

Activity Sheets



*Ensuring a future
for young people with trees and forests
for trees and forests with young people*

The Activity Sheets are practical activities for educators or coordinators to use with groups of young people or students.

All the Activity Sheets are downloadable from the website, and relevant sheets are listed at the end of each section of the Youth for Trees Guide.

They should enable young people:

- to learn about and promote the diversity, life and value of trees and forests.
- to explore, experience, and engage with wood, trees and forests in terms of our impacts and future.
- to plan and work together effectively.
- to volunteer and organise volunteering.
- to learn about and develop enterprises and careers related to trees and forests.
- to express their concerns about trees and forests.

They should develop their competencies for:

- Teamwork, creativity, employability, project management and entrepreneurship.
- Public participation, civic competences, citizenship and political engagement.

Sections

- **Title** - in English
- **Why read this?** - Something young people could do, led by you as a youth/student educator
- **What for?** - aim or objectives, reason it was done
- **What resources?** - needed to do it
- **What to do?** - bullet point step-by-step
- **What benefit?** - to young person, other people, environment (trees), or economy
- **What learning?** - skills or understanding by the young person
- **What examples?** - weblinks



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1 Assessing carbon in trees

Assess carbon in trees, wood products and forests.
How to calculate carbon stored in trees and wood?

What resources?

- Individual trees
- Tape measure

What to do?

- Measure the circumference of the tree at the standard Diameter at Breast Height above the ground (1.3m) with a tape measure. Record the result in centimetres. Repeat at least 3 times, at the same height, and calculate the average.
- Look at the table below to convert this to dry weight. Use the nearest value in the table to your value.
- Divide your answer by 2 (as 50% of the tree biomass is carbon). This tells you how much carbon is stored in the tree.
- Multiplying your figure for carbon by 3.67 - to calculate how much carbon dioxide was absorbed to create this carbon store.
- Multiply the result by 120% (as 20% of the tree biomass is in the roots).



Circumference (cm)	Tree dry weight (kg)
50	106
100	668
150	1,964
200	4,221
225	5,771
250	7,641
275	9,842
300	12,410
325	15,350
350	18,700
400	26,674

These values, provided by Forest Research (UK), are for an individual broadleaved tree in Westonbirt Arboretum, UK. Coniferous trees may differ. They can be used as an example. Trees will grow at different rates depending on the species, soil, drainage, slope aspect and climate conditions. This formula and conversion will obtain an average estimate over the life span of the tree, and will exclude stores in forest soil carbon, which are likely to be higher.

Finally if you would like to know the CO₂ sequestered per tree per year you need to look at the CO₂ and divide it by the age of the tree. This can be found in a felled tree by counting the annual rings.

What benefit?

This enables forest researchers, planners to decide the best species to grow and best places and conditions in which to grow trees as carbon sinks. It also enables politicians and others to understand the value of trees.

What learning?

Accurate measurement and mapping is important for any scientific evidence. However the final figures are based on many assumptions.

Trees are valuable carbon sinks, helping to balance the carbon cycle. Carbon constitutes approximately half of the dry mass of trees and when wood from these trees is used to produce wood products the carbon is stored for life in that product. Carbon stored in wood is only released back to the atmosphere when the wood product is burnt or decays.

What links?

[Climate Forests Project](#)
[Forest carbon diagrams](#)

What impact is climate change having on European forests? [4 min. video](#)

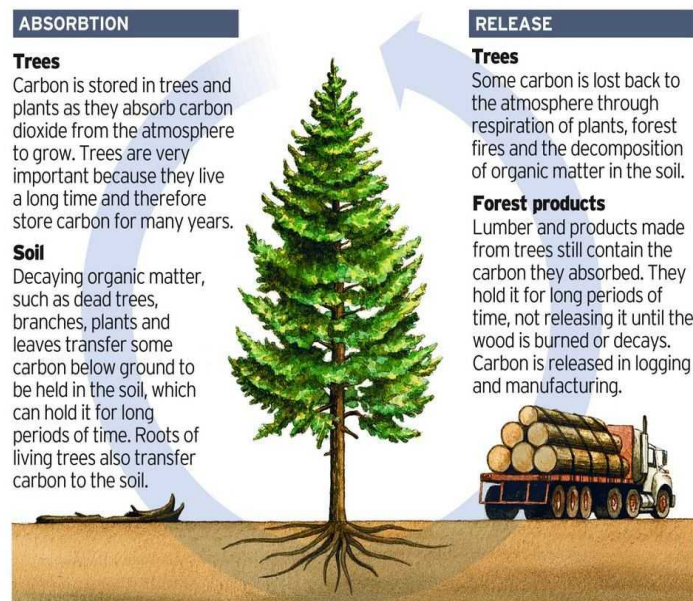
Are trees one of the best solutions to climate change? [3 min. video](#)

Are trees one of the best solutions to climate change? [11 min. video](#)

[Solutions to climate change, Project Drawdown](#)

How forests absorb carbon dioxide

Forests can function as carbon sinks, absorbing the climate-changing gas carbon dioxide from the atmosphere and storing it for long periods of time in trees and soil. How the carbon cycle works:



Source: USDA, Northern Research Station

ERIC BAKER/THE OREGONIAN

2 Assessing seasonal change with trees

Track the effects of weather and climate change on trees near you. Discover the effect that recent weather and climate change has on trees.

Use phenology (the study of the timing of specific biological events such as bud burst, flowering, leaf fall) to spot the changes in the seasons and climate.

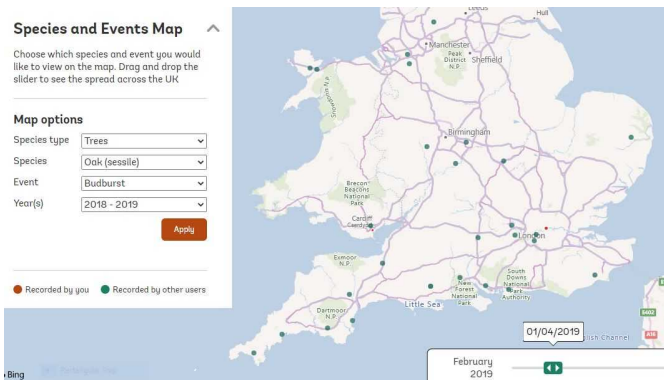
What resources?

- [Nature Calendar website](#)
- [Tree identification app](#)
- Recording sheet
- Calendar



What to do?

- **Choose a tree event** - that you want to record. Examples of tree events that you can record throughout the year as part of the Nature's Calendar project include: Budburst, first leaf, first flower, fruit ripe, first tint, full tint, leaf fall, bare tree.
- **Choose a tree species** - The Nature's Calendar project records changes from: Alder, Ash, Beech, European larch, Field maple, Horse chestnut, Pedunculate oak, Sessile oak, Rowan, Silver birch and Sycamore. Choose one or more that you can check at least twice a week. Some species will need more frequent checking than others.
- **Choose your recording locations** - Choose recording locations that you visit regularly, ideally as part of your normal routine.
- Notice when an event happens to the species you are recording for the first time. For example you might choose to record the ash tree you walk past daily.
- **Record your observations** - Look out for the seasonal events that happen to your species. Record the date that you first see each event. Recording your species in the same location each year will give us the best quality records. For species with multiple events e.g. oak budburst, first leaf, first flowering and so on, record all the events on the same tree.



What benefit?

- Phenological observations have been used for centuries by farmers to maximize crop

production, nature-lovers to anticipate optimal viewing times, and by almost all of us to prepare for seasonal allergies.

- Today, this well established science is also used by scientists to track the effect of global warming and climate change on organisms and to make predictions about the future health of the environment. By tracking changes in the timing of these phenological events, scientists are able to better understand how the environment is changing.

What learning?

What are the best indicators to define the onset and end of the growing season?

How much do phenology measurements vary from year-to-year?

Recently new satellite-based estimates show significant trends in the phenology of trees in spring.

There is increasing evidence from phenology that climate change is causing deciduous trees to drop their leaves later in autumn or not at all, which would be extremely bad for trees and the ecosystems in which they live. The high surface area to volume ratio of the leaves would cause the trees to lose a lot of heat and moisture if they were to keep them during the winter. The nutrients like nitrogen and phosphorus in the leaves will not be stored over winter back in the twigs and branches.

- In Europe trees may begin to migrate northward. New saplings may find more habitable climates north of their traditional range. So trees may be stressed in soils to which they are not adapted. Also any migrating trees would be an invasive species, which have no natural threats and can out-compete native trees for resources.

What example?

You can see the analysis of recent UK records [here](#).

3 Campaigning about felling trees

Trees may be felled for many reasons - eg. danger to the public (in towns and cities), for timber (in forests), mining or growing farm crops. A single tree or whole forest may be felled by chainsaw or bulldozer but it will always reduce the carbon sink effect of trees as they no longer can capture CO₂ from the air. Deforestation or the clear felling of large areas of forest can have a huge effect on both increasing global warming and decreasing biodiversity. This is especially true of tropical forests which are only 6% of the Earth's surface but hold 80% of the Earth's known biodiversity.

What for?

Young people around the world campaign about this, at international events, outside government and business offices, on the street and online.

What resources?

- A small group of motivated young people.
- Access to a library.
- Access to businesses and politicians and non-governmental organisations.

What to do?

Find the problem

Regularly look at a few key news and information websites and blogs.

- eg. According to Brazil's space agency Amazon deforestation soared 22% over the 12 months to July last year. [Newspaper here](#).

Follow this up with further searches.

- eg. Government greenwashing promises. [Newspaper here](#).

But don't just rely on those sources. Check their reporting and views by looking to other sources.

- eg. News agency in Brazil [here](#).

Find the human cause

Now look for some of the human causes.

- Is it the demand for the trees or for the land? Is it the supply by the people who fell the trees or work on the land?
- Who pays for the people who fell the trees or work on the land? Who earns money by allowing people to fell the trees or work on the land?
- Who is finally responsible for the deforestation? Is it the people who supply (the producers) or people who demand (the consumers) or the regulators who control the supply and demand (the Governments)?

So how can these questions be answered with real evidence by young people from another country?

Act personally

How can young people directly try to limit the deforestation?

- eg. as a consumer they can boycott products - ensure that they are not purchasing or consuming soya bean products such as chicken, in case it has come from Brazil and grown on land that was deforested. [Newspaper here](#).
- eg. as a consumer write to a supermarket who

sells chicken explaining your concerns and to find out their policy on soya beans and deforestation.

[Magazine article](#).

Act together

Share what each person has found out about the problem and the human causes.

Consider what you can do as a group to explain the problem, suggest alternatives and change:

- the views and behaviour of other consumers.
- the policies of regulators such as Governments (both importers or exporters).
- the actions and campaigns of lobbying non-governmental organisations (both supporting and opposing deforestation).
- the actions of the chain of businesses responsible for clearing the land and trading the products.
- the livelihoods and work of the people who live and work on the land and in the forest.

Write to businesses and Government politicians for a statement of how they see the problem and their solution.

Consider working with other campaigning groups to negotiate with businesses and Governments, but this may be viewed as too much of a compromise.

Consider a fun, visually clear and interesting direct action near the business or Government to get some local or national media coverage. [Review of direct action](#).

Find solutions

Single, simple solutions may be hard to find. But all campaigns need to see a green light at the end of the campaign tunnel.



What benefits?

This experience of finding a problem, human cause and possible solutions may enable young people to transfer their new found skills to other acts of responsible citizenship.

What learning?

Investigative problem solving needs evidence from a range of sources.

Campaigners must practice what they preach or they are two faced.

What examples and links?

There are many examples of campaigns about the felling of trees at both local, national and international level from the Chipko Movement in India to street trees in Sheffield, UK.

Many links are in the Youth for Trees Guide - 2 Promoting Trees.

4 Campaigning online to plant trees

Support online campaigns to plant trees to address the nature and climate emergency.

What resources?

- A lot of people and friends who can be contacted online.
- A bit of time to write petitions, meet or lobby local politicians, landowners.

What to do?

Find local, national or international online campaigns for tree planting and afforestation. For example complete an online petition to your council asking for a doubling of tree cover in the local authority area over the next 25 years.

Lobby local councillors and talk and persuade local landowners to plant trees.

Use social media to link others to these campaigns. Set up or join a webinar to discuss how to influence Council decisions and policies.

Design placards, posters and presentations.

Consider setting up a local group to plant and protect trees.

Set up a community tree nursery, community woodland or orchard with others and offer trees to the local community.



What benefits?

- Successful online campaigning can change people's attitudes and behaviour, change policies (and even regulations and laws!), and change environments - and most vitally change the climate! It's a way of acting locally from home, cooperatively with many others and influencing more globally.
- There are many social, financial, environmental, and political benefits from online campaigning.
- There are loads of benefits from planting trees - they will clean the air, reduce flooding, enrich wildlife, and cool cities.
- Probably most vitally planting trees captures carbon as part of their photosynthesis and stores

it in both the living tree and when it is dead or as timber. The fossil fuels that are now combusted and changing the climate were partly formed in the Carboniferous Period from the earliest trees. So planting trees as a carbon bank can replace dead trees as a carbon source.

- Online campaigns can change local government policy about fossil fuels and climate change, especially if backed up by some form of direct, passive action.
- They can help people understand that the right tree should be planted in the right place at the right time - where, what species, how many?

What learning?

There are many practical, technical, digital and communication skills that you can learn from joining or starting an online campaign. You might even find that it changes your own behaviour and values - Be open to that!

What examples?



Local campaigns

[Plantabosque](#) from Spain

[Futuro Project](#), from Portugal

[Roads for Trees Project](#), from Poland

National campaigns

[The Big Climate Fightback and Ancient woodlands campaigns](#)

[Woodland Trust's Emergency Tree Plan for the UK](#)

[Friends of the Earth Trees campaign](#) It asks why should the UK double tree cover. It has one of the lowest tree covers in Europe. Woodlands now cover only 13% of the UK - less than half the European average. It also asks where should the trees be planted - Is it the uplands or lowlands, urban or rural?

[Trees for Life - Rewilding the Scottish Highlands](#)

International campaigns

[Trillion Trees](#)

[UN Trillion Tree campaign](#)

[Forest app](#) - cure for phone addiction

5 Celebrating important tree dates

This activity aims to raise awareness about the importance of forests and trees by celebrating important dates for trees, such as the International Day of Forests on March 21. Young people can organise and promote ways of celebrating the value of trees and forests and share good practice.

What resources?

This activity is very open in terms of program and resources. It depends on the people who organize it, their creativity and contacts.

The celebration can take place in any site, but would make more sense in a wood or group of trees. It needs a team of people to organise and could be an hour or so or over a weekend.

What to do?

To celebrate important dates for trees, there are various activities that can be organised:

- Organising a guided walk with the community around a woodland, with the support of a nature guide
- Tree planting in the right place, right time and with the right species
- Organising a local party, with music, food, drinks and tree products (both timber and non-timber)
- Performing street theatre about trees, their history and value as a story or illusion
- Organising a Tree fair, with some displays of projects or products developed about trees, to inform people and share good practice
- Collecting and recycling litter
- Adding fun, stimulating or artistic signage to a woodland

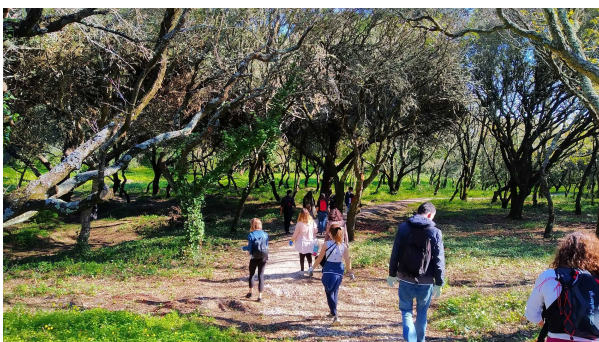


Photo: ASPEA

Here are some steps you can do to prepare the activity:

- Gather a small team of volunteers
- Decide the site and how you want to celebrate the important date and the value of trees and forests
- Make contacts and a list of resources
- Create a poster or a flyer to promote the activity
- Invite the local community or general public
- Put up posters, notices, directions to guide people to the site

What benefits?

Social - bringing people together and connecting them with trees and nature.

Environmental - raising awareness about the importance forests and trees.

Economic - possibly selling tree products or fundraising for a project to the economy, due to the sale of tree products or good cause.

What learning?

Young people can develop these skills:

- Organisation
- Leadership
- Communication
- Teamwork

Also, this activity has the potential to promote a change of behaviour, both on the organisers and the participants, towards their personal impact on the sustainable management of forests and trees.

What examples?

- [Celebration of the International Day of Forests by Vancouver Urban Forestry \(Canada\)](#)
- [Celebration of the Autochthonous Forest Day by college students \(Portugal\)](#)
- [International Day of Forests - 2018 events around the world](#)



6 Constructing with bamboo

Many architects work with this material creating awesome buildings in Colombia, Japan, combining it with other materials as wood, clay, cement and iron.



What for?

The bamboo crop can be used for construction, to purify water and help degraded lands. It can grow 1 meter per day, which makes it a quick and profitable product. It is necessary to know how to manage the bamboo, and tropical countries have large experience doing this.

Bamboo has more than [1.500 applications](#). It can be used for building houses, bridges, roofs, crafts, decorations, fences, shades, tents and temporary shelters. The fibres can be used for clothing, substituting others like cotton, which requires much more water and land.

What resources?

Naturally bamboo does not grow in Europe but it has the ability to adapt to many climate conditions so it can be grown in many parts of Europe. So it can be purchased from a certified supplier.

What to do?

- Design the construction according to the weather, the earthquakes and other land issues.
- Choose the bamboo to suit the site and form of construction.
- Buy the bamboo from a certificated plantation and, if possible, that has been locally produced.
- Design the construction based on plans.

What benefits?

Bamboo is a really good material for construction, because it is cheaper than other woods and grows fast. It is also flexible, lightweight, strong and is very versatile so can be used in many types of construction. Also it is sustainable and works perfectly as a carbon sink, water filter, protector of water sources, retainer of soil and restorer of degraded landscapes. It has financial value, because it is much cheaper than other materials as well as environmental because it can be used to reforest a degraded land and because it is a great carbon sink due to the speed of the growth.

What learning?

Using this material could substitute for many plastic products that come from petroleum and are not

renewable.

Architects and people in Europe are not used to this material as a construction material. So they need to develop capacities and skills in this area as there is a huge market to explore.

What examples?

<https://bambusa.es/en>

[European bamboo](#)

www.inbar.int

[Bamboo -the material of the future video](#)

[Bamboo as a natural building material](#)

7 Creating a rope adventure park

Why read this?

The aim is to create a **rope park on trees** in a way that minimises the risks to the trees and is safe for users.



A rope park as a tourist attraction can be a place to educate young people about trees, species, biology, and the impact of installed equipment on the health of trees. A well-organized park can also be a model of good practice in creating buildings on trees - also at home (e.g. tree houses).

What for?

A properly constructed rope park can work for up to 10 years. It requires periodic inspections of the condition of the equipment and the condition of the trees. It is also advisable to have a dendrologist check the condition of the park's equipment and the condition of the trees. They will determine whether the ropes need to be moved to another tree or another tree trunk height.

- Trees of an appropriate age (BHD over 30 cm) and slower radial increment - preferably after a period of intensive growth, with thick bark.
- A specialist company to build and supervise.
- The legal requirements for the safety of trees and users.
- Near other tourist attractions for young people.
- Time to assemble - several months.

What to do?

- Choose a site with at least a dozen or so trees for 2-3 routes at different heights distributed over 1-2 ha. Well, if you can design
- Design at least one long descent on a line stretched between the trees over a length of at least 50-100 m - a very exciting challenge for users.
- Check current legislation.
- Do an economic analysis of the project.
- Assess what it will look like at different seasons and with the removed trees.

- Assess the safety of the equipment and internal condition of the trees with dendrological analysis. Check that the trees will withstand the loads, and nearby trees do not risk users or equipment.
- Design the rope park with guidance and education near the platforms and ladders.
- Choose good climbing instructors to train and supervise rope park users.



What benefits?

Financial - The possibility of obtaining a return on investment even within 2-3 years.

Social and educational - Overcoming a fear of heights, showing life in the treetops and responsible use of trees.

Economic - Potential for tourist development in other areas.

What learning?

Using a well-built rope park is safe, it teaches self-confidence and coping with the fear of heights. It is also a chance for interesting nature education in unusual conditions of tree crowns. It also promotes good practices of using living trees.

What examples?

UK

www.ravenadventure.co.uk

<https://ropeworksactive.co.uk>

Spain

<https://tirolinasgo.com/madrid>

<https://costabravaparcaventura.com>

Portugal

www.parqueaventura.net/en/lagos-en

<http://adventurepark.pt>

Poland

www.parklinowy.pl/uk/index.htm

www.rudnicapark.pl

8 Creating and observing bird and bat boxes

What for?

- Learning about birds living in forests - their common species, habitats and life cycle.
- Raising awareness of the role of birds in the forest ecosystem.
- Promoting wood as an ecological and renewable resource.
- Connecting people to local nature.
- Creating a product that can be sold to raise funds for nature conservation and forest protection.

What resources?

- Possibly a specialist who can reach about the biology, ecology and bird protection as well as workshops for assembling nesting boxes.
- Materials for the construction of nesting boxes - timber boards, saws, screws, screwdrivers.
- Safe ladders and tools for erecting nest boxes.
- First aid equipment as working with tools and ladders.
- Tools for observing birds - binoculars, night movement camera etc.

What to do?

Three types of workshops could be organised:

- An educational workshop on birds and nesting boxes.
- Hanging the bird or bat boxes in nearby forests and parks.
- Observing the boxes.
- Promote all or some of the workshops on posters and in social media.
- Find a source to buy materials or borrow tools and find unused or recycled wood.
- Plan the workshops with the volunteer team.
- Check the right place to hang the bird and bat boxes.
- After a year describe and promote the workshops and whole project so it could be repeated elsewhere.
- Possibly organise a photo or film event, display or a competition for the most interesting photo or record of birds or bats near the boxes.

What benefits?

- Social - promoting joint activities to engage people, build the boxes and enjoy the activities.
- Ecological - increasing the number of locally breeding birds and bats.
- Educational - expanding knowledge about the forest ecosystem and nature conservation.

What learning?

- Recognising common forest bird and bat species.
- Simple tool handling and construction skills.

What links?

[Design for building a bird nest box](#)

[Design for building a bat roost box](#)

Bird box



Bat box



9 Creating tree fruit characters

The fruits of forest trees are usually used as an artistic material for children in the early stages of schooling but are also used as a craft by adults. As a small enterprise buyers may be attracted by the association with early childhood. Human and animal figures can be made from tree fruit and nuts.

What resources?

Tree fruits and nuts are widely available. You can also use your camera or smartphone and open source software for animation and film making.

- String, thin wire, labels
- Promotional leaflets, posters etc
- Identification guide to tree fruits and nuts
- Price list, business card, website, social media

What for?

- Catching the attention of potential buyers.
- Advertise products and projects
- Educating about tree seeds and species.

What to do?

- Recognise the local, historical and domestic traditions of using tree fruits and nuts.
- Invent an original vision of their creation.
- Take a series of photos of your own products.
- Set up a website and social media.
- Publish product photos.
- Develop the content of the website trying to attract interest in selling products with attractive emblems that you have created such as calendars, T-shirts, mugs.
- Collaborate with organisations, companies, and businesses to develop and promote the products.
- Constantly keep the attention of your audience by updating your website and social media with new elements such as films or animations.

What value?

You create "something from nothing" If you are creative, you can develop commercial activities on this basis or offer to promote social or educational organisations using your products.

What learning?

You learn to be creative in the use of opportunities. By creating "something from nothing" you gain faith in your own strength and abilities. You also learn about tree species and the history of local customs and culture.

What links?

<https://www.drolipathes.net>

<https://dubanci.cz/english-info>

<https://www.zazzle.com/collections/calendars-119944088769855147?rf=238554285273206478>

<https://www.facebook.com/dubanci>



10 Foraging from edible trees

Gather, process and use different parts of trees for food and drink.

What resources?

- Tree identification guide
- Basic cooking equipment
- Storage containers, trays, bottles and jars ideally of the same sizes.

What to do?

The main harvesting time is in the autumn when fruit and seeds can be collected. However in the spring the sap, bark, flowers and leaves of some trees can be collected. Create an edible woody landscape in your local area using the principles of a forest garden.

Products could be fresh fruit, teas, salads, flour, preserves (chutneys, pickles), dried fruits and nuts, and fermented drinks, fruit juice, acorn flour, nut roast, flower fritters and sap syrup.

- **Edible fruit** - from native, wild trees such as elder, hawthorn and rowan, but also cultivated orchard trees such as apple, pear, cherry, plum - as fresh fruit, dried fruit, fruit leathers, soft drinks (sweet cordials, fruit juice), preserved in syrup or alcohol, alcoholic drinks (cider, perry, wine).
- **Edible seeds** - from beech, ash, pines and holm oak, as well as cultivated nut trees such as sweet chestnut, walnut and hazel - as nuts, pickles, flour, general cooking.
- **Edible flowers** - from black locust, elder, lime, sumac - as tea, fritters, juice, cordial, wine
- **Edible leaves** - from young lime leaves - as salad.
- **Edible sap** - from birch, maple, walnut - as concentrated sweet syrup or alcohol.
- **Edible bark** - from birch, poplars, maple, willow and pine - as soft, moist, sweet inner bark or cambium.

As these are foods and drinks, there is inevitably some health risk that need to be considered. Rules of foraging - if in doubt leave it out.

What benefits?

There are many benefits of trees as sources of food and drink.

Many of these products need little capital and equipment to set up a small enterprise but there are food safety regulations in different countries.

Both tree fruit and nuts are a key part of a healthy vegetarian, and particularly vegan, diet.

Social - There are many benefits of trees as sources of food and drink. Both tree fruit and nuts are a key part of a healthy vegetarian, and particularly vegan, diet. Making food from trees can be a productive, physical, healthy and social activity.

Financial - Making food and drink from trees can have low-cost inputs and high-cost outputs. So young adults,

as individuals or small cooperatives, can have an opportunity to start up a new enterprise.

Environmental - Making food and drink from trees is a form of agroforestry. Foraging is very sustainable as it can have no, or few, artificial inputs. Foraging uses simple equipment and the perennial trees protect the soil from erosion and act as a store of carbon. In the tropics most traditional farming is agroforestry or forest gardening.

What learning?

- Valuing and respecting nature
- The low-input enterprise opportunities
- Practical processing and cooking techniques

What links?

[Foraging guides](#)

[Apple and Orchard Guide, SCOG](#)

[Examining the potential for harvesting and making more use of the fruit from traditional orchards](#)

[Juicing equipment hire](#)

[Nut trees](#)

[Forest gardening](#)

What is a forest garden? [Video](#)

Sandford Orchards Straw Pressed Cider Timelapse [Video](#)

Traditional cider making at National Trust Killerton [Video](#)

Harvesting apples [Video](#)

Harvesting, Storing and Processing apples [Video](#)



11 Geocaching in a forest

Geocaching is a real-world, outdoor treasure hunting game using GPS-enabled devices. Participants navigate to a specific set of GPS coordinates and then attempt to find the geocache (container) hidden at that location. Geocaches can be found all over the world. It is common for geocachers to hide caches in locations that are important to them, reflecting a special interest or skill of the cache owner. These locations can be quite diverse. They may be at your local park, at the end of a long hike, underwater or on the side of a city street.

What for?

- discovering unknown places
- exploring different forest habitats
- getting outside
- staying healthy for you and your family

What resources?

- A GPS device (eg. on smartphone) that will be used to locate your position
- A pen to log your findings into a logbook
- Small items that you can swap with other items in the geocache

What to do?

You can make your own geocache and hide it in various locations. You can find geocaches during walks in your neighbourhood or remote trips around the world. Geocaching can be a team sport - you can take friends or family with you!

Finding geocache

1. Locate the cache in an interesting area using a special geocaching website.
2. Put coordinates into your navigation device.
3. Use your GPS device to assist in finding the hidden geocache.
4. Sign the logbook and return the geocache to its original location.
5. If you take something from the geocache, leave something of equal or greater value.
6. Share your geocaching stories and photos online.

Hiding geocache

1. Prepare yourself about the rules of hiding geocaches.
2. Find a suitable spot.
3. Put a logbook in the container.
4. Hide the cache. It should be suitable for all weather types and the location you've picked. Make sure it doesn't scent (it may attract animals) nor is threatening (label it properly).

What benefits?

Social - promoting spending time outdoors
Ecological - making aware of different natural habitats and conditions

What learning?

Learning how to properly navigate in new surroundings.

What examples?

- <https://en.wikipedia.org/wiki/Geocaching>
- <https://www.nationaltrust.org.uk/features/what-is-geocaching-outdoor-adventure-for-kids>
- <https://adventure.howstuffworks.com/outdoor-activities/hiking/geocaching.htm>
- <https://www.geocaching.com>
- <https://opencaching.pl>
- <http://www.geocachingspain.es>
- <https://www.geocaching.pt>



Photo. Nadleśnictwo Gdańsk - Lasy Państwowe



Photo. Woda Góry Las



Photo. Camprest

12 Germinating tree seeds

Set up a tree nursery in order to grow locally collected native trees from seed and cuttings.

What resources?

- Plant pots or a small piece of land.
- Sieved soil, ideally with added decomposed leaf litter.
- Washed coarse sand, grit or wood chips.
- Access to water, and access to a fridge (for temporarily storing some seed).

What to do?

Collecting seed - May to December depending on species

- Look at maps for old, wild local woodlands to collect the local native tree species.
- Identify the species using an identification guide.
- Collect seed from a few trees to keep the genetic diversity.
- Regularly check for the right time to collect - when seed is ripe and before birds, mammals eat and wind disperses the seed.
- Collect from the tree by hand or with a stick and hook, or from the ground.

Processing seed

Fleshy fruit are the most difficult to separate the seed. Try mashing (eg. apple), pressing through a sieve (eg rowan) or popping by hand (eg hawthorn).

Nuts (eg oak and beech) need to be full, undamaged without holes and sinkable in water (eg hazel).

Winged seeds (eg ash, elm, maple) can be sown immediately.

Cones (eg alder, birch and conifers) need to be stored in a dry bag or box in a warm place. As they dry the seeds separate when shaken.

Pre-treating seed

Most European seed is dormant (alive but will not germinate immediately). It needs moisture and/or a period of cold or warmth.

- Willow, elm, aspen, oak - Needs only moisture.
- Alder, birch, pine - Needs to be stored dry then soaked in water for a day, mixed with moist sand in a plastic bag and stored in a fridge for a month.
- Blackthorn, bird cherry, crab apple, elder, guelder rose, hazel, rowan, purging buckthorn, whitebeam and wild cherry etc. - can be pre-treated when seeds are extracted.
- Ash, hawthorn, holly, spindle, yew - These seeds are treated the same way as above, but wait until the second spring before sowing.

Pre-treatment

- In a plant pot with drainage holes mix an equal volumes of peat-free compost or leafmould, and grit or coarse sand.
- Add an equal volume of seed and enough water to make it moist but not dripping when squeezed.
- Cover the seed mixture with 2 cm of grit, sand or wood chips. Sink it in soil and leave outdoors in a

shady place. It must not dry out.

- Mark a plastic label with a pencil and sink it in the pot. Also good to map the position of the pot. Labels can get lost! Cover with wire mesh.
- In early spring (the first or the second spring, depending on the species), check your seeds for signs of germination. Ideally they should be sown just as the root begins to appear.
- They will be ready to sow in the first spring following collection. Don't give up! Your patience will be rewarded.

Raising seeds

The number of seeds you sow depends on the species and the number of seeds you expect to germinate. As a general rule, the larger the seed, the higher the germination rate.

Remove the weaker seedlings to leave only one. Seeds are scattered on the surface of the soil or compost, firmed and covered.

Horticultural grit is the best material to use to cover your seeds, but soil or compost will do.

Ensure that the seeds are only covered to their own depth. Too deep and they may not emerge. Too shallow and they might dry out.

Don't forget to label the seedbed or pots.

What benefits?

- **Social** - Many volunteers can be used to identify and collect seeds in the autumn.
- **Financial** - If many trees are produced they can be sold or exchanged.
- **Environmental** - Focusing on local sources of trees and local planting minimises the use of unsustainable transport. Locally collected wild tree seed means that the trees will be suited to the local climate and soil. But it is worth asking or checking to see if that species of tree is locally common.

What learning?

- Potential for a mini-enterprise, selling or exchanging young trees.
- Basic horticultural skills.
- Encourages local community and volunteering activity.

What links?

[Online guide to growing trees from seed, TCV](#)

[Autumn seed harvest handbook, TCV](#)

[Practical Guide to raising trees from seed, Forestry Commission](#)

[Grow an oak tree in a pot, The National Forest](#)

[Tree seed online](#)

[Guide to tree growing](#)

[Modern automated tree nursery. 3 min. video](#)

[Modern US tree nursery and tree farmer. 3 min. Video](#)

13 Growing tree seedlings and cuttings

Set up a tree nursery in order to grow locally collected native trees from seedlings and cuttings.

What resources?

- Plant pots or a small piece of land.
- Sieved soil, ideally with added decomposed leaf litter.
- Washed coarse sand, grit or wood chips.
- Access to water, and access to a fridge (for temporarily storing some seed).
- Land for final tree planting.

What to do?

Growing seedlings

Once the seeds begin to germinate, the young trees are dependent on us for their care - watering, weeding and feeding.

It is vital that alder, birch and willow seeds are not allowed to dry out at all during the first three weeks after sowing. All other seeds should be kept moist. Before the seedlings start to crowd each other they should be thinned out or transplanted.

Pots should be kept in a well-ventilated and well-lit position. Wide temperature fluctuations must be avoided. Don't forget to protect the seeds and young seedlings from birds and mice!

Begin weekly liquid feeding when the first true leaves have grown and continue through to the end of July. Keep moist at all times. Inspect seedlings for pests and diseases. Weed regularly for best growth.

Hardening off

Trees and shrubs, when grown indoors (in a greenhouse or on a window sill) need to be acclimatised to outdoor conditions.

Planting your trees

Once trees are about 30 or 40cm tall, after one or two years, they are ready to be planted into their final home.

Collecting and raising cuttings

Some trees will grow from hardwood cuttings - willows, poplars, hawthorn, blackthorn, elder, guelder rose, whitebeam, box, mulberry, fig. But also try a few other

tree species as they take little effort and space and may grow as long as they always have moist but soil. The cuttings need to be 30 cm. long pencil or finger sized, one year old wood. This needs to be collected in late winter/ early spring before the buds break open. They can be cut with secateurs or a small saw or sharp knife.

Two-thirds of the cutting is planted with a 10 cm spacing between cuttings in a pot of soil or a shallow trench.

What benefits?

Social - Many volunteers can be used to identify and collect seeds in the autumn.

Financial - If many trees are produced they can be sold or exchanged.

Environmental - Growing trees mainly uses renewable natural resources. The seedlings produced can grow to be major carbon absorbers reducing greenhouse gas emissions. Focusing on local sources of trees and local planting minimises the use of unsustainable transport. Locally collected wild tree seed means that the trees will be suited to the local climate and soil. But it is worth asking or checking to see if that species of tree is locally common.

What learning?

- Potential for a mini-enterprise, selling or exchanging young trees.
- Basic horticultural skills.
- Encourages local community and volunteering activity.

What links?

[Online guide to growing trees from seed, TCV](#)

[Autumn seed harvest handbook, TCV](#)

[Practical Guide to raising trees from seed, Forestry Commission](#)

[Grow an oak tree in a pot, The National Forest](#)

[How are trees are being bred for the future, Future Trees Trust](#)

Modern automated tree nursery. [3 min. video](#)

Modern US tree nursery and tree farmer. [3 min. video](#)



14 Guiding forest walks

Organising a guided walk in a woodland or forest is probably the cheapest, simplest and easiest way to get other people appreciating the value of trees and nature.

What for?

- Learning about trees and forests
- Promoting active outdoor recreation in woodlands

What resources?

Other volunteers to help promote and organise the walk.
First aid kit and mobile phone.

What to do?

Planning

- Start with a site or route that you know.
- If on private land, check permission with the landowner, ideally in writing.
- Select your audience eg. school pupils, scout or youth groups, college students, retired or disabled groups.
- Consider how they would get to and from the site or route.
- Develop a theme for the walk using your own enthusiasm and experience of the theme or site. This is even more important than being a specialist or sharing your knowledge or information.
- Write down your theme and key messages eg. the range of different and old trees along the route, with simple ways of identifying the species, some interesting stories about them and the value of old trees.
- The group may have very different physical abilities. Most walks may only cover about 2 km in 2 hours. So stop and talk together every 5 minutes or so or when the group sees something interesting.
- Work out the best season and time for the audience.
- Confirm if it will run “rain or shine” and advertise accordingly. Most walks run under all conditions but plan for some shelter.
- For longer walks local toilet facilities could be identified.
- Possibly plan the walk alongside another event to ensure a large audience.
- Serving some food and drink at some stage is always popular - biscuits, apple or orange slices, cheesy snacks, hot or cold fruit juice with paper cups.
- A single pocket-sized handout may add interest eg. map or identification guide.

A month before the walk

- Prepare and distribute a simple flyer and social media (Twitter, blog or e-newsletter)
- If open to the public, send a press release to the local media. But word of mouth is probably the most effective promotion.

Before the day of the walk

- Walk the route through the eyes and ears of a

fresh visitor to check that the theme and key messages can still be included.

- Decide where people can park, if needed.
- Plan how to keep different people engaged and interested esp. children.

On the walk

- Carry a first aid kit, knife and mobile phone, together with the phone number of the nearest hospital and police - and hand lens and binocular etc. if needed.
- If there are helpers, give them and yourself name tags and possibly reflective jackets esp. if using roads.
- Remind visitors to gather round close when the group stops to talk. Encourage people to ask questions, explain things to others.
- Ask everyone to take photos if they want but ask if everyone is willing to be photographed. Give them an email or site where they can send the photos. Consider a group photo at the end.
- End the walk on time to avoid people leaving before the end and feeling dissatisfied.
- Remember the basic principles of good communication.

After the walk

- add a short description and photo(s) to a website or send to the local media to promote future walks.
- Make a note of what did and did not work.

What benefits?

Social - connecting people with other people and with nature.

Environmental - Encouraging good environmental behaviour on walks.

Educational - raising awareness and understanding of forest management and nature.

What learning?

Learning about the features and value of trees and forests.

What links?

[How to organise a walking event](#)



15 Identifying trees

Find out how to identify and name trees.

What for?

Young people may lack experience and skill in identifying trees.

- Lack of field excursions and lab-based classes.
- Using dried samples or pictures which are not representative of the whole tree.
- Latin names are not practical in the field and students need to learn the common names to be able to communicate with the local communities and forest workers.
- Courses may overwhelm students naming too many species in a short time.

What resources?

- [Tree ID app, Woodland Trust](#)



- Tree Identification Guidebooks
- [Tree genus names in different languages](#)

What to do?

The most important thing that you should know is that learning to identify trees takes time in different places and seasons. But it can be a skill for life.

- Try to visit nearby or city woodlands to spot tree leaves, flowers, trunks and branches in different seasons.
- Perhaps “adopt” one or two very local trees where you regularly walk.
- Take photos and make an Instagram account to store your photos.
- Use some of the plant apps listed here to identify the different parts of the tree.
- Don't panic. If you couldn't remember the names in the beginning, the most important thing is getting familiar with the features of the trees.
- Remember that you are learning a new language, you need to repeat the names, with the time you will get fluent.
- Make it fun! Try to relate the Latin names to familiar words from your language, I'm sure you will find some.
- There are many more tree species in the south of Europe compared to the north.
- Try to prioritize native species, start with trees and then move to shrubs.
- Look at the leaves or needles. Is it a broadleaf

(usually deciduous) or is it a conifer (usually with needles or scales)?

- Different features will be visible through the seasons. In winter, for broadleaf trees, you'll have to use twigs, leaf buds and bark.
- Take notice of the surrounding area such as hedgerows, fields, parks, woodland or close to water. Some species are more likely to grow near water, in scrubland, parkland or in woodland.
- Piece the clues together, including the overall shape and size of the tree, bark, leaves or needles, flowers, fruits, leaf buds and twigs. The more features you can see, the more accurate your identification will be.

What benefits?

Why should we even learn the names and identify the species? Why in Latin?

Globally the Latin names are used in science to avoid confusion with common names that vary in each country and maybe in each zone! and the unity of names makes it easier for scientists to describe species or phenomena. In forestry the main focus is on tree species as they form the structure of the forest ecosystems.

Describing the tree species is crucial for many measures in the forest like biodiversity surveys, tree health surveys, management and regeneration plans, and genetic studies.

What learning?

The skill of tree identification by observing and recording the leaves, flowers, fruits, bark and shape of trees.

What examples?

- [Leafsnap - Plant Identification app](#)
 - [Heart of England Forest tree guide](#)
 - [Street and park trees](#)
 - [Urban Tree Survey, Natural History Museum](#)
 - [A-Z of British Trees, Woodland Trust](#)
 - [Tree Guide UK](#)
 - [Tree Health Survey, Opal](#)
 - [The Wood Database - European timber](#)
 - Common trees of the UK, Part 1 [Video](#)
 - Common trees of the UK, Part 2 [Video](#)
-

16 Looking inside Trees

What for?

Explore what happens inside a tree, by tapping the trunk for sap, catching water from the leaves, estimating the age of a tree and listening through its trunk.

What resources?

- Drill, plastic pipe and bucket
- Large plastic bag and string or tape
- Measuring ruler

What to do?

Tapping for sap (best in early spring)

- Choose a large, mature, healthy tree (eg birch, maple and willow) with a diameter at least 20cms and with a large canopy. Make sure you have permission from the owner and that the trees are not exposed to pesticides or other toxic chemicals.
- Drill a 5-10 cm hole (1-2 cm diameter) in the tree approximately 1m from the ground, using an electric or hand drill. This will not damage the tree.
- Insert the loose end of a clean, food-grade pipe into the hole to create a tight seal, ideally to a depth of about 2 cm and seal any gaps with cloth.
- Put the other end of the pipe into a bottle or bucket. After 15 or so minutes clear sap should flow from the pipe. The container may be full after an hour or so.
- Remove the pipe and push a piece of branch into the plug hole or use a cork.
- Once collected, keep sap refrigerated and use or process within 2 days. If left too long the yeasts start fermenting the sugary sap. Concentrating the sap is very energy intensive as it is about 95% water. So it is best used as weak sugary water.



Sap can be heard flowing through the xylem in the tree trunk [here](#) and [here](#).

Ultrasound sensors can detect a snap in the water column of the phloem often in the afternoon.

Talking trees

- Find a long dead log or plank of wood which is cut at both ends and place it on a support.
- One person scratches the cut end of the wood and the other person listens at the other cut end.

Why does the sound travel through the wood? It may be possible to hear sound travelling through the air spaces of the dead xylem vessels of the central heartwood which are connected, long and hollow. Musical instruments use this property of wood to amplify and modify the sound, which is why particular woods are favoured by musical instrument makers.

Catching water (best in spring)

- Tie a large clear plastic bag on the end of a small tree branch.
- The bag should be sealed tightly over the branch. Water vapour will collect and condense in the bag.
- Wait until evening for maximum condensation before removing the bag. A bag may give one cup of water per day.



Electric calipers can detect the daytime contracting of twigs and the night time rehydrating with water from the roots.

Tree rings

Look at a cut tree trunk or log.

Count the number of dark tree rings. Each dark ring shows where growth was slowed down in the winter. So this indicates the age of the tree.

Compare the widths of each tree ring. Ring width indicates the relative amount of growth due to temperature and rainfall, and competition from nearby trees etc.

Tree rings can be used as evidence of climate change looking at the effects of temperature on tree ring widths over the short term. In warmer growing periods tree rings are wider. In many samples tree rings are narrower before than after the 1990s.

What learning?

Ask yourself where do trees get their mass? As in the TED talk [here](#).

Learn how a tree works [here](#) - through its leaves, branches, trunk and roots.

What links?

[Basic tree biology](#)

17 Making a clue trail with trees

A peddy-paper is an outdoor pedestrian competition with teams, which consists of a route associated with questions or tasks corresponding to different intermediate points. It was developed in Portugal. The main objectives of a peddy-paper with trees are:

- Gaining knowledge about trees and forests, their ecology, benefits and importance.
- Promoting leisure activities with trees and young people (15-30 years old).
- Learning to work in a group and to get connected with trees.

What resources?

- At least 2 groups of young people and 1 leader per group
- 1 pen and 1 notebook per group
- 1 camera or cell phone camera

The place for this activity can be any forest or tree area, even an urban area with trees. The path/route should be safe and studied previously. This activity lasts approximately 90 minutes.



What to do?

- Choose the place and define a route.
- Prepare the challenges of the peddy-paper, by setting up a list of questions and answers, integrated in the chosen route. These questions can be about tree species, tree products, interesting facts, riddles about trees, clues to the next point, to explore the forest and engage with trees. If there are 2 groups, the route can be inverted, which means one group follows one direction and the other group follows another, but the route is the same.
- Choose the date and call for participants, by spreading the event through email and social media. Optionally, create a poster of the activity to be more appealing.
- Choose a leader with knowledge of the peddy-paper and the answers to accompany each participant group.
- On the day of the activity, the planner of the activity explains the rules to the participants and the time available. Each group has a name and one leader to accompany them.
- It's important to think of a prize for the winning team, for example, some wood products or a meal in a restaurant that uses recipes with tree products.

What benefits?

This activity has social benefits, as it promotes social contact and recreation for young people. It can be interesting to use in a summer-camp or an event related to trees. It also has environmental benefits, because it increases knowledge about trees and raises awareness in young people for the value and importance of trees and forests.



Photo. <https://www.profitocla.pt/peddy-paper-na-semana-de-acolhimento/>

What learning?

Learning about characteristics of trees, the importance of protecting trees and forests, ecosystem services, and connecting people to trees. By exploring trees and forests through this peddy-paper, young people may change their attitudes and behaviour about trees, in a positive way. Soft skills such as teamwork, creativity, problem solving and cooperation are also developed.

What links?

- [Peddy paper Together for the environment](#)
- [Peddy paper in the Forest](#)

18 Making upcycled wooden products

Many small products can be simply made from waste wood, such as wooden pallets or fallen branches from woodland. These can be sold as gifts or utensils either to raise funds for environmental projects or for the purchase of tools and equipment for environmental groups. Alternatively they can be given as presents or sold by small youth-led, start-up enterprises.

What for?

The aim of this activity is to transform wood waste into useful and saleable products.

- Decreasing waste
- Connecting people to trees and nature
- Educating about the value of trees and wood

What resources?

- Wood waste, wood materials, sharp objects
- Tools such as saws, fretsaws, sharp knives, string, wire, clips, small chains, copper tape etc.
- For finishing, if the participants wish, they may need pencils, charcoal, paints, varnishes, waxes and sandpaper.
- First aid kit.

What to do?

- Ask what skills, experience and ideas the group may already have.
- Introduce the available tools and resources, good tool handling and safety practices.
- Consider planning and working in small collaborative teams.
- Research online some of the possible ideas for small wooden products eg. everyday utensils and decorations, such as pendants, pens and key chains, dice, door wedges, necklaces, spatulas, butter spreaders etc.
- Practice using the tools and resources.
- Develop ideas and prototypes for the wooden product.
- Consider collaboration between participants in order to refine the products and make multiple copies or variations.
- Critically review the whole design and production process and share this experience with other participants.



Wooden pen



Wooden keychain

What benefits?

- Reduction of waste
- Products for sale or fundraising
- Useful gifts or utensils

What learning?

- Collaborative planning and design.
- Practical skills about safely and efficiently using a range of tools.
- Educating about the circular economy and sustainable production techniques.
- concepts of incentive and motivation to reuse tree endogenous materials.

What examples?

- [Workshop of wooden miniatures](#)
- [10 projects you can make with scrap wood](#)
- [Woodworking workshops for sustainable adaptation techniques](#)
- [Get ideas from Etsy](#)



19 Measuring and Monitoring trees

Record trees in your local area or forest by mapping, measuring and monitoring its location, age, dimensions and condition.

What resources?

- Online access with a mobile phone or tablet, and able to download apps, take photos etc.
- Mobile phone (in case of emergencies)
- Tape measure, ruler (or app)
- Camera (or app)
- Clinometer (or app)
- Map or GPS device (or app)
- [Treezilla app](#)
- [Observatree app](#)
- [Treetalk app](#)
- [Example of city tree map](#)

What to do?

Once you have identified the species or variety of tree, there are many other characteristics that can be measured and monitored in order to manage, protect and conserve the tree.

Identify an area of trees, woodland or a forest that you want to map by identifying some of the trees or marking different areas. Use Google Maps with Satellite view to identify the location. This could be used as a base map the location of trees.

Measure height - Use a stick the same length as your fully stretched arm. Walk backwards from the tree about the same distance as its height. Hold the stick vertically at arms length with the top in line with the top of the tree and the bottom in line with the base of the tree. When they align you have made a 45 degree angle. The tree height will be your distance from the tree trunk.



Or Measure height - Using a ruler and second person or Using a 1 or 2 m rod and shadow of the tree.

Measure the diameter and circumference at a standard 1.3 m up the trunk using a tape measure or string and ruler. Trees tend to grow irregularly at the base, so to determine a more accurate measure of diameter, foresters will measure the diameter of the tree at 1.3 m above the ground (Diameter at Breast Height - DBH).

Estimate age using the circumference divided by an average of 2.5 cm per year. The growth rate of trees may be higher if they are conifers, isolated trees in rich soil with good light, as well as many other growth factors such as climate, connection with other trees, competition for light.

Monitor condition of canopy by looking up from the trunk to see % leaf cover against the sky.

Monitor length of branches in north, south, east and west directions from the trunk.

Monitor pests and diseases by using guides to local pests and diseases such as Observatree for the UK.



Find the ecosystem services using the citizen science Treezilla app.

Make an online map with your recordings using Google My Maps with each point on the map including text and photos like here.

What benefits?

There are now online maps of most things in the environment but very few maps of local individual trees.

- Most towns have many different species of tree. With a name attached to each tree on the map, your neighbourhood can become an arboretum with a tree trail.
- The tree records can be used as an alert to any pests and diseases, dangerous trees, trees threatened with removal.
- They can be sent to professional tree or forestry officers for them to ensure the trees are protected and well-managed.
- Perhaps most importantly the records can be used by local communities and groups to raise awareness of the value of trees and forests, and as part of any campaigns about felling, deforestation.

What learning?

There are many practical, technical, digital and communication skills that you can learn. Youthpass may be useful to focus on the range of key competencies that could potentially be learned. Become a Google mapping GIS expert - Kickstart your map-making with Google Earth and Google Maps with these step-by-step tutorials [here](#).

20 Online challenges about trees

Try some online tree-based challenges that could be done from home or very locally.

With online access from your home you can take photos or video, record audio, make podcasts, write text, tell stories, research, survey, campaign, and write letters to local media and politicians.

What Resources?

- Online access with a mobile phone or tablet, and able to download apps, take photos etc.
- Photos and videos that you already have stored on your computer.
- A bit of time while at home looking out of the window, walking locally and staring at a screen.

What to do?

Be challenged to do something about and for trees and forests without leaving the comfort of your own room.

Share these with your friends, local groups, media or even politicians.

Photos - Adopt a tree and take photos throughout the year like [here](#). Identify and research it. Try making a video or staged photos from a fixed position.

Books - Get lost in a forest of tree books. Publish a list of good books about trees and forests that you have read - fact or fiction.

Artwork - Be creative with artwork on or about trees and forests. eg. Design labels to hang on trees eg. I am your breath of fresh air. Make decorations, knitted fabric to celebrate a special tree like [here](#).

Phone - Make your phone more tree-friendly. Add favourite tree photos as wallpaper to your phone. Make [Ecosia](#) your new search engine and plant trees with your searches - for free!

Videos - Watch any of the Youtube videos that interest you from our Y4Trees Channel here on campaigning, volunteering, working, learning, planting, monitoring, and celebrating.

Apps - Load some of these apps listed on the Y4Trees site [here](#) onto your mobile phone ready for when your local groups meet again. Load apps that will help you identify, measure, map and record trees, and even raise funds for their protection and planting.

Citizen science - Have a look at some of these [citizen science projects](#), and contribute to any that interest you. Try the [Globe Observer: trees](#) and clouds app by NASA to contribute useful scientific data.



Presentation - Using your own stored photos, and help from friends, put together a short presentation about trees and forests - their value, beauty, care, use, protection, restoration etc.

Climate solutions - Research existing tree policies in your local council or regional/national government, as well as how trees and forests have changed over time in the area. Then research natural climate solutions. Lastly suggest changes to those policies.

Online campaigns - Find local, national or international online campaigns for planting and protecting trees and forests. See what support you can give them. Complete any online petition that you could support. Use social media to link others to these campaigns.



Trees at risk - Check if any local threatened or ancient trees need special protection. Then photograph them, record their measurements, location etc. Lastly let the local forestry officer know about them and add them to any national databases eg. www.vetree.eu

Online call - Set up or join a Zoom or Whatsapp call with friends on trees and forests.

Promotion - Design placards, posters and presentations for any future volunteering or practical group activity such as tree planting.

Plan - Plan your next practical activities with others in your local group or set up a group.

What benefits?

These challenges can help you:

- Learn more about trees and forests, as well as other life including your own.
- Encourage and persuade others to value trees and forests.
- Identify and monitor nearby trees.
- Change local and national government tree policies and practice about fossil fuels and climate change, especially if backed up by some form of direct, passive action.
- Help people understand that the right tree should be planted in the right place at the right time - where, what species, how many?

What learning?

There are many practical, technical, digital and communication skills that you can learn from these online challenges.

You might even find that it changes your own behaviour and values - Be open to that!

21 Planting trees with seedballs

Using seedballs (or treebombs) to grow trees improves germination rates and empowers large scale planting by making the tree planting process more cost effective and less labour intensive. Seedballs do not need planting in the traditional sense. The clay and soil protects the seed until it is ready to germinate. Charcoal is added to the mix to aid germination and deter predators.



They can reforest areas of cleared woodland in a playful but educational way.

What resources?

Buckets, sieves and strainers to collect and clean the tree seed

Mixed and cleaned native tree seeds

Charcoal powder - to coat the seedball

Clay

Compost

Water

Slingshots or drones (optional)

What to do?

- Identify local tree species and research the best time and method to collect and prepare their seed.
- Collect native tree seeds from an area near where the seedballs will be thrown.
- If the tree seed is a berry or soft fruit, clean and separate the hard seed in a bucket of water.
- Mix clay, compost, water and tree seeds to make round seedballs. Use the proportion of 1 seed to 5 clay.
- Cover the seedball in charcoal powder to deter pests and diseases.
- Make sure there is no wood ash in the powder as this is highly caustic.
- Use hands, slingshots or drones to throw the seedballs.

Double the number of seeds in a seedball are needed for germination compared to direct sown.

Tree species with highly palatable seeds have little prospect of germination because animals may eat the seed before it has germinated unless it is pelletised. Also, small and light seeds are more likely to drift in the wind, so they are harder to target during the drop. Seedballs, however, may fall into crevices and are then more likely to get covered with soil, thereby enhancing their chances of survival.

What benefit?

Seedballs can disperse tree seed quickly and easily, especially in rough, rocky or hilly areas. On a large scale seedballs can be distributed by helicopter or aeroplane.

It a fun and interesting activity both indoors and outdoors.



What learning?

Social - Teamwork to plan, produce and disperse the seedballs.

Educational - Learning about different tree seeds and their germination.

What links?

https://en.wikipedia.org/wiki/Seed_ball

www.treebombs.co.uk

[Tree seed bomb video](#)

22 Supporting the forest school approach

Do you want to help nursery and primary school teachers introduce the forest school approach to their class? Support the teacher in helping young children or teenagers with emotional difficulties learn about themselves, others and the environment in a woodland or forest setting.

What for?

Learn and work as a support volunteer helping teachers introduce the forest school approach so young children can learn in a forest setting.

Key features of the forest school approach:

- The use of a woodland setting
- A high adult to pupil ratio
- Learning can be linked to the national curriculum
- The freedom to explore using multiple senses
- Regular contact

What resources?

- Minimal equipment needed other than waterproof clothing and gloves.
- The school will provide all the tools, equipment and classroom resources that are needed.
- The woodland or forest provides most of the resource.

What to do?

Find a local primary or nursery school that wants support with Forest School activities.

As a volunteer over 18 years old get accredited to work with children eg. know safeguarding policy.

Work alongside the teacher to regularly walk to woodland or forest area, inside school grounds or nearby. Find out about getting accredited as a Forest School practitioner.

What benefits?

This experience can provide a way into:

- Becoming an accredited Forest School practitioner.
- Training as a primary school teacher.
- Education jobs at a field study or nature centre, National Park etc.
- Setting up a social enterprise on education, trees and forests.

What learning?

Examples of learning for the child:

- Personal and social education- Be confident to try new activities; understand what is right and wrong and why; consider the consequences of their actions for themselves.
- Communicating and language - Sustain attentive listening; extend their vocabulary, and explore the meanings and sounds of new words. Express and communicate their ideas.

- Mathematics - Use language to compare quantities and to describe shape and size.
- Knowledge and understanding - Investigate objects and materials by using all of their senses as appropriate.
- Creativity - Respond to a story and a variety of shelter shapes to create their own using simple materials.
- Physical activity - Move with confidence and imagination.

What examples?

[A small social enterprise](#) based on the forest school approach

[Review of the Forest School approach](#)

[Guidance on Working with children and schools](#)

[The Forest School Association](#)

