Free downloadable lesson plan: Temperate Forest Lesson Plan KS2

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The Forestry Commission looks after more than 1500 woods and forests in England – together they make up the Public Forest Estate. All our forests are located within the temperate forest biome and are perfect places to learn about native woodlands and how they contrast to tropical rain forests.

Curriculum links:

Science: Plants; living things and their habitats; evolution and inheritance; working scientifically.
Geography: Locational knowledge; place knowledge (understanding geographical similarities and differences between a region of the United Kingdom and a region within South America); physical geography (climate zones, biomes and vegetation belts); human geography (land use, economic activity and natural resources); geographical fieldwork.

Before your visit to the forest:

Explain to the children that a biome is a vast area of Earth that has a particular climate and certain types of species that live there. Vegetation is usually the most obvious feature of the landscape, so a biome is characterised by the trees and plants that grow there.

Using a world map, ask the children to identify the position of the Equator and other significant features such as the Tropics of Cancer and Capricorn and the Northern and Southern Hemisphere. Can they locate and plot three of the six major world biomes, the boreal forest (taiga), temperate forest and tropical rainforest?

For a great introduction to the forest and how it is cared for by the Forestry Commission visit....’ See Biome 3 box on page 2.

For your visit to the forest, you will need to bring:

- digital recording equipment e.g. camera or tablet
- deciduous tree spotter guide – (provided at end of lesson plan)
- leaf collectors – see back of lesson plan (photocopy these onto thick card and stick a single strip of double sided tape to them)
- quadrats (you can make your own with garden wire) or large hoops
- woodland plant guides
- pencils
- clipboards
- minibeast collecting equipment e.g. bug pots, white sheets, sweep nets
- minibeast identification charts
- animal evidence tick list (provided at end of lesson plan)
- forest cycle sheets (provided at end of lesson plan)
Biome 1
Boreal forest (Taiga): this is Earth’s largest biome extending in a belt across North America, Europe, and Asia between the latitudes 60 degrees north and 50 degrees north. It experiences long, very cold winters together with a short summer, restricting the growing season to just 130 days. Evergreen conifers such as pine, fir and spruce dominate the landscape. Boreal fauna include bears, moose, wolverines and lynx.

Biome 2
Temperate Deciduous Forest: this is found in eastern North America, western and central Europe, and eastern Asia. Here, the climate is generally moderate, and characterised by distinct seasons. Winters vary from cold to mild, but with up to six months free from extreme cold, the growing season extends to up to two hundred days. Temperate forests are dominated by hardwood broadleaved trees, most of which lose their leaves each winter, for example, oak and beech. Animals include rabbits, deer and fox. England’s woods and forests are located in this biome. For a great introduction to UK forests and how they are cared for by the Forestry Commission, visit www.forestry.gov.uk/learning, where you will find an informative, child-friendly photo show, with notes and discussion questions. You will also find some useful health and safety advice for your visit.

Biome 3
Tropical Rainforest: these occur around the Equator (extending 23.5 degrees both north and south) in hot, humid regions that get more than 180 cm of rain per year. Parts of South and Central America, West and Central Africa, Southeast Asia and Australia all have tropical rain forests.

The world’s largest rainforest, the Amazon, is located in Brazil and covers more than half of the country. The trees here are mostly evergreen and have large leaves to capture what little sunlight penetrates down to the lower levels.
Forest Lesson Plan

Starter Activity: Seasonal signs

Explain that one of the major differences between temperate forests and tropical rainforests is that temperate forests have **seasons** - here we experience variations in temperature and rainfall throughout the year, unlike the Equator where it is hot and wet all the time.

Can the children name all four seasons in order? Do they know what season it is at the time of your visit? Do they have a favourite season, and why?

Ask the children to explore a small area of woodland and digitally record the seasonal signs that they find (both visually and audibly).

**Seasonal signs to look and listen for in the forest**

<table>
<thead>
<tr>
<th>Season</th>
<th>Signs</th>
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| Spring  | Wildflowers, such as celandines, primroses, bluebells and wood anemones growing on the forest floor.  
Leaf buds or soft, new leaves.  
Trees flowering (e.g. willow and hazel) or in blossom (e.g. blackthorn).  
Birds nesting (carrying twigs in their beaks) or feeding (carrying a beak full of worms or flies).  
Woodpeckers drumming. |
| Summer  | Lush, green leaves and a thick forest canopy of leaves engulfing the woodland floor in shade.  
Birds continuing to feed new broods of young.  
Abundance of winged insects on sunny days.  
Wood ants prevalent in ancient woodland.  
Summer migrant birds (e.g. cuckoo and chiff chaff).  
Bracken, nettles and rosebay willowherb covering areas of the forest floor. |
| Autumn  | Leaves changing colour and falling to the ground.  
Plants dying back.  
Plants fruiting, e.g. blackberries.  
Seed dispersal, e.g. acorns, sycamore, beech mast, sweet chestnut.  
Squirrels collecting and burying nuts.  
Fungi.  
Spider webs visible on dewy mornings.  
Male deer rutting. |
| Winter  | Deciduous trees standing bare.  
Evergreen trees such as pines, firs, spruces and holly keep their green needles / leaves. |
1. Tree Identification

Temperate forests are naturally dominated by deciduous trees, these are the ones that lose their leaves in autumn, and are predominantly broadleaved (see box).

By contrast, tropical rainforests are filled with trees that stay green all year, with palms being one of the most common tree types.

Using the deciduous tree spotter sheet provided at the end of the plan, and other ID guides, ask the children to try to identify some of the trees around you.

Tree words:

Evergreen – trees which keep their leaves all year round; mostly conifers (but not all e.g. holly is evergreen, but not a conifer).

Deciduous – trees which lose their leaves in autumn; mostly broadleaves (but not all e.g. larch is a deciduous conifer).

Coniferous – trees with cones and needles e.g. Scots pine, Douglas fir; usually evergreen.

Broadleaf – trees with broad flat leaves e.g. oak, silver birch; usually deciduous.

2. Leaf Collector:

The children may notice that not all of the trees in the forest are deciduous. There may also be some evergreen trees present, the only evergreen conifer trees native to England are the Scots pine, yew and common juniper. Other evergreen species have however been introduced to our forests. This is because foresters have discovered that some coniferous trees grow more quickly here than deciduous trees and are therefore faster to yield a crop of timber. This is one of the ways this biome has altered over the years.

Ask the children to think about the uses of wood from trees – why do foresters want trees that grow quickly?

How to ‘Collect with Respect’

• Collect from the forest floor wherever possible.
• Spread your load – carefully collect only a few leaves from any particular plant or tree.

Hand out the leaf collector sheets (see end of lesson plan), and ask the children to remove the top of the double sided tape, making sure that all the strips of paper go into a pocket or bin. Now ask the children to look for different leaf shapes and colours, and to save them by sticking them onto the leaf collectors.
3. Plant Diversity

Tropical rainforests are known for the diversity of their plants. The Amazon alone is believed to have tens of thousands of species of plants, many of which are still undiscovered.

Compared with tropical rainforests, the diversity of species in a temperate forest is lower.

Explain to the children that you are going to find out how many different plants are growing on the forest floor in your woodland.

Show them how to throw the quadrat carefully, then count the number of different plants growing underneath an area of deciduous trees. Can they identify any of the species?

Explain how to estimate the percentage cover of each plant at an appropriate level for the ability of your group and then ask the children to record their results in the table titled ‘Plant Diversity’, provided at the end of the lesson plan.

How would you describe the growing conditions, for example, is there plenty of light reaching the forest floor? Or is it dark and shady?

4. Woodland Structure

Plants (including trees) are often found on different levels within the woodland. Temperate forests usually have 4 main layers:

1. The ground layer (mosses, fungi, some lichens, leaf litter and decaying wood).
2. The herb or field layer (grasses, ferns, bramble and flowering plants, such as primrose and bluebells).
3. The understory or shrub layer (bushes of hawthorn and blackthorn or small trees of rowan, hazel, holly and alder).
4. The canopy layer (the highest level formed by the tops of the largest trees).

Using all of your observations and the information that you have gathered so far, photograph how many layers are present in your woodland.

Your images may show a wood where some of the layers are missing. If this is the case, it may be because the canopy is closed, i.e. so dense that little sunlight reaches the ground, for example, in beech woodland, or because there are deer living there. Deer eat young trees and shrubs and cause damage by rubbing their antlers against them.
Woodland Structure

(Continued)

5. Wildlife
The more layers present within the woodland structure, generally the larger the number of habitats provided and the wider the range of animal and bird species found there. To find out how many different creatures are living in your woodland carry out a minibeast search (see box) and look for animal clues (using the ‘Wildlife in your forest’ tick sheet provided at the end of the plan).

6. Land use – the forest cycle
More than 50% of Earth’s tropical rainforest has been destroyed by logging, or cleared to make way for agriculture or urban development. By contrast all Forestry Commission woodlands are managed sustainably. We take great pride in the fact that all of the timber harvested from FC woodlands is Forest Stewardship Council (FSC) certified.

Timber from trees in your forest is used to make things. The Forestry Commission plants enough trees to replace any that are felled (cut down). This makes the way that we manage our woodlands sustainable, and means that the forest will always be there for animals and birds to live in, and for you to enjoy!

Using the Forest Cycle spotter sheet (at the end of the lesson plan), how many parts of the forest cycle can you spot?

All of our forests and woodlands in Forestry Commission England are certified by the Forest Stewardship Council ® (FSC®) and The Programme for the Endorsement of Forest Certification™ (PEFC™) under the UK Woodland Assurance Standard.

Timber from our forests give us many things like books, tissues, furniture and so much more. FSC helps take care of forests and the people and wildlife who call them home. FSC’s ‘tick tree’ logo is used to show that products are certified under the FSC system. When you choose products with the FSC logo, you know that you are helping to make sure our forests are alive for generations to come.

For FSC educational resources, including lesson plans and activity ideas, go to: http://www.fsc-uk.org/en-uk/get-involved/teachers/education
Back at School

Things to explore further:

1) Identify the different deciduous trees in your school grounds. Do some research - find out what properties the wood from each tree has and what it can be used for, e.g. oak has strong timber and has always been used for buildings and ships.

2) Forestry Commission woodlands are looked after for people, timber and wildlife. Think about how people use England’s woods and forests today. Visit the Forestry Commission website, www.forestry.gov.uk to find out what facilities and activities are offered at our main woodland sites. How does this differ from the ways tropical rainforests are used by the people who live in them.

Tell us what you think...

We’d like to know what you thought of this Forestry Commission learning resource.

Please visit www.forestry.gov.uk/learning and follow the link to our online questionnaire.

Many thanks for your help.
Deciduous tree spotter guide

Tick the trees that you see in your forest.

What else did you see (write here) ...........................................................................................
# Plant Diversity

<table>
<thead>
<tr>
<th>Plant species</th>
<th>% of cover</th>
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**Total Species:**

**Total % of cover:**

(This can be over 100% as leaves overlap)

<table>
<thead>
<tr>
<th>Season</th>
<th>Tick one</th>
<th>Growing Conditions</th>
<th>Tick all that apply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td></td>
<td>Light / sunny</td>
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<tr>
<td>Summer</td>
<td></td>
<td>Shady / cool</td>
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<tr>
<td>Autumn</td>
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<td>Ground damp to the touch</td>
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<tr>
<td>Winter</td>
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<td>Ground dry to the touch</td>
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<td></td>
<td></td>
<td>Sloping ground</td>
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<td>Level ground</td>
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<td></td>
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<td>Other conditions of note:</td>
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</table>

**Season Tick one Growing Conditions Tick all that apply**
E.g. General description of site, including physical features such as stream or valley, and tree species in your survey area:
Wildlife in your forest

How many wildlife signs or animals can you spot?

- Bird
- Squirrel
- Animal footprints
- Feather
- Nuts or cones nibbled by animals
- Spider’s web
- Animal homes
- Minibeasts
- Droppings (poo!)

How many Forestry Commission logos can you spot during your visit to the forest?

Your forest is cared for by the Forestry Commission for people, wildlife and timber.
The forest cycle

Timber from trees in your forest is used to make things. The Forestry Commission plants enough trees to replace any that are felled. That way, the forest will always be there for animals and birds to live in, and for you to enjoy.

How many parts of the forest cycle can you spot while you are in your forest? Tick the boxes to record what you see.

- All trees grow from seeds.
- Fruit and seeds eg: acorn, nut, conker, cone
- Mature (big) trees produce more seeds.
- Young trees need to be protected.
- Forest machine
- Count the rings to see how old the tree was.
- Pile of logs
- The timber is taken away and made into useful things.
- Things made of timber