



## NORTH EAST SCOTLAND FEI FOREST EDUCATION ACTIVITIES

### FIRST AND SECOND STAGES

## SUMMER



### Activity 1 - Science/Drama

#### Build a tree

CfE Experience and Outcomes **SCN 1-01a**; **SCN 1-03a**; **SCN 2-01a**

**Aims:** To enhance understanding of the function of different parts of a tree;  
to gain an understanding of how a tree works.

**Timing:** Approx. 35 minutes.

**Grouping:** Whole class.

**Resources:** Narration notes.

#### **What to do:**

1. Avoid wet/muddy areas as some children have to lie on the ground. This can be played back at school if necessary.
2. Each child will help to build the various parts of the tree: the taproot, lateral roots, heartwood, sapwood, phloem/cambium and bark. The game uses drama to act out the roles played by each part of the tree.

#### Heartwood

3. Choose two or three tall strong people and ask them to stand with their backs together.
4. Tell them, 'You are called the Heartwood. You are the inner core of the tree. You are what gives it its strength and your role is to keep the trunk upright so that the leaves can get energy from the sun. You have been around a long time and are the most preserved part of the tree, but you are dead. You used to be alive, but as you grew your tubes became blocked up. When I say "Heartwood", you say "Tall and Strong".'

#### Taproot

5. Choose several people to be the taproots. They should sit facing outwards with their backs to the heartwood.
6. Tell them, 'You are very long roots and are called Taproots. Your role is to get water for the rest of the tree from deep under the ground. You can be about 90m long. You act as an anchor to the tree. You are one of many Taproots on this tree.'

Tell them that they are to say 'slurp' when you say 'Let's slurp!' (Not all trees have taproots)

### Lateral Roots

7. Choose several people with long hair and ask them if they wouldn't mind lying on the ground. They should lie with their feet against the trunk, but leave enough space for the Sapwood and Cambium.
8. Tell them: 'You are the Lateral Roots. There are hundreds of you. You grow outward like branches all around the tree, but underground. You help to keep the tree upright. Each root has tiny hairs (ask the roots to spread out their hair). You have thousands of these hairs to absorb water and nutrients. You grow in the direction of sources of water.'
9. Tell them that they are to say 'slurp' when you say 'Let's slurp!'. Ask them and the tap roots to practise saying 'slurp'.

### Sapwood

10. Choose enough people to form a complete circle around the Heartwood. They should circle the Heartwood holding hands and facing inwards. Ask them to be careful of the roots. Tell them, 'You are called the Sapwood or Xylem. You draw water up to the highest branches and are the most efficient pump in the world. You can soak up about 1400 litres of water a day and move it a 100 mph!' Tell the Sapwood to practice drawing the water up. Ask them to go 'Wheeee!' and to lift their arms up when you say 'Bring the water up'. Ask the roots to 'slurp' again and then the Sapwood to bring the water up.

### Cambium/Phloem

11. Choose enough people to create a complete circle around the Sapwood. They should circle the Sapwood holding hands and facing **outwards**.
12. Tell them: 'You are the Cambium and the Phloem. The Cambium is the growing part of the tree and adds new layers (tree rings) to the Sapwood and Phloem each year.' Explain that trees do not grow like human hair. Trees grow outwards from the trunk and branch tips, whereas hair grows from the scalp and not from the ends. Behind you towards the outside of the tree is the Phloem that carries food manufactured by the leaves and distributes it to the rest of the tree. Let's turn our hands into leaves'.
13. Ask them to stretch their arms upward and outward so that they intersect each other's arms at wrists and forearms, leaving their hands free to flutter like leaves.
14. Tell them, 'When I say "Let's make food!" raise your arms and flutter your leaves, absorb the energy from the sun and make food. And when I say, "Bring the food down", you go "Whooooo!".' (Make the "Whooooo!" a long descending sound while you bend at the knees and drop your arms and body toward the ground.) 'Let's practice.' Go through all the motions and sounds with all the parts, in this order: 'Heartwood', 'Let's slurp!', 'Let's make food!', 'Bring the water up!', 'Bring the food down!'.

15. Make sure they don't raise their arms and flutter their leaves until you say 'Let's make food!'.

### Bark

16. Using the last remaining people to make the bark. Create a circle around all the layers facing outwards.
17. Tell them: 'You are the bark. Your role is to stop the tree from drying out and to protect the flow of food in the Phloem. You also protect the tree from insects, fungi and fire. Humans can damage you if they pull you away from the tree. As you get older you crack and stretch.'
18. Raise your arms like a boxer and clench your fists.' (Pause.....) 'Do you hear that high-pitched sound? It's a fierce, very hungry, long-snouted wood-borer. I'll go and see if I can stop it.' Disappear behind a tree and re-appear in role as the wood-borer with fingers as antennae. Attempt to penetrate the bark's protective layer.



### Recap

19. Now recap on all the parts in sequence. Call out: 'Heartwood', 'Let's slurp!, Let's make food!, Bring up the water!, Bring the food down!' and ask the bark to be strong and protect.

### **Round up**

Ask the children if they can describe the function of the various parts of a tree.

See '**Leaf factory**' in *North-East Scotland FEI Forest Activities Autumn 1*, which describes an activity designed to introduce the idea of leaves making sugar.

*Adapted from 'Sharing the Joy of Nature' by Joseph Cornell*

## **Activity 2 - Science**

### **Who has the leaf?**

*CfE Experience and Outcomes SCN 1-01a; SCN 2-01a*

**Aims:** To explore the diversity of shape, size, colour and texture of leaves within and between species.

**Timing:** 20 minutes.

**Grouping:** Whole class.

**Resources:** A bag of common tree leaves with at least 4 or more of each kind, enough for one each per person.

**What to do:**

1. Arrange the class in a circle.
2. Hand out a leaf to each individual.
3. Make a series of statements related to one kind of leaf e.g. an oak leaf with its wavy edges; a leaf from a deciduous tree; a leaf made of many leaflets; a leaf with a hole in it; a pine needle etc
4. As you make these statements, everyone with a leaf with those characteristics runs around the circle and trades places. Make sure they all run in one direction!



**Round up**

Go round the circle asking what kind of leaves each person has.

Develop this into a game of **Leaf Tag** (see next activity)

*Adapted from 'Oranges and Lemons' Arbriachan Community Woodland Trust.*

## Activity 3 - Science

### Leaf Tag

*CfE Experience and Outcomes SCN 1-01a; SCN 2-01a*

**Aims:** To aid leaf identification.

**Timing:** 15 minutes.

**Grouping:** Whole class.

**Resources:** One each of a number of kinds twigs with leaves, both deciduous and coniferous.

**What to do:**

1. Form two equal teams and line them up facing each other about 15 metres apart.
2. Place the specimens in a row between the two teams.
3. Count off the teams separately beginning at opposite ends, so that each player has a number and in each team there are players numbered one, two etc.
4. Call out the name of a tree or bush represented by one of the specimens and then call out a number. *'The next tree is oak and the number is ..... two.'*
5. As soon as the 'twos' hear their number called they race to the specimens and try to be the first to pick up the correct twig.
6. The twig is replaced and the game continues.

7. Points can be awarded for successful players and deducted for wrong identification.

### Round up

Hold up the twigs and ask the class to call out their names.

*Adapted from Sharing Nature with Children by Joseph Cornell*

### Leaf ID

The Woodland Trust has a number of excellent resources to assist with leaf identification [http://www.naturedetectives.org.uk/packs/pack\\_spotting.htm](http://www.naturedetectives.org.uk/packs/pack_spotting.htm)

## Activity 4 - Sensory/Science/Social Studies

### Meet a Tree

*CfE Experience and Outcomes SCN 1-01a; SCN 2-01a; SCN 1-12b; SOC 1-07a*

**Aims:** To encourage use of senses other than sight; to foster trust; to enhance observations of the characteristics of trees

**Timing:** 30 minutes.

**Grouping:** Pairs or threes.

**Resources:** A blindfold per group or pair.

#### What to do:

1. Split the group into pairs or groups of three.
2. For younger children or those not used to being lead blindfolded this can be quite a challenging experience. It can be helpful to allow each child to experience being lead a short way and leading another child, before starting the main activity. For younger children having a leader on each side is reassuring.
3. Hand out blindfolds.
4. Explain that one of the group/pair will be blindfolded and the partners will lead him/her through the wood to any tree that attracts them.
5. Emphasise that the blindfolded person will need a lot of support, so lead them by the arm. Warn them about, and protect them from, any hazards.
6. On reaching the tree help the 'blind' person to explore the tree through touch and smell. For example help them to bend down to feel the base, roots and plants



- growing there. Feel the trunk and smell the bark and leaves. Can they put their arms round it? Are there lichens or moss to touch?
7. When they have finished, turn them round several times and lead them back to where they started via a different route. Help them to step over imaginary logs or bend down under non-existent branches.
  8. Remove the blindfold and let them try to re-find 'their' tree. The searcher will see that the forest is a collection of very individual trees!

*Adapted from Sharing Nature with Children by Joseph Cornell*

## Activity 5 - Language/History/Science

*CfE Experience and Outcomes SCN 1-01a; SCN 2-01a; SCN 1-12b; SOC 1-07a SOC 1-13b*

### Clans

**Aims:** To increase knowledge of the lore, uses and natural history of some of our native trees

**Grouping:** Whole class

**Resources:** See below

### What to do

We have found that it works well to give groups a woodland name, be it a minibeast, tree, plant, bird or animal. Naming groups after native trees can help children to identify more closely with the woodland.

Below is an example of a tree 'personality'....

### Silver Birch

Gaelic - Beith

Ruling planet - Venus

Latin - Betula alba

### *Natural history*

Birch is native to the cool climates of the Northern Hemisphere and is a pioneer species colonising bare ground. It is easily recognised by its white bark with diamond patterns of black and delicate twigs. Its open canopy gives a light shade allowing other plants to flourish under it, which, in turn, means plenty of food for woodland creatures. It can live to 90 years. 'Witches brooms', a cluster of tangled twigs, may appear high in the crown of some trees, looking like old bird's nests. These are caused by a fungal infection. Birch produces male catkins in the spring and the wind disperses the pollen. The seeds are produced in catkin-like clusters in July which are

eaten by small finches such as Siskins. The bark of Birch contains a substance called Betulin, which gives it its white appearance and has anti-bacterial and anti-mould properties. The tree supports over 300 kinds of insect and numerous fungi live in association with it.

#### *Custom and legend*

The Silver Birch is known as 'The Lady of the Woods'. It is a tree of enchantment and is thought to be faithful and friendly and associated with fairies. It can ward off evil spirits. It is a tree of renewal and associated with new beginnings. Birch rods were used to drive out the spirit of the old year and, once upon a time, for caning disobedient pupils. In Scandinavia a small Birch tree was brought into the house to encourage it to come into leaf early as a symbol of the return of spring.

#### *Healing*

The sap from Birch can be made into a fizzy wine. It was used to treat rheumatic diseases and as a mouthwash. It is said to cure spots and fade freckles.

The bark can be used to make an anaesthetic and is also antiseptic. Putting the fresh inside of bark against the skin is meant to heal muscle pain.

#### *Magic*

Dried leaves of Birch were used to 'charm' a baby's cot, giving the child strength to cast off weakness. You should always ask the Birch if you want to take leaves or bark for if she is made angry she raises her whip-like branches.

#### *Physical uses*

Birch timber is mainly used for plywood and furniture. It used also to be used for toys, spoons and bobbins. Its waterproof bark can be used in roofing and for tanning leather. Birch bark peels easily and some varieties were used to write on. It makes excellent tinder for fire lighting as it's rich in oils. In North America the native peoples used the bark to make canoes and containers. In Sweden and Lapland the sap was used to replace sugar and made into a strong glue and insect repellent.

*Similar information about other native tree species can be found in:*

'*A Tree In Your Pocket*' by Jacqueline Memory Paterson (1998) pub. Thorsons, has information about tree myths and legends;

Simon Fraser has produced a *Tree Alphabet for Schools*, which is wonderfully illustrated and has information about botanical lore and mythology associated with our native trees <http://www.treealphabet.co.uk/schools/gallery.htm> ;

The Royal Forestry Society's website: <http://www.rfs.org.uk/learning> gives an easy overview of identification and human and wildlife uses;

'*Whispering Woods*' by Alan Crawford (2012) is a collection of original stories about Scotland's native trees that weave together threads of mythology, lore, herbal medicine, uses of timber and wood and woodland ecology;

'Tree Stories' by Claire Hewitt is a collection of 12 short stories for use as a scaffold for story-telling in the woods. Each story is accompanied by notes about the tree and its lore. Available from Forestry Commission Scotland, email: [fcscotland@forestry.gsi.gov.uk](mailto:fcscotland@forestry.gsi.gov.uk) web: [www.forestry.gov.uk/scotland](http://www.forestry.gov.uk/scotland)

## Activity 6 - Sensory/Language Angles

*CfE Experience and Outcomes SCN 1-12b; ENG 1-30a; ENG 1-31a; ENG 2-30a; ENG 2-31a*

**Aims:** To enhance observation and concentration; to enhance aesthetic appreciation of woodland.

**Timing:** 15 min

**Grouping:** Groups of 4 to 6

**Resources:** Pencil and piece of card per pupil

### What to do:

1. Give each child a piece of card and pencil.
2. Each group of children chooses a tree. Each member of the group arranges themselves so that they are looking at the tree from a different angle. For instance: one child might stand looking closely at the trunk, one could lie looking at the roots and base, another gazing into the branches, another sitting looking at leaves etc.
3. Each member of the group thinks of three or four adjectives that describe the part of the tree that they are observing and writes them down.
4. As a group they then rearrange their adjectives and names of parts of the tree to make a poem.

### Round up

Share the poems with other groups.

Back in school write the poems could be written out and illustrated with photos or drawings.

## Activity 7 - Drama Animals by numbers

*CfE Experience and Outcomes EXA 1-12a; EXA 1-13a; EXA 2-13a*



**Aims:** to work as a team; to think hard about the construction of animal bodies; to be creative and use imagination.

**Timing:** 15 min

**Grouping:** Various groupings.

**Resources:** None.

**What to do:**

1. The children have to work in groups to physically create different animals.
2. Call out an animal, such as 'squirrel' and a number, 3, for example.
3. Count down from 30 to 0 while the children form their groups and arrange themselves into the animal (or allow as much time as you feel they need).
4. When you get to 0 shout 'freeze!'
5. Give groups time to look around.
6. Allow another count of 10 for them to perfect their animal.
7. Comment on the animals - 'nice ears'; 'lovely tail', 'Oh dear six legs!' etc
8. Some groups will choose to produce a 2D animal by lying on the ground, a more 3D approach can be encouraged by asking them to try to move like their animal which is much more challenging!
9. Then another animal, but this time change the number of children per group e.g. beetle and 6. If the numbers don't fit with your class size allow larger or smaller groups to form
10. Try a few more numbers and animals.
11. Finally ask them to make a couple of big animals using everyone e.g. a centipede or even a tree!



**Round up**

Did they find this difficult?

What were the problems?

Did it make them really think how animals are put together, stand etc.

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