I have the dream of the whole Earth made green again, an Earth healed and made whole through the efforts of children: children of all nations planting trees to express their special understanding of the Earth as their home, children of all races holding hands, circling the Earth, expressing and celebrating their special understanding of all children as their brothers and sisters.

Richard St. Barbe Baker
Founder, International Tree Foundation

Cover photo: Anne (Creative Commons)

Britain’s oldest tree - the Fortingall Yew - is estimated to be at least 2,000 years old and possibly even up to 9,000 years old. This tree not only demonstrates the power of longevity, but also recently displayed the remarkable power to change sex from male to female, with part of the tree producing berries.
Acknowledgements

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Until you dig a hole, plant a tree, water it and make it survive, you haven’t done a thing.

You are just talking.

Wangari Maathai
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*Photo: Mount Kenya Environmental Conservation*
1. Introduction

1.1 International Tree Foundation

Tree Power is an educational initiative led by International Tree Foundation (ITF). ITF works with communities in Africa and the UK to carry out sustainable community forestry projects which protect, regenerate and cultivate trees and forests to conserve habitats rich in biodiversity and to enhance human and environmental well-being. Since our inception, we have helped to plant an estimated 27 billion trees. Our vision is “a world where trees and forests flourish and where their vital role in supporting life on Earth is fully realised and valued.”

We have four key strategic objectives:

- **ENVIRONMENT** - increase global tree cover, promote reforestation and appropriate tree cultivation
- **EDUCATION** - foster an understanding of the amenity, ecological and economic value of trees
- **LIVELIHOODS** - enable communities to develop (restore) sustainable and productive landscapes by tree cultivation
- **CAPACITY BUILDING** - build capacity in community organisations to advocate and implement community based forestry and agroforestry

ITF is a values based organisation that promotes and upholds ethical relationships between people, the natural environment and wildlife.

Our programmes provide support for a wide range of community based organisations who are working with local people to make a positive difference to the environment and livelihoods. To find out more about our current programmes and projects please visit our website: www.internationaltreefoundation.org
1.2 The Tree Power Resource Pack

Tree Power’s vision is a world where young people appreciate, value and act to sustain the vital role of trees and forests in supporting life on Earth.

Tree Power aims to support teachers and schools to inspire new generations about the local and global importance of trees and forests, and to take action to protect these.

In the long term, Tree Power seeks to change consumer behaviour in order to achieve a reduction in the rate of deforestation and hence, an improvement in both the environment and in the lives of people who depend directly or indirectly on forests and trees. Tree Power also aims to increase the awareness of the role of trees outside forests, and engage children and young people in tree planting, conservation and education activities in their local areas.

Tree Power aims to address a gap in the resources available to primary schools. There are already a number of teaching resources looking at studying trees in an outdoor education context. A wide range of teaching materials also consider the impacts of tropical deforestation (see Appendix 6).

Tree Power aims to address teaching and learning about trees and forest resources holistically, bringing the local and global together and incorporating elements from both environmental and development education.

1.3 Why Teach Trees?

Learning about trees and forest resources is a unique chance for children (and their teachers and parents) to grasp how natural resources support life on Earth. There is no learning more valuable than this.

Teaching children about trees can enrich your curriculum by:

- Providing opportunities for real life teaching which help meet the requirements of the National Curriculum
- Providing opportunities to foster a connection with and respect for trees and forests
- Developing active citizenship skills

We hope this resource will provide a meaningful contribution to appreciating our connection with the Earth’s ecological systems, and our personal impact on them.
Introduction

Tree Power is about:
- The local and global importance of trees and forests
- Creating powerful learning experiences for children through practical immersion in woodlands and forests
- Engaging children in real life stories about the role of trees and forests in livelihoods and cultures
- The use of trees and forest resources and the UK’s impact on global deforestation
- The causes and effects of deforestation
- Helping make schools ‘forest friendly’

More information about the importance of trees can be found here: www.internationaltreefoundation.org/why-trees/

1.4 Outdoor Education and Global Learning

What makes Tree Power distinctive is that it brings together the two educational strands of development education (global learning) and outdoor education, to enable children to become both (informed) Tree Explorers and (active) Tree Guardians.

Both global learning and outdoor education focus on the key concepts of interdependence and sustainability. People across the globe depend on their connections with others, just as all living things do within the natural world. Equally, the search for sustainable ways of living will help to reduce inequalities across the globe as well as protecting the environment. So it makes good sense to bring the two strands together within this resource.

There is growing recognition of the importance of both outdoor education and global learning for children’s development:
- Children spend less time playing in natural places, such as woodlands, than they did in previous generations. Less than 10% play in such places compared to 40% of adults when they were young (Natural England 2009)
- Research shows that children benefit in a range of ways from outdoor learning, such as persevering for longer with tasks, attempting a greater number of new tasks and showing more enthusiasm (Estyn and National Trust 2011)
- Global learning resources will foster: critical and creative thinking, self-awareness and respect for difference, understanding of global issues and power relationships, and optimism and action for a better world
- Global learning has also been shown to improve attainment. Research indicates that ‘learning about global issues at school gives young people the skills to help them access good careers’... and ‘is an important driver of high attainment.’ (Think Global 2011)

1.5 Tree Power and International School Partnerships

Many thousands of schools in the UK now have a partner school in the global South. Tree Power is an ideal project for teachers and students who are engaged in joint curricular work with their partner school.

ITF’s partners in different African countries often engage schools and students in their tree planting projects, as well as raising awareness about the importance of trees and combatting deforestation.
1.6 Tree Power and the Curriculum

Tree Power has been designed to support teachers to deliver elements of the Key Stage 2 curriculum across a number of subjects, as outlined in the individual session plans. Further information on how Tree Power supports non-statutory curricular outcomes in citizenship is included in Appendix 1.

1.7 Structure of the Pack and How to use it

The teaching and learning sessions in this pack are led by ITF’s vision of a world where young people understand, value and act to sustain the vital role of trees and forests in supporting life on Earth.

The pack contains a selection of classroom activities with specific curriculum links (primarily literacy, geography, science and citizenship).

We consider the activities are best suited to pupils in years 4 and 5. There are eight sessions in total divided into two distinct units: Tree Explorers and Tree Guardians.

The Tree Explorers lessons focus on furthering children’s knowledge of trees and forests and the causes and effects of deforestation.

The Tree Guardians section provides an insight into the lives of inspirational people who have worked to protect trees and forests and support communities that are reliant on them. It also provides opportunities for reflection on how our lives are linked to global deforestation.

The lessons can be taught as a series or chosen individually to fit in with your curriculum. We strongly recommend including an element of outdoor education (‘tree immersion’) in a local wood or park, or, if these are not accessible, a school garden or other suitable outdoor space.

Before you begin we suggest that you use Worksheet 2.1: Tree Power Baseline Assessment so that you can quickly see where your students are at the beginning of the project and assess their learning and attainment on completion.

We hope that the contents of this pack can be used to create an impact on the school’s ‘forest footprint’ by inspiring staff, learners and governors to take action to reduce the use of unsustainably produced wood, paper, palm oil and other products.

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**Tree Explorers**

1. Tree Immersion
2. Poe-Tree
3. Tree Food Chains
4. Why Are Trees Disappearing?

**Tree Guardians**

5. Tree Champions
6. The Forest in My Classroom
7. Palm Oil Detectives
8. Forest Friendly Schools
Every day when you wake up, there are 27 million less trees on the planet than there were before.
2. Tree Explorers

This section contains four sessions which are designed to encourage children to be Tree Explorers.

We suggest starting with the Tree Immersion woodland visit as this will increase children’s motivation and enthusiasm to learn more. Depending on the circumstances it may be more appropriate to start with one of the classroom based sessions.
2.1 Session One: Tree Immersion

LESSON
Tree Immersion: a Forest or Woodland Visit

Learning Objectives

- Get to know a woodland environment and trees more intimately
- Understand the function of trees and their role in supporting life

Curriculum Links

Science Year 4 Programme of Study: Living Things and their Habitats

- recognise that living things can be grouped in a variety of ways
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- recognise that environments can change and that this can sometimes pose dangers to living things

Geography KS2: Geographical Skills and Fieldwork

- use fieldwork to observe, measure, record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies

Maths Year 4 Programme of Study: Measurement, Statistics

- estimate, compare and calculate different measures
- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs

Maths Year 5 Programme of Study: Measurement

- convert between different units of metric measure (for example, kilometre and metre; centimetre and metre)

English KS2: Spoken Language

- listen and respond appropriately to adults and their peers
- ask relevant questions to extend their knowledge and understanding
- use relevant strategies to build their vocabulary
- give well-structured descriptions and explanations including expressing feeling
- maintain attention and participate actively in collaborative conversations, staying on topic and initiating and responding to comments
- speak audibly and fluently with an increasing command of Standard English
- participate in discussions
Organisation / Resources

See Appendix 3: Woodland Visit Checklist to begin a planning process and checklist at least two months before the visit.

Introduction / Starter Activity

(Timings are approximate and suggested only)

9.45 am Group Briefing and Woodland Senses

On arrival review ground rules. Give children some background information about the woodland/forest. Clearly identify with the children the defined area, making clear the boundaries. There are several possibilities for doing this:

- A rope walk - each child holds on to a rope and creates the boundary by walking in a chain and laying the rope to create a border.
- Natural boundaries - children and teacher seek out natural boundaries in the woodland and agree on certain landmarks to define their exploring area.
- Human chain - adults helping on the day are positioned around the defined area to form the boundary; this has the added benefit of creating adult supervision throughout the whole area.

Begin by exploring the woodland with the children, so they can get to know the area and to establish the physical boundaries. Invite children to ask questions and make observations about the area. Ask them what they would like to know, or which parts of the woodland they are interested in. This can result in a more child-led approach where the teacher acts as the facilitator of children’s learning.

Having walked through the defined areas children can share their first impressions: ask them how it sounds, feels and smells in the woods (or park).

Main Tasks / Activities

10.25 am Activity 1: My Tree

Ask children individually or in pairs to walk around the defined area and find a tree which they like. Ask them to write down a list of words and phrases which describe the tree as accurately as possible. This might include details such as its height, girth (height could be estimated and girth could be measured), colours, textures, description of its leaves, seeds and blossom. They could provide further clues by describing what they can see at the tree’s base or close to it.

Provide each child with a leaf identification sheet to help them identify their chosen tree. Ask them to try and complete the following sentences/paragraphs:

I would describe my tree as follows...
I like my tree because...
I think my tree is [name/type]...
Once children have completed this exercise invite them back to the central meeting point.

11.00 am  Break and Snack

11.15 am  Activity 2: Tree IDs

Ask children to sit in a circle and invite a few of them to share some of their descriptions.

The next task is for children to try and find trees based on the descriptions. There are several possible approaches here, depending on the size of the defined area, the ages of the children and their knowledge and experience of the woodland.

A walk around and through the defined area could be repeated as a whole class exercise or in groups with adult helpers and children invited to shout out “my tree is close to here” when they approach their tree. That child could then read out their description and others try to find it.

Children could work in pairs taking it in turns to describe and find - in each case they could walk to roughly the right area first to make it slightly easier. A paired approach may be preferable if you want to ensure every child gets the chance to describe their tree and have someone find it.

12.00 pm  Lunch

12.45 pm: Activity 3: The Life of a Tree

Ask children in small groups or pairs to decide on one tree which they think will be of interest in terms of the wildlife it supports. This could be one of the trees visited previously or a new one.

Ask them what factors they will take into account when considering a tree’s ability to support wildlife. These might include branches for birds or squirrels, leaves for caterpillars, bark for bugs and mini-beasts, leaf-mould beneath the tree for other bugs, mini-beasts and earthworms etc.

When they have chosen a tree, ask the group or pair to quietly observe the wildlife for ten minutes. Explain the importance of working with as little movement and noise as possible. Listening carefully can reveal what wildlife is present. After ten minutes ask them to rummage gently under leaves and look at holes in the bark to see if they can discover any mini-beasts. An identification book or sheet on mini-beasts may be useful.

1.15pm

Having carried out their observations ask children to return, sit in a circle and share their findings.

What kind of wildlife did they observe?

Ask them what factors they think determine how much wildlife a tree supports? These may include:

• Age of the tree: older, larger trees tend to support more wildlife
• Health of the tree: cracks or holes in the bark may provide shelter for small mammals, birds and insects
• Presence of branches and nesting sites for birds
• Availability of shelter on the forest floor such as root systems for mammals
• Availability of food in the form of leaves, fruits and nuts for birds and mammals or decaying leaves, twigs, branches for insects

**Extension** (if time permits): Ask children to return to their trees and draw labelled sketches of them based on what they have learnt throughout the day. Children could be encouraged to make bark rubbings (this may be a good opportunity to take photos). There are a number of maths challenges that could be set such as finding the tallest tree, the tree with the largest girth, the tree with the longest/broadest leaves, or finding the most common tree. Graphs and charts can be made to show the range of trees in the defined area and which are most and least common.

**Plenary**

Ask groups to write down some of the new things that they have learnt as a result of the visit to the woodland; invite groups to share their thoughts and experiences.

**Additional Activities / Homework**

Provide children with a case study of a similar activity carried out in a forest or woodland landscape in another country, for example by a partner school country. Ask them to compare and contrast. What are the similarities and differences?

**Resources and Links Related to Session**

The following resources may support this session or provide further ideas:

**Woodland Trust Nature Detectives: Tree ID activity - using leaves to identify common trees and shrubs:**

www.woodlandtrust.org.uk/naturedetectives/activities/2015/09/leaf-id/

**Woodland Trust Nature Detectives: Activities:**

www.woodlandtrust.org.uk/naturedetectives/activities/

**Sharing Nature with Children:**

www.sharingnature.com/nature-activities.html
2.2 Session Two: Poe-Tree

LESSON
Poe-Tree: Writing Poems on a Tree Theme

Learning Objectives

- Practice writing simple poems
- Use descriptive language to share feelings and emotions
- Learn to describe and appreciate trees
- Learn appropriate vocabulary and correct spellings associated with trees and forests

Curriculum Links

English Years 3 and 4; Years 5 and 6 Programmes of Study

Reading - Comprehension

- recognising some different forms of poetry
- listen to and discuss poetry
- prepare poems to read aloud and to perform
- discussing words and phrases that capture the reader’s interest and imagination

Writing - Composition

- plan their writing
- draft and write
- evaluate and edit
- proof read for spelling and punctuation errors
- read aloud their own writing

Writing - Vocabulary, Grammar and Punctuation

Organisation / Resources

Worksheet 2.2: Examples of Tree Poems.
Images of trees from woodland visit if available.
Children’s own descriptions of trees and any sketches or photos they may have taken in Session 1.

Introduction / Starter Activity

Read a couple of tree poems (see Worksheet 2.2: Examples of Tree Poems). Ask children to identify which poems they like and why.

Depending on what best links with your current English or other local languages curriculum, pick one or more styles of poetry for the children to focus on.
Main Tasks / Activities

Ask children to reflect on their woodland visit and the tree which they chose. Ask them to use some of the description of their tree as a starting point for a poem. Each child should pick a particular style of poem from the list of styles offered which they think will work best for them, or particular styles as directed.

Once drafted, poems could be written neatly and decorated.

Plenary

Share completed poems.

Additional Activities / Homework

Create an appropriate display such as hanging mobiles of poems on leaf rubbings or incorporating this work into art lessons using methods such as printing, sewing, scratch art, coin rubbings and line drawing.

Resources and Links Related to Session

Poems and Prayers about Trees

www.bit.ly/1fWVIIU
www.bit.ly/1lLpqhA
www.treesofstrength.org/poems.htm

An internet search will provide further examples.

African Authors

Lupenga Mphande (Malawi) - www.africanbookscollective.com/authors-editors/lupenga-mphande
Zondiwe Mbano (Malawi) - www.africanbookscollective.com/books/beware-millipede
Anneline Pillay (South Africa) - www.poemhunter.com/poem/our-indigenous-trees/
2.3 Session Three: Food Chains or Circles?

Learning Objectives

- Understand how trees form a vital part of forest or woodland food chains
- Understand that food chains are vital for sustaining the systems within a woodland habitat

Curriculum Links

Science Year 4 Programme of Study: Living Things and their Habitats
- construct and interpret a variety of food chains, identifying producers, predators and prey

Geography KS2: Location Knowledge
- locate the world’s countries using maps - North America

English KS2: Spoken Language
- speak audibly and fluently with an increasing command of Standard English
- participate in discussions, presentations, performances, role-play, improvisations and debates

Organisation / Resources

Worksheet 2.3: Food Chains

Introduction / Starter Activity

This activity could be used as a way of covering food chains, as specified in the Year 4 science curriculum, though it is expected that at least the basic ideas behind food chains will already have been investigated. If it is year 5 or year 6 children, this activity can reinforce and extend children’s understanding of food chains.

Ask children what they can remember about food chains. Can they describe a simple food chain? This BBC clip provides a useful reminder of the producers, herbivores and carnivores that make up food chains:

www.bbc.co.uk/learningzone/clips/an-introduction-to-food-chains/2312.html

There are a number of useful online interactive activities and games that can reinforce the idea of food chains, but also extend children’s understanding and challenge them further. See resources and links below. These could be completed individually, in pairs or as a whole class session using an interactive board.

Main Tasks / Activities

The main focus of this session is to help children understand the vital role played by trees in woodland food chains and the circular nature of those chains which help to ensure the survival and health of a woodland or forest habitat.
Tree Explorers

Tree Food Chains

Explain to children that all food chains start with producers. Producers such as trees and other plants make their own food because they convert the energy of the sun (light) into edible energy (plant matter).

Read the following to children:

Example of a Deciduous Woodland Food Chain

Here is an example of a single tree, the Basswood or Linden tree, common in the forests of North America.

*In spring a small moth lays clusters of eggs in gaps in the bark. These hatch into small green or grey caterpillars which crawl up the tree and feed on the tender growing leaves. Dozens of migrating warbler birds are to be seen in springtime searching the Basswood trees for these small caterpillars. Sometimes these little birds become prey to larger predator birds such as hawks and owls, or their nests may be raided by squirrels for eggs. These squirrels may in turn sometimes be caught unawares by a hunting fox.*

*When these animals that live in the forest die, other animals such as fly maggots or carrion beetles will scavenge their carcasses. As all dead animals decompose they contribute fertiliser to the soil. Also, in autumn, after the leaves have fallen, bacteria, fungi and a wide variety of mini-beasts begin to break down the rotting leaves into leaf mould. Earthworms pull fragments of leaves down into their burrows where they are eaten and the digested remains stirred into the soil. All this provides important nutrients for the Basswood tree. The food chain has gone full circle.*

Ask children to work in groups of five. Provide each group with cards listing the names of living organisms and their function within the food chain. The functions and terminology below may need reinforcing before the activity.

- Basswood tree
- Caterpillar
- Warbler bird
- Hawk
- Decaying/decomposing animal and plant matter
- Producer
- Herbivore
- Omnivore
- Carnivore
- Decomposer

Before they form their chain, ask them to match the living or dead organism to the function (as below). Provide each group with the Worksheet 2.3 on food chains to do this.
Now, using the organism and function cards you have provided to each group, ask children to ‘present’ their food chain based on the example of the Basswood tree. Encourage them to represent this food chain in dramatic and ‘three dimensional’ ways using their own initiative, teamwork and imagination to decide on the positioning and sequence of the food chain. See if any of the groups present it as a circle rather than a straight chain. If they don’t, ask them whether they are able to present it as a circle. Explain that woodland food chains are in fact circular and that all stages in the chain help to maintain a healthy and sustainable habitat.

Plenary

Ask one of the groups to form their chain by holding hands. Now remove one of the ‘links’. Ask children to consider what might happen if this link was removed ‘in real life’. Repeat for other links and ensure they consider what would happen if the woodland itself was removed (the whole chain would be affected). The circular nature of woodland food chains can further be reinforced in the plenary by showing that decomposing trees also have their own food chains: www.bbc.co.uk/learningzone/clips/insects-living-on-a-decomposing-tree/4459.html

Additional Activities / Homework

Ask children to reflect on the trees that they chose on the woodland visit. Ask them to draw and annotate a possible food chain for their tree and to carry out research to check if their assumptions about food chains are correct.

Resources and Links Related to Session

Interactive Activities and Games on Food Chains:

www.sheppardsoftware.com/content/animals/kidscorner/games/foodchaingame.htm - becomes progressively more challenging.

www.bbc.co.uk/bitesize/ks2/science/living_things/food_chains/play/ - a good interactive activity for a whole class session.

www.cserc.org/main/games/buildafoodchain/index.html - this is a particularly useful way of looking at food chains in a woodlands context as it includes sun and decomposers too, so completing the woodland chain/circle.
2.4 Session Four: Why are Trees Disappearing?

**LESSON**

**Why are Trees Disappearing?**

**The Causes and Effects of Deforestation**

**Learning Objectives**

- Learn about some of the main causes of deforestation around the world
- Gain a ‘baseline’ assessment of children’s opinions and understanding on the main causes of deforestation
- Think critically about the impacts of deforestation

**Curriculum Links**

**Science Year 4 Programme of Study: Living Things and their Habitats**

- recognise that environments can change and that this can sometimes pose dangers to living things

**Science Year 4 Programme of Study: States of Matter**

- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

**Geography KS2: Human and Physical Geography**

Describe and understand key aspects of:

- physical geography, including: climate zones, biomes and vegetation belts, rivers, mountains, volcanoes and earthquakes, and the water cycle

**Maths Years KS2 Programme of Study: Number - Multiplication and Division**

**English KS2: Spoken Language**

- use spoken language to develop understanding through speculating, hypothesising, imagining and exploring ideas
- consider and evaluate different viewpoints, attending to and building on the contributions of others

**Organisation / Resources**

Worksheet 2.4.1: Reasons Why the World’s Trees are Disappearing - cut up.

Enough beads/counters/beans for five per pupil.

Ten non-transparent pots (so they are not influenced by others) for children to place beads in.

Worksheet 2.4.2: What are the Effects of Deforestation? - available in two levels suitable for different age groups and/or abilities.

**Introduction / Starter Activity**

Explain that the world’s forests are disappearing at a rapid rate. The term used to
describe the removal of trees is deforestation.

Provide a definition: *The cutting down of trees in a large area, or the destruction of forests by people.*

Provide some examples of the rates of deforestation at a global level:

Every day, when you wake up, there are 27 million (27,397,260) less trees on the planet than the *day* before.

We are losing 15 billion (15,000,000,000) trees every *year* (and only five billion new trees are planted, and often these are on plantations).

Forests are being cut down at the rate of:
- 28 hectares per *minute*: equivalent to 40 football fields
- 400 km² per *day*: an area larger than Glasgow or Stockholm
- 150,000 km² per *year*: an area larger than Bangladesh

On average, an estimated 137 species of plant, mammal, bird and insect become extinct due to deforestation *every day*, or 50,000 each year.

It is estimated that at the current rate of loss the world’s rainforests will completely disappear in around *100 years*.

Ask children to offer reasons for why they think forests are disappearing so rapidly. Now give out the cut up version of Worksheet 2.4.1 with ten possible reasons for deforestation:

1. To make room for huge farms to grow crops
2. To make space for animals to graze to produce meat
3. To create space for other trees to produce palm oil
4. So that local people can grow their own food
5. To provide wood for building and furniture and for making paper (logging)
6. To clear areas for new roads and bigger towns and cities
7. To get at minerals and fuels such as oil, coal and gas which lie underneath forests
8. Due to natural wildfires which burn the forest down
9. To make charcoal
10. To provide firewood for use at home and to sell

Without too much discussion, ask children to vote for the reasons they think are the main causes. They can distribute their ‘beans’ any way they like - in five different pots, or if they feel very strongly about particular reasons they can place more than one in a single pot.

Following the vote, ask children if they have any questions or comments on the reasons for why trees are disappearing. Explain that over the next few sessions (Tree Guardian sessions) the children will be learning more about the causes and effects of deforestation and what is and can be done to help prevent it.
At some stage, add up the votes, and reveal the top reasons voted for. Explain that the vote will be taken again at the end of the topic to see if their ideas have changed at all.

**Main Tasks / Activities**

Having considered the causes, the session will now focus on the effects of deforestation. This session contains quite a few concepts and terminology that may be new to pupils or will need further exploration. You may wish to explore concepts such as the water cycle or global warming/climate change in more depth and so run this session over a number of lessons.

Provide groups with the worksheet on the effects of deforestation. This features three columns: the effects of deforestation, descriptions of each effect and a reason for the effect, (why deforestation has this impact).

This is essentially a matching exercise. The sheet presents the three columns with each row wrongly ordered. Groups should be asked to cut out the sheet and rearrange the effects, descriptions and explanations. Some of these will be challenging for younger children, especially Year 3, but it should be emphasised that they should match what they do know first and try to arrange what is left over, partly this will be a process of elimination. Groups should then stick these onto another sheet of paper in a way that they consider is the correct match between effect, description and reason. The teacher’s copies of the worksheets and Appendix 4 provide fuller explanations on the causes and effects of deforestation.

**Plenary**

With the whole class, check that each group has correctly matched the effect, description and reasons. Use this as a starting point for further work on the causes and effects of deforestation.

**Additional Activities / Homework**

Ask children to design a leaflet or prepare a presentation identifying the causes and effects of deforestation drawing on what they have learnt during the session and using the suggested links below.

Alternatively, or additionally, some children could be set a maths challenge based on deforestation figures. Examples might include:

- Given that 40 football fields of forest disappear in the world every minute, how many football pitches disappear in one hour, during the school day?
- If 137 species become extinct every day, how many become extinct in a week, how many will become extinct this month?

**Resources and Links Related to Session**

- **Buzzle**: www.buzzle.com/articles/causes-and-effects-of-deforestation.html
- **Active Wild**: www.activewild.com/what-is-deforestation-for-kids-information-and-facts/
- **Mongabay**: https://kids.mongabay.com/lesson_plans/lisa_algee/deforestation.html
- **The World Counts**: www.theworldcounts.com/stories/Deforestation-Facts-for-Kids

[NB - some of the statistics in these resources are out of date]
3. Tree Guardians

This section contains four sessions which are designed to inspire and encourage children to become Tree Guardians.
3.1 Session Five: Tree Champions

There are two options for this lesson, each one featuring a different tree champion. Lesson A features Richard St. Barbe Baker, who founded international Tree Foundation in the 1920s. Lesson B features Wangari Maathai, who founded The Green Belt Movement in 1976.

LESSON A
Tree Champion: Richard St. Barbe Baker

Learning Objectives

- Understand the importance of trees for sustaining the environment and people’s quality of life
- Appreciate the efforts some people will go to in order to protect trees and forests and understand why they take such a strong stand

Curriculum Links

**English: KS2 Spoken Language**

- articulate and justify answers, arguments and opinions
- consider and evaluate different viewpoints, attending to and building on the contributions of others

**English Years 3 and 4 Programme of Study: Reading - Comprehension**

- listening to and discussing a wide range of fiction, poetry, plays, non-fiction and reference books or textbooks
- drawing inferences such as inferring characters’ feelings, thoughts and motives from their actions, and justifying inferences with evidence
- participate in discussion about both books that are read to them and those they can read for themselves, taking turns and listening to what others say
- retrieve and record information from non-fiction

**English Years 3 and 4 Programme of Study: Writing - Composition**

Plan their writing by:

- discussing and recording ideas

Draft their writing by:

- in non-narrative material, using simple organisational devices (for example, headings and sub-headings)

Evaluate their writing by:

- assessing the effectiveness of their own and other’s writing and suggesting improvements
Proof read for spelling and punctuation errors

Read aloud their own writing to a group or whole class

**English Years 5 and 6 Programme of Study: Reading - Comprehension**

- distinguish between statements of fact and opinion
- participate in discussions about books that are read to them... building on their own and others’ ideas and challenging views courteously
- provide reasoned justifications for their views

**English Years 5 and 6 Programme of Study: Writing - Composition**

Plan their writing by:

- identifying the audience for and purpose of the writing, selecting the appropriate form and using other similar writing as models for their own
- noting and developing initial ideas, drawing on reading and research

Draft and write by:

- selecting appropriate grammar and vocabulary, understanding how such choices can change and enhance meaning
- using further organisational and presentational devices to structure text and to guide the reader (for example, headings, bullet points, underlining)

Evaluate and edit by:

- assessing the effectiveness of their own and other’s writing and suggesting improvements
- proposing changes to grammar and vocabulary to improve consistency, including the accurate use of pronouns in sentences

Proof read for spelling and punctuation errors

**Citizenship - Non-statutory Curriculum - see Appendix 1: Citizenship Links**

**Organisation / Resources**

Selected articles from the publication *Man of the Trees, Richard St. Barbe Baker* 1983 edited by Hugh Locke and published by the Richard St. Barbe Baker Foundation are available in Appendix 5 along with other information about him.

- Item 1: The Times ‘In Memoriam’ Richard St. Barbe Baker
- Item 3: ‘Men of the Trees’
- Item 4: ‘I Believe’ excerpts from the Creed

**Introduction / Starter Activity**

Read *The Times* obituary, ‘Trees and Life’ pages and ‘I Believe’ to the class
Why was Richard St. Barbe Baker worried about people cutting down trees for agriculture and fuel in Kenya?

He had seen the beginning of the dust bowl in Canada when he was at university and was worried that it would happen again in Kenya.

What was his greatest ambition?

The reclamation of the Sahara desert, which he never saw achieved at any big scale during his lifetime.

Why did he think that trees were important as a natural resource?

He knew that they not only produced timber, but were also essential in producing oxygen, absorbing carbon dioxide and helping to bring rain.

What other unusual things did St. Barbe Baker do in his lifetime?

He studied divinity, served in the army and helped develop the modern caravan as an early social enterprise whilst at university.

How was his work as an environmentalist and humanitarian recognised in his lifetime?

He was appointed OBE and given an honorary doctorate by his former university in Canada.

What are the seven key functions that trees perform?

Produce oxygen, transport and filter water, provide food, prevent erosion, have a beneficial effect on climate, protect wildlife and produce timber.

Why does Richard St. Barbe Baker think that oxygen is the most important thing that trees produce?

Because everyone needs oxygen to breathe and it takes a lot of trees to produce enough clean air for us to exist.

Richard St. Barbe Baker was a life-long vegetarian and believed that people should eat more foods produced by trees. Can you think of any ordinary and unusual foods and other products that are produced by trees?

Usual: fruits like apples and pears, nuts and avocados. Unusual: cork for bottles, sap for things like chewing gum, latex rubber to make washing up gloves.

Why is producing timber last on the list? Richard St. Barbe Baker doesn’t say much about why it’s last but maybe the class knows why?

The benefits of cutting down a tree are outweighed by the other functions they perform. Therefore, although they produce important products that are very useful for many purposes, this needs to be put into perspective with the other benefits they provide.
Tree Guardians

Q. Can the class think of any other functions that trees perform that they would like to add to the list?

A. Trees make our streets, parks and countryside more beautiful and many people appreciate this. Research has also found that being close to trees might help people live longer, improve their quality of life and make them happier.

Main Tasks / Activities

There are several possibilities for a writing task based on these texts. The particular choice will depend on what fits best with literacy aims and what will be of most benefit to the class at the time. A variety of tasks could be used with different groups undertaking different tasks. The following are just some ideas; the story of Richard St. Barbe Baker provides rich material for a variety of literacy activities.

Write a news report. When Richard St. Barbe Baker heard about the threat posed by desertification he set up a tree planting movement, Watu Wa Miti, in Kenya. Based on his ‘Men of the Trees’ account of the events, the class could write a news report using the information in the article and address the ‘5 w’s’: Who, What, When, Why, Where, and explain what was innovative and unusual about his approach.

Write a poem. Richard St. Barbe Baker felt that poetry was an important way of communicating and sharing his love of trees. He had an ambition that in a place called the Grove of Understanding in California, children from around the world would come together and perform music, poetry, dance and theatre. The poems could take different forms: they could be about a particular tree that the child knows and appreciates, about an issue to do with deforestation or desertification or about the Man of the Trees himself. The poem could be illustrated or take the form of a tree.

Write a persuasive argument. The New Earth Charter was a very important document for the Men of the Trees to produce and it is very compelling in its argument about how humankind can live in harmony with nature. Having analysed the text ‘I Believe’, the class could discuss as a group what they believe and draw together their own environmental philosophy addressing why trees are important and what responsibilities we have to those around us.

Design a poster. Richard St. Barbe Baker set out the seven key functions that trees perform, starting with their production of oxygen and ending with timber. Using the seven functions as a starting point the class could then design a poster which uses image and text to illustrate the points and which could then be exhibited in the school. If there is time then groups of children could work together on larger posters which bring together poetry, collage and painting.

Plenary / Extension

Ask children to share some of their work. If Philosophy for Children (P4C) or another critical thinking process is well established in school, the life of Richard St. Barbe Baker provides an excellent stimulus for philosophical questioning.

Additional Activities / Homework

Any of the creative writing tasks identified above could be set as homework or additional activities.
Resources and Links Related to Session

**Man of the Trees Film**

This film, made in 1981 when Richard St. Barbe Baker was very elderly, is a great way of sharing his voice and message with the class. It tells his life story and also clearly explains his environmental philosophy.

- Part 1 [www.youtube.com/watch?v=MdM4diRvnWk](www.youtube.com/watch?v=MdM4diRvnWk)
- Part 2 [www.youtube.com/watch?v=06Jts33wCEE](www.youtube.com/watch?v=06Jts33wCEE)
- Part 3 [www.youtube.com/watch?v=QGBkFYNpXTQ](www.youtube.com/watch?v=QGBkFYNpXTQ)

**The Man Who Planted Trees**

This short animated film is also known as The Story of Elzéard Bouffier: the most Extraordinary Character I ever Met, and The Man Who Planted Hope and Reaped Happiness. It is an allegorical tale by Jean Giono, published in 1953. It was adapted as this animated short by Frédéric Back, released in 1987. It earned a number of awards including an Academy Award for Best Animated Short Film. Some people think that it was based on Richard St. Barbe Baker, and in fact ITF was one of the first to publish the story. How closely does the class think that the two intersect?

- [www.youtube.com/watch?v=KTvYh8ar3tc](www.youtube.com/watch?v=KTvYh8ar3tc)

**Texts from the Baha’i Community**

Richard St. Barbe Baker joined the Baha’i faith in 1924 and the religion’s teachings had a profound impact on his environmental philosophy. These resources reflect upon his writings and some key excerpts from Baha’i texts. The second is an extensive biography written by the Baha’i community.

- [www.bahaiteachings.org/series/the-man-of-the-trees](www.bahaiteachings.org/series/the-man-of-the-trees)
LESSON B
Tree Champion - Wangari Maathai

Learning Objectives

- Understand the impacts of deforestation on the environment and people’s quality of life
- Appreciate the efforts some people will go to in order to safeguard trees and forests and understand why they take such a strong stand

Curriculum Links

English: KS2 Spoken Language

- articulate and justify answers, arguments and opinions
- consider and evaluate different viewpoints, attending to and building on the contributions of others

English Years 3 and 4 Programme of Study: Reading - Comprehension

- listening to and discussing a wide range of fiction, poetry, plays, non-fiction and reference books or textbooks
- drawing inferences such as inferring characters’ feelings, thoughts and motives from their actions, and justifying inferences with evidence
- participate in discussion about both books that are read to them and those they can read for themselves, taking turns and listening to what others say
- retrieve and record information from non-fiction

English Years 3 and 4 Programme of Study: Writing - Composition

Plan their writing by:

- discussing and recording ideas

Draft their writing by:

- in non-narrative material, using simple organisational devices (for example, headings and sub-headings)

Evaluate their writing by:

- assessing the effectiveness of their own and other’s writing and suggesting improvements

Proof read for spelling and punctuation errors

Read aloud their own writing to a group or whole class
English Years 5 and 6 Programme of Study: Reading - Comprehension

- distinguish between statements of fact and opinion
- participate in discussions about books that are read to them... building on their own and others’ ideas and challenging views courteously
- provide reasoned justifications for their views

English Years 5 and 6 Programme of Study: Writing - Composition

Plan their writing by:

- Identifying the audience for and purpose of the writing, selecting the appropriate form and using other similar writing as models for their own
- noting and developing initial ideas, drawing on reading and research

Draft and write by:

- selecting appropriate grammar and vocabulary, understanding how such choices can change and enhance meaning
- using further organisational and presentational devices to structure text and to guide the reader (for example, headings, bullet points, underlining)

Evaluate and edit by:

- assessing the effectiveness of their own and other’s writing and suggesting improvements
- proposing changes to grammar and vocabulary to improve consistency, including the accurate use of pronouns in sentences

Proof read for spelling and punctuation errors

Citizenship - Non-Statutory Curriculum - see Appendix 1: Citizenship Links

Organisation / Resources


Introduction / Starter Activity

Read the true story of Wangari Maathai to the children. Ask them to share their reactions to the story. Particular questions you might like to ask:

Q. When Wangari returns from studying in America, what changes does she notice in her homeland?
A. Thousands of trees have been cut down, the land has become barren, and no crops are able to grow.

Q. Why have the trees been cut down? What factors have led to deforestation?
A. Forests have been cleared to make way for building developments, trees have been cut down for firewood and no replacement trees have been planted.
Tree Guardians

Q. What is her response to the changes she sees?
A. She begins by planting nine tree seedlings to replace some of the trees that have been cut down.

Q. What do you think Wangari says to the women in the village to persuade them that planting trees is a good idea?
A. She explains that they prevent the spread of the desert, improve the soil, increase fertility for crops, provide shade and are an accessible source of firewood.

Q. How else does Wangari encourage the women to plant trees?
A. She agrees to pay the women for each seedling still living after three months, thereby encouraging them not only to plant the trees but to care for them too.

Q. Ask for some reactions to the following: ‘Women can’t plant trees, it takes trained foresters to plant trees’. What is the women’s reaction to this?
A. The women ignore the men and continue planting.

Q. Wangari defends the trees still standing: “We need a park more than we need an office tower”. Ask for some reactions to this.
A. Why did the work of Wangari not stop when she was sent to prison?
A. Women who had supported her ideas continued to plant trees and word spread. More and more women across Africa became involved in tree planting.

Q. How many trees were planted where ‘once there were none’?
A. 30 million

Q. What changes have taken place since Wangari’s tree growing programme began?
A. The ‘umbrella of green’ has returned, providing shade. Women are able to collect firewood closer to home. The soil has improved and more food crops are able to grow. Women have been empowered and the whole world knows of one amazing woman and her band of women.

A film could also be shown about Wangari, see links below.

Main Tasks / Activities

There are several possibilities for a writing task based on this book. The particular choice will depend on what fits best with literacy aims and what will be of most benefit to the class at the time. A variety of tasks could be used with different groups undertaking different tasks. The following are just some ideas; the story of Wangari provides rich material for a variety of literacy activities.

Write a news report on the arrest of Wangari explaining why she has been arrested and providing a balanced account, providing the viewpoints of government officials and Wangari; children could use the book to create quotes from Wangari, other women and government officials based on the story giving both sides of the argument.
Write a brief biography. Wangari Maathai established the Green Belt Movement in Kenya and became the first African woman to receive the Nobel Peace Prize. She died in 2011. Children could write a brief biography or obituary based on the book and further research (see links below). In particular they could research what else Wangari did in her life and why she was awarded the Nobel Peace Prize. (See links and references below).

Write a persuasive argument. Using their own imagination and research (see links below), children could be asked to write a short article giving reasons why planting trees is an act of peace, and why it was appropriate for Wangari to be awarded the Nobel Peace Prize.

Design a logo and strap line. Having learnt some basic facts about the Green Belt Movement, set up by Wangari Maathai, children could design an appropriate logo and strap line for the organisation. They could then compare this with the actual logo (see link below).

Plenary / Extension

Ask children to share some of their work. If Philosophy for Children (P4C) or another critical thinking process is well established in school, the story of Wangari provides an excellent stimulus for philosophical questioning.

Additional Activities / Homework

Any of the creative writing tasks identified above could be set as homework or additional activities.

Resources and Links Related to Session

Kid World Citizen

A useful summary of Wangari’s life and list of further useful resources. The page includes a useful cause and effect table which can be used as a further activity.

www.kidworldcitizen.org/2012/04/24/introduce-kids-to-nobel-peace-prize-winner-wangari-maathai/

A Voice for Trees

This short film features Wangari Maathai speaking about the reasons for deforestation, why she supported tree planting and why she set up the Green Belt Movement.

www.youtube.com/watch?v=GFvv9f9u-vY&t=190

Planting Hope: Wangari Maathai and the Green Belt Movement

This more detailed film will help children understand why Wangari was so passionate about trees and their vital role in the environment as well as how planting trees represented hope, peace and democracy too.

www.youtube.com/watch?v=Es6eVgmPWJM&t=207

The Green Belt Movement

www.greenbeltmovement.org/
In 2007, inspired by a school presentation on Wangari Maathai and Richard St. Barbe Baker, a 9-year-old, Felix Finkbeiner, formulated his vision that children could plant one million trees in every country on Earth and thereby offset CO2 emissions all on their own, while adults are still talking about doing it. This children’s initiative, Plant-for-the-Planet, has now become a global movement adopted by the United Nations.
3.2 Session Six: The Forest in My School

Learning Objectives

- Understand that many of the materials and products we use in our daily lives come from trees
- Understand the concept of stewardship in relation to trees and forests and the criteria used to ensure well managed forests
- Know how to identify products made using sustainably harvested wood

Curriculum Links

**Science: Year 4 Programme of Study: Living Things and their Habitats**

- recognise that environments can change and that this can sometimes pose dangers to living things

**Non-statutory Guidance:**

- pupils should explore examples of human impact (both positive and negative) for example... deforestation.

**Science: Year 5 Programme of Study: Properties and Changes of Materials**

- compare and group together everyday materials on the basis of their properties...

**Art and Design: KS2**

- create sketchbooks to record their observations to review and revisit them
- improve their mastery of art and design techniques, including drawing, painting with a range of materials

**Citizenship - Non-statutory Curriculum – see Appendix 1: Citizenship Links**

Organisation / Resources

Worksheet 3.2.1: Detective Mission - Wooden Bingo

Range of objects with a FSC (Forest Stewardship Council) label e.g. pocket tissues, pack of toilet roll or kitchen towel, pack of paper, wood or wooden objects etc.

Worksheet 3.2.2: Forest Stewardship - Looking after the World’s Forests

Introduction / Starter Activity

Ask each child to think of things that they used before or on the way to school that are produced from wood (e.g. toilet paper, bus ticket).
Main tasks / Activities

Wood Detectives

Discuss what a detective does - careful observation, finding clues, looking beyond the obvious.

Now ask the children in pairs to go on a ‘detective mission’ to find objects around the school that are produced from trees (encourage pupils to think of less obvious wooden objects such as paper, parts of the building, office paper supply, tyres made out of rubber etc.). Provide each pair with the Detective Mission bingo sheet (Worksheet 3.2.1) to complete. This will help them think broadly. Alternatively, children could have been asked to complete the bingo sheet at home prior to the session (see below).

Once pairs have completed their bingo sheet or filled as many squares as possible, discuss their findings. Refer to the link below for a wide range of products derived from wood. Having completed this task and having been encouraged to think broadly, children should understand our reliance on trees for a huge range of products.

Now ask children what they understand by stewardship - the act or activity of looking after and making decisions about something. Explain that the idea of stewardship is common in many religions - the belief that humans are responsible for the world, and should take care of it.

Once there is an agreed understanding of the term stewardship, ask children to think about what this might mean in terms of forests and trees.

Explain that there is an organisation called the Forest Stewardship Council that provides a certificate to forests around the world which are well managed.

Show the children the FSC label and some products with the label on, e.g. paper, tissues, kitchen roll etc. Ask if they have seen this label/logo on any products before. Did they notice it on any products around the school?

Now explain the criteria that FSC uses to make sure wood comes from forests that are well managed - see the simplified criteria sheet: Worksheet 3.2.2 - Forest Stewardship. See also links below for more detailed criteria.

Provide children with Worksheet 3.2.2 and display the criteria on a screen. Ask if they think the FSC logo is a good one. Now ask the children to design their own logo that could be used to show that wood or tree products come from well managed forests.

Plenary

Recap on the importance of the FSC label and what it means. Ask a few children to show their own label/logo designs and explain their thinking. This will provide a good opportunity to assess whether the concepts behind sustainable forestry have been understood.

Explain that not all wood or wooden products come from FSC certified forests. Ask them what impact buying wood or wooden products from non FSC certified forests might mean for the forests themselves, the wildlife that live in them and the people who depend on them.
Additional Activities / Homework

Go on a ‘detective mission’ to find products made from wood at home - children could be issued the bingo sheet to complete at home with family members.

Ask children to see how many products they can find at home with the FSC label on and discuss with their parents the importance of looking out for the FSC label when shopping for wooden goods or products made using wood.

Ask children to consider whether the school could improve the range of FSC products it uses. Ask them to investigate what FSC products the school could be using which it is currently not using and invite them to make recommendations to the School Council or Board of Governors.

Resources and Links Related to Session

List of products from wood
www.idahoforests.org/wood_you.htm

Forest Stewardship Council Vision and Principles

Forest Stewardship Council Frequently Asked Questions
www.fsc-uk.org/frequently-asked-questions.31.htm
Learning Objectives

- Learn about palm oil - where and why it is grown
- Understand how to detect products containing palm oil
- Learn about the problems caused by unsustainable palm oil production and what is being done about this

Curriculum Links

**English: KS2: Spoken Language**

- ask relevant questions to extend their understanding and knowledge
- articulate and justify answers, arguments and opinions
- consider and evaluate different viewpoints, attending to and building on the contributions of others

**Non-statutory Guidance:**

- have opportunities to work in groups of different sizes
- understand how to participate constructively in conversations and debates
Science: Year 4 Programme of Study: Living Things and their Habitats

- recognise that environments can change and that this can sometimes pose dangers to living things

Non-statutory Guidance:

- pupils should explore examples of human impact (both positive and negative) for example... deforestation.

Geography KS2:

Human and Physical Geography

- human geography, including types of settlement, land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water
- geographical skills and fieldwork
- use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied

Art and Design: KS2

- create sketchbooks to record their observations to review and revisit them
- improve their mastery of art and design techniques, including drawing, painting with a range of materials

Citizenship - Non-statutory Curriculum - see Appendix 1: Citizenship Links

Organisation / Resources

Worksheet 3.3.1: Palm Oil Detectives - Investigation Information Sheet
Worksheet 3.3.2: Palm Oil Detectives - Recording Sheet

A range of food, cosmetics, soaps and detergent packaging, brought in by children (beginning about two weeks before the session and ideally at least 3-5 items per child)

If possible obtain a bottle from Traidcraft’s ‘Clean and Fair’ cleaning products which contain Fairtrade certified palm oil from Ghana

Introduction / Starter Activity

Explain that children are going to learn about palm oil in this session. Ask if anyone has heard of palm oil before. Ask if they know where it comes from. Ask children if they ever knowingly eat or use palm oil.

Now show this short film about palm oil: www.youtube.com/watch?v=rImP_tP6KJY  Having viewed the film ask again whether anyone thinks they have ever eaten or used palm oil. Explain that palm oil is used in a wide range of products - food, soaps, cosmetics, even as a fuel for cars.

Consumers across the world are demanding products with sustainable palm oil but this is very difficult to achieve. Several groups have tried to certify sustainable palm oil such as
Round Table on Sustainable Palm Oil which is currently the largest sustainability-focused organisation within the palm oil sector. However, there are issues around the certification process which organisations are trying to address. And even RSPO standards do not ban deforestation or destruction of peat lands for the development of oil palm plantations and thus do not prevent the subsequent loss of habitat for orangutans.

Now watch a second film about palm oil: Sustainable palm oil production www.youtube.com/watch?v=7BRGjODwYwA (NB this video contains one potentially upsetting image of an orangutan)

Begin watching the film but stop it where it asks the question: We must put an end to palm oil, right?

Gain some reactions.

Now play the rest of the film that reveals the benefits of palm oil to the communities involved in its production. You may wish to stop the film at various points to read out the subtitles or answer questions.

Following the film, gain some further reactions. Has the film changed anyone’s mind about palm oil? Ask children to identify the disadvantages of palm oil production. These may include forest destruction, habitat loss, species decline/extinction, destruction of people’s homes/homelands, global warming. Also discuss the advantages to producers, such as the provision of a better income, which can result in improvements in nutrition, education and housing. In groups, children could be asked to reflect on the advantages and disadvantages and write these down in two columns on a large sheet of paper.

**Main Tasks / Activities**

Now tell groups that they are going to be Palm Oil Detectives.

Provide each group with a range of product packaging, some food and some non-food. First ask them to look at the ingredients to see if palm oil is identified. Invariably it will not be. Ask for feedback.

Explain that palm oil is often a hidden ingredient because it can be listed under a variety of names. Distribute Worksheet 3.3.1 which identifies the many ways in which palm oil is used and named.

Given this list, ask groups to look again at their products to see if they contain palm oil. Ask groups to complete Worksheet 3.3.2, identifying whether the packaging states anything about where the palm oil comes from or has any certification logo, (such as those of RSPO or Fairtrade).

**Plenary**

Share the results of the Palm Oil Detectives activity. If children have found the RSPO logo they should be informed that this organisation does not actually ban deforestation or the destruction of peat lands.

**Additional Activities / Homework**

Palm Oil Detectives at home - ask children to make a list of all the products they can find at
home which do or do not contain palm oil. Encourage the children to think of doing something about this - a letter to companies, supermarkets etc. Children can do their own research at home into the impact of palm oil on orangutans and other animals. Paignton Zoo www.paigntonzoo.org.uk is actively promoting the use of products that do not contain palm oil. The children could also research their local zoo.

Ask the children to write a letter to a food company or supermarket chain to ask how they are dealing with the destruction caused by the production of palm oil. Or write a letter to local food producers asking them to consider using an alternative to palm oil such as butter.

Ask children to identify snack items that do not contain palm oil. Organise a palm oil free snack feast.

Resources and Links Related to Session

**Forest Justice**

List of palm oil pseudonyms
www.forestjustice.org/ppp/

**Say No to Palm Oil**

More on the issues of sustainable palm oil
www.saynotopalmoil.com

**EU Regulations**

As of December 2014, food producers are obliged to specify what type of vegetable oil is in their product (rape seed, soy, palm, etc.). Experts say it will be difficult to find a replacement for palm oil. However, milk butter fat is a viable alternative. For one day a week the Proper Cornish Food Company in conjunction with Paignton Zoo, are making pasties using butter instead of palm oil.

**Dr Bronner’s Palm Oil**

This is produced ethically from sustainably-harvested palm fruits in Ghana’s Eastern Region. The project is owned and coordinated by Serendipalm, Dr. Bronner’s sister company in Ghana. Palm fruits are bought exclusively from 500 small organic family farms. These farms were developed without the widespread clearance of rainforest and resulting devastation to local primates that are common nowadays with many of the newer, larger-scale palm oil plantations.

**Fairtrade**

This film is about Dr Bronner’s production of coconut oil (rather than palm oil) in Sri Lanka, but it reveals the advantages of fairtrade and sustainable production to local communities:
www.youtube.com/channel/UCfx2fE2xdGjBjI2jiiMMXCTw
3.4 Session Eight: Our Forest Friendly School

**Learning Objectives**

- Consider actions that can be taken at school (and at home and in the wider community), to protect the world’s forests and trees
- Identify effective ways of transmitting messages about the importance of protecting forests and trees and who these messages should be communicated to

**Curriculum Links**

**English: KS2 - Spoken Language**

- listen and respond appropriately to adults and their peers
- ask relevant questions to extend their understanding and knowledge
- articulate and justify answers, arguments and opinions
- use relevant strategies to build their vocabulary
- maintain attention and participate actively in collaborative conversations, staying on topic and initiating and responding to comments
- participate in discussions and debates
- consider and evaluate different viewpoints, attending to and building on the contributions of others

**Non-statutory Guidance**

- have opportunities to work in groups of different sizes - in pairs, small groups, large groups and as a whole class
- understand how to take turns and when and how to participate constructively in conversations and debates

**Citizenship - Non-statutory Curriculum - see Appendix 1: Citizenship Links**

**Organisation / Resources**

Worksheet 3.4: Developing a Forest Friendly School

**Introduction / Starter Activity**

The main purpose of the final session is to encourage children to consider what actions they can take to ensure that trees and forests are protected and conserved.

Begin the session by repeating the voting activity carried out at the end of the **Tree Explorers** section on page 17 to see if children have changed their ideas on the reasons for deforestation during the course of the programme (see Session 2.4 above). Discuss any changes in the results, asking children who have changed their minds to provide explanations.
for why they have done so. This will provide a useful evaluation of the programme and how it has informed children and challenged their ideas and attitudes.

**Main Tasks / Activities**

Discuss with the whole class any actions they think can be taken to prevent deforestation. Then ask children in groups to consider the actions that could be taken to help create a ‘Forest Friendly School’. Provide groups with Worksheet 3.4 which provides some key ideas on how to protect the world’s forests. Ask groups to add ideas to this list. Then ask them to identify possible actions for each method of forest protection. Some suggested actions have been provided already.

Having completed this sheet ask groups to think of an action plan for creating a Forest Friendly School which should include information on how they plan to get the message across and who they need to get the message across to. Examples might include: presentations to Governors or the School Council; speaking to the Canteen Manager; organising a school assembly, designing posters to put up around school for both parents and other pupils to see; writing a page for the school website; writing letters to food manufacturers and suppliers.

**Plenary**

Ask groups to share their ideas and action plans. All the ideas could be incorporated into one definitive School Action Plan for a Forest Friendly School.

**Additional Activities / Homework**

Taking the important messages back home and out into the community is an important part of this programme. Children could be encouraged to develop a similar action plan for their family situation and seek to create a ‘Forest Friendly Home’.

A further step might be to consider becoming an Eco-School (see below which identifies ‘Seven Steps to Sustainability’). This can help in the development of a more comprehensive action plan.

**Resources and Links Related to Session**

**Ten Easy Ways Kids can Help Save Rainforests**

[www.rainforest-alliance.org/articles/10-ways-kids-can-save-the-rainforest](http://www.rainforest-alliance.org/articles/10-ways-kids-can-save-the-rainforest)

**Eco-Schools:**

[www.ecoschools.global](http://www.ecoschools.global)
2.1 Worksheet: Tree Power Baseline Assessment

Name ....................................... Class ............ Date ....................................

<table>
<thead>
<tr>
<th>Questions</th>
<th>(tick one box to answer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you tick ‘Yes’ to questions 4 and 7, write your answers in the spaces</td>
<td></td>
</tr>
<tr>
<td>1. I can tell you why trees are important.</td>
<td></td>
</tr>
<tr>
<td>2. I know lots of words to do with trees.</td>
<td></td>
</tr>
<tr>
<td>3. I can draw a food chain or circle with a tree in it.</td>
<td></td>
</tr>
<tr>
<td>4. I know the main reason why people cut down trees:</td>
<td></td>
</tr>
<tr>
<td>5. I can tell you about someone who got people to plant millions of trees.</td>
<td></td>
</tr>
<tr>
<td>6. I can tell you five things that we use that came from trees.</td>
<td></td>
</tr>
<tr>
<td>7. I know what the label ‘FSC’ means.</td>
<td></td>
</tr>
<tr>
<td>8. I can tell you about palm oil.</td>
<td></td>
</tr>
<tr>
<td>9. I can tell you some things we can do to help protect trees and forests.</td>
<td></td>
</tr>
</tbody>
</table>
### 2.2 Worksheet: Examples of Tree Poems

<table>
<thead>
<tr>
<th>Poetic form</th>
<th>Structure</th>
<th>Example of tree poem</th>
</tr>
</thead>
</table>
| **Haiku**   | 5 syllables or less  
7 syllables or less  
5 syllables or less | Red dappled light  
Under copper beeches  
A robin sings  
(By Juliet Wilson) |
| **Cinquain**| Five lines:  
Title: 2 syllables  
Description of title: 4 syllables  
Description of action: 6 syllables  
Description of feeling: 8 syllables  
Another word for title: 2 syllables | **Forests**  
Graceful, growing  
Climbing among the clouds  
Calmly awaiting the sunrise  
Alive |
| **Diamante**| Diamond shaped seven-line pattern:  
noun  
adjective adjective  
participle participle participle  
noun noun noun noun  
participle participle participle  
adjective adjective  
noun | Trees  
Tall  Secure  
Swaying  Creaking  Shading  
Leaves  Limbs  Trunk  Roots  
Standing  Imposing  Cleansing  
Sturdy  Beautiful  
Trees |
| **Windspark**| Five-line pattern:  
I dreamed  
I was...(someone or something)  
Where  
An action  
How | I dreamed  
I was a tree  
On a hillside  
Playing with the wind  
Joyfully |
| **Shape poem**| Write a poem in the shape of a tree:  
just the outline of the tree shape, or fill in the whole shape with your words.  
Think of the shapes of different trees and pick the one that would most suit your poem | |
| **Acrostic poem**| Write a poem about a tree. Start each line with a letter from the word “tree” (see example) | Tall  
Rustling  
Evocative  
Eternity |
Trees
Are old friends.
They have many jobs.
Homes for animals, shelters
From the cold and the rain,
Oxygen producers, and
Providers of shade.
So big, so alive.
2.3 Worksheet: Food Chains

The following are not matched correctly. Can you match the organism to the function?

<table>
<thead>
<tr>
<th>Organism</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basswood tree/leaves</td>
<td>Decomposer (eg. fungi, earthworms)</td>
</tr>
<tr>
<td>Caterpillar</td>
<td>Carnivore (consumer)</td>
</tr>
<tr>
<td>Warbler bird</td>
<td>Herbivore (consumer)</td>
</tr>
<tr>
<td>Hawk</td>
<td>Omnivore (consumer)</td>
</tr>
<tr>
<td>Decaying and decomposing animals and plants</td>
<td>Producer</td>
</tr>
</tbody>
</table>

Here are some definitions to help you:

**Herbivore**: an animal that gets its energy and nutrients only by eating plants.

**Omnivore**: an animal that gets its energy and nutrients from a variety of food that may include plants, other animals, fungi and bacteria.

**Carnivore**: an animal that gets its energy and nutrients from killing and eating other animals.

** Decomposer**: organism, often bacterium or fungus, that feeds on and breaks down dead plant or animal matter.

**Having matched the organism and the function correctly, can you form a food chain?**
2.4.1 Worksheet: Reasons Why the World’s Trees are Disappearing
(Teacher’s Copy - in approximate order of importance)

1. To make room for huge farms to grow crops (especially soya, sugar etc. for animal feed and processed foods)
2. To make space for animals to graze to produce meat
3. To create space for other trees to produce palm oil
4. So that local people can grow their own food
5. To provide wood for building and furniture and for making paper (logging)
6. To clear areas for new roads and bigger towns and cities
7. To get at minerals and fuels such as oil, coal and gas which lie underneath forests
8. Due to natural wildfires which burn the forest down (made more serious by poor logging practices and spread of urbanisation)
9. To make charcoal
10. To provide firewood for use at home and to sell
2.4.1 Worksheet: Reasons Why the World’s Trees are Disappearing

- To make room for huge farms to grow crops
- To make space for animals to graze to produce meat
- To create space for other trees to produce palm oil
- So that local people can grow their own food
- To provide wood for building and furniture and for making paper
- To clear areas for new roads and bigger towns and cities
- To get at minerals and fuels such as oil, coal and gas which lie underneath forests
- Due to natural wildfires which burn the forest down
- To make charcoal
- To provide firewood for use at home and to sell
### 2.4.2 Worksheet (Year 5/6): What are the Effects of Deforestation?

<table>
<thead>
<tr>
<th>Effect of deforestation</th>
<th>Description of effect</th>
<th>Reason for effect: why does deforestation lead to this?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil erosion</td>
<td>A great flowing or overflowing of water, especially over land.</td>
<td>70% of the world’s plants and animals live in forests. Removing forests means they lose their habitats and homes and so have nowhere to go. Some species reduce in number and others become extinct.</td>
</tr>
<tr>
<td>Global warming</td>
<td>Changing the circulation of water that occurs naturally through evaporation and condensation.</td>
<td>Trees play an important part in the water cycle, holding water in their roots and releasing it into the atmosphere. In the Amazon, more than half of all water is held in plants. Without the plants, the climate may become drier.</td>
</tr>
<tr>
<td>Loss of biodiversity</td>
<td>Interfering with the customs of a particular group of people shown through language, religion, food, social habits, music and arts.</td>
<td>Many people rely on forests to provide food, shelter, materials for cooking, clothing, even medicines. The forests are often also an important part of local customs and traditions.</td>
</tr>
<tr>
<td>Flooding</td>
<td>The movement of soil by water, wind or gravity.</td>
<td>Healthy forests help soak up the carbon emissions that result from burning fossil fuels like oil, coal and gas. Burning these fuels is causing the climate to change and the Earth to become warmer.</td>
</tr>
<tr>
<td>Disruption to the water cycle</td>
<td>An increase in the average temperature of the Earth’s atmosphere.</td>
<td>Tree roots hold the soil. When they are removed the soil can dry out and be blown away or when it rains top soil is washed away.</td>
</tr>
<tr>
<td>Destroying local culture</td>
<td>Reduction of or disruption to the variety of plants and animals living in a particular place.</td>
<td>Forests soak up and store large amounts of water. When trees are removed there is nothing to hold the water so floods can result.</td>
</tr>
</tbody>
</table>
### 2.4.2 Worksheet (Year 3/4): What are the Effects of Deforestation?

<table>
<thead>
<tr>
<th>Effect of deforestation</th>
<th>Description of effect</th>
<th>Reason for effect: why does deforestation lead to this?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil erosion</td>
<td>Water overflowing onto the land.</td>
<td>Most of the world’s plants and animals live in forests so cutting down the forests means that they lose their habitats and homes and so have nowhere to go. Some species reduce in number and others become extinct.</td>
</tr>
<tr>
<td>Global warming</td>
<td>Changing the circulation of water that occurs naturally through evaporation and condensation.</td>
<td>Many people rely on the forest to provide food, shelter, material for cooking, clothing and medicines. Without the forest many people are without homes.</td>
</tr>
<tr>
<td>Animals and plants are becoming extinct (loss of biodiversity)</td>
<td>Getting in the way of the life of the local people.</td>
<td>Trees hold water in their roots and release it into the atmosphere. In the Amazon, more than half of all water is held in plants.</td>
</tr>
<tr>
<td>Flooding</td>
<td>The movement of soil by water, wind or gravity.</td>
<td>Healthy forests help soak up the carbon emissions that result from burning fossil fuels like oil, coal and gas. Burning these fuels is causing the climate to change and the Earth to become warmer.</td>
</tr>
<tr>
<td>The water cycle is disturbed</td>
<td>An increase in the temperature of the Earth’s atmosphere.</td>
<td>Tree roots hold the soil. When they are removed the soil can dry out and be blown away or when it rains top soil is washed away.</td>
</tr>
<tr>
<td>Destroying local culture</td>
<td>The number of different plants and animals is less.</td>
<td>Forests soak up and store large amounts of water. When trees are removed there is nothing to hold the water so floods can result.</td>
</tr>
<tr>
<td>Effect of deforestation</td>
<td>Description of effect</td>
<td>Reason for effect: why does deforestation lead to this?</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------------</td>
<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Soil erosion</td>
<td>The movement of soil by water, wind or gravity.</td>
<td>Tree roots hold the soil. When they are removed the soil can dry out and be blown away or when it rains top soil is washed away. Crops planted after clearing forests can make soil erosion worse because their roots cannot hold onto the soil the way trees can. Soil erosion can also lead to silt entering lakes, rivers and streams which can decrease local water quality and contribute to poor health in local populations.</td>
</tr>
<tr>
<td>Global warming</td>
<td>An increase in the temperature of the Earth’s atmosphere.</td>
<td>Healthy forests help absorb greenhouse gasses and carbon emissions that are caused by human civilization and contribute to global climate change. Without trees, more carbon and greenhouse gasses enter the atmosphere. To make matters worse, trees actually become carbon sources when they are cut, burned, or otherwise removed</td>
</tr>
<tr>
<td>Loss of biodiversity</td>
<td>Reduction of or disruption to the variety of plants and animals living in a particular place.</td>
<td>70% of the world’s plants and animals live in forests. Removal of their forest habitats is leading to rapid decline and even extinctions of species.</td>
</tr>
<tr>
<td>Flooding</td>
<td>An increase in the temperature of the Earth’s atmosphere.</td>
<td>Forests absorb and store great amounts of water quickly when there are heavy rains. When forests are cut down, this regulation of the flow of water is disrupted, which leads to alternating periods of flood and then drought in deforested areas.</td>
</tr>
<tr>
<td>Disruption to the water cycle</td>
<td>Changing the circulation of water that occurs naturally through evaporation and condensation.</td>
<td>Trees play an important part in the water cycle, holding water in their roots and releasing it into the atmosphere. In the Amazon, more than half the water in the ecosystem is held within the plants. Without the plants, the climate may become drier.</td>
</tr>
<tr>
<td>Disruption to local culture</td>
<td>Interfering with the customs of a particular group of people shown through language, religion, food, social habits, music and arts.</td>
<td>Many communities have for generations relied on forests to provide food, shelter, materials for cooking, clothing, even medicines. The forests and trees are often also deeply embedded in cultural practices and spiritual beliefs. When forests are removed forest dwellers are displaced which often leads to social and economic problems.</td>
</tr>
</tbody>
</table>
3.2.1 Worksheet: Detective Mission - Wooden Bingo

Walk around the school and find items to complete your bingo sheet. You can fill the final square with anything you like as long as it is something to do with wood!

Name ........................................ Class ........ Date ..................................

<table>
<thead>
<tr>
<th>A wooden object</th>
<th>A wooden musical instrument</th>
<th>Made from another part of a tree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made of wood – you can see the grain</td>
<td>Made of wood but covered by another material</td>
<td>Made of wood that has been pulped or shredded</td>
</tr>
<tr>
<td>Made of wood and other materials</td>
<td>Edible product from a tree</td>
<td>An unusual wooden object</td>
</tr>
</tbody>
</table>
3.2.2 Worksheet: Forest Stewardship - Looking After the World’s Forests

The Forest Stewardship Council awards a certificate to forests around the world which are well managed.

Here is the checklist they use before awarding the FSC label to forests and the products that come from them.

The forests and those who manage them must:

- Follow international rules and laws that aim to protect trees and forests
- Respect people who own and live on the land
- Respect forest workers and the communities they belong to
- Make sure everyone benefits equally from the forest
- Make sure that logging is done in a way which prevents damage to either the forest itself or the wider environment
- Make regular checks on the forest to make sure it is being well managed and protected
- Offer special protection to forests that are important wildlife habitats
- Replant trees to help preserve forests and replace trees cut down

The FSC label is shown above. Design your own label/logo below that could be used to show that wood or tree products come from well looked after and managed forests.
3.3.1 Worksheet: Palm Oil Detectives - Investigation Information Sheet

Just like all good criminals, palm oil comes in a number of clever disguises. So to help your investigations, here is a list of alternative names for palm oil.

### Food products
- Palmitate
- Palmate
- Palm Oil Kernel
- Sodium Laureth Sulphate (can also mean coconut oil)
- Sodium Lauryl Sulphates
- Sodium Dodecyl Sulphate (SDS or NaDS)
- ‘Vegetable Oil’ can and often does mean palm oil...

### Cosmetics and detergents
- Elaeis Guineensis
- Glyceryl Stearate
- Stearic Acid

### Chemicals containing palm oil
- Steareth - 2
- Steareth - 20
- Sodium Lauryl Sulphate
- Sodium Lauryl Sulfoacetate (coconut and/or palm)
- Hydrated Palm Glycerides
- Sodium Isostearoyl Lactylaye
- Cetyl Palmitate
- Octyl Palmitate

And a word of warning sleuths: anything with ‘Palmitate’ at the end has palm oil in it!
3.3.2 Worksheet: Palm Oil Detectives Recording Sheet

<table>
<thead>
<tr>
<th>Product</th>
<th>Does it contain palm oil? Name given for palm oil</th>
<th>Name the country of origin of palm oil used in the product</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
### 3.4 Worksheet: Developing a Forest Friendly School

The table below identifies some ideas for ways in which forests and trees can be protected. Can you think of any other ways? Think of some actions to go with each which will help create a Forest Friendly School. Some ideas are suggested, just to get you started!

<table>
<thead>
<tr>
<th>Ways of protecting forests</th>
<th>Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use the ‘5 Rs’ to reduce demand for wood and paper: reduce, reuse, repair, recycle, refuse.</td>
<td>• Make sure both sides of paper are used before it is recycled.</td>
</tr>
<tr>
<td>Buy recycled and/or FSC certified wood and paper.</td>
<td></td>
</tr>
<tr>
<td>Avoiding products containing palm oil; buying products which use RSPO certified palm oil.</td>
<td>• Ask school caterers/canteen if they know which products used for school lunches contain palm oil. Can they switch to alternatives or to products containing RSPO?</td>
</tr>
<tr>
<td>Eating less red meat, particularly imported meat.</td>
<td></td>
</tr>
<tr>
<td>Reduce the use of fossil fuels (coal, oil and gas) in heating, electricity, transport.</td>
<td>• Walk or cycle to school • Make sure lights are switched off when not needed</td>
</tr>
</tbody>
</table>

---

1. Much of the land used for beef cattle, especially in South America, is land that has been converted from forest to pasture land.

2. Fossil fuels are often extracted from rainforests which can cause a lot of damage. Burning fossil fuels contributes to climate change - something that is bad for people, bad for the planet and bad for forests.
Appendix 1: Citizenship Links

Although citizenship is now a non-statutory subject the Tree Power programme lends itself well to active citizenship. The learning objectives contained in the non-statutory curriculum apply across the Tree Power sessions.

Another useful link is the Oxfam Curriculum for Global Citizenship: www.oxfam.org.uk/education/global-citizenship/global-citizenship-guides

Non-statutory Curriculum Links

Developing confidence and responsibility and making the most of their abilities

Pupils should be taught:

• to talk and write about their opinions, and explain their views, on issues that affect themselves and society

Preparing to play an active role as citizens

Pupils should be taught:

• to research, discuss and debate topical issues, problems and events
• why and how rules and laws are made and enforced and why different rules are needed in different situations and how to take part in making and changing rules
• that there are different kinds of responsibilities, rights and duties at home, at school and in the community, and that these can sometimes conflict with each other
• that resources can be allocated in different ways and that these economic choices affect individuals, communities and the sustainability of the environment

Developing good relationships and respecting the differences between people

Pupils should be taught:

• that their actions affect themselves and others, to care about other people’s feelings and to try to see things from their points of view
• to think about the lives of people living in other places and times, and people with different values and customs
Appendices

Appendix 2: Tree Power and Philosophy for Children (P4C)

This is a very quick guide to a deep and effective process, which aims to help pupils develop thinking, reasoning and participative skills through a ‘community of enquiry’ approach. We highly recommend attending training to further your knowledge and skills.

What is P4C?

P4C is about getting young people to think and communicate well, and encourage ‘reasonableness’, through focussing on developing ‘thinking skills.’ It draws its inspiration from the approach of the Greek philosopher Socrates, who used dialogue as a way of getting to deeper understanding or wisdom.

In P4C, the teacher facilitates a student-led discussion on a philosophical question, using a simple but effective methodology. The principles are:

- Caring Thinking
- Collaborative Thinking
- Critical Thinking
- Creative Thinking

Philosophical questions (as defined in P4C)

- are open to examination, further questioning and enquiry
- can’t be answered by appealing only to scientific investigation or sense experience
- are questions about meaning, truth, value, knowledge and reality

It’s important to explain these key principles to your students before you begin an enquiry

Methodology

The chairs should be arranged in a circle so everyone can make eye contact. Guidelines need to be written and agreed upon in order to ensure the community of enquiry is collaborative and caring. Then the following process starts:

- Getting Set - a warm up to engage all participants to listen and concentrate.
- Presentation of Stimulus - the teacher or a pupil shares a stimulus. This can be a story, a film, an object, a tree ... or anything that introduces pupils to an issue or theme
- Thinking Time - pupils reflect on their personal responses
- Question-Making - children share their thoughts in pairs and construct a question
- Questions - Airing - teacher/children read out their questions and pupils clarify as needed
- Questions - Choosing - pupils vote to discuss one of the questions
- First Thoughts - pupils record their initial thoughts to the question. The people who formulated the question then start off the discussion

It’s fantastic in such a crammed curriculum to have a space for child led learning

Deputy Head, Westend Primary School, Leeds.
Building - pupils are encouraged to listen, consider different points of view and build on the discussion. The teacher’s role is to act as a facilitator

Last Thoughts - pupils record their final thoughts to the question

Review - pupils are invited to review the process. Where was the community of enquiry strong? How can the community be better? Did we listen to each other? Give good reasons? Challenge another viewpoint?

What is the Value of P4C?

P4C builds higher order thinking, questioning, speaking and listening skills. It enables pupils to ask and discuss BIG questions such as “What kind of person do I want to be?”, “What kind of world do I want to live in?”. Reports have shown how it increases reading, writing and maths skills, in addition to confidence and emotional literacy. To learn more about the value of P4C, read the Education Endowment Foundation’s full report here:

www.sapere.org.uk/AboutP4C/P4CImpact.aspx

How to use P4C with Tree Power

As Tree Power’s vision is a world where young people appreciate, value and act to sustain the vital role of trees... there are many P4C opportunities, including using the trees as the stimulus on your immersion trip to the wood. In the age of the screens and smart phones, the natural world, and trees in particular which are static and tall, can seem quite distant from the lives of many young people (most of whom live in urban environments).

Setting up a dialogue about an aspect of trees or nature can help children bridge the gap between our lives and the natural world of which we are a part, and on which we depend. It can help students make sense of the value of trees to our lives, because they are going through the process of thinking this through both individually and collectively. There are many different aspects of trees and forests which can form the basis of an enquiry to explore ideas about interdependency, and the meaning of ‘care’ and ‘respect’ in connection with humans relationship to the ‘natural world’. This may enable students to go beyond a token recognition to a deeper appreciation of trees.

Leeds DEC has used P4C methodology in its Tree Power teacher training. After reading the Wangari’s Trees of Peace story, teachers were given time to reflect before pairing up to create a philosophical question. They generated questions such as “What can we learn from Wangari?”, “How can we make a difference?” and, “Can planting trees change the world?”. These questions show how P4C methodology can create learner led reflection and a deep, personal connection to the stimulus. Other stories that can be used to explore trees include Handa’s Surprise by Eileen Browne and This is the Tree: A Story of the Baobab by Miriam Moss.

Further Information and Training

There is a lot more to learn about P4C methodology and practice so we recommend you follow the links below. P4C accredited training is run by a range of trainers across the UK via SAPERE (Society for Advancing Philosophical Enquiry and Reflection) www.sapere.org.uk

Many local Development Education Centres can offer training and support on P4C and global learning/ sustainable development delivery https://globalclassrooms.org.uk/where-are-we
Appendices

Appendix 3: Woodland Visit Checklist

Here is a picture of a happy class on a field trip to the woods. If your school is not yet lucky enough to be part of a more regular scheme of outdoor learning (e.g. Forest Schools), we hope this will give you some helpful pointers to make a woodland visit a reality.

Two or more months away

- **Locate** a local woodland, e.g. using www.woodlandtrust.org.uk/visiting-woods/map/, or linking up with a local outdoor/environmental education provider or charity (e.g. Wilderness Wood in Sussex, local Wildlife Trust or Woodland Trust branches).

- **Visit** the location and carry out an initial risk assessment involving at least one other colleague. Plan a route through the area identifying where you will have space to stop and circle up the class. Be aware that the environment you see now may well change in the intervening weeks. What seems like a good clear space for a game or to eat lunch may turn into a sea of nettles by the time of the visit.

- **Select** a date and book minibuses or other form of transport.

One month away

- **Announce** visit. This could be done in assembly, or using a surprise/mystery element, e.g. the delivery of a letter or a parcel containing some “clues”, or displaying a map (e.g. rendered more interesting by stylising it as an old treasure map). See suggestions summarised in the Woodland Trust Scotland (2012) publication below, inspired by the ‘Earth Education’ system.

- **Recruit** parent helpers / chaperones (check school’s required ratio for trips).

- **Send letter** to parents. Include a list of equipment for children and helpers.

- **Plan and prepare** activities and equipment and a detailed written outline of the day. Have extra activities on standby in case it is not possible to do one of the planned activities or it all takes less time than anticipated. Prepare a small briefing for helpers, including plan of the day, everyone’s phone numbers and emergency procedures. Finalise risk assessment.

The best classroom and the richest cupboard is roofed only by the sky
Margaret McMillan

Photo: International Tree Foundation
• Involve children in finalising the planning for the day.

**One week away**

• Meet with parents and other helpers to outline the day and activities.

**The day before**

• Remind children about equipment to take, and do a final check of your own.

**On the day**

• Complete last minute hazard tick list (see example in Woodland Trust Scotland 2012). Brief children and teachers, and enjoy the woods!

**Practical Points**

• Children must be adequately supervised at all times.

• Set and agree your behaviour expectations for the trip.

• Identify a system for calling children back immediately, e.g. three blows on a whistle.

• Appropriate warm and waterproof clothing is essential, with wellies in wet weather and hats in cold weather. Long trousers are best, even in the hottest weather, to avoid nettle stings and tick bites. **Crocs are not suitable** shoes to wear in woodland. They don’t stay on the feet if the wearer runs or trips which could result in them stepping on a sharp object.

• Fresh air makes children hungry! It is essential that children have a good breakfast before the trip in order to help their concentration, and a mid-morning snack.

• Collect material in moderation, such as tree leaves and pieces of wood, but check if any restrictions apply to your particular site.

• Brief the children and adults about meeting points and procedures if they get lost.

• Toilets: Ensure children are prepared; that they know how long they will be out and that there will be NO TOILETS (just bushes - ensure these are away from water and working areas).

• Be aware of any relevant medical information - i.e. tree nut allergies, hay-fever etc.

• Take a rucksack with: First aid kit, water, mobile phone (check signal), emergency contact numbers (including all adult helpers’ mobile numbers in case groups separate), risk assessment and hazard tick list.

• Know where you have good signal coverage on site and where emergency vehicle access points are (including street name or grid ref). If you use 112 instead of 999 to summon the emergency services, it automatically locates your position by GPS so you can be found even if you don’t know exactly where you are.

(Sources: Woodland Trust Scotland 2012, Wilderness Woods 2012. With special thanks to the Sussex Wildlife Trust for contributing additional practical pointers)
Appendices

Appendix 4: Deforestation - Its Causes and Effects

The Importance of Forests

There are an estimated three trillion trees on Earth. This is estimated to be less than half of what existed before humans started cutting them down.

Forests cover one third of the Earth’s land mass, and are the most biologically-diverse ecosystems on land, home to more than half of the terrestrial species of animals, plants and insects. We all rely on forests, directly or indirectly, knowingly or unknowingly. For those 1.6 billion people living in or near to forests, they are veritable life support systems, providing food, medicines and construction materials, as well as shade, shelter, and spiritual and cultural sustenance. They provide soil and watershed protection and have immense economic value thanks to the numerous products which can be extracted from them, from timber to medicines.

Trees and Forests

Contrary to popular perception, trees and forests are not synonymous as trees alone do not make up forests, and trees are not found only in forests. Trees outside forests however are also of huge value to both the environment and people’s quality of life. They also supply many products (including wood for fuel and construction, fruits, barks and food products) and services, such as wildlife habitats and microclimate stabilisation. They protect crops and the soil against water and wind erosion, thus combating drought and desertification and protecting water resources, and often have important social and spiritual significance. In rural and semi-urban areas they provide sources of income, and in cities they regulate temperatures and the climate and provide much needed shade and amenity.

Forests and Climate

Forests also play a vital role in regulating local climatic conditions, triggering the rainfall that feeds into our streams and rivers (Global Forest Coalition, 2013). All forests play a crucial role in climate regulation and constitute one of the major carbon sinks on earth, with their survival being crucial to preventing the intensification of the greenhouse effect (World Rainforest Movement, 2013). The world’s largest forests in the Amazon and the Congo River basins in particular play a vital role in determining global weather patterns (Global Forest Coalition, 2013).

The Scale of Deforestation

Yet despite all of these priceless ecological, economic, social and health benefits, we are destroying the very forests we need to survive. Global deforestation continues at an alarming rate - 15 billion trees and 13 million hectares of forest are destroyed annually. This is equivalent to an area the size of 50 football pitches every minute. The world’s rainforests could completely vanish in one hundred years at the current rate of deforestation. Deforestation accounts for between 12% and 17% of annual global greenhouse gas emissions that contribute to climate change (World Resources Institute).

A number of commitments have been made to end deforestation by 2020 by the world’s governments in both the Sustainable Development Goals and the Paris Climate Agreement. However, there is little sign that this target will be achieved.

Causes of Deforestation

Over two thirds of tropical deforestation is driven by the production of a handful of commodities including; palm oil, soya, timber, paper and pulp, beef, and leather. These commodities are in products we use every day and are present in more than 50% of the packaged products in our supermarkets.
This makes us all part of a deforestation economy that is responsible for a tenth of global carbon emissions, harms water systems, and undermines livelihoods. (Global Canopy Programme, 2016)

Large-scale industrial agriculture is the main driver of deforestation and forest degradation in the tropics and sub-tropics, accounting for 40% of deforestation. The biggest component of this is for animal agriculture or livestock production. Other key components are palm oil and soy production. Local subsistence agriculture accounts for a further 33% of deforestation in the tropics and sub-tropics. Clearing forests for mining, urban expansion and infrastructure development account for 27% of

These pictures illustrate deforestation in central Africa. The second largest rainforest in the world sits in the Congo basin of Africa. The expansion of logging in this and other regions is destroying globally critical carbon reserves and impacting biodiversity. Beyond environmental impacts, logging in the region exacerbates poverty and leads to social conflicts.
deforestation in these regions. (FAO, State of the World’s Forests, 2016)
An estimated 70% of forest degradation is caused by timber extraction and logging operations.
(Global Forest Coalition, 2013)

An increasing number of companies, financial institutions, and governments are acknowledging
their role in the deforestation economy and have begun to make public commitments to prevent
deforestation in agricultural supply chains. In September 2014, members of governments, companies,
indigenous communities and civil society met to sign the New York Declaration on Forests, committing
to support the goal to remove deforestation from agricultural production by 2020. However, while these
leaders have acknowledged the reputational, legislative and operational risks posed by deforestation,
many have yet to act to ensure the commodities they produce or procure do not contribute to further
loss of tropical forests. (Global Canopy Programme, 2016).

Effects of Deforestation

Forests are complex ecosystems that are important to the carbon and water cycles that sustain life on
Earth. When they are degraded, this can set off a devastating chain of events both locally and around
the world.

Loss of Species: 70% of the world’s plants and animals live in forests and are losing their habitats to
deforestation. Loss of habitat can lead to species extinction. This is not only a biodiversity tragedy but
also has negative consequences for medicinal research and local populations who rely on the animals
and plants in the forests for food and medicine.

Carbon Emissions: Healthy forests help absorb greenhouse gasses and carbon emissions that are
caused by human civilization and contribute to global climate change. Without trees, more carbon
and greenhouse gasses enter the atmosphere. To make matters worse, trees actually become carbon
sources when they are cut, burned, or otherwise removed. ‘Tropical forests hold more than 210
gigatons of carbon, and deforestation represents around 15 percent of greenhouse gas emissions,’
according to the World Wildlife Fund (WWF).

Water Cycle: Trees play an important part in the water cycle, grounding the water in their roots and
releasing it into the atmosphere. In the Amazon, more than half the water in the ecosystem is held
within the plants. Without the plants, the climate may become drier.

Soil Erosion: Without tree roots to anchor the soil and with increased exposure to the sun, soil can dry
out, leading to problems like increased flooding and inability to farm. The WWF states that scientists
estimate that a third of the world's arable land has been lost as a result of deforestation since 1960. Cash
crops planted after clear cutting or burning - like soy, coffee, and palm oil - can actually exacerbate soil
erosion because their roots cannot hold onto the soil the way forest trees can.

Life Quality: Soil erosion can also lead to silt entering lakes, streams, and other water sources. This can
decrease local water quality, contributing to poor health in the local population.

All of these factors can have adverse effects on local economies. Increased flooding, poor water
quality and inability to produce sufficient food causes many local people to migrate to cities that lack
infrastructure for them. Or, they may work on plantations, worsening the deforestation problem and at
times being subjected to inhumane working conditions.
Appendices

Appendix 5: About Richard St. Barbe Baker

Richard St. Barbe Baker - forester, environmentalist and humanitarian - was born near Southampton in 1889 and died in 1982 in the city of Saskatoon, Saskatchewan in Canada. Richard St. Barbe Baker is considered to be one of the first people who was able to fully conceive and communicate the role that trees played in regulating Earth’s environment and he spent most of his life travelling the world to spread this message.

His life took in time on the prairie frontier of Canada as a lumberjack, farmer and student, university at Cambridge, serving in the trenches and training and transporting horses to France in the First World War, lobbying for the establishment of the Ministry of Health and setting up an early social enterprise for disabled ex-servicemen who built some of the first modern caravans. In 1920, he was appointed Assistant Conservator of Forests in Kenya and on 22nd July 1922 he organised the Dance of the Trees with 3,000 local Kikuyu warriors. This early innovation in social forestry created a voluntary tree planting movement to arrest the damage being done by colonial extraction and contemporary agricultural practices. The Dance of the Trees grew into Watu Wa Miti (People of the Trees) and became Men of the Trees when St. Barbe Baker returned to England in 1924.

The organisation spread across the UK and around the world, describing itself as wanting to plant and protect trees everywhere. He also helped to bring together religious leaders in Palestine in 1929 to devise a forestry plan for the country, contributed to the establishment of the Civilian Conservation Corps in the United States in the 1930s and launched a campaign to save the redwoods in California. Richard St. Barbe Baker bought a great deal of energy to the Men of the Trees, organising exhibitions, publishing the Trees journal, visiting groups around the country and organising innovative conferences which bought together the most recent thinking about organic agriculture and tree planting.

The reason that St. Barbe Baker’s work is still so significant is that it took place during a time of seismic political and social changes around the world during the 20th century. He saw the restoration of land as a moral and spiritual duty, as well as having deep practical applications in ensuring that people had a sustainable way of life, free from want and conflict. This was at odds with much of the prevailing wisdom at the time and so his most well-known proposal, the Green Front, had only begun to show signs of success at the end of his lifetime. It has now been adopted by the African Union as the Great Green Wall and is being actively implemented across the Sahel region.

Richard St. Barbe Baker was passionate about educating children about the importance of trees. In the 1950s he wrote two novels for children: Kabongo and Kamiti. In 1958 he rode around three counties in England on his white horse called The Ghost visiting schools to talk to an estimated 30,000 children.
He cofounded Children of the Green Earth, which aimed to join an enhanced awareness of nature with a sense of planetary responsibility. Their motto was:

From our hearts
With our hands
For the earth
All the world together

Richard St. Barbe Baker will always be known as ‘the Man of the Trees’. In Kenya, he was known as Baba Wya Miti, ‘the affectionate Father of the Trees’, also as Bwana Wya Miti, ‘the Master of the Trees’. In Australia, he was often referred to as ‘the King of the Trees’ and sometimes as ‘the Saint of the Trees’; in California, he has been called ‘the Redwood Saint’. (Edward Goldsmith, The Ecologist, 1982)
I Believe: Selections from the Creed
Richard St. Barbe Baker, 1950

I believe in the Oneness of Mankind and all living things and the interdependence of each and all. I believe that unless we play fair to the Earth we cannot exist …

I believe in the development of a fuller understanding of the true relationship between all forms of life in an endeavour to maintain a natural balance between minerals, vegetation, animals and mankind, man being primarily dependent on the vegetation of the Earth for both food and clothing …

I believe that water must be a basic consideration in all our natural and Earth-wide forest programs; streams and rivers must be restored to their natural motion, and floods and droughts must be eliminated. Forests and woodlands are intimately linked with biological, social and spiritual well-being …

I believe in the traditional ideal that our fields should be ‘fields of the woods’, by which is meant landscape farming of every valley and plain, with woodlands in high places, shelter belts, nut and fruit orchards (of mixed species) and hedgerow trees everywhere.

I believe that the ‘blossoming deserts’ foretold by the Prophets of Old is now being fulfilled by the steady reclamation of the deserts by tree planting …

I believe that this generation may either be the last to exist in any semblance of a civilized world, or it will be the first to have the vision, the daring and the greatness to say, “I will have nothing to do with the destruction of life; I will play no part in this devastation of the land; I am destined to live and work for peaceful construction for I am morally responsible for the world of today and the generations of tomorrow.” Let “TWAHAMWE”, “pull together”, be our motto …

I believe that God has lent us the Earth. It belongs as much to those who come after us as to us …

I believe … that I must be just to the Earth beneath my feet, to the neighbour by my side and to the Light that comes from above and within that this wonderful world of ours may be a little more beautiful and happy for my having lived in it.
Mr Richard St Barbe Baker, OBE, the founder of The Men of the Trees, died in Saskatoon, Saskatchewan, Canada, on June 9. He was 92.

He started the Society dedicated to the planting and protection of trees, in Kenya in 1922 when he was serving as a young forestry Officer. He was persuading the local tribesmen that the replacement of trees being felled for agricultural clearings, for fuel, and for timber was vital for their future survival; and he had already come to the conclusion now widely accepted, that it was the removal of tree cover which created deserts and contributed to the occurrence of dust-bowls. He could see the Sahara increasing in size year by year as a result of the indiscriminate slaughter of forests on its perimeter and he remembered the beginnings of the American dust-bowls which he had observed at Saskatchewan University.

The Society grew so rapidly and spread so far that by 1929 Baker resigned from the Forestry Service and devoted himself entirely to its aims; as its numbers increased so did its influences and over the years it was responsible for saving countless trees from needless destruction and for the planting of vast numbers of replacements when felling was necessary. Help and advice on preservation was given in cases of individual trees in private ownership, in cases of avenues threatened by local authorities and developers, over the threat to the trees in Cadogan Gardens and in the case of the California Redwoods. Planting ranged from the single amenity tree to the landscaping of new roads and housing estates and to large shelter belts.

Baker’s greatest ambition, the reclamation of the Sahara Desert, only latterly began to show results. In his active life time the achievements were small but the way ahead was charted and he was to see, for example at Bon Saada in Algeria, the proof that this mammoth task was possible.

Baker was born in 1889 at West End, near Southampton and his ancestors included two rectors of Botley and Samuel Baker, the famous explorer who helped to discover the source of the Nile. Destined for the church, he spent four years at Saskatchewan University and was reading Divinity at Cambridge when the 1914-18 War broke out. He was an accomplished horseman and at once joined King Edward’s Horse as a trooper and was later commissioned.

He served in France until 1918 when he was invalided out after being seriously wounded for the second time. He returned to Cambridge but now to take a Diploma in Forestry, financing himself meanwhile by building caravans from surplus RAF materials. In 1920, he was sent to Kenya by the Colonial Office as an assistant Forest Conservator.

From his early efforts to induce the local tribesmen to halt the insidious advance of the Sahara grew his determination to devote his life to persuading people and their governments of the absolute necessity of tree cover if man was to survive on this planet. From 1929 onwards he travelled all over the world in pursuit of this task, writing innumerable articles, pamphlets and scientific papers; lecturing to any available audience and interviewing ministers and heads of states.

He also published many books...
including an account of his epic journey across the Sahara and a history of the famous Redwoods of California.

Baker deserves to be remembered as one of the very first men to realise that we were destroying the natural resources of the world faster than was prudent; and that trees were not only providers of timber, pulp and fuel but were also manufacturers of life-giving oxygen from the waste products of man and his machines; and, perhaps even more importantly, inducers of rain when massed in sufficient numbers.

Baker had become converted to the Baha’i faith in 1922 and had latterly been active in the faith at conferences around the world. In particular he was special adviser to the Baha’i delegation at the UN conference in Nairobi in 1976 and had also attended other UN conferences.

He was made an Hon LLD of the University of Saskatchewan in 1971 and was appointed OBE in 1978.

Baker was twice married, firstly in 1946 to Doreen Whitworth. This marriage was dissolved in 1953 and he married, in 1959, Catriona Burnett. There were a son and a daughter of his first marriage.

Men of the Trees
Richard St. Barbe Baker, Canadian Forest and Outdoors magazine, November 1924

The performance of at least one good deed each day has long been part of the Boy Scouts’ code. It is an idea which has been applied in what may seem to be a strange manner to the conservation of forests in East Africa. A movement has been started which may have very far-reaching results, insofar as it is assisting to protect and perpetuate the forests ...

Ten Trees a Year
After long experience of lecturing tours, and the apparent lack of effect on the African public, I thought of adapting the inspired principle of the Boy Scout system to prevent deforestation and to get trees planted, so as to perpetuate the forests. Having explained the idea to the Chiefs and Elders of the tribes, and given time for discussion, I called for volunteers, for men amongst them who would promise before N’gai to plant ten trees each year and take care of trees everywhere. Three thousand warriors came to my camp, and from these, with the assistance of the Chiefs, I selected 50 for the trial effort. All the Chiefs were initiated as Forest Guides – the equivalent of Scoutmasters – and after this first batch of 50 volunteers, the ranks were closed, and only those who were individually recommended by the Chiefs were accepted.

Initiation Ceremony
By degrees an initiation ceremony came into being ... and every would-be member is duly received at a Court of Forest Scouts to which no stranger is admitted. At an early stage in the initiation ceremony the candidates have impressed upon them the seriousness of making promises lightly which they may be unable to fulfil; and it has often been found at this stage that candidates will waver and fall out. Those who continue in their desire to become members repeat solemnly the three-fold promise: “I promise before N’gai to do at least one good deed a day, to plant ten trees a year, and take care of trees everywhere,” after which the badge of membership is tied on the left wrist. Their attention is thereupon
drawn to the colours of the organization. They are green and they are white; green to remind members of their obligation to plant trees, and white because every member’s heart must be “safi”, meaning clean. If any member has an unfulfilled obligation, he cannot be said to have a “safi” heart. At this stage, the Forest Guides are instructed to hand over to the candidates the secret sign and password. The sign is a particular handshake, indicating the three-fold promise, and the password ... means “We are one”. It is of interest to note the solemnity with which the secret sign and password is given and received.

The Daily Good Deed
At first the good deed a day idea was not readily understood by them, and often in the evening a number of the Forest Scouts would come to the house of their Chief [and ask], “We have come to ask you to help us to think of a good deed. In two hours, the sun will go down and so far, we have been unable to think of anything to do. Can you help us?” They were so keen on doing something to help that a Forest Nursery was started nearby, in which members would be asked to plant out 50 young trees, which was allowed to count as a good deed. At the same time, it was impressed upon them that this was not necessarily the best kind of good deed to do, but they must search their own hearts and find other things to do. Since those early days reports have come in from all sides which show that they have grown to understand, and often daring deeds to save both life and property have been accomplished in their efforts to fulfil their obligations.

Watu Wa Miti
The Forest Scouts are locally known as the Watu wa Miti, or the Men of the Trees, because of their association with tree planting. The organization in the tribe is known as The Forest. The Forest is divided into districts, each district being named after the dominant species of tree growing in that district. This is again sub-divided into branches, over which the Forest Guides are the rulers. Hence, we have the Forest, the Trees and the Branches. The organization is democratic in its inception, for although Chiefs were originally appointed as Forest Guides, any member in the rank who has made good by introducing 100 members who have proved themselves, is eligible for election to this high post.

There is a wonderful esprit de corps in the organization, and much inter-tribal suspicion is vanishing as the result of the exchange of hospitality amongst members of this brotherhood, who have all taken the same promises, and all wear the same badge of membership and possess the same secret sign and password. The very fact that it is difficult to join the ranks of the Forest Scouts lends an impetus to the movement. It is quite natural that candidates in the first instance may be influenced to join by the fact that the members possess something that they have not got. When, however, they come within the Brotherhood they soon enter into the spirit of the movement and cannot help being influenced by the high ideas that are always kept before them.
Trees and Life

Reprinted from the Information Kit published as part of the “For Every Child a Tree” project of the United Nations Environment Program, administered in Canada by National Survival Institute. Published in Toronto, Spring, 1983. Editor Hugh Locke

Richard St. Barbe Baker makes the connection between trees and the functions they perform – vital functions that make them essential for life on earth (his words in bold).

1. Oxygen

The first thing we get from the forest is oxygen ... it requires 16 acres of forest to supply every citizen of Canada with sufficient oxygen to breathe.

Oxygen is an important by-product of trees. One acre of a healthy, young forest releases four tons of oxygen a year. The leaves and needles of trees absorb air and by photosynthesis, use the carbon dioxide and release life-giving oxygen.

2. Water

We live less than five days without water, and trees supply the water that we drink. They are absolutely essential in the water cycle.

For example, about 90 percent of the water for the Canadian prairies comes from the natural Rocky Mountain watersheds on the mountains’ wooded east slopes. Watersheds are great natural catch basins. Trees and ground vegetation prevent quick runoff and soil erosion by trapping rain and snow. This moisture filters into the ground where it percolates downward, purifying itself, picking up minerals and eventually becomes stream flow.

3. Food

Trees provide us with much of the food we eat.

4. Preventing Erosion

The next in order of importance is prevention of accelerated erosion ...

Trees can do this by protecting the soil from rain and wind, reducing soil erosion to a minimum. Soils tend to be swept away, especially in the rainy season, if there is no vegetation or tree cover. The canopy of trees shelters the ground from the impact of heavy downpours.
5. Effect on Climate

The next thing is climatic ...

The leaves and roots of trees help to retain moisture for much longer periods than bare soil, so preserving the humidity in the surrounding atmosphere. As well, in sunny weather the leaves on one square mile of deciduous trees (with broad leaves), may evaporate up to 77 thousand gallons of water a day into the air. This is the process known as transpiration. Trees reduce wind speed and modify temperature. Scientists believe that excessive clearance of rain forests may affects climates on a global scale.

6. Protection of Wildlife

... and the next thing is to protect wildlife.

When forests are cut down, plant and animal habitat is destroyed and species may become extinct. There are many thousands of species that have not yet been investigated for possible food or medicinal value, and by destroying any species we may be eliminating the source of a cure for a serious disease. At present, there are an estimated 3 to 10 million species of plants and wildlife in the world. It has been estimated that between half a million and a million species will have been made extinct by the end of the century.

7. Timber

Then comes lumber, timber. It comes way down there.
Appendices

Appendix 6: Further References and Resources

Educational Resources

**Million Trees NYC** wants every New Yorker to learn about how trees fit into our urban environment, and how they provide tremendous benefits to our minds and bodies. The site provides links to tree based lesson plans and activities www.milliontreesnyc.org/html/programs/toolkit.shtml

**Twinkl Tropical Rainforest World Map Reference Sheet**
www.twinkl.co.uk/resource/t2-g-022-tropical-rainforests-world-map

**Natural History Museum: Urban Tree Survey (KS2)**. Learners discuss different types of trees and their leaves before using a leaf chart to survey trees in their school grounds or local park. Back in the classroom they can upload their results to the Natural History Museum website and make a poster showing their work. www.nhm.ac.uk/education/online-resources/urban-tree-survey/

**Rainforest Foundation Education Pack**
www.rainforestfoundationuk.org/rainforest-foundation-uk-publications/school-publications

**Rainforest Maths**
www.tes.co.uk/teaching-resource/Rainforest-Halving-6135213/

**Times Education Supplement resources on palm oil**
www.tes.co.uk/teaching-resource/Palm-Oil-Production-6164424/

**The Woodland Trust** has a wide range of materials and activities to help teach children about nature, woods and trees www.woodlandtrust.org.uk/en/about-us/faqs/children-learning/Pages/faqs.aspx

**Timber Trumps**: A card game that teaches you about the forest and timber industry http://classroom.materials.ac.uk/timTrump.php


**WWF and Earth Restoration Service Teaching Pack**

**Fruit-full Communities Environmental Resource Pack**

Further Research

**Allianz, Top Ten Drivers of Deforestation**

**Estyn, Outdoor Learning: An Evaluation of Learning in the Outdoors for Children under Five September 2011**

**Food and Agriculture Organization of the United Nations, State of the World’s Forests 2016**
www.fao.org/3/a-i5588e.pdf
Appendices


Global Forest Coalition, blog articles on the causes and effects of deforestation  www.globalforestcoalition.org/resources/underlying-causes-of-forest-loss/

Greenpeace, articles on orangutans  www.greenpeace.org.uk/tag/orangutans/


Paignton Zoo: campaign for sustainable palm oil  www.paigntonzoo.org.uk/conservation/conservation-campaigns/palm-oil

Say No to Palm Oil list of products containing palm oil  www.saynotopalmoil.com/palm-oil.php - Avoid and Detect


World Rainforest Movement: various articles on the causes of deforestation  www.wrm.org.uy/browse-by-subject/deforestation/

World Resources Institute, blog article on deforestation and climate change  www.wri.org/blog/2010/04/us-forests-redd-begins-home

Reference Books


Harriman, H., The Outdoor Classroom: A Place to Learn, Red Robin Books, 2008

Louv, R., Last Child in the Woods: Saving Our Children from Nature Deficit Disorder, Atlantic Books, 2009


Van Martre, S., Earth Education: A New Beginning, Institute of Earth Education, 1990

Children’s Fiction Books


Cherry, L., The Great Kapok Tree, Frank Schaffer Publications, 2000


Reed-Jones, C., The Tree in the Ancient Forest, Dawn Publications, 2000

Organisations

Forest Education Network (successor to the Forest Education Initiative) is hosted by the Council for Learning Outside the Classroom  www.lotc.org.uk/fen/
**Forest Schools** is an inspirational scheme that offers children, young people and adults regular opportunities to achieve and develop confidence through hands-on learning in a woodland environment. There are around 4000 forest schools in the UK. The new independent Forest School Association was launched in July 2012. www.forestschoolassociation.org/

**Teaching Trees** was conceived and developed by the Yorkshire Division of The Royal Forestry Society. Its aim is to encourage teachers to bring children of all ages into managed woods. www.teachingtrees.org.uk/

**Wildlife Trust** - local branches have education officers supporting schools  www.wildlifetrusts.org
A world where trees and forests flourish and where their vital role in supporting life on Earth is fully realised and valued.

International Tree Foundation