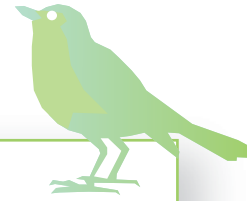


WINTER WARMERS

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INTRODUCTION

Year's end

Provided it is not flooded, it is still possible to explore Holt Island in the winter. It is a good site to compare between the seasons as the trees are deciduous and you can easily see the shapes of the branches, and see how different species have different forms. Look hard and the children might spot groups of ladybirds huddled together for warmth as they hibernate.

In the mud or even in the snow there might also be some tracks to spot – look out for Muntjac deer prints with the two cloven hoof marks, and the wandering patterns of Wood Pigeon feet. A pile of feathers might indicate that a Fox or a Sparrowhawk has eaten a bird. Here are some other signs for the children to search for in the winter months.

If snow is forecast, place a metal tray in the freezer beforehand. Once it starts to snow, put a thin black cloth on the tray and place it on the ground to catch a few flakes. Working quickly and using a magnifying glass, look at the shapes and patterns of the snowflakes. No two will be alike.

DECEMBER

Robin

A splash of colour in the winter with the red breast being very apparent. **SG p8**

Wren

A small russet-brown bird with an upturned tail, Wrens eat insects and spiders from the ground. **SG p8**

Nests

Easier to see now, look at the differences. Goldfinch looks like a mossy cup, Blackbird like a saucer-shaped, twiggy spaceship.

JANUARY and FEBRUARY

Ash

Distinctive black buds, inconspicuous red flowers. Look for hard, black fungus balls, known as King Alfred's cakes, on the branches. **SG p15**

Varicoloured bracket fungus

Lives on dead wood which it helps to rot. As its name suggests it is very colourful and usually stripy. See *Trametes versicolor*. **SG p15**

Pill Wood Louse

Found in damp places, feeding on rotting timber. If disturbed it rolls into a tight ball for protection.

Pheasant

More easily seen at this time of year. It will search deep in the soggy leaves for worms, beetles and buried seeds. **SG p11**

RESOURCES

www.rspb.org has some simple designs and explains how to choose good sites to be sure of attracting the birds.

WOODLAND ROLE PLAY

This is a whole class activity, and will be best undertaken after a visit to Holt Island, once the value of woodland for minibeasts, for example, has been discussed. This knowledge will build on the pupils' own experiences of having trees in their gardens, near to homes or at school.

The scenario to set is as follows. Imagine there is a large piece of land, half of which currently has mature trees, under storey and good range of wildlife, and the rest is a popular grassy playing field. The owners do not know what to do with it, and are looking for help to make up their minds. Suggest to the children that a few of them might be the puzzled owners who have to make up their minds. They will need to ask themselves questions to clarify certain points.

Opposite is a list of reasons that might either justify planting more trees, or encourage the removal of the existing trees. You might mention that on a larger scale this could be comparable to the destruction of rain forests in other parts of the world. Print off the list of statements from the CD-ROM in advance, and cut them out.

Share them around the children. Allow them time to think about their own statement, and ask them to form two major groups, one to argue the need for planting more trees, and the other to insist that trees should be felled. The children may need time to access research material to be able to find facts to back up the statements, or this part of the project could perhaps be set as homework.

Ask each child to first read out their statement and then explain a fact that supports it (they can work in pairs if required).

Each statement requires a 'role': for example a 'doctor' would be best to speak on behalf of the medicinal ingredients, like aspirin being found in willow, or horse chestnut leaves being rubbed to give 'soap'. A 'farmer', on the other hand, would be concerned to have more land for more crops.

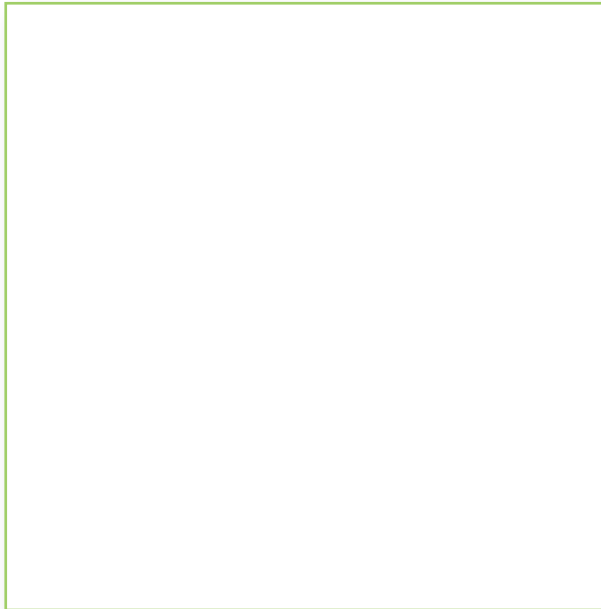
Allow time to hear all the opinions and for the 'land owners' to make up their minds. The land owners may need to make some notes for discussion before making their decision.

The statements

- Trees provide fruit
- Removing trees provides more land for crops
- Trees prevent soil erosion
- Removing trees increases risk of flooding
- Trees make ploughing difficult
- Trees provide food for animals
- Removing trees allows light into buildings
- Trees are useful for furniture making
- Trees provide oxygen for breathing
- Trees lower carbon dioxide in the air
- Removing trees makes space for roads and houses
- Trees are great for burning in my log burner
- Trees provide some medicinal ingredients
- Trees provide shelter for large mammals
- Trees provide habitat for birds and insects
- Dead leaves provide nutrients for the soil
- Tree roots can damage underground water pipes
- Community space enables the fair to park twice a year
- Trees improve air quality by filtering out harmful pollutants
- Open space is important for children to play sport
- Trees grow tall and get in the way of overhead electricity cables
- Trees provide shelter from the sun.

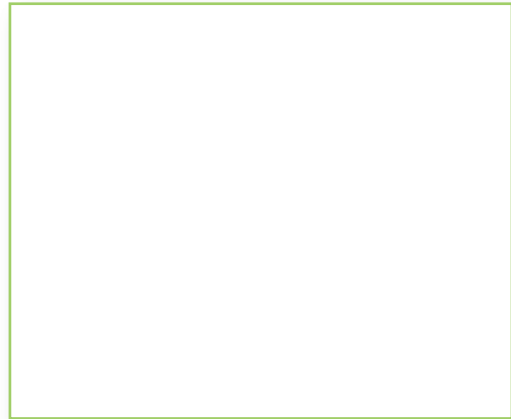
THIS IS MY TREE!


My name is Date



 My tree looks like this

This is a bark rubbing 



The flowers/seeds/fruit look like this 



The leaves look like this



I found a minibeast/bird in/under my tree.

 It looks like this

The bark feels

✓ Tick the boxes:

- rough
- smooth
- knobbly
- furry
- prickly
- sticky
- dry

My tree is a

BUILD A TREE GAME

AIM

To 'Build a tree' using the children to act out the roles of each part of a tree to ensure photosynthesis can occur and bring a tree to life.

Time needed

15 minutes

Age group

5 years

Location

Indoors or outdoors

What you will need

About 25 children, some with long hair!

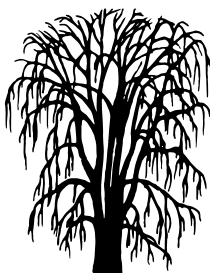
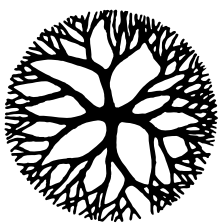
Safety first

If outdoors, find an open space for the game rather than under a tree.

This game demonstrates the different parts of a tree and their purpose. A group of children is used to make one tree – with sound effects too! Judge how many people you want for each layer according to how many are in the group.

- Choose some tall pupils for the **HEARTWOOD** and stand them back to back.
They say loudly, 'Standing Tall and Strong!' Make them practice!
- Choose some children to stand and hold hands in a circle around the heartwood facing in. They are the **XYLEM**, the cells which take water up from the roots to the leaves.
They say, 'Whoosh!' and swing their arms up.
- Choose some children to make another circle standing around the xylem ring. They are the **PHLOEM**, the cells which brings food down from the leaves to the roots.
They hold their hands high and wave them downwards saying, 'Whoooooah!'
- The remaining children can make a circle standing around the phloem ring, with their backs to the phloem. They are the **BARK**.
When an adult says, 'Get tough bark'. They say, 'Grrrr' and use hands to box the air!
- Choose some boys and girls for **TAPROOTS** and sit them down with their backs to the bark with their legs out. They anchor the tree.
They say, 'Holding fast!'
- Some girls with long hair can lie down with their feet against the taproots and their hair out like lots of roots. They are the lateral roots and suck water in from the soil.
They make sucking noises!

When everyone knows what they are, have a practice with everyone doing 'their thing' in turn. It should be a noisy tree!



THE STRUCTURE OF TREES

Introduce the idea to children that trees can be thought of to resemble houses!



AGE The foundations were laid many years ago and the tree has been growing ever since

ROOTS provide the firm foundations

BARK makes good thick walls to protect the inside of the tree

LENTICELS Tiny slits in the bark provide air conditioning, letting air in and out

BRANCHES provide attractive old-style timber structure for the upper rooms

TWIGS make stairs for smaller residents to climb and **BUDS** make upward extensions, providing new rooms each year

BUDS and **NEW LEAVES** provide free meals for residents and visitors

LEAVES furnish rooms with meals for smaller residents such as Leaf Miner beetles

CROWN offers spacious roof-top balconies with excellent views

FLOWERS and **SEEDS** can provide meals for visiting bees and butterflies

ACORNS can feed Grey Squirrels and Jays

ENVIRONMENTALLY FRIENDLY Leaves produce oxygen and reduce the amount of carbon dioxide in the air

SOUND SYSTEM is built in, making gentle wind-rustling noises or bird song

FREE DECORATION occurs four times a year when new colour schemes appear. These can range from greens in summer to browns, oranges and yellows in autumn

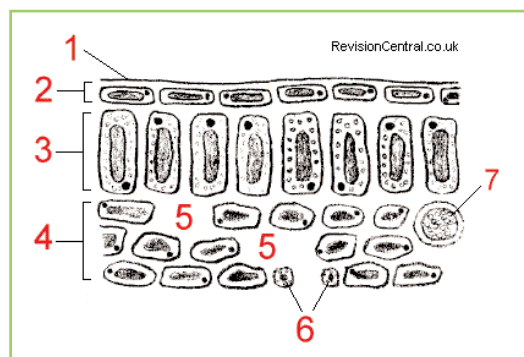


LEAF TALK

Ask the children to each collect a 'beautiful' leaf.

Gather together in a circle and hold their leaves up to the light (make sure the children do NOT look directly at the sun.)

Point out the veins and leaf structure. Use this diagram to describe the different cells and their functions.



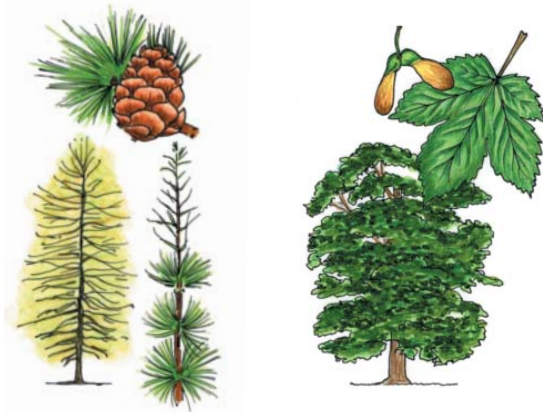
- 1. Waxy cuticle** Forms a waterproof layer to stop any loss of water.
- 2. Upper epidermis** Consists of epidermal cells with no chloroplasts, parts that contain chlorophyll.
- 3. Palisade cells** Contain lots of chloroplasts where photosynthesis is carried out.
- 4. Spongy mesophyll** Layer of tissue with air spaces.
- 5. Air spaces** Allow for diffusion of water vapour.
- 6. Guard cells** These form pores (stomata) which allow for the diffusion of the gases oxygen and carbon dioxide in and out of the plant.
- 7. Leaf veins** Contain xylem and phloem tubes made up of cells that form the plant's transport system and carry water, minerals and nutrients.



THE STRUCTURE OF TREES continued

How does a tree grow?

Trees grow **UPWARDS** and **OUTWARDS** above the ground and **DOWNWARDS** and **OUTWARDS** below the ground. They grow upwards at the tip of each twig and outwards in the cambium layer where the cells split and divide, pushing the bark outwards. It eventually splits, falls off and is replaced.



The inward growth of the cambium forms the main part of the trunk and the tree's

TRANSPORT SYSTEM. This is called the xylem layer which is made up of tiny tubes which carry water and minerals from the roots up the trunk and branches to the leaves. The leaves need water to make food (sugars) from sunlight, and the outward growth is made by the layer of phloem tubes that transport the sugars from the leaves to the rest of the tree. If the phloem is damaged, the rest of the tree will die.

ROOT HAIRS take in moisture and minerals and feed into the roots of the tree. **LEAVES** provide animals and insects with food. Leaves turn sunlight into food energy and make the oxygen for us to breathe.

Leaves are like miniature food factories. They trap the sunlight then mix the chlorophyll inside with water and carbon dioxide to make sugars which provide energy in a process called **PHOTOSYNTHESIS**. Once the food is made, it is carried through veins to other parts of the leaf. The leaf is strong because the veins are like a skeleton.

Trees lose water through **STOMATA**, holes in the underside of leaves. In the winter the ground may be too hard to take in water, and if the trees then kept losing water, they would dehydrate and die. Instead, a tree chooses to lose its leaves and therefore keep the water it has absorbed. The trees that shed their leaves are called **DECIDUOUS** trees. A needle leaf can stay on a **CONIFEROUS** tree for three or four years. It works in the same way as a leaf from a deciduous tree but does not lose water because the surface area is so much smaller.

RESOURCES

www.treeforall.org.uk has some good follow-up ideas for numeracy work, considering how many leaves are on a tree and measuring surface area, for example.

Inspiration!

Inspired art

Building on the colour work we did in autumn, there should be plenty of tree silhouettes and shadows to inspire some moody artwork. Charcoal is an ideal medium to use. A good start would be to complete the THIS IS MY TREE! activity and take inspiration from the bark or leaf rubbings.

Date a tree While the trees have no leaves, considering their age and height can bring numeracy lessons to life. See THE HEIGHT OF A TREE and THE AGE OF A TREE.



THE HEIGHT OF A TREE

AIM

To introduce scientific techniques

Time needed
15 minutes

Age group
8 years plus

Location
Outdoors

What you will need

- Long tape measure
- Pencils
- Paper

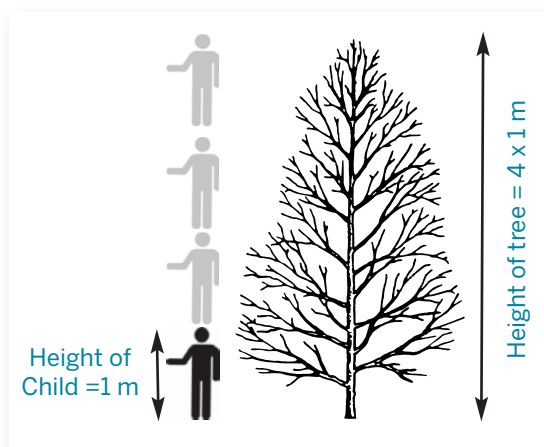
Preparation
Have in mind a good straight tall tree

Safety first
Define the limits of the investigation area.

A method to calculate the height of a tree

What to do

Organize the children into pairs. Ask one child to stand under the tree they have selected and then the other to measure the height of their friend. The



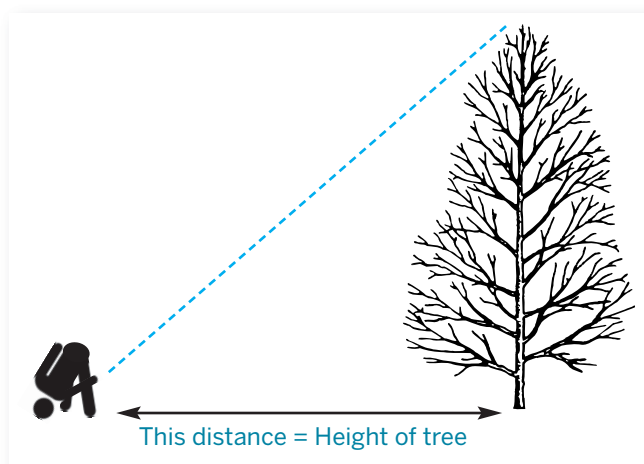
second child walks carefully backwards, away from the tree until, using a pencil and shutting one eye, until the pencil appears the same height as the friend. The child will need to hold the pencil out at arm's length in front of them.

Once the pencil and the friend appear the same length, ask the child to estimate how many times the pencil would need to 'flip' upwards to reach the top of the tree. Multiply this by the height of the friend to give an estimate of height of the tree.

Discuss with the children why this is still only an estimate because it hard to judge how many pencil heights are needed to reach the top of the tree.

Try this alternative

Choose another tree that a child can walk away from in a straight line. Ask the child to walk away from the tree, stopping occasionally to bend down, looking back at the tree through their legs. When they get to a point when they can just see the top of the tree in this way, tell them to stop while another child measures from the base of the tree to where the first child is standing. This measurement is an approximation of the height of the tree. Again, discuss with the children why this is so. It depends on how far they bend over, and how accurate they are in judging when the top of the tree is visible.



THE AGE OF A TREE

AIM

To introduce scientific techniques and plant growth

Time needed

15 minutes

Age group

8 years plus

Location

Outdoors

What you will need

- Tape measure
- Tree identification book /spotter charts/keys
- Recording sheet and pencil

Preparation

Have an idea of where you will find a good mixed group of trees

Safety first

Define the limits of the investigation area.

A method to calculate the age of a tree

What to do

Organize the children into small groups and ask each group to vote for the tree they think is the oldest and stand near it. It will be interesting to see which ones they choose! Use this method to work out the approximate age of some of the trees chosen.

Measure up the trunk 1.5 metres from the ground and ask the children to place their fingers at this height. Then measure round the trunk at finger tip level and record the circumference in centimetres. You can work out the approximate age of the tree using this ratio: 25 centimetres is about 10 years' growth. If you are measuring in inches, 10 inches is about 10 years' growth.

Nearby other trees of the same species are likely to be the same age. Are all of these trees the same size? Ask the children how accurate they think their estimations are. How can they use their measured ages to get a more realistic age for all of the trees? The answer is to work out the average age of trees of the same species within the area.

Now test observation skills by asking the children to find the youngest tree. You can often find a recently sprouted seed with a woody stem and two leaves!

Discussion

Ask the children why these calculations are still only estimates and what factors control the rate of growth. Consider light, temperature, water (trees growing under

larger ones will be shaded from the sun and the rain, and the larger trees will have longer roots. This is why taking an average works as it takes into account the different growth rates of individual trees.

Do the children think that trees of different species grow at the same rate? Oak trees grow much slower than most other trees, and a popular garden tree called Leylandii grows incredibly fast!

What other methods are used to accurately tell the ages of trees — examples are growth rings on stumps, and written records of when they were planted. Ask the class if they know of any famous very old trees. For example, there was a Yew tree in a churchyard in the village of Selbourne, in Hampshire, that was over 2,000 years old. There are also very old oaks in the Great Park at Windsor Castle in Berkshire.

MAKE A SIMPLE FRUIT BASKET

AIM

To produce a round fruit basket with a base of 20 cm/8 in diameter, a top of 30 cm/12 in diameter and a height of 10 cm/4 in.

Time needed

3-4 hours, use enrichment time

Age group

10-11 years

Location

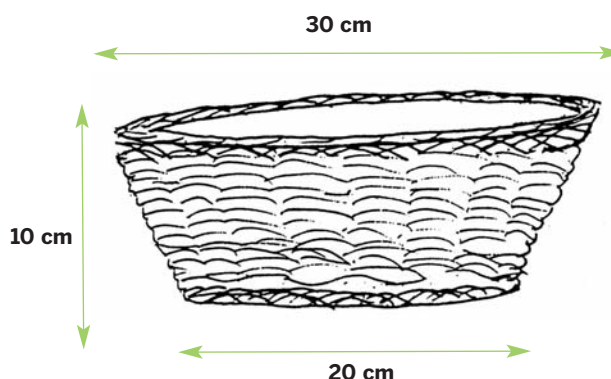
Indoors or outdoors

What you will need

- Two bolts of buff willow, soaked in advance for six hours and wrapped in a towel or blanket to keep it damp.
- Sharp secateurs and knife
- Rapping iron to tap stakes further into base
- Bodkin (a small, sharp pointed tool) – or a screwdriver or an awl
- A lap board and weight to fix your basket to. This makes it easier – but you can manage without
- A hand-spray to keep the willow damp and supple whilst you work

Safety first

You will need to supervise all use of secateurs and knife



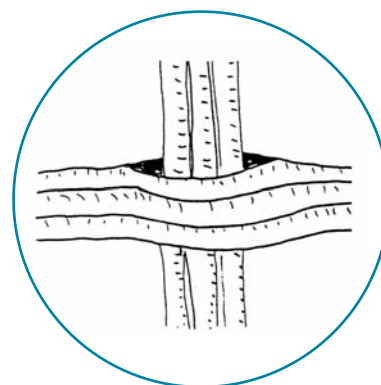
So it's cold outside and the weather unpredictable. What better way to occupy the children than to teach them the fascinating art of willow weaving, a craft with strong associations with Holt Island. You'll first need to acquire the willow sticks or wands, sometimes also called withies, and we offer two options to do this.

These instructions make a basket using willow that has been boiled and 'stripped'. This buff willow is used to make most commercially made baskets, and has had the outer bark removed to make it is easier on the hands. See RESOURCES for a good source of buff willow. By purchasing one bolt (a bundle of sticks about 30 cm/12 in diameter at the base) of 1.2 m/4 ft length, and one bolt of 1.8 m/6 ft length, there will be enough willow for a class of 30 to each make a fruit basket.

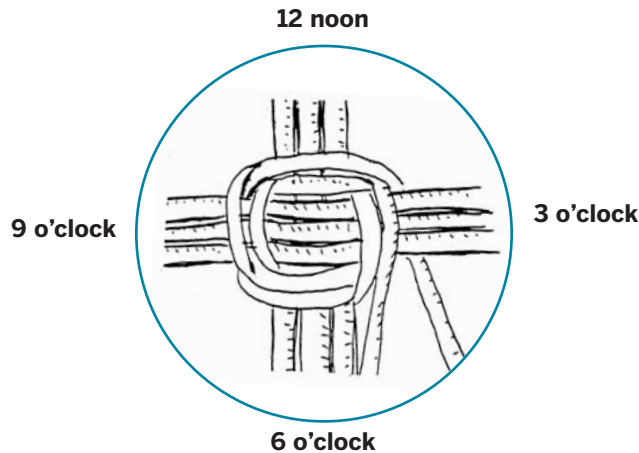
However, it is possible to use willow that has not been treated. This is cut on Holt Island during the winter months, so ask a Ranger and they should be able to help you out!

How to make the base

Cut six sticks from the base of the thickest stems, 25 cm/9 in long. Use the bodkin and put a hole through the middle of three of them and push the other three through them, to make a cross.



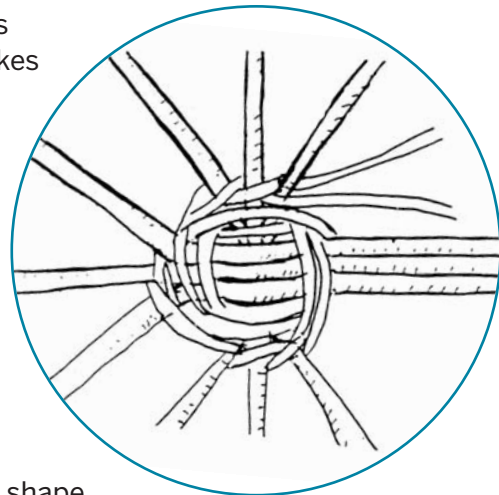
MAKE A SIMPLE FRUIT BASKET continued 1



Use two long sticks at a time to tie these centre sticks together. Put the two thin ends of 1.2 m/4 ft sticks through the hole you have made on the left, at 9 o'clock on a clock face. Lift one of these now called 'weavers' up and over three base sticks, and put the other under the same three sticks. Cross them so the one that was underneath at 9 o'clock, goes over the next three at 12 noon, and the one that was on top goes under the next three. Pull them upwards towards you, cross them and do the same until you get to 3 o'clock, cross again and repeat, so you are back to where you started. You have now secured the middle of the base to your basket. Make sure they are all pulled tightly together, with no holes. Now go around again.

Continue in the same cross over technique, but as you go spread out each of the sticks (like the spokes of a wheel) and cross the weavers after each individual base stick instead of the groups of three. The gaps between the base sticks should all be equal.

As the weavers' run out', join in new ones by lifting up the short end you have just finished and pushing a new weaver into your work. Join a thick end to a thick end, and a thin end to a thin end to keep the overall base even.



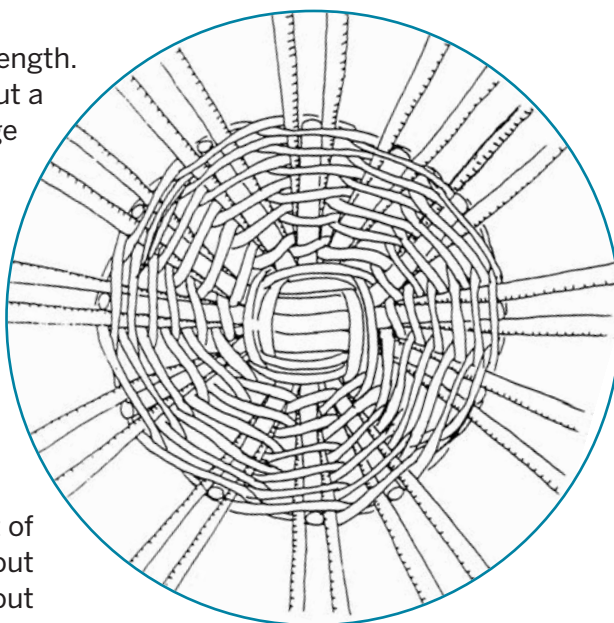
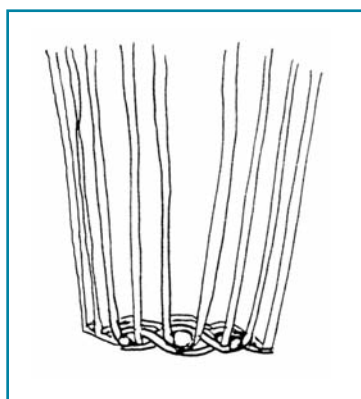
Keep an eye on the shape, tapping the willow into shape if it is not quite round. If you have a slightly concave round disc, don't worry that is natural! When you have a base of approximately 20 cm, finish with the thin ends of weavers and just tuck them back into your work to hold them in place.

Using secateurs, trim off all the excess of the original six sticks and you will have a base that is like a frisbee. If it is concave, place it on the floor so the little mound is downwards, that is not sitting flat on the floor. **(See over page.)**

MAKE A SIMPLE FRUIT BASKET continued 2

Staking up

Select 20 relatively thick sticks of the same length. Using a sharp knife, slype the ends, that is, put a small point on the thick ends. You need a large area now! Push four sticks into your work, one each at 12, 3, 6 and 9 on a clock face. Push in a stick each side of the remaining eight base sticks. You will now have a big 'spider' on the floor. Turn it over so it now sits flat.

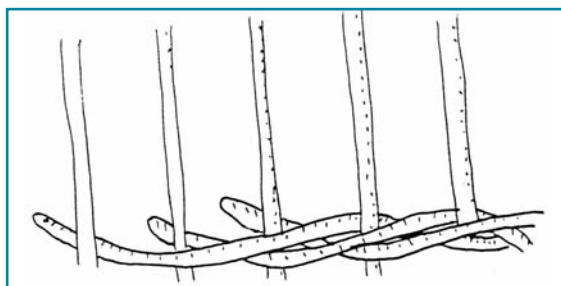


Using the point of a knife, and about 0.5 cm/1/5 in out from the base, pierce each of the sticks so that they will easily bend upwards without splitting. Gather all 20 sticks together and secure loosely at the top with a hoop. Use a rapping iron or closed secateurs to tap all the 20 sticks even further into your base.

Upsetting

This is where you secure the sides to the base ... it is the most important stage of the basket and one of the hardest to master! You are aiming to cover up the cut ends of your original six base sticks and secure the base to the new upright stakes. You have to ensure your work is pulled tight as well as keeping the stakes evenly spaced!

Take three thinner sticks of equal length and slype the thick ends. Insert these three weavers, one to the left of each of three consecutive upright sticks. Bend the weavers downwards to the right. Take the weaver on the left, put it in front of the next two upright sticks to the right and behind the third stick. Let it point outwards so this weaver is now furthest to the right.



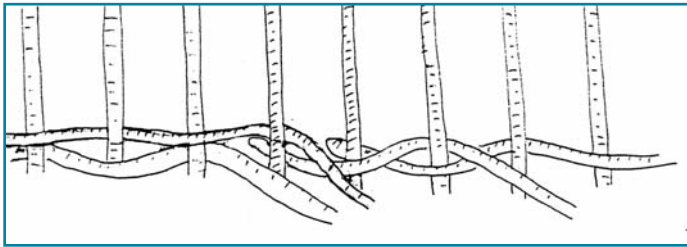
There is a new left-hand weaver. Pull this in front of two sticks and behind the third again leaving it pointing outwards towards you. Turn your work as you progress so you are always working nearest to your body.

Continue using these three weavers until you get half way around. Temporarily leave these weavers, slype three more weavers and insert these new ones (one to the left of the next three consecutive base stakes), and follow the instructions above. Work until you have used the end of these weavers, then work in the three ends you abandoned previously.

MAKE A SIMPLE FRUIT BASKET continued 3

Randing

Now comes weaving the sides. If you have a lap board attach your basket, if not continue to use your knees to support your work. You are going to make the sides of the basket and this is where your fingers are in control. How you hold the sticks and the weavers will determine the overall shape. Be firm!



Choose willow that is thinner than that used for the upright sticks. To start each weaver, push the thick end downwards into the rows below. This means no sharp ends protrude into your basket which could damage your fruit.

Because you have an even number of sticks, it will be necessary to start each end of weaver one gap to the right of the previous one. Work one complete circle of each willow length and leave any excess sticking outwards to be cut off at the end. Your work will initially appear uneven, but once you have used all 20 weavers, it will be even. Remember ... keep checking the shape, and tapping down each row so there are no holes.

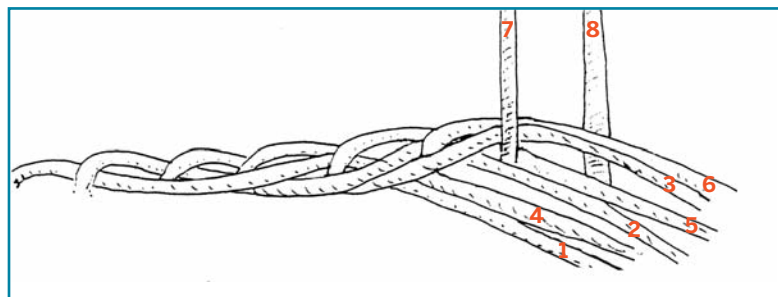
Putting on a wale

This is the same technique as upsetting. It will add strength and neatens the top of the basket. Use three weavers as before, but this time, start with the thin ends, work completely until they run out, and add in three more, each time poking the thick end under the end of the one that has finished. When all six have been done, tuck the final three thin ends neatly into your work.

Border (3 rod border)

If at this point your work has dried out, it may be necessary to soak it again over night. This is where you use the upright sticks to fold down and finish off the basket. Use the point of your knife to prick any four consecutive sticks, about 0.5 cm/1/5 in above the wale.

Take the left-hand stick of these four and bend it downwards behind the next upright stake and leaving it coming out to face you (in front of stick 3 on the drawing). Take the next left-hand stake, bend it behind 1 and out to the front of



stick 4. Take it down 3, behind 4 and out in front of 5. Go back to the first stick you laid down. Bring it across in front of your work, behind the next upright stick 5 and out in front of 6. Take the left-hand upright stick 4, bend it behind one stake and out to the front of 6 to make a pair which lies flat against the wale. Repeat the last two steps until you have three pairs lying across the top of your basket. **(See over page.)**

MAKE A SIMPLE FRUIT BASKET continued 4

Continue as above, bringing the right-hand weaver of each pair in front of your work, followed by bending the left-hand upright stick behind the next one, each time making a new pair.

NOTE: the left-hand one of each pair has done its work and is now finished. It will be trimmed later. When only one upright is left standing, it needs to be threaded under stick 1 to make the final pair.

When there are no more uprights left, you still need to complete the process for the final pairs, this time tucking the right-hand weaver under the stakes you had originally put a little nick in. By putting the nick in, there should be just enough room to thread the thin end of the remaining stakes through, and pull tight and flat. Imagining the stakes are still standing upright helps. You will notice that each of the last ones will go under more layers of the rim to complete the basket rim.

The final task is to give your fruit basket a 'haircut' – trim off all the wispy ends using secateurs. Lift the willow slightly and cut back into it making sure that each cut end will rest against one of the uprights. There should be very little waste, as the cut-off pieces should be used for other baskets.

CONGRATULATIONS!

You have just made your first willow basket! If you have had difficulty following these instructions we refer you to *Modern Basketry Techniques*, Barbara Maynard and Mary Butcher, Batsford, 1993 ISBN 978-0713461602, on which the text has been based and from which the drawings have been reproduced.

RESOURCES

A bolt of stripped, buff willow can be purchased from Coates of Somerset 01823 490249. For more information see www.englishwillowbaskets.co.uk/willow.htm.

www.jonsbushcraft.com/basicbasket.htm For an alternative set of instructions, with step by step photographic references.