



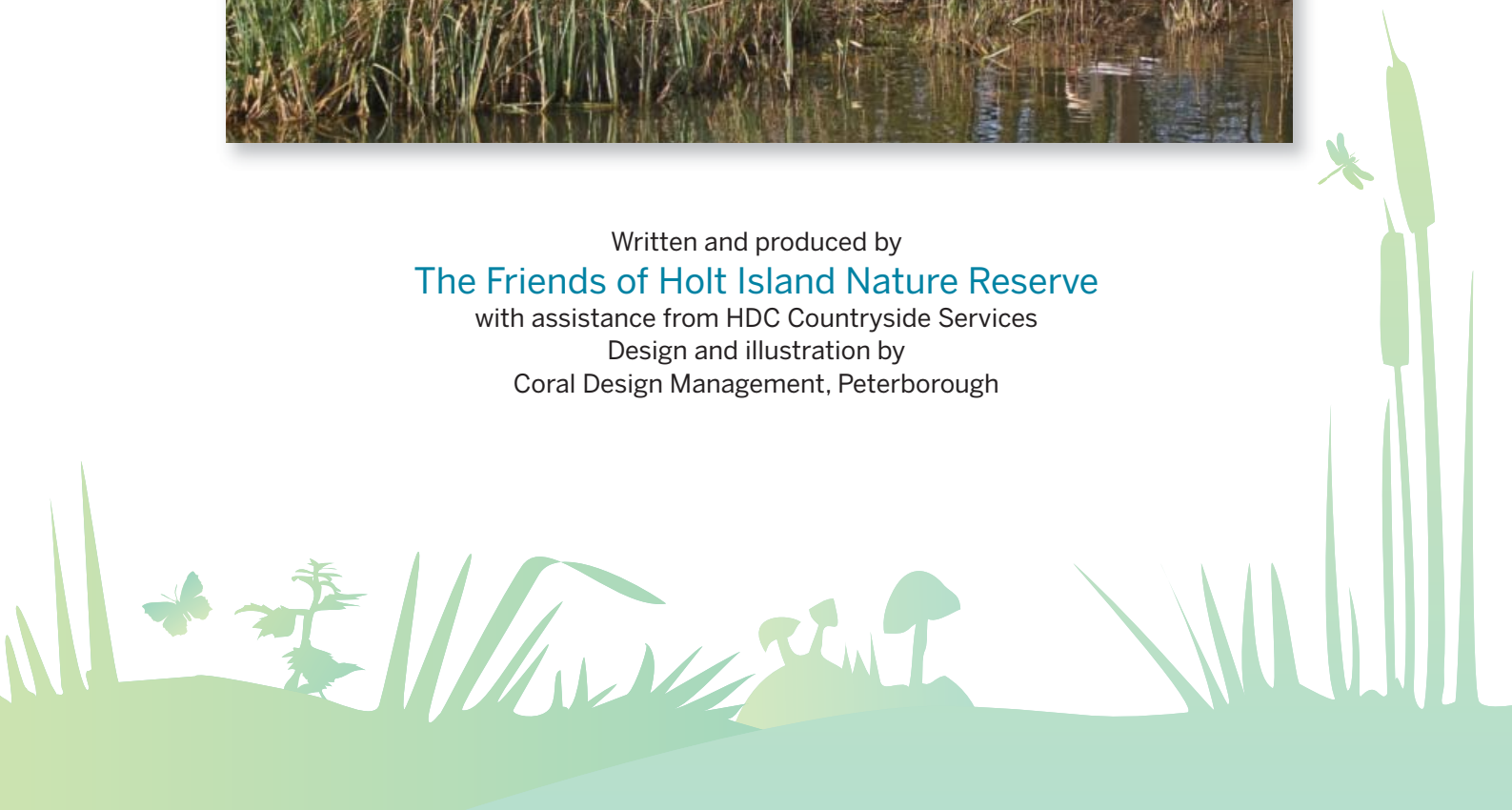
Friends of
Holt Island
Nature Reserve

Holt Island Nature Reserve EDUCATION PACK

For children aged 4–11 years



Written and produced by
The Friends of Holt Island Nature Reserve
with assistance from HDC Countryside Services
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HOLT ISLAND

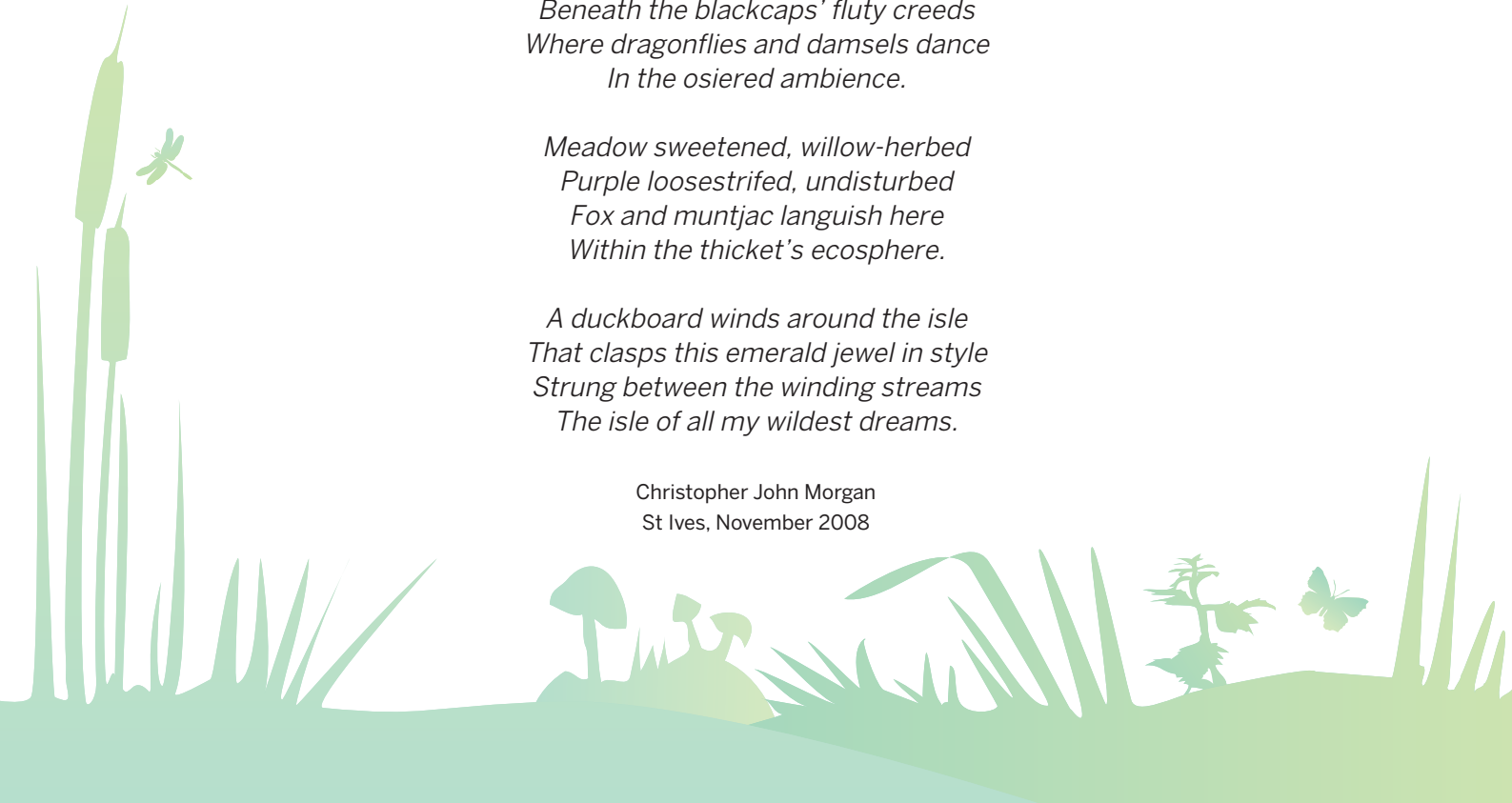
*There is an island in our Slepe
That splits the Ouse's mudded deep
And in the midst the wild abounds
Within its willow-knotted grounds.*

*Warblers flirting in the reeds
Beneath the blackcaps' fluty creeds
Where dragonflies and damsels dance
In the osiered ambience.*

*Meadow sweetened, willow-herbed
Purple loosestrifed, undisturbed
Fox and muntjac languish here
Within the thicket's ecosphere.*

*A duckboard winds around the isle
That clasps this emerald jewel in style
Strung between the winding streams
The isle of all my wildest dreams.*

Christopher John Morgan
St Ives, November 2008



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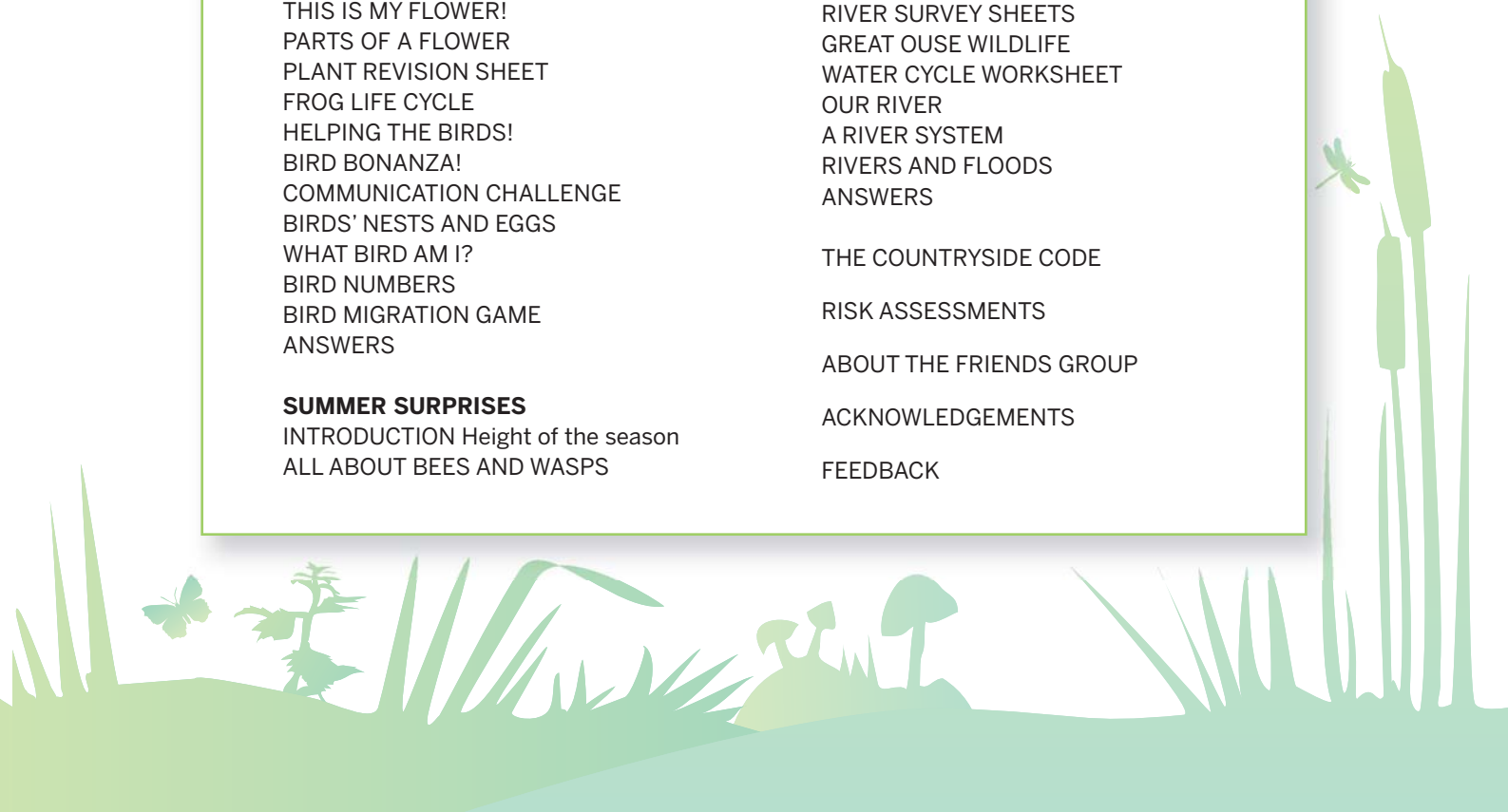
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INTRODUCTION

Welcome to the Holt Island Nature Reserve EDUCATION PACK. Whether you are a teacher, scout, guide or any other youth group leader, our aim is to encourage you to bring children aged between 4 and 11 years old on to our Island and, through the projects and activities presented here, introduce them to the wonders of nature.

What is Holt Island Nature Reserve?

Holt Island is a beautiful, natural green oasis within walking distance of the centre of the town owned by Huntingdonshire District Council and managed by their Countryside Services Team. It is a rare example of wet woodland habitat, dominated by mature willow, ash and chestnut trees, and with reedbeds around the margins. It attracts a wide range of flora and fauna. In spring it is full of bird song from visiting warblers. Blackcaps, Chiffchaffs, Garden and Willow Warblers provide a musical background of high notes from the trees and shrubs. Sedge and Reed Warblers chatter away with low scratchy



songs at double speed from the banks. In summer, stunning dragon and damselflies clatter and dash after aerial prey, and butterflies dance in the dappled sunlight. We have a resident dog fox and a family of muntjac. It is a special place.

We are lucky to have it and it is enjoyed by many – young mums needing somewhere for toddlers to test their legs, office workers on a lunch break, and people simply enjoying the peace and quiet and natural beauty. In addition, we are very aware that the Island reserve represents a wonderful educational opportunity, and it is this that we are particularly keen to promote through this pack.

How to use the pack

This pack has been compiled to make it easier for you to plan a visit and get the most out of what the Island has to offer, at any time of the


year. It contains over 60 pre-planned projects and activities and is packed with information both for teachers and children. You are invited to browse through the pages before a trip and to particularly notice the 'Teacher's pages'. These often include a RESOURCES footnote with useful websites for further information on a particular topic.

Once you have selected the project(s) you would like to undertake, you can photocopy the relevant pages from the ringbinder or you may prefer to print them out from the 'print ready' pdf of the Education Pack supplied on the CD-ROM.

How is the pack organised?

The content of the pack is varied. The first section establishes the historical perspective of St Ives and encourages children to see both the town and the Island in this context, and draw comparisons between then and now. A section on maps and map reading follows to help the children get a good grasp of where they are on the Island, and how to use grid references. The four seasons offer particular projects and so there are four sections with ideas and activities for spring, summer, autumn and winter. Finally, being located on an island on a river, we felt we should show children how our river 'works', and how lucky we are to have access to the wealth of wildlife it supports. Please note that throughout the pack, some projects have been included for indoor work in class.

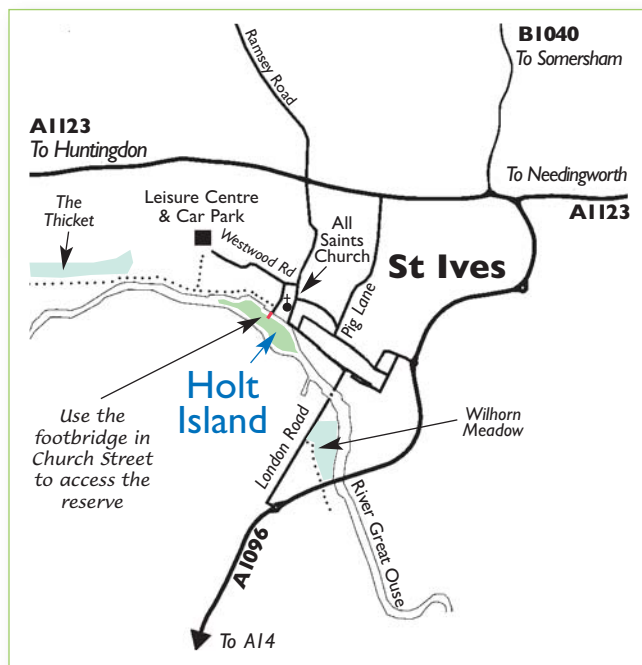
Extras

In addition to the pages you see here, you will also find extra material on the CD-ROM for you to use with some projects (this symbol  will indicate where this is relevant). The ringbinder also includes a SPOTTER GUIDE. This handy, all-colour identification guide includes illustrations of the most common minibeasts you will see on the Island, including damsel and dragonflies, butterflies, amphibians and reptiles, birds, mammals, fungi, flowers, reeds, sedges, grasses and trees. Take it with you whenever you visit!



Where is the Island?

Holt Island Nature Reserve is located behind All Saints Parish Church at the end of The Waits in the town centre. The post code is PE27 6DG. It is accessed via a white footbridge in Church Road, St Ives. There is limited parking in Church Street just by the access bridge. Please have consideration for nearby residents when coming and going to the Island. The nearest public car park is Globe Place in West Street.



When can we go?

The Island is open to the public on weekends, including Bank Holidays, between April and September, normally from 10 am until 4 pm. If you visit at these times please bear in mind there will be others on the Island enjoying its peace and tranquillity. Should you wish to have the place to yourselves on a weekday at any time of year, you may borrow keys from either The Norris Museum on The Waits opposite the Island, or from One Leisure St Ives, next to The Burgess Hall at St Ivo School. A deposit will be required, and there are certain conditions you will be asked to note. These are that you will be responsible for your own safety and

that of the children during your visit (see RISK ASSESSMENTS); you should ensure the children stay on the boardwalk, grass path or central meadow; you should lock both gates



behind you as you enter, and when you leave; and ensure you have all the members of your party with you when you do leave! There are no toilet facilities on the reserve.

The Countryside Ranger organises work parties on the first Sunday and third Friday of each month throughout the year, and so it is best to avoid these dates when planning a visit. Please call HDC Countryside Services at Hinchingsbrooke Country Park to double check access on 01480 451568.

Who made the pack?

The pack has been designed and created by The Friends of Holt Island Nature Reserve, with the assistance of grant aid from COMMA (Community Aggregates Fund), and editorial input from the staff of HDC Countryside Services – see ACKNOWLEDGEMENTS. If you are interested in becoming more closely associated with the reserve, please enquire about schools and group membership, and see the section ABOUT THE THE FRIENDS GROUP.

We hope you enjoy trying out the projects in the pack and your visit to our Island. Our wish is that the children you bring will not only learn something about the natural world, but also develop an interest in, and connect with, nature. Who knows, they then may become our future ambassadors for the environment that sustains us all – not a bad objective we think.

The Friends of Holt Island Nature Reserve, May 2012

CHANGING LANDSCAPES

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INTRODUCTION

The town and the Island

St Ives is a thriving market town in Cambridgeshire around 24 kilometres (15 miles) north-west of Cambridge, and 110 kilometres (68 miles) north of London, within the historic county boundaries of Huntingdonshire. Previously called Slepe – an old Saxon word meaning muddy – its name was changed to St Ives after a body, claimed to be that of a Persian bishop Saint Ivo, was found buried in the town in about 1001-2.



Early days

Built on the banks of the River Great Ouse between Huntingdon and Ely, St Ives has a famous chapel to St Leger on its bridge. It is possible to gain access to the chapel by borrowing the key from the Norris Museum, on the Waits. In the Anglo-Saxon era, St Ives' position on the river Great Ouse was strategic as it controlled the last natural crossing point or ford on the river, 80 kilometres (50 miles) from the sea. The flint reef in the bed of the river at this point gave rise to a ford, which then provided the foundations for the celebrated bridge. Holt Island is located at the western end of the town of St Ives, adjacent to the Anglican Parish Church of All Saints.

Expansion and wealth

During the eighteenth and nineteenth centuries St Ives was a hub of trade and navigation (see print above). Goods were brought into the town on barges, and livestock rested on the last fattening grounds – the lush water meadows – before delivery to London's Smithfield Market. As the railway network expanded and roads improved, the use of the River Great Ouse declined. It is now mostly used for leisure boats and recreation.

Living with flooding

The river Great Ouse at St Ives flooded badly in 1947, and some parts suffered seriously again at Easter 1998 and in January 2003. Extensive flood protection works were carried out on both sides of the river in 2006-7 at a cost of nearly £9 million. Five hundred metres (1,600 ft) of brick-clad steel-piling was put into place to protect the town, most noticeably at the Waits, where a pleasing plaza has also been created. A further 750 metres (2,460 ft) of earth bank and piling on the other side of the river protects Hemingford Grey, reducing the yearly risk of flooding from 10% to 1%. Building on the flood plain at St Ives is now discouraged.

Holt Island

The eastern or town end of Holt Island is now a nature reserve. Holt Island, or rather Ingle Holt as it was originally called, was owned by George Wright-Ingle, Lord of the Manors of Hilton and Fenstanton. Upon his death, and that of his son, ownership of the island passed into the hands of his daughter Mrs Olive Sutton who, in 1934, decided to donate the Island to the town. For many years until the 1970s the island was used as an osier bed by local basket makers. Since 1995 the island has been managed as a nature reserve by Huntingdonshire District Council's Countryside Services team.

RESOURCES

www.stives-town.info/river_great_ouse/local_history_of_the_river.asp for historical facts and fascinating photographs to compare with the town now.

Use the SURVEY SHEET later in this section to compare and contrast different parts of Holt Island with a different location within the town.

THE IMPORTANCE OF WILLOW

Holt Island was worked as a commercial osier bed by Jack Harrison, grandson of John Harrison who founded a basket-making company in 1877. His importance in the town is recognised by the bypass - Harrison Way - named after him. A hybrid willow - Harrison Willow - also carries his name. There are 18 species of willow native to Britain and over 100 hybrids of which Weeping Willow is the best known. However, Weeping Willow cannot be used to make baskets as it doesn't bend.

An osier is any willow with flexible stems (wands) used in basket making. Osiers are grown in dense beds and regularly cut down to ground level to encourage the growth of long straight wands. Holt Island is an ideal site for osiers as willows like wet roots, and can grow in permanently wet or frequently flooded areas. The flooding brings plenty of nutrients onto the island ensuring good growth. You can see that the planted areas on the Island have a ridge and furrow appearance. The willows were planted in the furrows, whilst the harvesters can keep a little drier standing on the ridges.



How willow is used

Willow baskets were once very important but many items are now made using plastic or are imported from elsewhere. British basket makers are now rare, although in Norfolk and Somerset key growers remain and have enough skilled staff to meet the demand.

Willow had many uses: it formed the frame for some of original, now classic, cars, and it is still used to make fences and hurdles, coracles, furniture, bike baskets, hot air balloon baskets, sculptures, charcoal pencils and the frames of soldiers' busby hats.



ISLAND WILLOW

Once the commercial use of willow declined, and Mr Harrison's business ceased trading, the Island became quite overgrown. In 1995 HDC Countryside Services engaged the help of a master basket maker from Peterborough, Len Wilcox, and started to clear some of the overgrown areas. Over the following years, willow was again planted by volunteers and the annual crop is used for sculptures, living willow arches and tunnels and in basket-making workshops. Unlike the old days, the willow is not boiled to create buff willow, but can be stripped to create white willow, or used with the bark intact as brown willow.

Willow and wildlife

Around 450 animal species are known to feed on willow. Many insects require both water and trees to be present in their complicated life cycle, and so Holt Island is very important for invertebrates. In turn, these provide food for large numbers of wetland fauna, and especially birds. With the dense re-growth property of willow, it also forms well-protected areas for nesting birds such as Reed and Sedge Warblers and Reed Bunting.

Willows flower early in spring making them popular with bees. It is important for bees to quickly find this essential source of food so that they can then continue with their vital pollination role as they feed and forage elsewhere.



Willows love our Island but there are problems for them too! Green fly can attack buds and stop growth, and rabbits and deer are particularly fond of young sweet shoots. After several years of trying to crop Holt Island willow at ground level, you can now see we coppice at waist height to form pollards to discourage Muntjac deer eating the new shoots!



Willow names
The following willow types can be found on Holt Island. Use the Spotter Guide and Interpretation boards on the Island to help you identify them and learn more about Harrison's basket-making business. The Island map will show you where the osier beds are located.

- Crack Willow *Salix fragilis*
- Violet Willow *Salix daphnoides*
- Purple Willow *Salix purpurea*
- Golden Willow *Salix alba vitellina*
- Black Maul *Salix triandra*
- Common Osier *Salix viminalis*



WONDERFUL WILLOW WORKSHEET

Here are some questions about willow that you will have fun answering. If you don't already know the answers, check out the previous WILLOW pages. Space is provided here for you to write your answers and to add some drawings

1. There are over 300 different types of willow in Britain. On Holt Island there are several including Harrison Willow and Golden Osier
What is special about them?

.....
.....

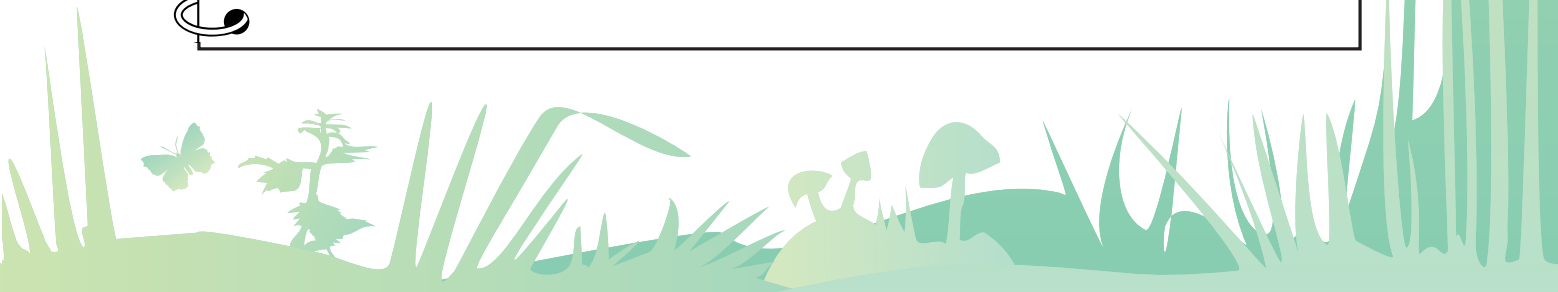
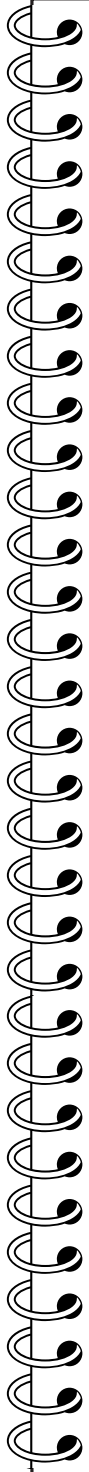
2. Weeping Willow and Crack willow are not good for basket making.
Why?

.....
.....

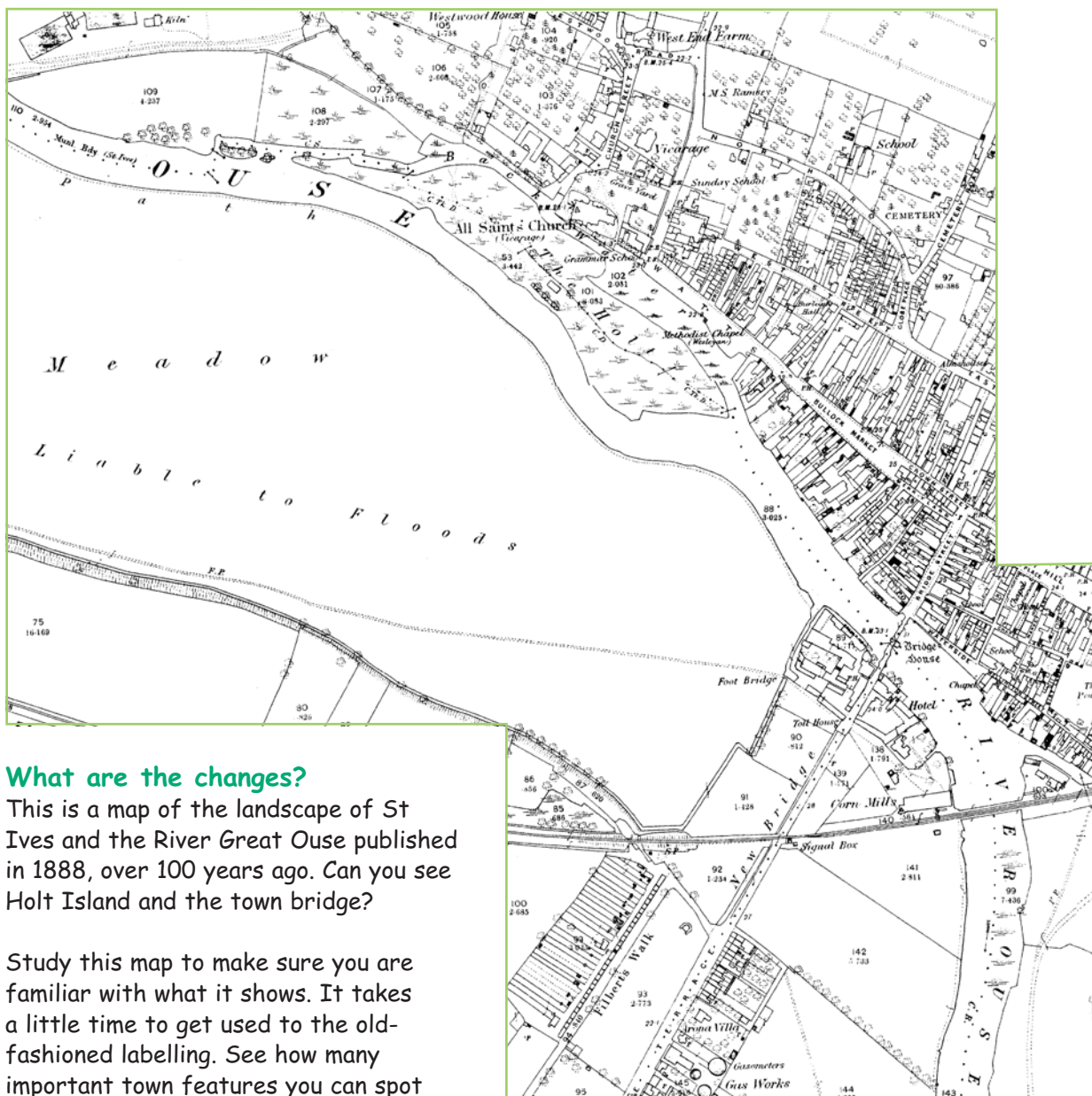
3. Willow can grow up to 2 m a year, and has many uses such as furniture making or for cricket bats. What else is willow used for?

.....
.....

4. Willow trees provide food and shelter for over 400 species of bird, animal and insects. Draw a picture to show a creature benefitting from willow on Holt Island.



THEN AND NOW



What are the changes?

This is a map of the landscape of St Ives and the River Great Ouse published in 1888, over 100 years ago. Can you see Holt Island and the town bridge?

Study this map to make sure you are familiar with what it shows. It takes a little time to get used to the old-fashioned labelling. See how many important town features you can spot (you might find it useful to have a look at the ST IVES FROM THE AIR page).

Now, look at the up-to-date map of the same area. If you look carefully you will notice differences: some will be features on the old map that have now vanished; some will be new features on the modern map that did not exist on the old map.

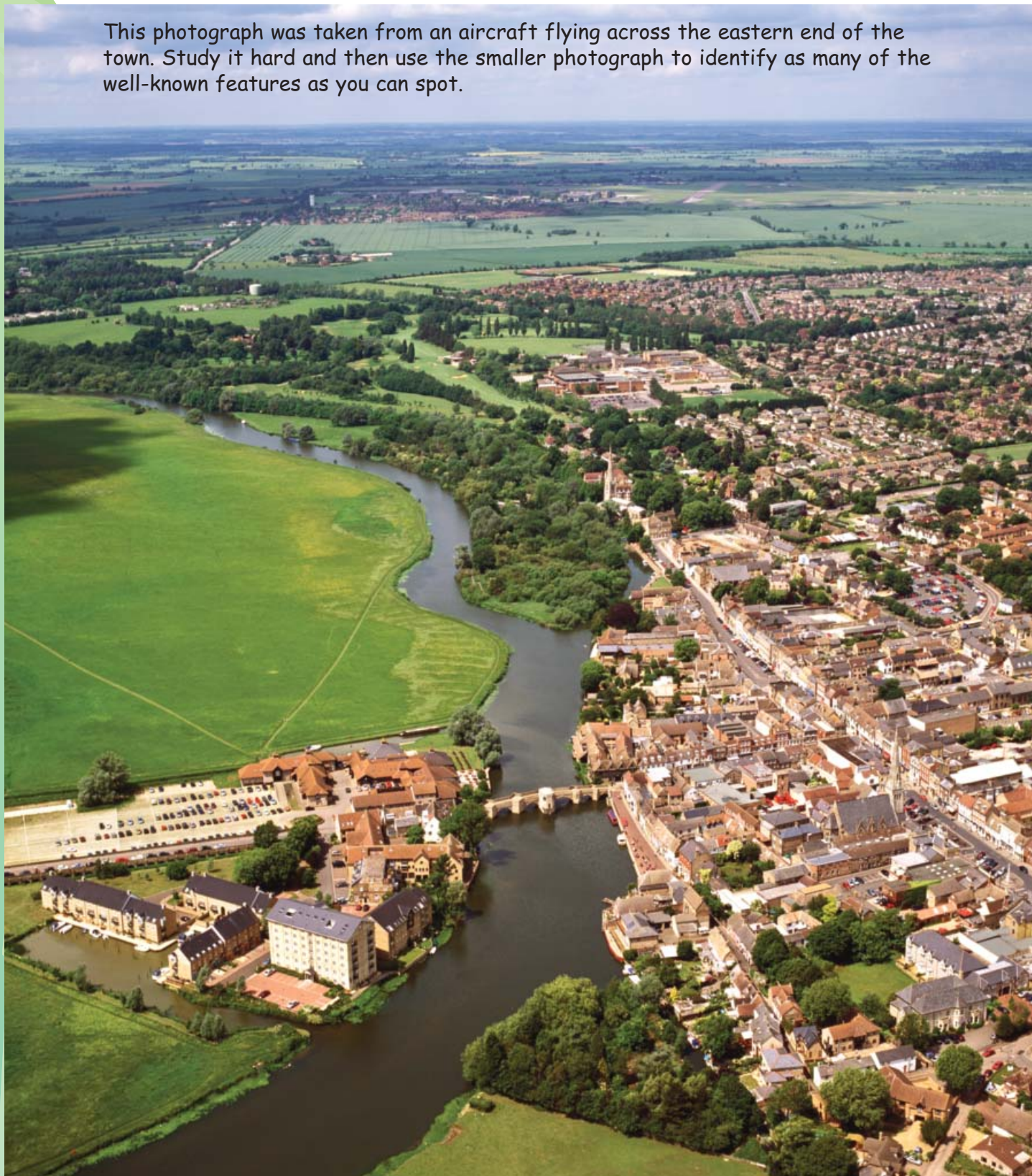
Here are some questions to start you off noticing the differences between then and now:

1. Was there a bridge onto Holt Island?
Yes No
2. Is there one now?
Yes No

CHANGING LANDSCAPES

ST IVES FROM THE AIR

This photograph was taken from an aircraft flying across the eastern end of the town. Study it hard and then use the smaller photograph to identify as many of the well-known features as you can spot.



ST IVES FROM THE AIR continued



Here are the features to identify: fill in the correct number in each circle.

- | | |
|-----------------------------|----------------------|
| 1. Holt Island | 10. The Free Church |
| 2. All Saints Parish Church | 11. The Quay |
| 3. The Town Bridge | 12. St Ivo School |
| 4. The Dolphin Hotel | 13. Nobles Field |
| 5. The Old Mill | 14. The Thicket |
| 6. Hemingford Meadow | 15. Wilhorn Meadow |
| 7. The Broadway | 16. River Great Ouse |
| 8. Bridge Street | 17. The Backwater |
| 9. Market Hill | 18. The Waits |

SURVEY SHEET

How do you rate the island? Use this Environmental and Leisure Assessment form to compare and contrast the Nature Reserve with another location of your choice within the town.

First Location

Second Location

Holt Island Nature Reserve

Time of survey from: to to

Weather conditions to

Number of people seen to

Look around in your area and note the following:

Facilities for visitors

(litter bins, notices, toilets etc)

Evidence of management (paths

vegetation, fencing, planting etc)

Evidence of general damage

(erosion, rabbits/deer etc)

Evidence of purposeful damage

(vandalism, graffiti etc)

Are there any links between the issues in the table above?

For example, can you see evidence of management which aims to reduce human impact?

.....

.....

Grade the following based on your opinion of the areas you are looking at.

✓ one number for each location, for each category.

Issue	First	Second	Issue	First	Second
Litter			Interest		
5 - a lot of litter			5 - All the same/boring		
4			4		
3 - Quite a lot			3 - Quite a lot of variety		
2			2		
1 - Very little litter			1 - Lots of variety & interest		
Appearance			Human impact		
5 - Unattractive			5 - Negative impact		
4			4		
3 - Quite attractive			3 - Neutral impact		
2			2		
1 - Attractive			1 - Positive impact		
Noise			Footpaths		
5 - Very noisy			5 - Artificial surface		
4			4 - Natural - bad damage		
3 - Quite noisy			3 - Natural - quite a lot of erosion		
2			2 - Natural - some erosion		
1 - Very little noise			1 - Natural - hardly any erosion/none		

SURVEY SHEET continued

Read through this before you walk around the Island, then fill it in as you walk

Recreational activity	Present?	Evidence	Possible/actual impacts	Evidence of how impacts have been or could be addressed
Dog walking				
Mountain bike riding				
Flower studies				
Fishing				
Horse riding				
BBQ's				
Boating				
Education				
Bird watching				
Picnics				

Now you have had chance to explore, what do you think of Holt Island Nature Reserve?

.....

.....

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.....

.....

ANSWERS

WONDERFUL WILLOW WORKSHEET

1. **Harrison Willow** planted on Holt Island by the Harrison Family, is red in colour and good for basket weaving. **Golden Osier** is very hardy and good for adding patterns to baskets as its golden colour contrasts well with many green barked willows.
2. **Weeping Willow** & **Crack Willow** crack when bent.
3. Fruit baskets, laundry baskets, sorting baskets for mail, fences, coracles, baskets for bikes and hot air balloons, and frames for soldiers Busby hats.

THEN AND NOW

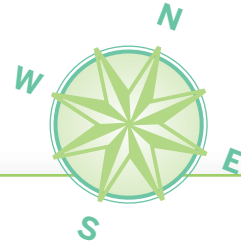
1. No
 2. Yes
 3. No
 4. Yes
 5. The Old Mill
 6. No
 7. Yes
 8. Because it is slightly higher than the other side and is less likely to flood.
- Other differences:**
No houses along Filbert's Walk now
Dolphin Hotel now
Mooring basin at Dolphin Hotel now

ST IVES FROM THE AIR



WHERE ARE WE?

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WHERE ARE WE?

INTRODUCTION

Getting started with map reading

Holt Island is a great place to encourage children to be outdoors, and it offers teachers the opportunity to introduce the concept of location, maps and map reading. This first section looks at the use of maps and grid references and involves going to Holt Island to identify features and carefully plotting them on the map outlines.

To start with, gather together lots of maps of the area (World, Europe, England, East Anglia, Cambridgeshire, Huntingdonshire, St Ives) in different styles and scales.

Ask the children some questions about maps

- What can a map be used for? Good answers would be giving directions, showing country boundaries (political), or showing physical features.
- What type of maps have you seen or used? Globe, historical maps, pictorial maps, large scale, small scale, Ordnance Survey.

See if the children can find Holt Island and their school on any of the maps. They can then work out the route they will be travelling to get to the Island. Can they work out the distance on each map? How far is it?

On the opposite page we have presented a selection of symbols to be found on Ordnance Survey maps. These are deliberately shown without labels so they can be used as a refresher or a learning tool enabling the children to become familiar with them during their map work. These symbols have also been provided for your use at a larger size on the CD-ROM. Rather than just walking in a crocodile to Holt Island, it might be fun to print out some map symbols and during the walk photograph the children holding the correct symbol in front of the feature. Depending on your route and the features you pass, you may need to add some more in advance. You can obtain these from www.ordnancesurvey.co.uk/oswebsite/education-and-research/teaching-resources/map-symbols.html

You will also find on the CD-ROM a black-and-white outline map of the Island, plus another one in colour, which the children might find helpful for the MAP THE ISLAND projects.

RESOURCES

There are some alternative map and mapping resources and activities on the following websites:

www.ordnancesurvey.co.uk/mapzone Fantastic free resources, activities and online games

www.geography.pppst.com/mapskills Based on the Americas but still has some useful Powerpoint presentations

www.centremaps.co.uk/page/free_maps Free down-loadable information sheets

www.teachnet-uk.org.uk/2006%20Projects/P_Geog-mapping_Skills_Y6/Lesson1 has a Powerpoint presentation to discuss maps of different scales.

Teacher's
Page

ORDNANCE SURVEY MAP SYMBOLS



1



2



3



4



5



6



7



8



9



10



11



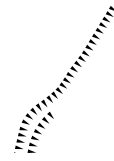
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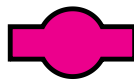
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24



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WHAT ARE GRID REFERENCES?

Many maps have a grid over them with numbers running along the bottom and up the left-hand edge. Each square on the grid has a four-figure grid reference that refers to that square alone. This helps people pinpoint a particular location on the map accurately.

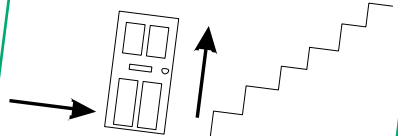
The reference is actually made up of two numbers, so 0613 is 06 and 13. Notice that these numbers label the lines rather than the square itself! More complicated grid references are given as six figures giving the exact location within the individual square.

Columns and rows

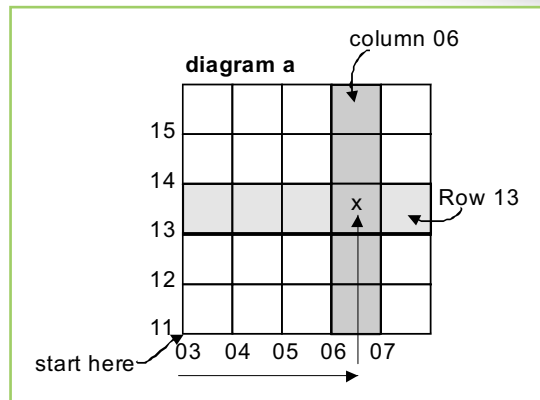
Here's what to do to find the location grid reference 0613 on the map. Break it down into the two numbers 06 and 13. Always start from the bottom left-hand corner of the grid. Run your finger along the bottom until you find the number you want - in this case 06. Note the column to the right of the number. Then, starting from the bottom left-hand corner of the grid again, look up the left-hand edge until you find your second number - in this case 13. The row you want is the one above this line.

Run one finger up the column you identified first and one finger along the row until they meet: this is the square you want (indicated by x) - see the grid **diagram a** opposite.

The **first** number always indicates how far **along** the bottom you go and the **second** number indicates how far **up** the side you go. An easy way to remember this is that you must go **IN** to the house before you can go **UP** the stairs.

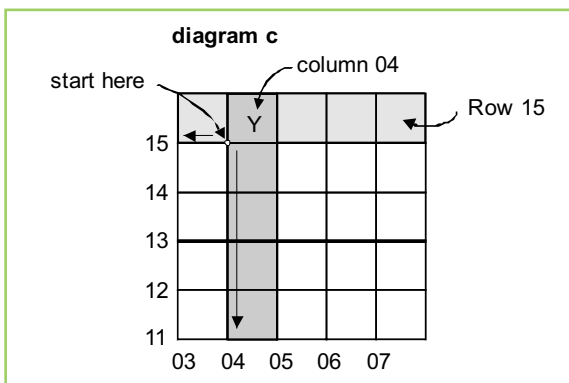


"in the house then up the stairs"



Working out a grid reference from the map

If you want to tell someone the location of a place or something on the map, you need to tell them the grid reference, sometimes called the coordinates. Say your place is Y in the grid **diagram c** below. Start in the bottom left-hand corner of the square in which Y is situated. Follow this line down to a number on the bottom edge and note this down - in this case 04. Go back to your square and, again from the top left-hand corner, follow the line to the left and make a note of the number on this edge - in this case 15. So, Y is located at grid reference 0415 and these are Y's coordinates.



ANIMAL GRID

Now it's time to have a go for yourself. Use this grid with animals in various squares to practice finding and creating four-figure grid references. This will also test your animal identification skills!

1. Which squares are these animals hiding in?

deer

bumble bee

duckling




















duck

weasel

centipede

barn owl

frog

22										
21										
20										
19										
18										
17										
16										
15										
14										
13										
	45	46	47	48	49	50	51	52	53	54

2. Which animals are hiding in these squares?

4814

4521

4918

5116

4718

4820

5220

3. Which is the odd animal out?

4. Why?

GRID REFERENCES ON THE ISLAND

Use the **Grid Reference Map** to answer all three parts of this challenge.

Part 1

Below you will see a list of six key locations on the Island. Walk round until you find one of them. Now, by looking around at your surroundings, work out exactly where you are on the map and then work out the grid reference for your position. See the page **WHAT ARE GRID REFERENCES?** if you have forgotten how to do this. Write down the grid reference. Now walk a bit more until you find another key location and repeat the exercise. Continue until you have found all the locations and worked out their grid references.

1. Rangers' shed
Grid reference
2. Bench for Sid and Doris Mann
Grid reference
3. Willow dome
Grid reference
4. Bench for the Friends of Holt Island
Grid reference
5. Information board about the reed and osier beds
Grid reference
6. Information board about the meadow
Grid reference



Part 3

Find another feature on the island (another bench or picnic table, or a sign, or maybe the pond, for example) and work out the grid reference for it. Walk away from it and find a friend. Give your friend this grid reference and see if they end up at the same point. If they end up in a different place, ask somebody else to check who is correct! **Grid reference**

Part 2

Here are the grid references for five squares on the map. First, locate the square on the map. Now, find your way to each square in turn. When you get there write down three things you can see at each location (try to find different things each time).

Grid reference 2610 **What I saw there:**
.....
.....
.....

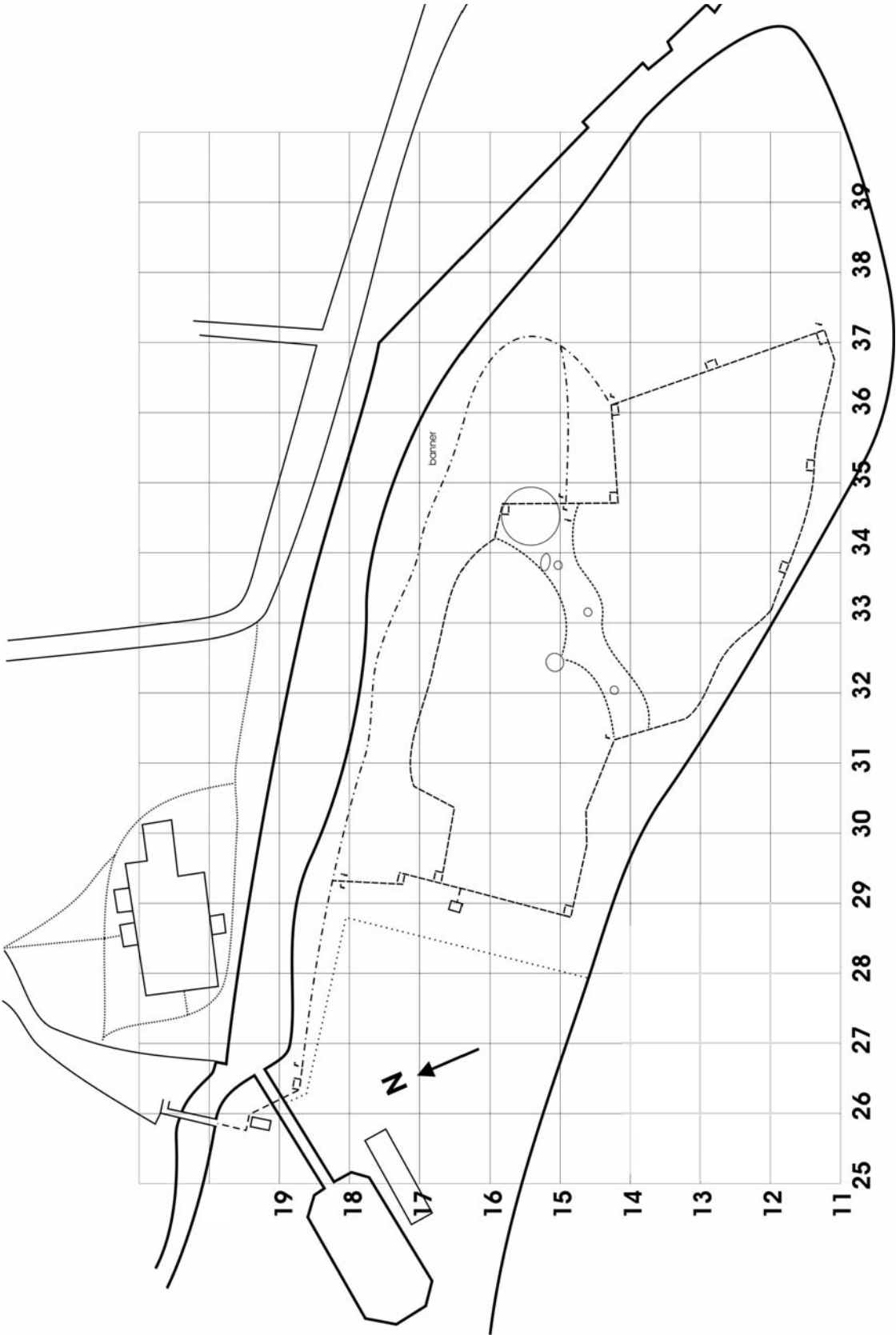
Grid reference 3711 **What I saw there:**
.....
.....
.....

Grid reference 2816 **What I saw there:**
.....
.....
.....

Grid reference 3214 **What I saw there:**
.....
.....
.....

Grid reference 3415 **What I saw there:**
.....
.....
.....

GRID REFERENCE MAP



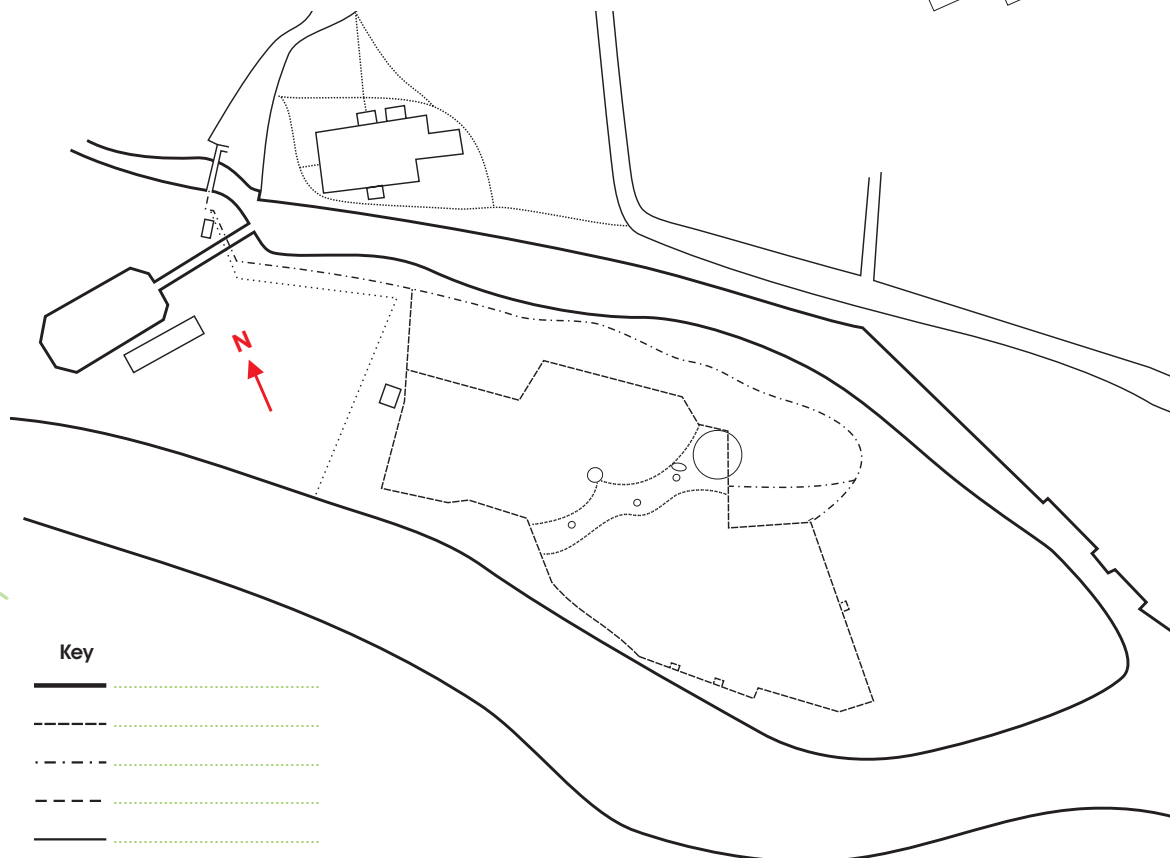
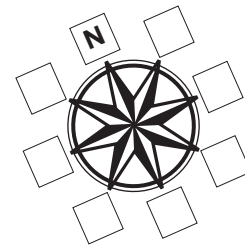
WHERE ARE WE?

MAP THE ISLAND

Now it's time to complete your own map of the Island. Here are the stages:

1. Colour in the map - use **green** for the island and **blue** for the river.
2. Now fill in the blank squares on the compass rose.
3. Next, complete the key.
4. Finally, work out where the objects listed below are located, and draw them onto the map as accurately positioned as possible.

- Wide passing places
- Ramps
- Ranger's shed
- Benches
- Willow dome
- Information boards
- Circular picnic benches
- Banner



Key



MATHS WALK

The boardwalk is the most important feature on the Island. It enables visitors to walk easily around the reserve and to keep their feet dry when the ground is muddy. Sometimes the Island becomes flooded and so then the boardwalk becomes even more important because without it the Island would have to close. You can walk on the grass path and the Meadow but at all other times it is best to stay on the boardwalk for your own safety. Here are some calculations for you to try as you walk round.

1. You will notice several useful features provided for use by the visitors. How many can you count? What is the total cost to provide all the features?

	How many?	Cost per item	How much for all of them?
Benches		£350	
Round picnic tables		£435	
Litter bins		£200	
Interpretation boards		£1,200	

2. Why do you think we do not provide certain items?

.....

3. What other facilities would you like see on Holt Island?

.....

Constructing the boardwalk

Over the winter of 2009-2010 Rangers and volunteers started to replace the whole of the boardwalk. To do this we had to buy materials and so on the next page we have given you some real figures to use in the next calculation.



MATHS WALK continued

4. Imagine you are the Ranger in charge of this essential project. Can you complete the costing table below? You may use a calculator - after all, the Ranger did!

- Sometimes you will need to count how many items there are and then from the total cost you can find out the cost of each item.
- Sometimes the cost per item is given and so once you know how many items there are you can find out the total cost.
- Sometimes the number of items is given and the cost per item so you can work out the total cost.

	Tally	Cost per item	Total Cost?
Metal 'H' frames that go into the ground (approximately 2 frames every 5 m)			£9,038
Wooden beams that support the planks (5 m length)		£18.65	
Wooden planks that you walk on (approximately 1.4 m)	2,625	£2.60	
Concrete (per bag)	444	£3.60	
Nails (per 25 kg tub)	4 tubs	£51.50	

For the next questions you will need to go to Holt Island to measure the length of the boardwalk and count some of the features.

- The length of the board walk is metres
- How long is each load-bearing beam?
.....
- In general, looking at the normal width of the boardwalk, how long is each wooden plank?
.....
- Each nail weighs 10g. How many are there in each tub?.....
- If each wooden plank has 4 nails to attach it to the beam, how many planks can we fix with each tub?
.....
- It costs £2,000 to add the non-slip surface to 500 m of board walk. How much does it cost per m?
.....
- Why do you think it is necessary to have a board walk?
.....
.....
.....
- As you walk along, what evidence can you see that animals have used the boardwalk too?
.....
.....

VISITOR BRAINTEASERS

Now test your brain power on these questions that relate to visitor numbers on Holt Island.

1. A class of 28 children were asked to put their hands up if they had visited the Island. Fourteen hands went up. What fraction of a pie chart would this cover?

- a) One half
- b) One quarter
- c) One third

2. Seven children had visited the Island within the last month. What is that number expressed as a decimal proportion of the class?

- a) 0.25
- b) 0.5
- c) 0.75

3. Which graph would be the best way to show how many children had visited over the summer months?

- a) Line graph
- b) Pie chart
- c) Bar graph

4. Douglas had visited the Island more than most children. Each time he was there, he kept a record of how many hours he stayed and he drew a bar graph to show his friends. How could we see how long he stayed each day?

- a) Looking at the height of the bars
- b) Adding together the total number of bars
- c) Neither of the above

5. Roy drew a bar graph to show how many of each bird he saw on the Island. There was no bar above the label 'Goldeneye'. What can this tell us?

- a) He forgot to draw it
- b) He saw no Goldeneyes that day
- c) Goldeneyes do not live in this country

Holt Island opens at weekends for six months each year. For three years Steve has counted the number of people who visit the Island, on the last Sunday of each month.

	year 1	year 2	year 3
Apr	132	71	82
May	82	11	95
Jun	151	99	106
Jul	158	34	103
Aug	159	248	264
Sep	139	202	153
Total	821	665	803

6. Which month is constantly busiest?

Can you think why this particular Sunday is always busiest?

.....

7. Can you think of a reason why May in year 2 might have been so quiet?

8. What is the average number of visitors on the last Sunday in June over the three years?.....

9. Which two months had the same number of visitors?

.....

Now use the figures for year 3 and assume each month has 4 Sundays.

10. What was the approximate number of visitors on Sundays in year 3?

11. What was the average number of visitors per month?

.....

12. What was the average per Sunday?

.....

13. Why are these figures only a guide line?

.....

.....

14. Draw a bar graph to show how the numbers varied. Remember to add your labels. (Use another sheet of paper.)

WHERE ARE WE?

ANSWERS

OS MAP SYMBOLS

1. Golf course
2. Campsite/caravan site
3. Information centre
4. Picnic site
5. Recreation/leisure/sports centre
6. Nature reserve
7. Parking
8. Public phone
9. Building of historic interest
10. Museum
11. Footpath
12. Trunk or main road
13. Quarry
14. Non-coniferous trees
15. Slopes
16. Milepost
17. Milestone
18. Town Hall
19. Footbridge
20. Public house
21. Post office
22. School
23. Bus or coach station
24. Place of worship with spire, minaret or dome
25. Place of worship with tower

ANIMAL GRID

- | | |
|------------|------|
| 1. deer | 4720 |
| bumble bee | 5120 |
| duckling | 5414 |
| duck | 4715 |
| weasel | 4613 |
| centipede | 4616 |
| barn owl | 5218 |
| frog | 5316 |

2. 4814 rabbit
4521 ladybird
4918 fox
5116 goose
4718 squirrel
4820 butterfly
5220 spider

3. and 4. kangaroo is the odd one out because it is not likely to be found on the island!

GRID REFERENCES ON THE ISLAND

Part 1.

1. 2916
2. 3311
3. 3215
4. 3711
5. 3711
6. 3414

Part 2.

These five squares have a variety of things that can be seen, including the following:

2610 Main bridge onto the island

3711 The 'Friends' bench, the main St Ives town bridge and the Dolphin Hotel

2816 Rangers shed and surrounding area. The church is sometimes visible.

3214 Picnic bench

3415 A big ash tree

MAP THE ISLAND

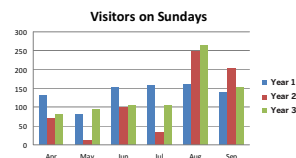
See the CD-ROM for reference maps.



VISITOR BRAINTEASERS

1. a) One half
2. a 0.25
3. c) bar graph
4. a) Looking at the height of the bars
5. b) He saw no Goldeneyes that day
6. Bank holiday weekend or nice weather
7. Weather
8. 119
9. May in year 1 and April in year 3
10. 3,212
11. 535
12. 134

13. Weather or special events on the Island could increase number.
- 14.



MATHS WALK

1.	Total	Cost per item	How much for all of them?
Benches	2	£350	£700
Round picnic tables	2	£435	£870
Litter bins	0	£200	£0
Interpretation boards	2	£1,200	£2,400

2. We do not supply litter bins because rubbish blows out of them and is also pulled out by birds. Instead we ask you to take your rubbish home.
3. Toilets? (Too expensive) Ice cream shop? (not suitable) Sun loungers? (Not suitable) Pond dipping (We hope to provide this soon)

4.	Tally	Cost per item	Total Cost?
Metal 'H' frames	221	£40.90	£9,038
Wooden beams (5 m)	232	£18.65	£4,326
Wooden planks (1.4 m)	2,626	£2.60	£8,480
Concrete (per bag)	444	£3.60	£1,598
Nails (per 25 kg tub)	4 tubs	£51.50	£206

5. 500 m
6. 5 m
7. 1.4 m long
8. 2,500
9. 625
10. £4 per m
11. Safe access for all when ground is wet, muddy or flooded. Wheelchairs can be pushed round and baby buggies too.
12. Deer droppings; fox droppings; bird droppings

SPRING HAS SPRUNG!

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HELPING THE BIRDS!

BIRD BONANZA!

COMMUNICATION CHALLENGE

BIRDS' NESTS AND EGGS

WHAT BIRD AM I?

BIRD NUMBERS

BIRD MIGRATION GAME [Teacher's pages](#)

ANSWERS [Teacher's page](#)



SPRING HAS SPRUNG!

INTRODUCTION

Spring
Scavenger Hunt on
CD-ROM

First signs of spring

Spring happens at different times around Britain, and at different times from one year to the next depending on weather conditions, so these dates are a guideline to the flora and fauna you may see on the Island during your visit. One of the first butterflies you will see is the Brimstone. Its closed wings resemble leaves and act as camouflage whilst it is hibernating among the ivy. When it flies, however, its bright yellow colouring makes it unmistakable. It particularly likes the nectar of willow blossom and this is why there are plenty of Brimstones on Holt Island. Encourage the children to look hard for these signs of spring! A Spring Scavenger Hunt is included on the CD-ROM to get them going.

MARCH

Horse Chestnut

Sticky buds start to swell in March, followed by the creamy white flowers known as “candles” – this is one of the first trees to come into leaf and flower each year. **SG p23**

Honeybee

Honeybees can also be seen collecting pollen from willow catkins.

Peacock Butterfly

Comes out of hibernation and lays its eggs on nettles. The spots on its wings, which look like eyes, scare off the birds. **SG p5**

Mallard

Watch out for drake mallards on their own, the females might already be sitting on eggs. **SG p12**

APRIL

Orange Tip Butterfly

The male has orange wing tips. Caterpillars eat Lady’s Smock and Hedge Mustard. **SG p5**

Willow Warbler and Chiffchaff

Cascading Willow Warbler song often heard in April. The Chiffchaff repeats its name! **SG p8**

Broken Thrush and Blackbird eggs

This evidence might indicate the activity of Magpies and Jays on Holt Island.

Marsh Marigold

Also known as King Cup, this is a member of the buttercup family which flowers from March to April. **SG p17**

MAY

Cuckoo Flower

Delicate flower found in wetter patches. Sometimes called Lady’s Smock or Milkmaids.

Greenfinch

Wheezy calls give away their location and they are often found feeding among the bright yellow catkins of White Willow. **SG p9**

Great Spotted Woodpecker

Tricky to see but easy to hear as they drill out their nest holes, usually high up in tree trunks.

SG p7

Buff-tailed

Bumblebee

A round, furry bee with an obvious white/cream bottom. **SG p3**

RESOURCES

www.rspb.org.uk/youth/learn Brilliant resources for birds

www.rspb.org.uk Everything bird related, but good for Design and Technology projects

www.enchantedlearning.com Great printable work sheets for every topic!

Teacher's
Page

GERMINATION AND HABITAT CHANGE

Spring is traditionally seen as the start of nature's calendar year. Everyone is eagerly waiting for plants and insects to appear, followed by young birds heralding summer. Germination is the production of both roots and shoots from a seed.

There are many classroom experiments to show children how individual seeds germinate and which conditions are the best, for example, between light or dark locations, with or without water and so on.

The following project suggestions are concentrating on outdoor activities on a broader scale, with suggestions for follow up classroom work or additional homework sheets.

To understand how landscapes can change scientists monitor colonisation when a volcano erupts and a new island appears. But it is a slow process. Seeds need to be blown in or dropped by birds, plants need to colonise an area, soil needs to develop and larger plants and trees need to become established, followed by animals and birds spreading into the newly formed habitat. For more information on this sequence of natural events it is worth researching the volcanic island of Surtsey, 20 miles off the Icelandic coast. Surtsey appeared overnight in November 1963 and has now been designated a nature reserve with extremely limited access so that scientists can carefully monitor the natural process.

It is possible to recreate changes like these on a smaller scale in a very short space of time to show children how nature can and does develop. Spring is a good time to try this.

Make a mini nature reserve

Take an old window box or large (not too deep) plant pot and put in some sterile soil or compost, making sure there are no seeds in it. Make a depression in the compost and place in it a plastic tub (a yogurt pot is fine) with some rain water in (keep topping it up), a largish stone and a log. If you locate several of these mini reserves in different places around the school you can make some interesting comparisons.

Use a camera to capture any changes and a note book to record which species appear. Watch for any changes. After a few months you will note that the bark begins to peel from the log and there may be some woodlice or snails exploring it. On the stone, some lichen or moss will begin to grow.

If you can leave your mini reserves for several years you may even see tree seedlings appear. On Holt Island 'winter tree work' is undertaken by Rangers and their chainsaws. In your case the children can use secateurs for your 'coppice' management and trim back branches to encourage fresh new growth.

SPRING HAS SPRUNG!

THIS IS MY FLOWER!

My name is Date

My flower looks like this 

Its colour is

.....

It has a scent


It has no scent

✓ Tick the right boxes:

My flower is

 star-shaped


 bell shaped

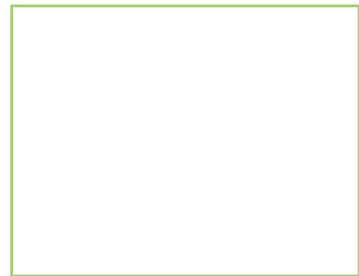
 in a spike


 in a cluster

 daisy-like

 dandelion-like

Its seeds look like this 



I found this minibeast  on my flower

Its leaves are

 heart-shaped

 spiky


 oval


 narrow

 wavy

 toothed


Its stem is

 smooth

 triangular

 square

 prickly

 hairy

I found my flower in/on

My flower is a

PARTS OF A FLOWER

AIM


This exercise demonstrates the different parts of plants and flowers in a very simple way. It encourages children to look more closely at plants and be aware of their differences.


Time needed
15 mins or more

Age group
6-12 years plus

Location
Indoors or outdoors

- What you will need**
- Felt board
 - Laminated parts of a flower
 - Laminated name cards for the parts
 - Worksheets, clipboards and pencils
 - Some flowers as examples to look at

Preparation
Print, laminate and cut out the parts of a flower and name cards from the  CD-ROM

Print Worksheets for the children from the  CD-ROM.

Safety first

Do not allow the children to handle any plants which are thorny or can sting. If the children handle flowers make sure that they wash their hands afterwards. Work in small groups sitting in a semi circle, so that they can all see and avoid being poked by a pencil.

What to do

The idea of the activity is to teach the children the different parts of the flower/plant and the function of each part using questions and descriptions.

Sit the group in a semi-circle around the felt board making sure that they can all see clearly. Give each child a clipboard to rest on, an activity sheet and a pencil. Start by asking simple questions, for example: What part of a plant is found underground and is used for taking up water?

Once the answer is given the relevant piece of the plant is placed on the felt board and the name card is placed by it. As each piece and name card is laid the children can fill in their worksheets.

Once the parts start to get more complicated it is best to describe the part and what it does rather than asking questions (see stage 8 over page). When you get to this stage use the example flowers to help show what you are talking about. By the end each child should have all the parts of the flower on their sheets labelled. **(See over page.)**

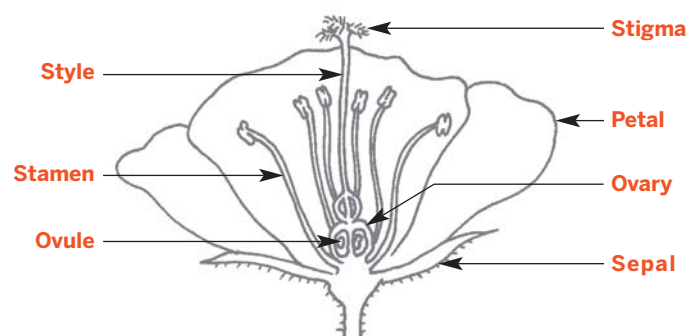
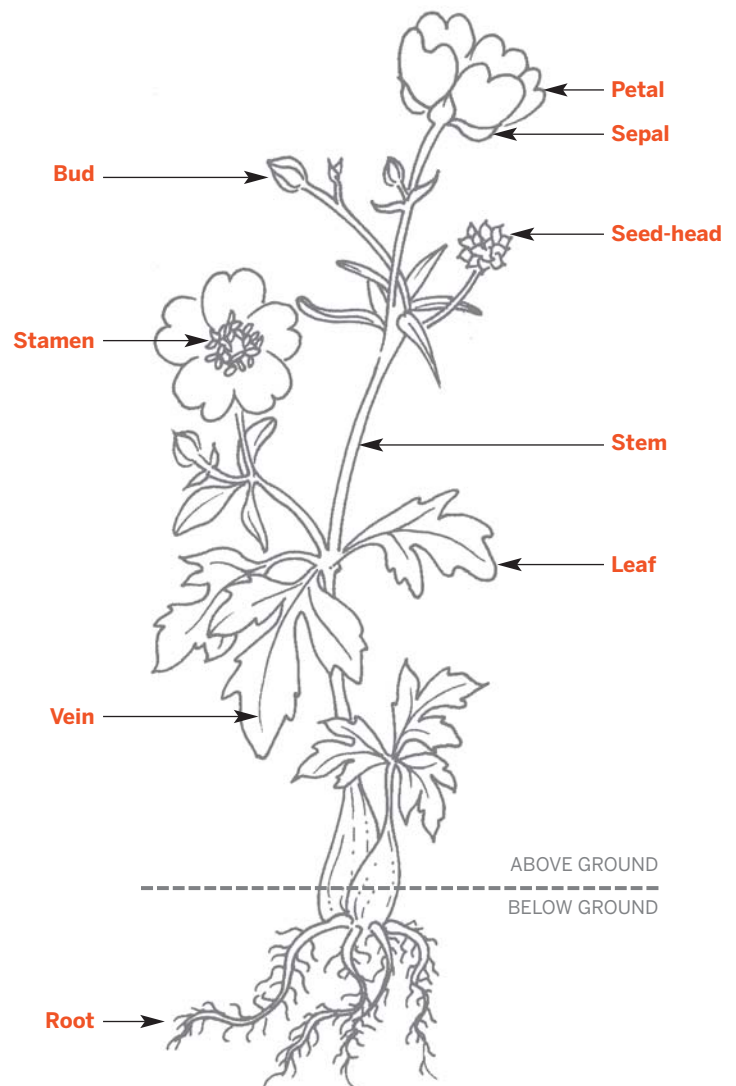


SPRING HAS SPRUNG!

PARTS OF A FLOWER continued

Example questions (in order) with answers

1. What part of the flower is found underground and is used for taking up water? **Roots**
2. What grows up from the **roots** towards the sky? **Stem**
3. What parts of the plant catch sunlight and turn it into food? **Leaves**
4. What protects the flower before it opens? **Bud**
5. When the **bud** opens it forms a ring under the flower and is given another name. What is it? **Sepal**
6. The **bud** opens, what comes out of it? **Flower**
7. What are these parts called? **Petals**
8. Inside the flower are tiny hair-like parts, which have tiny balls on the tips. The tiny balls are where the **pollen** is found and hairs hold the pollen up to the wind and passing insects. This part is called the **stamen**.
9. In the centre of the flower is the **ovary** and inside the ovary are spaces called **ovules**, in which **seeds** are created.
10. To create a seed a process called **pollination** takes place when pollen from the stamen goes into the ovary. But how does it get there?
11. When an insect enters a flower to feed on nectar the pollen sticks to its legs and body. As the insect moves around some of the pollen touches the **stigma**, which sticks up high in the centre of the plant. The pollen that touches the top of the stigma is taken into it. The pollen is then taken down along a tube called the **style** and will eventually end up in the **ovary**.
12. By the end of the summer the petals fall off the flower leaving behind a **seed-head** inside which are the **seeds**.



Teacher's
Page

PLANT REVISION SHEET

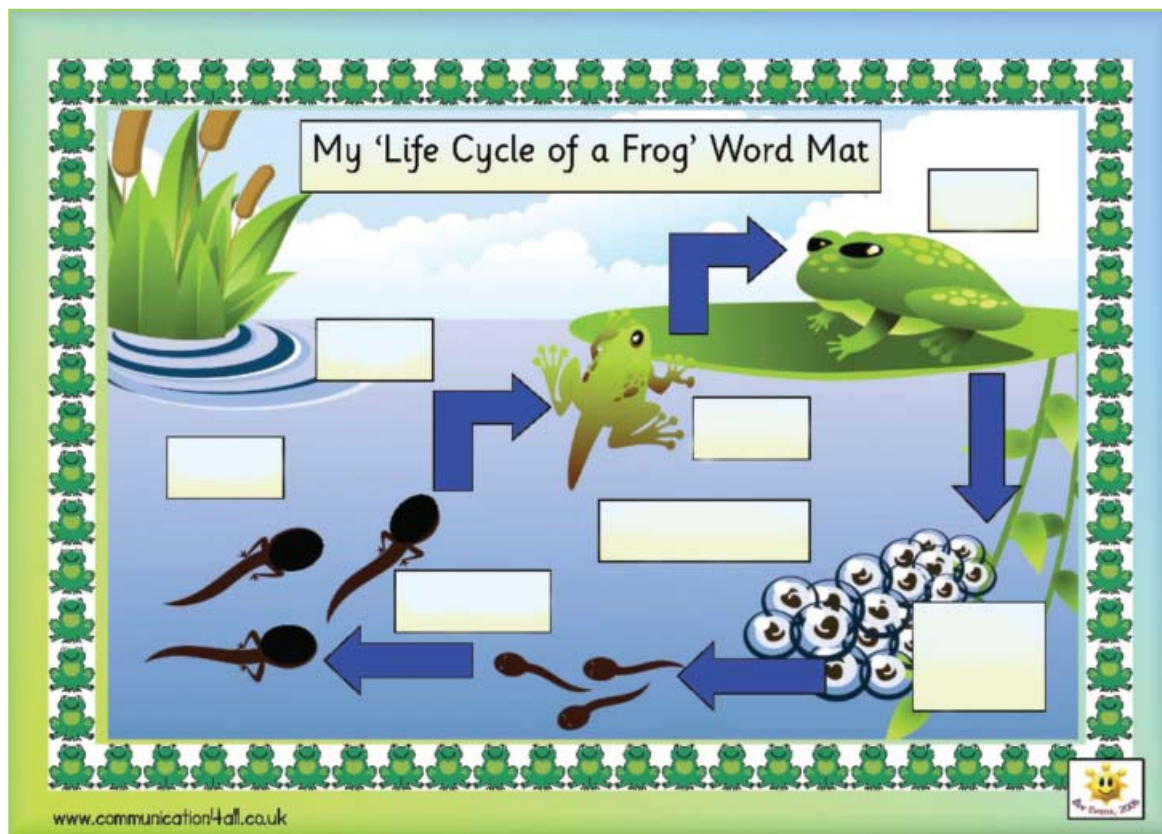
1. What conditions are needed for healthy growth of plants that are not needed for germination?	2. What is present in soil which breaks down dead things and recycles their materials?	3. Name three conditions needed for seeds to germinate.
4. Which part of the plant is a carrot?	5. Name the female parts of a flower.	6. Name the male parts of a flower.
7. Which part of the flower produces pollen?	8. Which part of the flower does pollen land on during pollination?	9. Which part of the flower attracts insects?
10. What do fertilisers provide for plants?	11. Which part of a carrot plant makes food for the plant?	12. Name two different methods of pollination.
13. What do we call the spreading out of seeds from the original plant?	14. What do we call the transfer of pollen from one flower to another?	15. How are the seeds of dandelions dispersed?
16. What pollinates a yellow dandelion?	17. What pollinates dull green grass flowers?	18. What do we call the joining of a pollen grain with an ovule?
19. How are the seeds of blackberries dispersed?	20. What do we call it when seeds start to grow?	21. In a food chain a plant is always a p _ _ _ _ _
22. In a food chain an animal is always a c _ _ _ _ _	23. Where does the energy for a food chain come from?	24. What is a predator?

SPRING HAS SPRUNG!

FROG LIFE CYCLE

Can you write the correct words from the list below into the spaces on the picture?

Pond Water Froglet Tadpoles Frog spawn Life cycle Frog



WATERY WORDSEARCH Can you find 18 'watery' words in the grid?

R	S	B	X	Y	S	E	D	L	O	K	Q	B	R	F
T	E	C	R	K	D	R	A	G	O	N	F	L	Y	R
E	F	T	N	A	E	I	M	R	O	I	F	E	S	O
G	T	A	T	Y	E	E	S	T	E	M	D	B	H	G
C	B	A	G	O	R	R	E	T	E	V	H	I	B	O
L	A	F	R	L	N	V	L	O	W	E	I	C	H	E
S	U	L	E	B	F	L	F	D	E	N	N	R	H	C
L	F	L	L	T	E	E	L	O	V	R	E	T	A	W
L	H	I	O	H	E	T	Y	E	T	O	N	U	R	T
I	S	A	P	A	E	Y	R	W	H	E	P	O	N	D
G	I	V	D	N	I	R	E	E	M	O	F	A	M	T
S	F	I	A	I	N	O	I	V	D	F	O	R	F	
T	M	F	T	T	O	N	D	N	A	N	M	L	D	R
S	A	C	Y	D	D	E	Y	O	M	H	I	L	E	R
S	E	R	C	I	S	W	T	Y	P	Y	S	G	F	F

- BANKS
- DAMSELFLY
- DRAGONFLY
- FISH
- FROG
- GILLS
- HERON
- INVERTEBRATE
- MINK
- NEWT
- OTTER
- POND
- REEDS
- RIVER
- SEDIMENT
- TADPOLE
- TOAD
- WATER VOLE

HELPING THE BIRDS!

Birds are found in the grounds of just about every school. With a little work, more can be encouraged and monitored. The real results gathered by the children can then bring maths lessons alive and can help prove that even graphs can be fun!

Feeding



Good food

bacon rind	unsalted peanuts
pastry	cheese
fresh coconut	unsalted nuts
fruit	suet
mealworms	cooked potato
wet bread	cake
cat or dog food	oatmeal
millet	corn
raisins/sultanas	sunflower seeds
mixed bird seed	



Bad food

salted nuts
desiccated coconut
mouldy food
uncooked rice
dry bread

Classroom Activity

Make a hole through the bottom of a yogurt pot, thread a piece of string through and knot the end so that the pot will be suspended upside-down. Mix up some dried fruit and put it loosely into the bottom of the pot. Carefully pour some melted lard over the fruit and mix together. (No need to let the lard boil, just gently melt). Allow to set and then hang it out for the birds to enjoy. A mixture of seed and fat can also be used to fill the cracks in fir cones or holes in logs.

Maintenance

Bird tables are an excellent way to feed the birds. Make sure the feeding surface is cleaned regularly to prevent any nasty diseases from being passed between birds. It is also a good idea to move a bird table once through the winter to prevent a build up of droppings and infections underneath.

Water

It is important to give the birds water all year round because it is vital for drinking and bathing. In the summer you will need to keep filling it up and in the winter you will need to keep melting it! You could combine this activity with monitoring the weather in the school grounds. **(See over page.)**

SPRING HAS SPRUNG!

HELPING THE BIRDS! continued

Bedding

In the spring birds are on the look out for bedding material for their nests. Hang out small bundles of 2 cm long wool, sheep's fleece, straw, fluffy feathers and grass, and then sit back and watch who takes what! Which is the most popular?

Bird boxes

Make up some bird boxes and site them around your school grounds. Research which boxes are best for your area and use Design and Technology worksheets (see the introduction to Spring has Sprung!) to make them. Don't locate the boxes on south-facing walls as the young birds could overheat in prolonged sunshine. Make sure they are sited high enough to be away from cats if your school is in a residential area. Make sure you clean out the boxes each year.



Safety first rubbish

Recycling is an important part of everyday life now. Sometimes, however, the reasons why it is important to consider what we do with our rubbish can be forgotten. Think about the rubbish which is thrown away - it may harm birds scavenging on the landfill site. Ask the children to make a list of harmful rubbish.

Firstly, recycle as much as possible, minimising the rubbish ending up in landfill. Landfill destroys habitats and pollutes the surrounding areas. Of the lists the children have just written which items could be recycled?

Secondly, make all rubbish safe - wrap up broken glass, break up the plastic

rings which hold cans together, do not leave a tin can lid partly attached to the can (this can trap legs or beaks, or small animals such as mice can get in but often cannot get out).

These topics can lead onto Countryside Code activities. It is worth encouraging children to pick up litter in the countryside, but emphasize that they should NEVER touch broken glass, needles or anything which may harm them. An adult should be asked to help if possible. Discarded fishing line is a problem to water birds. It can get caught around the feet or beaks of birds on the bank or in the water. It should be picked up carefully, avoiding any sharp hooks, and placed in a bin.

**Teacher's
Page**

Don't forget to take your binoculars if you have a pair.

SPRING HAS SPRUNG!

BIRD BONANZA!



Walk around Holt Island as quietly as you can and note the birds you see or hear. Look out for the bird feeders. These will be good places to watch the birds. Every time you see a bird, fill in this table:

Bird Name (or description)	What was the bird doing?

Where did you see the most birds?.....

Can you find out which birds these beaks belong to?

A
B
C

Birds on or around Holt Island eat different things. Look at the pictures on the left, and write down the answer to the following questions:

1. Which beak would be best for eating seeds?
2. Which beak would be best for eating insects?
3. Which beak is best for catching fish?



Stand still, be quiet and listen.

Draw the shape of a beak for a Shoveler or a Goose.

Can you hear any birds singing?

Why do you think birds sing?.....

.....
.....
.....
.....

SPRING HAS SPRUNG!



COMMUNICATION CHALLENGE



As humans we mainly talk to each other to communicate, but we can also use hand signals and even facial gestures (smiling or frowning, for example) and head nodding, Morse code (dots and dashes or short and long beeps used in the First and Second World Wars), text messages or semaphore flags still used in the Navy.



Research the semaphore alphabet to discover what this message says. Each position means a letter. Write your answer here

 Birds communicate through their song. They can give warnings (listen for a blackbird calling loudly and very fast when there is a cat around!) and in spring  listen out for lots of songs as birds prepare to nest. We can't understand exactly what they are saying but it is important that the birds listening can.

MAKE YOUR OWN SECRET COMMUNICATION CODE

Using a simple code like this is a bit like communicating in another language. Each letter is represented by a number:

A	B	C	D	E	F	G	H	I	J	K	L	M
1	2	3	4	5	6	7	8	9	10	11	12	13
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
14	15	16	17	18	19	20	21	22	23	24	25	26

Holt Island could be written 8-15-12-20 9-19-12-1-14-4

Can you decipher this message? Write the letters in the spaces underneath the number codes:

25-15-21 3-1-14 13-1-11-5 2-1-19-11-5-20-19 21-19-9-14-7 23-9-12-12-15-23

.....



Use the table above to tell your friend what you have seen on the Island today. See if they can unscramble your code.

Code

Translation

Create your own code and try it out. Use numbers or shapes to represent letters.

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

BIRDS' NESTS AND EGGS

See how many egg and nest questions you can answer.

Birds lay hard-shelled eggs. Some birds, like chickens, lay eggs each day. A chicken's egg takes around 20 days to hatch, whilst a swan's egg takes around 30 days.

1. How long does a blackbird's egg take to hatch?.....
2. How long does a wren's egg take to hatch?.....
3. What factors might affect this?.....
4. Worldwide, which birds eggs have the longest incubation period?
5. World wide which bird lays the smallest egg?.....

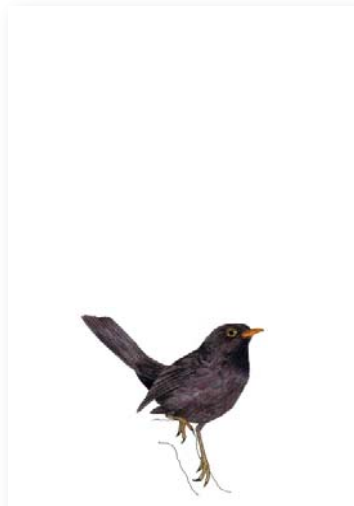
Birds build nests for breeding in trees, on cliffs, or on the ground. Most birds are taken care of by at least one parent until they are able to fly and get their own food.

6. What is special about a cuckoo and its eggs?.....

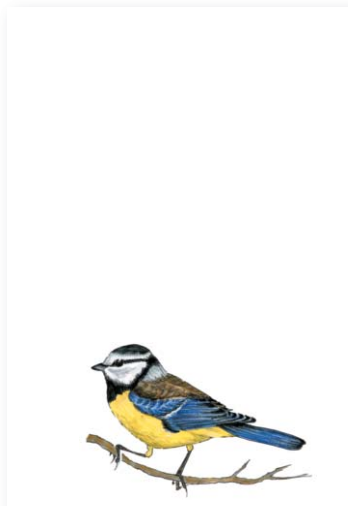
Nests are made using the materials nearby, so sometimes they are stones roughly pulled into a circle on a pebbly beach.

7. What do you think most birds use on Holt Island for their nests?.....

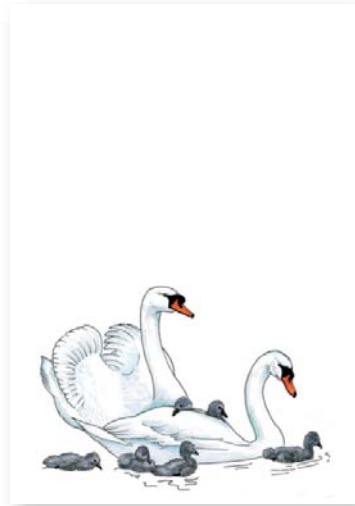
Draw a picture of a Blackbird's nest, a Blue Tit's nest and a Swan's nest.



Blackbird



Blue Tit



Swan

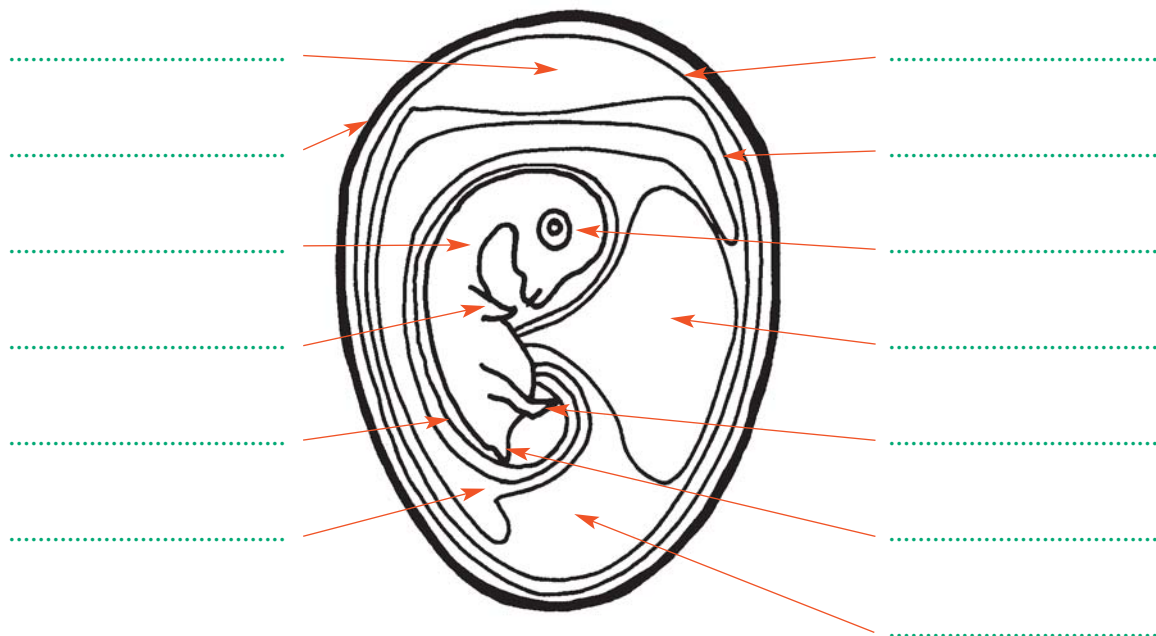
List what each bird has used to make their nest.

.....
.....
.....

SPRING HAS SPRUNG!

BIRDS' NESTS AND EGGS continued

Using the information below, label and colour the diagram of this 10-day-old egg.



Air cell A space at the large end of the egg, between the inner and outer shell membranes.

Albumen The egg white. It provides protein and water for the embryo and protects it from microorganisms.

Allantois A sack that holds some of the embryo's waste. It is attached to the embryo near the legs.

Amnion A membrane that surrounds the embryo, protecting it from dehydration (losing water) and shock.

Eggshell The hard, protective coating of the egg. It is semi-permeable; it lets gas exchange occur, but keeps other substances from entering the egg. It is made of calcium carbonate.

Embryo The developing chick inside the egg.

Eye Large and prominent on the head.

Inner shell membrane The thin membrane located between the outer shell membrane and the albumen.

Leg One of the lower limbs of the chick.

Outer shell membrane The thin membrane located just inside the shell.

Tail Located at the far end (the posterior) of the embryo.

Wing One of the upper limbs of the chick.

Yolk The yellow part of the egg; it contains nourishment (food) for the embryo.

WHAT BIRD AM I?

Can you work out which birds these clues describe? (Use books or the internet to research your answers if necessary.)

1. Water bird, lobed feet, white bill and face shield
2. Large brown bird, big black eyes, hoots
3. Green, red cap, yellow rump, often feeds on the ground
4. White rump, black head, pink breast
5. Black and white and pink, long tail, usually found in flocks
6. Grey, long legs, black crest, long yellow beak, likes to eat fish
7. Blue back, orange breast, long beak, lays eggs in tunnels in the river bank
.....
8. Brown back, red chin and breast eats worms, seed, fruit and insects
9. Yellow breast and belly, blue crown, olive/grey back
10. Yellow and black wings, white rump, red chin

Long-distance traveller

Imagine you are a Willow Warbler, and after the summer here on Holt Island, you now have to migrate to West Africa. Using the internet or books, make some notes about your characteristics.



I am a Willow Warbler notes



Use the table below to list your thoughts, regarding when, where, why you should leave, what dangers you will meet on the way, what might help you, what will you eat.

Reasons to go	Reasons to stay

Now write a poem to reveal your feelings as a bird at the end of the summer.

SPRING HAS SPRUNG!

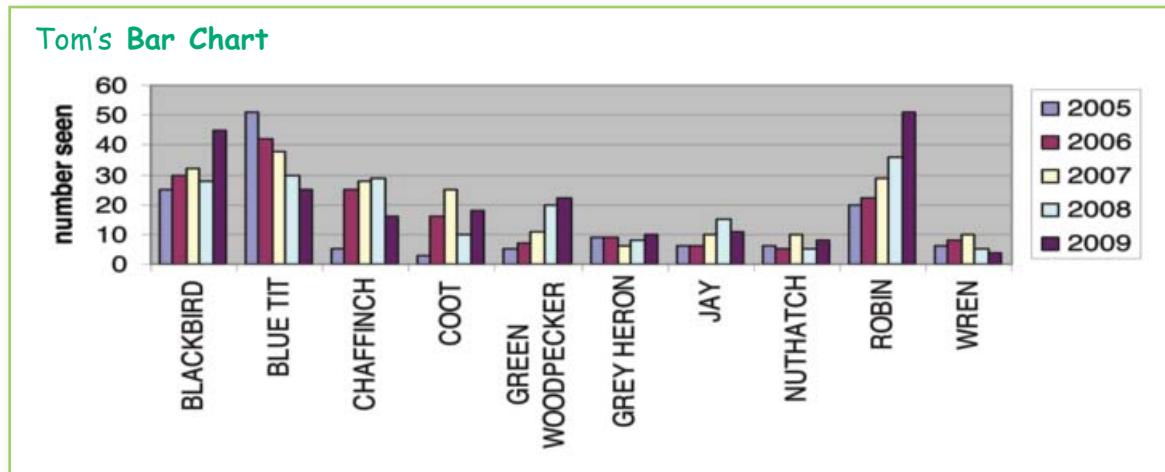
BIRD NUMBERS

Tom is keen on birds. Over the summer he kept a record of every time he saw a particular bird on Holt Island or on the River Great Ouse (each picture = 5 birds)

Tom's Tally Chart	
Sparrow	
Willow warbler	
Blue tit	
Heron	
Robin	
Green woodpecker	
Swan	

- Looking at the tally chart:
1. How many times did Tom see a Robin?
 2. What was the most common bird?
 3. Which bird did Tom see least often?

Tom kept a careful record of birds over 5 years, and his findings are shown below.



- Looking at the bar chart:
4. Which two species have consistently increased?.....
 5. Which species appears to be decreasing?
 6. Can you think why the Heron seems to be the most constant?

During your visit to Holt Island, keep a tally of the bird species you see, and note how many of each you spot. Record your findings in a graph like Tom's bar chart.

BIRD MIGRATION GAME

AIM

To demonstrate bird migration and the problems faced by birds on route.

Time needed
15 mins or more

Age group
6 years plus

Location
Indoors or outdoors

What you will need

- 216 Fuel Cards/tokens
- 36 Action Cards
- 10 lengths of rope or skipping ropes
- Dice

Preparation

Print 216 Fuel Cards from the CD-ROM or use plain green paper/tokens instead

Print 36 Action Cards from the CD-ROM.



What to do

All the children are birds, for example Swans migrating from Iceland to England or Swallows migrating from England to Africa.

Gaining fuel

Before the children can start their migration they must gain fuel. To do this each child in turn throws a dice 7 times to see how many green Fuel Cards they can get.

Throwing numbers

1 to 4 on the dice = 1 Fuel Card

Number 5 on the dice = 2 Fuel Cards

Number 6 on the dice = No Fuel Cards

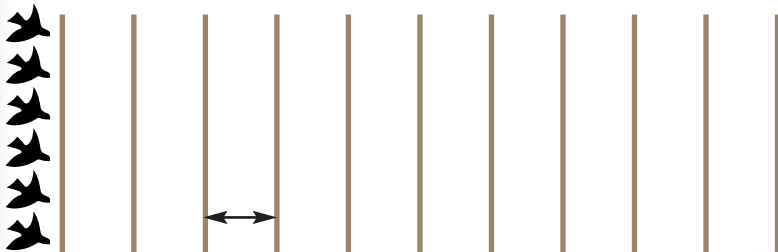


Each Fuel Card represents food for one day so when some 'birds' have got 7 Fuel Cards they can start the journey.

Explain that this illustrates that some birds have problems putting on enough weight before migration.

The Journey

Lay out rope/twigs/draw lines so there are 10 flying days.



= 1 day's flight

Variations

There is suddenly a good wind. All birds go forwards 1 day and keep the same number of Fuel Cards.

Very bad weather. All birds go back 1 day and keep the same number of Fuel Cards/lose 1 Fuel Card.

All birds get to England and find their lake has been drained. Only those with more than 2 Fuel Cards make it to the new winter site!

Each bird in turn picks an Action Card.

- If the bird moves forward 1 day it has to give back a Fuel Card, which represents the energy it has used in flying for one day.
- If the bird stays in the same place for a turn it gains a Fuel Card because it is gaining energy by resting.
- If there is a really good wind then the birds don't use energy flying so they keep the same number of Fuel Cards.
- Any bird that runs out of Fuel Cards dies of exhaustion and is out of the game. They are also out of the game if they pick an Action Card which says 'Sorry! You are now dead'.

Action Card
Blown off course, go back 2 days. Keep same number of fuel cards



Teacher's Page

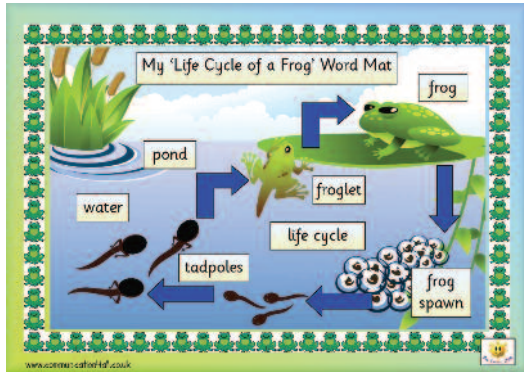
SPRING HAS SPRUNG!

ANSWERS

PLANT REVISION SHEET

1. Light (allow fertilisers)
2. Microbes
3. Air/water/warmth
4. The root (swollen tap root)
5. Ovary/carpel/pistil/style
6. Stamen (anther and filament)
7. Anther
8. Stigma
9. Bright petals or nectary
10. Nutrients/minerals/nitrates
11. The (green) leaves
12. Wind and insect
13. Seed dispersal
14. Pollination
15. By the wind
16. Insect/bee/or other named insect
17. The wind
18. Fertilisation
19. By birds/animals (in their droppings)
20. Germination
21. Producer
22. Consumer
23. The Sun
24. Something which hunts and kills its food

FROG LIFE CYCLE

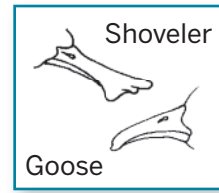
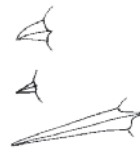


WATERY WORDSEARCH



BIRD BONANZA!

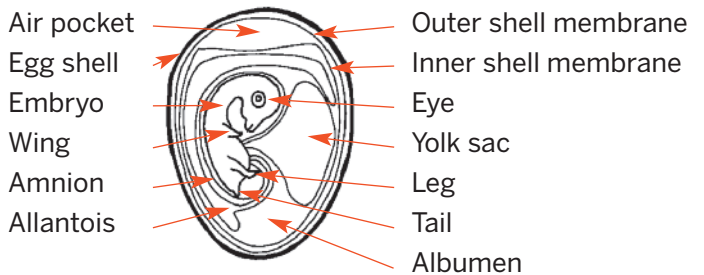
1. Chaffinch (A)
2. Blue Tit (C)
3. Heron (B)



COMMUNICATION CHALLENGE

Semaphore word: Feathers

Message deciphered: You can make baskets using willow.



BIRDS' NESTS AND EGGS

1. 10–19 days (2 or 3 clutches a year, 3–5 eggs per clutch)
2. 13–18 days (2 clutches per year, 5–8 eggs a time)
3. Weather (especially temperature), predators, nest disturbance
4. The male Emperor Penguin incubates the single egg on the top of its feet continuously without relief for 64–67 days. The male kiwi and wandering albatross incubate for 85 days but do leave the nest to feed
5. West Indian Vervain hummingbird and bee hummingbird eggs are around 10 mm and incubate for 16–17 days
6. Lays eggs in other birds nests. The young cuckoo will be fed whatever the “foster parent” eats, regardless how big the foster parent is. These foster parents can get exhausted by the demands of such a big baby
7. Twigs, moss and feathers

WHAT BIRD AM I?

1. Coot
2. Tawny Owl
3. Green Woodpecker
4. Bullfinch (male)
5. Long-tailed Tit
6. Heron
7. Kingfisher
8. Robin
9. Blue Tit
10. Goldfinch

BIRD NUMBERS

1. 10
2. Blue Tit
3. Willow Warbler
4. Green woodpecker and Robin
5. Blue Tit
6. There is a constant food source of fish around Holt Island.

Teacher's Page

SUMMER SURPRISES

CONTENTS

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MINIBEAST STATEMENTS

THE FOOD-CHAIN GAME [Teacher's pages](#)

THE FOOD-WEB GAME [Teacher's pages](#)



INTRODUCTION



Height of the season

Summer is a time when everything is seen to be ripening. The early spring flowers are setting seeds and summer flowers are appearing. Tree canopies are full and there are more minibeasts, birds, flowers and mammals visible. There are many hands-on activities based around minibeast hunting and so the following pages indicate some of these, together with ideas for follow up work ranging from creative writing and games. Encourage the children to look for these characteristic sights of summer.

JUNE

Yorkshire Fog

Grass family, flowers from June to September. **SG p21**

Timothy Grass

Little 'spikelets' go all the way round the stem making it look like a cat's tail. **SG p21**

Elder

Gently scented white-cream flowers – the flowers and the berries can be used to make cordial or wine.

SG p22

Rosebay Willowherb

Eaten by the caterpillars of Elephant Hawkmoths – large and brown with enormous spots that look like eyes. **SG p5,18**

JULY

Red Admiral Butterfly

Caterpillars feed on nettles but the adults are often spotted on rotting fruit. Migrates between Europe, North Africa and UK.

SG p5

Earwig

Earwigs have a pair of rear pincers and can be seen eating leaves, flowers and rotting fruit. **SG p3**

Common Wasp

Wasps can be seen collecting wood, which they chew, to make their nests.

Moorhen with sooty black chicks

Moorhens are water birds, with long spindly legs and red beaks, (Coots have white beaks.) **SG p10**

AUGUST

Brown Hawker Dragonfly

Large dragonfly with yellowish brown wings – seen catching insects as it flies. **SG p4**

Kingfisher

Watch out for a brilliant blue flash as it flies up and down the river. The 'nest' is a tunnel excavated in the river bank. **SG p12**

Grass Snake

Completely harmless. It is up to 1 m long and its colour ranges from green to brown, but always with a yellow triangle on the neck.

SG p9

Purple Loosestrife

Magenta flowers with 5 to 7 petals. A single plant can produce up to 3 million seeds each year! **SG p19**

RESOURCES

www.saps.plantsci.cam.ac.uk This is an excellent site including a thorough project across the curriculum, based on the very common dandelion so it is easily manageable for the whole class.



ALL ABOUT BEES AND WASPS

Bees are very important to us because by visiting flowers to feed on nectar and pollen they are the main way plants become pollinated. Bees have furry bodies which get covered in pollen grains when they land on a flower to feed. Some flowers are designed to



make this happen as the bee moves around. At the next flower, some of this pollen will fall off onto the stigma (see PLANT REVISION in SPRING HAS SPRUNG!) to fertilise the flower, and more new pollen will attach. Pollination is very important to humans because one-third of our food comes from plants that depend on pollination. There are around 300 different species of bees in Britain, in three groups – bumble, solitary and honey bees.

Bumblebees are the biggest bees we have in this country. They are quite furry and our 20 or so different kinds have varying patterns of stripes. The basic colour is black or brown with wide stripes of yellow or white. A bumblebee nest is like a bird's nest, found in compost heaps, under garden sheds, in mouse holes and in tussocks of grass.

Solitary bees work on their own, though they may all choose the same part of your garden or school grounds to live in. Each

female makes a row of cells in a hole and provides the eggs she lays with enough pollen for the larvae to eat and grow to adulthood. Most solitary bees cannot sting. (See MAKE A BEE HOTEL in this section.)

Honey bees are useful to humans as they produce the honey we like to eat. Beekeepers can also use wax and propolis – a waxy substance collected by bees from buds and used by the bees, like cement – to make candles, polishes, creams and medicinal products.

The Queen bee keeps the hive together. Worker bees feed a larva with royal jelly to create one queen in each hive. Following her mating flight, her main purpose is to lay eggs – up to 2,000 every day – while the workers rear the bees. In the peak of the summer a healthy colony can have up to 60,000 bees. A queen lives from four to six years, but is often forced to swarm after three when the workers sense she is not at her best. Approximately half of the hive will leave with the old queen, and they will establish a new colony elsewhere. The remaining worker bees will raise a new queen. **(See over page.)**

ALL ABOUT BEES AND WASPS continued



Worker bees are all female and make up most of the bees in a hive. The youngest construct the comb, rear the brood, tend the queen and drones, clean, control the temperature (by beating their wings) and defend the hive. Older workers forage outside to gather nectar, pollen, water and sticky plant resins (propolis) used in hive construction. Workers live about six weeks because they are soon exhausted. However, those born in the autumn can survive until the following spring.

Drone bees are male and have no sting. There are only a few hundred in the hive. Their sole function is to mate with a new queen. They are bigger than the workers and have bigger eyes. Drones live for about eight weeks. At the end of the season they are considered unnecessary and driven out!

Wasps are mostly predators and meat eaters and do not store honey. They make their nests from paper and colonies last only a season. The basic colour for wasps is black and yellow stripes. We have about eight kinds of wasps in Britain.

Hornets are particularly big wasps. They live in similar paper nests and eat other insects. The red tint is typical of a hornet compared with smaller wasps. Though they look and sound fearsome, hornets are not really any more dangerous than other wasps and are perhaps even a bit less aggressive.

RESOURCES

www.britishbee.org.uk/bees4kids/index.php Produced by the British Beekeepers Association, the folder 'Bees in the Curriculum' has a mass of information about bees, together with worksheets and the appropriate links to the curriculum.

BUILD A BEE HOTEL

AIM

To increase nesting opportunities for an interesting group of harmless insects.

Time needed

30 minutes

Age group

6 years +
(adult help required)

Location

Outdoors

What you will need

- Garden twine or string or wire
- Any hollow plant stems such as reeds or bamboo canes.
- Alternatively, a block of wood and a drill

Safety first

Don't worry; the children will not be stung by a solitary bee. Some species do not have a sting and the others will only sting in self-defence.

Not all bees live together in colonies. Solitary bees live alone but they are finding it increasingly difficult to find suitable places to make nests holes in which to rear their young. They like to use hollow reeds or twigs, holes in wood or, most commonly, tunnels in the ground. The female creates a compartment called a 'cell', lays an egg, leaves some food and then seals it off. You can help the solitary bees find suitable homes by making a bee hotel.

What to do

Cut the stems into 10-20 cm lengths. Different widths will be used by different species. Now bundle them together so the open ends all face the same way. Use the twine, string or wire to tie the tubes tightly together.



Leave a long end so the 'hotel' can be secured in place. Choose a location that is protected from the rain on a south or east-facing wall, which receives sun. Try putting the hotels in different places such as a shelf in a shed, in a rockery or on a fence.

Another way to make a hotel is to drill deep holes of various diameters into a block of untreated wood and place this in a similar position in the school grounds or garden.

You will know if your hotel is being used as the ends of tubes will be sealed with leaves or mud where the bees have 'checked in' to lay eggs. Other minibeasts, such as ladybirds and lacewings, might also look for a safe place to shelter if the hotel has vacancies. But watch out for wasp larvae as they will feed on the bee grubs. See how busy your hotels get in the summer season!

THIS IS MY MINIBEAST!

My name is Date

My minibeast looks like

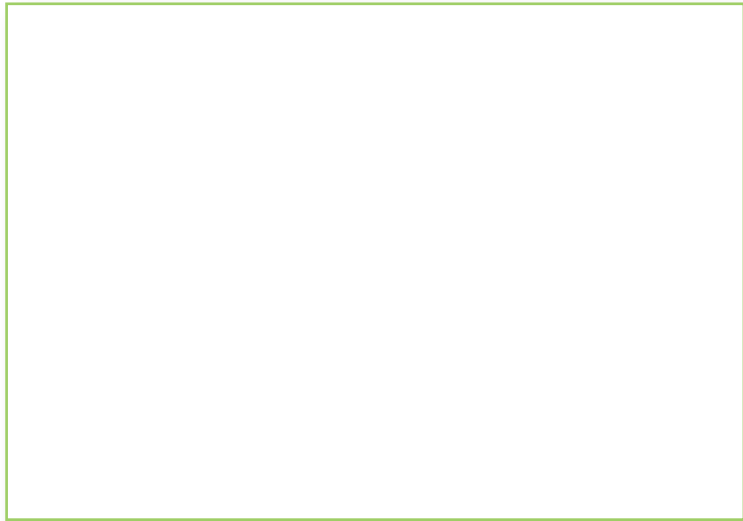
this 

Its colour is

.....








It is about this big

(draw a circle/rectangle)







✓ Tick the right boxes:

It has

- segments 
- 1 pair of wings 
- 2 pairs of wings 
- no wings 
- antennae 
- a shell 
- a hard wing case 

It has

- no legs 
- 6 legs 
- 8 legs 
- > 8 legs 

It moves

- quickly 
- slowly 

I found my minibeast in/on

- land places {
- a tree
 - grass/flower
 - log/stone











- watery places {
- surface
 - weed
 - mud

My minibeast is a

It eats

It is eaten by

MINIBEAST KEY

 Does your minibeast have legs?	YES? Go to 4	NO? Go to 2
 Does your minibeast have a shell?	YES? Snail	NO? Go to 3
 Is your minibeast's body clearly divided into rings or segments?	YES? Worm	NO? Slug
 Does your minibeast have more than four pairs of legs?	YES? Go to 5	NO? Go to 7
 Does your minibeast have more than seven pairs of legs?	YES? Go to 6	NO? Woodlouse
 Does your minibeast have one or two pairs of legs on each body segment?	One? Centipede	Two? Millipede
 Does your minibeast have three or four pairs of legs?	Three? Go to 8	Four? Spider
 Does your minibeast have wings?	YES? Go to 10	NO? Go to 9
 Does your minibeast have more than three body segments?	YES? Caterpillar	NO? Aphid
 Does your minibeast have one or two pairs of wings? (Look closely, there may be a second pair of wings hidden.)	One? Fly	Two? Go to 11
 Are the wings hidden?	YES? Go to 12	NO? Go to 13
 Does the minibeast have spots on its back?	YES? Ladybird	NO? Beetle
 Are the wings transparent?	YES? Go to 14	NO? Go to 15
 Can you see three body segments?	YES? Wasp	NO? Bee
 Does your minibeast have antennae with a ball at the end?	YES? Butterfly	NO? Moth

COMPARING MINIBEASTS

Now you have had chance to look for some minibeasts and identify them, try to complete the table below. There is space for eight minibeasts.

Name	How many wings?	How many body parts?	How many legs?	Is it an insect?

Choose one of the minibeasts from your list above and make a detailed drawing in the box.



Now add labels for **head**, **thorax**, **abdomen**, **wing** and **legs** and try to answer the questions

How many insects are in your table?

.....

What makes a minibeast an insect?

.....

.....

Are any similar? How?

.....

.....

.....

What else do your results tell you?

.....

.....

.....

.....

.....

CREATIVE WRITING

AIM

To explore and describe habitats from a minibeast's point of view

Time needed

30 minutes plus class room time to complete the writing

Age group

6 years +
(with adult supervision)

Location

Outdoors

What you will need

- 1 piece of string per child 1-2 m in length
- Carrier bags to lie on if wet
- Paper, clipboards and pencils
- A few copies of the Minibeast statements (see over)
- Small mirrors (optional)

Preparation

Photocopy the Minibeast statements (see over)

Safety first

Warn the children about brambles and nettles

What to do

Ask the children to choose a minibeast; either an ant, a butterfly or a centipede. Then group together the children who have chosen the same minibeast. Show the children the page of statements about the three minibeasts and allow them to decide which statements refer to their creature. This will start them thinking about the life-style of their chosen minibeast (some statements may refer to more than one minibeast).

Working individually or in pairs the children need to choose an area they think their minibeast would live. For ants and centipedes lay down a metre length of string to show a route their creature may walk. For butterflies they will need a 2 m length as butterflies fly faster than ants or centipedes walk (they may go beyond this if they have finished long before their friends).

Shrink them down!

Let the children know they now have to shrink to the size of their chosen creature! They can hold hands, shut their eyes and count to three. When they open their eyes they have shrunk and must see things differently. They must follow the route they have just laid out, pretending they are the minibeast and seeing the world from the minibeast's point of view. They need to remember the statements about their minibeast to ensure they move and act in the same way. Those following a centipede's or ant's route should lie on their tummies so their eyes are at the right level! The butterflies can fly above their string and change heights, alight on a flower, fly over or around things. Tiny pebbles will become huge boulders, a puff of wind will become major turbulence! The children can use the small mirrors to hold under logs or against cracks and crevices so they can see from a completely different perspective.

As they go the children should make notes of their journey which will lead to the writing of a story. (Younger children can just call out words or phrases for the leader to jot down.) If you have time the children can write up their story while still outside. Alternatively this can be a great follow up activity back at school.

MINIBEAST STATEMENTS

I feel things with my antennae

I like the sun

I like damp places

I like dark places

I'm looking for other animals to eat

I have to be fast

I collect lots of things; flowers, seeds, bits of dead animal

I like to stay under things and out of sight

I stay by myself

I like to be with other ants

I need to stay away from spiders' webs

Birds might eat me

I like to crawl around under logs

I like to visit flowers

I like to run over things

I do not like bright, sunny areas

I have to be careful when it is windy

I prefer to stay on the ground

I am happy to explore up a tree

THE FOOD-CHAIN GAME

AIM

- **To understand that the Sun is the source of all energy and that plants are the only living things that can turn the Sun's energy in food.**
- **To understand that living things are linked and depend on each other.**
- **To review the names of creatures seen during pond dipping, what they eat and what they are eaten by.**

Time needed

5-10 minutes

Age group

Age 6-8 (minimum 5 children)

Location

Outdoors

What you will need

- Index cards or pieces of paper or sticky labels
- Wide-tipped pen
- Tape

Preparation

Use the pen to label each card as follows: Water Boatman; Tadpoles; Water Fleas; Very Small Plants; Sun

Hand children the cards already taped to press on their chest

What to do

1. Arrange the children so they can see and hear. Some will be selected and will need to stand facing the others.
2. Talk to the children and try to work with the answers they give. The following is an example of how the activity might develop.

'All the creatures we found in the pond are connected. One of the main ways they are connected is by who eats who.'

'Who found a Water Boatman?'

The child who answers receives this card and tapes it on.

'What does he eat?'

The child who says 'Tadpoles!' gets this card and tapes it on.

'Did we see any Tadpoles today? Why not?'

(If necessary) **'Who has kept Tadpoles? What do they eat?'**

The child who says 'Water Fleas!' gets this card and tapes it on.

'And who can remember what Water Fleas eat?'

The child who says 'Very Small Plants!' gets this card and tapes it on.

'What do plants eat?'

(You are prompting the answers Water and Soil)

'If you put a plant in a dark cupboard with Water and Soil would it grow? What else does it need?'

The child who says 'Sun!' gets this card and tapes it on.

'Do you realise that plants can 'eat' the Sun?'

The process by which plants turn sunlight into food is called photosynthesis. Without sunlight and plants none of us could live. **(See over page.)**

THE FOOD-CHAIN GAME continued

3. Arrange the children with cards into a straight line in order of who eats who, as follows



Now ask the following questions:

'Where does all our energy come from?'

Answer 'Sun!'

'Who can turn sunlight into food?'

Answer: 'Very Small Plants!'

'Who eats the plants?'

Answer: 'Water Fleas!'

Now ask, **'What happens if we take away the Sun?'**

Answer: 'No plants would grow and all animals would die.'

'What happens if we take away all the plants to make the pond look tidier?'

Answer: 'There would be nothing for the plant-eaters to eat and eventually all the other creatures would die.'

'What happens if we take away the Tadpoles which are eating the Water Fleas?'

Answer: 'There would be many more Water fleas in the pond and the Water Boatmen would have to find something else to eat such as the Water Fleas or small fish.'

Tell the children that they have just made a food chain and then ask:

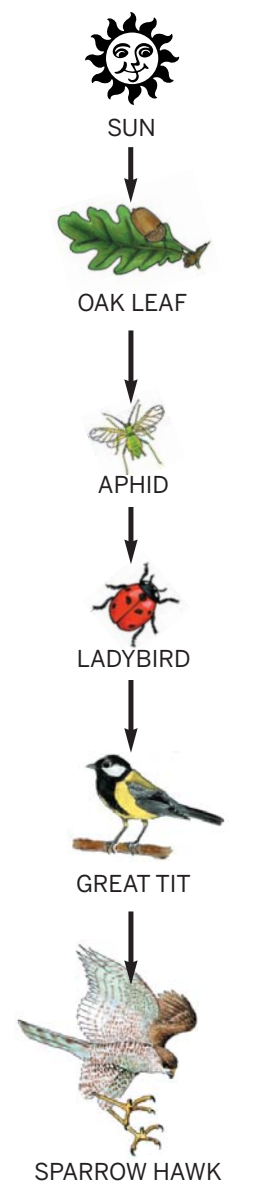
'But you don't just eat beef burgers do you? Well the Water Boatman or the Tadpole eats lots of different things as well. That is why this chain is not real. Animals and plants are not connected by a chain but by a web.'

Can they think of anything else in a pond that would appear in a food web?

Linked activities

Now follow with THE FOOD-WEB GAME which is more representative of how food chains work in a pond.

The FOOD-CHAIN GAME can be adapted to suit any habitat. For example an Oak tree food chain may be:



THE FOOD-WEB GAME

AIM

- To follow on from **THE FOOD CHAIN GAME** to show that the connections between living things can be complicated.
- To show that changes in a food web can cause unpredictable results.
- To review the names of creatures seen during pond-dipping, or other minibeast study, and what they eat or are eaten by.

Time needed

10 minutes

Age group

All age groups. This is a good follow-up for KS2 students (minimum of 10 students)

Location

Indoors or outdoors

What you will need

- Index cards or pieces of paper
- Tape
- Wide-tipped pen
- Lengths of medium thick rope approx 1 m long or skipping ropes

Preparation

Hand children the cards already taped to press on their chest

Safety first

Do not allow students to wrap rope around their hands. No-one is to pull rope until they are told to do so.

What to do

Arrange the children in a circle and ask children without labels (see THE FOOD-CHAIN GAME) to tell you the names of plants they've seen while doing the previous game, or while they have been on the Island. Write the names of the plants on labels and stick them on the children who named the plants. Be positive and work with the information the children give you. Then ask for names of animals which eat plants (herbivores), animals which eat the animals which eat plants (carnivores), or predators and animals which eat the animals which eat the plants (super predators). If you are working with a group of 11 children the ideal balance is 1 sun (see later), 4 plants, 3 herbivores, 2 predators, 1 super predator.

Now ask the following questions:

'Where does all our energy come from?' 'Sun!'

Give Sun the end of several pieces of rope. '

'And who turns sunlight into energy?'

Connect plants to the Sun. The plants will need to hold several pieces of rope now to connect to animals which eat them. Remember each plant will be eaten by several animals/insects

'And who eats plants?'

Connect plant and plant-eater with rope.

Continue the questioning

'And who eats this insect/animal?' and so on, until all children are part of the web at least once.

'This is the web. Can you see it? and each one of you is an important part of the web.' For instance,

'What if I take away the sun? Who will be affected?'

Ask children to hold all the ends of the rope tightly and make sure the rope is taut from one child to another. Ask 'Sun' to give the rope a tug. **(See over page.)**

THE FOOD-WEB GAME continued

'Who felt the tug? Why?' Because without sunlight plants can't grow.

'Now all those who felt the tug, tug the rope. Who felt the tug?' Take one or two connections and discuss why they would be affected. 'Because without plants, plant-eaters can't live.'

'Now, I have to tell you that I hate midges. I hate them so much that I am going to put a horrible poison on the pond to kill all midge pupae so that the midges will never hatch.' Ask midge pupa to pull on rope.

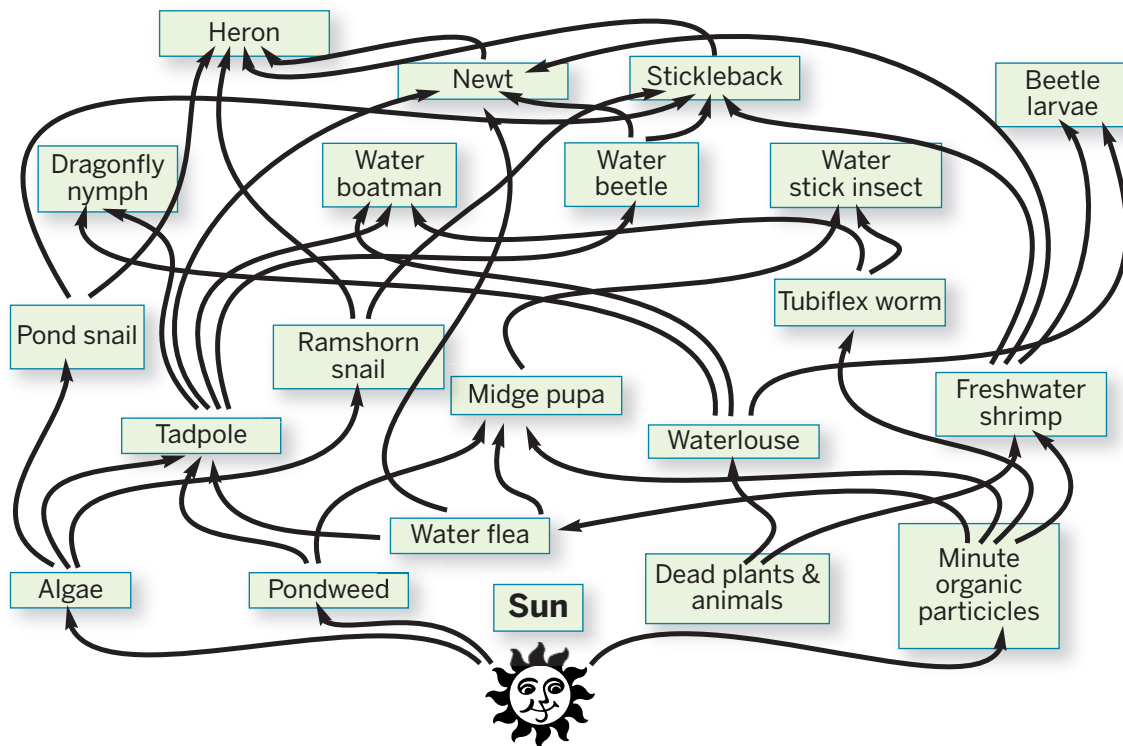
'Who felt that? What happens to the Water Flea if the midge pupa isn't eating it any more?' There will be more Water Fleas.

'And what happens to the plants if there are millions of Water Fleas attacking the plants?' There will be fewer plants.

'What happens to the Water Fleas if the plants are all gone?' The Water Fleas die.

'What happens to the other animals if the Water Fleas disappear?' The animals that live off Water Fleas will die or eat something else.

'Can you see how important each plant or animal is to the food web?' If we get rid of one, it will affect all the others . . .



Linked activities

COMPARING MINIBEASTS, MINIBEAST STATEMENTS

Teacher's Page

AUTUMN ANTICS

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INTRODUCTION

Seeds, snails, fungi and more

During the autumn months the trees change colour, seeds are being dispersed and there is a lessening of visible wildlife activity. In the case of the honey bee, all males die and the queen stops laying eggs so there are no new bees. However, a few will survive the winter ready to start over in spring. Encourage the children to look for these signs of autumn.

Autumn is a great time to explore and investigate colour and patterns. With art in mind, conkers, fallen acorns and seed cases can be collected and used to create patterns and collages on grand scales. Research the work of Andy Goldworthy for inspiration. Look out for lichen and moss which stay colourful all year round. Lichen is a good pollution indicator and so offers interesting links to science topics and opportunities to practice observation and hone recording skills.

As an introduction to the importance of seeds, take a collection of fruits (apples, grapes, kiwi fruit, tomatoes, peaches, melon) and ask the children to dissect them in search of seed(s). Collect and count them (estimate in the case of the kiwi!) Then discuss how these seeds would normally be distributed.

SEPTEMBER

Grasshoppers

Listen out for buzzing sounds coming from the grasses on the meadow as Grasshopper rub their legs against their bodies. **SG p3**

Mallard drakes

Notice that the male Mallard ducks now look like the females, with all-over brown 'eclipse' plumage see. **SG p2**

Conkers

Watch out for the spiky cases which split releasing the beautiful Horse Chestnut seed. Voles, mice and the Grey Squirrel eat them.

OCTOBER

Acorns

These may be found wedged into the bark of trees where the Great Spotted Woodpecker has been feeding on them.

Dog rose hips

Bright red berries that are valuable food for mice and voles.

Painted Lady

Having spent the summer feeding on nectar, whilst the caterpillars feed on thistles and stinging nettles, these adults migrate to Africa each Autumn. **SG p3**

NOVEMBER

Ivy flowers

The nectar from Ivy is welcomed late in the year by bees and other insects when there is little other food available.

Song thrush

One of the few birds still to be singing in repeated phrases: "I told you, I told you, I told you!" **SG p9**

Coral Spot

Found on dead, deciduous tree branches, these little pinkish/orange blobs are easily identifiable. **SG p15**

RESOURCES

www.treecouncil.org.uk is a good place to start looking for ideas.

Take part in Seed Collection Sunday or find out more about National Tree Week.

Could your school plant some trees in the grounds?

PARACHUTE SEED TEST

AIM

To test the effectiveness of parachutes as a means of seed dispersal.

Time needed

20 minutes

Age group

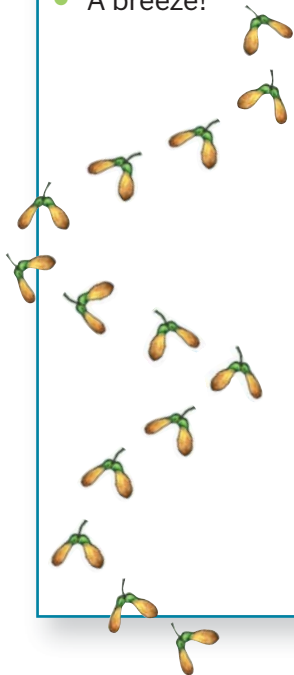
6 years +

Location

Outdoors

What you will need

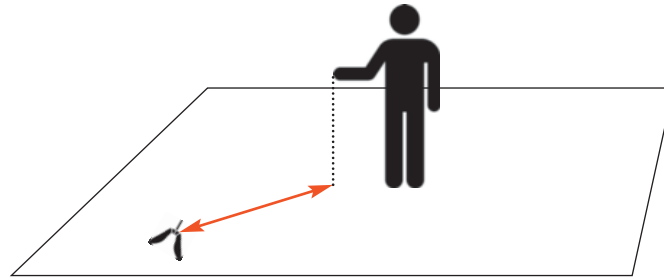
- Seeds with hairs such as dandelion or thistle, or wings such as Ash or Sycamore
- Scissors
- Tape measures
- Pencils and paper for recording
- Large white sheet (optional but useful)
- A breeze!



What to do

Children need to collect and identify some seeds with hairs or wings. To make this an investigative piece of work try trimming the hairs off some of them, using scissors or fingernails. Sycamore and Ash have wind-dispersed seed that use propellers rather than parachutes. A similar technique can be used for these – try some where the wings have been trimmed.

Lay out a large white sheet, and drop the seeds one at a time from an outstretched arm. For each one, record the type of seed and how far it travels. The measurement should be along the ground in a straight line across the floor, from under the outstretched arm to wherever the seed lands.



By using the data collected calculate the average (mean) distance for with and without a complete parachute (or with and without complete wings). Which design is the most effective? Encourage the children to discuss why seeds need to disperse. This is particularly obvious with trees.

What would happen if the seeds dropped straight down and landed under the tree – would they have enough light to grow? Competition for light and other resources can then be discussed in more detail with older children.

Put a sock in it

It is possible to recreate animal dispersal methods. Put an old white sock over children's shoes and then walk across grassland, or through woodland. On returning to the start, children can see if they have picked up any seeds on their socks. Which ones stick best? Do some of them look like Velcro with little hooks, or have some got caught because they have sharp points?

SEED EXPLOSION

SEED MAZE

Imagine you are trying to break out of your protective case, like a seed has to do in order to germinate. Can you find a way out of this maze? Start in the middle.

Seeds need to be scattered because they would be too close together if they all germinated at the base of the plant.



SEED TESTS

On Holt Island, there is a very large Ash tree. In one way it is like the Sycamore, Maple, Lime, Hornbeam and Elm.






1. What do they all have in common?
2. Why is this important?
3. Find out which seeds on Holt Island have:

Hard dry fruits/nuts	Wings
Feathery hairs	Little hooks

If you don't know their names draw the seed shapes and look them up in the SPOTTER GUIDE, or in other books.

4. Find out which birds eat which berries or nuts:
 Berries are eaten by
- Nuts are eaten by

5. Can you find out about these seeds and complete this table?

	What are the seeds commonly called?	What use do humans have for them?	Which animals use them and what for?
wild rose 			
black thorn 			
oak 			
horse chestnut 			
hawthorn 			

WRITE A POEM

Do you know what an acrostic poem is? It is a made-up poem. You think of a word first that describes the subject of your poem. It is called the topic word. Each line of the poem starts with a letter of the topic word and must relate to the topic word. Here's an example of an acrostic poem called SUN:



Shines brightly
Up in the sky
Nice and warm on my skin

Before you start gather some ideas to use in the poem, write a quick list of ten things you have noticed about autumn on Holt Island.

Now, can you add any adjectives to better describe your observations?

For example, if you have written piles of dead leaves, you might add 'rustly'.

Can you add any emotions or describe how you felt when you saw the island in autumn? Maybe the dead leaves made you feel sad 😞? maybe the bright red berries cheered you up 😊?

Using your ideas from above, write the acrostic poem below:

1
2
3
4
5
6
7
8
9
10

A
 U
 T
 U
 M
 N

FABULOUS FUNGI

There are more than three times as many species of fungus in Britain as there are wild flowers, and they are a vital part of the natural scheme of things. Fungi and moulds play their part in breaking down organic waste so that it gets washed away by rain, and sinks into the soil as compost for flowers and trees, and food for worms.

If fungi, insects, slugs and bacteria did not exist, fallen leaves would pile up and fallen tree-trunks would make woods impenetrable. Nothing new would grow because there would be no fresh nutrition in the soil.

How do mushrooms and toadstools help?

Firstly, there is no difference between a mushroom and a toadstool! They are both forms of fungi, but the term mushroom has generally been applied to those that can be eaten. They both help in breaking down organic material.

The part of the fungus visible above the ground in the grass, or on rotting logs and tree stumps, is the fruiting body of a much bigger underground living structure. It is just like seeing a flower head of a plant but not being able to see its roots.

A tree or a flower has the most important part of its structure above ground, where the chlorophyll in its leaves turns sunlight into food and roots take water from the soil. The fungus equivalents of the stem, trunk, roots and leaves are hidden from view and are called jointly the **mycelium**.

The mycelium takes nutrients from any organic matter by breaking up leaf litter and dead wood, or as a parasite — usually harmless — on living trees. Fungi rely on other plants to make their food.

Fungi come in many shapes and sizes other than the familiar stalks with caps of mushrooms and toadstalls. Young puffballs are delicious when cooked but, as their name suggests, they look like balls. Beefsteak fungus grows as a shelf-like structure on old oak trees, and has pores (small holes) underneath rather than thin gills. It is also tasty.

Honey fungus looks like string and is found on trees with its mycelium under the bark.

Children should **NOT** be allowed to eat any berries or fungus found on Holt Island. Whilst very few are poisonous, many can cause upset tummies.

In literature, especially in fairy tales, you can find many illustrations of the red-and-white-spotted Fly Agaric toadstool. Disney's film *Fantasia* has a dancing mushroom sequence featuring this species. There are images of Fly Agaric dating back to 3,500 BC painted in caves at Tassili, Algeria.

A classroom activity could be to research illustrations of mushrooms and toadstools through various periods of history and in different styles of art.

RESOURCES

Fungus Fred Goes Foraging by Maggie Hadley provides a great introduction to fungus and the following page is based on this book. The whole book is downloadable from www.fungi4schools.org
www.countrysideinfo.co.uk/fungi/concl.htm has excellent pictures and is very informative.



BE A FUNGUS DETECTIVE

On the back of this page you will find your Fungus Detective worksheet to fill in as you conduct your fungus investigation. But first you must look at your 'briefing notes' here so you are prepared.

There are nine main groups, or types, of fungus and we have shown you the outline shapes.



gill fungus



bolete type



bracket type



club fungus



stinkhorn



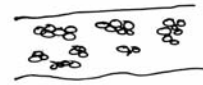
trumpet type



puffball type

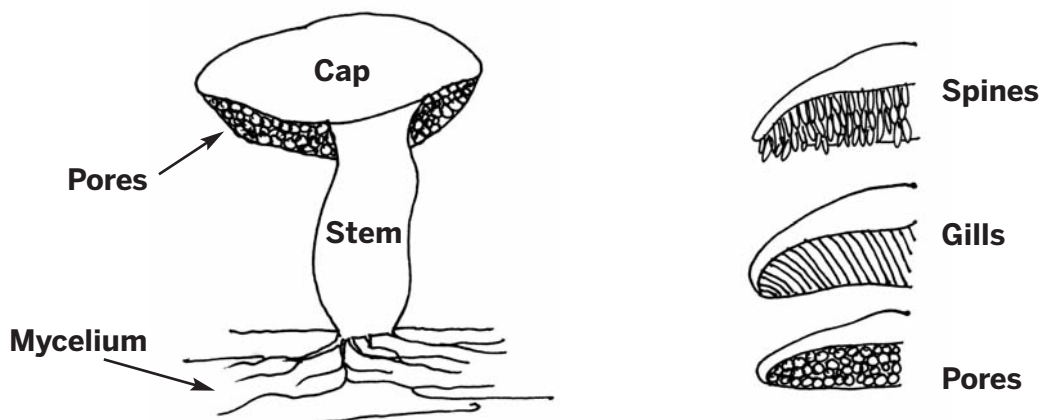


cup fungi



blobs on wood

You also need to be familiar with the parts of the fungus before you can complete your Fungus Detective form. Look at the drawings here so you can spot the cap, and identify whether your fungus has gills, pores or spines under the cap.



FUNGUS DETECTIVE WORKSHEET

Walk round the Island, or through The Thicket, and look carefully on the ground under trees, and on the trees themselves, or on fallen logs and spot as many different types of fungus as you can. Fill in the worksheet for each as accurately as you can. Remember, a detective is only as good as his notes!

Draw the outline shape of the fungus and write on it the colours of the parts: the **cap**, **stem** and **gills**.

Draw the outline shape of the fungus and write on it the colours of the parts: the **cap**, **stem** and **gills**.

Measure the **height** from the cap to the stem base.

Measure the **height** from the cap to the stem base.

Has the fungus got:
 gills, **pores** or **spines**?

Has the fungus got:
 gills, **pores** or **spines**?

Describe the **habitat** - where was the fungus growing?

Describe the **habitat** - where was the fungus growing?

Which of the 9 main **groups** does it belong to?

Which of the 9 main **groups** does it belong to?

At home, use a book to try and find the **name** of the fungus.
.....

At home, use a book to try and find the **name** of the fungus.
.....

WHAT IS LICHEN?

A lichen is a partnership between a fungus and an algae which work together to live in places that they may not be able to survive on their own! The algae part of the lichen provides food to the fungus using photosynthesis. Lichens can sometimes look a little like mosses but mosses are made up of slender, green stems with tiny, transparent, green leaves. Lichens can also look like splashes of paint, can have scalloped edges, wrinkled sheets; lacy patterns, bushy tufts or untidy strands of black or green 'hair' — but they **never have** leaves.

Lichens and pollution

If the air is very badly polluted from chimneys with a gas called sulphur dioxide there may be no lichens present, although green algae may still be found. If the air is clean, shrubby, hairy and leaf-like lichens become abundant.

Can you tell anything about the quality of the air in St Ives? You can also look up to the rooftops of the older houses in the town to see if any have lichen on the tiles. It grows very slowly and the newer buildings will not have any. The gravestones in the churchyard are the best place to look because you can tell how old the lichens are from the dates engraved on the stones. Some lichens can grow for a 1,000 years.

RESOURCES

www.cymru.org.uk/vtc/ngfl/science/phil_edwards_lichen/lichens.swf has some good lesson plans looking at the science/pollution of lichen.



LICHEN SURVEY

Conduct a survey as you walk to Holt Island to see what type of lichen you can find. Look on the trunk and branches of older trees and shrubs, and on walls. Take a magnifying glass with you to help see their different features. Examine each one closely if you can, and then tick the chart according to its appearance.

Lichen characteristics	LICHEN 1	LICHEN 2	LICHEN 3
Orange, yellow or black?			
Leafy surface?			
Shrubby surface?			
Granular surface?			
White, frost-like surface?			
Ridged surface?			
Rough surface?			
Smooth surface?			
Veined surface?			
Other observations			

Try to identify each one. It is not easy as there are many species (about 19,000 worldwide!) Check the library for an identification guide with pictures you can compare with those you have seen, or use the internet.

Draw some examples of lichen.

An example of a foliose (leafy) lichen

An example of crustose (encrusting) lichen

An example of fruticose (shrubby) lichen

ANIMAL ID

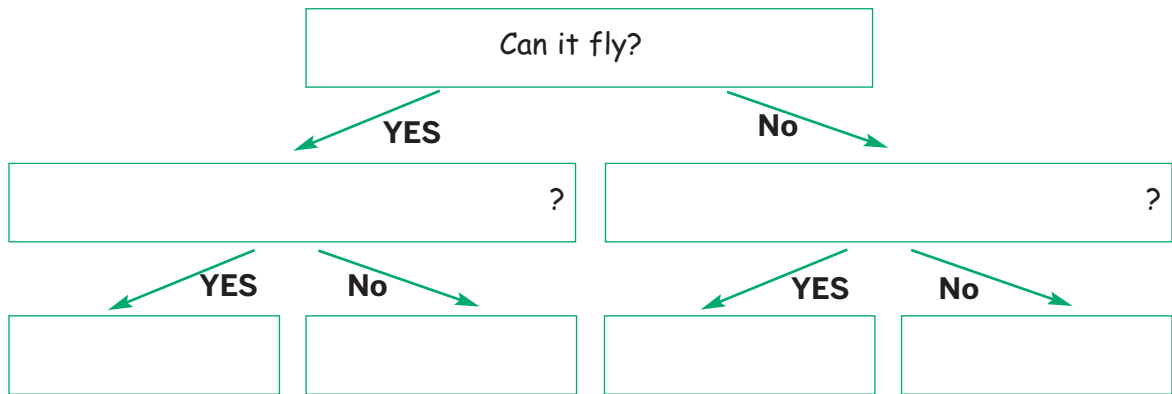
Here are four different animals.



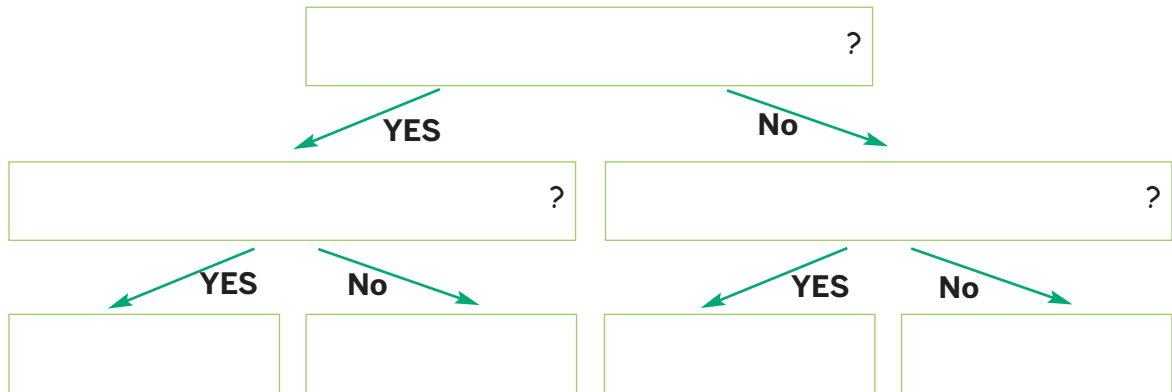
Can you think of some questions to create a key to identify these four animals? Your questions should have yes/no answers and should focus on the difference between the four creatures. Here's an example of what the first question might be to start you off: Can it fly?

Fill in the question boxes on the key.

Write the animal names in the correct boxes at the bottom of the key. Test your key on your friends. Does it always work?



Now make up keys to identify different animals that your research has shown live on Holt Island.



SNAILS, SLUGS AND SLIME

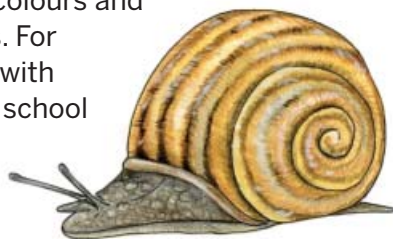
Slugs are known for leaving a trail of slime, which gives them suction to cling onto vertical surfaces. They can also cover their bodies with a layer of slime that tastes unpleasant to predators. Their eyes are at the end of the long tentacles while shorter ones are used for feeling. Slugs are just like snails but without the shell.

Snails can be seen in a variety of colours and shapes and found in a range of locations, from hedgerows and woodland to ponds and lakes.

Studying snails and slugs can encourage good observation skills and, as they do not move so fast, identification tends to be easier compared to say that of butterflies or birds. This means that studying snails or slugs and collecting and collating data it is quite easy. Slugs are slightly less appealing to children, so these activities will concentrate on snails!

Banded Snails

The most common snail that children can spot is the Banded Snail (see SG page 3). The shells are various shades from yellow to pink to brown, and can have one band round the middle or up to five bands, or even no band at all. Banded Snails are a favourite food of the Song Thrush (see SG page 9) and their various shell colours and patterns camouflage them against different backgrounds. For example, darker shells are found in woodlands but snails with lighter, yellow shells are found on grassland. There is one school of thought that shell colour affects how sensitive a snail will be to temperature, with dark-shelled snails being found further north.



The importance of snails

What would happen to snail populations if Song Thrushes continue to decline? Ask the children to think about the knock-on effect to humans. Link back to the food-webs in the Summer Surprises section.

In the classroom

It is possible to study snails in the classroom by collecting some snails and putting them into a container with a few twigs, a rock and some leaf litter. Keep it moist!

Snail questions

How does a snail eat? Snails feed in one of two ways. Usually the snail uses its radula, or tongue. This has around 14,000 minute saw-like teeth all over its surface and is used to 'scrape' away at the surface of the foodstuff. The snail also has a horny jaw. It sometimes uses this to bite pieces out of a leaf in much the same way as a caterpillar eats.

Which leaves are preferred? Snails do not like prickly leaves, but it is a good experiment to add one to show children that snails will choose alternatives.

How does a snail move? Snails have a large fleshy foot containing muscles which expand and contract to move the snail along. The slime that slugs and snails produce enables them to go over uneven, sharp ground as the slime protects the soft body.

SNAILS, SLUGS AND SLIME continued

What happens when the snail is touched? It will probably respond by retreating back into its shell. It can seal off the entrance using the same slimy mucus that creates the snail trail. This is how snails protect themselves against predators and dry weather. This is also how they sleep, or hibernate, through the winter.

Can snails adapt?

One of Darwin's first observations on his travels was that finches had different-shaped beaks for eating different seeds. This led him to believe that, over time, creatures could adapt to their surroundings – snails are no different.

On Holt Island, study the snails found in shady areas such as under the trees, compared to those found in the grassy meadow. Back at school continue the snail hunt on the playground and around the playing field to include a sandy area if you have one. It may be useful to use a thermometer to measure the temperature in each location, and to photograph some of the snails in situ.

Use the sheet to record the findings. Do the results show enough to prove or disprove the theory that there are different colours for different locations?

Having collected data, discuss what changes would be necessary for snails to survive if the habitat changed, for example if all the trees were cut down.

Follow this activity with a study of the snails in a pond. Why is the Ramshorn Snail so flat? How do snails breathe? Do the ones in water have gills?

Art projects

For an art activity, ask the children to draw a snail that would fit in well in an area made solely of concrete buildings, and one in an area that was always wet.

Research *The Snail* by Matisse.

Can the children take inspiration from him and their own observations to create an autumnal snail picture?



RESOURCES

www.tate.org.uk/imap/pages/animated/cutout/matisse/snail.htm has a great website showing how Matisse created his masterpiece.

www.kiddyhouse.com/Snails has a good background to snails and related activities.

www.edu.dudley.gov.uk/primary/ICT/year%20group/Year%20Five%20Page.htm uses ICT to teach about animal classification.

SNAIL WORKSHEET

Using your observation skills find a snail or a slug and make a detailed drawing of it. A slug is really a snail without a shell, although some slugs have a little 'saddle' on their back which is like a shell.

Label the **antennae, eyes, foot, lip and shell**

Describe exactly what the conditions were like when you found the snail you have drawn above. (Consider if it was open, sheltered or shady, wet or dry. Was the surface smooth? Was the day hot or cold?)

.....

.....

.....

.....

.....

Continue your search and see if you can find any more slugs or snails. Try at least four different places and fill in the details for each location and the snails you find.

	Location 1	Location 2	Location 3	Location 4
Describe the location				
Temperature				
Number of snails				
Size of snail				
Colour of shell				
Number of bands				
Colour of lip				
Is there a snail inside?				

NATURE IS ART

Experimenting with natural forms encourages both observation and creativity. Nature can be extremely ordered. A sunflower head, for example, is extremely precise and the coloration of a butterfly's wings is symmetrical, whilst spiders' webs are delicate variations on a circular structure. But add different flowers and colours and the picture becomes quite chaotic.



Andy Goldsworthy is an artist who uses natural objects in his compositions and shows how the study of patterns in nature can create works of art.

Andy works outdoors and tends to focus on either one colour, for example red, or one shape, for example round, or one item, for example twigs and leaves from one particular tree. He then arranges the selected items into effective patterns – his work has appeared in a number of books and has even featured on a series of stamps in 1995. Here are some examples:



The key factor in each of Andy's works is that nothing unnatural is used. If items need pinning, then thorns or pine needles are used, or alternatively the materials are woven or plaited together.

Think like Andy

Discuss Andy's approach to his pictures and show the children these examples. Then, on Holt Island, ask the class to collect a range of natural items to reflect autumn. Encourage the children to think in advance whether they are going to collect items of only one colour, or only one item but of any colour, or whether they are going to collect a huge range of natural material. Ask the children to collaborate in small groups to make some large-scale art pieces and leave them for other visitors to see. Don't forget to photograph the finished works of art!

Remember! Limit the impact! Do not break branches or remove a whole plant. Picking one or two petals or leaves from each flower is fine – do not strip a flower completely. Leave some for the next visitors to admire! Do not destroy animal habitats.

RESOURCES

www.forestry.gov.uk/thameschase provides some lesson plans plus curriculum links for various outdoor activities.

www.morning-earth.org/artistnaturalists/an_goldsworthy.html has a brief interview with the artist Andy Goldsworthy and examples of his work.






ANSWERS

SEED EXPLOSION

1. Seeds with wings 2. For seed distribution on the wind

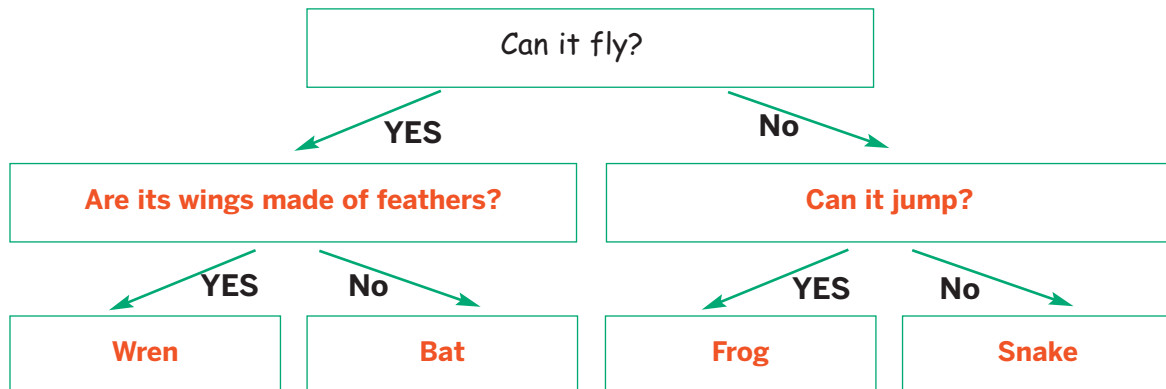
3.	Hard dry fruits/nuts Hazel	Wings Ash, Sycamore
	Feathery hairs Dandelion	Little Old Man's Beard

4. Berries are eaten by Blackbirds Nuts are eaten by Nuthatch

5.	What are the seeds commonly called?	What use do humans have for them?	Which animals use them and what for?
wild rose 	rose hips	making syrup and flavouring ice cream	birds will eat as a last resort in a hard winter
black thorn 	sloe berries	alcoholic drinks	good habitat for birds and hiding place for weasels
oak 	acorns	ground to make coffee and flour	jays and squirrels for food
horse chestnut 	conkers	games of conkers!	squirrels for food
hawthorn 	haws	used in medicines	blackbirds for food

ANIMAL ID

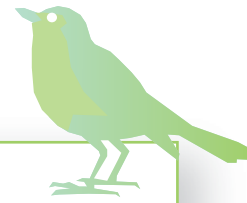
Possible answers



Teacher's Page

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.

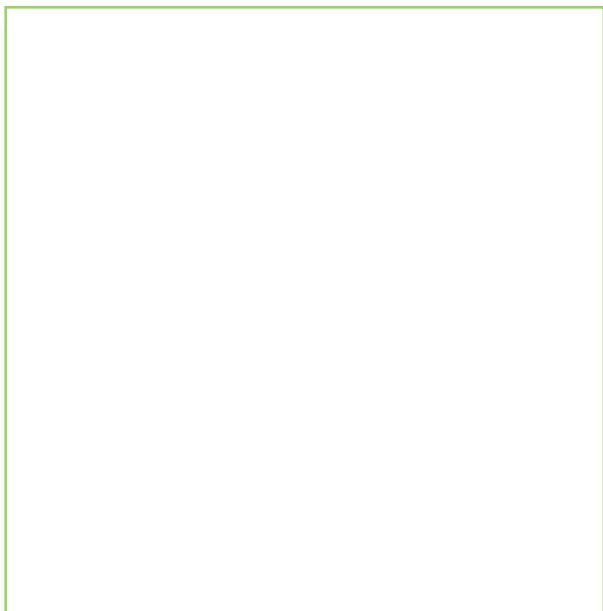
Allow time to hear all the opinions and for the 'land owners' to make up their minds. The land owners may need to make some notes for discussion before making their decision.

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.

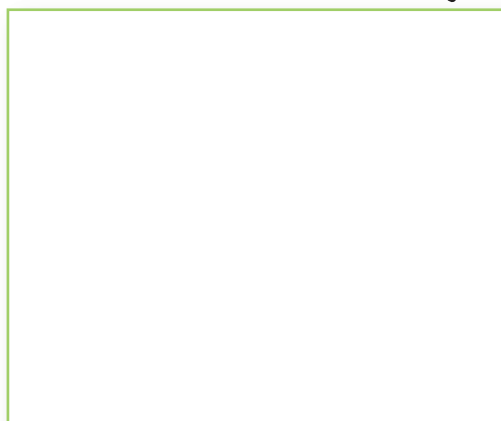
THIS IS MY TREE!


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!

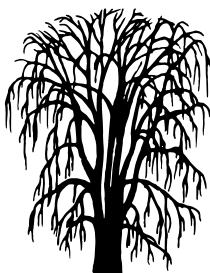
Safety first

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

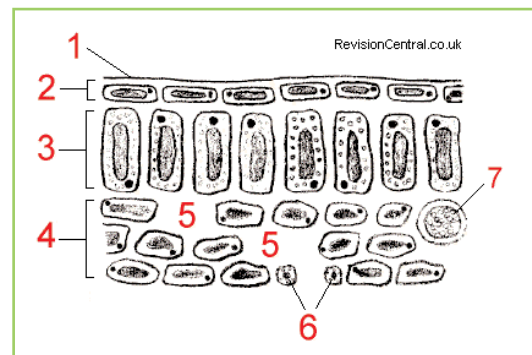


LEAF TALK

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.



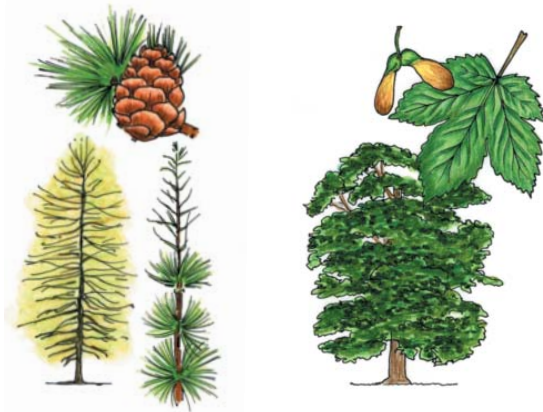
- 1. Waxy cuticle** Forms a waterproof layer to stop any loss of water.
- 2. Upper epidermis** Consists of epidermal cells with no chloroplasts, parts that contain chlorophyll.
- 3. Palisade cells** Contain lots of chloroplasts where photosynthesis is carried out.
- 4. Spongy mesophyll** Layer of tissue 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

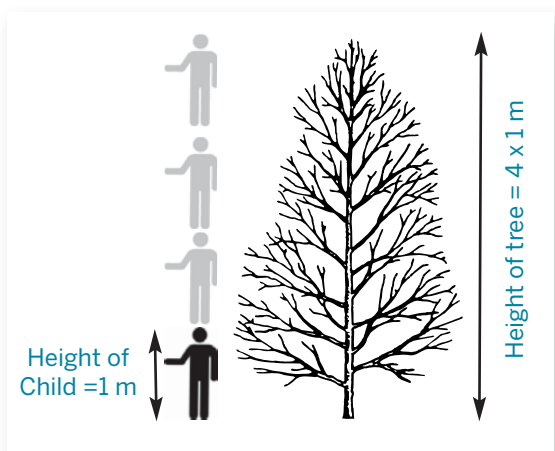
Preparation
 Have in mind a good straight tall tree

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



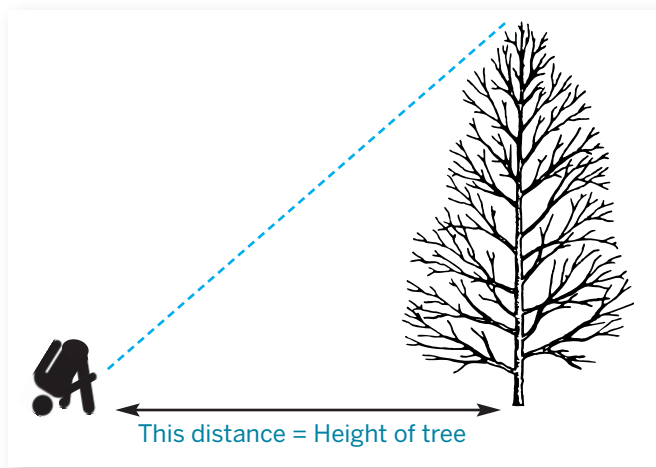
second child walks carefully backwards, away from the tree until, using a pencil and shutting one eye, until the pencil appears the same height as the friend. The child will need to hold the pencil out at arm's length in front of them.

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.



Teacher's Page

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

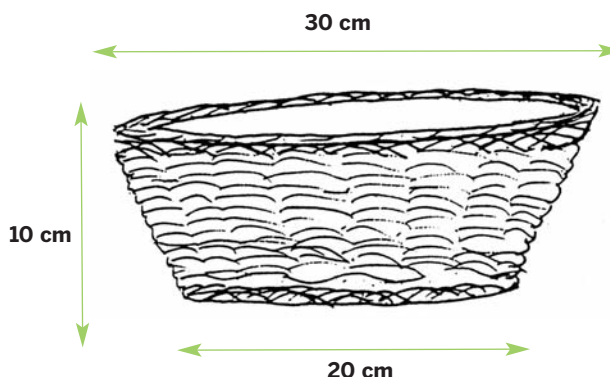
Indoors or outdoors

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



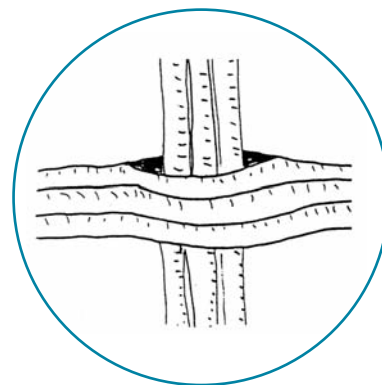
So it's cold outside and the weather unpredictable. What better way to occupy the children than to teach them the fascinating art of willow weaving, a craft with strong associations with Holt Island. You'll first need to acquire the willow sticks or wands, sometimes also called withies, and we offer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

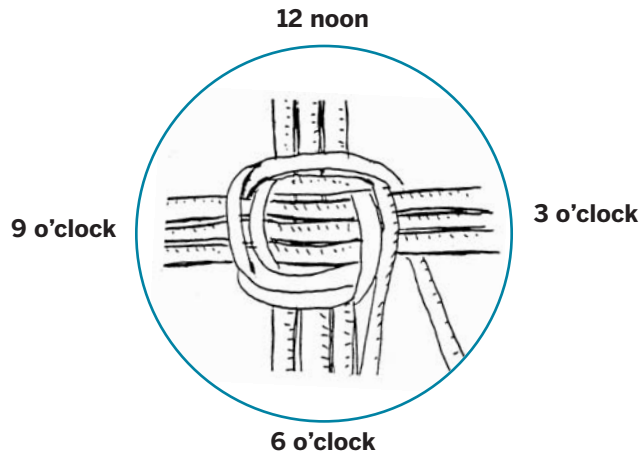
However, it is possible to use willow that has not been treated. This is cut on Holt Island during the winter months, so ask a Ranger and they should be able to help you out!

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.



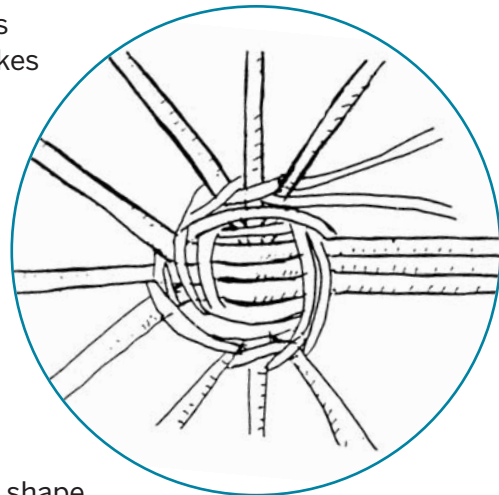
MAKE A SIMPLE FRUIT BASKET continued 1



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.



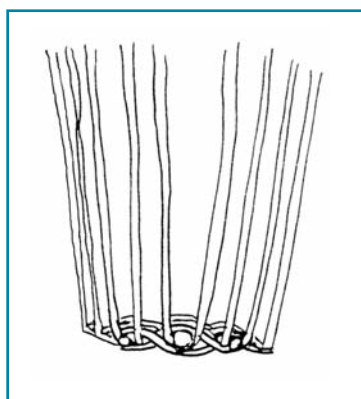
Keep an eye on the shape, tapping the willow into shape if it is not quite round. If you have a slightly concave round disc, don't worry that is natural! When you have a base of approximately 20 cm, finish with the thin ends of weavers and just tuck them back into your work to hold them in place.

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.)**

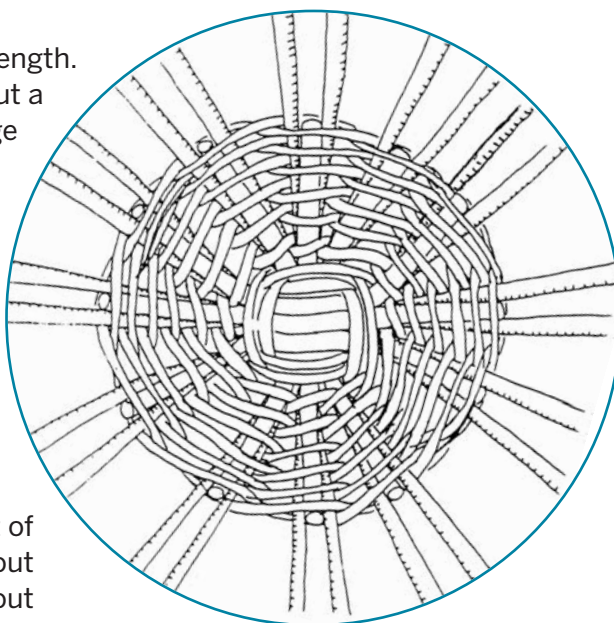
MAKE A SIMPLE FRUIT BASKET continued 2

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.

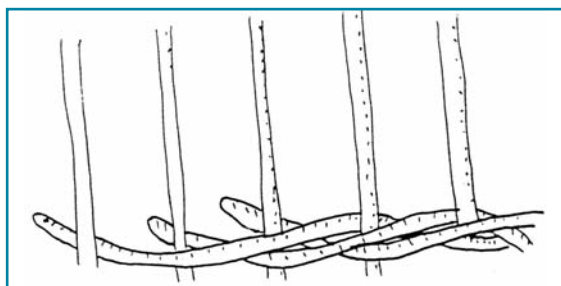


Upsetting

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.

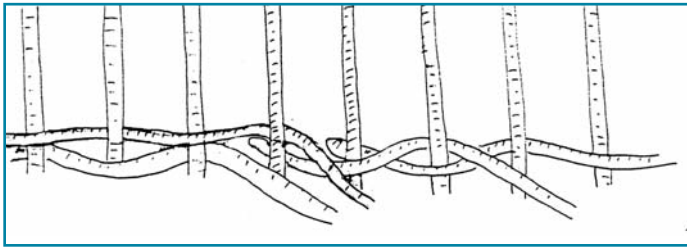


Continue using these three weavers until you get half way around. Temporarily leave these weavers, slype three more weavers and insert these new ones (one to the left of the next three consecutive base stakes), and follow the instructions above. Work until you have used the end of these weavers, then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

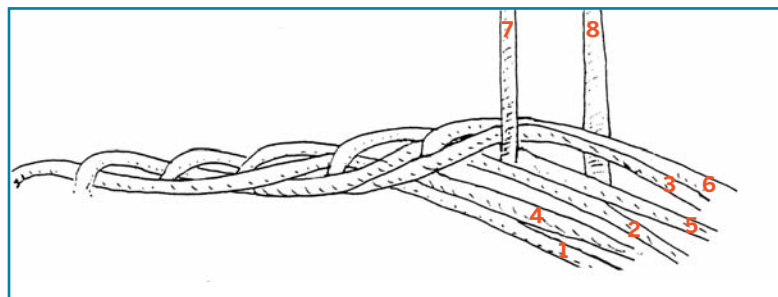
Putting on a wale

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.

RIVER DETECTIVES

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INTRODUCTION

Surveying fun

Careful surveys are an important part of investigating an area. We have provided a River Survey Sheet template with four sections over three pages for photocopying and use at three locations near or on the Island. But first, encourage the children to find out more about their river.

Our river

Holt Island is located in the River Great Ouse. The river represents a wonderful natural resource that the children will find fascinating to research. Our river Great Ouse is approximately 140 miles/230 km long from source to sea. It is the fifth longest river in the UK. From this table can the children discover which rivers are longer and where they flow from and to?

	name	miles	km
1	River Severn	220	354
2	River Thames	215	346
3	River Trent	185	297
4	River Aire	161	259
5	River Great Ouse	143	230
6	River Wye	135	215
7	River Tay	117	188
8	River Spey	107	172
9	River Nene	100	161
10	River Clyde	98	158

On flows the river

The source of the Great Ouse is near Syresham in Northamptonshire and it flows through Buckingham and Milton Keynes to Kempston in Bedfordshire. This 70 miles/114 km section is not navigable. From Kempston it continues through Bedford, and into Cambridgeshire via St Neots, Godmanchester, Huntingdon, Hemingford Grey to St Ives. From our town it continues through Earith, Ely and Littleport, to reach the Denver sluice in Norfolk. Below the sluice the 16 miles/26 km of river is tidal and passes Downham Market to enter The Wash at King's Lynn.

The Ouse Washes in Cambridgeshire where floodwater is diverted in winter are famous for the wildlife supported by the wet meadows there. A great day trip could be organised to either the RSPB or Wildfowl and Wetland Reserves to investigate the importance of this area.

To focus on the river in its entirety ask the children to discover as much about the Great Ouse as possible from its source to the sea. In addition ask them to investigate how the river is used in the towns and villages through which it passes, how many bridges it flows under, and how many locks are required to make the river navigable.

RESOURCES

www.waterscape.com/canals-and-rivers/river-great-ouse Information regarding length, history etc of the River Great Ouse.

www.rspb.org.uk Basic information about birdlife found at the Ouse Washes.

www.environment-agency.gov.uk Check to see if there are any fast stream or flood warnings in place at the moment.

www.washbarrier.org Considers flooding and actions that can be taken in The Wash.

www.captainsplosh.co.uk Anglian Water's educational pages look at nature, clean water provision and water uses.

INTRODUCTION continued

Using the River Survey Sheets

The purpose of this section is to investigate the river as it is found in St Ives in three locations on the Island. By completing a survey sheet for each, the children will gain a good understanding of the many different elements that make their local river landscape what it is today, and the differences between the backwater and the main river channel. The locations are as follows:

1. From the bridge onto the island, looking right along the backwater upstream (away from the town centre).
2. From The Waits, opposite the Island.
3. From the boardwalk on the Island overlooking Hemingford Meadow (at the widening of the path by the bench for Mr and Mrs Mann), looking both ways. The group adult rather than the children may need to collect the water sample from this location.

Choose the location you want, copy the sheets and tick the relevant box.



Water safety

Before they visit the site, ask the children to come up with how they can stay safe near deep water. Then ask them to make their own list of rules they must follow – they are more likely to remember these if they have created them themselves. There is a hazards table included in this pack for your information.

Parts of the River Survey Sheet

Section 1. RIVER FACTS

Each side of the river may have different attributes – record both sides (maybe use a black and a blue pen, but remember to make a note of which bank is which colour). The depth of the river will have to be guessed or recorded as ‘unknown’.

Section 2. RIVER CHEMISTRY

The children can work out a safe way to retrieve a water sample – the easiest is to use an empty plastic bottle (glue some clean stones to the underside so it sinks) on a long piece of string so you can throw it in and retrieve it again.

Section 3. RIVER WILDLIFE

The Spotter Guide will help with wildlife identification.

Section 4. ILLUSTRATIONS

If the surveys are to be used together for comparisons they need to be completed at a similar time. Sketches can be completed on a separate visit.

All of the sketches and photos created by the children can be used together in a big class display – draw out a large scale plan of the river and use the material to annotate it.

NOTE The sea is in the direction of the medieval stone town bridge (the one with the chapel). For the purpose of completing the survey sheets and annotating the maps, always stand facing downstream, towards the sea, with the bank on your left as the left bank and the bank on your right as the right bank.



RIVER SURVEY SHEET

Name/name of group Date

Tick which location you are surveying:

Location 1 From bridge on the backwater

Location 2 From The Waits

Location 3 From the boardwalk opposite Hemingford Meadow

Current weather conditions Rainy Cloudy Windy (strong)

Windy (light) No wind Sunny Other

Recent weather conditions Lots of rain Little rain No rain

Section 1 RIVER FACTS

River width <1m 1-5m >5m

River depth

What is the river bed made of? Can't see Mud and silt Clay

Sand Pebbles Boulders Concrete/bricks

Flow speed How long does it take for a stick to travel 10 m?

What is the river bank made of?

Earth Boulders Bedrock Brick/stone Covered in vegetation

What is the river bank shape? Steep Gentle Reinforced Not visible

What is the height of the river bank above the water?

<1m 1-2m 2-3m >3m

What signs of erosion can you see?

River litter Number of items you can see

Type of litter (bottles, oil, bicycles etc.)

What is the surrounding land use? Farmland (arable) Farmland (grazing)

Scrub/rough grass Woodland Wetland Public park

Urban/residential Flood banks Other

Is there any evidence of people using the waterway?

Moored boats Moving boats No evidence of boats

Other.....

RIVER SURVEY SHEET continued 1

Name/name of group Date

Survey location **1** The bridge **2** The Waits **3** The boardwalk

Section 2 RIVER CHEMISTRY

You will need to use proper testing kits.

Water pH

Nitrate level

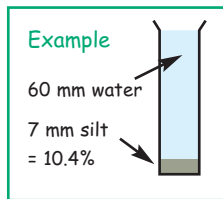
Collect a water sample and place it in a straight-sided, see-through container.

Is the water clear?
.....

Leave it for a while until the silt settles and then measure the height of the sediment compared to the height of the water.

What percentage is this?
.....

Draw in the level of water and silt in the blank container below



Your sample

Section 3 RIVER WILDLIFE

Look carefully around the location and tick off the species of plants, trees, shrubs, birds, insects and mammals that you can see. Use the Spotter Guide to help your identifications.

Plants (river)

- Water Plantain
- Bogbean
- Bulrush
- Common Reed
- Pondweed
- Duckweed
- Yellow Iris
- Water Mint
- Floating Sweetgrass
- Water Lily
- Others

Plants (bank)

- Purple Loosestrife
- Marsh Marigold
- Common Sedge
- Ragged Robin
- Himalayan Balsam
- Others

Trees and shrubs

- Ash
- Alder
- Willow
- Hawthorn
- Elder
- Bramble
- Oak
- Others

Birds (water)

- Heron
- Kingfisher
- Mallard
- Mute Swan

Greylag Goose

Canada Goose

Coot

Moorhen

Great Crested Grebe

Others

Birds (surrounding area)

Sparrow

Blackbird

Blue tit

Great Tit

Chaffinch

Wren

Thrush

Wood Pigeon

Others

Insects

Dragonflies

Butterflies

Beetles

Bees

Flies

Others

Mammals (signs and actual sightings) on the river banks

Rabbit

Otter

Water Vole

Rat

Muntjac

Mink


Others

RIVER SURVEY SHEET continued 2

Name/name of group Date

Survey Location **1** The bridge **2** The Waits **3** The boardwalk

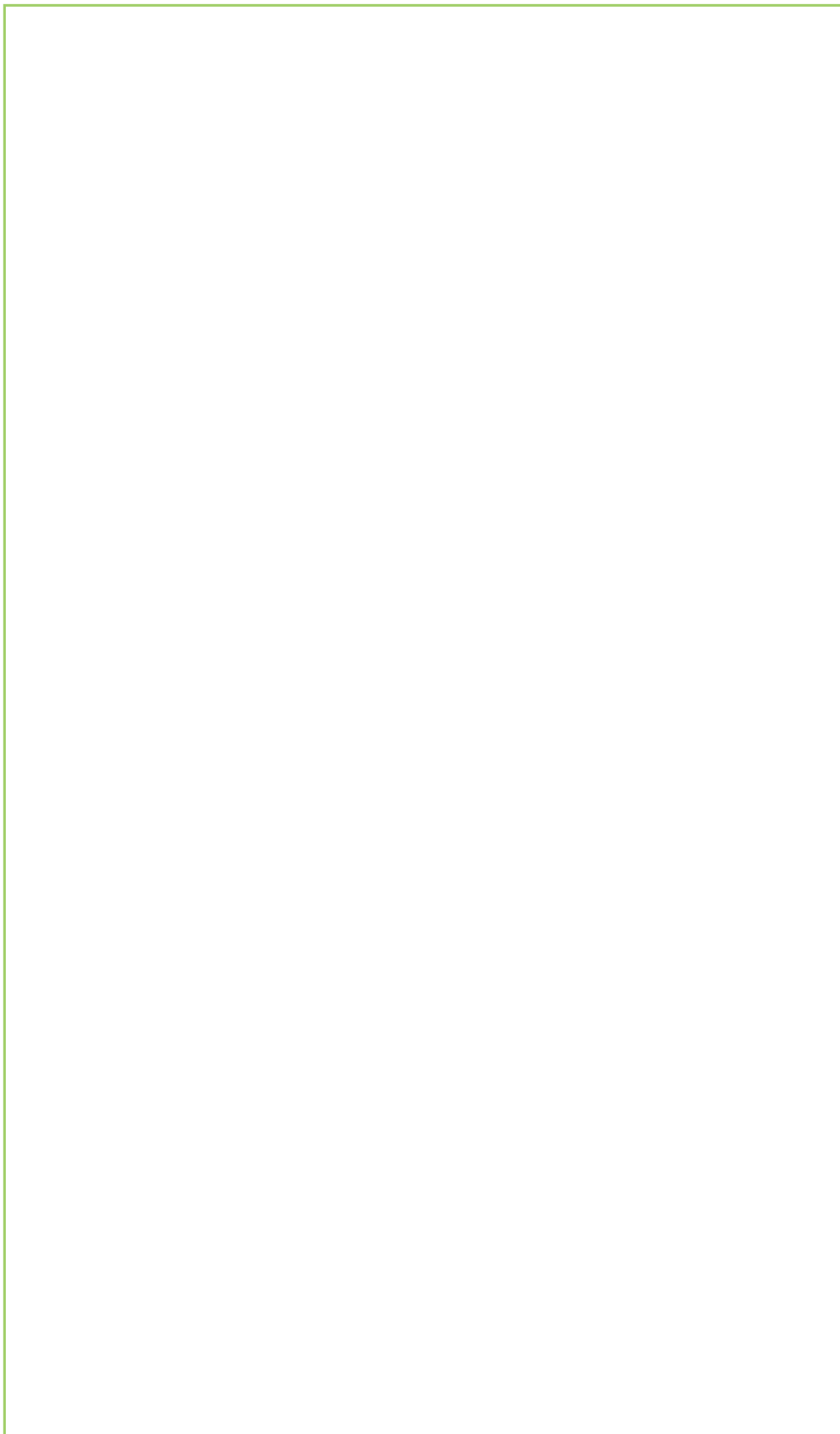
Section 4 ILLUSTRATIONS

In this box  or on another piece of paper, sketch the area you have been surveying. Be sure to record information such as:

- direction of flow
- left bank and right bank
- bank composition
- man-made features
- types of plants in the water (on the surface, underwater or emerging from the water)
- overhanging trees
- what the riverside is used for
- where you saw animals
- and anything else of interest

This can be done as an aerial view/plan, or as a perspective view from where you are standing.

Alternatively, take lots of photos to work with when you are back in school as part of an IT project!



GREAT OUSE WILDLIFE

The best time to visit the Island with children to watch for river wildlife is in the spring and summer. Try to get on the Island as early in the day as you can. A key is always available from the Norris Museum or One Leisure St Ives or from the Friends group – see ABOUT THE FRIENDS GROUP at the back of the Education Pack.

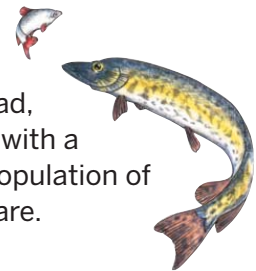
Birds and fish

On a fine still morning in April, all the resident birds – there is a list displayed near the hut – are in full song as the males claim nesting territory and attract females. Listen out for the lovely fluted Blackbird, the Song Thrush repeating his phrases, the excited chatter of Blue Tits, the ‘teacher, teacher’ call of Great Tits and the Wrens singing loud, explosive phrases.



Later in the month the summer warblers arrive and you will hear the Chiffchaff singing its own name, the beautiful song of the Black Cap and Sedge and Reed Warblers chattering away constantly in the reed beds. Sit quietly by the river bank and you should see Great Crested Grebes, maybe a Cormorant diving for fish, a Heron standing stock still watching the water. If you are lucky, a Kingfisher will flash by fast and low. We hope one may start to fish in our pond. Coots and Moorhens will be sitting on floating nests, and we may have a Mute Swan nest somewhere on the Island bank.

Swallows, Sand Martins and House Martins will snatch insects from just above the river surface and later in the season, Swifts will scream overhead, and the lazy-winged Common Tern will suddenly plunge dive, often rising with a fish. Although slow and weedy, the river is healthy and supports a good population of coarse fish, which is why we can easily see the fish-eaters taking their share.



Damsels and dragons

High summer – July, August and September – is the time to see the damsel and dragonflies. Make your way to the central meadow area where you will find some picnic benches to sit and wait quietly. Here the delicate damsels will flit and flutter gracefully. Watch out for the speciality of this area, the striking Banded Demoiselle with a dark ‘thumbprint’ on each wing. This is the male with a blue-green body. The female is a dazzling green with no wing mark.

When at rest damselflies sit with their wings folded along their body. Larger dragonflies sit with their wings outstretched – an easy way to tell the two groups apart. Dragonflies are spectacular and fly fast chasing insect prey. Listen out for the clattering sound of their dry wings. They will often bask on sunny days on the picnic tables. Sit very still! Both damsels and dragons have a larval stage that lives for several years underwater, before emerging and hatching into the adult form we see flying around. Neither will sting nor bite. There is more information about the life cycle of a dragonfly on the CD-ROM. **(See over page.)**



GREAT OUSE WILDLIFE continued

Mammals

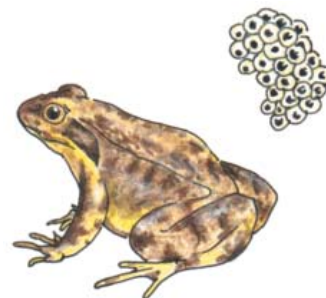
You'll have to visit early in the morning or late in the afternoon to catch fleeting glimpses of our Fox and Muntjac deer. At other times look for their evidence on the boardwalk! Fox droppings are obvious, and those of Muntjac are small, dark and round. Muntjac are about the size of a small dog and love to nibble the shoots of young willow. This is why the willow osiers in the plantations (see CHANGING LANDCAPES) are no longer coppiced to the ground, but pollarded to form a stump to deter the deer from reaching up. We also have Grey Squirrels and sometimes a melanistic (black) one. Mink are occasionally seen, rarely otters, and on occasions a Common Seal from King's Lynn appears to spend time in St Ives, or more likely Earith.



The bat boxes in the trees near the main map – count groups of three on four trees – attract roosting Soprano Pipistrelles, which are about the size of a 50p coin. These are a protected species and must not be disturbed. Visit on a warm evening with a bat detector and you will hear their high frequency squeaks however.

Amphibians and reptiles

The pond will attract frogs and toads, and perhaps newts, to breed – let us know of your sightings, especially of frog spawn. Watch out too for basking Grass Snakes – quite harmless – and sometimes to be seen swimming in the river hunting small fish and insects.



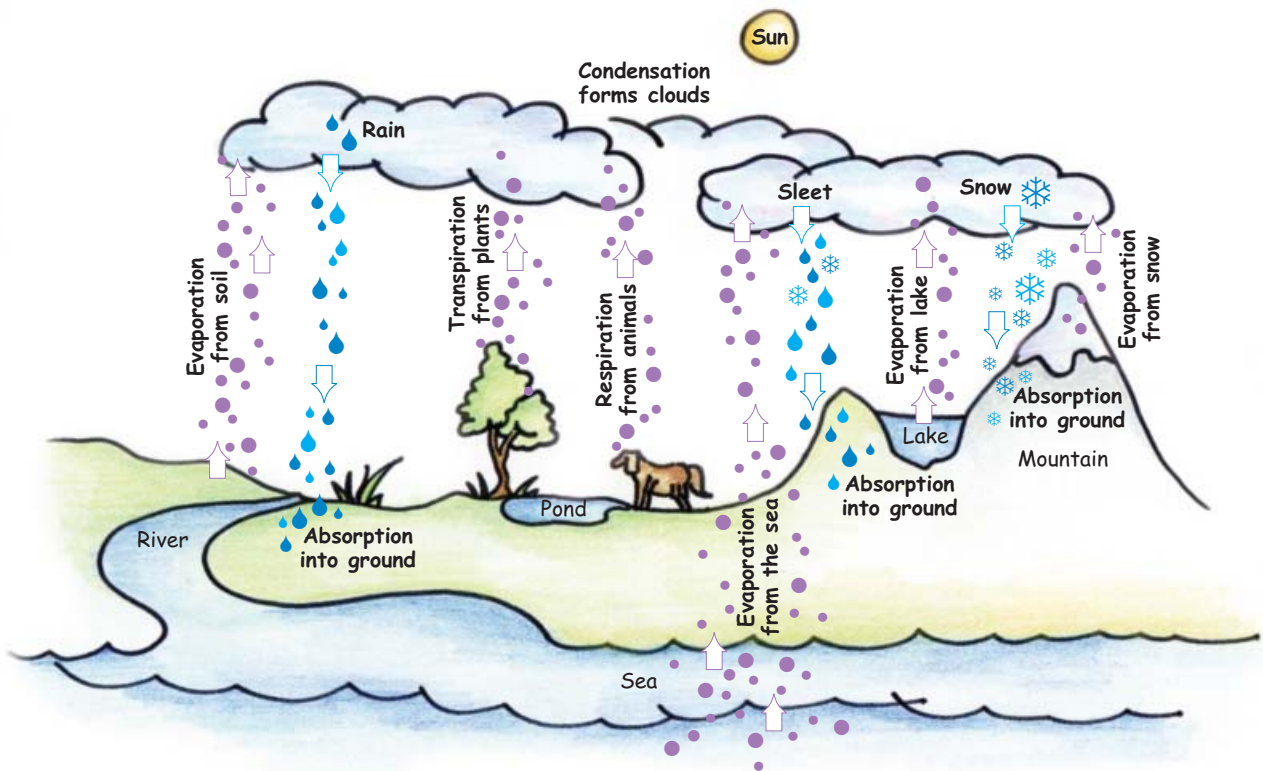
Flora

Our rare wet woodland habitat supports a wide range of trees, shrubs and plants. Many species of willow delight in the damp conditions and we have mature Horse Chestnut and Common Ash with Alder, Hawthorn, Sycamore and Elder plus wild plum and apple trees. The reed bed comprises Phragmites common Reed, Reed Canary Grass, Bulrush and Branched Bur-reed and among marsh plants we have good displays of Water Mint, Common Comfrey, Hemp Agrimony plus Stinging Nettles with the unusual parasitic Dodder plant.

Our SPOTTER GUIDE will help you to identify the animals and plants you see on the Island.



WATER CYCLE WORKSHEET



Have you ever looked at a glass of water and wondered how old the water is? Well it is very old indeed because the earth has only a limited supply, and so it keeps going round and round in what is known as The Water Cycle.

You'll get the idea if you look closely at the diagram and then fill in the missing words in the statements below. If you are not sure about an answer, have another look at the diagram.

The water on our planet, _____, is constantly being _____. When the heat from the _____ warms water from the River Great Ouse, lakes, ponds and the _____, it is turned into _____ - _____. This process is known as _____.

_____ is when the vapour rises up and cools down to form small water _____ which join together to form _____. If these get too heavy, the water droplets fall from the sky as _____, _____ or _____. Water is essential for life.

The water that falls may go straight into reservoirs or seas, whilst some may soak into the _____ before finding its way back into the River Great Ouse and other river systems.

Some water is used by _____ which suck it from the ground using their _____.

The water cycle starts again as the water is transpired from their _____.

OUR RIVER

Let's think about rivers. Rivers can appear very different from each other depending on what type of rock and landscape they flow through, or whereabouts on the river happen to be. Rivers change in appearance from the source to the sea. You might imagine a very wide river (think of the Amazon) with a large delta at the mouth (think of the Nile.) Alternatively, you may think of a narrow, pretty river you have seen on holiday - a mountain stream splashing along a stony bottom for example, or a river meandering gently through rolling hills, or a torrent flowing from a high point to form a waterfall crashing into a pool below.



To describe a river you need to understand the following terminology. Research these words and write a definition in the space provided then tick any that you know relate to the River Great Ouse in St Ives.

River word	Meaning	Tick
Source		
Waterfall		
Meander		
Delta		
Mouth		
Flood plain		
Estuary		
Ox bow lake		
Steep sided valley		
Erosion		
Pollution		
River bed		
River load		

Now write a few notes from your observations to describe our river (shown above):



The River Great Ouse is

It flows

In St Ives in summer it is

In St Ives in winter it is

Throughout the year the river is used by

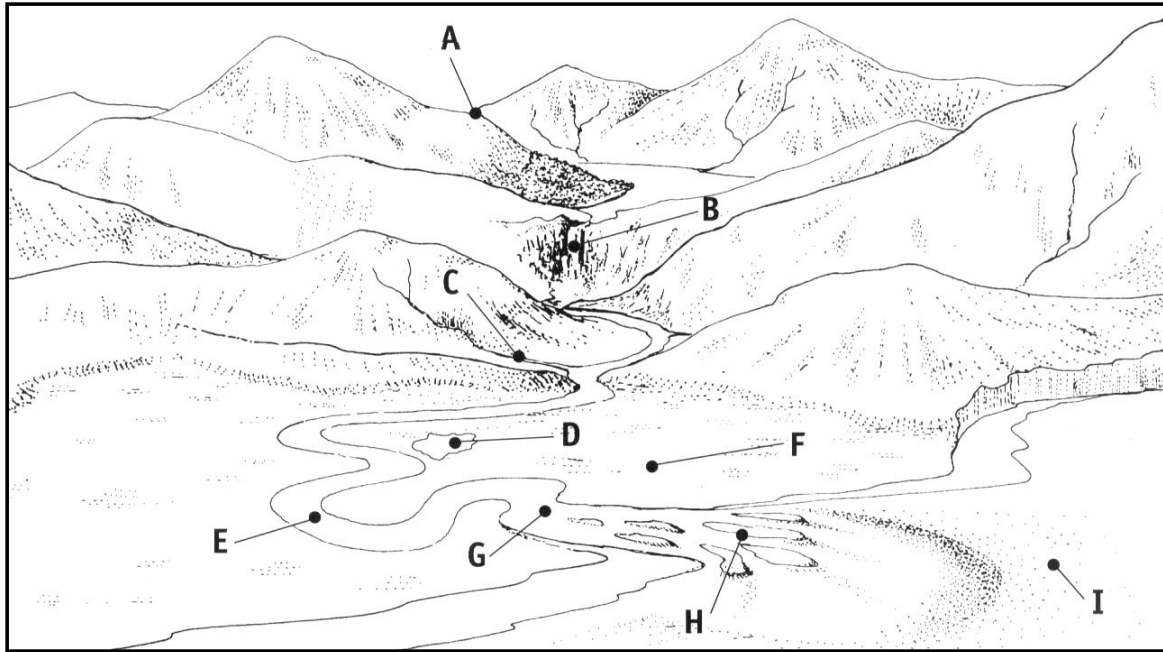
In historical times the river was important because

.....

I like the river best for

A RIVER SYSTEM

As soon as rain falls on high ground it starts to flow downhill. The water finds the easiest way it can to the sea. The picture shows the course of a river from the hills to the sea.



What are the features marked at A, B, C, D, E, F, G, H and I? Choose the correct labels from those listed below and write the letter in the box.

- source
- sea
- flood plain
- meander
- tributary
- delta
- waterfall
- lake
- mouth

Use the picture to help you fill in the gaps in these sentences:

The place where a river starts is called its

A is a smaller river or stream which flows into a larger one.

A large bend in a river is called a

A is an area of land roughly triangular in shape which forms where a river enters a lake or the sea.

RIVERS AND FLOODS

Rivers carry heavy loads of earth, stones, debris and silt when they have lots of energy. This is usually when they are moving fast during a flood. If the water flow slows down the material is deposited. On Holt Island the willow grows extremely well because the ground is wet, but also because the sediment that is dropped by the river in flood is rich in nutrients.



Flood research

The River Great Ouse has flooded frequently in this area in recent years.

Can you find out the date of the last big flood?.....

Which areas locally were flooded?

Was there any damage to properties? If so, which?

.....

Once the water had gone down, was there any debris left? Yes No

Why does the river flood?

A lot of water falling in the catchment area can cause the river to flood, but there are many contributing factors. Consider yourself as a town planner and try to predict what might happen in the following scenarios:

Scenario 1. If the ground is **extremely** dry prior to a torrential rainstorm, what might be the result and why?

.....

Scenario 2. If an area was once a grassy field with cows grazing but has recently been developed with new concrete play areas and tarmac roads, what might the effect be if it rains heavily?.....

.....

Scenario 3. If the ground in the Ouse valley was already slightly damp, say in May, and there was a terrific thunderstorm five miles upriver with torrential rain in Huntingdon, can you predict what might happen in St Ives, and explain your answer?.....

.....

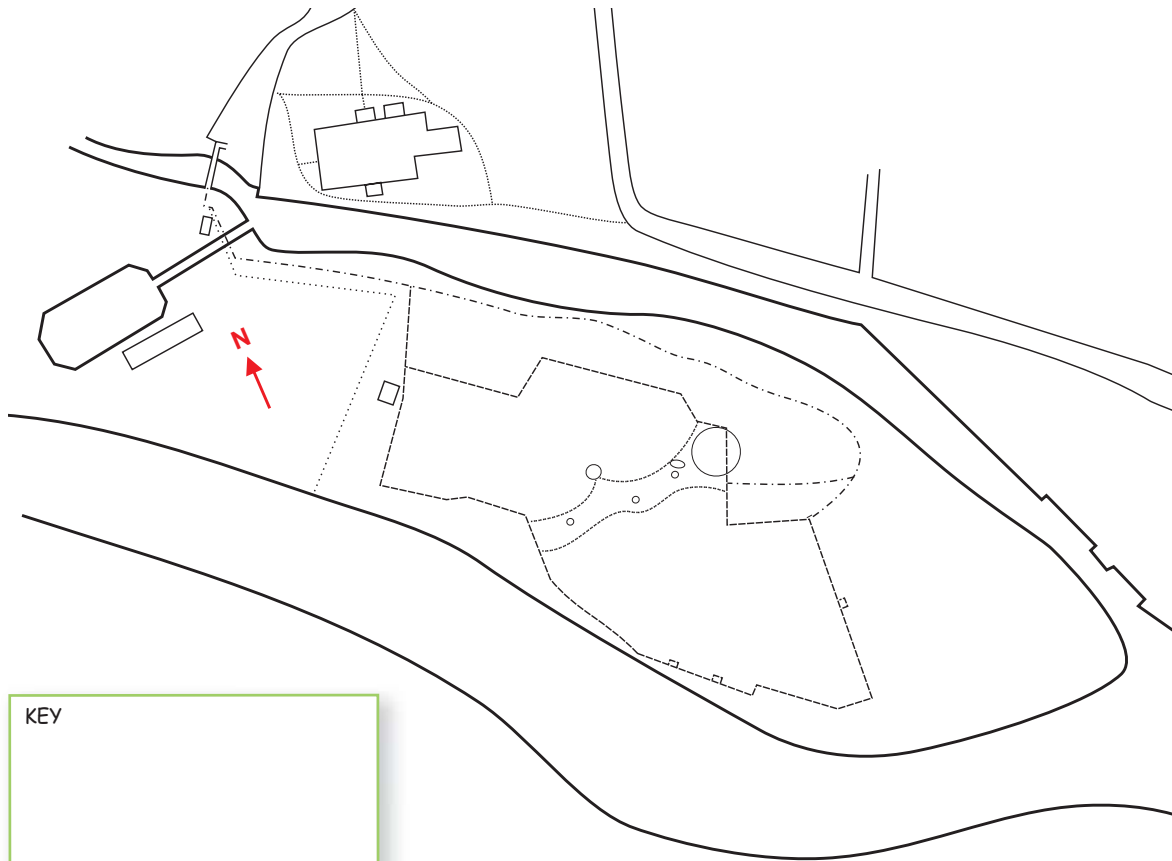
RIVERS AND FLOODS continued

Working with the flood

As the town planner, you have been told to create a nature reserve on an existing island in a river which is frequently flooded. The public will be allowed to visit and access is over a bridge. Using the island outline below add the features you might have to include to encourage people to visit. Create a key and use symbols for everything you want to include.

Remember! Consider the following important points:

- You have to balance the needs of the wildlife with those of the visitors.
- Different visitors will have different needs.
- What will happen when the island floods?



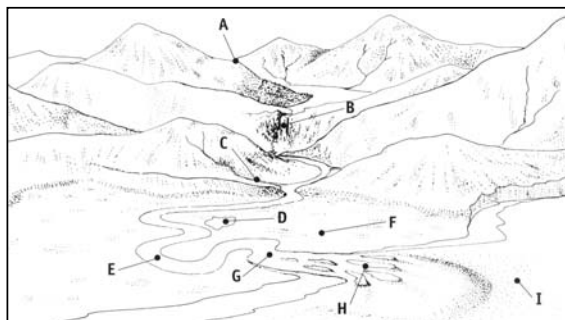
KEY

ANSWERS

WATER CYCLE WORKSHEET

The water on our planet, **earth**, is constantly being **recycled**. When the heat from the **sun** warms water from lakes, ponds and the **sea**, it is turned into **water vapour**. This process is known as **evaporation**. **Condensation** is when the vapour rises up and cools down to form small water **droplets** which join together to form **clouds**. If these get too heavy, the water droplets fall from the sky as **rain, sleet** or **snow**. Water is essential for life. The water that falls may go straight into reservoirs or seas, whilst some may soak into the **ground** before finding its way into river systems. Some water is used by **plants** which suck it from the ground using their **roots**. The water cycle starts again as the water is **transpired** from their leaves.

A RIVER SYSTEM



- A** source
- I** sea
- F** flood plain
- E** meander
- C** tributary
- H** delta
- B** waterfall
- D** lake
- G** mouth

The place where a river starts is called its **source**. A **tributary** is a smaller river or stream which flows into a larger one. A large bend in a river is called a **meander**. A **delta** is an area of land roughly triangular in shape which forms where a river enters a lake or the sea.

The Countryside Code



The Countryside Code promoted by Natural England enshrines the principles of good conduct in the countryside for everybody. We have included the summary here for your reference because even though only part relates to the Holt Island reserve, you may want to take the children and some of the projects to other sites.

These are the six guidelines dedicated to helping you and the children respect, protect and enjoy the countryside:

Respect other people

- Consider the local community and other people enjoying the outdoors
- Leave gates and property as you find them and follow paths unless wider access is available

Protect the natural environment

- Leave no trace of your visit and take your litter home
- Keep dogs under effective control

Enjoy the outdoors

- Plan ahead and be prepared
- Follow advice and local signs

To help you introduce The Countryside Code to the children we have provided two Word Search puzzles overleaf with the Countryside Code theme. The answers are provided below.

RESOURCES

www.naturalengland.org.uk/ourwork/enjoying/countrysidecode/default.aspx
<http://publications.naturalengland.org.uk/publication/987819> with a leaflet download



Number 1



Number 2



The Countryside Code Word Search

C	Q	A	N	I	M	A	L	S	W	E	W
B	O	P	E	N	A	C	C	E	S	S	A
R	R	U	T	Y	P	B	U	I	N	K	Y
O	E	I	N	P	S	A	Y	G	S	C	M
H	T	Y	D	T	D	F	I	W	G	O	A
T	T	T	H	L	R	S	J	K	A	R	R
A	I	U	L	Z	E	Y	X	C	V	Y	K
P	L	A	N	T	S	W	S	B	G	O	N
T	M	E	Q	R	P	W	A	I	O	J	E
O	R	B	T	E	E	Y	U	Y	D	N	I
O	P	A	S	E	C	E	F	A	S	E	B
F	I	R	E	S	T	C	E	T	O	R	P

Number 1

ANIMALS	LITTER
BEAUTY	MAPS
BE SAFE	OPEN ACCESS
BRIDLEWAY	PLANTS
BYWAY	PROTECT
COUNTRYSIDE	RESPECT
DOG	ROCKS
ENJOY	SIGNS
FIRES	TREES
FOOTPATH	WAYMARK



The Countryside Code Word Search

Q	W	N	O	I	T	A	E	R	C	E	R
E	G	T	R	A	F	F	I	C	W	A	L
P	L	A	N	A	H	E	A	D	I	R	T
K	C	O	T	S	E	V	I	L	L	Y	U
I	O	P	S	E	S	R	O	H	D	M	A
S	S	N	G	I	S	W	O	L	L	O	F
D	S	D	F	A	E	E	G	R	I	O	I
A	H	J	F	L	K	A	L	U	F	R	E
O	Z	E	F	X	S	T	I	L	E	S	L
R	T	A	P	E	E	H	S	E	C	V	D
Y	R	S	H	T	A	E	H	S	B	N	S
E	M	Q	W	H	E	R	I	T	A	G	E

Number 2

GATES	SAFETY
HEATHS	SHEEP
HERITAGE	STILES
HORSES	TRAFFIC
LIVESTOCK	WEATHER
MOORS	WILDLIFE
FIELDS	ROADS
PLAN AHEAD	
FOLLOW SIGNS	
RECREATION	





RISK ASSESSMENTS

Many leaders of young children feel unsure about taking them on trips outdoors. However, a few simple health and safety rules and procedures can make a visit to Holt Island Nature Reserve a safe and rewarding outing. Here are our hints and tips to ensure peace of mind:

In advance:

- Visit the site
- Confirm local health and safety considerations with the local authority (LA) or contact the Outdoor Education Advisor on 01480 375133
- Carry out a risk assessment, including health and safety measures (see hazards table overleaf)
- Ensure that an appropriate ratio of supervising adults will be present
- Do not plan any activities that involve children working on the edge of the boardwalk or on the river banks

On the day:

- Check the area again on the day to make sure there have been no changes
- Do a safety talk for both children and assisting adults before the activities start – this should set boundaries and ensure safe use of equipment
- Make sure health and safety measures are in place
- Monitor the activity as it takes place to ensure that it continues to run safely
- Make sure that children wash their hands immediately after the activity and before eating or drinking
- Ensure that the children who take part have appropriate clothing for the prevailing weather conditions

On the next three pages you will find a Hazards Table compiled in 2010 detailing particular situations that may occur on the Reserve. We indicate what HDC has done to minimize the hazards and what we want you to do to help avoid accidents. There is also space for your own notes. Please let us have any feedback you may feel is helpful.

Hazards Table 1/3

Significant hazards we have identified	What we have done to minimize the hazards	What we want you to do to minimize the hazards	Your notes and specific hazards you have identified
<p>Slips and trips</p>	<p>The board walk is raised off the ground, without hand rails. It is tarred and chipped but it may still be slippery and have debris underfoot. This is a natural site and so the ground is uneven. It is checked weekly during the summer as part of our site checks and we deal with any hazards. At other times, teaching staff must undertake a pre-visit check.</p>	<p>Please make sure the children walk, not run, and are alert and under control when moving around the site. Ensure children do not try to 'overtake' or push others out of the way. They will then not fall off the boardwalk</p>	
<p>Dogs on the Island</p>	<p>Dogs may visit the island with their owners, but must be on a lead and owners must pick up and take away any mess. Very few dogs actually go on the Island. There is a refuse bin close to the white bridge entrance.</p>	<p>Supervise the children and remind them not to approach or stroke dogs which come too close. Politely ask dog owners who do not control their dogs to take them away from the children. Ensure the children wash their hands before lunch and at the end of the day.</p>	
<p>Getting lost</p>	<p>Maps of the Island reserve are provided in this pack. The board walk is a circular route, but there are alternatives. Staff should familiarise themselves prior to the visit.</p>	<p>Warn the children in advance they must stay with their group. Supervise the children closely and do regular head counts. Set boundaries for each activity, including lunchtime, so they do not stray too far. Group leaders should familiarise themselves with the map in advance.</p>	
<p>Sunstroke/sunburn and changes in the weather</p>	<p>There is no class room facility on Holt Island Nature Reserve. There is therefore no shade from the sun or rain, other than that provided by trees. No visits should take place to the island during a thunderstorm.</p>	<p>Teaching staff are responsible for the children's well being. Ensure the children are dressed for the weather (wellies, raincoats or sun-cream, sunhats and trousers, NOT shorts or sandals). Feel free to bring bottles of water on very hot days. Please take away the empty bottles.</p>	

Hazards Table 2/3

Significant hazards we have identified	What we have done to minimize the hazards	What we want you to do to minimize the hazards	Your notes and specific hazards you have identified
<p>Dirty hands</p>	<p>Hand-washing facilities are not available. Staff should bring anti-bac, waterless soap to use on the island.</p>	<p>Ensure the children keep their hands out of eyes and mouths during the visit. Ensure the children wash their hands with soap before eating and at the end of the day.</p>	
<p>Child protection issues.</p>	<p>The site is open to the public at all times. All Rangers employed by Huntingdonshire District Council have been police checked. Rangers will not supervise the children in a one-to-one situation. Members of the public may be on the island at the same time, but would not normally become involved with the children's activities.</p>	<p>Ensure correct levels of supervision so that Rangers (if present) are not included within adult-to-child ratios. Make sure children stay within sight at all times and regular head counts are done. Follow your school policy if a child has to be removed from the group, for example, to go to the toilet. Supervise children at all times.</p>	
<p>Allergies such as hay fever and food, or bee and wasp stings</p>	<p>Due to the nature of the site wasps and bees are present, plus pollen-producing plants and nut trees.</p>	<p>Before starting any activities, tell the children what to do with 'buzzy' minibeasts caught in sweep nets. Ensure group leaders are aware of any allergies the children in their group have, and that children have the correct medication with them. It is your responsibility to dispense the medication and /or know what to do in the event of a reaction. Advise children to ignore flying insects rather than flapping their hands at them.</p>	

Hazards Table ³/₃

Significant hazards we have identified	What we have done to minimize the hazards	What we want you to do to minimize the hazards	Your notes and specific hazards you have identified
Nettles, prickles and berries	We keep nettles and thistles back from the path and boardwalk as much as is practical on a Nature Reserve.	Prior to your visit, ensure children know what nettles and thistles look like. Ensure the children are aware of patches of nettles and thistles and work away from these areas. Ensure the children wear trousers and trainers or wellies. Shorts and open-toed sandals are not suitable. Instruct children not to put berries near to their mouth. Closely supervise the children if they are collecting natural materials, especially in the autumn.	
Water, ponds and river	Holt Island is accessed over bridges with hand rails. The river water is untreated and the banks are steep. Natural barriers of vegetation are left, to stop visitors inadvertently going too near the water.	Ensure the children do not go near the water without adult supervision and stay kneeling or sitting all the time if they are pond dipping. Ensure children listen and follow instructions.	
Unexpected occurrences	Not every situation can be predicted. First aid kits are not provided.	It is advisable that each group carries a mobile phone and has access to a first aid kit. We suggest the use of a whistle or other signal to call back the children.	

The aim of the day is for the children to learn about the natural environment whilst having fun. Encouragement from the group leaders and parent helpers and good spirits is the key to a successful day! If there is anything you think Rangers should know about, please contact 01480 451568

ABOUT THE FRIENDS GROUP

How we started

Our group was formed in 2007 when there was concern that the original boardwalk, built in 1992-3, was in such a serious state of decomposition that it was unsafe, and the future

of the reserve was in doubt. Commercial estimates to rebuild it were beyond the means of HDC Countryside Services so a small number of interested people formed a volunteer support group.



The Friends wrote a constitution, formed a committee and set about recruiting members. We added our weight to the existing team of practical volunteers, and we made it known

to HDC that we would assist in any scheme to help overcome the difficulties of replacing the boardwalk. Eventually a solution was found, the new boardwalk created in record time and under budget, and the preservation of the reserve assured for the foreseeable future.

Our progress

The Friends group has gone from strength to strength. Our membership has grown as we have promoted the reserve and our activities, and we are pleased with the contributions we have made to help improve its visitor experience. We are still a relatively new group but we are proud of our loyal membership base and the links we are making with local businesses and schools. It is gratifying too to see increasing numbers of visitors over the summer months, both local and from further afield.

In particular

In addition to providing all the concrete needed for the new boardwalk and the funds to extend it to the main entrance, our particular achievements to date are the provision of wheel-chair friendly picnic tables with seating in the central meadow, plus a bench seat on the boardwalk, and assistance to create two new interpretation boards. We secured funding to create this Education Pack, and more recently for the replacement of the old tools' hut with a proper cabin, a new gate, and two more interpretation boards.



How we work

We organise ourselves around the seasons of the year. So, each quarter the committee meets to review progress and make new plans. We publish a newsletter, *The Islander*, to mark the season and to keep our members up to date with what we are doing on the Island. Socially, we organise a Spring Surprise Family Fun Day, plus four walks through the year for members and their friends: the Spring Step; Summer Stroll; Autumn Ramble; and Winter Warmer. Our AGM in July always features a popular guest speaker and is well attended.



We organise a popular ADOPTABOX fund-raiser, the proceeds from which helped fund the creation of a dedicated bird-feeding station on the Island. Sponsors of each nesting box are kept informed of its progress throughout the breeding season, and invited to a nest box guided walk in May. For those interested in birds, we monitor all sightings throughout the year and publish these in *The Islander*.

We are keen to develop our relationships with Schools and already the Eco-Ivo group at St Ivo School has attended our work parties in The Thicket. We are also committed to assist HDC with their Countryside Services work there, and in Wilhorn Meadow.

We want the reserve to be used for educational visits and this is why we have created this pack. We hope it will offer you plenty of ideas to form the basis of trips to the Island, and we look forward hearing of your experiences with it. If you would like your school or group to be more closely involved with the Island reserve, and are interested in becoming members, please contact The Friends group at ianjackson@ntlworld.com or HDC Countryside Rangers on 01480 451568



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Ian Jackson, Chair, Friends of Holt Island Nature Reserve, May 2012

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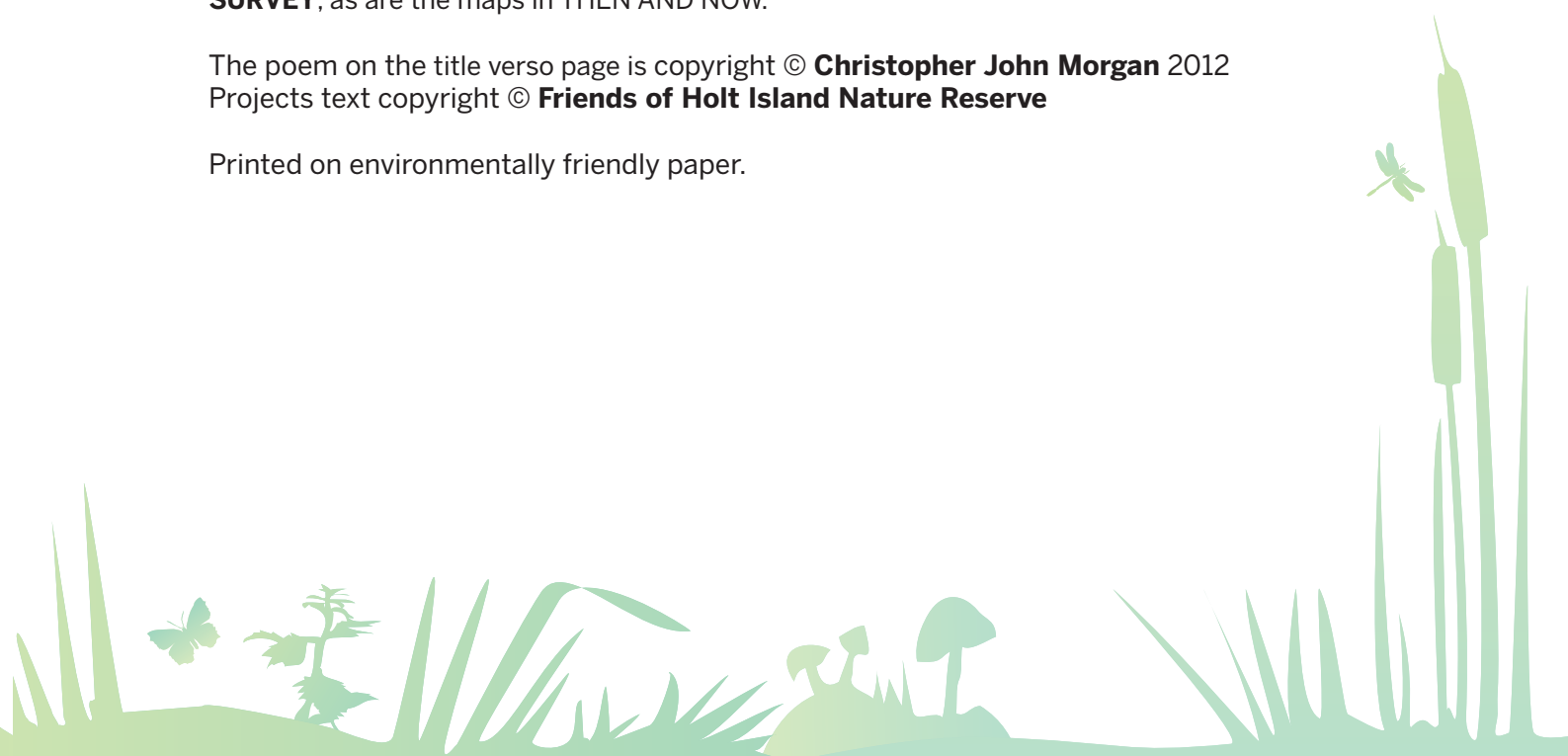
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FEEDBACK

We are very keen to know how you have got on with the Pack, both on the Island and indoors. Please feel free to get in touch with us and let us know what you/the children liked, and what you didn't like.

Please contact Ian Jackson, Chair, Friends of Holt Island Nature Reserve at ianjackson@ntlworld.com or HDC Countryside Rangers on 01480 451568