

Peatlands





Schools out

Fieldwork made easy

Peatlands

This pack has been developed and produced as a result of the Highland Environmental Network Schools Out! Project which aims to facilitate fieldwork for 5-14 Environmental Studies.

The project has three specific aims:

- to produce local site guides
- to develop guidelines for best practice in fieldwork
- to produce topic-based activity packs for fieldwork in:
woodland, seashore, harbour, ponds, burns,
waste, and landscape.

This pack – Schools Out! Fieldwork made easy – Peatlands, has been produced to add to the existing topic-based activity packs.

The material in this pack is copyright free to all Highland schools and community groups. Feedback and comments from users is most welcome and should be sent to the Highland Environmental Network (HEN), Education Centre, Castle Street, Dingwall IV15 9HU. Additional copies of the pack can be obtained from Scottish Natural Heritage (SNH), Main Street, Golspie, Sutherland KW10 6TG.



Acknowledgments

A number of organisations have supported the development of this pack, including Highland Council Ranger Service, Highland Council Education Service and Scottish Natural Heritage.

Susan Webster, Gee Whizz developed this education pack and the illustrations were provided by John Tasker. Artysans provided additional illustrative work and designed the pack and printing was carried out by Nevisprint.

Planning a safe excursion

Please ensure that the Section "Guidelines on School Excursions" has been read prior to any visit to peatlands.

It is recommended that the necessary Risk Assessments are prepared in advance of a fieldwork visit and a throw bag is taken on the trip, along with other standard safety equipment.

PEATLANDS

The following links to the 5-14 National Guidelines – Environmental Studies, are addressed in the fieldwork activities relating to the study of PEATLANDS:

SCIENCE – Knowledge and understanding – living things and the processes of life

- Recognising and naming some common plants and animals found in peatlands.
- Constructing and interpreting food chains and food webs
- Describing examples of human impact on peatlands, that have brought about changes.
- Giving examples of how plants and animals are suited to their peatland environment.
- Giving examples of physical factors that affect the distribution of living things.
- Constructing and explaining food pyramids.

Skills in science – investigating

- Using simple equipment and techniques to make observations and measurements.
- Recording findings in a range of ways.
- Reporting and presenting the information collected.
- Interpreting and evaluating the results and processes.

Developing informed attitudes – social subjects (soc) and science (sci)

- Recognising the interaction between people and their environment in the past, present and future. (soc)
- Understanding the need for the responsible use of the natural environment in accordance with the principles of sustainability. (soc)
- Recognising the importance of their natural, social and cultural heritage. (soc)
- Taking responsibility for their own health and safety out of doors. (sci)
- Participating in the safe and responsible care of living things and the environment. (sci)
- Thinking through the various consequences for living things and for the environment of different choices decisions and courses of action. (sci)
- Understanding the importance of the interrelationships between living things and their environment. (sci)
- Developing an understanding of participating in the conservation of natural resources and the sustainable use of the Earth's resources. (sci)
- Recognising the need for conservation of scarce energy resources and endangered species at local and global level. (sci)



SEQUENCE OF FIELD ACTIVITIES - THE PEATLAND

PRIOR TO VISIT

CHILDREN :-

- **RESEARCH and STUDY** various aspects of peatland i.e. plants, animals, insects and the influence of people
- **DRAW OR COMPOSE** a peat bog code in the form of a poster, play or poem
- **DISCUSS/BRAINSTORM** their feelings about visiting a peat bog – what do they imagine it will be like? What will they find?
- **DISCUSS** the classification of plants and animals using simple categories
- **PRACTICE** with the equipment that will be used during the field visit – include identification keys
- **DISCUSS** the worksheets which will be used during the visit

TEACHER :-

- **RESEARCH** peatlands using available resources, see list
- **VISIT** the peatland if at all possible, meet with the ranger or other fieldworker
- **DISCUSS** with the class the importance of safety on peatland – emphasise the boggy, wet nature of the habitat
- **PREPARE** materials and equipment



THE FIELD VISIT

THE JOURNEY

1 **COMPLETE** observation sheet 'Look carefully as you travel along'

ON ARRIVAL AT THE SITE

2 **LISTEN** carefully and **complete** the sheet
'Things we hear on the Peatlands'

3 **LOOK** carefully for birds and **complete** the sheet 'Peatland Birds'

4 **STUDY** the plants around you and **complete** the appropriate sheets:
'Peatland plants', 'Plants of the Peatlands', 'My favourite plant',
'Plants-Quadrats' and 'Plants-Transects'

5 **OBSERVE** Minibeasts and **complete** the sheet 'Peatland minibeasts'

6 **READ** sheet 'How to catch pond minibeasts' and **complete**
'On the surface of the peaty pool' and 'Below the surface
of the peaty pool'

7 **STUDY** and **complete** the sheet 'Food chains'

8 **ACTIVITY** peatland food pyramids – at site or in school

9 **COLLECT** peat, sphagnum and pond water samples to take
carefully back to school for further study



POST VISIT

- Using samples collected on site:

Pond water:

- a) Study appearance, clear/colourless/peaty
- b) Filter and study any residue left in filter paper
- c) Find pH value - pH less than 7 is acid – more than 7 is alkaline, less than 5 and more than 9 is harmful to most creatures... sample some other substances.

Sphagnum:

- a) Keep wet
- b) Look at it under a microscope to see the wonderful water storage system
- c) Weigh wet sphagnum, then leave it to dry out, turning over each day until totally dry
- d) Weigh again, what proportion of this plant is water?

- **COMPLETE** food chains sheet, discuss food chains including humans
- **STUDY** plant and Minibeast study sheets – discuss how wildlife adapts to their surroundings
- **INVESTIGATE and CONSTRUCT** using the Peatland Food Pyramid Sheet. Create food chains based on the plants and animals found/seen during the visit. Introduce an outside influence (pollution/fire) and see how this has an impact. Other food chains might include: midges, dragonflies and insectivorous plants such as sundew or insect eating birds such as the skylark. Fox, hare and bog plants. Adders, frogs and insects.
- **MAPWORK** – locate the site of your visit and discuss the journey, places and items of interest

Additional resources

- The Peatlands of Caithness and Sutherland and their inhabitants – A teachers pack for Primary Schools by Meg Telfer and Trisha Matthews produced by the RSPB.
- Wild Wet and Wonderful peatland pack available on line: www.snh.org.uk
- Peatlands and the Primary School Curriculum by Catherine O'Connel available from the Irish Peatlands Conservation Council
- Also see ponds section for freshwater invertebrates identification guides





SUGGESTED EQUIPMENT/ ITEMS NEEDED FOR VISIT TO PEATLANDS

- Mobile phone
- First Aid Kit
- Throw bag – water safety rope
- Survival bag
- Camera
- Towels
- Wellies and warm clothing
- Poly bags to sit upon
- Dipping nets
- Pond trays/ice cream tubs to put pond and bog minibeasts in
- Quadrats – or hoops
- String and bamboo poles for transects
- Bottle to collect water sample
- Box to collect moss sample – keep damp
- Bug boxes
- Magnifying glasses
- Books to help with identification
- Clipboards, pencils and erasers
- Worksheets
- Maps of the area

	Tick
Mobile phone	
First Aid Kit	
Throw bag – water safety rope	
Survival bag	
Camera	
Towels	
Wellies and warm clothing	
Poly bags to sit upon	
Dipping nets	
Pond trays/ice cream tubs to put pond and bog minibeasts in	
Quadrats – or hoops	
String and bamboo poles for transects	
Bottle to collect water sample	
Box to collect moss sample – keep damp	
Bug boxes	
Magnifying glasses	
Books to help with identification	
Clipboards, pencils and erasers	
Worksheets	
Maps of the area	





Name:

Peatlands - look carefully as you travel along



Tick the things below as you see them

Someone using the outdoors
for work



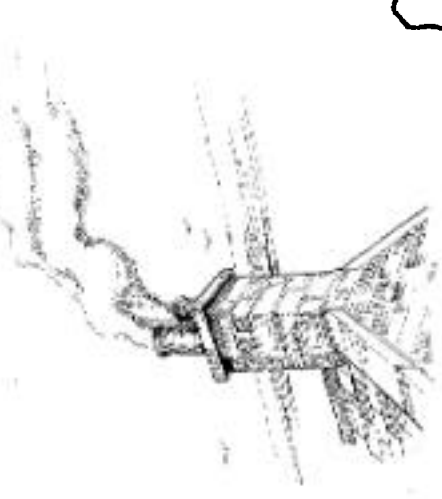
Someone using the outdoors
for leisure



Woodlands or forests



Someone burning fuel for heat



An area good for wildlife



Mountains and wide spaces



When you get back to school tell a peatland story using these pictures...cut them out and sequence them to fit your story.

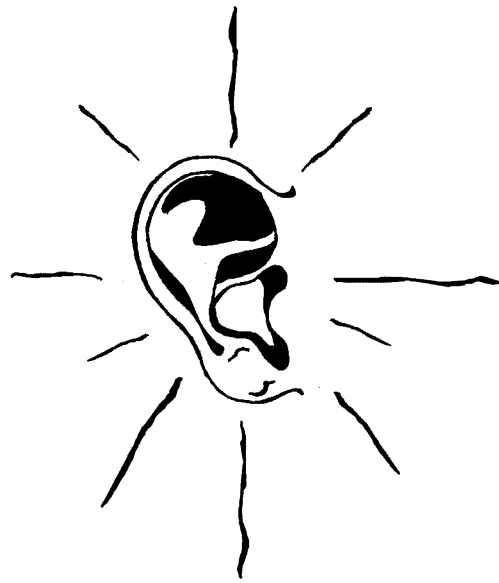


Name:



Things we hear in the Peatlands

Sit down, close your eyes and listen....When you have heard something describe or draw the sound and which direction it came from then listen again.



Name:



Peatland plants

Can you find the following plants?
When you find them, colour the picture.
Use the living plant as your guide.

Sphagnum moss



Bog cotton



Round-leaved sundew



Cross-leaved heath



Butterwort



Bog asphodel





Name:



Plants of the Peatlands

Hummocks and Hollows

Draw and describe any of the plants:

That are very tall

That are very small

That live on dry hummocks

That live in wet hollows



Remember to draw any minibeasts that you find on your plants too.

On the other side list three differences between plants growing on the hummocks and those that grow in the hollows.

Discuss reasons for this back at school.

Where were the tallest plants growing?

Where was there the greatest variety of plants?



Name:

My favourite plant



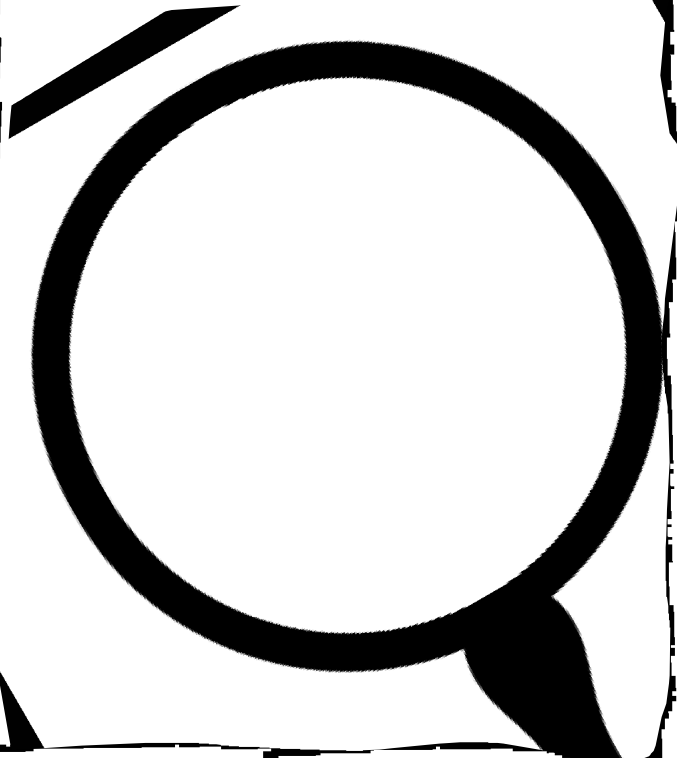
Choose one of the many peatland plants and take a closer look.

My plant in the landscape

My plant and its neighbours

My plant close up

One leaf of my plant



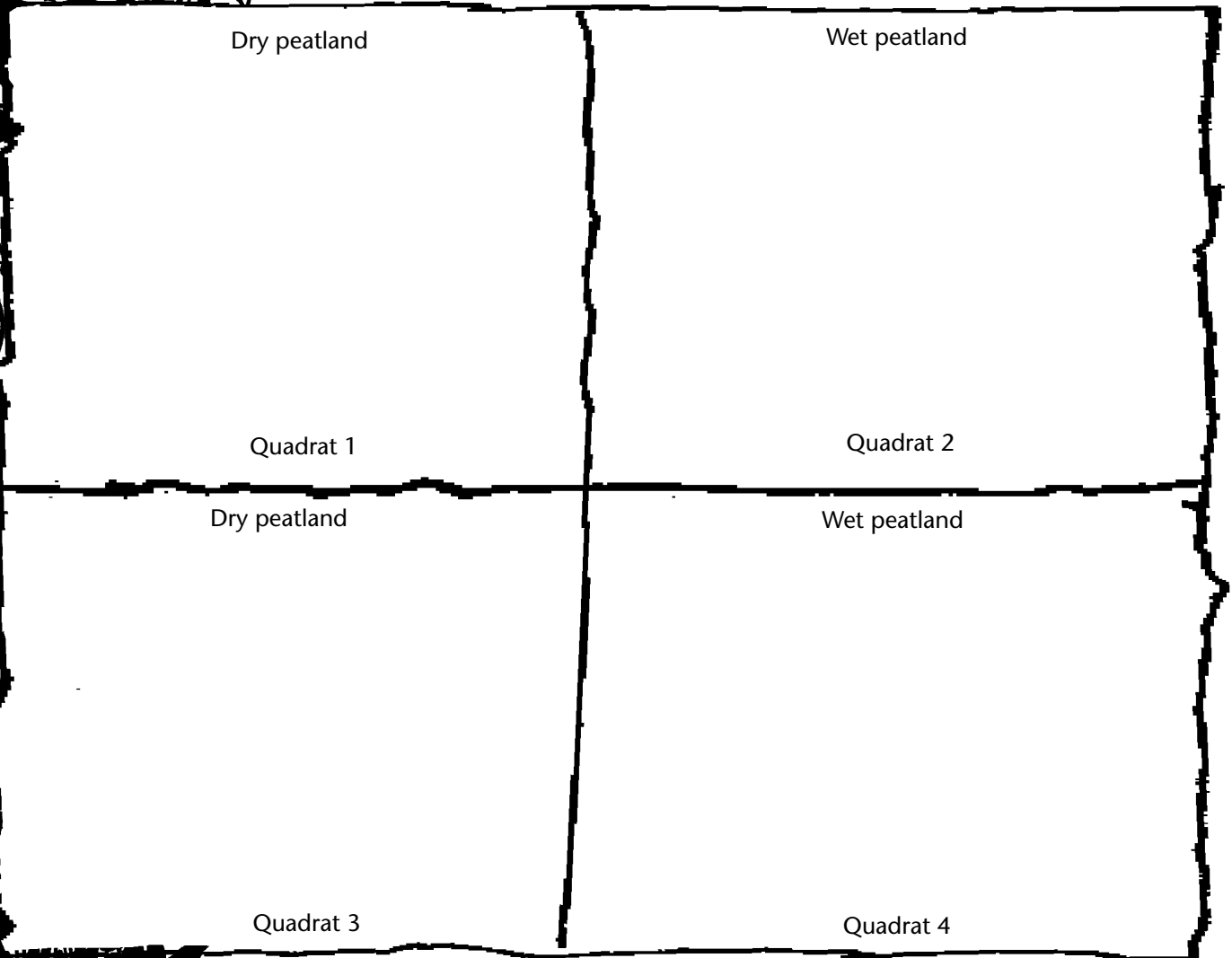
Name:



Peatland plants - using a quadrat

Take your quadrat and simply find a 'dry' place to lay it down! Use the plant key to identify the main plant in your quadrat. Look carefully and see if there are any other plants. Mark the plants on the diagram below and use the key to identify them too. Make some sketches of the plants. Record any minibeasts you find too!

Lift up your quadrat and find a 'wet' place - avoiding pools! Lay the quadrat down and record what you see.



Use the diagram to record your findings for four quadrats... are they different?

Yes No

What is the main plant on your corner of the peatlands?

Do you think this would be the same for all peatlands? Why?



Name:

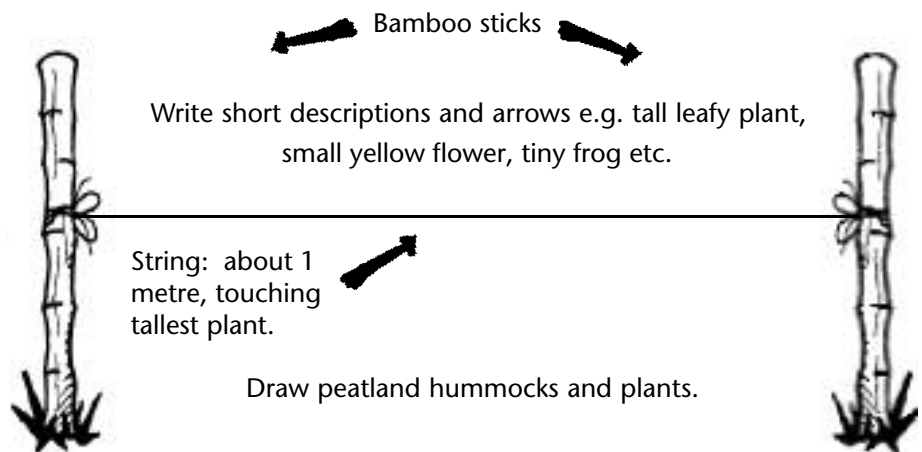


Peatland plants - using a transect

You will need two bamboo rods and a piece of string about 1 metre long.

Find a bumpy bit of bog! Tie your string to the two bamboo poles and stick one pole into a hummock and the other pole as far away as you can. Try to make the string touch the top of the highest plant.

On the other side of this sheet make a drawing of your transect landscape - see below.



What plant is the tallest?

Mark on all the different plants along your transect.

Repeat this activity for another piece of bog. Is it different?

Why?

Remember to draw any minibeasts that you find too!



Name:

Peatland minibeasts



Animals and insects can be found all around the peatlands. Have a close look and see what you can find.

REMEMBER to return your minibeasts safely to where you found them, don't leave them lost and homeless!



Drawing and description of animal or Minibeast

Where did you find them?

What were they doing?

What do they eat?

Drawing and description of animal or Minibeast	Where did you find them?	What were they doing?	What do they eat?

Back at school identify your minibeasts and try to find out more about them. Compare your notes with the rest of the class. Which minibeasts did most people find? Were there any unusual ones? Do you know of any animals or minibeasts which are only found on peat bogs?



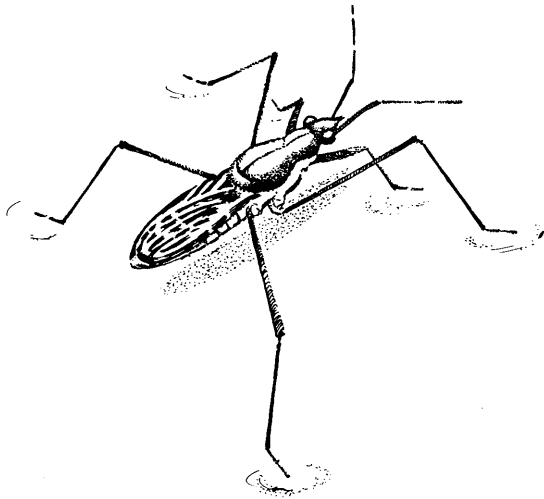
Name:



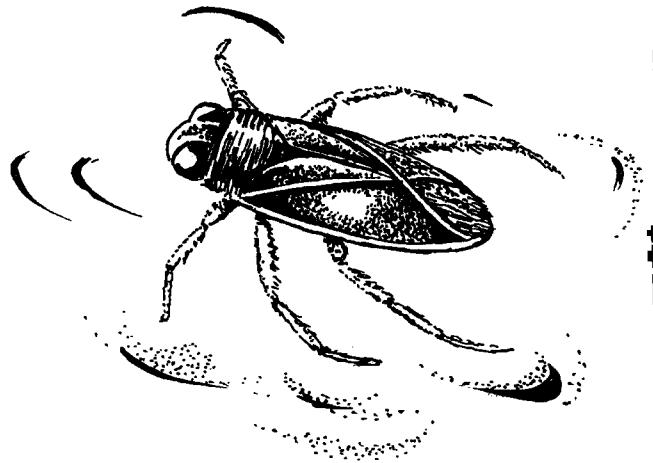
On the surface of the peat pool

- Tread carefully!
- Look carefully into the pool
- Can you see anything flying above or floating on the surface?
- Colour in any of the following that you see:

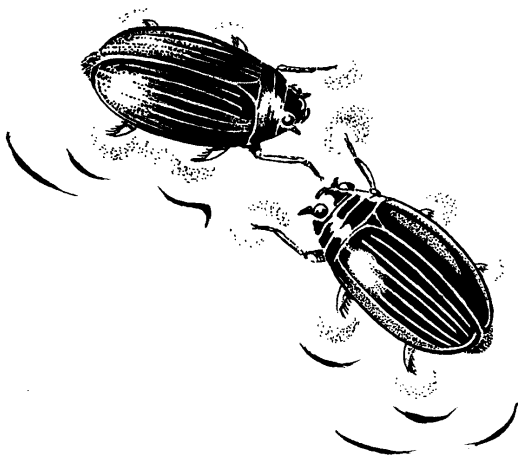
Pond skater



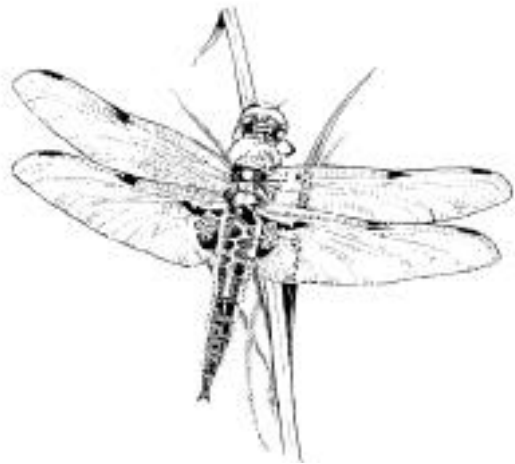
Water boatman



Whirligig beetle



Dragonfly (four spot chaser)



Watch them carefully and remember what they are doing.
How do they move? What do you think they might eat?
Can they fly? Find out more in the classroom.



Name:



HOW TO CATCH POND MINIBEASTS

Equipment needed:



wellies



a pond net



a white tray



white plastic spoon



magnifying glass



minibeast identification sheet (FIELD STUDIES COUNCIL "FRESH WATER TRAIL" RECOMMENDED)

Instructions

- 1 Have a look at the water and choose an easy and safe spot to dip from
- 2 Find a level bit of ground and half fill trays with pond water. Try to get as clear water as possible.
- 3 Gently move your net amongst the water and any plants in the water
- 4 Keep any bits of plants that are in the net and place them in the tray along with the creatures. Gently turn the net inside out to let the creatures move slowly into the water in the tray
- 5 Look for creatures on and under any stones which can be easily lifted, before carefully replacing them
- 6 Have the net ready to catch any creatures as you lift the stones
- 7 To get a closer look at the minibeasts lift them with the spoons and use the magnifying glass to get a really good look at them
- 8 Carefully return all the creatures and plants into the water by lowering the tray into the water and letting them swim out slowly
- 9 Wash out your tray and net

PLEASE ENSURE THAT ALL
LIVING SAMPLES ARE RETURNED
TO THEIR ORIGINAL LOCATION

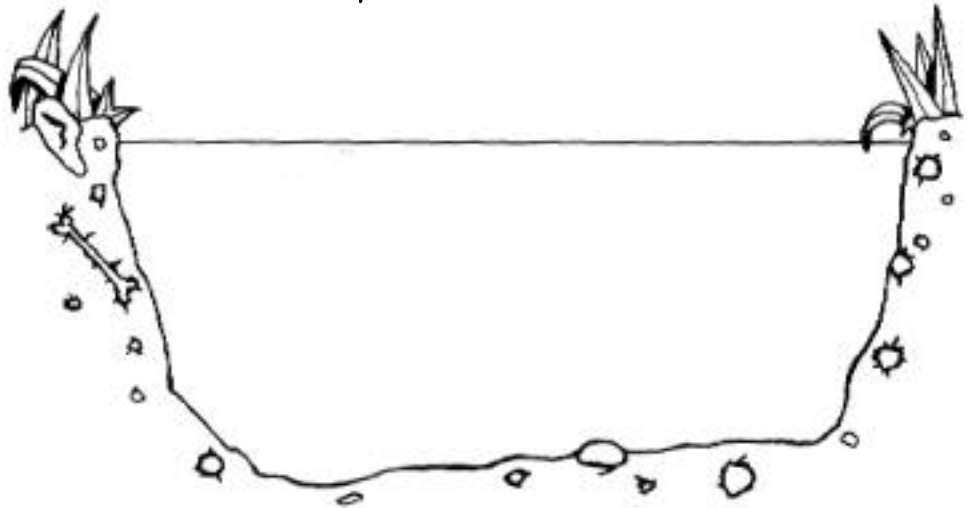


Name:



What is hidden below the surface of the peaty pool?

1. Find a safe place to reach into the peaty pool- tread carefully!
2. Put some water into your tray
3. Dip below the surface with your net
4. Empty your net into the tray
5. Carefully study what you have found - you may need a magnifying glass
6. Draw a picture of anything you have found
7. Put all the pool creatures back carefully where you found them
8. Take a water sample back to school



Back at school:

How many different types of pool minibeasts did you find?

What was there a lot of? A little of?

Did you find something special?

Were there more minibeasts in the pond or on the surface? Why?

Can you draw a peaty pool food chain on the back of this sheet?



Name:



Peatland birds

Peatlands are very important places for birds. They can be quite hard to see. If you stand or sit quietly in a special place you may be lucky enough to spot or see or hear them. Colour any that you see or hear.

Hen harrier



Meadow Pipit



Curlew



Red Grouse



Dunlin



Skylark



If you see a bird close up use the back of this sheet to make a quick field sketch – note wing, body and head markings and type of beak. Also note where it was and what it was doing. All these notes will help you identify it back at school.

In the classroom use bird books to find out more about these birds. What do they feed on? What adaptations help them to live on the peatlands? Do they live there all year round. If not, where do they go?



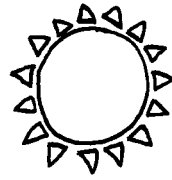


Food Chains

Name: _____

P
PUPIL

Look at this food chain and think about who is eating who. Now have a look around you and see if you can find evidence of lunch... yours and the local wildlife! Draw some examples to take back to the classroom. Where do we all get our energy from?



Sun



bog plant



green caterpillar



frog



adder

I found....

Something nibbled, something caught, something being eaten, something dead, something hunting...

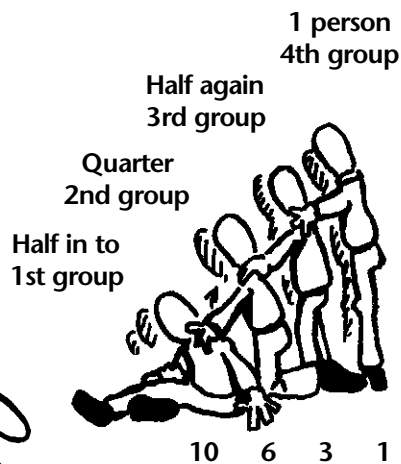




PEATLAND FOOD PYRAMIDS

This activity can be done either inside or outside, or both!

- Think about what YOU eat, where does it come from?
- Now think about where the plants and animals around you get THEIR food from
- What happens if there is a change to the food supply?
- Try this game and find out for yourself!



Divide the class into 4 groups of the following sizes – for example a class of 20:

Half the class into one group(10) (plants)

About a quarter into another group (6) (minibeasts)

Half again into the third (3) (insect feeding birds or mammals)

And just one person as the fourth group (1) (the highest predators – foxes, owls, hen harriers)

- Decide which creature each group is, based on knowing who eats who!
- The children arrange themselves in a pyramid as per diagram
- Look at how important the largest group is (but often the smallest creatures)
- NOW introduce something that damages the biggest group (pollution, fire, human interference)
- What effect does this have on the rest of the pyramid?



Name:



