

Discovering the Wild Bogs of Ireland

3rd & 4th Class Worksheets



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Rathangan, Co. Kildare R51 V293. Charity No.: CHY6829. Website: www.ipcc.ie,
Telephone: 045-860133, E-mail: bogs@ipcc.ie





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Welcome

Dear Teacher

Thank you for introducing and exploring the wild bogs of Ireland with your students. These printable worksheets have been specially prepared by the Irish Peatland Conservation Council to raise awareness about boglands. We are the national charity in Ireland that aims to conserve a representative portion of Irish peatlands for future generations to enjoy. There are two types of bogland in Ireland: raised bogs found in the midlands and blanket bogs located in the mountains and along the western seaboard of Ireland. Boglands are 90% water and 10% dead plant material. Boglands once covered 1.3 million hectares of the landscape of Ireland. Due to the harvesting of turf as a domestic fuel, the burning of milled peat to make electricity and the use of moss peat in gardening and horticulture, less than 18% of the original area of boglands in Ireland remain.

Today our bogland habitats are not only valued for their economic benefits but also:

- For recreation
- As one of Ireland's last wildernesses
- For their diversity of plants and animals including insect eating sundews and frogs
- For providing food including cranberries and blueberries collected on bogs in Autumn
- For helping to regulate flooding in river catchments - *Sphagnum* moss can absorb and store 20 times its own weight in water
- By acting as a carbon store - bogs are made of dead plants that have not decomposed in the waterlogged conditions of the peatlands forming peat

The worksheets provided in this pack support the primary school curriculum studies with links to the SESE Science, Geography, Maths and English Curricula.

If you have any comments or thoughts you would like to share with the Irish Peatland Conservation Council please contact us at the Bog of Allen Nature Centre on 045-860133 or e-mail bogs@ipcc.ie. Why not consider visiting the Bog of Allen Nature Centre as part of your bogland studies.

Kind Regards

Nuala Madigan, M. Ed.
Environmental Education Officer
The Irish Peatland Conservation Council



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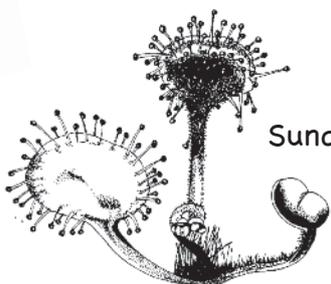
You can learn more about the wild bogs of Ireland by visiting 'Discovering the Wild Bogland 5th & 6th Class Worksheets' where you can investigate energy and composting with your students



Bog Cotton



Butterfly



Sundew



Turf Stack



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Types of Bog in Ireland and Where to Find Them

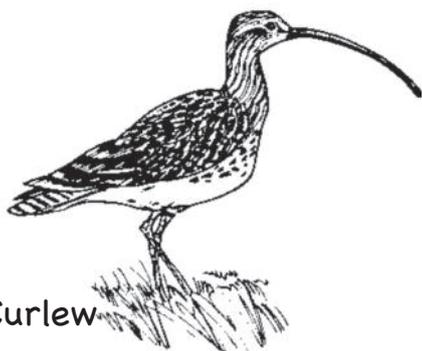
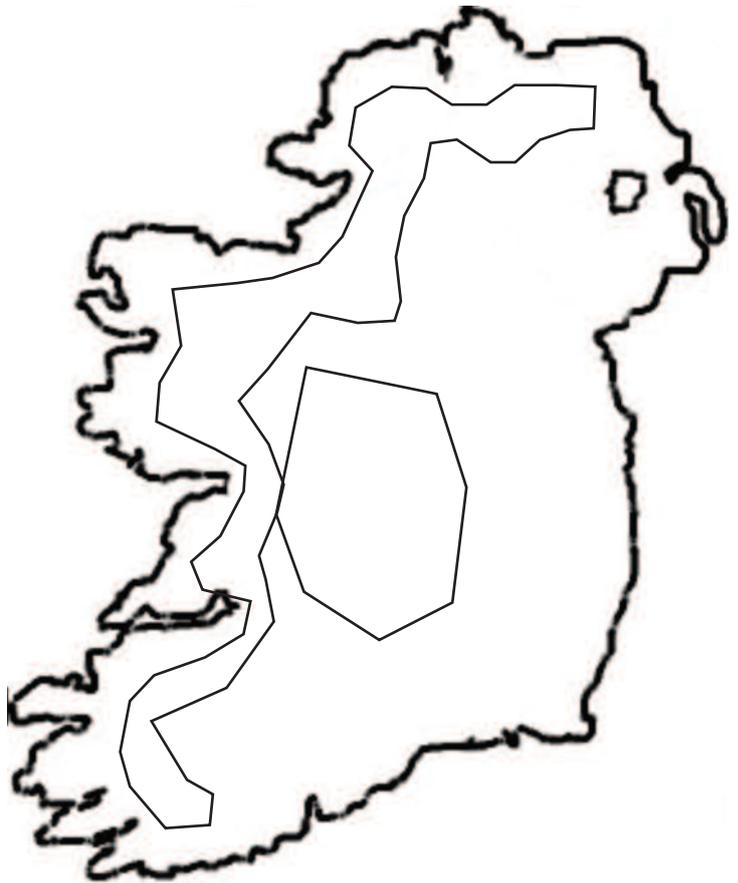
Boglands are wetlands

There are two types of bog in Ireland r _____ bog and b _____ bog.

Below is a map of I _____.

On the map colour the
Raised bogs in green
Blanket bogs in brown

Raised bogs are found in the
m _____ of Ireland and blanket
bogs are found in the
m _____ and along the west
coast. Raised bogs are t __ _ thousand
years old and blanket bogs are f ____
thousand years old.



Curlew

Word Bank

- raised
- ten
- midlands
- blanket
- Ireland
- four
- mountains



Why are Bogs so Special?

The different values of Irish Bogs

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For many years we have used our bogs for:

1. T _ _ _ for heating our homes
2. Making e _ _ _ _ _ _ _ _ _ _
3. C _ _ _ _ _ _ for growing flowers

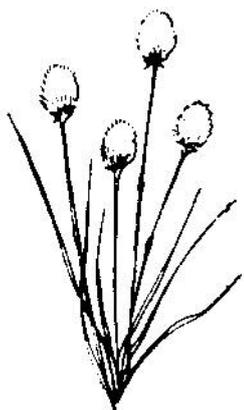


Today we know more about bogs than we did in the past and they are important for many reasons:

1. A h _ _ _ _ _ for plants and animals
2. For storing w _ _ _ _ _
3. For days out w _ _ _ _ _ _
4. For collecting b _ _ _ _ _ _
5. A living h _ _ _ _ _ _ book of our past
6. For helping to keep our environment c _ _ _ _ _



By p _ _ _ _ _ _ _ _ _ _ a sample of bogs
we can all enjoy the bogs of Ireland for
many years to come.



Bog Cotton

Word Bank

- | | | |
|---------|-------------|---------|
| walking | habitat | turf |
| history | electricity | berries |
| clean | protecting | water |
| | | compost |



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Teachers Guide

Bog in a Bottle - Exploring Raised Bog Formation

Opening Discussion - Has anyone seen the movie Ice Age?

Did you know that 10,000 years ago Ireland was in the grips of an Ice Age?

Can you describe what the land in Ireland would have looked like during the Ice Age?

Does it still look the same today? What happened the ice?

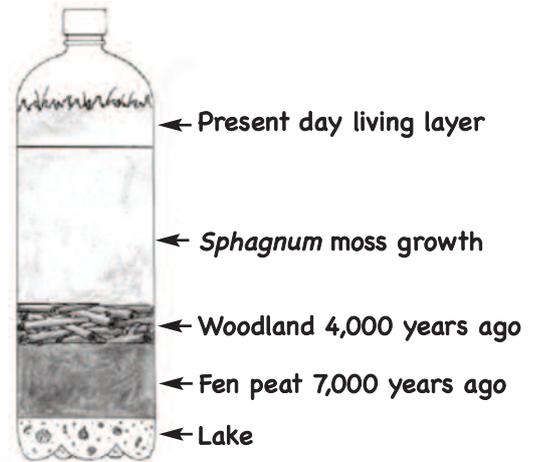
Take an ice cube out of the freezer and ask students to predict what will happen to the ice.

Did they predict that the ice would change to water? What would cause the ice to melt?

This is where our raised bog story begins

Equipment: As this is a model we will just use items that we can find around our school. You will need:

- * 1 x empty 2 litre clear plastic bottle
- * White tissue paper
- * Compost
- * Bark chips
- * Plants such as moss and heathers



Stage 1: Shallow Lakes 10,000 years ago



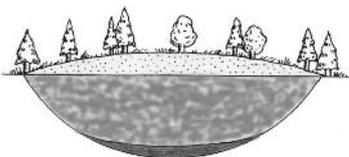
At the end of the last Ice Age 10,000 years ago a weather change caused the ice to melt forming shallow lakes in the midlands of Ireland. Put the white tissue in the bottom of the bottle to represent this stage.

Stage 2: Fen 7,000 years ago



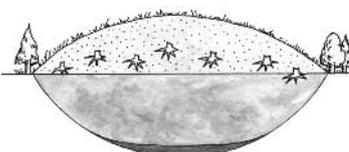
Slowly plants began to grow in these lakes. Over 3,000 years they grew bigger and bigger to fill up the lakes to create a fen. A fen is a lake filled with dead plants. Put two cups of compost into the bottle.

Stage 3: Woodland 4,000 years ago



4,000 years ago almost all of Ireland was covered in trees a weather change bringing wind and rain was to cause these trees to fall over. Fill a cup of bark chips into the bottle to represent the fallen woodland.

Stage 4: *Sphagnum* Moss growth



Once the trees fell it opened up the surface of the fen and allowed *Sphagnum* moss to grow. *Sphagnum* moss is the bog builder growing 1mm a year upwards storing 20 times its own weight in water. Fill the remainder of the bottle with compost and add your plants to the surface. You have now made your own classroom 'Bog in a Bottle'.



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Teachers Guide

Bog in a Bottle - Exploring Blanket Bog Formation

Opening Discussion – A woodland is a collection of trees. Did you know that 4,000 years ago most of Ireland was covered in trees?

Is most of Ireland covered in trees today?

What does the land in Ireland look like today?

Can you guess what happened all these trees?

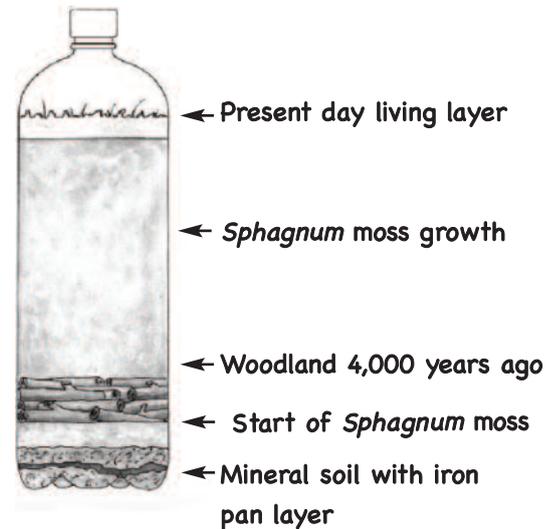
Did your students guess that early farmers removed trees in the mountains to create fields?

But Irelands weather was to change to the rain and wind we get a lot of today.

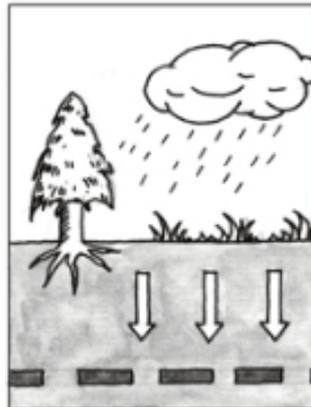
This is the beginning of our blanket bog story.....

Equipment: As this is a model we will just use items that we can find around our school. You will need:

- * 1 x empty 2 litre clear plastic bottle
- * Sand or gravel
- * Compost and Garden soil
- * Bark chips
- * Plants such as moss and heathers



5,000 years ago Ireland was covered in woodlands. As farmers came to Ireland they cleared these woodlands to create farmland. Add two cups of garden soil to the bottle.



A weather change was to bring rainfall greater than 1200mm per year and caused leaching of iron through the soil. Add a layer of sand or gravel to represent the forming of an iron pan layer.



This iron pan, impermeable to water was to cause water logging of the land allowing *Sphagnum* moss to grow. Add two cups of soil and one cup of bark chips to show the end of the woodland.



As the *Sphagnum* moss continued to grow it covered the mountains. Fill the bottle with compost and add some plants such as moss and heather to the top of the bottle to show the present day.



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BOGWATCH Flower Dial

What's that bog flower?
Use the dial to check your
identification. Just point
the magnifying glass at the
plant you want to check.
The notes will help by
telling you some of the
special features of the plant.

number of
flower petals

flower
colour & shape
when seen

special
features



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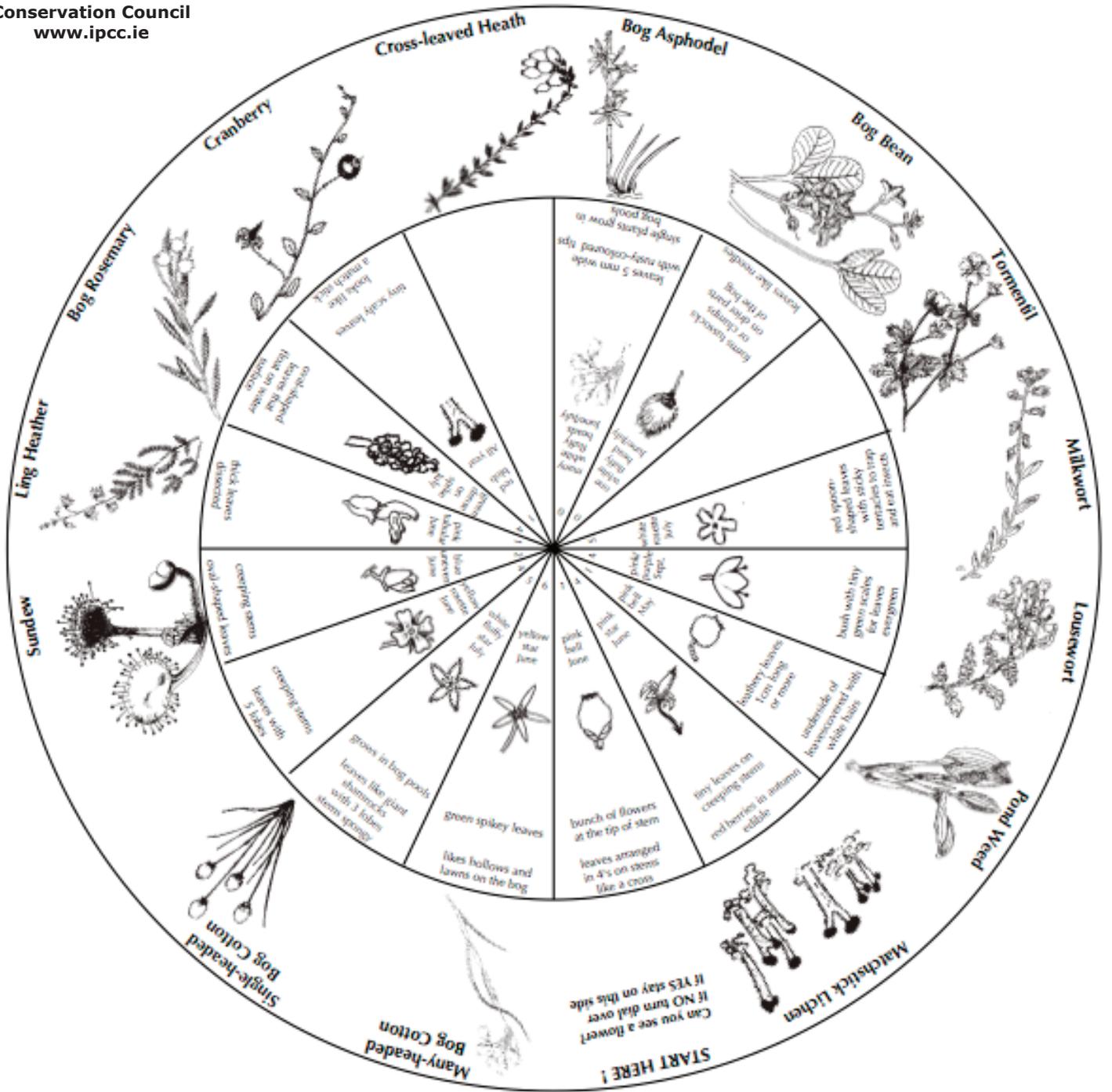
special
features



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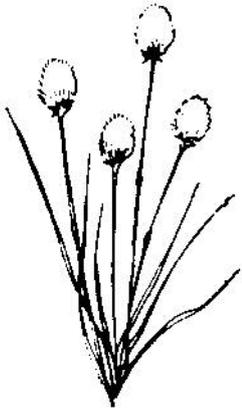


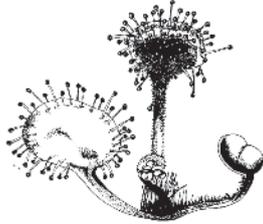


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Bogland Plants

Using your Bog Watch Flower Identification Dial name
these bogland plants























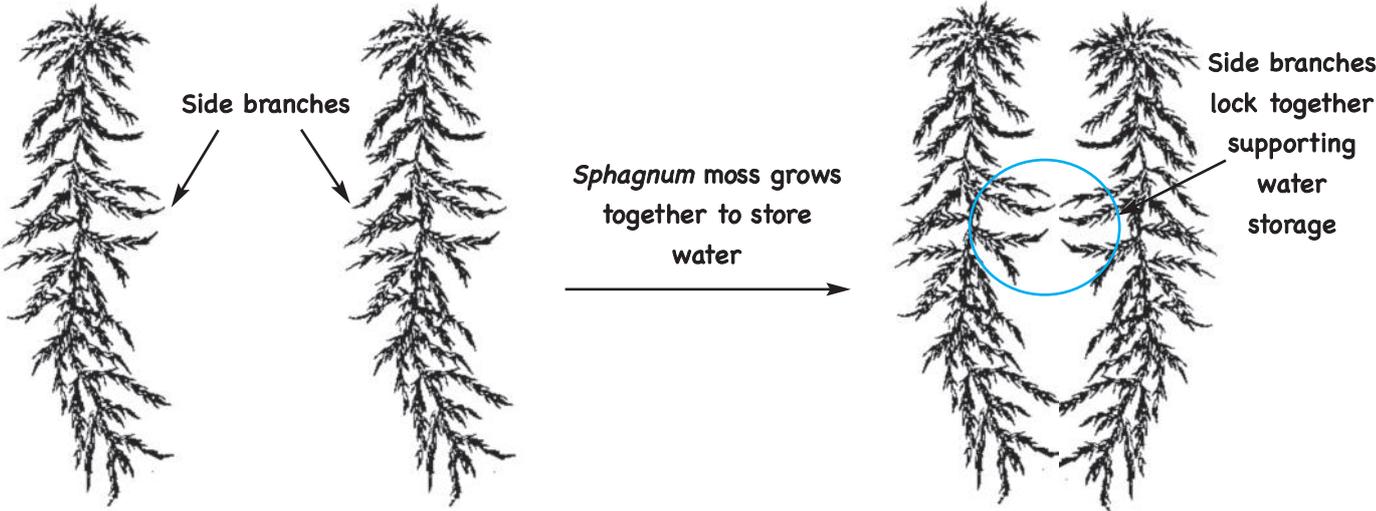
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Why are Bogs so Wet?

Raised bogs are 10,000 years old and they started to form when the Ice Age ended and left shallow lakes throughout the midlands of Ireland. These shallow lakes were filled in with plants over 7,000 years ago. Blanket bogs are formed on the mountains where no lakes existed.

But why is it that both blanket bogs and raised bogs are so wet?

Well the secret lies with the bog building plant called *Sphagnum moss*. The stem of *Sphagnum moss* is a bit like a paint brush soaking up water and this water is held around the plant with the support of side branches linking together with other *Sphagnum moss* plants.



Lets investigate.....

Sphagnum moss can be described as a bogland sponge soaking and storing water. Follow the steps holds more water than a sponge? You will need a sponge, a weighing scales, some water and a plastic container.

Recording Sheet

1. Weigh the plastic container and record its weight	..... g
2. Weigh the plastic container and a dry sponge and record their weight	..... g
3. Subtract your weight number 1 from weight number 2 to find out the weight of the dry sponge	..... g
4. Soak the sponge in water and weigh the wet sponge in the plastic container and record the weight	..... g
5. Subtract your weight number 1 from weight number 4 to find out the weight of your wet sponge	..... g
6. Divide the weight of the dry sponge (reading 3) into the weight of the sponge soaked in water (reading 5) and record your results	..... g
7. <i>Sphagnum moss</i> holds 20 times its own weight in water. How does this compare with a sponge? g

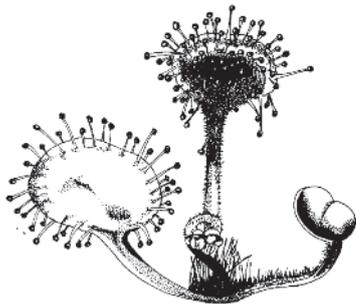
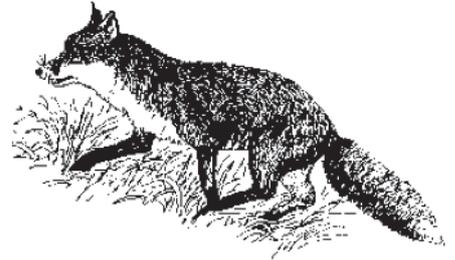


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Bogland Carnivores

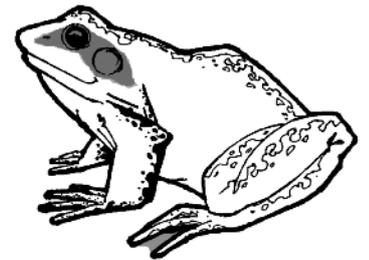
Boglands are home to many different animals and plants. But what do they eat?

A Fox is a mammal and it eats other
a _ _ _ _ _ on the bog



A Sundew is a plant that lives on the bog.
It has sticky tentacles to trap and
eat b _ _ _

A Frog can live in water and on land. It is
called an amphibian. Frogs eat s _ _ _ _ on
the bog



A Curlew is a bird that builds its nest on the
bog surface. It has a long curled beak for
eating i _ _ _ _ _

All of these bogland animals and plants are
c _ _ _ _ _ as they eat other animals

Word Bank



Dragonfly

bugs

insects

animals

carnivores

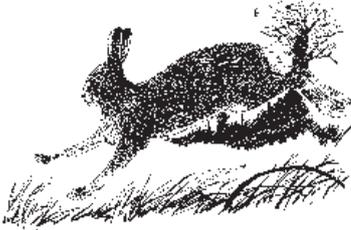
slugs



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Bogland Herbivores

Boglands are home to many different animals. But what do they eat?



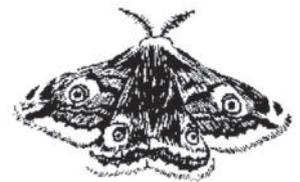
A Hare is a mammal. It does not burrow like a rabbit as bogs are too wet. It lives under the heather plant and it eats the leaves of b _ _ c _ _ _ _ _ on the bog

A Red Grouse is a bird that builds its nest on the surface of the bog. It is also called the heather hen as it eats the h _ _ _ _ _ plant on the bog



The Black Slug loves the wet surface of the bog. It eats dead p _ _ _ _ on the bog

The pattern of colours on an emperor moths wings look like two frightening eyes. They feed on n _ _ _ _ _ of bogland flowers on the bog



All of these bogland animals are h _ _ _ _ _ _ _ _ as they all eat plants

Word Bank

bog

cotton



plant

herbivores

bog cotton

nectar

heather



Bogland Carnivores, Herbivores and Omnivores

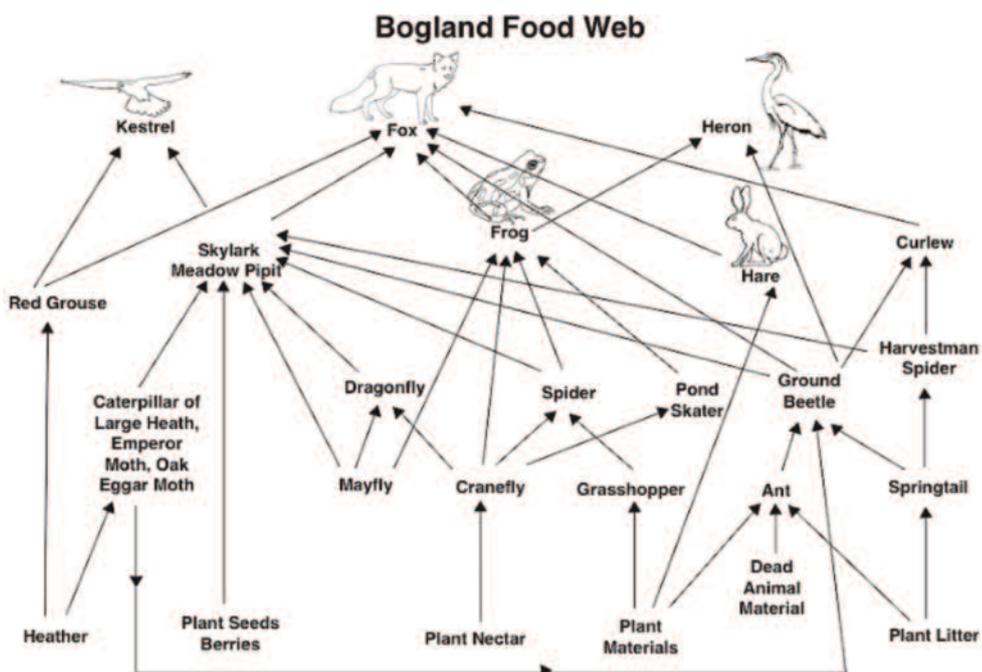
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Some bog animals eat other animals we call them: _____

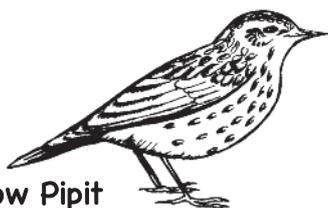
Some bog animals eat plants we call them: _____

Some animals eat both plants and animals we call them: _____

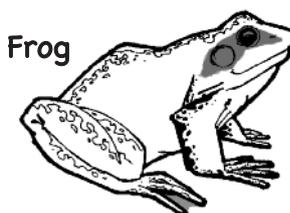
Using this bogland food web can you identify which animals are herbivores, carnivores or omnivores



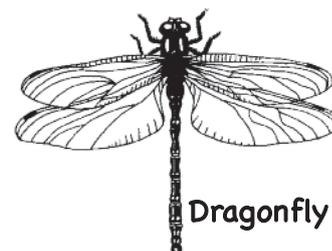
Kestrel



Meadow Pipit



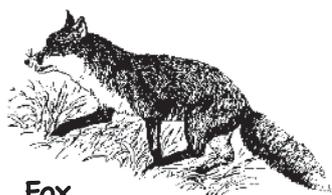
Frog



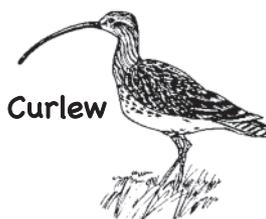
Dragonfly



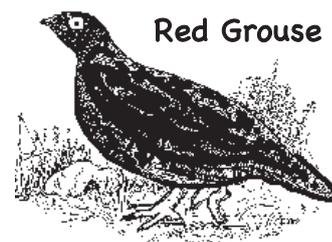
Hare



Fox



Curlew



Red Grouse

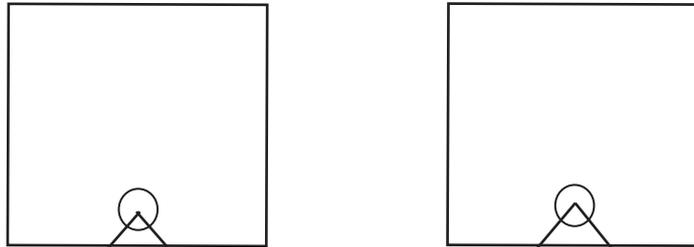
Visit Discovering the Wild Bogland 5th & 6th Class worksheets to learn how you can identify animals on the bog by watching for animal tracks and signs on the bog



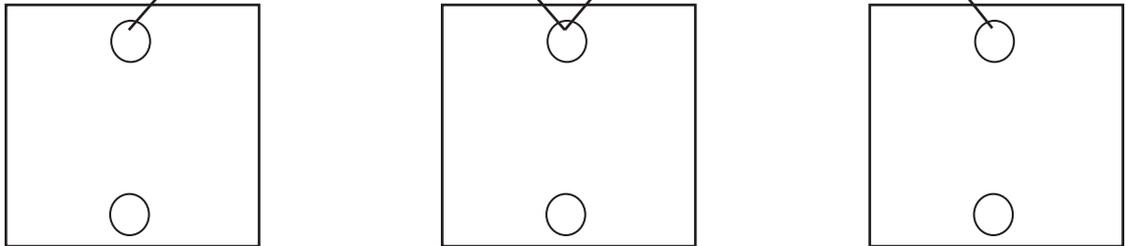
Food Web Planning Sheet

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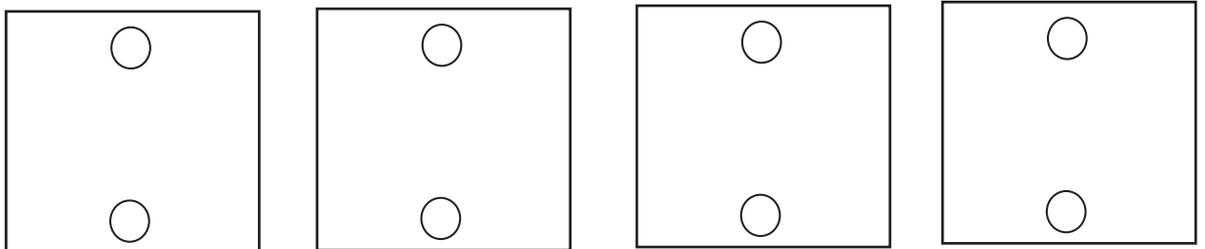
Place your
top carnivore
predators in this line
of your food web



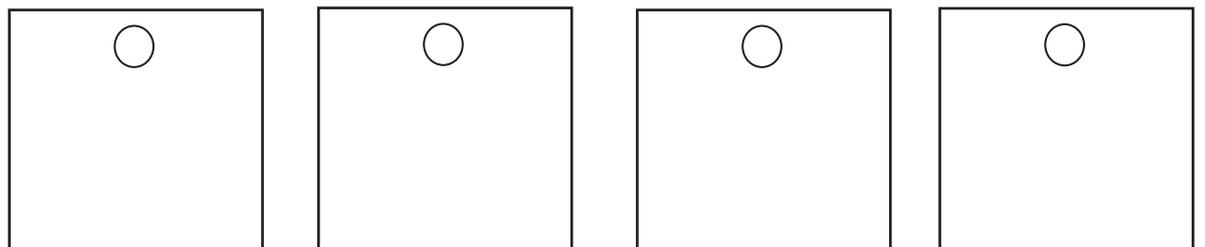
This line should
include animals
your top predator
will eat it may also
include omnivores



This line should
include
herbivores and
omnivores



This line should
include plants and
seeds that the
bogland
herbivores and
omnivores will eat



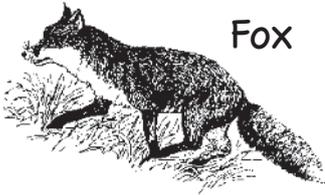
To finish your food web draw lines between the circles in the boxes to link the omnivores, carnivores and herbivores together showing what-eats-what on a bogland habitat - now you are ready to make your bogland food web



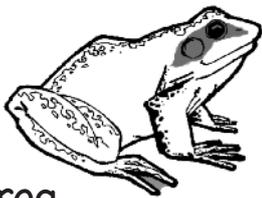
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Bogland Plants & Animals

Boglands are home to many different plants and animals. A home for plants and animals is called a habitat. When visiting a bog the animals often hide. Can you find some of Ireland's bogland animals and plants hidden in the wordsearch?



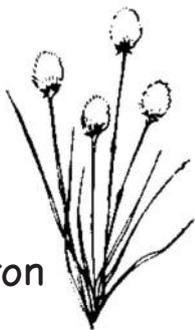
Fox



Frog



Hare



Bog
Cotton

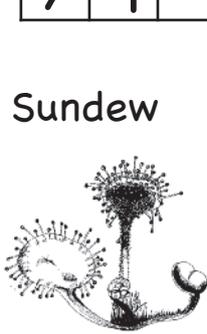


Kestrel

c	u	r	l	e	w	d	g	h	c	f	i	m	n	k	j
v	z	b	a	s	t	r	u	m	t	w	b	h	a	r	e
i	e	q	r	f	g	b	h	j	k	y	u	i	o	p	m
q	s	d	f	c	v	b	h	y	u	i	o	r	t	f	e
c	v	r	t	d	f	r	o	g	x	d	f	g	y	b	a
d	q	s	x	z	c	v	b	n	h	j	y	f	t	o	d
r	e	d	f	t	q	w	e	r	t	y	h	i	o	g	o
a	s	d	k	e	s	t	r	e	l	f	e	g	h	c	w
g	l	z	x	c	v	b	n	m	l	k	a	j	h	o	p
o	f	t	r	y	w	s	d	f	y	u	t	g	h	t	i
n	a	s	c	v	b	n	m	z	x	d	e	r	t	t	p
f	q	w	e	r	t	f	o	x	t	y	e	i	o	o	i
l	z	x	c	v	f	d	s	a	f	g	r	u	y	n	t
y	q	e	d	c	v	t	y	u	i	s	n	i	p	e	p



Heather



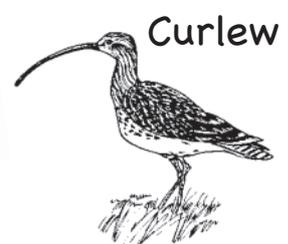
Sundew



Meadow Pipit



Dragonfly



Curlew



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Why Don't we Grow Vegetables in Bogs?

Worms, Bogs and the School Garden



Bogs are wetlands and one thing you will never see is a farmer trying to grow vegetables out on the bog. Do you know why?

Lets investigate

Go to your school garden and dig a hole. In the box below describe what you find and what the ground is like?

Did any of the groups find worms? Yes No

Was the ground wet like a bog? Yes No

Do you know what worms do for your garden?

If you were fishing would you look for worms
in the water or in the soi? Water Soil

Can we breathe under water? Yes No

What do fish have to help them live under water? _____

Are worms like fish? Yes No

Do you think worms live in the wet bogs of Ireland? Yes No



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Why Don't we Grow Vegetables in Bogs?

No nutrients for vegetables

Did you know you will rarely find an earthworm in a bog? This is because bogs are wet and worms don't have gills like fish, they breath oxygen through their skin. There is very little oxygen under water and therefore a bit like us, worms cannot live in the wet bogs of Ireland. Worms are nature's recyclers turning dead plants into compost full of nutrients that help plants grow. Plant nutrients are a bit like our vitamins and minerals that help us grow big and strong. With no earthworms in bogs there are no nutrients to allow vegetables to grow.

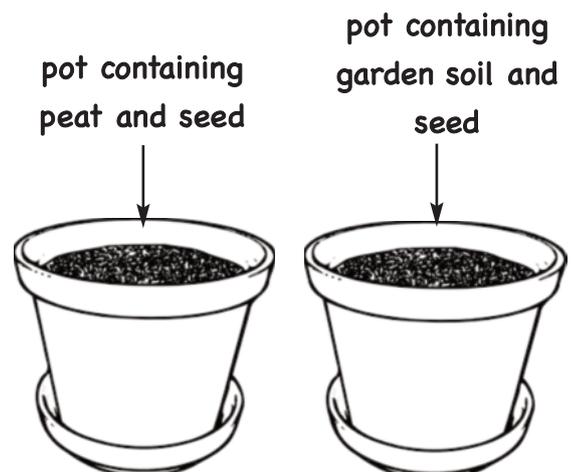
Lets do a fair test investigate to see if this is true

You will need: eight plant pots, some vegetable or flower seeds, some garden soil and some peat taken from a bog that is not protected

We need our investigation to be a fair test - this means all materials used in this investigation will be the same with only one item in our investigation being different.

What should be the same?	What is the one item we will change?

1. Fill 4 plant pots with equal weights of peat and 4 plant pots with the equal weights of garden soil. Label each pot.
2. Bury one vegetable or flower seed, at the same depth in each of the pots.
3. Water all pots ensuring to give each pot the same amount of water and place beside each other on the classroom window sill.
4. Observe, monitor and record the growth of the plants in the two different pots. Keep a record of your results over the next two months.





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Why Don't we Grow Vegetables in Bogs?

Recording Sheet

To calculate the average height of the plants growing in soil measure the height of the emerging plants in each of your four pots filled with soil. Add these heights together and divide your total by the number of plants you measured. Repeat this to get the average height of plants growing in peat. Record your results in the table below.

Each week record the height of the emerging plants, calculate the average height and write it in the table

Average height of seedlings in the flower pots containing peat

Average height of seedlings in the flower pots containing garden soil

Week 1	..... cm	..... cm
Week 2	..... cm	..... cm
Week 3	..... cm	..... cm
Week 4	..... cm	..... cm
Week 5	..... cm	..... cm
Week 6	..... cm	..... cm
Week 7	..... cm	..... cm
Week 8 cm cm

Is peat good for growing vegetables?

Yes

No

Can you explain why?



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Bogland Fractions

Frogs are amphibians. This means they lay their eggs in water, the young develop under water and then the adults have the ability to come onto land.

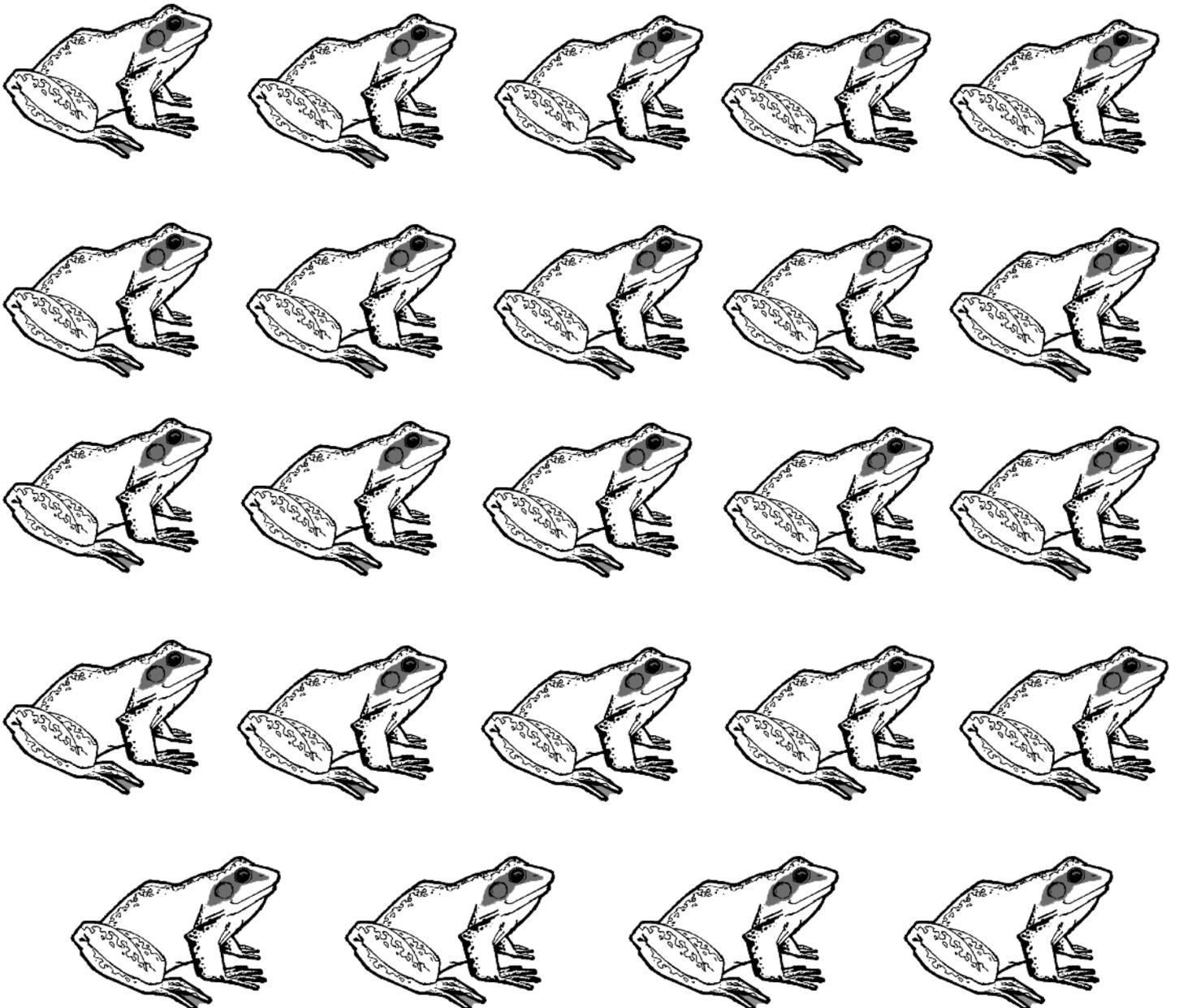
How many frogs did I find in the bog? _____

Colour $\frac{1}{2}$ of the frogs green = _____

Colour $\frac{1}{4}$ of the frogs brown = _____

Colour $\frac{1}{6}$ of the frogs purple = _____

How many frogs have no colour? _____

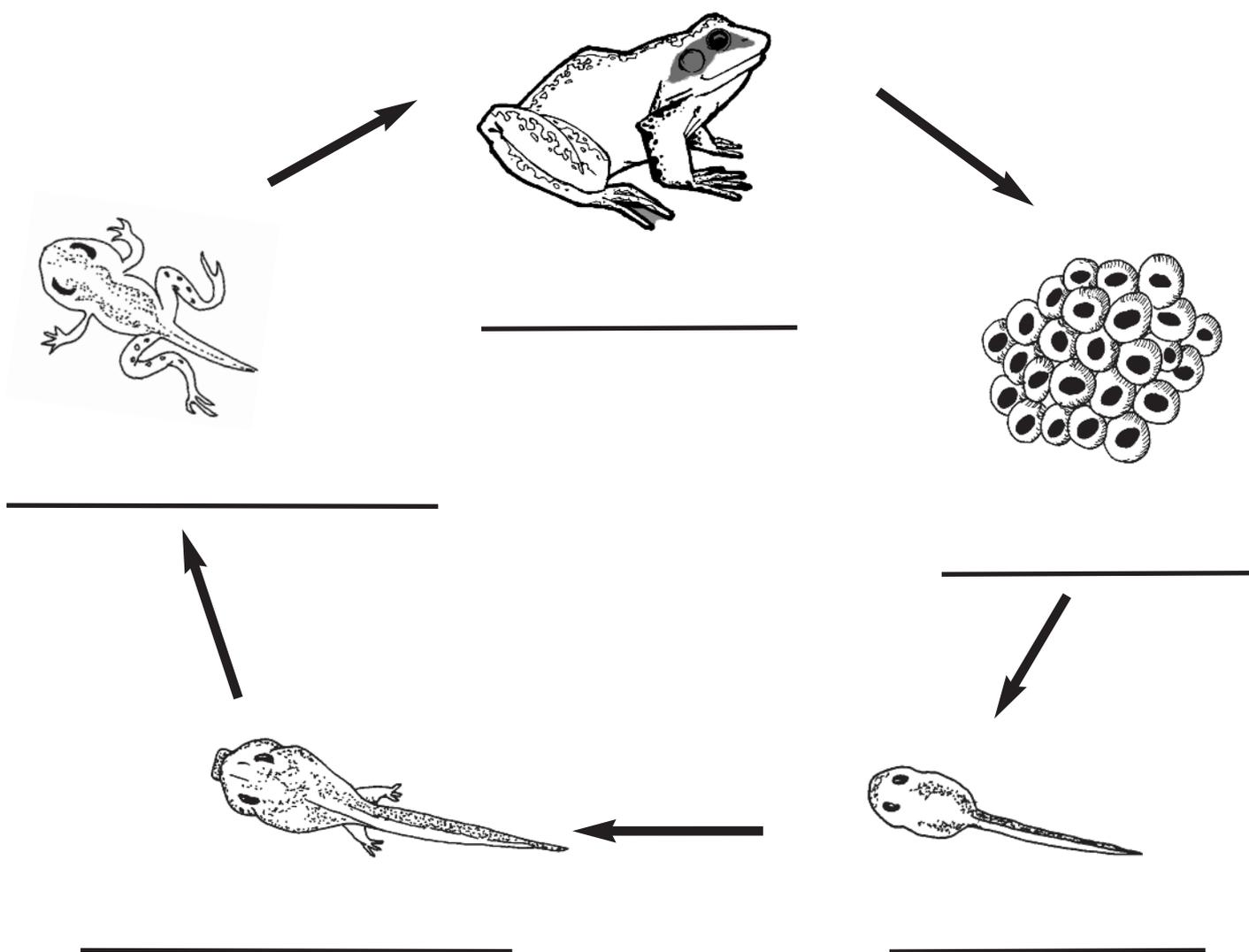




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Frog Lifecycle

Ireland is home to three amphibians, the Common Frog, Smooth Newt and Natterjack Toad. Common Frogs and Smooth Newts are found in every county of Ireland, while the Natterjack Toad can only be found living in Co. Kerry and Co. Wexford. Name the stages in the frog lifecycle?



Take Part in The Hop To It Frog Survey - bringing ICT into the Classroom

The Irish Peatland Conservation Council carry out the National Frog Hop To It Survey each year. If you have seen frogs in your local area record the name of the area, take a description of the site, the date and what stage of the frog lifecycle you saw. Then follow the instructions to submit your frog record online -

Step 1: visit www.ipcc.ie. on your school internet

Step 2: Click the 'Help IPCC' tab in the header banner

Step 3: Click into the link for National Hop To It Frog Survey Card

Step 4: Complete your frog details and press submit



Raised Bog Worksheet

Let's see what you know about bogs....



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Bogs are w _ _ _ _ _

Sphagnum moss is call the b _ _ b _ _ _ _ and it
grows o _ _ mm per year

Raised bogs grow in the m _ _ _ _ _ and are 10,000 y _ _ _ _ old

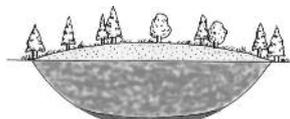
Can you name the stages of raised bog formation?



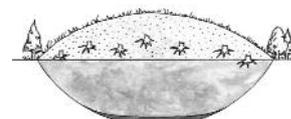
l _ _ _



f _ _

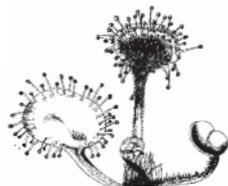


w _ _ _ _ _



b _ _

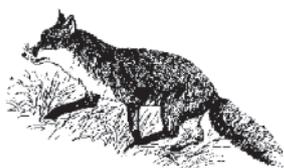
Can you name these bogland animals & animals?



S _ _ _ _ _



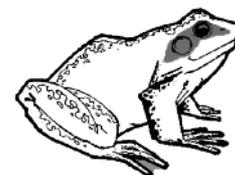
C _ _ _ _ _



F _ _



B _ _ C _ _ _ _ _



F _ _ _

A carnivore eats other a _ _ _ _ _

A herbivore eats p _ _ _ _ _

Name three reasons why bogs are important

1. _____
2. _____
3. _____

An omnivore eats both

p _ _ _ _ _ and
a _ _ _ _ _

Bogs are wet and there is no oxygen under water in the bog as a result no
w _ _ _ _ live in bogs. Can you name three items found in bogs?

1. _____
2. _____
3. _____



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Blanket Bog Worksheet

Let's see what you know about bogs...

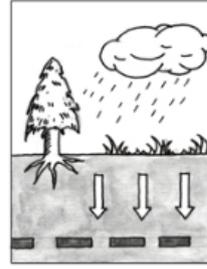


Bogs are w _ _ _ _ _

Sphagnum moss is call the b _ _ b _ _ _ _ _ . It grows o _ _ mm per year

Blanket bogs grow in the m _ _ _ _ _ and are 4,000 y _ _ _ _ old

Can you name the stages of blanket bog formation?



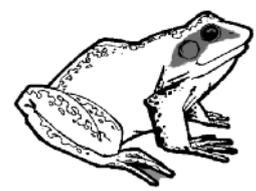
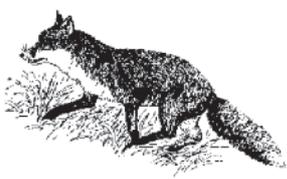
f _ _ _ _ _

i _ _ _
pan

S _ _ _ _ _
m _ _ _

b _ _ _ _ _
b _ _

Can you name these bogland animals & animals?



S _ _ _ _ _

C _ _ _ _ _

F _ _ _

B _ _ C _ _ _ _

F _ _ _

A carnivore eats other a _ _ _ _ _

A herbivore eats p _ _ _ _ _

Name three reasons why bogs are important

1. _____
2. _____
3. _____

An omnivore eats both
p _ _ _ _ _ and
a _ _ _ _ _

Bogs are wet and there is no oxygen under water in the bog as a result no w _ _ _ _ live in bogs. Can you name three items found in bogs?

1. _____
2. _____
3. _____