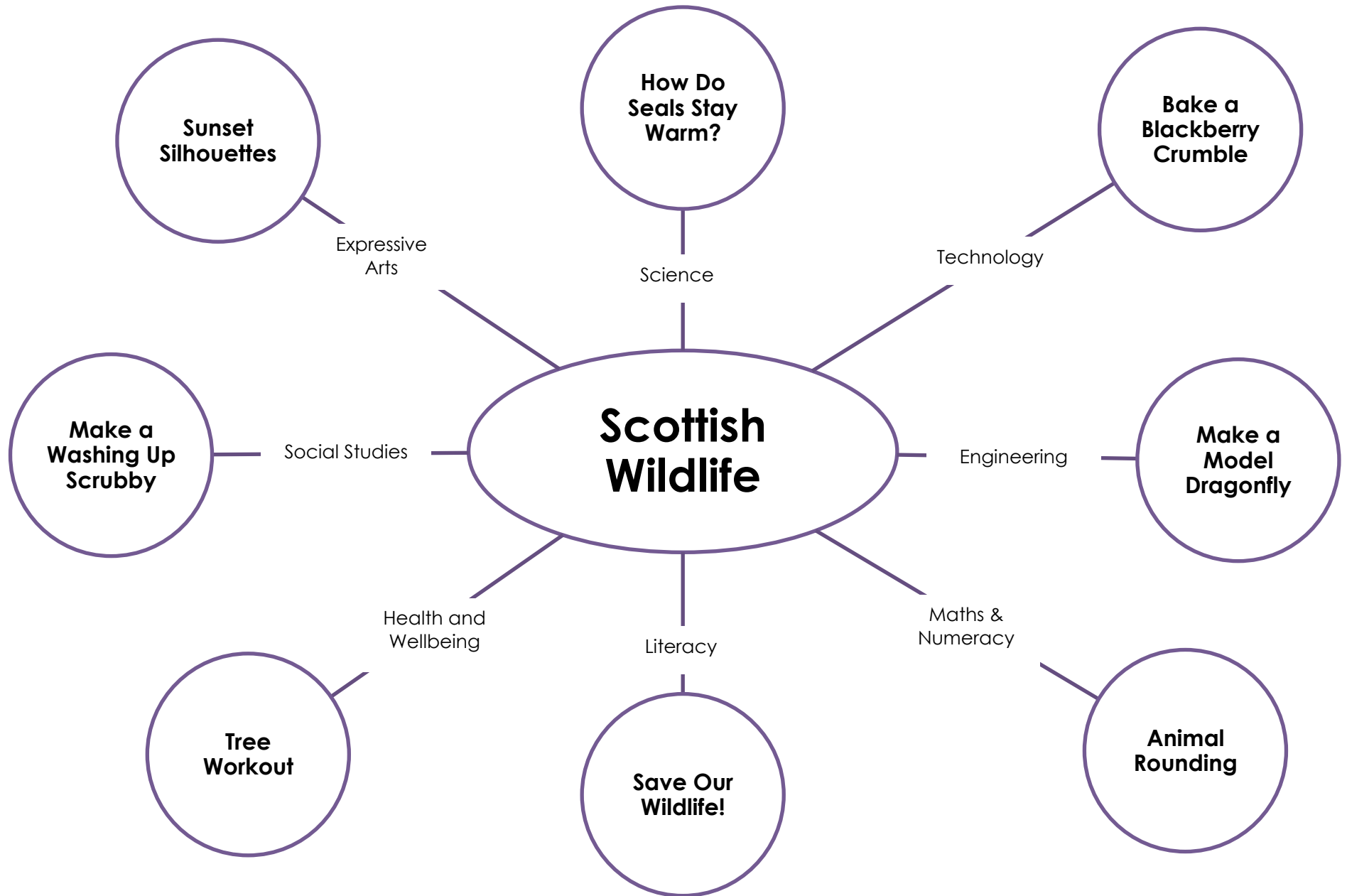


Learning from Home



Science Challenge



How do Seals Stay Warm?

Nearly half of all grey seals live in UK waters – and about 9 out of 10 of these, breed at colonies in Scotland. Try this experiment and find out how they have adapted to keep warm.

You will need:

- Vaseline (or cooking lard)
- Two plastic bags
- A bowl of water and ice cubes
- A stopwatch
- Two large rubber bands
- An adult helper



Image from clipart-library.com

What to do:

1. Put one hand inside one of the plastic bags.
2. Ask your helper to spread a thick layer of Vaseline (**or lard**) over your other hand.
3. Slide the second plastic bag over the hand with the Vaseline on.
4. Squeeze the air out of the bags.
5. Put a rubber band over the top of each of the plastic bags, round your wrists, to stop them falling off. *Make sure it's not too tight!*
6. Stick your hands in the bowl of ice water. Don't let any water get inside the plastic bags.
7. Time how long you can keep each hand in the water for. **Make sure you take each hand out when it starts to feel uncomfortable. Don't hurt yourself!**

Did one of your hands start to feel uncomfortable before the other one?

The Science:

Most people can keep the hand covered in Vaseline (or lard) in the water for longer than the other hand. Vaseline acts as an **insulator**. It keeps the heat from your hand escaping into the water. The hand without the Vaseline doesn't have this extra protection and it loses heat quickly to the water.

Animals like grey seals, which live in cold habitats, grow a thick layer of fat called **blubber**. This fat acts just like Vaseline - it is an insulator. The blubber helps the animal to retain its body heat and prevents the body heat being lost to the surroundings.

Activity adapted from planet-science.com

Technology Challenge



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Bake a Blackberry Crumble

Blackberries are the fruits of brambles – a thorny shrub of the rose family.

These plants can be found in many habitats in Scotland, including woodlands, hedgerows and gardens. The blackberries appear during Autumn. Out of season, you can still often buy fresh or frozen blackberries in most supermarkets.

Note: If you don't like or don't have blackberries, you could substitute these with another fruit like apples or pears.

What you need:

- Blackberries (450g) *(or alternative fruit)*
- Caster sugar (2 tbsp)
- Plain flour (225g)
- Soft brown sugar (150g)
- Soft butter (75g)
- Baking powder (one level tsp)
- A mixing bowl
- A wooden spoon
- Oven gloves
- An oven



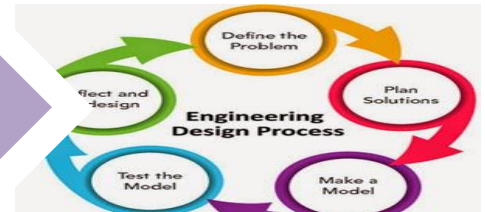
Adult Supervision is required

How to bake a wild blackberry crumble:

1. Wash the blackberries (if fresh) and arrange them in a shallow ovenproof dish. (If using apples or pears, these need to be washed and carefully peeled and sliced – ask a grown up for help)
2. Sprinkle the fruit with caster sugar.
3. Mix the remaining ingredients in the mixing bowl, using your fingers and thumbs work the mixture until it becomes crumbly.
4. Pour the crumble mixture on top of the fruit.
5. Bake in the oven at 180°C (Gas mark 4) for 30-40 minutes.
6. Using the oven gloves, carefully take the crumble out from the oven and leave it to stand. **(Be careful as this will be very hot!)**
7. When it has cooled to a suitable heat – enjoy!

Activity and photo from scottishwildlifetrust.org.uk/

Engineering Challenge



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Make a Model Dragonfly



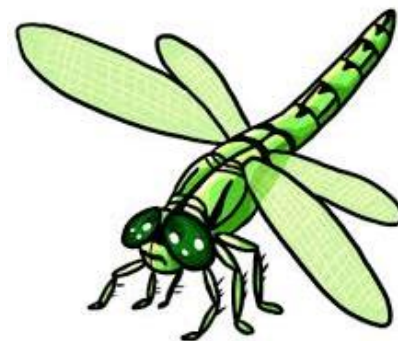
Dragonflies love watery habitats. You can find them in places like lochs, ponds, rivers, canals, burns and bogs! Scotland is home to around 29 different species.



When at rest, a dragonfly holds its wings out from its body, and can look quite beautiful.

What you will need:

- Two 30cm lengths of strong, bendable wire
- Two long, coloured pipe cleaners
- Two white buttons or beads, with a hole in each
- Coloured cellophane or sweet wrappers (optional)
- Sticky tape
- Permanent marker pens



Activity from <https://scottishwildlifetrust.org.uk/>
Images from clipart-library.com

Instructions:

1. Thread a pipe cleaner through one of the beads (or buttons).
2. Twist the ends of the pipe cleaner together to stop the bead falling off.
3. Repeat with the second pipe cleaner, and the second bead.
4. Finish making the dragonfly's body, by twisting the two pipe cleaners together.
5. Add a black dot to each of the beads – these are the eyes.
6. To make the wings – bend the wire into a double set (a figure of eight) – leave enough wire at the ends to attach to the body.
7. Wrap each wing with the cellophane or sweet wrappers; or, if you don't have those, cover them in sticky tape and then colour the tape with the markers.
8. Your dragonfly is ready to fly!
9. You could make a few and make a dragonfly mobile. Simply make a cross shape out of cardboard, and then attach each dragonfly using sellotape and string.
10. Add another piece of string to the top centre of the cardboard cross and hang at a location of choice to brighten up the room.

Make a model dragonfly

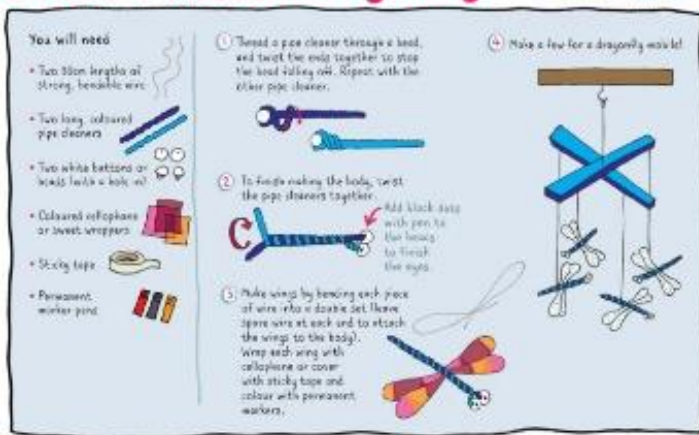
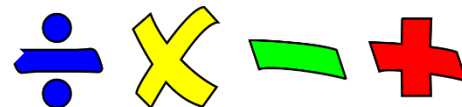


Illustration by Corinne Welch © Royal Society of Wildlife Trusts 2015

Maths & Numeracy Challenge



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Animal Rounding

Rounding is a way of simplifying numbers. We round numbers all the time and being able to do this can make rough calculations or estimations much easier.

Note: when a number is halfway between e.g., 15 or 150 then always round up so, 15 rounds up to 20 (rounded to the nearest 10), and 150 rounds up to 200 (rounded to the nearest 100)

Original	Rounded to the nearest 10	Rounded to the nearest 100
58	60	100
98	100	100
221	220	200
53	50	100
475	480	500
641	640	600

Task: Complete the table below, rounding the number of animals to the nearest 10 and 100.

Number of animals	Rounded to nearest 10	Rounded to nearest 100
27 rabbits		
103 adders		
13 capercaillie		
879 red deer		

You have been tasked with providing food for the wildlife in the Highlands National Park during a very cold winter. Round up and estimate how many of each item you will need to deliver to the park if:

1. There are 95 squirrels, and they need 9 acorns each.
2. There are 23 hedgehogs, and they need 8 worms each

If you have a calculator you might want to check how close you are to the actual answer. (Or you could challenge yourself to work it out on paper!)

Literacy Challenge



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Save Our Wildlife!

Your task today is to create a poster encouraging people to look after an animal of your choice from this selection of native Scottish animals. Can you persuade people to save the animal of your choice?

Red squirrel	Capercaillie	Scottish wildcat	Mountain hare
Badger	Hedgehog	Red deer	Golden eagle
Adder	Barn owl	Basking shark	Natterjack toad

You should include:

1. A picture of your animal
2. Information about what kind of animal it is e.g., bird, mammal, reptile etc.
3. Where it lives / habitat
4. What it eats
5. What is special about that animal and why people should protect them.

What could help:

- Short, snappy sentences / phrases
- Eye catching layout
- A catchy title using alliteration. (Words starting with the same sound)
- Something to offer
- Attention grabbing pictures or photographs
- Final reminder of the message or product

You could use paper and pens / pencils or a computer.

Save Scotland's Stunning Capercaillie

Capercaillies are the largest game bird in Scotland. They live in our pine forests in the Highlands.

Capercaillies form groups called **Leks**.



They eat berries and insects.

Male birds do a special dance and sing to attract a mate.

If out walking or mountain biking in forests, please stick to the paths so you don't scare them!

Numbers in Scotland are decreasing.

Please save our amazing capercaillie!



Health & Wellbeing Challenge

Tree Workout



Exercise is important for keeping us fit, but it is also good fun. Have you ever seen horses running in a field or even cows and sheep jumping?



Today's exercises are done outdoors using trees or bushes. You might be lucky enough to have some in your own garden but if not then make pretend trees/bushes from other garden objects. *Or when you can leave your home ask grown up if they know where you could go to do the exercises.*

Remember – do not leave the house without speaking to a grown up first!

Activities:

1. Warm up with some arm swinging and brisk walking. If you are walking to where the trees are then you could do this on the way.
2. Find 2 trees or bushes – run between them, touching each one, 10 times.
3. Next hop on one leg from one tree to the other. Hop back using the other leg if you can.
4. Using the same 2 trees or bushes, jump with both feet together between the two. How many jumps did it take you?
5. Next, skip from one tree to the other and skip back.
6. Next hop, skip then jump in a sequence, back and forth between the trees. Do this twice.
7. Find a big tree and put your hands on it at about shoulder level. Do 10 press ups against the trunk, keeping your legs straight.
8. Face a tree, leaning your hands on it. Curl up one foot behind you while keeping the other leg straight. Repeat 10 times with each leg.
9. Now lift one leg in front of you, bending your knee. 10 times on each leg.
10. Jump as high as you can and touch the trunk - how high can you reach? Repeat 5 times.
11. Try to make up some of your own exercises.

Remember to wash your hands when you get home.

Activity adapted from www.ttl.org.uk/free-resources

Social Studies Challenge



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Make a Washing Up Scrubby

Adult supervision recommended

Many items in the home contain plastic, and it's not just the obvious ones! For example, most dishcloths contain man-made plastic fibres. It's important that we try to **reduce, reuse** and **recycle** whenever we can and especially when it comes to plastic.

Many animals can be badly affected by the things we throw away. For example, some can become trapped in plastic bags or ring pulls, fish can die from eating plastic in the seas and our rivers. If the fish die, then other creatures such as birds may also die as they will have no food source.



Try this simple activity to turn your old clothing into a sustainable dishcloth, and practise our **reduce, reuse** and **recycle** mantra.

What you will need:

- Clothes pegs
- A square plastic food tub
- Unwanted socks
- Scissors



Click here to watch a video showing how to make the scrubby:

https://www.youtube.com/watch?v=5NSXMc0xmCU&feature=emb_imp_woyt



Clipart from clipart-library.com

Idea and photo from <https://scottishwildlifetrust.org.uk/>

Expressive Arts Challenge



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Sunset Silhouettes

We can have some truly stunning sunsets in Scotland. Today we are going to create some beautiful art by making a silhouette (an outline of an object, person or animal, represented as a solid dark, usually black, likeness) and mounting this onto a sunset background.



You will need:

- Paper
- paintbrush
- scissors
- tracing paper (optional).
- paints
- black paper
- glue

It also helps to have photos of sunsets and the wildlife you have decided to draw.

Method:

1. Begin by looking at pictures of sunsets. They can have a wide variety of colours and the warmest colours (yellow, orange, red) are near the horizon. (Where the sky meets the Earth) The colours flow into each other and the bands of colour are horizontal (across the way), not vertical (downwards).
2. Use paint to cover your paper background – if you add water to it, it will spread across the paper more easily giving more subtle mixtures of colour. Don't use too much!
3. While the paint is drying, draw your animal outline on the black paper using an ordinary pencil or a fine white pencil if you have one. If you have tracing paper, you may wish to find a picture in a book or magazine and trace around it for your silhouette.
4. Carefully cut out the silhouette of your animal from black paper. (This can be tricky so ask a grown up for help if you need it)
5. Next, cut a thin strip of black paper, glue this onto the bottom of the dry background paper, then glue the animal in the foreground.



Images from
clipart-
library.com