



SSC DIVE IN!

WINTER



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WELCOME!

Hello, and welcome to “SSC Dive In!”. Packs of resources providing some seaside fun directly into family homes and classrooms.

This pack’s theme: *Winter*

Brrr! Winter is a cold time in the Firth of Forth but, believe it or not, October-December is grey seal pupping season.

How do grey seal pups survive the harsh winter climate? How are seals’ bodies adapted to the cold? How do scientists study seal colonies? These and other questions answered inside!

Inside this pack:

- **Children’s blog: Winter babies**
- **Discover sheet: Seal surveys.**
- **Experiment instructions: Blubber glove**
- **Photo gallery: Fluffy seal pups**
- **Craft instructions: Seal mask**
- **Puzzle: Seal pup wordsearch**

Important note: *If you are going outdoors, please follow the social distancing protocols and government advice.*

We’d love to hear from you! If you’ve had fun having a go at activities, experiments and crafts, let us know. Any comments or pictures can be sent to marineengagement@seabird.org. More resources available on our [website](#).

Enjoy using our packs and want to see more? The Scottish Seabird Centre is an environmental education and conservation charity. Every penny we raise helps us deliver our important education and conservation work. If you enjoy using our resources and would like to support our work, please consider making a donation to the our [JustGiving page](#). Thank you.

We hope you enjoy diving in to the pack!

Scottish Seabird Centre Learning Team



BLOG



WINTER BABIES

Have you ever noticed when there are most baby animals around? Most animals raise their young in the spring, but grey seals give birth in the late-autumn and winter. This means that across the UK, south-eastern Canada, and the Baltic Sea, lots of grey seal pups are born at this time of year. The Isle of May, our very own breeding colony in the Firth of Forth, will see over 2,500 pups born every year!

Grey seal pups are easy to spot as they are covered in a white and fluffy coat. This first coat is not waterproof which means they could get cold if they go in the sea. So, when grey seal pups reach around three weeks of age, they lose their fluffy white coat and their first waterproof coat grows in. We call this '**moulting**'. To help with the moulting process, we will often see pups rolling around on the rocks to try and help rub their fur off.

Can you tell the difference between these two seal pups?



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On the left, we have a pup that is a couple of weeks old – it still has its fluffy, white coat. On the right, we have a three week old pup – it has begun to moult and grow a darker, waterproof coat.





When pups are born, they weigh around 14kg and gain 2kg a day —that's the same weight as 5 tins of soup! They do this by drinking lots of their mother's milk which contains a high percentage of fat. At the same time as the pup gains weight, the mother loses it because she is not able to feed herself whilst raising the pup. Providing milk also means she transfers all her fat to the pup. Incredibly, mothers can lose up to 65kg over the first three weeks — nearly a third of her body weight!

On the cameras we have in the Scottish Seabird Centre, we are very lucky to see at least 100 pups born along a stretch of beach called 'Pilgrim's Haven.' This photo of a pup feeding from its mother was taken on 17th October 2020.

Watch live footage of seals from our cameras here: www.seabird.org/webcams/isle-of-may



By 6 weeks of age, grey seal pups will have developed '**blubber**'. Blubber acts like a layer of fat that **insulates** their bodies and stops their internal body temperature from getting too low. The blood vessels in blubber **constrict** (get smaller) in cold water which slows the flow of blood around the body and means heat is not lost as easily. Slower blood flow means the body is kept warm and heat stays around the vital organs of the body. This is very helpful to seals as they can spend large amounts of time in the cold sea at great depths.

However, even with blubber on their bodies, seals can still feel the cold in their nose and flippers.

EARN A SEAL OF APPROVAL

Find out how much you've learnt by answering the following questions:

1. What is the name of the process when seals change their fur?
2. How much weight do pups put on a day?
3. What does blubber do?



DISCOVER

SEAL PUP PHOTO GALLERY



Time for a fluffy photoshoot!

Here's a selection of some of our favourite seal pup snaps.

Which do you think is the cutest?





FACTFILE

GREY SEALS

WHAT ARE SEALS?

Seals belong to a group of carnivorous mammals that are called '**pinnipeds**', which means fin or flipper-footed animals. This group includes seals, sea lions and walruses— 33 species in all. Within Scotland we only have two types of seal: the **harbour seal** (*Phoca vitulina*) and the **grey seal** (*Halichoerus grypus*).



WHERE ARE GREY SEALS FOUND?

Grey seals are found in the Atlantic ocean, the Baltic Sea and the Barents Sea. They are one of the rarer seal species with an estimated world population level of 350,000 to 400,000. About 40% of the world population are found in the UK and **Scotland is a particular stronghold hosting 90% of this UK population.**

HOW DO I IDENTIFY A GREY SEAL?

It can be a little tricky to tell harbour and grey seals apart, especially when they are in water or are young. Grey seals have a distinctive oval shaped head which runs straight into a long snout, sometimes referred to as a 'Roman nose'. Their mouth is set back, underneath the tip of their fleshy snout.

The coat of an adult grey seal is blotchy, with the upper part darker than the lower part, which acts as **camouflage**. As seals get older the male coat turns much darker and more uniform in colour. Grey seal pups are born with a distinctive white fluffy coat.

HOW BIG IS A GREY SEAL?

Grey seals are much bigger than harbour seals. The adult males can weigh up to **300 kilograms** and be **2.5 metres** long and the females weigh up to **180 kilograms** and are about **1.8 metres long**. The average weight of an adult person is around 75 kilograms, so you can see these are big and hefty mammals!



FACTFILE

GREY SEALS (CONTINUED)

WHEN DO GREY SEALS BREED?

Grey seals breed during the autumn months between **September** and **early December**. Over 40,000 pups are born in Scotland each year. This is a good time to spot them as the mothers haul out of the water and gather in a crowd at their traditional breeding sites to give birth to their pups.



© David Steel

WHERE ARE THESE BREEDING SITES?

Breeding sites can be found in the Inner and Outer Hebrides, Shetland, Orkney and a few spots along the North and North-east coast of mainland Scotland.

The largest breeding site on the east coast of Scotland is the Isle of May National Nature Reserve, in the Firth of Forth. Here, around **2,500 seal pups** are born in a year making it the fourth largest breeding site in the UK. The colony was afforded protection when it was designated as a **European Special Area of Conservation**.



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HOW LONG BEFORE A PUP IS INDEPENDENT?

Grey seal pups weigh about 14 kilograms at birth and have soft white fur. They remain on land where they suck from their mother for **16-21 days**. A female's milk is rich in fat (60%), so pups grow very quickly, gaining about **2 kilograms** in weight each day.

Grey seal pups are **weaned** (come off their mother's milk) at about 3 to 4 weeks of age. From this point the pups are independent (can survive on their own) and live off their fat reserves whilst learning to feed.



FACTFILE

GREY SEALS (CONTINUED)

HOW ARE SEALS ADAPTED TO THE WATER?

Grey seals have special adaptations that allow them to remain underwater for a period of time. These include **large lungs** that allow them to quickly catch their breath when they surface from a dive. They have very **large eyes** that allow them to see in the darker underwater world. They can also conserve body heat by keeping the **warm blood** in their body away from the surface and building up a thick layer of **blubber** around their bodies —a very good **insulator**.

HOW ARE GREY SEALS MONITORED?

The **Sea Mammal Research Unit** (SMRU) is responsible for undertaking **national counts** of grey seals on land and they do this by aerial photography. Local wildlife groups also count grey seals from land and boats. Grey seals, however, spend most of their lives out at sea searching for fish species such as sand eels, whitefish and flatfish and crustaceans and molluscs.



To find out more about where seals go and what they do they can be monitored with **satellite tags** that are glued to the back of their heads. When the seals surface from the water these tags reveal information on where they have travelled to, how deep they dive and how fast they swim.

WHAT HAVE YOU DISCOVERED?

1. What group of carnivorous animals do seals belong to?
2. What months do grey seals breed in?
3. How heavy is an adult male grey seal?
4. How many seal pups are born on the Isle of May every year?
5. At what age do seal pups become independent?
6. How are seals tracked at sea?



PUZZLE

SEAL PUP WORDSEARCH

Can you find all the words names hidden in the grid?



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

Words to find:

GREY SEAL
BLUBBER

WHITE FUR
MOULT

MILK

*Hint: Finding the
first letter of a
word is a good
place to start!*



EXPERIMENT

BLUBBER GLOVE

Blubber is an amazing substance. Find out more about how it works by watching the video below!

Double click on the picture to watch Fran, our Education Officer, demonstrate an easy experiment you can do at home. Check out our [YouTube channel](#) for more educational videos.



SUPER SCIENCE SKILLS

Watch the video and see if you can answer the following...

1. What materials do you need to conduct the blubber glove experiment? Write a list of ingredients and equipment.
2. How does Fran make the experiment a **fair test**?





CRAFT

SEAL MASK



WHAT DO I NEED?

- Seal mask template
- Scissors
- Sticky tape
- Colouring pencils
- String
- Hole punch
- Lollipop stick (optional)

1



Print out your template onto A4 size paper or card stock. If you don't have a printer, why not design your own template? Colour in your mask using crayons, pencils, paints or pens.

2



Use scissors to carefully cut along the edges of your mask. Ask an adult to help you cut out the eye holes.

3



With the hole punch, make some holes at the centre of your mask, around the seal's nose. Thread a short piece of string through each of the holes and secure with sticky tape behind.

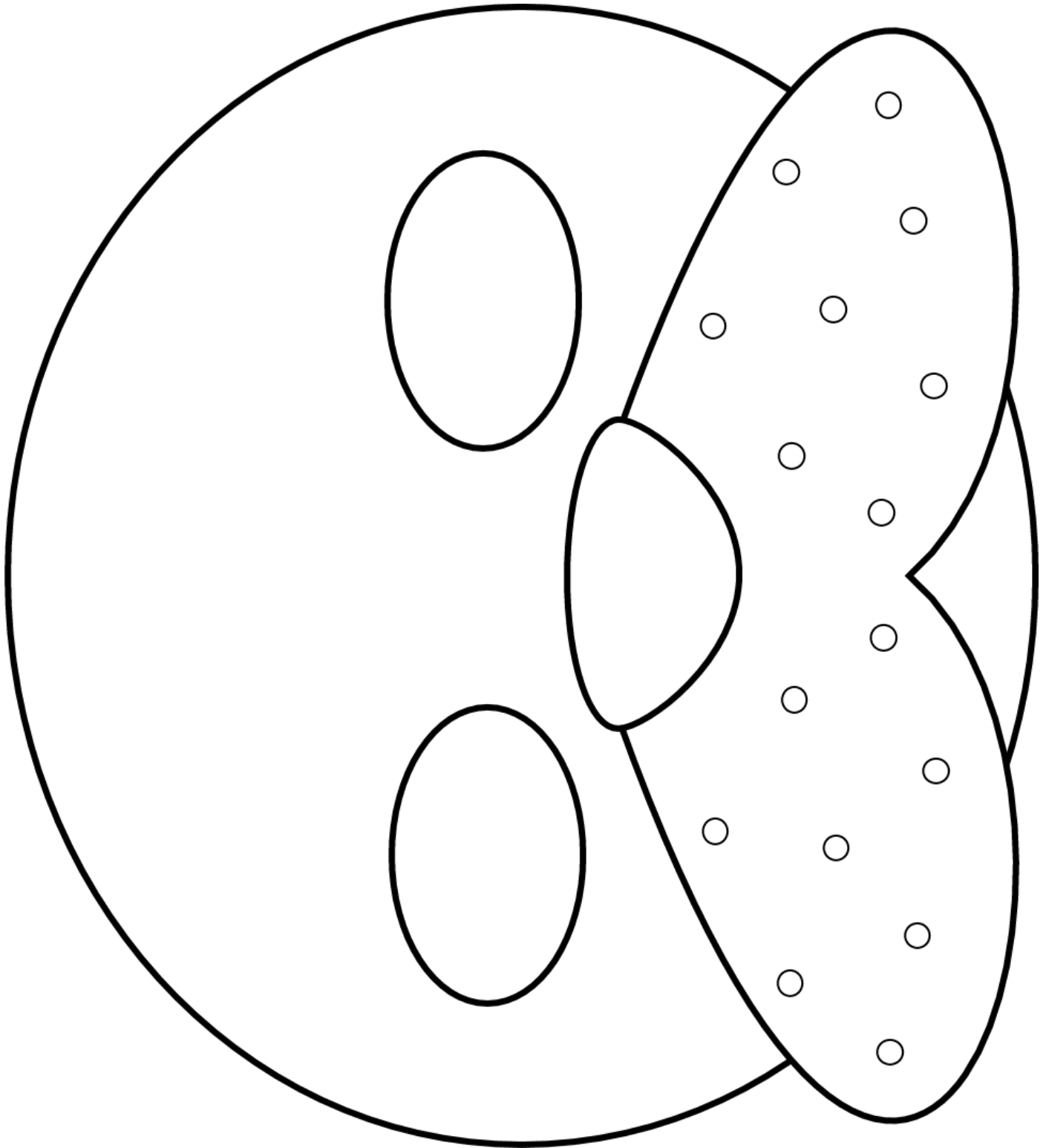
4



You can also punch holes in each side of the mask to attach a string. Or for smaller hands, why not tape a lollipop stick to the bottom of the mask.

TOP TIP: You can reinforce the punched holes with sticky tape to make them stronger and for added durability.

SEAL MASK TEMPLATE



If you enjoyed making your seal mask, why not make a whole colony! You can experiment with size, colour and pattern. Visit www.seabird.org/wildlife to learn more about the seals that live in Scotland.

We'd love to see your fantastic pieces of art! Share them by sending them to:

marineengagement@seabird.org

