

RSNO

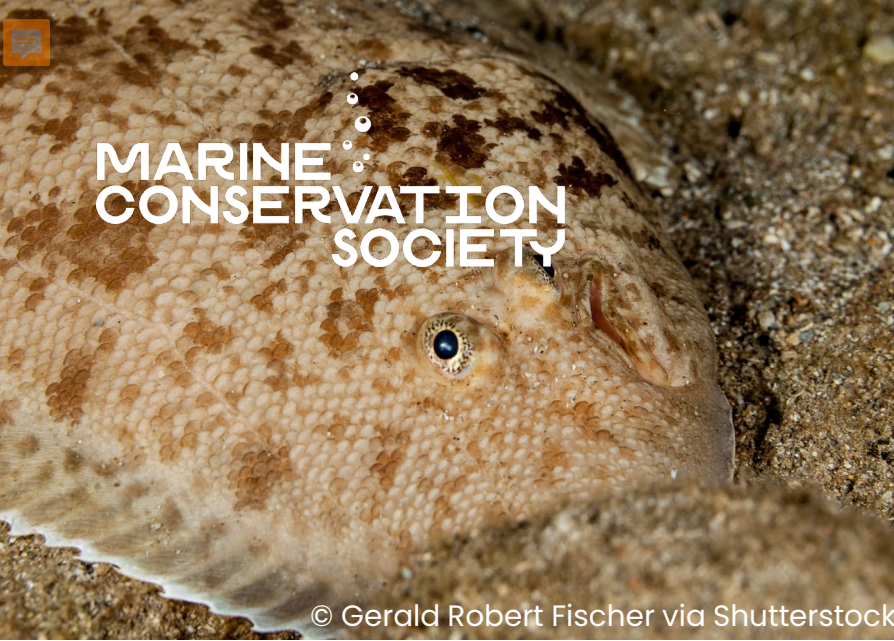
SCOTLAND'S NATIONAL
ORCHESTRA

*S*ounds
of the
Deep

Learning Resource:

How do Creatures Adapt?

MARINE
CONSERVATION
SOCIETY



MARINE
CONSERVATION
SOCIETY

© Gerald Robert Fischer via Shutterstock

How do creatures adapt?

Sustainability Goals:



Subject links:
Science, English

Ages 7-11

Curriculum links:
UK wildlife, Biodiversity, Adaptations, Habitats, Ecosystems, Reading, Writing, Group work, Drama, Performance

Ocean Literacy Principles:
5. The ocean supports a great diversity of life and ecosystems

- Learning Objectives:**
- To be able to define the term 'habitat' and name some marine animals that live in common UK habitats
 - To understand how an animal has adapted to its habitat and why it needs to adapt
 - To develop imagination and creative writing skills as a group

Resources provided:
[Habitat Fact File](#)
[Habitat Illustrations](#)
[Species cards](#)
[About My Creature worksheet](#)

Step 1

Background

Animals adapt to the environment, or habitat, in which they live. Marine animals have many unique adaptations. To warn off predators, cuttlefish can spray black ink and change colour to camouflage with their surroundings. Anemones and jellyfish have stinging tentacles to catch their prey. Limpets have super strong teeth to scrape algae off rocks – so strong in fact, it's the strongest material in the animal kingdom and only one man-made material is stronger (carbon fibre)!

More information on adaptation can be found on the [species cards](#).

Step 2

Set the Scene

10 minutes – Adapted to survive

Discuss the things animals need to survive: oxygen, water, food, shelter and to reproduce. Use shelter to define the term 'habitats.' Relate these requirements to the life of an animal that students are familiar with, like birds.

Introduce the idea of adaptation and discuss how animals have adapted to suit their habitats. For example, birds have adapted to fly so they can find food over a large area and are able to nest high in trees away from predators. Discuss features of different types of common birds, like different coloured feathers, and different shapes and sizes of their bodies and beaks depending on the habitat they live in (woods, gardens, hedgerows, coastal cliffs, coastal lagoons).

Step 3

Activities

Activity 1: 30–40 minutes – Where do I live?

Define the term 'marine.' Introduce the different marine habitats (see [fact file](#)) by showing the [habitat illustrations](#) on your whiteboard. Print these out and place them around the classroom. Allocate a [species card](#) to each child. Students should wander around the room looking at each habitat and think about whether their creature would live in that habitat or not. Once they have viewed all habitats, they should determine which habitat their creature is best suited to and stand next to that image. Check students have chosen the correct habitats. Then, as a class, go through each habitat and ask each student to describe what the creature on their card looks like. Ask if anyone can guess the creature. Students should reveal their creature's name and read the facts to the group.

Activity 2: 10 minutes – Creature focus

Students should fill in the [About my creature](#) worksheet using facts on their card and the information from Activity 1.

Activity 3: 30 minutes – Day in the life of

Students should find others whose animals share the same habitat and form a group. Groups should share knowledge with each other about their creature. Working together in habitat groups, students should design a short play about life in their habitat, making sure to include information learnt in Activities 1 & 2. Students will take on the roles of their creatures and perform their play to the rest of the class.

Step 4

Extend

1–2 hours – Animal theatre

Groups could practise and perfect their plays and could even incorporate using musical instruments.

Groups could then perform a suite of short plays at a school assembly to showcase life underwater.

Step 5

Reflect

5 minutes

What is a habitat? Why do animals need to be adapted to their habitats? Can you think of an example of how an animal has adapted to its habitat?

What did you learn about working together as a team? What did you find hard about creating your group play? What did you enjoy about this activity?

Step 6

Follow up

Take a look at our [Rockpool](#) and [Life in the deep](#) lessons to explore adaption in different habitats.

To study a specific creature, take a look at our [Sharks aren't scary](#) and [Tremendous turtles](#) lessons.

Habitat Fact File



Saltmarsh

You can find saltmarsh habitats across the UK coastline in sheltered areas. Saltmarshes can be divided into zones:

- The area at the top of the shore only gets flooded by the sea during storms
- The middle zone is flooded by the sea on high tide but has no water on low tide
- The area at the bottom is always covered by the sea

Many plants live in saltmarshes. Grass-like plants grown in the areas covered by the tide. Higher up the shore are larger flowering plants, and finally shrubs in the top zone.

Saltmarshes are muddy environments, making them a great habitat for worms and burrowing shells. This also means saltmarshes are great places for birds to feed.



Sandy seafloor

Underwater sandy habitats are the most common marine habitat.

They might look boring, but there's plenty of diversity!

Because there aren't many plants or boulders to use to hide from predators, animals living in the sand have to adapt. Some animals are camouflaged and some animals burrow in the sand to hide.

Many fish use sandy habitats to hide their eggs in burrows in the seafloor.

Habitat Fact File



© Jeremy Bishop

Open ocean

Our area of the ocean is the North East Atlantic. This can be split into smaller coastal seas:

- To the south of the UK is the English Channel
- On the east is the North Sea
- Between Great Britain and Ireland is the Irish Sea

There's a huge variety of animals that live in the ocean, from tiny microscopic plankton to huge whales.

Some animals spend their whole life in the open ocean waters, like mackerel. Others, like basking sharks, spend their time in shallow coastal waters. And some animals, like seals, live on beaches and use the open ocean to feed on fish.



© Benjamin L. Jones

Seagrass beds

Seagrass is the only flowering plant in the ocean. It's found in calm, shallow, sunlit coastal waters around the world.

When seagrass grows in large areas, the habitat it creates is described as a 'seagrass meadow' or 'seagrass bed'.

Globally, seagrass beds are known for their value as fish nurseries for many important species, including flatfish and cuttlefish. They're also home to many bivalves, worms and starfish.

In the UK, two rare and wonderful creatures live solely in seagrass beds: the spiny seahorse and stalked jellyfish.

Habitat Fact File



Rockpools

Rockpools are found across the UK on rocky shores. The whole habitat is inundated with water during high tide, but only the pools store water at low tide.

Rockpools are challenging places to live due to:

- Changing tides
- Strong wave action
- Sunlight heating the water in the pools, causing evaporation and increased salinity
- Rainwater decreasing salinity
- People walking along the coast, possibly disturbing or standing on creatures
- Competition for space with many creatures (predators and prey) forced into small rockpools during tide.

The animals that live in rockpools have to be well adapted to learn to cope with this harsh, ever-changing environment.

Rockpools provide animals many places to find shelter: in cracks in boulders, under rocks, and under seaweed.

Useful definitions:

Species

A group of living organisms consisting of similar individuals that share common characteristics and are capable of interbreeding.

Adaptation

A change in body shape and behaviour to enable a creature to live in a particular area or in particular conditions.

Habitat

The natural home or environment in which an animal, plant or organism lives. A habitat contains all an organism needs to survive such as food and shelter.

Microhabitat

A microhabitat is a small area within a larger habitat, which is home to a creature.

Answers for habitat matching game:

Saltmarsh – lugworm, curlew, mud shrimp, oyster catcher, tellin

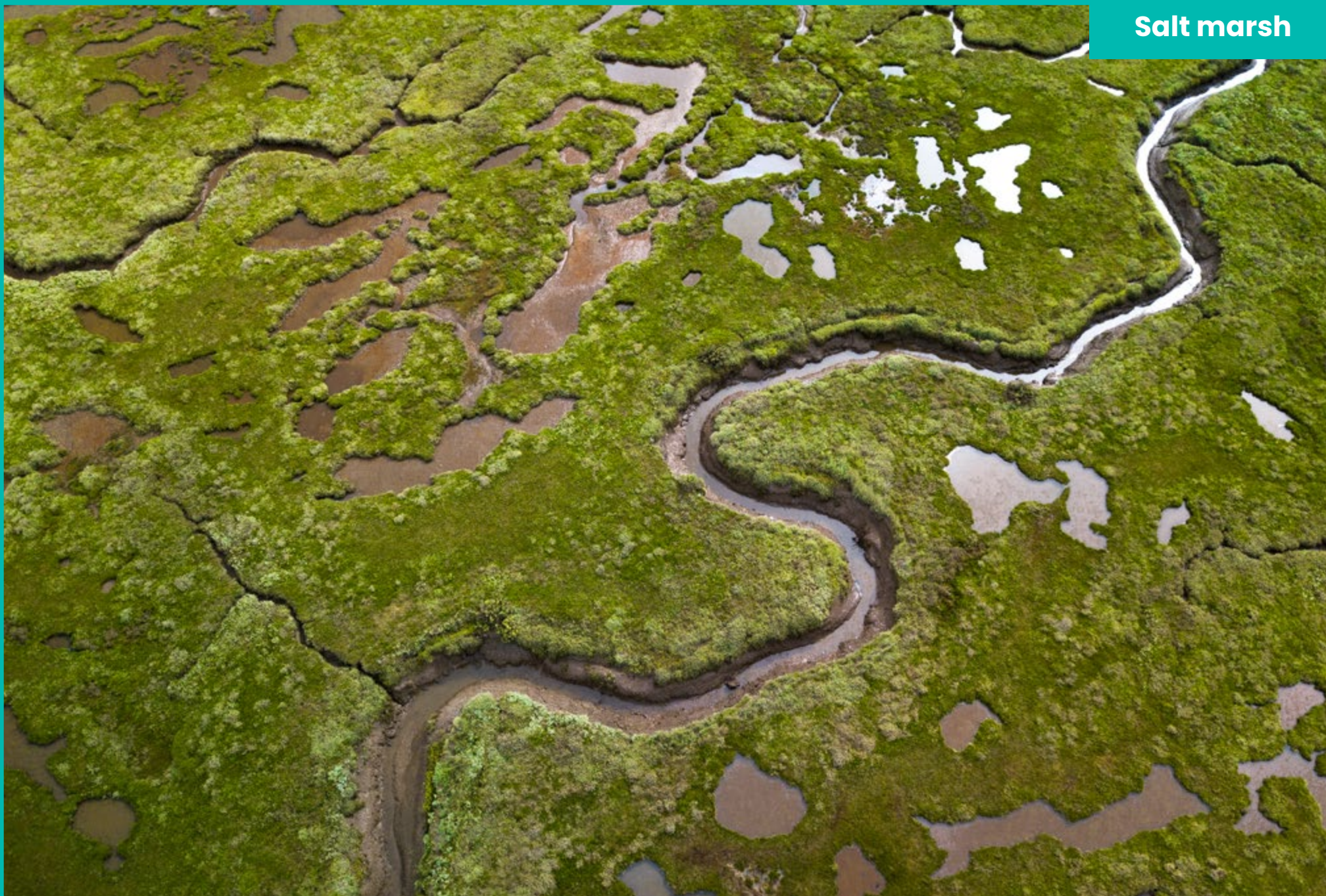
Rockpool – Limpet, anemone, shore crab, periwinkle, blenny

Sandy Seafloor – Flat fish, cockle, weaver fish, burrowing urchin, sand eels

Open Ocean – Harbour porpoise, mackerel, jellyfish, seal, john dory

Seagrass bed – Seahorse, cuttlefish, stalked jellyfish, corkwing wrasse, tube anemone

Salt marsh



Rockpool



Sandy seafloor



Open ocean



Seagrass beds



Saltmarsh

Lugworm



Live underground in a U-shaped burrow. It makes its burrow by eating sand and mud and poeing it out! They are a favourite food for many birds.

Curlew



Are famous for their long, curved beak. They are named after the sound they make: 'cur-lee.' The number of curlews has reduced and they are now at risk of extinction.

Mud Shrimp



Live underground in a U-shaped burrow. They use their large antennae to dig. They shed their skin like a snake when they grow.

Oyster catcher



Has a loud high-pitched bird song, which sounds like 'kleep-keep.' Their beaks can be flat like a hammer to open shells to eat, or they can have sharp beak to slice shells in two.

Tellin



Inside these two shells is a small creature similar to a snail. It can burrow 12 cm deep using its long foot to dig. Animals like this with two shells are called bivalves.

Rockpool

Limpet



Their tongue is covered with tiny teeth. They use this to scrape algae off rocks to eat. The material their teeth are made from is the strongest material in the animal kingdom. It is even stronger than most manmade materials.

Beadlet anemone



They have a jelly-like body and can stick themselves to rocks. They use their tentacles to sting and catch prey. They can also close up into a ball when they need to.

Shore crab



They have a hard exoskeleton, which they shed when they grow (like a snake). They use their claws when feeding or fighting.

Common Periwinkle



Humans eat them as a salty snack. They are a type of sea snail. They use their foot to glue onto the rock. They also use their foot to scrape algae off the rock to eat

Tompot Blenny



Are a colourful fish with tentacles on their head. They like to guard their home territory. Males look after the eggs until they hatch.

Sandy Seafloor

Plaice



Are a type of flatfish. They are camouflaged with their habitat. They start life looking like a normal fish, but slowly begin to swim horizontally and 'hang out' on the seafloor. As they go through this change their eyes move around their head so that both eyes are on top of their head!

Cockle



Is a type of bivalve, meaning it has two shells. They bury themselves in the sand hiding from predators like flat fish. Their shells have horizontal growth lines which can be used to age them, just like a tree.

Weever fish



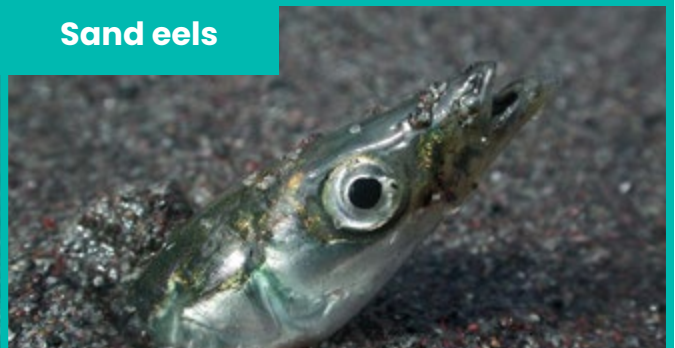
Hide in the sand. They have a sharp black dorsal fin, which contains poison and is used to scare off predators. These stings can also be very painful to humans who accidentally stand on them.

Burrowing urchin



Are also called sea potato. They use their soft spines to burrow into sediment. Underneath the spines is a heart shaped shell, so they are also called heart urchins.

Sand eels



Confusingly they are not eels, but are eel shaped. They are an important food for seabirds like puffins. To avoid being eaten they swim in shoals.

Open Ocean

Harbour porpoise



Are often confused with dolphins, but are much smaller with a smaller dorsal fin. They need to come to the surface for air, and make a puffing noise like a pig when they breathe. This gives them the nickname 'puffing pig.'

Mackerel



Swim in large shoals. They like to eat plankton and sand eels. Their forked tails means they can swim fast. Their predators include harbour porpoises and dolphins.

Compass jellyfish



Have a nasty sting used to catch and stun prey such as small fish and other jellyfish. They are also known as sea nettles because of their sting.

Basking sharks



Can be 8-10 metres long, making them the second largest fish in the world. They are filter feeders, feeding on tiny plankton species.

John dory



Have a flat oval body and 8-10 dorsal fin rays that make it look like it's got a mohican. They don't shoal and instead live by themselves. The eye marking on the side of their body confuses predators into thinking they are a big creature with big eyes.

Seagrass bed

Spiny Seahorse



Are a type of fish. They can change colour to match their environment. The male seahorse looks after the eggs in a pouch (a bit like a kangaroo pouch).

Cuttlefish



To hide from predators they can change colour to camouflage and they can spray black ink at their predators. They lay their black 'grape like' eggs on to plants to stop them floating away.

Stalked jellyfish



Unlike other jellyfish this creature does not swim around. It spends its life attached to a plant. They have 8 arms, and each arm has about 45 tentacles!

Corkwing wrasse



Female and baby fish are brown/green in colour. Males are very brightly coloured, but can change colour at night when sleeping to become camouflaged.

Tube anemone



Are a type of anemone that burrow in sediment. Their tentacles stick out and move around in the water to catch food. They can have up to 70 tentacles.

About my creature

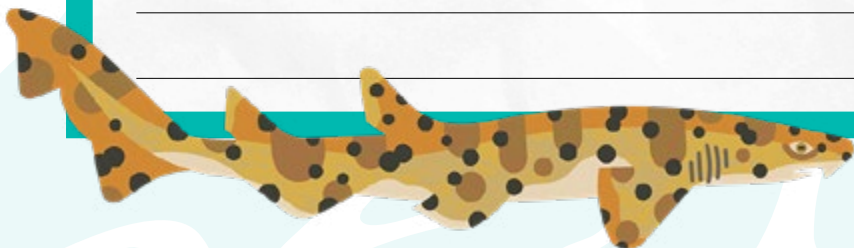
Name:

What is your creature's name?

What habitat does it live in?

What are its adaptation features?

How is the creature suited to its habitat?



How does your creature catch food?

This is a picture of my creature...



RSNO
SCOTLAND'S NATIONAL
ORCHESTRA

Sounds
of the
Deep

How do Creatures Adapt?:
**Experiences and
Outcomes**

Literacy

- When I engage with others, I can respond in ways appropriate to my role, show that I value others' contributions and use these to build on thinking. **LIT 2-02a**
- I can select ideas and relevant information, organise these in an appropriate way for my purpose and use suitable vocabulary for my audience. **LIT 2-06a**
- When listening and talking with others for different purposes, I can:
 - share information, experiences and opinions
 - explain processes and ideas
 - identify issues raised and summarise main points or findings
 - clarify points by asking questions or by asking others to say more. **LIT 2-09a**
- I can make notes, organise them under suitable headings and use them to understand information, develop my thinking, explore problems and create new texts, using my own words as appropriate. **LIT 2-15a**

Expressive Arts

- I have experienced the energy and excitement of presenting/performing for audiences and being part of an audience for other people's presentations/performances. **EXA 2-01a**
- I have created and presented scripted or improvised drama, beginning to take account of audience and atmosphere. **EXA 2-14a**

Science

- I can identify and classify examples of living things, past and present, to help me appreciate their diversity. I can relate physical and behavioural characteristics to their survival or extinction. **SCN 2-01a**

With thanks to our partners



Sounds of the Deep is supported by:

Aberdeen City Council, Aberdeen Endowments Trust, Alexander Moncur Charitable Trust, Balgay Children's Society, Castansa Trust, Cookie Matheson Charitable Trust, David and June Gordon Memorial Trust, Educational Institute of Scotland, Forteviot Charitable Trust, The Gannochy Trust, Glasgow City Council, Hugh Fraser Foundation, Jimmie Cairncross Charitable Trust, Leach Family Charitable Trust, Leisure and Culture Dundee, Leng Charitable Trust, The McGlashan Charitable Trust, MEB Charitable Trust, Nancie Massey Charitable Trust, Northwood Charitable Trust, PF Charitable Trust, Q Charitable Trust, Scott Davidson Charitable Trust, ScotRail, Stevenston Charitable Trust, Tay Charitable Trust, Tillyloss Trust, Walter Craig Charitable Trust, Walter Scott Giving Group.



Royal Scottish National Orchestra
19 Killermont Street, Glasgow G2 3NX

Charitable Company registered in Scotland
Company Number: SC027809
Scottish Charity Number: SC010702

The RSNO is supported by
the Scottish Government

