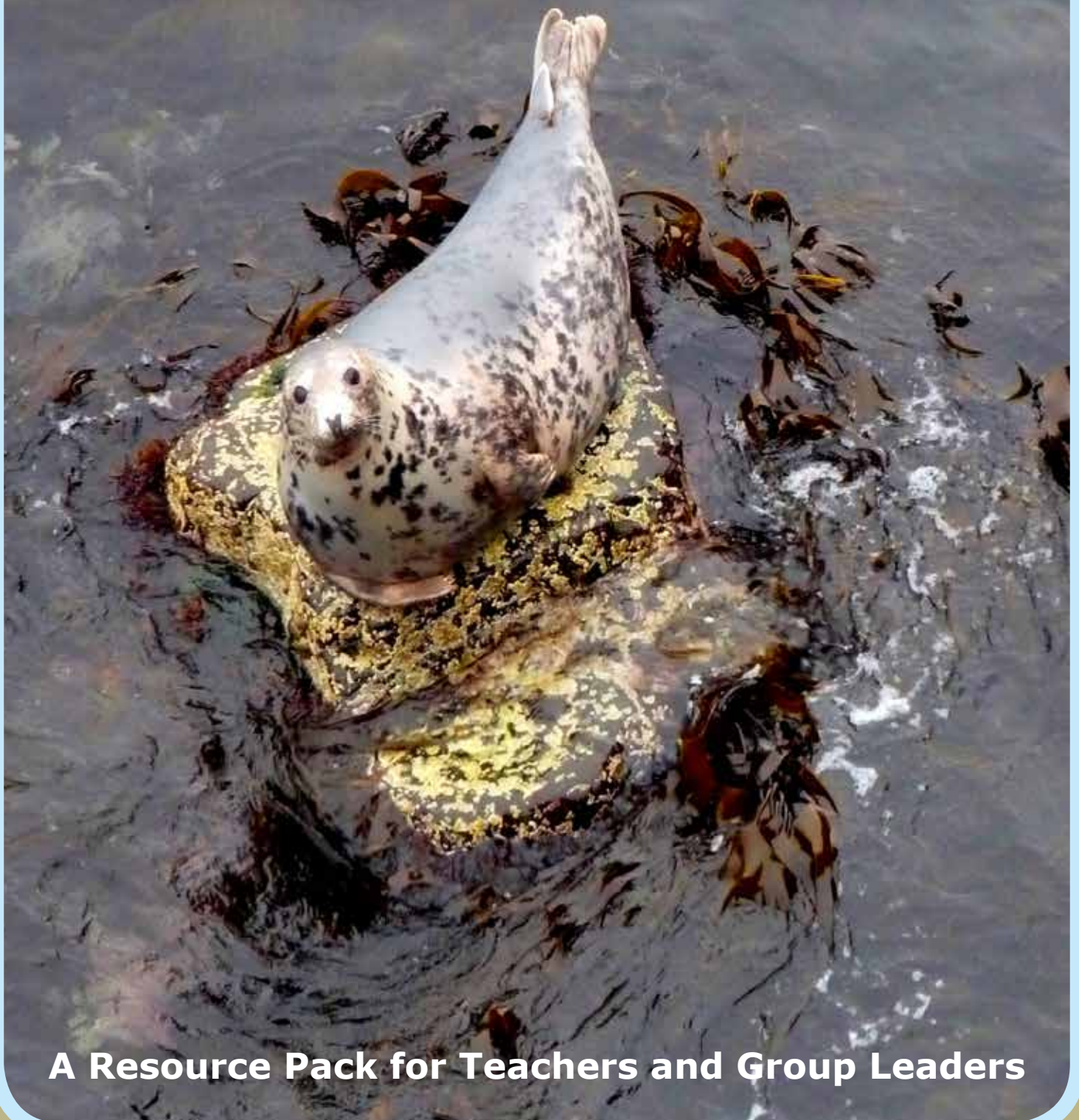


# Exploring the Forth

The Scottish Fisheries Museum and Scottish Natural Heritage



**A Resource Pack for Teachers and Group Leaders**

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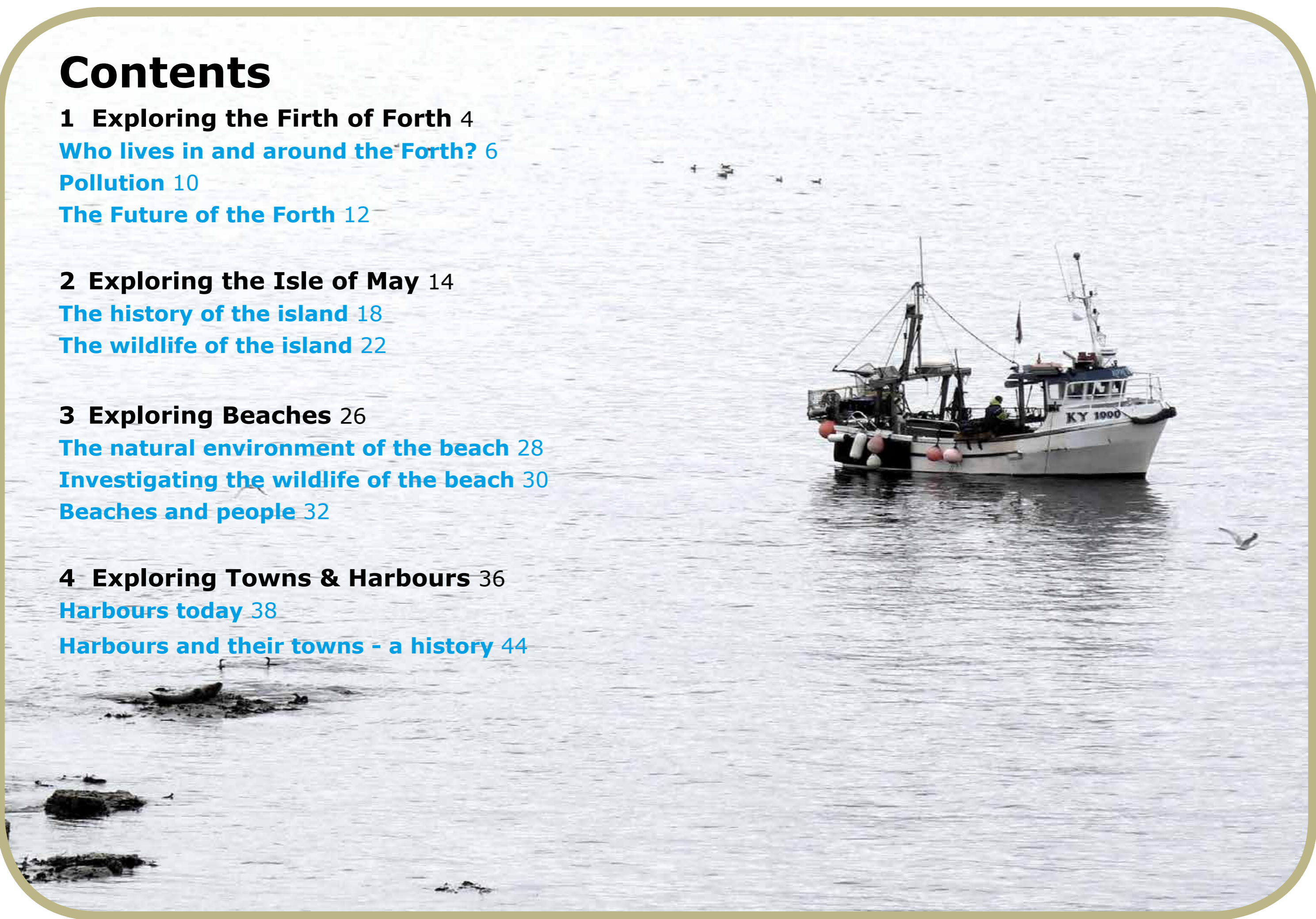
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## About this resource

This resource is for teachers and group leaders who are interested in exploring the environment of the Firth of Forth, especially in and around the East Neuk of Fife. The Fife coast provides a fantastic opportunity to get groups outside to actively engage with the environment around them.

**Scottish Natural Heritage** promote and care for Scotland's natural heritage, helping people to enjoy it responsibly and enabling a greater understanding and awareness of it. They provide support and resources for education groups and local Rangers who would be willing to assist with any organised visits, including trips to the Isle of May. More information is available at [www.snh.gov.uk](http://www.snh.gov.uk)

**The Scottish Fisheries Museum** tells the story of fishing in Scotland and its people from earliest times to the present. The activities suggested in this resource can be supported by a visit to the Scottish Fisheries Museum to consolidate the groups' learning and put the experience into a historical context. A visit to the museum can be organised by contacting the museum at [enquiries@scotfishmuseum.org](mailto:enquiries@scotfishmuseum.org). More information including a wide range of educational resources is available at [www.scotfishmuseum.org](http://www.scotfishmuseum.org)



## How to use this resource

Each section is divided into different topics, each with general background information followed by practical suggestions for active learning activities. Some activities focus on particular areas of the curriculum, while others offer opportunities for interdisciplinary learning.

### Curriculum for Excellence

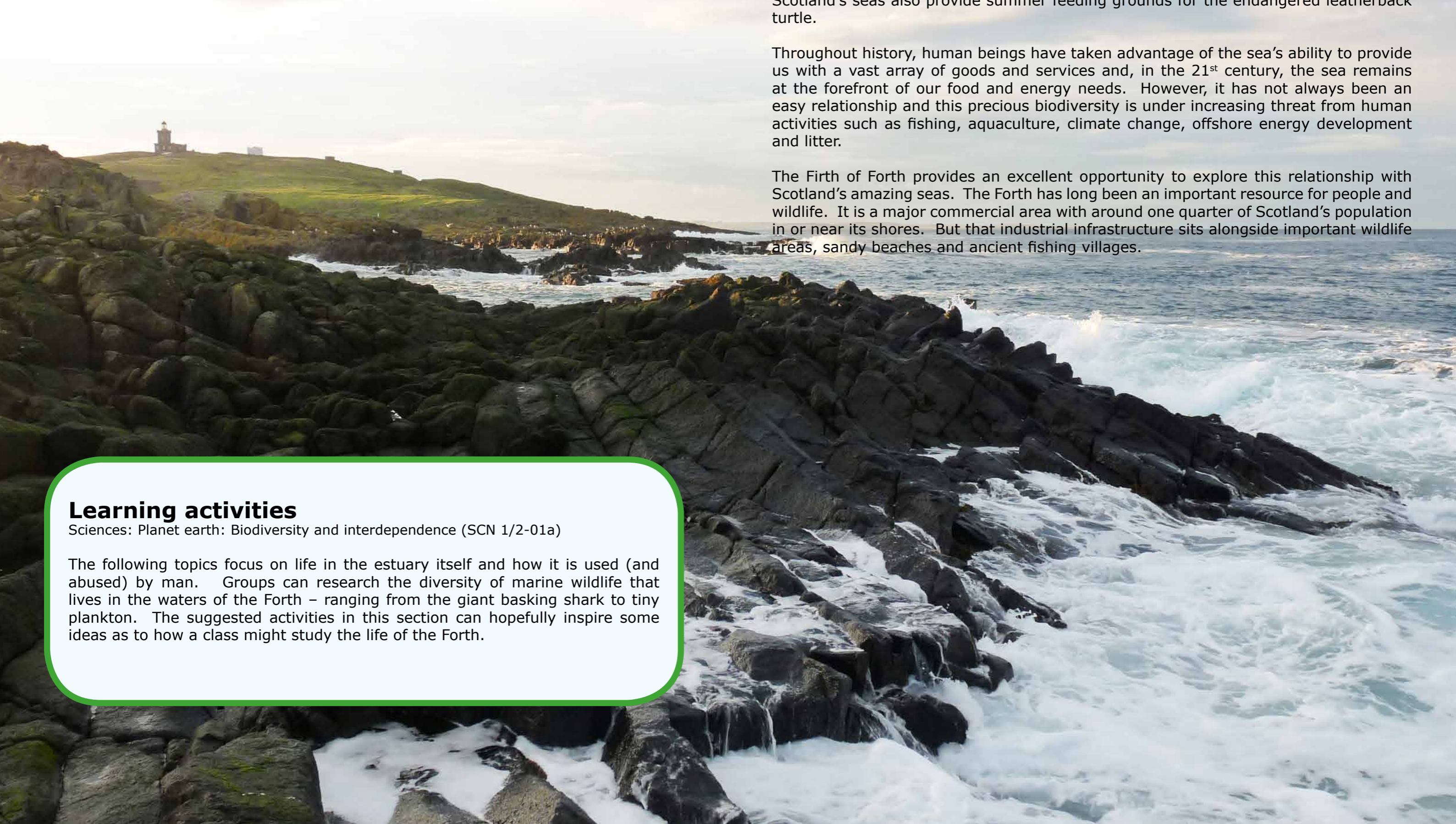
The resource has been written to be used flexibly and with Curriculum for Excellence very much in mind. Most of the activities are suitable for use with pupils at Levels 1 and 2 (i.e. P3-7), but can easily be adapted for pupils at other levels.

With each activity a reference has been made to a key curricular area, however, there are plenty of opportunities within each activity for broader cross curricular references to be made – particularly in literacy, numeracy, expressive arts and technologies.



## Section 1

# Exploring the Firth of Forth



### Learning activities

Sciences: Planet earth: Biodiversity and interdependence (SCN 1/2-01a)

The following topics focus on life in the estuary itself and how it is used (and abused) by man. Groups can research the diversity of marine wildlife that lives in the waters of the Forth – ranging from the giant basking shark to tiny plankton. The suggested activities in this section can hopefully inspire some ideas as to how a class might study the life of the Forth.

### Background information

The seas around Scotland are world class. They support an amazingly diverse and complex range of habitats and species. They are home to a third of the world's grey seals; to 24 species of whale and dolphin; to basking sharks - the second largest fish on the planet - and are the UK stronghold for many important marine species and habitats. Scotland is of global importance for 24 species of seabird and also more obscure species such as pink sea fingers (a type of soft coral), tall sea pens and fireworks anemones. Scotland's seas also provide summer feeding grounds for the endangered leatherback turtle.

Throughout history, human beings have taken advantage of the sea's ability to provide us with a vast array of goods and services and, in the 21<sup>st</sup> century, the sea remains at the forefront of our food and energy needs. However, it has not always been an easy relationship and this precious biodiversity is under increasing threat from human activities such as fishing, aquaculture, climate change, offshore energy development and litter.

The Firth of Forth provides an excellent opportunity to explore this relationship with Scotland's amazing seas. The Forth has long been an important resource for people and wildlife. It is a major commercial area with around one quarter of Scotland's population in or near its shores. But that industrial infrastructure sits alongside important wildlife areas, sandy beaches and ancient fishing villages.

## Topic: Who lives in and around the Forth?

The Firth of Forth is home to a huge diversity of marine wildlife – from visiting dolphins and whales to beautiful corals, anemones and starfish. It has one of Britain's largest seal colonies and it has long been fished for the diverse produce held beneath its waters.

The rocky islands of the Forth provide safe breeding areas for many thousands of sea birds including puffins, gannets, fulmars, guillemots and razorbills. The undersea habitats around the islands support many species such as sponges, anemones and sea slugs.

There is a long history of fishing on the Forth as a livelihood that supported the development of many lively fishing villages all along the coast. Traditionally fishing depended on the harvest of mussels, oysters, scallops and herring. These industries have largely collapsed but the Forth is showing signs of recovery and is a nursery ground for species such as flounder and a wintering area for herring and sprats. Salmon are once again using the river to gain access to upper reaches of the Forth for breeding.

Seals are now a common site in the Forth and grey seals give birth in November at various rocky locations and islands, including the Isle of May. Whales and dolphins are noted on a regular basis. Bottlenose dolphins and porpoises visit the Forth and are regularly seen from boats and from the shore. A family of minke whales are sighted near the Isle of May each summer. The second largest fish in the sea – the basking shark – is also not an entirely uncommon sight.

Most of the coastline and the islands are legally protected by national and international wildlife designations. The Sites of Special Scientific Interest (SSSI) protect nationally important habitats, species and geology. The Special Protection Area (SPA) is an international designation which protects important bird species. The Isle of May is a Special Area of Conservation (SAC) because it supports a breeding colony of grey seals making it the largest east coast breeding colony of grey seals in Scotland.



### Firth of Forth Top Trumps

*Literacy across learning: Writing*

Once they have done their research, the class could make up their own 'Top Trump' cards for the different wildlife they have found out about.

They would provide a picture and write a short paragraph of information for each creature and give marks for different criteria on each card. For example;

- ✓ size
- ✓ numbers
- ✓ speed of movement
- ✓ food chain rating
- ✓ beauty/scary factor
- ✓ extinction threat rating

See if they can make up at least 20 different cards, and then play the game. The information that the class has gathered to create the game could then be used to create a class database as part of a technology project.

### Jellyfish survey

*Sciences: Planet earth: Biodiversity and interdependence (SCN 1/2-01a)*

Jellyfish are a common site in the waters and on the beaches of the Forth. Jellyfish are also the favourite food of sea turtles – which have occasionally been spotted off the Fife coast.

The Marine Conservation Society are interested in recording and collating jellyfish sightings and it's really easy to get involved and carry out your own survey to send in – possibly on a beach or boat trip. More information can be found on the The Marine Conservation Society's website

### Life at sea - fishing on the Forth

*Social studies: People, past events and societies (SOC1/ 2-03a)*

The Forth has been fished ever since the earliest people settled in Scotland. The Fife coast has a history which is irrevocably linked with its fishing past and offers an opportunity for pupils to explore what the lives of these fishermen must have been like.

As a possible class project, groups could research different aspects of the history of fishing on the Forth. This could look at:

- The earliest fishermen
- Different types of fishing and how they work
- Life on board a fishing boat – perhaps comparing the day in a life of a fisherman now and 150 years ago.
- How fishing has changed
- The effects of industrial fishing in the last 100 years

The research could open up opportunities for different styles of presentations – through creative writing, report writing, drama/role play, artwork etc.

### Under the sea collage

*Expressive arts: Art and design (EXA 1/2-02a)*

Having researched the different marine life of the Forth, the class could create their own wall collage of an underwater scene, showing all the sea life that they've found out about.

This could incorporate a variety of materials – artwork, pictures from magazines, recycled materials etc. They could then design and present this appropriately on the classroom walls.

If you're feeling really creative, you could hang a blue tarpaulin sheet across the ceiling and design aerials of the sea creatures to hang from it to give the classroom a real 'underwater' feel!

### Friendly fish

*Social studies: People, place and environment (SOC 1/2-08a)*

Find out more about the fish that are caught and that we eat today. Are we eating fish that are fished ethically and sustainably?

See the Good Fish Guide leaflet at: <http://www.goodfishguide.co.uk/>



*Gadus morhua – Max length: 170 cm*



## Topic: Pollution

*Social studies: People, place and environment*

Manmade pollution is a major threat to the wildlife of the Firth of Forth. But it is not only from waste and spills from ships and industrial plants. The sea acts as a sink for virtually everything that enters fresh waters in one form or another. Items that we discard every day – plastic bags, packaging, tin cans – frequently find their way into the sea to provide a very real danger to the wildlife that lives there.

### Save our Forth campaign

*Social studies: People, place and environment (SOC 1/2-08a)*

As a possible class exercise, the pupils could get together to agree on a campaign that they would like to get involved in that would raise awareness of how pollution is affecting the Forth. For example, they could lobby for a charge on plastic bags in local shops, highlighting the danger that they cause to marine wildlife. This could involve researching their chosen issue and creating a coherent argument that could then be presented to local politicians and businesses. They could organise a petition or even pursue getting it raised in Parliament through a Public Petition: ([www.scottish.parliament.uk/parliamentarybusiness/CurrentCommittees/29869.aspx](http://www.scottish.parliament.uk/parliamentarybusiness/CurrentCommittees/29869.aspx))

### Beach clean up

*Social studies: People, place and environment (SOC 1/2-08a)*

Get the class involved with a clean-up of your local beach and contribute to a survey of the pollution that affects our marine environment.

Marine Conservation Scotland provide lots of support and information on how to go about doing this: [www.mcsuk.org/scotland/Beachwatch+in+Scotland/Beachwatch+in+Scotland/Beachwatch+in+Scotland](http://www.mcsuk.org/scotland/Beachwatch+in+Scotland/Beachwatch+in+Scotland/Beachwatch+in+Scotland)

### Investigative journalists

*Social studies: People, place and environment (SOC 1/2-08a)*

Task the class with the job of investigative journalists who must write a report, or even produce a documentary, highlighting the dangers of pollution to our marine wildlife.

They could be encouraged to contact different agencies for information and research some of the sites listed below for more evidence to include in their report.

Their investigations could seek to uncover the different types of pollution that are evident, how pollution affects different wildlife and what steps can be taken to prevent this from happening.



The final report could include pictures, tables/graphs and interviews with experts.



**Topic:****The Future of the Forth***Social studies: People, place and environment*

How the natural resources of the Firth of Forth are used in the future will always create a debate, as the delicate balance between man's needs and conservation continues to make for uneasy partners. One of the most controversial issues is the harnessing of offshore energy.

Though large scale fishing, and the environmental damage that it later brought, is never likely to return to the Forth, other industries continue to use these waters in the 21<sup>st</sup> century. One of these comes in the form of renewable energy plants.

The seas around Scotland have the potential to provide us with a sustainable, renewable energy source through tidal power, wave power and offshore wind power. The Scottish Government is committed to increasing hugely Scotland's renewable energy capacity and some offshore sites in the Firth of Forth have been identified as ideal locations. However, these could seriously threaten the marine environment in certain sensitive areas and are also a cause for concern for many people living nearby.

**Renewable energy – the big debate***Social studies: People, place and environment (SOC 2-08b)*

Areas around the Firth of Forth have been identified as good sites for offshore wind farms but this has raised opposition for various reasons.

After doing some research work and preparation with the class on the topic of renewable energy in Scotland, get them to organise their own class debate. Learning Teaching Scotland provide some good information on renewable energies on their website at [www.ltscotland.org.uk/weatherandclimatechange/energy/renewable/waveandtidal.asp](http://www.ltscotland.org.uk/weatherandclimatechange/energy/renewable/waveandtidal.asp)

Perhaps selecting an imaginary site near you, groups could carry out some research work into the pros and cons of offshore renewable energy. They could think about:

- The advantages and disadvantages to renewable energy sources. (Think of environmental and social issues.)
- Are renewable energy sources a good idea?
- Would they like to see a wind farm from their house?

The class could be split into the 'for' and 'against' side of the argument and take on different persona at a community meeting – for example concerned residents, environmentalists, local councilors, local businessmen, unemployed young people.

Role playing their persona – perhaps with the aid of simple costumes/props - groups could then present their thoughts and findings back to the class in the form of a community debate which will allow the whole class to decide whether or not it should be built.



## Section 2

# Exploring The Isle of May

### Background information

The largest island in the Forth, the Isle of May is home to vast numbers of seabirds and seals. Visiting the island is not that complicated and the trip would be an unforgettable element of any project investigating the Firth of Forth.

See the 'resources and links' section for more information on planning a visit to the island.

### Learning activities

This section highlights key aspects of the island's natural and cultural heritage together with a sample selection of learning activities.

SNH have also produced a comprehensive Education Resource Pack for teachers about the Isle of May, which includes background and practical information and numerous activities for classroom work as well as on the island. The pack can be downloaded from [www.nnr-scotland.org.uk/isle-of-may/visiting/education](http://www.nnr-scotland.org.uk/isle-of-may/visiting/education). We recommend that any teacher planning a visit to the island also a look at this for more in-depth activities.

## Information on visiting the island

The teeming wildlife is what makes the island special. The history of the island is also very interesting and worth investigating along with the wildlife. We therefore recommend that investigating and observing birds and/or seals and the island history be the primary focus of any visit; there are better and more readily accessible places to look at plants, for example along the coastlines and beaches.

The key constraints on learning activities on the island are:

- you are likely only to visit once with pupils
- you will only have a limited amount of time when you're there

Preparation in the classroom is therefore vital, so that pupils have a clear idea of why they are there and what the main purpose of their visit is. At the same time, it's good to be able to build in time for simply exploring and enjoying this amazing place and being open to discoveries.

### General preparation

It can be wild and windy on the island, so as far as possible pupils should not be encumbered with flapping worksheets and clipboards: eyes, binoculars and cameras are the best tools here, with possibly pocket-sized notebooks if you feel that note taking or drawing is essential.

- Involve pupils in planning the visit as far as possible, and help build a sense of anticipation through looking at leaflets, the SNH website material including the virtual tour.
- Look at the island on a range of maps and on Google Earth. Look at a large-scale map of the island - there's a nice one in the SNH pack. Help pupils to become familiar with the landscape they are likely to see.
- If focusing on the natural world, get pupils to research particular seabirds or seals so that they are familiar with key species.
- If focusing on the human stories, consider in advance which aspect, which period, which stories, and do some preparatory research.
- Get pupils to invent games to play on the boat which relate to their visit (e.g. I-spy, I went to the Isle of May and I saw... (with each pupil adding to the list in turn)).

## Topic: History of the Isle of May

The first people are thought to have arrived in Fife around 8,000 years ago. They may have travelled out to the Isle of May to fish and hunt seabirds and seals. However, the first concrete evidence we have for human activity is some shards of Bronze Age pottery found on the island which date from around 4,000 years ago.

In the early Christian era, the Isle of May became an important religious site. There was a tradition among the early Christian leaders in Scotland of living in remote, harsh places, free from worldly distractions and in the 7th century St Ethernan, later known as St Adrian, is said to have been buried on the Isle of May. The island may have been his base for missionary work: converting the people who lived around the Forth to Christianity.

It is known that by around 875 AD there was a community of monks living on the island who were violently slain by Vikings. By the 11th century there was a church over St Ethernan's burial site which was becoming a place of pilgrimage. By around 1200 an elaborate priory with a community of Benedictine monks was under construction. This may have taken over a century to complete and was built of high quality, expensive materials, paid for by gifts of land and income from rich nobility on the condition that the monks prayed for their souls. The monks imported livestock and were then largely self-sufficient on the island, though grain for making bread and beer still had to be imported.

During the Wars of Independence the priory was demolished and any surviving riches were passed on to Pittenweem Priory. As St Andrews grew in importance as a pilgrimage site, the Isle of May became a stopping off point en route for those travelling to St Andrews by sea. Part of the old priory was renovated to cater for the needs of these pilgrims. King James IV visited the island several times between 1490 and 1508, and apparently enjoyed shooting at seabirds from the boat! Once he was accompanied by the choir of the Chapel Royal from Stirling Palace. A private owner bought the island in 1549 and a small village of around 12-14 families grew up, who made a living from fishing – and possibly smuggling.



In 1636 the first lighthouse in Scotland was built on the island, paid for by passing ships. Just 12 metres tall, the tower was lit with an open fire. Though technology improved the open fire remained in service for over 150 years. You can also see piles of ash around the island which are the remains of the tons of coal built in the days of the lighthouse's open beacon. A new lighthouse was built by Robert Stevenson in 1816 which contained the latest lamp technology. The lighthouse building was modified several times more but you can still see parts of the original building today. In 1855 the lighthouse became the first lighthouse to be powered by electricity, and took seven keepers to manage its technology. In 1989 the lighthouse became automated and the last keepers left the island.

During both World Wars the Isle of May played a role. By 1914 a lookout and signal station was established on the island and two torpedo boats were based there to respond quickly to any sightings of submarines. The first warship to be attacked by a torpedo fired from a German submarine sank just 14 miles off the island and remains a war grave today. In 1918, the horrific tragedy which became known as the Battle of May Island occurred. It is described in some detail in the SNH teachers' pack; in essence, more than 100 men were killed in a number of collisions during a training exercise involving a huge fleet of – all British – vessels in the Firth of Forth. The incident was kept secret at the time, but a memorial to those who died was erected in Anstruther in 2002.

In the Second World War a defence system was based on the island which was designed to detect incoming ships and submarines. It seems to have worked, as there is no evidence of any German warships penetrating the Forth. Most of the buildings relating to this system have now been removed, but traces of some buildings and structures are dotted around the island.

In 1956 the Isle of May was designated one of the first National Nature Reserves in Britain to protect its wildlife. It is also protected as a Site of Special Scientific Interest, and as a European Natura 2000 site. Today it is managed by Scottish Natural Heritage, the government nature conservation body.

## Exploring the social history

As stated before, the unique aspect of the island is its remarkable wildlife and the opportunity to observe it at close quarters. However, the human story of the island is also interesting and quite unique and you may wish to offer pupils the chance to explore this aspect too or as an alternative. Again, most activities are taken from the SNH Education pack.

### Shipwrecked

*Literacy across learning: Writing*

Get the skipper to point out the wrecks as you approach the island, tell the group of the many ships that have come to grief around the coast of the Isle of May over the centuries. The rocks off North Ness, at the north end of The May, are a graveyard for ships - six or so wrecks lie off this small but dangerous area with its sharp rocks and strong currents. Island Rocks gets its name from the steam yacht, "Island". She belonged to the Danish royal family and was sailing from Copenhagen to Leith on 13th April, 1937, when she became lost in thick fog. Her skipper was on his last voyage before retiring, after 260 trips between Iceland, Leith and Copenhagen. The Anstruther lifeboat was called out and was able to rescue all 66 people on board. Some of her wreckage can be seen scattered along the shore by keen-eyed pupils on the ferry.

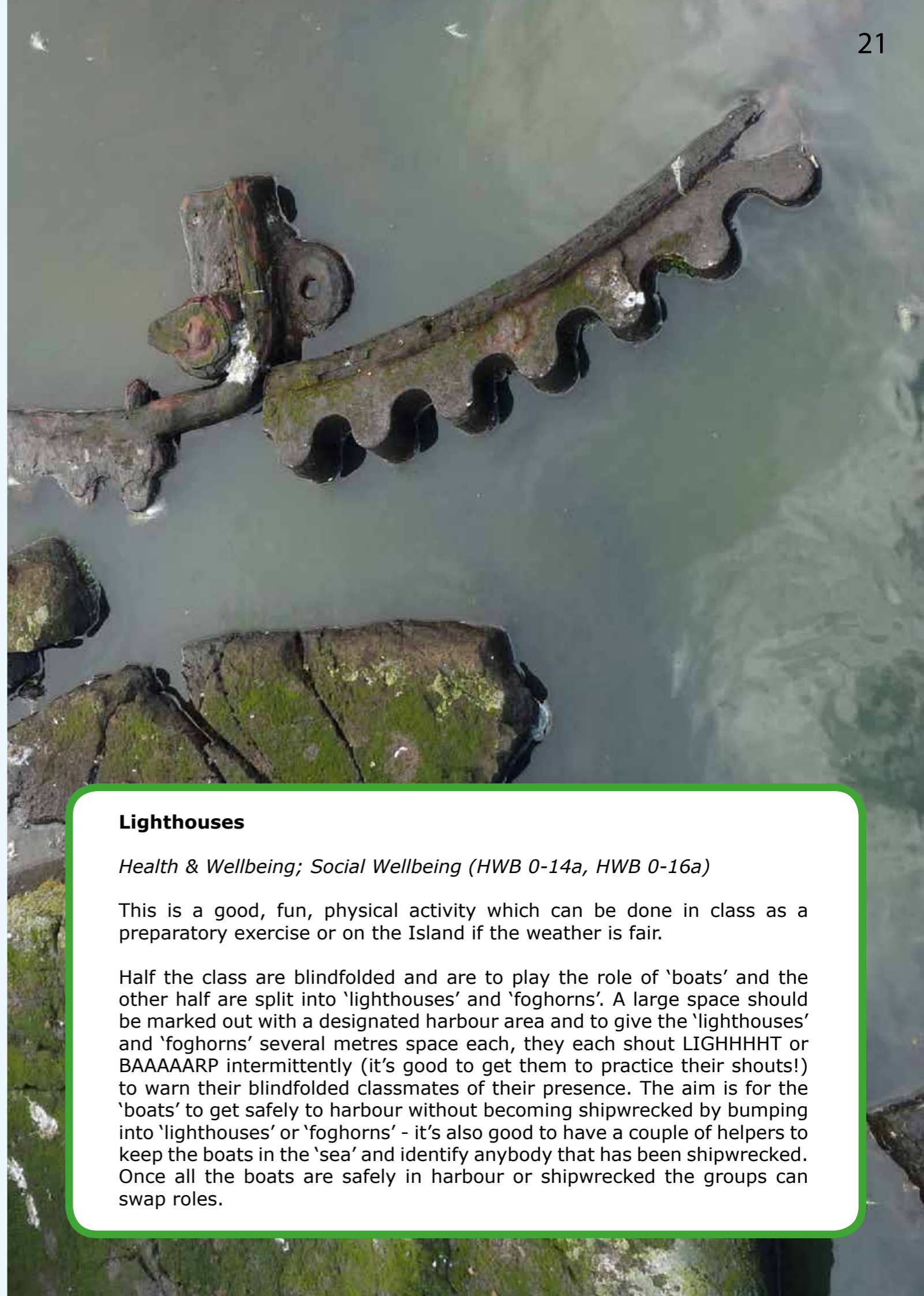
- Use the wreck observation as a basis for sketching activities.
- You can also get the class to note down words describing what it would have been like on that day for the passengers or lifeboat
- These can be used later, to create a word cloud or even poetry.
- The pupils' work could be displayed within a large lighthouse frieze.

### Signs of War

*Social Subjects: People, past events and societies (SOC 1/2-01a, Soc 1/2-02a, Soc 1/2-03a)*

This activity could be used alongside war projects, there are remains from WW1 and WW2 on the Island. Ask SNH about the possibility of seeing Wuffy – a serviceman in WW1's pet dog's grave and be sure to visit the WW2 Control Cabin. Back in the classroom, get the pupils to pretend to be servicemen and WRENS stationed on the HMS May Island during WW2.

- Would this be considered an easy posting as opposed to on the front-line?
- Let them write letters to their families telling of their experiences, about their work, how they feel about being stationed on the May, living conditions, what the food rations were like, their friends, the island and its wildlife.
- You could then go on it look at censorship - this was an important defence station and the Navy wouldn't want sensitive information to leak out!



### Lighthouses

*Health & Wellbeing; Social Wellbeing (HWB 0-14a, HWB 0-16a)*

This is a good, fun, physical activity which can be done in class as a preparatory exercise or on the Island if the weather is fair.

Half the class are blindfolded and are to play the role of 'boats' and the other half are split into 'lighthouses' and 'foghorns'. A large space should be marked out with a designated harbour area and to give the 'lighthouses' and 'foghorns' several metres space each, they each shout LIGHHHHT or BAAAAARP intermittently (it's good to get them to practice their shouts!) to warn their blindfolded classmates of their presence. The aim is for the 'boats' to get safely to harbour without becoming shipwrecked by bumping into 'lighthouses' or 'foghorns' - it's also good to have a couple of helpers to keep the boats in the 'sea' and identify anybody that has been shipwrecked. Once all the boats are safely in harbour or shipwrecked the groups can swap roles.

## Topic: Wildlife of the Isle of May

The Isle of May is a site of international importance to wildlife, in particular for seabirds and seals.

A quarter of a million seabirds are attracted to the island every year and over 250 different bird species have been sighted here. Between March and July, the main breeding season, the wide ledges on the island cliffs heave with nesting birds and the air is full of flapping wings and the sounds of screeching. Twelve species of seabird breed on the cliffs, shore and grassy banks: eider ducks, puffins, guillemots, razorbills, fulmars, kittiwakes, shags, arctic terns, common terns, herring gulls, lesser black-backed gulls and greater black-backed gulls. The island is home to the largest breeding colony of puffins in the UK, with around 45,000 active puffin burrows.

Every single nesting bird is counted for scientific research purposes. Numbers fluctuate from year to year, due to weather and/or the availability of food such as sand eels, and the work carried out on the island is important in monitoring these trends. In 2009, for example, 405 tern nests were found, but in 2010 the colony was abandoned completely. The SNH pack contains 'fact files' for numerous seabirds.

Other birds nest here as well, not just seabirds. Look out for oystercatchers, shelduck, lapwings, pigeons, starlings, swallows, pied wagtails, rock pipits, meadow pipits, blackbirds, song thrushes, linnets and crows.



The Isle of May is also famous for its colony of grey seals, the largest on the east coast of Scotland. The smaller common or harbour seals are less frequently sighted on the Isle of May. Most grey seals found in British waters breed in Scotland, and around 8% of these breed in the Firth of Forth. For much of the year around 100 seals can be seen in the waters around the island, but in late autumn this increases to around 4,000 as the seals 'haul out' to give birth. About 2,000 pups are born here every year. It's a good place for seals as the waters and reefs around the island provide a rich source of food – sand eels, cod, crabs, lobsters, octopus etc. The seals can forage up to 60-70 miles away for food.

Like seabirds, the number of seals is not static and can fluctuate. Before the 18th century the number was reasonably stable, but was then completely wiped out, for unexplained reasons. Even in the 1930s they were only rarely sighted. By the 1950s they were beginning to breed on the Isle of May again but it was not until the 1970s that the breeding colony became properly established; many of the seals were 'refugees' from the Farne Islands, where they had been culled for causing erosion of seabird breeding zones. Luckily, the same problem has not arisen at the Isle of May.

Look out too for whales from the island: in the winter of 2006 orcas (killer whales) were seen in the Firth, and in 2002 minke whales were seen almost every day in the summer.



## Exploring the natural world

The activities below contribute towards attainment of Curriculum for Excellence outcomes at Levels 1 and 2, however, within each activity there is plenty of scope for cross curricular learning and teaching.

### Animal ID

*Science: Planet Earth: Biodiversity and interdependence (SCN 1/2-01a)*

Pupils can familiarise themselves with the wildlife of May by creating a fact-sheet on each of the birds (Puffin, Eider Duck, Common Tern, Arctic Tern, Sandwich Tern, Guillemot, Razorbill, Shag, Fulmar, Kittiwake, Greater Black-backed Gull, Lesser Black-backed Gull, Herring Gull).

These should include a photograph, distinguishing features, favourite food etc. A short presentation on each could even be made in the classroom as preparation for the trip. As a fun activity on the boat make up post-it notes with each of the birds on, these are stuck to each other's foreheads and questions asked to ascertain what bird it is (and what they remember from their factsheets – although these could be available as well to help!).

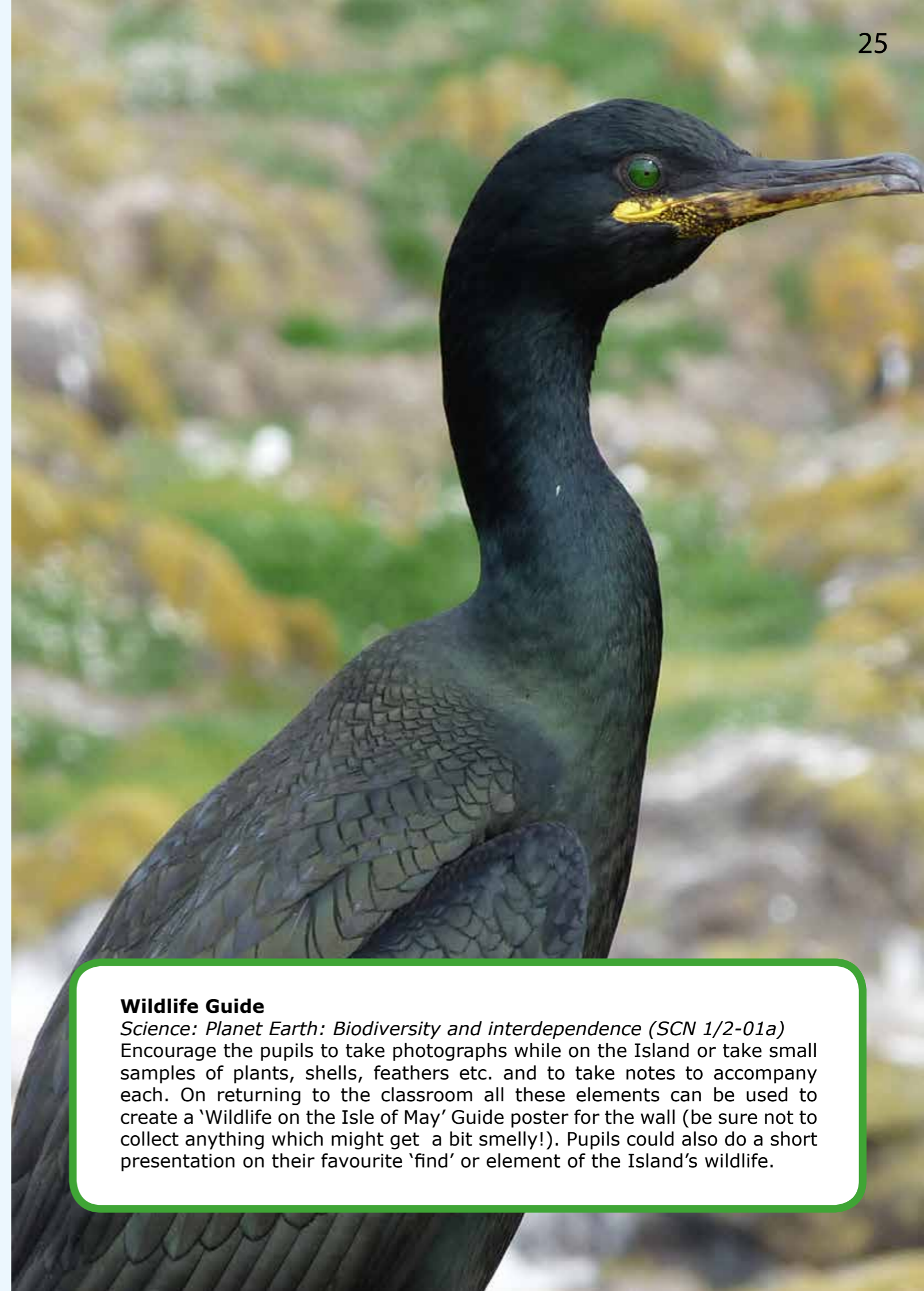
### Feathers

*Science: Planet Earth: Biodiversity and interdependence (SCN 1/2-02a)*

Start by explaining the purpose and design of feathers.

Birds are warm-blooded and have to keep their body temperature at about 40°C, warmer than our bodies (37°C). One use of their feathers is to keep them warm. Feathers are remarkable, they are what makes birds unique in the animal kingdom. As well as insulation, feathers are used for camouflage, advertising, waterproofing and, of course, flying. Feathers probably originally developed from reptilian scales. They are very light and strong and are made from keratin, just like our hair and fingernails (beaks are made of keratin too). Feathers have to be kept in top condition - the bird's survival depends on it. So a bird will spend a lot of time preening them - this is essential maintenance in which each feather is zipped together by the bird's beak and oiled. The oil comes from a gland above the root of the bird's tail. The oil conditions the feathers and keeps seabirds waterproof. Parasites and dirt are also removed by preening. However feathers don't last forever. To cope with all that wear and tear they have to be replaced at least once a year in a moult, usually after breeding and before migration, when brand new feathers are an advantage.

Collect feathers on the island and talk about their uses for humans – not only birds – in things like duvets and mountaineering clothes. If you like these can be taken back to the classroom, sterilised in the microwave and looked at under a microscope, see if the pupils can identify which sections give warmth and which give waterproofing.



### Wildlife Guide

*Science: Planet Earth: Biodiversity and interdependence (SCN 1/2-01a)*

Encourage the pupils to take photographs while on the Island or take small samples of plants, shells, feathers etc. and to take notes to accompany each. On returning to the classroom all these elements can be used to create a 'Wildlife on the Isle of May' Guide poster for the wall (be sure not to collect anything which might get a bit smelly!). Pupils could also do a short presentation on their favourite 'find' or element of the Island's wildlife.

# Section 3

## Exploring beaches



### Background information

There are many beautiful beaches around the coast of Fife. Large or small, sandy or rocky, your local beach presents numerous opportunities for focused studies: the history of your local beach; a study of its ecology and wildlife; an investigation of how it is used today. In addition beaches offer an inspiring focus for interdisciplinary learning and a fresh stimulus for the expressive arts.

**Best of all, children love spending time at the beach!**

### Learning activities

The following activities are suggestions for a range of approaches to using the beach as a resource for learning. Some focus on particular areas of the curriculum, while others offer opportunities for interdisciplinary learning. Most are designed for pupils working at Levels 1 and 2 of Curriculum for Excellence (i.e. P3-7) but can be adapted for pupils at other levels. All activities described are designed to take place on the beach.

It's often helpful to have an overarching focus for learning activities, to give pupils a sense of purpose. One suggestion might be to create a **Beach Guide**. After carrying out the various investigations on site, pupils can research, design and produce a guide to their local beach. This could be a leaflet, website, interpretive panel, audio guide or booklet. They could launch their guide through an event on the beach, and offer guided tours to parents/ younger pupils and so on.

## Topic:

# The natural environment of the beach

Ever changing, dynamic, exposed; buffeted by waves and weather – the beach is a challenging environment for wildlife.

It is perhaps helpful to begin with the distinct zones of a Scottish (tidal) beach. Imagine a beach when the tide is out. The wet area of sand which is covered by the incoming tide is known as the **foreshore**. Creatures living within this zone have to be able to withstand the battering of waves and scraping up and down the beach as the tide rises and falls. The foreshore may include rock pools, scoured out four times a day by the tide. The **strandline** is the high tide mark, often identified by a line of shells, seaweed and other debris. Above the strandline is sand which is often drier and softer: this is known as the **backshore**. Behind this, there may be rocks, cliffs, man-made structures – or dunes.

Dunes are formed by the prevailing wind. Gradually they become settled and anchored by marram grass, and, once fixed, **dune grassland and heath** can develop, along with sheltered pools known as **dune slacks**. Dunes are therefore a barrier between the sea and the land – without dunes then the sea can eat away or erode the land. Dunes are a vulnerable habitat, highly susceptible to erosion. Don't let pupils slide or jump down dunes, even though it's tempting; discuss with them why. The SNH Tentsmuir pack (see below) provides lots more information about dunes.

All of these are very different environments, providing habitats for a wide range of sea creatures, birds, insects and plants. Each species has evolved to be well adapted to its environment – so that creatures living in the foreshore zone are protected from pounding waves by a hard shell, or are able to dig themselves deep down into the wet sand. Creatures living in rock pools along the foreshore have to be able to cope with warm temperatures, as the water warms up between high tides on sunny days, and near freezing temperatures in winter. As you investigate habitats and wildlife on the beach with pupils, encourage discussion about how well each creature has adapted to its chosen habitat.

Some common species you may encounter when investigating a beach around the Forth are listed below; however, don't get too hung up on identification; instead, focus on how they are adapted to their environment, why they live there and how they fit into the ecosystem of the beach:

- Crustaceans: crabs (edible; shore; hermit); barnacles; shrimps; prawns; sand-hopper; sea slater.
- Molluscs: periwinkle; furrow shell; cowries; common limpet; blue-rayed limpet; cockle; mussel; razor shell; dog whelk
- Invertebrates: jellyfish; beadlet anemone; lugworm; brittle-star; starfish; common sea urchin
- Mammals: common seal; grey seal
- Birds: eider, terns, fulmar, shag, cormorant, curlew, oystercatcher, turnstone, ringed and golden plover, guillemot, herring gull and many more
- Seaweed: knotted wrack; spiral wrack; bladder wrack; kelp; sea-lettuce

Useful identification charts can be downloaded from [www.marine-reserve.co.uk](http://www.marine-reserve.co.uk)

### Walk the line

*Science: Planet Earth: Biodiversity and interdependence (SCN 1/2-02a)*

This activity highlights how different habitats support different species. Draw a long line in the sand right from the edge of the sea up to the soft sand above the strandline. Get pupils to position themselves in pairs along the line with a spade, a flat tray and a magnifying glass. Pupils look around them on the sand and dig down to collect any examples of wildlife and put them into the tray. Here they can be observed more easily. If you have laminated identification charts, pupils can try to work out what they have found.

Finally, pupils leave their trays and walk up and down the line to see what other people have found. Compare findings: has everyone found the same things or do they differ according to the different habitats? Take photographs of the creatures before returning them to their patch.

Back at school try and identify creatures and discuss how they have adapted to their particular habitat.

### Dead or alive

*Science: Planet Earth: Biodiversity and interdependence (SCN 1/2-01a)*

Pupils investigate the high tide line, often marked by a line of dried seaweed. Pupils can survey a 3-5m length of this line, and record how many different species they can find here.

- How many different shells can they find?
- How many different types of seaweed?
- Is there anything alive under the seaweed?
- Do they think that everything on this line came from this beach, or could some things have come from further away – from a completely different beach?

### Scavenger Hunt

*Social studies: People, past events and societies (SOC 1/2-02a)*

This is a good activity to encourage resourcefulness and lateral thinking, as well as developing powers of observation.

In advance, draw up a list of natural things which pupils can look for on the beach – a feather, five different coloured shells, something straight, a claw etc (an example is given on page 23 of the SNH Tentsmuir pack – see below). Pupils divide into pairs and go off and search for items until you blow a whistle.

When they come back pupils compare what they have found. What was the hardest thing to find? What was the easiest?

If you've been exploring the lives of Scotland's first people on the beach, get pupils to think about what each item could be used for: shells could be used as buttons or beads for a necklace; feathers could decorate a headdress or be used to 'fletch' an arrow; driftwood could be used to make the handle of a tool, or could be burnt on a fire etc.



**Topic:****Investigating the wildlife of the beach***Science: Planet Earth: Biodiversity and interdependence***Education**

The following activities focus on investigating the wildlife of the beach. There are various ways to organise this:

- You may wish to select activities to carry out as a whole class simultaneously.
- Pupils could choose different aspects of the beach to research in advance and then focus on particular habitats or species types once there.
- You could select a few activities and then rotate groups of pupils around them, so that they all have the chance to watch birds, investigate rock pools etc.
- You could visit the beach over a series of sessions, if it's local, exploring a different aspect each time.

**Signs of life***Science: Planet Earth: Biodiversity and interdependence (SCN 1/2-01a)*

This is a good activity to do at the beginning of a visit before your own footprints cover the sands.

Get pupils to look for animal or bird tracks in the sand. They can draw or take photographs of the prints and later try and identify the species using reference books.

- How far can they follow the tracks?
- Was the bird/animal on its own or with others?
- Can they work out what the bird/animal was doing?
- Where do the tracks lead?

**CCTV Birdwatch***Science: Planet Earth: Biodiversity and interdependence (SCN 1/2-01a)*

This is a good activity to focus pupils' attention on bird behaviour. Tell pupils that they are going to be CCTV cameras, to monitor the behaviour of birds closely. Get pupils to choose a bird/group of birds and find a place where they can watch them comfortably (not chasing them). It's useful if pupils can use binoculars and a stopwatch.

For 10-15 minutes, get pupils to check every minute, and make a note of what the bird is doing, and where. It may be easiest for you to give them a table with a set of possible bird activities (e.g. walking on beach, digging with bill, swimming, preening, flying, diving, bobbing around), which they can tick off in columns for each minute. The SNH Tenstmuir pack (see below) has some suggestions for bird activities on page 54. They can also draw or photograph the bird to identify it later.

**Rock stars***Science: Planet Earth: Biodiversity and interdependence (SCN 1/2-01a)*

Pupils work in pairs to survey the contents of a rock pool.

- How many different plants/crabs/shells/fish/other wildlife can they find?
- Can they work out what each one is, using identification charts?
- How is each species adapted to life in the rock pool?

Back at school pupils can find out what each one eats, and draw a food chain for their own particular rock pool.

Further information about rock pools can be found at:

[www.marine-reserve.co.uk/volunteers-conservation/education/otherresources/2.pdf](http://www.marine-reserve.co.uk/volunteers-conservation/education/otherresources/2.pdf)

<http://www.marine-reserve.co.uk/volunteers-conservation/education/otherresources/6.pdf>

A rock pool can be a good focus for expressive work: poetry, art and design or even music. Give pupils the chance and time to gaze into rock pools, taking photographs or making notes about what they see. What are sea anemones like? What do hermit crabs remind you of? Use pupils' comparisons as a way into metaphor and simile.

## Topic: Beaches and People

Around 10,000 years ago, the first people began to move into Scotland. Many would have travelled in simple boats or canoes made of wooden frames covered with tightly-stretched skins. Sandy beaches were good places to land delicate craft, and it is likely that these nomadic people set up camps close to the shore. Today we know these hunter-gatherers as Mesolithic people.

Hunting was hard work and not always successful. It was far easier to gather and collect. Beaches were – and are – good places to collect a huge range of useful and edible things. At Fife Ness archaeologists have discovered the traces of a Mesolithic camp from 7,500 years ago. They found post holes from early structures – tents or simple huts – and more than 1,500 fragments of worked local flint, the by-products of shaping blades for knives, arrowheads and scrapers for processing hides.



### Jonathan's Cave

At the Scottish Fisheries Museum you can peep into the past through our porthole into 'Jonathan's Cave'. This cave, one of a number at East Wemyss, Fife, is covered in carvings dating from the first millennium AD.

The caves at East Wemyss were carved out of the red sandstone rock by the sea during the last ice-age. They were inhabited from the earliest times and the name Wemyss itself comes from the Gaelic *uamh* meaning cave. Although a number of the caves contain carvings, by far the most are located on the west wall of Jonathan's Cave, so called as it was home to an 18<sup>th</sup> century nail-maker of that name.

Some of the images are Pictish, while later ones have been identified as Christian or Viking symbols. The carvings, dating from 500 - 900 AD, include a fish and what could be tridents or fish spears. There is also, on the opposite wall, a possible Viking boat which would date from 800 - 900 AD. If this identification is correct, it would be the earliest known drawing of a ship in Scotland.

There is evidence that from the time of the first settlers of Scotland, people chose to live near the coasts. Caves gouged out of the cliffs by the sea provided shelter conveniently close to a rich source of food. They were commonly used as Winter dwellings and similar carvings have been found in caves on the Moray Firth.

While some of the carvings in Jonathan's Cave are purely symbolic, others are more realistic. From them we can learn about the lives and ideas of the people who lived there 2,500 years ago.

Further north round the coast, near Tentsmuir, an ancient rubbish tip or midden reveals something of the Mesolithic diet: 20 types of shellfish, including cockles, mussels and crabs; fish bones and the bones of birds such as gannets, cormorants, shags, guillemots and puffins. Examples of midden finds can also be seen in the Scottish Fisheries Museum. Whales beached on shore provided tremendous bounty in the form of meat, blubber and a source of easily shaped strong, light bone. Further west up the Forth, colossal oyster middens have been found, oysters providing a good source of food in the winter months. Even long after people formed settled farming communities, the beach continued to provide rich pickings, especially in times of food shortages.

As farming developed, people became aware of the need for fertiliser. The beach provided an excellent source. After storms swathes of seaweed were cast up on to the beaches and people would rush to gather it to spread on fields, before the next tide dragged it back into the sea. People continue to gather seaweed for fertiliser in Fife today.

Children have probably always enjoyed playing on the beach and ploutring in rock pools, even back in Mesolithic times, but with increased leisure time from the late 19<sup>th</sup> and early 20<sup>th</sup> century, seaside holidays became something that more and more people could enjoy. At Cellardyke you can see the outdoor bathing pool, developed in the 1930s, and postcards from the time show bathing huts on crowded beaches.

Today many people fly abroad for beach holidays with warmer seas and a better chance of sunshine, but the beaches around the Forth continue to sustain their visitors, as places to play, relax, walk dogs and re-charge. Fife's beaches continue to be a source of tourist income for the people who live there.



### Seashore supermarket Stone Age style:

*Social studies: People, past events and societies (SOC 1/2-02a)*

Early people had to find or make the things that they needed to survive. Before visiting the beach research objects from Mesolithic times which have been found in Scotland. Challenge pupils to experience a day in the life of one of Scotland's first settlers. Could they create a camp using what they can find on the beach? You could supply them with a few basics – for example, tarpaulins could represent deer hides for the roof of a shelter. Pupils could also construct miniature camps, using twigs. They should also look on the beach for:

- something to eat – though of course pupils should not actually eat anything they find. Edible items could include crabs, mussels, cockles, periwinkles and razor clams (aka 'spoots').
- containers to hold water or cook in
- decorations for a headdress (you could supply a 'blank' headband) or beads for a necklace. What could they thread beads on to?
- material to weave a windbreak
- something to make a fish trap from.

### What a load of rubbish!

*Social studies: People place and environment (SOC 1/2-08a)*

Get pupils to carry out a survey of all the rubbish found on the beach. Divide the beach into obvious sections, and each pair of pupils should make a note of what they find there which is not natural (e.g. plastic bottles, tins, glass fragments, plastic bags etc). Please note that pupils should not handle any rubbish and should only look.

Back at school they can enter this data to produce a graph. Where do they think this rubbish came from (i.e. from ships at sea, dropped by visitors to the beach etc). Check on the Marine Conservation Society website ([www.mcsuk.org/coolseas/home](http://www.mcsuk.org/coolseas/home)) to find out more about what threats these items pose to marine wildlife.

Can pupils create a leaflet or posters for a campaign to clear up the beach and stop people from dropping litter on the beach? See [www.adoptabeach.co.uk](http://www.adoptabeach.co.uk) to find out more about how to organise a community beach campaign.

## Creative activities

### Beach art

*Expressive arts: Art and design (EXA 1/2-02a)*

The beach can be an inspiring place for pupils to create wonderful large-scale pieces of natural artwork, freed up from normal constraints of paper and paint. You may like to inspire them beforehand by looking at the work of nature artist Andy Goldsworthy, or by bringing laminated prints of his work. Here are some suggestions for activities:

- Create towers or 'stacks' of flat stones – almost like totem poles
- Create pebble spirals, graded in colours or sizes
- Create a beach rainbow, using anything you can find in the graded colours of the rainbow
- Create outlines of giant species – whales, fish etc – using lines of pebbles or shells, and 'colour' them in using seaweed
- Sculpt a self-portrait/giant fish/crab/mermaid - in 3D sand – and decorate.

Make sure you photograph all artworks before returning to school.

### Photography

*Expressive arts: Art and design (EXA 1/2-02a)*

Many of our suggestions include photography. It would be worth having a session on how to take good photographs, both close up for scientific purposes, and artistic. Ideally invite a local photographer to join you to give pupils tips on how to take better pictures.



## Section 4

# Exploring Towns and Harbours

### Background information

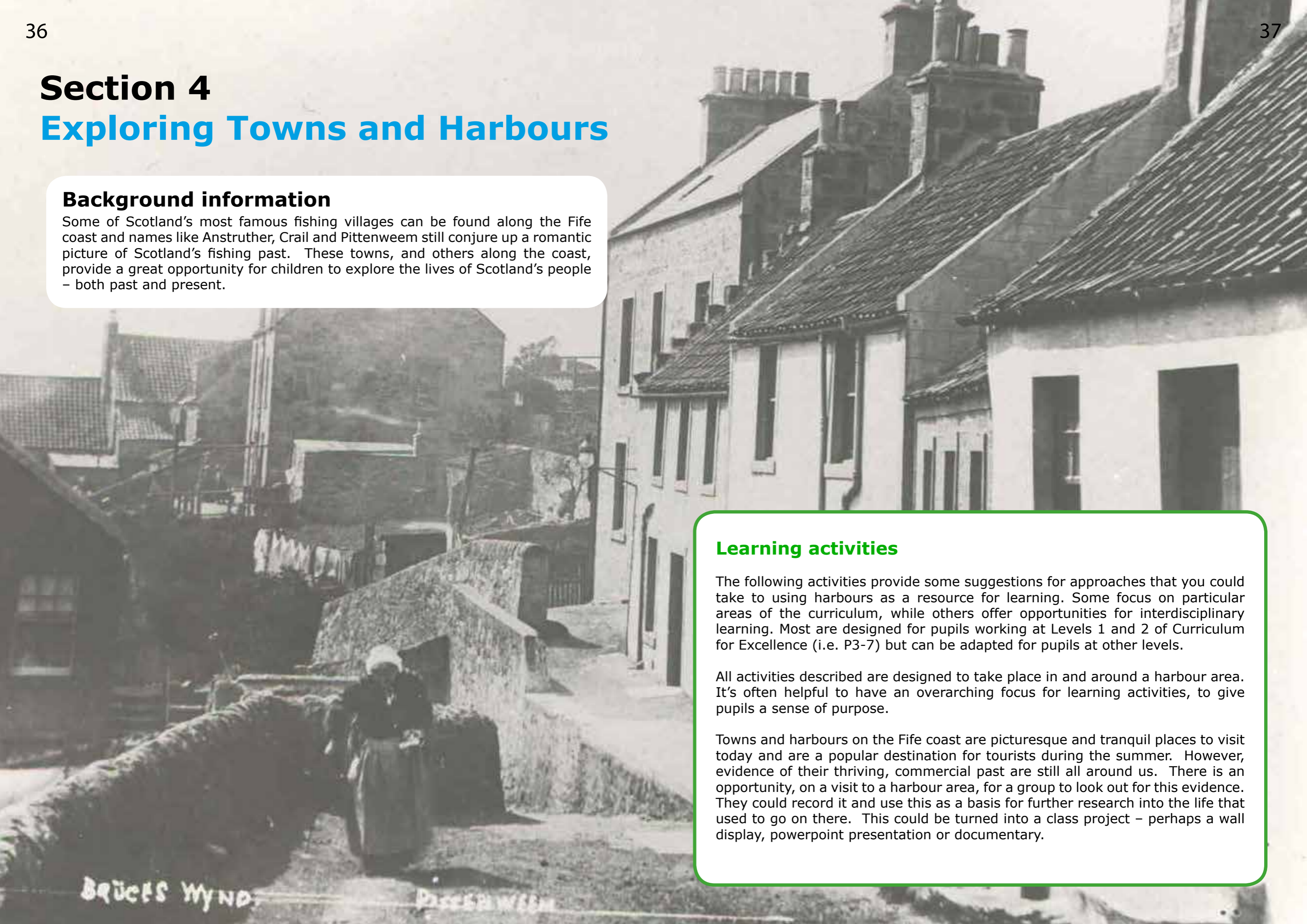
Some of Scotland's most famous fishing villages can be found along the Fife coast and names like Anstruther, Crail and Pittenweem still conjure up a romantic picture of Scotland's fishing past. These towns, and others along the coast, provide a great opportunity for children to explore the lives of Scotland's people – both past and present.

### Learning activities

The following activities provide some suggestions for approaches that you could take to using harbours as a resource for learning. Some focus on particular areas of the curriculum, while others offer opportunities for interdisciplinary learning. Most are designed for pupils working at Levels 1 and 2 of Curriculum for Excellence (i.e. P3-7) but can be adapted for pupils at other levels.

All activities described are designed to take place in and around a harbour area. It's often helpful to have an overarching focus for learning activities, to give pupils a sense of purpose.

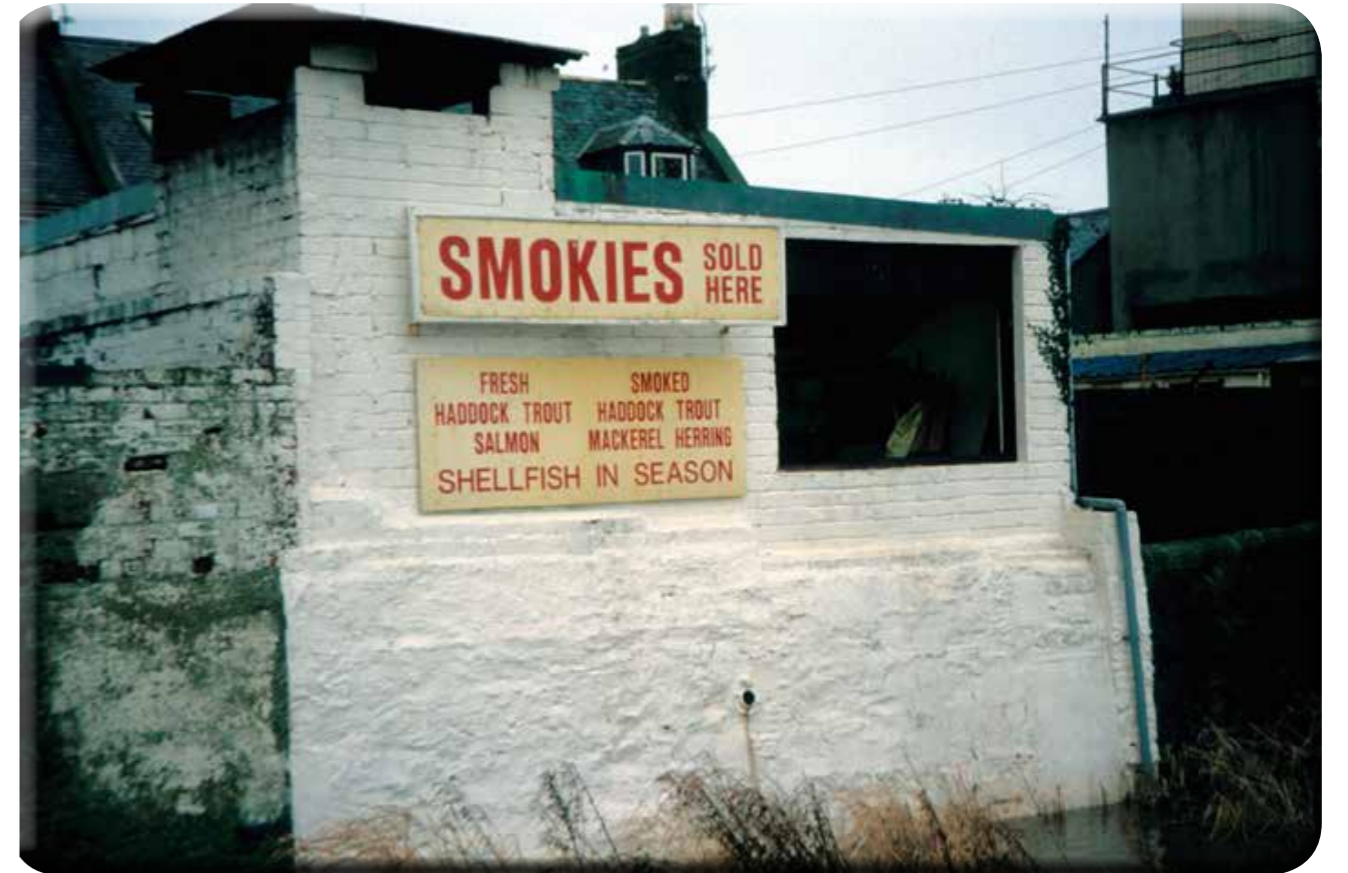
Towns and harbours on the Fife coast are picturesque and tranquil places to visit today and are a popular destination for tourists during the summer. However, evidence of their thriving, commercial past are still all around us. There is an opportunity, on a visit to a harbour area, for a group to look out for this evidence. They could record it and use this as a basis for further research into the life that used to go on there. This could be turned into a class project – perhaps a wall display, powerpoint presentation or documentary.



**Topic:****Harbours today***Social studies; People, place and environment*

Coastal towns today - at the beginning of the 20<sup>th</sup> century all the harbours in the East Neuk were full of boats - you could walk from one end of the pier to the other over the boats. Today it is a very different picture, although there is still plenty of life to be seen in and around these coastal towns and evidence of their past glories can be witnessed all around you.

Fishing still goes on, though on a much smaller scale as fishermen have diversified into catching shellfish, particularly prawns, and numbers of small boats are once again increasing. Harbours are now home to privately owned boats as well, which can often be seen out on the Forth of a weekend enjoying the unique pleasures of being out at sea or taking tours of visitors on cruises to spot the varieties of wildlife.

**Learning activities**

The following activities focus on exploring the harbour area as it is used today. There are various ways to organise this:

One suggestion might be to create a **Harbour Survey**. After carrying out the various investigations on site, pupils can research, design and produce a survey document about their local harbour area and how it is used today.

Alternatively, they could produce a **local history guide** to the harbour which could take the form of a leaflet, interpretive panel, audio guide or even a walking tour. These could be promoted through a local museum or tourist information centre.

## Fishy business

*Social subjects: People, place and environment (SOC 2-10a)*

There's a good chance that you will see evidence of the work that still goes on in these harbours. Various nets and creels may well be stacked against the harbour walls. Groups could do some local research and try to find out the answers to some of these questions:

- What kinds of fish/shellfish are still landed here?
- Where do the fish end up?
- Do any of the local shops sell the fish?
- If so, where did they get the fish from?



## Harbour interview

*Social studies: People, place and environment (SOC 2-10a)*

As part of their harbour survey, a group could prepare and carry out an interview with a local fisherman or harbour master. The types of information they might want to get could be:

- The amount of boats that use the harbour
- The types of boats that use the harbour
- What jobs take place there
- What duties a harbourmaster has to fulfil
- What a day in the life of a fisherman is like

## Harbour wildlife

*Sciences: Planet earth: Biodiversity and interdependence (SCN 1/2-01a)*

Human beings aren't the only signs of life in the harbour. A group could carry out a survey of the wildlife that they can see – both in and out of the water – and photograph them. Back in class they could research what species they think that they have seen and identify them.

They could be looking out for creatures such as birds, fish, jellyfish, shellfish and so on.



## Harbour construction

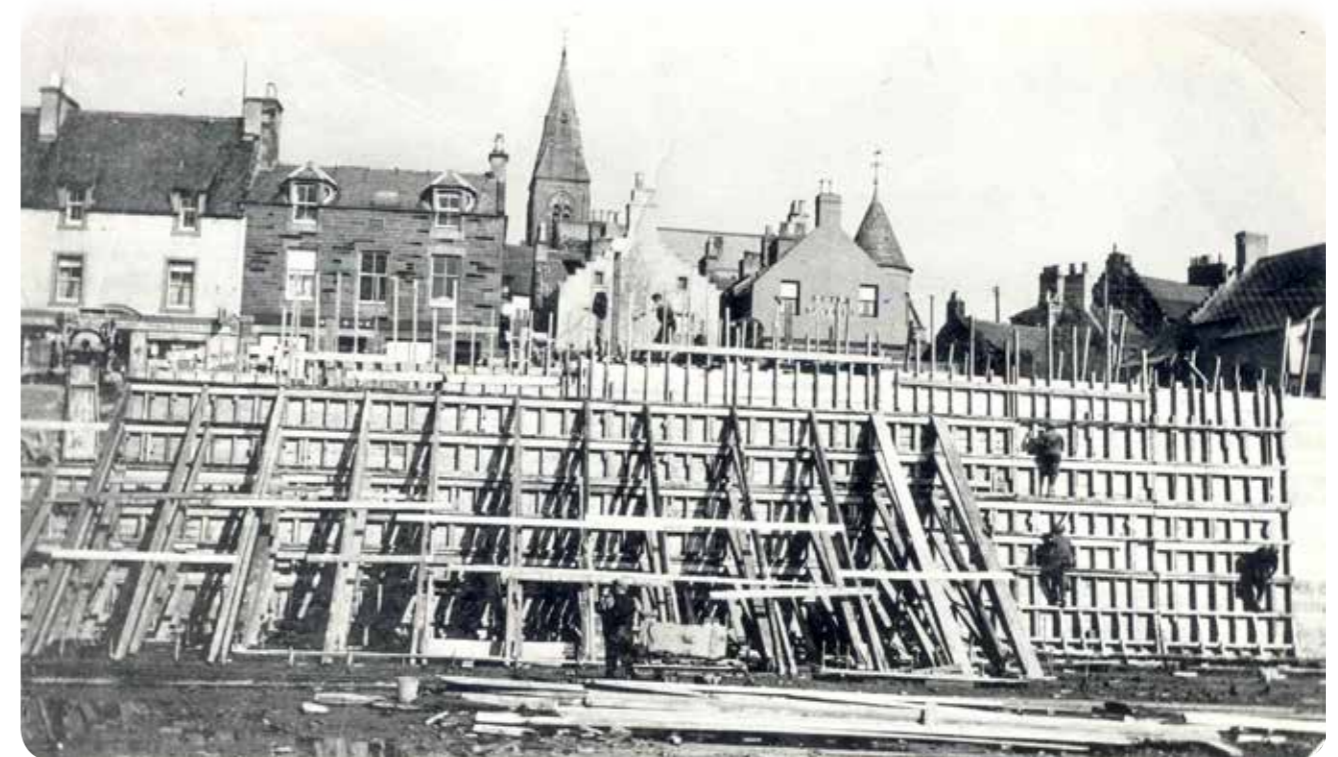
*Expressive arts: Art and design (EXA 1/2-04a)*

A group could work on looking at the shape and construction of the harbour. With the aid of sketches and photographs they could study how the harbour has been built and consider why it has been designed that way - what do they notice about the water outside and inside the harbour?



Back in class they could find aerial shots of the harbour and compare it with other similar towns (the RCAHMS archive contains excellent aerial shots of all the Forth coast villages at <http://canmore.rcahms.gov.uk/en/search/>)

From their research, the group could consider why harbours are built to a particular design and could even create their own designs and try them out at the beach.



## Boat survey

*Social studies; People, place and environment (SOC 1/2-10a)*

This would be a good activity for a small group to do – perhaps four or five pupils. Get them to make a survey of the boats in the harbour on a given day. They could record this in various ways, with each pupil being designated a specific task in advance.

- They could photograph each boat
- They could take a note of the names and registration numbers
- They could record the different sizes of the boats
- They could record the purpose of each boat (e.g. for fishing/private use/pleasure cruise)

Back in the classroom collate their results into a short report with simple graphs or charts, and perhaps even research more about the boats that they have seen.



**To extend the survey idea why not make a study of where the boats have come from?** Just like number plates on a car, every fishing boat must have its own registration number displayed. These tell you where the boat has come from. Pupils could make a survey of the boats in the harbour, then find out where they have come from. Even boats which are not registered, for example yachts, may still display their 'home port'. There is also a seasonal aspect to this, such as fishing seasons, and more yachts visiting harbours in the summer months. If there is a harbour master on duty they may be able to help out.

Pupils can also check the numbers against the registration list. You can find this at: [www.undiscoveredscotland.co.uk/usfeatures/fishingboatregistration/index.html](http://www.undiscoveredscotland.co.uk/usfeatures/fishingboatregistration/index.html)

They could then make a chart showing the number of boats from each different place, and plot the original locations for each boat on a map of Britain, pinning a picture of each boat alongside it on the map.

## Build your own boats

*Expressive arts: Art and design (EXA 1/2-02a)*

Get the class to look at the different designs of boats that they see in the harbour. They come in different shapes and sizes.

If there is a beach nearby they could collect resources that they might need to build their own boat (drift wood, plastic bottles etc.). This could be augmented with any recycling that you have at school or that they bring from home.

In groups they could have their own boat building competition and these could be tested for seaworthiness. Awards could also be given for best designs and names.



## Topic

### Harbours and their towns - a history

*Social studies: People, past events and societies*

#### The development of towns and harbours

Fish has been a major food source for people in Scotland from the very earliest times. Archaeology shows that fishing played an important part in the lives of Scotland's early people. Evidence of a 7,500 year old camp has been found at Fife Ness – possibly one of Scotland's earliest fishing 'villages'. At that time, fishing was purely a subsistence activity, to feed the fisherman and his immediate community before these Mesolithic hunter gatherers moved on.

Geography meant that eventually fishing became a natural industry for the people of the Scotland. By the medieval period herring caught in the Forth was being exported to the continent. As the industry developed, fishertowns and villages sprang up to supply the growing towns and fishing became more specialised. The Crown and the Government sought to encourage this industry. They granted licenses to catch and market fish and provided bounties for boat-building and for the curing of herring. It is during this period that villages like Crail, Pittenweem and Anstruther rose to prominence and were granted special charters to trade with other countries

By the early 19<sup>th</sup> century the fishing industry in Fife was about to enter its most successful period. Herring was a delicacy on the Continent and was caught relatively easily off the coast of Scotland. At this time, there were as many as 30,000 vessels involved in herring fishing on the east coast. As the century progressed, the numbers continued to grow until the Scottish fishing industry became the largest in Europe. The coming of the railways gave an opportunity to fishermen and agents to deliver their catches to markets much more quickly than in the past. Improved fishing methods meant that the industry was no longer local or seasonal since the boats followed the shoals around the coast of Britain and, along with them there followed an army of curers, merchants, general hands - and the herring lasses. Throughout the boom, the Scots fisher lasses, many of them from the coastal towns of Fife, were an integral part of the fisheries landscape at any port where herring was landed. They began gutting and packing the 'silver darlings' at the age of 15, and travelled throughout the season from Stornoway to Lerwick, to Peterhead, and as far south as Yarmouth.

The 1900s were a time of great boom in the herring industry. Therefore, this was a time of prosperity for many fisher families and their standard of living would have compared favourably with agricultural workers. Fisherfolk were unusual in having two-storey houses before many other workers.

The need for a place to store and repair gear between fishing seasons meant that many fisherfolk preferred a house with a loft in which to undertake this work. Others would lease space in a commercial building, such as that on the museum site, to repair their gear.

However, by the mid-20<sup>th</sup> century the industry was in decline. New technology and improved fishing methods led to inevitable over-fishing and the unintentional destruction of fish stocks through damaging new processes. Technical developments also resulted in bigger boats requiring bigger crews. The industry became concentrated in the hands of increasingly few fishermen operating ever more efficient vessels so that the number of people working in the industry fell.



### Then and now

*Social studies: People, past events and societies (SOC 1/2-01a)*

Pupils could research old photographs of the town and harbour area – perhaps online at school or with the help of a local museum or library. They could then carry out their own photo survey of the same parts of the town and make a wall display that highlights the differences that they can identify over time.

A similar exercise could be carried out by pupils mapping the current town and comparing their version with old town maps. Old maps could be accessed at the local library or museum. Alternatively a good online source of old town maps can be found at the National Library of Scotland at - [www.nls.uk](http://www.nls.uk) (click on the link for 'Maps of Scotland')

Another interesting project to add to this would be to research the lives of the people who used to live there. Even using old photographs as a starting point, they could find out more about the jobs and lives that people would have had in a coastal town. The Scottish Fisheries Museum in Anstruther is a particularly strong resource for exploring the social history of fishing on the Forth.



### Echoes of the past

*Social studies: People, past events and societies (SOC 1/2-02a)*

Many of the houses in and around the harbour area still hold clues to the past that they have witnessed. Pupils could carry out a (discreet!) survey of the houses in the area, looking out for symbols and house names that are evidence of their history.

Similarly they could collect a list of the different street names in the harbour area and find out the history of their names. How many of them are related to the town's maritime past?



## Knotty problem

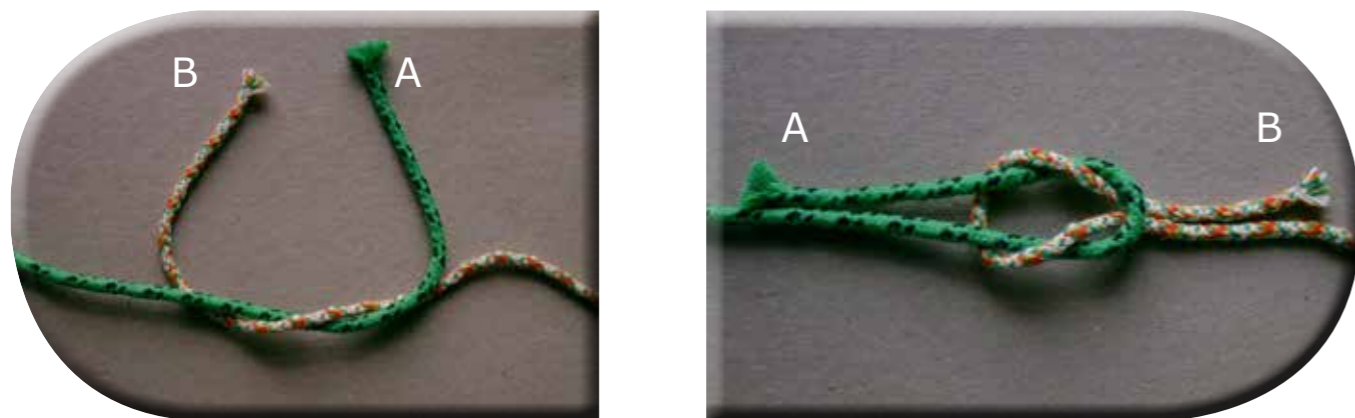
*Health and wellbeing; Physical education (HWB 1/2-21a)*

A group could look closely at how the boats are moored in the harbour – they will likely see evidence of lots of different knots being used to secure the boats and other objects, such as creels and boxes.

Being good at tying knots has always been an important skill for a fisherman to have. Below are some of the most important knots a fisherman would have to learn; there are many more that you could research.

### Reef Knot

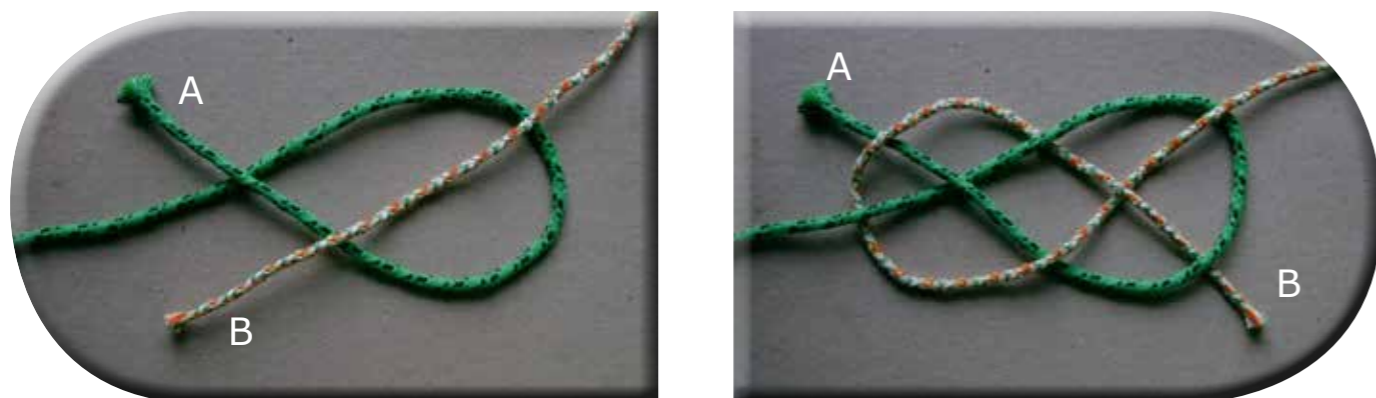
The name of this well-known knot comes from its chief use - to tie reef points when reefing the sails. It has many other uses.



Cross A over B and then pass it under B and up to form a half knot. Repeat, crossing A over B again so that the two halves mirror each other.

### Carrick Bend

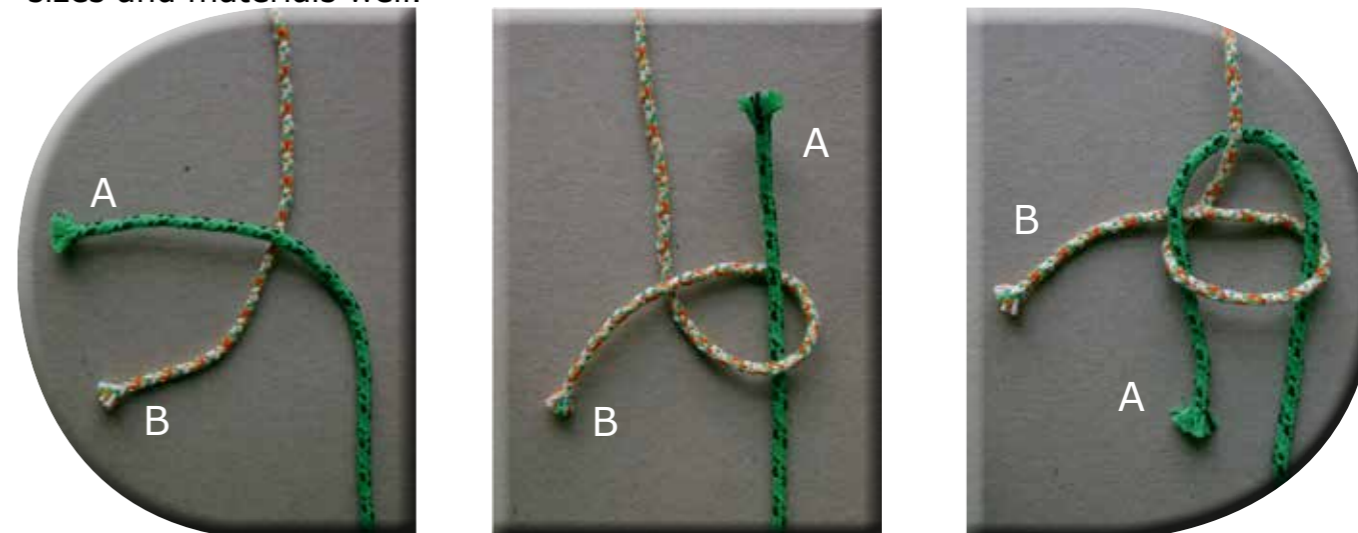
The Carrick Bend is less likely to jam than any other bend. It is a good way to join two ropes together.



Make a hitch (loop) in A and pass B over the front of it. Weave the end of B behind the long end of A, in front of the short end, behind the hitch, in front of B, and finally through the hitch.

## Sheet Bend

This strong, secure knot has a wide variety of uses. It holds ropes of different sizes and materials well.



Cross A over B. Bring A down, round B and up so that B flips over to form a hitch (loop). Pass A behind the top end of B, down through the hitch, and pull tight.

A group could be set the task of finding out more about these knots and try to learn how to tie them.

- A downloadable helpsheet from the Scout Association is available at: [www.scoutbase.org.uk/library/hqdocs/facts/pdfs/fs315082.pdf](http://www.scoutbase.org.uk/library/hqdocs/facts/pdfs/fs315082.pdf)
- Alternatively, a really good website to show you all of these knots can be found at: <http://www.animatedknots.com/> - click on *boating*.
- You could also try: <http://www.netknots.com/> - click on *boating knots*.

## Stories in the symbols

*Social studies: People, past events and societies (SOC 1/2-02a)*

Many old Scottish villages and towns have their own symbols and coats of arms to represent them, especially designated burghs. Pupils could look out for any symbols or coats of arms in the town, draw or photograph them and research their history back in class or at a local library or museum. Ancient coats of arms are particularly interesting and often tell the story of a town or events from its history.

Pupils could even design their own coat of arms for the school or for their town – choosing appropriate symbols that would represent them.



**This resource was developed by the Scottish Fisheries Museum in conjunction with Scottish Natural Heritage with the aim of highlighting the Firth of Forth as an inspiring educational resource, focusing on the Isle of May and the North Fife coastline.**



**Text by Calum Price and Elspeth MacKay  
Compiled and edited by Andrea Sayers**

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Museum.**

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