



Episode 4: The beaver's back! (Glasgow)

Natural History Adventurers' mission

Show that you can understand both sides of a complex issue and persuasively communicate viewpoints to others.

Episode journey

Children discover that there are different perspectives on topics relating to the natural world through exploring the issues of rewilding beavers. Children then create pamphlets from both perspectives.

Curriculum learning outcomes

- children will identify and use scientific evidence to support ideas and arguments (**Science**)
- children will identify the audience and purpose for their writing (**English**)

Rewilding

Rewilding can mean different things. It can mean introducing extinct species to the landscape or introducing creatures into the wild that have been bred in captivity. It can also involve restoring ecosystems such as woodland, wetland and wilderness areas.

Challenge synopsis

The postcard from Dippy's team introduces the beaver specimen and explains the story of its successful reintroduction to Scotland. The children's challenge is to create pamphlets that make the case either for or against rewilding. The included resources explain this as well as how to understand complex issues. Scientists use posters to communicate their work at conferences. As Future Scientists the children will need to use images, layout, diagrams and persuasive writing to get ideas across quickly and effectively.

Connected learning outcomes

- children learn that there are often different points of view
- children learn about different ways of communicating factual information and opinion

Possible additional activities

- Children build their own dam in a sand tray, in the playground with a hose as a water source or in a real stream. What happens to the flow of water? What are the effects of the dam?
- Children investigate the uses of dams in both small- and large-scale projects around the world.

Activities

Not all activities will be relevant for all classes. The activities were developed to be broken up and used over a period of time and as is suitable for your particular class.

- Read the **introductory postcard** and discuss the challenge with the children, using the glossary as required. Use **lesson script 1** to talk about beavers and explain about reintroducing beavers to Scotland. Make sure the children understand that there are two valid points of view about reintroducing beavers to the UK. This is a link to Sir David Attenborough narrating beavers building their dam: <https://www.youtube.com/watch?v=VuMRDZbrdXc&feature=youtu.be>. Note, this clip is of North American beavers.
- Explain to the children that they are going to make pamphlets that explain both sides of the argument. Their pamphlets will be a folded sheet of A4, with an image on the front and words inside.
- Look at some leaflets and discover or revise the styles of writing and use of colour, fonts, layout and graphics that are used (eg headings and subheadings, bullet points, numbered points or graphs). For example: <http://www.wildlifetrusts.org/sites/default/files/files/16597%20WAG%20-%20Hedgehog%2016pp%20Booklet16-7.pdf> and http://assets.wwf.org.uk/downloads/wwf_legacy_brochure.pdf.
- For each point of view the writer needs to be persuasive. What are the best arguments for persuading the reader? Look at or revise techniques such as rhetorical questions, repetition etc.
- Hand out **pupil resource 1**, summarising the views of four stakeholders.
- Ask the children to write a pamphlet that represents their viewpoint. Show pupils the demonstration pamphlet (**pupil resource 2**) and then give the children a blank pamphlet template (**pupil resource 3**). Ask them to work alone or in pairs. Can they make their point of view really persuasive?
- Once the pamphlets are completed, somebody from outside the classroom (perhaps another teacher or head teacher) is invited in to view the pamphlets and ask the children questions, taking the role of a judge.
- The judge then makes a decision on whether rewilding beavers should continue based on the arguments in the pamphlets. The children can then discuss among themselves what point of view they found most convincing, and why and whether it was harder to write one view than the other.





- Take photos of the pamphlets and, with the children, compose a group email to send to Dippy's team (DippyOnTour@nhm.ac.uk) with the subject line **Beavers**, revealing the outcome of their vote. They will receive an automated response.

Resources required

Provided in the Natural History Museum package:

- introductory postcard
- lesson script 1
- pupil resources 1–3
- glossary

Provided by school:

- photocopying of stakeholder comments (pupil resource 1) and the A4 pamphlet template (pupil resource 3)
- usual writing and drawing materials

English curriculum areas covered by Episode 4 (Key Stage 2)

Lower Key Stage 2 English: Writing – composition

Pupils should be taught to:

Plan their writing by:

- discussing writing similar to that which they are planning to write in order to understand and learn from its structure, vocabulary and grammar
- discussing and recording ideas

Draft and write by:

- composing and rehearsing sentences orally, progressively building a varied and rich vocabulary and an increasing range of sentence structures
- in non-narrative material, using simple organisational devices for example, headings and subheadings

Upper Key Stage 2 English: Writing – composition

Pupils should be taught to:

Plan their writing by:

- identifying the audience for and purpose of the writing, selecting the appropriate form and using other similar writing as models for their own

Draft and write by:

- using further organisational and presentational devices to structure text and to guide the reader (for example, headings, bullet points, underlining)

Science: Lower Key Stage 2

Working scientifically

- using straightforward scientific evidence to answer questions or support their findings

Science: Upper Key Stage 2

Working scientifically

- identifying scientific evidence that has been used to support or refute ideas or arguments

Geography: Human and physical geography

Describe and understand key aspects of Human geography, including: types of settlement and land use, economic activity including trade links, and the distribution of natural resources including energy, food, minerals and water.

Northern Irish curriculum areas covered by Episode 4 (Key Stages 1 and 2)

Language and literacy: Writing

Pupils should be enabled to:

- write for a variety of purposes and audiences, selecting, planning and using appropriate style and form
- express thoughts, feelings and opinions in imaginative and factual writing
- use a variety of stylistic features to create mood and effect
- create, organise, refine and present ideas using traditional and digital means, combining text, sound or graphics

The world around us: Place

Pupils should be enabled to explore:

- how place influences the nature of life
- ways in which people, plants and animals depend on the features and materials in places and how they adapt to their environment
- features of, and variations in places, including physical, human, climatic, vegetation and animal life
- our place in the universe
- change over time in places
- positive and negative effects of natural and human events upon place over time





Scottish curriculum areas covered by Episode 4 (First and Second)

Literacy and English

Writing: Organising and using information

Considering texts to help create short and extended texts for different purposes.

Writing: Creating texts

I am learning to use language and style in a way which engages and/or influences my reader. **ENG 2-27a**

Science: Planet Earth

Processes of the planet

They learn about climate change as a natural process in time as well as the result of human activity. Through connections with collaborative studies of landscape, weather and climate in social studies they build up an integrated picture of the dynamic nature of Earth.

Biodiversity and interdependence

I can use my knowledge of the interactions and energy flow between plants and animals in ecosystems, food chains and webs. I have contributed to the design or conservation of a wildlife area. **SCN 2-02a**

Welsh curriculum areas covered by Episode 4 (Key Stage 2)

Science at Key Stage 2

Learners should be taught to relate their scientific skills, knowledge and understanding to applications of science in everyday life, including current issues. They should be taught to recognise that scientific ideas can be evaluated by means of information gathered from observations and measurements. Teaching should encourage learners to manage their own learning and develop learning and thinking strategies appropriate to their maturity. They should be taught to value others' views and show responsibility as local citizens.

Skills

Communication

1. search for, access and select relevant scientific information, from a range of sources, including ICT
2. communicate clearly by speech, writing, drawings, diagrams, charts, tables, bar charts, line graphs, videos, and ICT packages, using relevant scientific vocabulary

Range

Interdependence of organisms

Pupils should use and develop their skills, knowledge and understanding by investigating how animals and plants are independent yet rely on each other for survival.

5. the interdependence of living organisms in those two environments and their representation as food chains
6. the environmental factors that affect what grows and lives in those two environments, *eg sunlight, water availability, temperature*
7. how humans affect the local environment, *eg litter, water pollution, noise pollution*





English

Strand: Writing

Learners should be given opportunities to:

Write for a variety of purposes, including to:

- recount
- instruct
- inform
- explain
- argue/persuade
- discuss/analyse
- evaluate
- narrate
- describe
- empathise

Write in a range of continuous and non-continuous texts in a variety of forms, *eg letters, diaries, articles, stories, reports, speeches, short plays and scripts, leaflets, advertisements, posters, web pages, questionnaires, reviews, soliloquies*

Write for a range of authentic audiences, real or imagined, *eg peers, younger learners, teachers, family members, historical and fictional characters*

Organising ideas and information

- meaning, purposes, readers
- structure and organisation

Geography

Geography provides opportunities for learners to consider important issues about their environment, and to recognise how people from all over the world are linked. They are encouraged to understand the importance of sustainability, develop an informed concern about the quality of their environment, and to recognise that they are global citizens.

Skills

Understanding places, environments and processes

Pupils should be given opportunities to:

3. describe the causes and consequences of how places and environments change, *eg by season; from past to present; the need for sustainability*

Communicating

Pupils should be given opportunities to:

1. express their own opinions and be aware that people have different points of view about places, environments and geographical issues, *eg about wind farms, fair trade*
2. make decisions about geographical issues by distinguishing between fact and opinion and considering different arguments, *eg a traffic problem*
3. communicate findings in a variety of ways, *eg using geographical terms, annotated photographs, maps, diagrams, or ICT*



Episode 4: The beaver's back! (Glasgow)



European beaver on display at Kelvingrove Art Gallery and Museum, Glasgow © CSG CIC Glasgow Museums Collection

Hello! I'm Richard, Research Manager for Natural Sciences at Glasgow Museums.

What do you all know about beavers?

[Hello teacher, please have that discussion now.]

What you might not know is that for the first time in 500 years, wild beavers are living in Britain. This may sound like good news, but not everyone is happy about it.

Future Scientists must understand that there are different sides to each story and solutions are not always simple. Scientists need to be able to understand others' views and also persuade people through their words.

Your Natural History Adventurer challenge is to explore the beaver's story and create pamphlets that argue why bringing back beavers is a really good – or really bad – idea.

Good luck!

Richard



Natural History Adventurers

Dippy on Tour

Future Scientist Training

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Lesson script 1

Things you may or may not know about beavers:

- Beavers use swimming goggles! They have a set of see-through (or transparent) eyelids that allow them to see underwater.
- Only humans build bigger structures. The largest beaver dam in existence is located in Wood Buffalo National Park in Alberta, Canada. It stretches for 850 metres and is visible from space.
- Beaver homes, called lodges, are dome-like constructions built from branches and mud.
- Beavers don't mind the cold. They stay active throughout the winter and keep using their ponds even when the water is covered with a layer of ice.
- Beavers are one of the largest rodents on Earth. Their large front teeth never stop growing. They keep their teeth from growing too long by wearing them down by constantly nibbling on wood.

Here's a short film about beavers with David Attenborough showing just how amazing their dams are:

www.youtube.com/watch?v=VuMRDZbrdXc&feature=youtu.be.

Note, this clip is of North American beavers.

Here is the story of how the beavers came back to Britain.

In May 2009, three families of beavers were released into Knapdale Forest in Scotland. These were the first wild beavers in Scotland in nearly 500 years. They had been safely captured in Norway and were looked after by vets before being safely released into a lake.

However, beavers are also living around the River Tay, Scotland, where they have been introduced without official permission, and have been the cause of some concern to local landowners!



Pamphlet challenge: Meet the stakeholders

Some people are very happy about the return of the beavers, but others are not. Here are four stakeholders, each with a different opinion about whether or not beavers should come back to Britain. A stakeholder is somebody who is interested in something because it makes a difference to their lives.

Your job is to read all four stakeholder positions and create two pamphlets. One pamphlet will be written by one of the stakeholders who is **for** the return of the beavers, and one will be written by one of the stakeholders who is **against** it.

Here are also some blank pamphlets and an example to show you how it's done.

*Hello teacher, hand out **pupil resources 1 and 2**, and show children **pupil resource 3** (the sample pamphlet).*

Pupil resource 1: Meet the stakeholders

Stakeholder 1:

Louise the farmer
(**against** bringing beavers back)

'Hi there, my name is Louise McGregor and I'm a farmer here in Knapdale. I love nature as much as anybody, but I am very against bringing back beavers.

There's a good reason why we use the phrase "busy as a beaver" and "beavering away" because beavers can cause a lot of damage in a very short time. I really worry that beavers will build dams that will flood my fields, killing my precious crops. Even if I spot the beavers' dams before my fields flood, I will have to spend lots of money clearing them away. There are other problems too: rodents such as beavers can carry diseases and I am afraid that they will spread those diseases to my sheep and cows.

I really believe that the beavers could force me to close down my farm.

Finally, I really do love the wildlife of our country – but shouldn't we help the animals that are already here, before bringing back new ones? Shouldn't we spend the money helping endangered creatures like the Scottish wildcat first?

I love animals, but the beavers will do more harm than good.'

Stakeholder 2:

Isaac the forester
(**against** bringing beavers back)

'Hello, my name is Isaac Richardson and I'm a forester working in Knapdale Forest. It is my job to make sure that the trees in the forest stay healthy and strong.

While I would be excited to see beavers running (and swimming) around Scotland again, I'm afraid the damage they would do would be too great. A normal beaver can cut down around 200 trees a year! Just imagine the damage a whole family could do to my beautiful forest!

People have told me that the beavers will stay in the part of the forest where the test is happening. But I know beavers – they are amazing at chewing through things, so I am certain they will escape and cause trouble.'

Stakeholder 3:

Shilpa the conservationist
(**for** bringing beavers back)

'Hi, I'm Shilpa Singh. I work as a conservationist in the Knapdale Valley. My job is to make decisions that protect the wildlife of the forest, so you can trust me when I say that I would never do anything to harm it.

I support the reintroduction of beavers to Scotland because scientific evidence shows that they will help all the other plants and animals. Beavers will create new wetland areas that will help species such as otters, water voles, fish and dragonflies to flourish. Beavers help humans as well, as they remove some harmful chemicals called phosphates from the water.

Finally, it was us who hunted the beavers in the first place, so it's our duty to bring them back if we can.'

Stakeholder 4:

Connor the Tourist Board Officer
(**for** bringing beavers back)

'Hello there, my name is Connor Douglas and I work for the Scottish Tourist Board. I make sure that people continue to come and visit Scotland, as this brings happiness to the visitors and brings money into Scotland.

Where I work, we believe that £127 million would be brought to Scotland by visitors coming to see the beavers. We could spend this money on better schools and medicine for Scottish people and on protecting Scottish wildlife.

The return of the beavers would also create more jobs. We'll need more hotels to look after all the visitors, and people will get jobs taking visitors on wildlife safaris. I think that if the beavers come back, everyone will be a winner!'

Making your pamphlets

Now that you've learned about the stakeholders, you need to create your pamphlets. Choose two stakeholders you just heard from and make pamphlets for them – one who is for bringing the beavers back, and one who is against it.

There are four pages in each pamphlet. You need to make sure that you use both pictures and words to convince the reader to agree with the stakeholder.

Page 1: This needs to be a picture that will catch the reader's eye. You also need to spell out your message in about four or five words, a bit like a newspaper headline.

Page 2: Here you can use the lines to explain in your own words why bringing back beavers is a good or a bad idea. This is where you need to persuade the reader to agree with the stakeholder.

Page 3: Here you can list some facts using bullet points, based on the information you have heard.

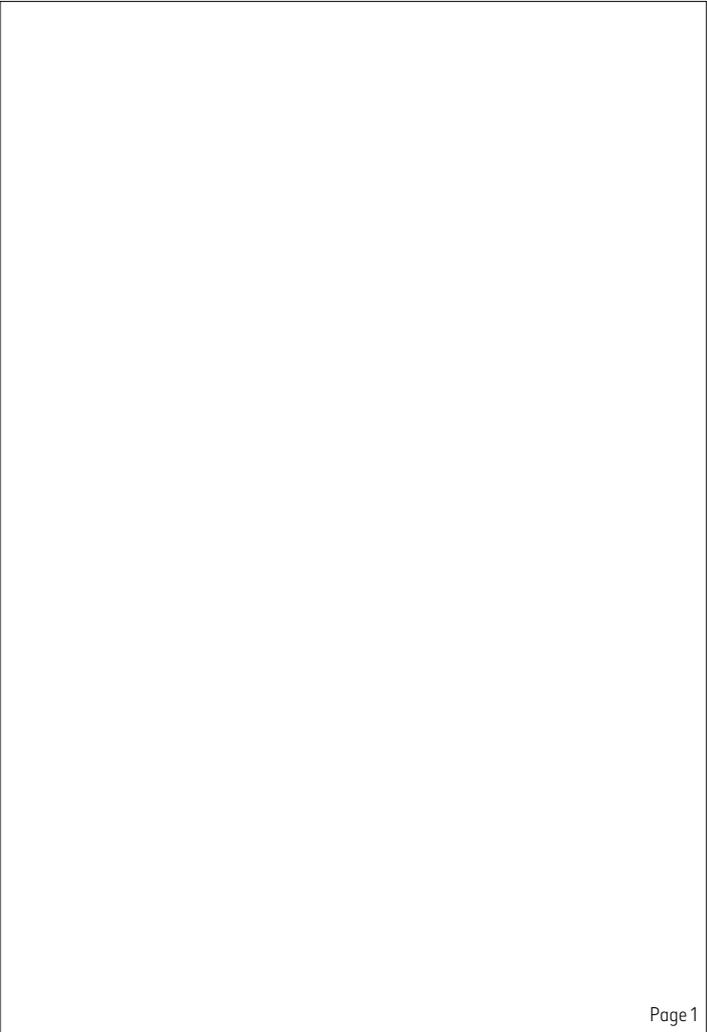
Page 4: You can put anything you like here, as long as it helps convince people that bringing back beavers is a good or a bad idea.

We are a group of farmers who are against
 rewinding the world with beavers, because we
 believe that beavers will destroy our crops.
 We have worked hard to build our farms and
 nobody knows whether or not these beavers will
 destroy them.
 We believe that people's lives are more important
 than beaver's lives, and this is why we want
 everyone to SAY NO TO BEAVERS!

- Remember!
- Beaver dams can cause floods which destroy farmers' crops.
 - Beavers can spread disease.
 - Other animals in Scotland need our help more.



**SAY NO TO
 BEAVERS!**



Episode 4 glossary

Beaver

A large, mostly nocturnal, rodent (like a guinea pig or hamster). Beavers are semiaquatic, meaning that they spend a significant amount of their time in water. They are known for building dams, using their teeth to fell and carry timber. There are two species of beaver, the American beaver and the Eurasian beaver.

Globally extinct

No longer existing, died out.

Locally extinct

Extinct in a particular geographical area.

Extinction

The process of being or becoming extinct.

Pamphlet

A small booklet or leaflet containing information about a single subject.

Persuade

To cause someone to believe or do something through your own actions or words.

Rewilding

Rewilding has several meanings. It can mean bringing locally extinct species into the wild, or bringing creatures into the wild that have been bred in zoos or wildlife centres.

Stakeholder

A person with an interest or concern in something.

Viewpoint

A person's opinion or point of view.