



Forestry England

Landscape change

The *Landscape change* resource is split into three lesson plans to help you teach your students about the physical and human causes of landscape change.

The first lesson sets the scene by defining landscape and then considering – through a range of examples from the UK and around the world – the physical and human processes leading to landscape change. The second and third lessons focus on two detailed and contrasting UK case studies involving sustainable forest management. Thames Chase, located to the east of London, is an example of a community forest planted on a brownfield site. Ennerdale in the Lake District, formerly a large conifer plantation used for timber, is now managed as a wild land restoration project.

Lesson plans:

Each lesson plan is accompanied by a PowerPoint and student worksheet

1. An introduction to landscape change
2. Case study: Thames Chase Community Forest
3. Case study: Wild Ennerdale

Key Stage 3 Geography National Curriculum links

Having completed the study of *Landscape change*, students will:

- Understand how human and physical processes interact to influence and change landscapes and environments
- Understand how human activity relies on effective functioning of natural systems
- Understand the change in climate from the Ice Age to the present
- Develop geographical skills associated with the interpretation of OS maps and other thematic maps, and aerial and satellite photos

How to use this resource

Each lesson plan has:

- Curriculum links and learning outcomes.
- A list of any equipment needed for the activities.
- A starter activity for students to begin thinking about the topic independently or in pairs.
- Activities that engage students, encouraging their own reflection and investigation, including skills exercises.
- Comprehensive teacher's notes which accompany the PowerPoint with some key information and images to bring the content to life.
- A worksheet to aid the suggested activities. Where there is a question on the worksheet relating to the slide content you will see this icon.
- References – links to find out more information.



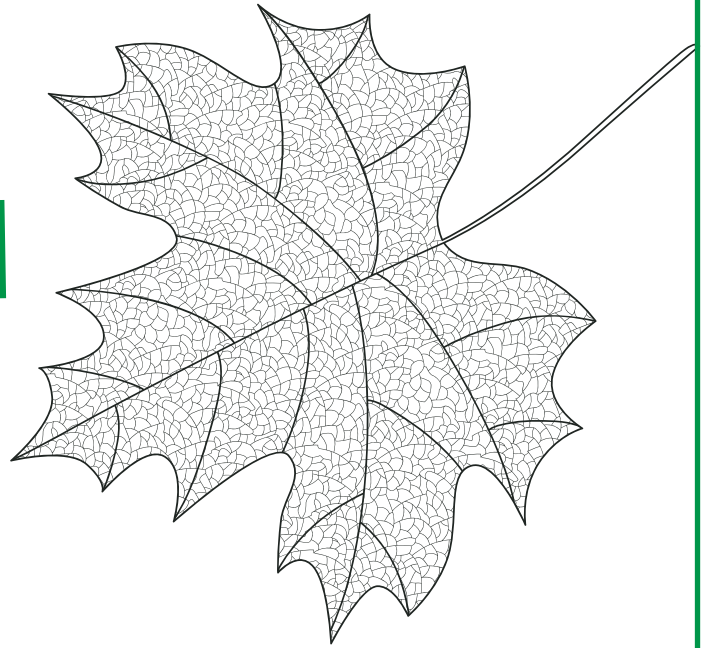
The lesson plans are adaptable to meet your requirements and the needs of your students.



Forestry England

Lesson 1

An introduction to Landscape change



Learning outcomes

- To understand the concept of landscape change.
- To understand some of the natural and human processes that often combine to lead to landscape change.

Curriculum links

- Understand how human and physical processes interact to influence and change landscapes and environments
- Understand how human activity relies on effective functioning of natural systems
- Develop geographical skills associated with the interpretation of OS maps and other thematic maps, and aerial and satellite photos

You will need:

- The associated PowerPoint and student worksheet
- Paper for posters

Overview

This lesson provides students with an introduction to the concept of landscape change. Students are introduced to the term 'landscape' before considering the natural and human processes that often combine to lead to landscape change.

A variety of contexts from across the world are chosen in which to consider landscape change including tectonics, agriculture, forestry and urbanisation. Using photos and maps, students will be able to identify aspects of landscape change and suggest the processes responsible.

Suggested student activities

Slide 1

Landscape change

Starter activity



- Q1** Define what we mean by the term landscape.

Slide 2

What is landscape?

1. Describe the landscapes in the photos. Encourage use of locational terminology in describing the photo, such as 'foreground' and 'background'.
-  **Q2** Identify natural and human features in the two different landscapes.

Slide 3

What is landscape change?

1. **Discuss** how the landscape has changed between 1967 and 2017.

Notes for slides

This shows Ennerdale, a glaciated valley located in the western Lake District. The forest in this valley has been managed very differently over the past and is now part of a nature restoration project called Wild Ennerdale. You will find out more about the landscape changes that have taken place in Ennerdale in the second case study.

A landscape can be defined as 'the visible natural and human features of an area of land'.

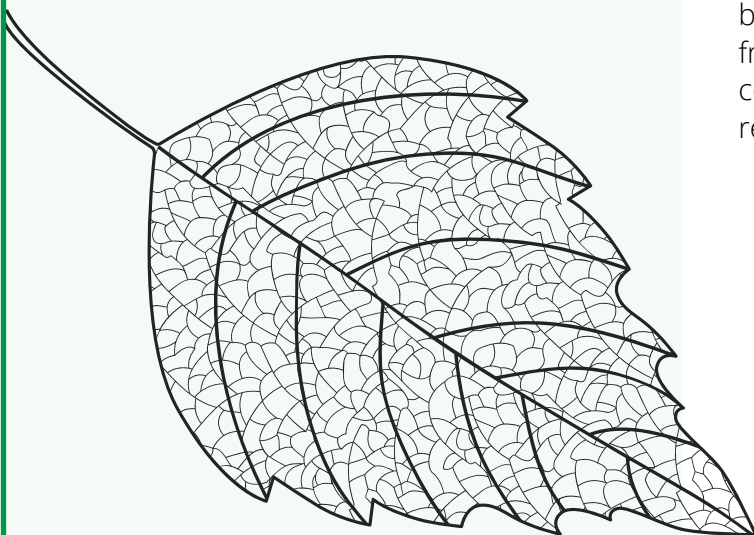
Many people consider the landscape to be a natural view in the countryside (mountains, the coast, forests). The left photo shows Alice Lake in the Rockies, Canada a glacially formed lake and popular tourist attraction today.

However, there are also urban/city landscapes (skyscrapers, religious buildings, parks) and industrial landscapes (factories, quarries, warehouses). The right photo shows Canary Wharf in London's docklands.

For example, think about how landscapes are constantly changing. Think about how local landscapes change with the seasons.

Landscapes will continue to change over time. Green fields may be developed for housing or new roads, new woodlands may be planted and urban landscapes may become greener.

These photos show Salford Quays in Manchester in both 1967 and 2017. The land has been transformed from a former industrial dockland into a modern commercial and residential area with shops, restaurants and galleries.



Slide 4**What causes landscape change?**

-  **3a** Work in pairs to list physical and human processes leading to landscape change.

Physical and human processes interact to create landscape change.

Physical processes include tectonic activity such as volcanic eruptions, the action of rivers, ice, the sea, ecological succession and climate change.

Human processes include industrial development (quarries, factories), agriculture, urbanisation and infrastructure (roads, rail).

These photos show glaciers in Canada, a lava flow from Mount Etna (Italy), commercial irrigated farmland (tomatoes) in Jordan and opencast coal mining in South Wales.

Slide 5**Volcanic activity**

- 1. Discuss** the changes in landscape features from before and after the eruption.
-  **3b** Complete the table as you work through slides 5-10.

The left photo shows Mount St Helen's before it erupted in 1980. The violent eruption wiped out huge areas of forest and deposited a great thickness of ash.

The right photo was taken in 2010, 30-years after the eruption, but you can still see the widespread devastation. Notice how the trees in the foreground have been torn from their roots by the power of the eruption.

In the distance you can see that some trees have begun to re-colonise the area. So in decades to come the landscape will change again.

Slide 6**At the coast**

Discuss how people have made use of natural processes changing the landscape?

Also, when do natural processes have a negative impact on people?

-  **3b**

The left photo shows the Dyfi estuary and, in the distance, the seaside village of Aberdyfi (Gwynedd, Wales)

The wide estuary was formed as sea levels rose at the end of the last ice age about 15,000 years ago. Vast amounts of sediment were deposited.

Since then, the river, waves, tidal currents and wind have re-worked the sediment to form mudflats, salt marshes and sand dunes.

Over time, vegetation succession changes the sand dunes. Early species such as marram grass are succeeded by shrubs and eventually trees.

The right photo shows Braunton Burrows in North Devon. The small hills in the middle distance of the photo are ancient sand dunes, now colonised by grasses and shrubs.

Can you see a golf course in the centre of the photo? This shows how the natural sand dunes have been managed by people to create a new landscape.

Slide 7**Industrial development**

Discuss whether pristine landscapes should be protected from industrial development.

**3b**

This photo was taken in Svalbard, a Norwegian archipelago located in the Arctic. It is the most northerly inhabited area in the world.

Svalbard's rugged, glaciated landscape is home to polar bears, Arctic foxes, and reindeer.

The main settlement is Longyearbyen. This was developed as a coal mining settlement. The photo shows some of the industrial and port developments in the town.

The landscape across the water shows what this area would have looked like before it was developed.

Slide 8**Agriculture**

Compare and contrast the two photos.

Discuss the environmental impacts of deforestation for farming.

**3b**

This rolling rural landscape is in Tuscany, Italy.

In the past, much of this landscape was as the left image shows, covered by shrubs and trees, such as pines and oaks.

In much of Tuscany, this natural woodland has been cleared to make way for commercial farming, as shown in the right image. The hot and sunny climate is ideal for growing grapes, a type of farming called viticulture.

Some areas have been planted with olive and citrus trees which are also well adapted to the physical conditions.

Slide 9**Woodland creation**

Discuss the challenges of turning brownfield sites green.

**3b**

Sence valley was previously a large opencast coal mine. The mine closed in 1996. The land was restored and in 1998 planted with 98,000 trees, transforming Sence Valley into a haven for wildlife and visitors.

Today, Sence Valley is a popular attraction for walkers, cyclists, horse riders and bird watchers.

Slide 10**Urbanisation**

Click on the link to google earth to see a time lapse of Jacksonville expanding.

Navigate to different locations around the globe that students think have undergone urban sprawl since 1984.

Discuss the process of urban sprawl and how this causes landscape change.

**3b**

This is an aerial photo of Jacksonville (Florida, USA). With a population of just under one million, it is the state's most populous city.

Jacksonville has spread over a vast area either side of the St. Johns River. This outward city expansion is called urban sprawl.

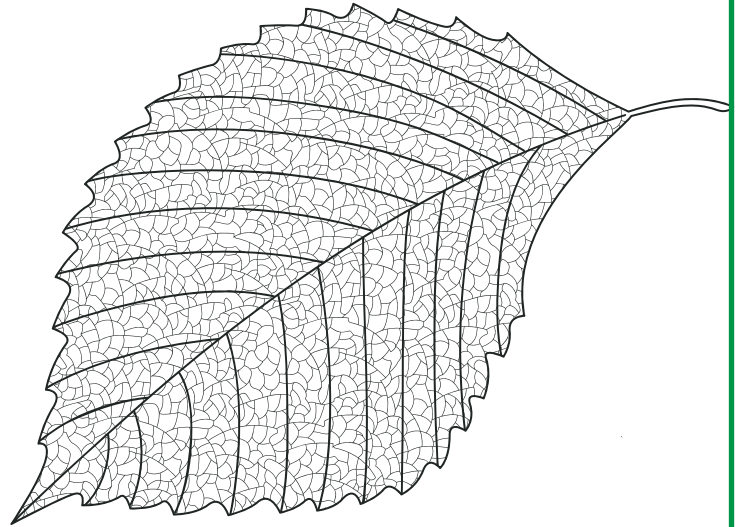
In the past, much of this area would have been natural woodland and wetlands.

Summary

Ask students to think about the positive and negative impacts of landscape change on people.

 Q4

Finish by thinking closer to home, and how the landscape has changed in your local area. You could use the student's knowledge, old maps, photos or the internet to carry out research.

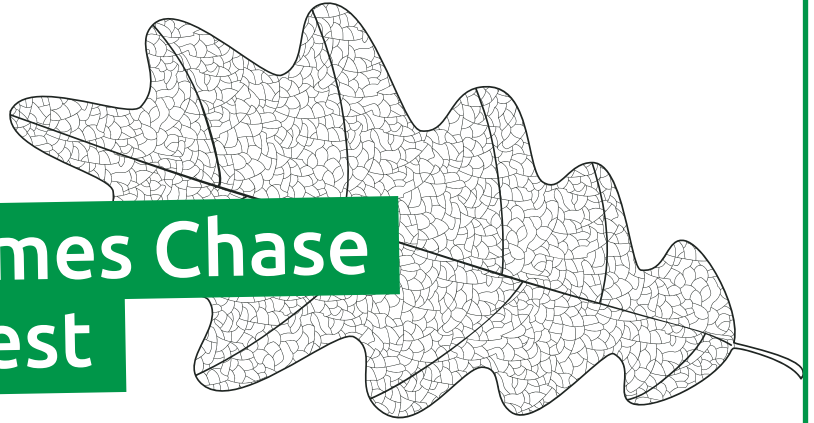
 Q5



Forestry England

Lesson 2

Case study – Thames Chase Community Forest



Learning outcome

- To study an example of woodland creation on a brownfield site.

Curriculum links

- Understand how human and physical processes interact to influence and change landscapes and environments
- Understand how human activity relies on effective functioning of natural systems

You will need:

- The associated PowerPoint and student worksheet
- Graph paper for soil activity

Overview

This lesson provides students with a case study of forest land management on former brownfield sites. It illustrates how the landscape has changed from industrial uses (quarrying and landfill) to being planted as a community forest to benefit people and wildlife.

The Thames Chase Community Forest covers over 10,000ha of land in east London and south Essex.

Established in 1990, the community forest comprises of 47 woodland sites many of which are linked together to form wildlife corridors. Since 1990, 1.3 million trees have been planted. The aim of the community forest is to regenerate the landscape to create a landscape for people to enjoy. The community forest will also benefit wildlife and increase biodiversity.

Suggested student activities

Slide 1

Thames Chase Community Forest

Starter questions to get your students thinking about what is going to be discussed:



Q1 What is a brownfield site?



Q2 What is a community forest?

Slide 2

Where is Thames Chase Community Forest?

Discuss what is a 'wildlife corridor' and why connecting woodlands is important for people and wildlife.

Slide 3

Industrial landscape of the past

Describe the spread/percentage of quarries.

Compare the map of quarries and landfill sites with map of Thames Chase Community Forest sites.

Slide 4

How is the Thames Chase Community Forest managed?

Discuss what has to be managed.

- Initial planning of what trees planted where
- Monitoring and maintenance of trees and hedgerows
- Monitoring of wildlife
- Facilities for people eg paths, benches, signage, litter

Notes for slides

The Thames Chase Community Forest covers over 10,000ha of land in east London and south Essex.

Established in 1990, the community forest comprises of 47 sites, many of which are linked together to form wildlife corridors. Since 1990, 1.3 million trees have been planted.

In the past, this area was quarried for sand and gravel. Much of it was used in the construction industry as London expanded. Some was used in road building, for example, in constructing the nearby M25 in the 1970s and 1980s.

As a result, the area was pock-marked with quarries. Some abandoned quarries became re-purposed as landfill sites. When full, they were covered by layers of soil (fill) and then used as low-quality farmland. It is some of this land that has been recently planted with trees to create the community forest, which can be seen with the two maps side by side.

Forestry England is one of several partners that are involved with the management of the Thames Chase Community Forest. Other partners include local authorities, environmental and heritage organisations.

The Thames Chase Trust is responsible for the overall landscape vision and strategic planning. Forestry England is responsible for woodland creation. Today, Forestry England manage 10 woodland sites developed on greenfield and brownfield land to improve connectivity for people and habitats as part of landscape scale restoration in the area.

Forestry England continues to work with partners to create new woodland in the area, including at Hole Farm in Essex where a collaboration with National Highways will transform a nearly 100ha farm into a new community woodland.

Slide 5**Objectives**

-  **Q2** Students could work in pairs to define the purpose of a community forest. How does it compare with their original thoughts?

These objectives explain what the community forest aims to achieve.

Slide 6**Thames Chase case studies**

-  **Q3** Students can label their own OS maps on the worksheet to show the locations.

This slide shows the location of the woodland sites that form the focus of this resource.

Slide 7**The story of Bonnetts Wood**

-  **Q4** Task the students with creating a timeline to outline landscape changes at Bonnetts Wood including the extension.

Bonnetts Wood is a 33ha site which was planted in two sections.

The first section, planted in 2003 on former agricultural land previously used as rough grazing for livestock.

The second section was a brownfield site, formerly a sand and gravel quarry (1950s-1960s). When quarrying ceased, it became a landfill site, backfilled with various waste materials including builders' rubble from London. By 1981 much of the site was derelict and classed as damaged land. Ingrebourne Valley Ltd bought the land in 2005 and in 2008 they started working with Forestry Commission (now Forestry England) to restore the land. In 2010 surplus excavated material was imported to regenerate the land.

In 2013, the Forestry Commission, who now manage the land, began creating more woodland on the Bonnetts Wood extension and opened the land to the public.

Slide 8**The planting of Bonnetts Wood extension**

Ask students to identify what has been created to enable people to have access to the new woodland?

This plan shows the extension to Bonnetts Wood.

In 2013, the Forestry Commission planted over 27,500 new trees and shrubs enlisting the help of the local community during tree planting days.

Gates, paths and benches were installed to allow access for the local community.

Slide 9**Understanding the conditions**

-  **Q5** See the worksheet for an activity studying the soil.

To ensure that the right trees were planted for the conditions, so that they would thrive and give all of the benefits for the community, various surveys were carried out, including soil testing. Remember, a lot of soil had been imported from elsewhere to restore the land.

Slide 10**Bonnetts Wood extension:
before and after**

Ask students to compare the landscape of Bonnetts Wood extension before and after it was planted with trees.

These images show the extension to Bonnetts Wood on the brownfield site, a former quarry and then landfill site.

The left photo shows reclamation and landscaping of the landfill site prior to planting in 2013. The right image shows the newly planted trees.

Slide 11**Bonnetts Wood:
community forest**

Bonnetts Wood has brought many benefits to people and nature:

- Former inaccessible derelict and damaged land has been transformed into attractive and accessible community woodland.
- There are opportunities for walking, running and cycling on the pathways and horse riding as well as community activities, wellbeing initiatives and volunteering opportunities.
- Biodiversity has benefited from the planting of trees, shrubs and hedgerows providing new habitats.
- The mixture of broadleaved tree species planted and managed for woodfuel, is predicted to sequester around 1,196 tonnes of carbon dioxide over a 20 year rotation.

Slide 12**The story of Berwick Glades**

Ask students to use the map to describe the location, shape and size of Berwick Glades.

This slide shows an OS map of the area, locating Berwick Glades. The site is well connected by footpaths to Hornchurch and Rainham.

Slide 13**Berwick Glades:
before and after**

Berwick Glades is a former quarry and restored farmland planted by the Forestry Commission (now known as Forestry England) in 2003.

Open areas (glades) have been created between the newly planted trees to provide views of Ingrebourne Marshes and create wildflower meadows.

A surfaced path winds its way through the wood and there are benches and picnic tables.

Slide 14**Berwick Glades:
community forest**

Discuss the benefits of having open glades amongst areas of woodland.

The local community enjoy walking and cycling in Berwick Glades.

The right image shows the sorts of glades that are present, where grasses and wildflowers complement the areas of woodland.

Slide 15**The story of Berwick Glades extension**

Ask students to describe the location of Berwick Glades extension in relation to Berwick Glades and Bonnetts Wood.

Discuss why it is important to connect the isolated areas of woodland.

**Q6**

The OS map shows the location of Berwick Glades extension, the site of an old quarry and landfill.

Owned and restored by Ingrebourne Valley Ltd, the land is now managed by Forestry England who have planted over 10,000 trees, many during special community planting days.

The site opened to the public in 2019.

[Bonnetts Wood | Forestry England](#)

[Berwick Glades | Forestry England](#)

Slide 16**The planting of Berwick Glades extension**

Ask students to describe the relief of the woodland using the contours.

**Q7**

Most of the area has been planted with mixed woodland tree species. The wetter corners are planted with shrubs, more tolerant of the damper conditions. The perimeter rabbit fence helps to protect the young plants.

Over 1000 native woodland trees were planted with the support of volunteers.

Slide 17**Berwick Glades extension: before and after**

Ask students to compare the two photos and describe how the landscape and land use has changed.

It may be worth drawing students' attention to the two different aerial photos, one being oblique and the other satellite (vertical). How do they distort reality? What are their advantages and disadvantages?

These photos show changes in the landscape at Berwick Glades extension.

The left oblique aerial photo shows quarrying and land restoration at the site.

The right satellite photo shows the newly planted forest and illustrates the importance of Berwick Glades extension in connecting Berwick Glades with Bonnetts Wood.

Slide 18**Berwick Glades extension: community forest**

Students could be asked for evidence that this area has only recently been planted and opened to the public.

Can they suggest why fences have been constructed here?

Berwick Glades extension links Berwick Glades and Bonnetts Wood enabling people to walk, run or cycle through an extensive wooded landscape, avoiding busy roads.

The extension provides a green corridor for plant and wildlife species to colonise. Berwick Glades has a healthy adder population and Bonnetts Wood has a thriving vole colony.

There are areas for people to pause to enjoy the scenery.

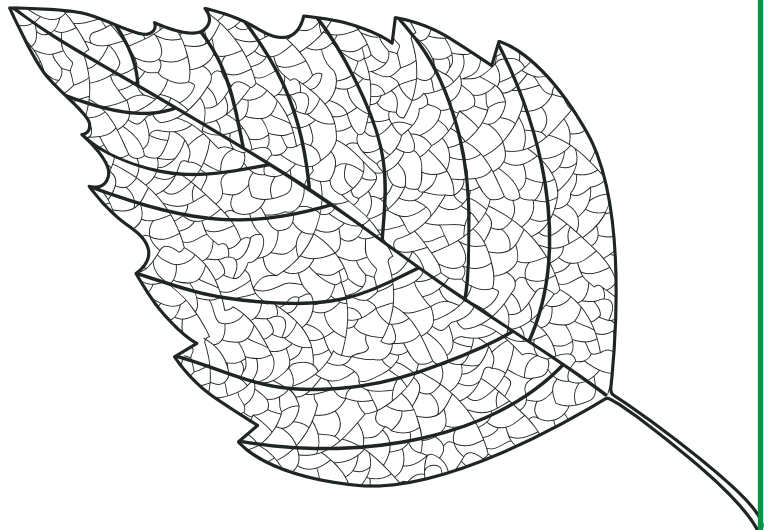
Today the site is a haven for skylarks and a hunting ground for Barn Owls.

Summary

Ask the students to summarise how the land use has changed in the example areas, and what benefits there are for the local community due to the creation of Thames Chase Community Forest.



For more information on Thames Chase Community Forest: www.thameschase.org.uk/

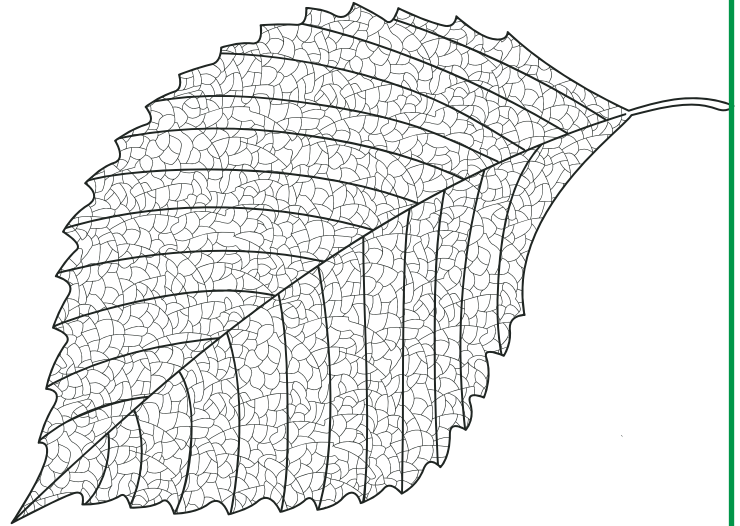




Forestry England

Lesson 3

Case study – Wild Ennerdale



Learning outcome

- To study an example of landscape change focusing on natural process-led land management.

Curriculum links

- Understand how human and physical processes interact to influence and change landscapes and environments
- Understand how human activity relies on effective functioning of natural systems
- Understand the change in climate from the Ice Age to the present
- Develop geographical skills associated with the interpretation of OS maps and other thematic maps, and aerial and satellite photos

You will need:

- The associated PowerPoint and student worksheet
- Poster paper for activity on slide 11

Overview

Wild Ennerdale is a remote valley on the western edge of the Lake District. One of the longest running wild land restoration projects in England, Ennerdale is home to some of England's most vibrant and varied natural environments.

This case study provides students with an overview of the natural and human landscape changes that have taken place over time, since the last Ice Age some 20,000 years ago until the present day.

wildwaterforestmountains
ennerdale

Suggested student activities

Slide 1

Wild Ennerdale

Starter activity

Describe the landscape.



Q1 Students can annotate key features on the photo on the worksheet.

Slide 2

Where is Ennerdale?



Q2 Describe the location of Ennerdale. Encourage your students to use directions and to refer to roads and settlements.

Discuss why it has stayed remote and mostly unsettled. Look at the relationship between the valleys, settlements and main roads.

Slide 3

How has Ennerdale's landscape changed?

Ask the students to describe the landscape. Can they spot glaciers (tongues of ice) in the side valleys?

Ask the students for evidence that this photo represents the Lake District at the end of the last Ice Age.

Notes for slides

Explore themes such as remoteness, lack of visible modern infrastructure, mosaic landscape, tranquillity, scale of mountains, importance of water – the river and lake.

Key features:

- It is a typical U-shaped glacial valley
- Cultivated land on the valley floor
- Forested slopes
- Meandering river
- Lake

Ennerdale is shown as the area bounded by the thick purple line. Notice that the valley is on the western side of the Lake District, inland from Whitehaven at the coast.

Around 20,000 years ago, at the height of the last Ice Age, much of the Lake District was covered by ice. Ennerdale was carved by a huge and powerful glacier.

At the end of the last Ice Age, about 10,000 years ago, the ice melted to reveal the sculpted landscape beneath.

This left a glacier lake, which the glacier had gouged out to a depth of up to 60m. The west end of the lake filled with material from the glacier streams and is only 10 to 15m deep. Hydrologically the lake is in fact almost 2 lakes.

The left photo shows a present day valley glacier in British Columbia. The Lake District may have looked like this towards the end of the Ice Age. Notice that although the valley glacier has shrunk in size there is still ice coming down the mountain sides from higher altitudes, where is colder.

The right hand photo shows the U-shaped valley resulting from glacier erosion.

Slide 4**How has Ennerdale's landscape changed?**

Looking at the timeline, discuss how Ennerdale has served local communities in the past.

Look through the historic photos and ask students to pick out how the landscape has been managed and used by people.

As the climate warmed, forests of oak, alder and birch colonised the area. From about 3,500 years ago people began to manage the area. Much of the native forest was cut down to create farmland. Since then, other demands on the land have included iron ore and lead mining, water abstraction and commercial forestry.

Ennerdale is the best example of a settled medieval valley in the Lake District National Park. It has over 500 historic features where you can see how medieval people lived and worked. In addition, the valley has examples of iron age and prehistoric land use, initially providing just shelter and food, then products such as wood, meat and wool. This photo shows the remains of a medieval twin walled longhouse.

Slide 5**From natural woodlands to plantations**

Can students see any evidence of clearfelling?

Discuss what the conditions are like in these plantations. Have students experienced any of these for themselves?

The forest present in Ennerdale today dates from 1925 onwards. During the first world war, timber was a key building material for planes, tanks, pit props etc which reduced the UK forest cover to just 5%. After the war the Forestry Commission was set up by Government to plant and organise the future timber supply and provide employment so rural communities could thrive again. By 1934, 300 local people were employed in forestry at Ennerdale.

The spruce and larch conifer trees which were planted formed a dense canopy with little light reaching the ground. Covered by a thick layer of acidic pine needles, which decompose very slowly, the forest floor was largely devoid of other plants and biodiversity was low.

These forests were managed mainly for timber and harvesting traditionally involved clearfelling (removal of all trees over a large area). The photo from 1993 shows recently planted tree saplings on the valley floor.

Slide 6**Harvesting**

This video is 360° so you can move the camera to change the viewpoint.

Historically the first trees felled in the valley were felled by hand with an axe and large cross cut saw. A horse or a basic tractor would extract the timber to the road.

Harvesters were then introduced. These cut the trees near ground level, remove any branches and trim the trunk to a set length. A forwarder machine then stacks the timber near the roadside ready for extraction.

Just as the way trees are felled has changed so has the way the forest is managed. Today the forest is managed for multiple objectives including nature, wildlife and biodiversity. Timber harvesting today has to consider protecting nesting birds, breeding squirrels, the quality of water and public access.

Slide 7**Working with nature for wilder forests**

Discuss how management practices have changed to promote work with natural processes.

**Q3**

Wild Ennerdale is now a superb example of natural process-led land management. It represents a new approach to managing for nature recovery at a landscape scale.

In 2006, the first Wild Ennerdale Stewardship Plan (WESP) was launched by Forestry England, National Trust, United Utilities and Natural England.

The latest Stewardship Plan (2018-2028) aims to balance the social, environmental and economic demands in the area. Through regeneration and by promoting natural processes, Wild Ennerdale will be more resilient to future changes in the climate.

Home to some of England's most vibrant and varied natural environments, Wild Ennerdale is one of the longest running wild land restoration projects in the UK.

Slide 8**Land management today**

Today, clearfelling is being replaced by an approach focussed on regular thinning, opening of gaps and natural regeneration known as continuous cover forestry. This lets more light reach the forest floor which enables a wider range of plants to grow and increases biodiversity. Forest management at Ennerdale aims to develop a more diverse habitat including open glades, tall trees, open woodland and deadwood.

Switching from sheep to cattle grazing encourages natural regeneration, where trees and plants disperse their own seeds, which take root and grow.

Trees are still planted by hand, but a greater variety of native trees are planted as Wild Ennerdale looks to reduce the dominance of non native Sitka spruce.

Slide 9**Managing Side Wood**

Describe the landscape and particularly the steepness of the wooded slope. How might this explain why Side Wood has remained as a native (untouched) woodland?

Discuss whether or not it is important to protect ancient native woodlands. Should people be allowed in protected areas?

Side Wood is an isolated area, located on the north face of the valley directly above the lake.

It is one of the best examples of a native oak and birch woodland that has existed since at least AD1600. These woodlands are called Temperate Rainforests as they are full of green mosses, liverworts and lichens.

Due to its ecological importance, the site has been designated a Site of Special Scientific Interest (SSSI), as it contains a rich biodiversity of rare plant species.

Forestry England and National Trust manage Side Wood together. Sheep have been excluded and some areas open to extensive very low density cattle grazing. Natural regeneration is expanding the woodland uphill which is not seen anywhere else in the Lake District.

Slide 10**Benefits for nature**

Describe the role of cattle in the management of Wild Ennerdale.

What are the signs of nature recovery in Ennerdale?

**Q4**

This video is 5mins long, so you may just want to watch up to 2:45.

Cattle graze the land, breaking up the dense ground litter and promoting seed germination. In the middle valley where the cattle have been free to roam for 10 years, and the forest thinned instead of clearfelled, bird numbers have gone up by 63% and species diversity has increased by 23%.

In 2022, Wild Ennerdale was declared a new National Nature Reserve (NNR). Ennerdale is home to an abundant and wide variety of plants, birds and butterflies. As a NNR, the management of Wild Ennerdale will focus on nature restoration and creating a healthy dynamic ecosystem for both wildlife and people.

Slide 11**Benefits for people**

Discuss what opportunities and attractions are there for visitors to Ennerdale?

**Q5**

Create a poster on attracting tourists to Ennerdale, promoting the sustainability of the area.

Ennerdale provides opportunities for a wide range of activities to enable people to get closer to nature and enjoy outdoor fun and adventure.

There are 50km of trails and paths for walkers, including routes to local mountain peaks, and 16km of forest roads for cyclists. Ennerdale Water provides opportunities for canoeing and bird watching. A network of forest roads and bridleways enable horse riders to explore the area.

Slide 12**Managing Wild Ennerdale today****Discuss:**

- How the course of the river Liza helps to help to protect settlements downstream from the possible impacts of climate change
- How trees can 'lock up carbon' and therefore help to reduce the impacts of climate change
- How trees help to reduce the likelihood of flooding from heavy rainfall events
- How the management of Wild Ennerdale can be an example to others in addressing issues of climate change

**Q6**

Wild Ennerdale has a future natural approach to managing the valley. Led by natural processes but accepting and working with both native and non native species.

Allowing the river to take its natural course reduces the flood risk further downstream. Planting trees not only helps by locking up carbon but also reduces the flood risk.

Extension activities



Q7 • Haiku poem exercise

- OS map activity on Ennerdale
forestryengland.uk/learning

For more details on Ennerdale:

[Wild Ennerdale – Shaping the Landscape Naturally](#)
[Ennerdale | Forestry England](#)