

SUSSEX: THE WEALD

LINKS TO NATIONAL CURRICULUM

Science

- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other (*Year 2, Living things and their habitats*).
- Identify and name a variety of plants and animals in their habitats (*Year 2, Living things and their habitats*).
- Recognise that environments can change and that this can sometimes pose dangers to living things: Pupils should explore examples of human impact (both positive and negative) on environments (*Year 4, Living things and their habitats*).

Geography

- Pupils should develop knowledge about the World, the United Kingdom and their locality (*Key Stage 1*)
- Use fieldwork to observe, measure, record and present the human and physical features in the local area (*Key Stage 2*)
- Understand how human and physical processes interact to influence, and change landscapes, environments and the climate (*Key stage 3*).

KEY LEARNING AREAS

1. Introduction to Sussex - location, history, size, sub-regions
2. Geography of the Weald - history, landscape and habitats
3. Plants of the Weald
4. Animals of the Weald
5. Human impact: protecting the Weald
6. Human impact: fracking in the Weald
7. Suggested activities linked to the Science National Curriculum

Note to Teachers

- These teaching notes run alongside a Powerpoint presentation and all slides are referred to in the notes.
- The notes are designed to provide key information about the region, whilst the presentation is full of effective images that will bring it to life for students in the classroom.
- Can be adapted to suit different ages of students by adding/deleting slides on the presentation and/or varying the level of detail used from the teacher notes.

GLOSSARY OF KEY WORDS

(in alphabetical order)

AONB - Area of Outstanding Natural Beauty.

Coombe - a short valley or hollow on a hillside or coastline.

Coppice - a group of small trees growing very close together

Deciduous tree - have leaves which fall off each autumn and regrow in the spring.

Evergreen tree - have leaves that remain green all year long.

Fracking - a method used for getting oil and gas from underground rocks by injecting liquid into the rocks so that they break apart.

Ghyll/Gill - a deep narrow valley which is usually heavily wooded.

Grassland - a usually flat area of land that is covered with grass.

Heathland - open landscape dominated by low-growing plants, mainly species of heather and gorse, as well as bracken, heathland grasses, herbs and mosses.

Intensive farming - a way of producing large amounts of crops by using chemicals and machines.

Microclimate - the essentially uniform local climate of a usually small site or habitat.

Red List - the world's most comprehensive inventory of the global conservation status of biological species.

SAC - Special Area of Conservation. To protect the 220 habitats and approximately 1000 species which are considered to be of European interest.

SPA - Special Protection Area. To safeguard the habitats of migratory birds and certain particularly threatened birds.

SSSI - Site of Special Scientific Interest.

Woodland - land covered with trees and shrubs.

1. INTRODUCTION TO SUSSEX

Location

Slide 3: Located around 50 miles south of London, in the south-east of England, lies the ancient county of Sussex.

History

The history of human habitation in Sussex goes back to the Old Stone Age and the oldest hominid remains known in Britain were found at Eartham Pit, Boxgrove in West Sussex. The foundation of the Kingdom of Sussex is recorded by the Anglo-Saxon Chronicle for the year AD 477 and the archaeology suggests that Saxons started to settle in the area in the late 5th century.

The county's name is derived from the tribe who once ruled the area - the South Saxons. In the 9th century Sussex was known as Suth Seaxe (*Suth* meaning south and *Seaxe* meaning Saxon). By the time of the Domesday Book (1086) it was called Sudsexe.

Slide 4: Sussex boasts a number of spectacular castles which cover a wide range of history. The coast of Roman Britain had a series of defensive forts on them, such as Pevensey Castle which has a history dating back to the 4th century.

Area and Population

Sussex is one of the largest counties in England, encompassing about 1,461 square miles. It is 75 miles long and between 22 and 25 miles wide. The population of Sussex is around 1.6 million.

Sub-Regions

Slide 5: Sussex has a fantastically varied landscape. The county can be divided into 3 geographical sub-regions:

1. The coastal plain
2. The South Downs
3. **The Weald**

There is a set of teaching notes with an accompanying presentation for each of these sub-regions.

2. GEOGRAPHY OF THE WEALD

Slide 7: North of the South Downs and spilling into the counties of Surrey and Kent is a hilly area of woods and **coombes** known as the Weald.

History of the Weald

The entire Weald was originally heavily forested. It gets its name from the Old English weald meaning 'forest' and today it is what remains of the vast and dense forest that existed between the North and South Downs, covering much of south-east England.

Areas of the Weald

As shown on the map (**slide 7**), the Weald has three separate parts with different characteristics:

Slide 8: High Weald

- In the centre of the Weald
- Mostly hard sandstone rock with very poor soils
- Characterised by rolling hills studded with sandstone outcrops, scattered farms, small woodlands, irregular fields, open heaths and ancient routeways
- Much of the High Weald is designated as the High Weald **AONB**
- Ashdown Forest is an extensive area of heathland and woodland that is on the highest sandy ridge-top at the centre of the High Weald

Slide 9: Low Weald

- Around the northern, western and southern edges of the High Weald
- Mainly Weald clay with some softer sandstones
- Wide and low-lying clay vales with small woodlands and fields
- Large areas covered in forest
- Has a great deal of surface water such as ponds and meandering streams
- Many areas only just above sea level so risk of flooding has discouraged tourism development.

Greensand Ridge

- A prominent, often wooded escarpment that stretches around the north and west of the Weald
- Includes the Weald's highest points
- Blackdown is the highest point in Sussex at 280 metres (919 ft).

Habitats of The Weald

The Weald has many rich and diverse habitats:

Woodland

Slide 10: Woodland still covers 23% of the total area of the Weald.

Slide 11: The High Weald contains around 7% of England's ancient woodland and this is especially important as it is land that has been continuously wooded for many centuries. In the High Weald fast running streams have cut deep narrow valleys (known locally as *ghylls* or *gills*) which are usually heavily wooded. These ghylls have a unique **microclimate** which enables rare species to grow there.

Lowland Meadow/Grassland

Slide 12: The Weald has nearly 20% of the lowland meadow in England - nowhere else in England is there such a concentration of lowland meadow.

Heathland

Slide 13: The sandstones of the Wealden rocks are usually acidic which often leads to the development of acidic habitats such as heathland. The largest remaining areas of heathland are in Ashdown Forest. The Weald's heathland is internationally important for its wildlife.

Wetlands

Slide 14: The Weald's coastline is made up of shingle ridges, saline lagoons, salt marsh, reedbed and wet grassland. It supports an important wintering wildfowl population.

3. PLANTS OF THE WEALD

A wealth of different plants grow in the Weald. Some can only grow in a particular habitat, whilst others can survive in a range of different conditions. It would be impossible to cover each species found in the Weald but here are a selection of those you are most likely to find:

Trees

Oak (slide 16)

- A large **deciduous** tree that grows up to 20-40 metres tall.
- The most common tree species in the UK, especially in southern and central British deciduous woods.
- Do not produce acorns until they are at least 40 years old.
- Grows well in the heavy clay soils which cover most of the Low Weald.
- For hundreds of years oaks from the Weald were considered the very best for shipbuilding.

Ash (slide 17)

- Deciduous and can reach a height of 35 metres and live as long as 400 years.
- The main threat to ash trees is *Chalara dieback of ash*, a disease caused by a fungus which causes trees to lose their leaves and the crown to die back, and usually results in their death.

Beech (slide 18)

- A large deciduous tree that can live for hundreds of years.
- There is a beech tree in the Weald that is 22 feet around the base and has 11 trunks - thought to be one of the largest beech trees in the UK.

Hazel (slide 19)

- Trees can reach a height of 12m and it can live for up to 80 years. If coppiced, it can live for several hundred years.
- Often found in the understorey of lowland oak or ash woodland and is also found in scrub and hedgerows.

Alder (slide 20)

- Conical in shape and mature trees reach heights of around 20 metres.
- Small brown cones, which are the female catkins, stay on the tree all year round.

Willow (slide 21)

- Deciduous broadleaf trees
- Found mainly on moist soils.

Hornbeam (slide 22)

- Naturally found in oak woodland and is often coppiced.
- A hornbeam hedge will keep its leaves all year round, providing shelter, roosting, nesting and foraging opportunities for birds and small mammals.

Lime (slide 23)

- A deciduous broadleaf tree with heart shaped leaves
- Can grow to 40 metres.

Horse Chestnut (slide 24)

- Mature horse chestnut trees grow to a height of around 40 metres
- Can live for up to 300 years.

Poplar (slide 25)

- Broadleaf deciduous tree that can grow to 30 metres and live for 200 years.
- It grows best in boggy conditions, alongside ditches and on floodplains.
- A declining species, it is now rarely found and grows in isolation.
- The *Sussex Black Poplar Partnership* is working to save the black poplar tree.

Woodland Plants

Wood anemone (slide 26)

- One of the first flowers of Spring.
- Solitary star-like white flowers with 5-8 petals, often pinkish underneath. Often an indicator of an ancient woodland site.

Primrose (slide 27)

- Another early Spring flower.
- Pale yellow, green-veined flowers found in woodland and grassland.

Ramson (slide 28)

- A common sight in woods in the Spring
- Flowers from April to June.

Bluebell (slide 29)

- Bell-like flowers with up-rolled tips.
- Distinctive scent attracts bees under the trees, into shaded places they might otherwise avoid.
- Found in woodland and grassland.

Common Dog Violet (slide 30)

- With its distinctive bluish-purple petals this is the most common wild violet in the UK.
- Found in woodland and grassland.

Cuckoo Pint (slide 31)

- A plant with shiny arrow shaped leaves often with dark spots, designed to attract flies for pollination.

Herb Robert (slide 32)

- A pretty, pink flower commonly found in woodland and shady places.
- The stem can be quite hairy and have a strong, unpleasant smell.

Garlic Mustard (slide 33)

- Sometimes growing to over a metre tall, it has bright green leaves and clusters of small white cross-shaped flowers.
- The whole plant smells of garlic when crushed.

Bracken (slide 34)

- Easily recognised by its branched fronds which appear in spring and are green when mature.

Butcher's Broom (slide 35)

- A low evergreen shrub once called 'knee holly' because it grows low down at the base of trees and has bright red berries.
- The name Butcher's Broom came about because bundles of the plant's stalks were once used to scour butcher's blocks.

Dog Rose (slide 36)

- Usually about five metres in height, but can climb to the tops of tall trees.

Coral-Root Bittercress (slide 37)

- The rarest native bittercress with pink flowers.

Grassland Plants

Common Knapweed (slide 38)

- Rather thistle-like, this is a wildflower of meadows and other grassland habitats.

Birds Foot Trefoil (slide 39)

- An important source of food for other creatures - pollinating insects find it a perfect source of nectar.

Ox-Eye Daisy (slide 40)

- A typical grassland plant that flowers from July to September.

Common Sorrel (slide 41)

- Blooms in summer with small pinkish flowers.

Heathland Plants

Common Heather/Ling (slide 42)

- Flowers August to September.

Bell Heather (slide 43)

- Pink bell-shaped flowers grow in groups along its stems.

Gorse (slide 44)

- Spiny evergreen shrubs with yellow flowers that smell of coconut.

Marsh Gentian (slide 45)

- Its bright blue, trumpet-shaped flowers appear from July to October and provide a contrast with the pinks and purples of the heath.

Wetland

The Weald supports a relatively high density of ponds, many man-made. Some of the plants that live here are rare.

Frogbit (slide 46)

- Looks like a small water lily and is in bloom in July and August.

Lesser Water-Plantain (slide 47)

- A delicate aquatic plant with long, curving stems that root wherever they touch moist ground.
- Only blooms briefly and produces pale pink flowers.

Tubular Water-Dropwort (slide 48)

- A perennial wildflower which is mainly found in boggy areas such as marshes and pond edges.
- Poisonous to animals and humans.

Round-leaved / Common Sundew (slide 49)

- A strange and beautiful plant that can be found at the shores of bog pools and on wet heaths.

Ghylls /Gills

In High Weald deep narrow valleys known as **ghylls** or gills create a moist **microclimate** which harbours plant populations not found elsewhere in eastern or southern England:

Ivy Leafed Bellflower (slide 50)

- A delicate trailing plant with blue bell-shaped flowers.

Hay-Scented Buckler Fern (slide 51)

- Can be spotted in moist, shady places in the winter.

4. ANIMALS OF THE WEALD

Mammals

The Weald supports a wide range of common mammals including badgers, foxes, rabbits, hedgehogs and squirrels. Here we focus on some of the rarer mammals that can be spotted in the Weald:

Wild Boar (slide 53)

- The Weald has the UK's largest population of feral wild boar.
- Wild boar became extinct in the Great Britain and Ireland by the 17th century, but they remained in France.
- Recently wild breeding populations have returned in the Weald following escapes from boar farms, so look out for them!
- For more information on the wild boar please see our factsheet:
<http://ypte.org.uk/factsheets/boar-wild/overview>

Common Dormouse (slide 54)

- Spends three quarters of its life asleep, so is rarely seen.
- Lives in deciduous woodland, hedgerows and dense scrub and spends most of the spring and summer up in the branches.
- For a factsheet, please see here:
<http://ypte.org.uk/factsheets/dormouse/overview>

Bat (slide 55)

- Bats are flying mammals and all British bats are nocturnal.
- The **Barbastelle** is uncommon in England and lives in woodlands, roosting in crevices in trees.
- The **Bechstein** is a rare tree-dwelling bat.

Amphibians

Common Toad (slide 56)

- Found throughout Britain.
- Prefer deeper bodies of water in which to breed, including fish ponds, farm ponds, reservoirs or village ponds.

Common Frog (slide 57)

- Common frogs have smooth skin and long legs for jumping away quickly.

Great-crested Newt (slide 58)

- This rare next can be found in many ponds in the Weald.

Butterflies

The high density of forest in the Weald means that Sussex has a large number of woodland butterflies. But as forestry management techniques have changed over the years, many of these have long since disappeared. Species such as the *pearl-bordered fritillary* and *wood white* are dangerously low in number whilst the *small pearl-bordered fritillary* became extinct in Sussex in 2013. Some of the butterflies you are most likely to see in the Sussex Weald include:

Comma (slide 59)

- Main breeding and hibernating habitats are open woodland and wood edges.

Brimstone (slide 60)

- Can be found in scrubby grassland, woodland, gardens and waste ground.

Peacock (slide 61)

- A common butterfly found in a range of habitats.
- Red wings with black markings and distinctive eye spots which evolved to startle or confuse predators.

Orange Tip (slide 62)

- Common and widespread in the UK.
- Prefers damp habitats such as meadows, woodland glades, hedgerows and the banks of streams and rivers, but also visit gardens.

Red Admiral (slide 63)

- This distinctive butterfly can be found in almost any habitat.

Wood White (slide 64)

- A small and dainty white butterfly with a slow flight.
- Usually found in sheltered places such as woodland glades or scrub.

Pearl Bordered Fritillary (slide 65)

- Found in woodland clearings or rough hillsides with bracken.
- Flies close to the ground, stopping regularly to feed on spring flowers.

Beetle

Black-headed Cardinal Beetle (slide 66)

- A rare beetle found in woodland, grassland, farmland, towns and gardens in the Weald.

Birds

There is a huge variety of bird species in the Weald. For a more comprehensive look at the bird species to be found in Sussex please see the dedicated lesson plan. Here we focus on some of the species you are most likely to see in the Weald:

Woodcock (slide 67)

- A large bulky wading bird with short legs and a long bill.

Reed Warbler (slide 68)

- In the summer, they can be seen in reedbeds.
- They sing from within the reedbed rather than from a perch, so are often heard rather than seen.

Lapwing (slide 69)

- Found on farmland and wetlands.
- Its name describes its wavering flight.
- Has suffered a decline in recent years and is now a **Red List** species.

Buzzard (slide 70)

- The most common and widespread bird of prey in the UK.
- Found in most habitats.
- A fact sheet on the buzzard can be found here:
<http://ypte.org.uk/factsheets/buzzard/overview>

Sparrowhawk (slide 71)

- A small bird of prey that breeds in woodland but also visits gardens and open countryside.

Kestrel (slide 72)

- Found in a wide variety of habitats, from moor and heath, to farmland and urban areas.

Mistle Thrush (slide 73)

- Large thrush which lives in open country.

- Its melodious and fluty song is similar to that of the blackbird.

Chiffchaff (slide 74)

- Can be seen in most habitats from gardens to parks and woodlands.

Willow Warbler (slide 75)

- Small birds that are similar to the chiffchaff but have a different song - a beautiful liquid warble that rises in volume.

Song Thrush (slide 76)

- A familiar garden song bird whose numbers are declining seriously.

Blue Tit (slide 77)

- Common in woodland, hedgerows, parks and gardens.
- See here for a factsheet:

<http://ypte.org.uk/factsheets/blue-tit/overview>

Coal Tit (slide 77)

- Less colourful than the blue tit. Has a smaller and more slender bill which means it can feed more successfully in conifers.
- Found in woodland, especially conifer woods, parks and gardens.

Green Woodpecker (slide 78)

- Have an undulating flight and a loud, laughing call.
- For more information on the green woodpecker, please see:

<http://ypte.org.uk/factsheets/woodpecker-green/overview>

5. HUMAN IMPACT: PROTECTING THE WEALD

As in many countryside areas throughout the UK, people are having an increasing impact on the landscape and ecology. Growing populations means increased pressure for developments such as housing and roads. Farming is becoming increasingly **intensive** resulting in the growing use of large machinery and changes in agricultural practices.

These changes are all happening in the Weald and they threaten the plantlife, animals, landscape and character of this unique area.

Protecting the Weald

In response to these threats, many areas of the Weald are now protected and measures are in place to limit damage:

High Weald AONB

Slide 80: The High Weald was designated as an **Area of Outstanding Natural Beauty (AONB)** in 1983. AONBs are designated by the government in order to conserve and enhance areas of natural beauty. The High Weald is special for a number of reasons:

- It is one of the best surviving medieval landscapes in Northern Europe
- It is crisscrossed by sunken droeways
- It harbours gills (small, steep-sided streams) with rare plant populations not found anywhere else in eastern/central England.

Ashdown Forest (slides 81-82)

- Covers an area of approximately 10 square miles
- A patchwork of heather, gorse, bracken, trees and open ground
- Despite its name, woodland makes up less than 40% of its total area and it is actually one of the largest area of lowland heath in south-east England
- Ecological importance recognised by its designation by the UK government as a **Site of Special Scientific Interest (SSSI)**, a **Special Protection Area (SPA)** for birds and a **Special Area of Conservation (SAC)** for its heathland habitats.
- Famous as the setting for the Winnie-the-Pooh stories written by A. A. Milne, who lived on the northern edge of the forest and took his son, Christopher Robin, walking there.

SSSIs

There are 50 Sites of **Special Scientific Interest (SSSI)** within the High Weald AONB.

Nature Reserves

Slide 83: There are numerous nature reserves in the Weald owned by organisations such as the National Trust, RSPB, Woodland Trust and the Forestry Commission. Sussex Wildlife Trust manages 4,500 acres of nature reserves and many of these are in the Weald. Wildlife-rich ancient woodland is a key feature of many of the Weald's nature reserves.

6. HUMAN IMPACT: FRACKING IN THE WEALD

What is Fracking?

Slide 84: Gas held within shale beds can be accessed through a technique called hydraulic fracturing or "**fracking**". The process involves drilling a borehole vertically for about 2 km which is lined with a steel and concrete casing. Horizontal drilling then stretches the well along the gas bearing shale layer and explosive charges are used to perforate the casing here. A mixture of water, sand and chemicals is then pumped through the borehole at high pressure. The mixture is forced through the perforations in the casing, causing the shale outside to fracture and so release the gas.

The right geology is key to the success of fracking and the British Geological Survey has found that the best shale oil prospects are in southern England, in the Weald Basin between the north and South Downs.

Environmental Impacts of Fracking

New rules mean that fracking companies have to closely monitor and report seismic (earthquake) activity, as well as potential water and air pollution. But there remain serious concerns about the environmental impacts of fracking.

Slide 85: Sussex Wildlife Trust is very concerned about the impact fracking could have on the species and habitats of Sussex. It is a very controversial issue and many local residents are concerned about the impacts fracking will have on the Weald. Some of their concerns include:

- Pollution of ground and surface water
- Increased stress on the region's water resources
- Road congestion and noise
- Air pollution
- Local ecological damage
- Minor earthquake damage
- Industrialisation of rural areas
- Increased greenhouse gas emissions contributing to climate change.

7. SUGGESTED ACTIVITIES

(linked to Science National Curriculum requirements)

Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other (*Year 2, Living things and their habitats*).

Choose a plant or animal that lives in the Weald. Produce a fact file on your species and try to include photographs and sketches where possible. Your factfile should address the following questions:

- What does your species look like?
- What habitat(s) is it found in?
- What does it need for its survival?
- How is it suited/adapted to the habitat it lives in? Think about the climate, food sources etc.
- Are there any plants or animals that depend on your species for their survival?
- Are there any threats to its survival (natural and/or human)?

Identify and name a variety of plants and animals in their habitats (*Year 2, Living things and their habitats*).

If possible, visit an area of the Weald to observe the animal and plant life at first hand in its natural habitat. Possible areas to visit include woodland and heathland at Ashdown Forest. Try to identify as many different plants and animals as possible and take photographs of any that you cannot identify, so you can find out what they are back at school. Produce a guide on 'The Plant and Animal Life of.....', so that visitors to the area can learn all about the local wildlife.

Recognise that environments can change and that this can sometimes pose dangers to living things: Pupils should explore examples of human impact (both positive and negative) on environments (*Year 4, Living things and their habitats*). Find out more about how human actions are having a positive impact on the environment of the Weald.

Find out about fracking and why it is being considered in the Weald. Research how fracking may bring benefits to the local area and how it may cause damage to the environment. Hold a class debate to decide whether you all think fracking should or should not be allowed to take place in the Weald.

