

SECTION ONE

The Great Flood, 1607

Plot on a map how far inland the water reached. Design your own woodcut picture to show the 1607 flood. Fake news? **pp. 26 – 29**



FOOTPRINTS MADE BY A WANDERING ROE DEER



SECTION TWO

How did the Levels flood so easily?

And why were some villages safe from the floods? **p. 30**

SECTION THREE

Rising sea levels

How will rising sea levels affect the Gwent Levels in the future? **p. 31**



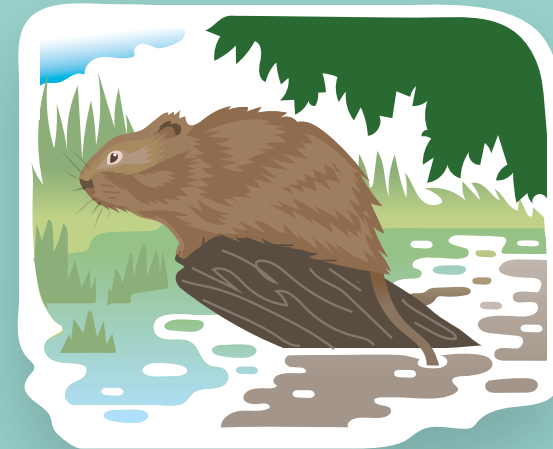
SECTION THREE

Climate change and sea wall

Why does the Gwent Levels have a sea wall? Write your findings up as a report. **p. 32**

THE BIG PICTURE

Image: of the woodcut picture of the Great Flood p. 33



PART TWO

How does the water on the Gwent Levels affect our lives?

The Great Flood, 1607

Watch this short film showing how the landscape changed during the rising waters of the Great Flood and how local people were affected, livinglevels.org.uk/ad1600

The Gwent Levels can be a wet place, particularly during the winter. While many fields have been shaped to let water run off into ditches (reens) and out to sea, heavy rainfall and snowmelt in the winter can mean some fields flood.

This can be good for wildlife such as ducks and waders, and more challenging for farmers and their grazing animals.

In 1607, a huge tidal flood covered the Gwent Levels, inundating farmland, low-lying houses, churches, and grazing areas for sheep and cows. Sea walls were unable to hold the water back. Today, you can visit some of the churches and see where local people marked the height of the floodwater (see 'flood marks and plaques' on p. 29).

ACTIVITY

Where did the waters flood?



Plot on a map how far inland the water might have reached.

- Low-lying villages or hamlets such as Peterstone, St Brides, Goldcliff, Whitson and Nash became flooded.
- Settlements on higher ground above the Gwent Levels didn't flood – they included Marshfield, Bassaleg, Magor and Undy – but their low-lying farmland did.

INTERPRETING DATA

ACTIVITY

Evidence for the storm surge



This provides a great opportunity to discuss the differences between a tidal surge and a tsunami – both of which have been in the mainstream news in recent years in different parts of the world. Look at the definitions of the two types of events that could cause flooding and discuss why the 1607 event is thought to be a storm.

- A **tsunami** is caused by a sudden movement of water which travels as a large wave across its surface. The movement could be due to a landslide, falling ice from an ice sheet, a volcanic eruption or an earthquake.
- A **tidal surge or storm surge** is where a combination of events causes the sea to be higher than normal, sometimes flooding places where it would not usually reach.

PROBLEM SOLVING

Did the Great Flood happen in 1607 or 1606?

The great tidal flood of 20 January happened at a time when the annual calendar in Wales and England began on 25 March (Julian Calendar), and so many people refer to this as

the year 1606 rather than 1607. To the French the flood happened on 30 January 1607. France used the Gregorian Calendar, which forwarded the old-style Julian Calendar dates by ten days; France started its official year on the 1 January, its New Year's Day. Since changes to the UK calendar in 1752, today we would also record the date of the flood as 30th January 1607.



A tidal surge

There have been claims in the past that the Great Flood was caused by a tsunami following an underwater earthquake off the coast of southern Ireland. However, the clues point overwhelmingly to a powerful storm with a combination of:

- A very high 'spring' tide just after a new moon;
- Strong westerly/south-westerly winds;
- Low-pressure weather allowing the sea to be higher than usual.

Today, floods such as this may become more frequent, and while we are good at getting the water out through the ancient drainage systems, a big flood can still cause problems for people and their grazing animals. Wildlife is much better able to cope and can recover more quickly.

News of the Great Flood

After the Great Flood, news slowly reached other parts of the UK and Europe. In the 1600s there were no phones, email or televisions.

News travelled on horseback or by carriage back to London. A report was written and an artist made an illustrative picture using wood carvings. These same pictures were replicated in different countries with slight differences. Like today, news stories became exaggerated or altered, and fake news found its way into some of them.

The story of the Great Flood was told through four printed pamphlets which came out once a week and covered different parts of the west of Britain such as Somerset, Gloucestershire and the Gwent Levels.

An image of the flood in 1607

One of these pamphlets told stories from Monmouthshire in South Wales, which included the Gwent Levels. The front cover included the woodcut image shown in this resource (p. 33). This had previously been used in a pamphlet about the floods in Somerset and through the use of the tower and spire depicts all churches. The imagery is deliberately exaggerated to get across the message of an exceptional flood. This helped to sell the pamphlet, and also tell the story to those who could not read.



A good book to read

The Candle Man
by Newport-born author
Catherine Fisher
(9–11 years)

This fiction book includes lots of local places and geography.

Meurig, the fiddler, is a haunted man. Hafren, the evil spirit-woman of the Severn, has captured his soul and now possesses the key to his life – a small candle stub. Hafren taunts and torments Meurig but with help from Conor and Sara, he CAN take back his life from her watery grasp – at the cost of flooding the land. Meurig must make his choice – his life or the village...

ACTIVITY

Designing a woodcut picture



Students could design their own woodcut to tell the story of the 1607 flood; this could then be created as an art project. Sheets of 5mm thick polystyrene and a biro, a lino cutter and a piece of lino, or a clay tile could all be used to create a relief and print, in a similar way to a woodcut. Students will need to remember to cut out the sections that they don't want to show up on the final print.

WORKING CREATIVELY

ACTIVITY

Woodcutting

How did woodcutting work? How long would a woodcut image have taken to produce? How would we produce an image today?



CURIOS QUESTIONS TO EXPLORE



Flooded farmland on the Somerset Levels on the other side of the Severn.
ED DREWITT

Writing in the pamphlets

Below are some examples of the writing from a pamphlet to give an idea of the language and the stories being told.

The pamphlet begins with a message from the unnamed author, which is followed by a long, mainly religious, introduction. This was quite usual as disasters such as floods, fires and earthquakes were regarded by many people as punishments sent by God, while others put the surge down to the state of the tide, the phase of the moon and the storm.

LAMENTABLE NEWS OUT OF MONMOUTHSHIRE IN WALES

containing the wonderful and most fearful accidents of the great overflowing of waters in the said county, drowning infinite numbers of cattle of all kinds, as sheep, oxen, kine and horses, with others: together with the loss of many men, women and children, and the subversion of 26 parishes in January last 1607.

TO THE READER

Reader, when this news was brought to London, I was given less than one day to write it in this pamphlet. I am sure that you will benefit from it, and will remember that God sends such floods to punish the sinful people who enjoy pleasures and pastimes rather more than the worship of God. Amen.

WOEFUL NEWS FROM WALES

...In the month of January last past upon a Tuesday, the sea being very tempestuously moved by the winds, overflowed his ordinary banks, and did drown 26 parishes adjoining on the coast side, in the county of Monmouthshire, the particulars whereof do follow: all spoiled by the grievous and lamentable fury of the waters.



Stories from the pamphlet

“Now all kinds of cattle for 24 miles in length and 4 in breadth were drowned. Ricks of corn were carried away. The sea damaged many houses and caused great hardship for the inhabitants. This damage, together with the loss of animals and crops, is said to be valued at more than £100,000. The flood has happened in the most fruitful place in the whole country for the soil is very rich.”

“A man and woman climbed a tree to escape the waters, and a four-year-old girl was put up into the rafters of her house to keep dry. A cradle containing a baby and a cat floated on the waters like it was a small boat... At Llandaff, Mistress Mathews lost 400 sheep in the floods.” The 400 sheep lost by Mistress Mathews at Llandaff are likely to have been inside a sheephouse where the animals were often put during the winter months.”

“The number of people drowned does not exceed 2,000. Many were saved by the kind efforts of Lord Herbert (son and heir to the Earl of Worcester), and Sir Walter Montague who dwell nearby. They sent rescue boats and food. Lord Herbert and Sir Walter Montague were among the wealthiest men in the area and they deployed rescue boats and food to those stranded by the floods.”

Fake news or the truth?

As news of the flood had to travel to London by word of mouth or letter, sometimes the facts were distorted. The author was not entirely sure of the date, although he knew it happened on a Tuesday in January. He mentions the strong winds ‘tempestuously’ moving the sea; these are noted in several other accounts written by pamphleteers and chroniclers, and also by vicars who witnessed the event. The storm associated with these south-westerly winds coincided with an extremely high spring tide, and the well-educated vicars of Almondsbury and Arlingham (Gloucestershire) make mention of this.

How accurate are reports of the flood?

The pamphleteer's job was to sell pamphlets, and sensational reporting was quite normal.

Encourage students to look at the picture on the pamphlet and read some of the stories. The person producing the pamphlet would want to sell as many as possible. How would the pictures and the stories make people want to buy the pamphlet? Read the text carefully. What can you find to show you that the writer could be exaggerating for effect? What questions would you like to find out the answers to, in order to assess whether the information is accurate?

Find a modern newspaper article that reports on an event. How is the story written differently? How does the reporter convince you that the story is true? This could develop into a discussion about how students can trust information that is presented to them in newspapers and on the internet. More able learners could be taught about how to assess which websites are reliable and where they can get their information from.

Further information

- The stories related in the pamphlet generally give no location. They are similar to those told in other pamphlets.
- 'Cattle' was a description used for all livestock, so the animals lost would have included sheep, horses and oxen too (the latter being used for transport and to work the land).
- The estimate of £100,000 for the losses and damages is a guess; the parish losses at Goldcliff were £5,000 according to the plaque in its church. Similarly, the number of people drowned is an estimate, one that was revised in a later pamphlet to 500.
- Insufficient records survive to verify the extent of the fatalities, but these were relatively sparsely populated areas, and the number of people who lost their lives at Goldcliff was 22.

CURIOUS QUESTIONS TO EXPLORE

Cardiff

Cardiff was also affected by the Great Flood of 1607. The River Taff surged inland and flooded St Mary's parish, north-west of the city centre. The tidal surge pushed into the church

which eventually collapsed and was rebuilt elsewhere in 1840. Churchgoers had to move to St John's Church for 200 years – this would have been a big thing back then and everyone would have been aware of why.



Rose Hewlett
UNIVERSITY OF BRISTOL

Rose is researching the Great Flood for her PhD. Using original manuscript records created at local level in its aftermath, she will provide the most representative account of its cause, and the effect it had on people and the local economy.

Writing a leaflet

Write and design a modern-day leaflet telling the story of the Great Flood. Include:

- Key features that made it a storm surge and not a tsunami;
- How people were affected;
- How farm animals and wildlife were affected;
- A picture showing the Great Flood.

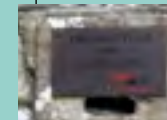
WORKING CREATIVELY

1607 flood marks and plaques

The great tidal flood of 20 January happened at a time when the annual calendar in Wales and England began on 25 March, and so many people referred to the year as 1606 rather than 1607.

Many of the churches on the Gwent Levels have plaques which commemorate the Great Flood in detail. Those at Goldcliff and St Brides go into detail and were made soon after it happened. Not all church plaques (for example, at Nash) reveal the true depth of the flood water and some were put up at a much later date.

The depth of water is best understood in relation to the churches and the ground level outside them. During the flood the depth of the water was between 1.2m and 1.5m in the immediate vicinity of some churches, and then higher or lower than that depending on the local landscape. It is difficult to be more precise because of the topography. Churches tended to be built on slight rises of land, as did farmhouses.



Nash

At Nash there is a tradition of parish children being taught that a slot in the wall of the church marked the height of the 1607 floodwater. A commemorative plaque was installed on the 400th anniversary of the flood.



Redwick

Redwick church has two flood marks at slightly different heights; that at the end of the chancel wall is older and thought to relate to the actual height of the 1607 flood. The plaque on the porch is twentieth century.



Goldcliff

This plaque at Goldcliff church shows the true height of the floods at this location in 1607.

Why were some villages safe from the floods, and how did the Levels flood so easily?

Severn Estuary at low tide
JEREMY WHITE



On the Gwent Levels, as you move inland from the sea, the land doesn't rise upwards at first. Instead the land slopes downwards. Therefore, those fields closest to the sea are naturally drier than fields several kilometres inland, where the water collects.

For example, while Magor village is on higher ground, an escarpment, Magor Marsh is on lower ground and at the base of where the fields slope downwards. Here the water collects, forming pools and bogs, which are important for rare plants and animals. Closer to the sea, the fields are dry. When floods have occurred in the past, it has been very difficult to get the water back to the sea again. Once the sea floods over the sea wall, it collects in the downward-sloping areas.

Tredegar House, Newport

Some historic evidence relating to flooding at Tredegar House might spark some further ideas or an opportunity for a visit:

- Evidence of historic flooding in the house still exists with steps leading up to the ground floor family rooms suggesting they wanted these above ground levels where water could accumulate.
- The park here still flooded until relatively recently (1980s/1990s) when a watercourse was changed. The estate cottages would regularly flood. The estate also has a man-made lake.
- There is reference to the Morgan family, who lived here, being involved in the construction of the sea wall in the medieval period.

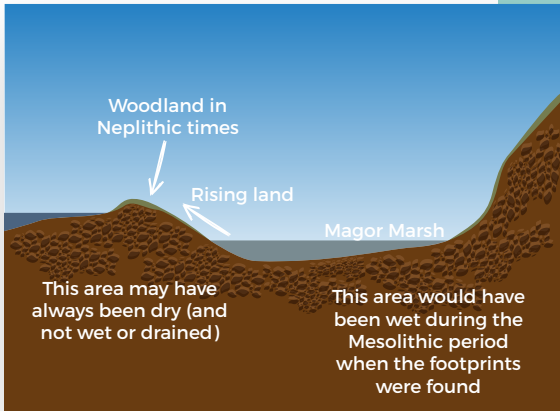
Severn Estuary and its high tides

The Severn Estuary, which borders the south-west side of the Gwent Levels, has the highest tidal range in Europe and the second highest tidal range in the world – the highest is in the Bay of Fundy, Canada.

Low tide is when the water drains out of the Severn Estuary, exposing the mud, rocks and seaweed. High tide is when the water rises and covers everything back over. Two of each occur in every lunar day, 24 hours and 50 minutes.

The tidal range is the difference in the water height between low tide and high tide. When the tide is high, for example on a spring tide, the Severn Estuary's sea can be really high – up to 14m or more above that at low tide. Saltmarsh, a habitat covered in salt-loving plants, will become partially covered by the sea and fully covered during very high tides. Without sea walls, spring tides would flood onto farmland too.

A spring tide happens when the moon is full or new; the moon, alongside the sun, affects the difference between high and low tide. A full or new moon creates the greatest upward pull on the sea, like a magnet, generating very high levels of water at high tide, and very low levels at low tide. They occur twice in each lunar month.



A cross section of the Gwent Levels, including Magor, during the Mesolithic Period



Sea wall and rising sea levels

Ducks, such as wigeon, rest and feed on flooded farmland.

ED DREWITT



Rising sea levels

Many towns and cities in Wales are on the coastline and 60% of the population in Wales lives by the sea (1.9 million people). Many settlements were originally built in places where the high tide was much lower than it is today. With sea levels and high tides now much higher, some places are vulnerable to flooding compared to 1,000 to 2,000 years ago.

Our changing climate is linked to global warming, melting glaciers, rising sea levels and greater (and heavier) rainfall. This means there are big changes for us and wildlife ahead



Things to consider:

- More frequent and severe storms;
- Heavy downpours;
- Higher tides;
- Rising water levels;
- Effects on people – flooding of properties and farmland (and effects on people and their wellbeing), erosion of beaches, roads and railway lines, tourists not visiting affected areas, costs of making changes to the coastline;
- Effects on the environment – changes to places where wildlife lives, providing new places for some wildlife and fewer places for others;
- Archaeology – peat cuttings and submerged ancient forests being revealed and uncovered. Drier summers revealing ancient medieval and Roman settlements on farmland;
- Solutions – use of sea walls and other coastal defences, allowing farmland to flood and return to nature (planned retreat), monitoring changes in how the coastline looks, removing large amounts of litter that build up on beaches after storms, forecasting/modelling the impacts of storms;
- Building sea walls may seem like a good solution – however, sea walls are costly, and if they are too high a freak storm can make getting water back out again incredibly difficult.

SECTION THREE

For more information on the historic drainage system and the sea wall visit livinglevels.org.uk/the-historic-drainage-system

ACTIVITY

Sea wall

- Why does the Gwent Levels have a sea wall? Discover what it has been made from over different periods of time.
- Write your findings up as a report. How would you build a sea wall today and why?
- You can walk some of the sea wall along the Newport Coast Path, newport.gov.uk/documents/Leisure-and-Tourism/Newport-Coast-Path-Map-English.pdf

APPLICATION OF KNOWLEDGE

Fascinating facts/stories to add in this section

In the 1846 flood a mail coach tried to cross the bridge over the River Rhymney. One horse drowned and the main route to Cardiff was blocked. People in Swansea were unable to receive their post.

There have been other floods in: 1258, 1483, 1703, 1846 and 1883. **Are you able to list and find out about floods in the 1900s and 2000s?**

History of the sea wall

During the early medieval period (1,500 to 1,000 years ago), the sea wall on the Gwent Levels started life as a succession of raised banks. People built their own small islands of protected land slightly above the watery channels, where they were able to have a small settlement – a home and area for

ACTIVITY

Thinking about climate change

Chair a class debate about how flooding is now more frequent, why and what we should and could do to stop this.

- What can we all do to reduce global warming?
- How will our changing climate affect sea levels here in South Wales?
- Will sea walls be able to hold back the sea?
- What is Natural Resources Wales doing to reduce flooding?
- What might happen in a modern flood?
- How might this area look flooded today and who would it affect?
- How would wildlife cope? Many animals are adapted to this regular flooding, although not to this extreme.
- What causes such floods?
- Where does water from inland come from? (mountains/Brecons)
- Why did people build where they did?
- What would happen if the Gwent Levels didn't have the drainage ditches such as reens?

What might this mean for us and how we build our homes?

- In the Netherlands, which is built on land that was once covered in sea, homes have the living space on the first floor above the garage on the ground floor. If there is a flood only the garage and garden are affected. Explore other technologies being developed to raise homes above the ground.
- Locally, storage warehouses have everything above ground on shelving units so if there is a flood, the water can be easily mopped up and the ground dried.
- A new hospital for Newport is being built on higher ground to avoid future floods and high tides.

CURIOS QUESTIONS TO EXPLORE

grazing – during the summer months. These still flooded in the winter. Over time, the small islands of land grew in size allowing people to remain all year; gradually the raised banks amalgamated and formed one long barrier to keep the sea out. Some of the Levels' original sea wall is kilometres out into the Severn Estuary and would have been wiggly rather

than today's smooth, relatively straight wall. As the sea has risen the sea wall has been rebuilt several times in new places. Today, where the sea wall runs you can see where fields have a triangular shape – look on Google maps to see. They would have extended further out into the estuary and parts of them have since been washed away by the tides.

Image of the woodcut picture of the Great Flood

This front cover was used in a pamphlet about the floods in Somerset with the tower and spire representative of all churches. It was used again for the pamphlet about the floods in Monmouthshire. The imagery was used to convey as many aspects of the contents of the pamphlet and an exceptional flood.'

Discuss what different things are happening in the picture. What animals are shown? What are different people doing?

How does the language differ to ours today?

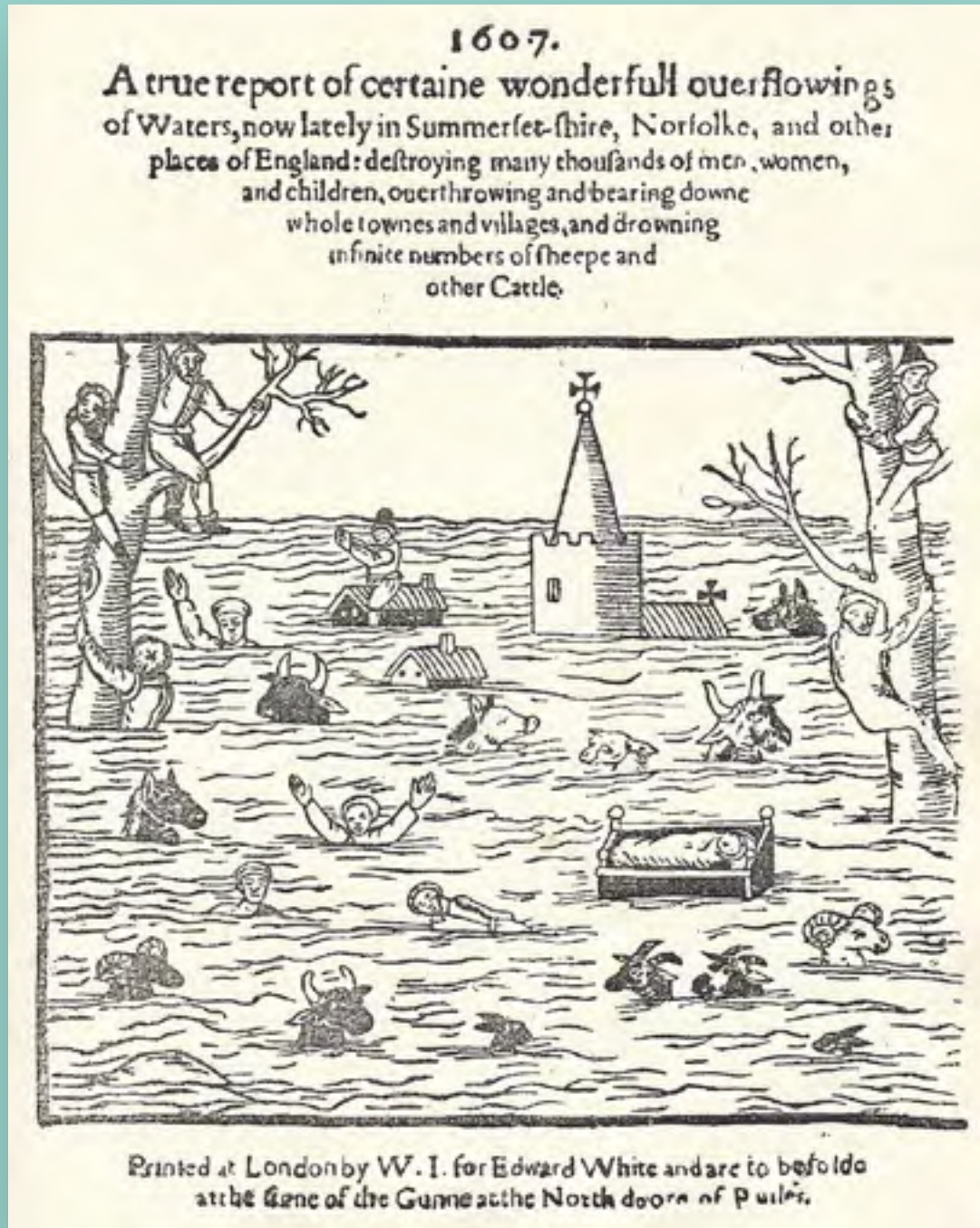


IMAGE COURTESY OF STEPHEN RIPPON