

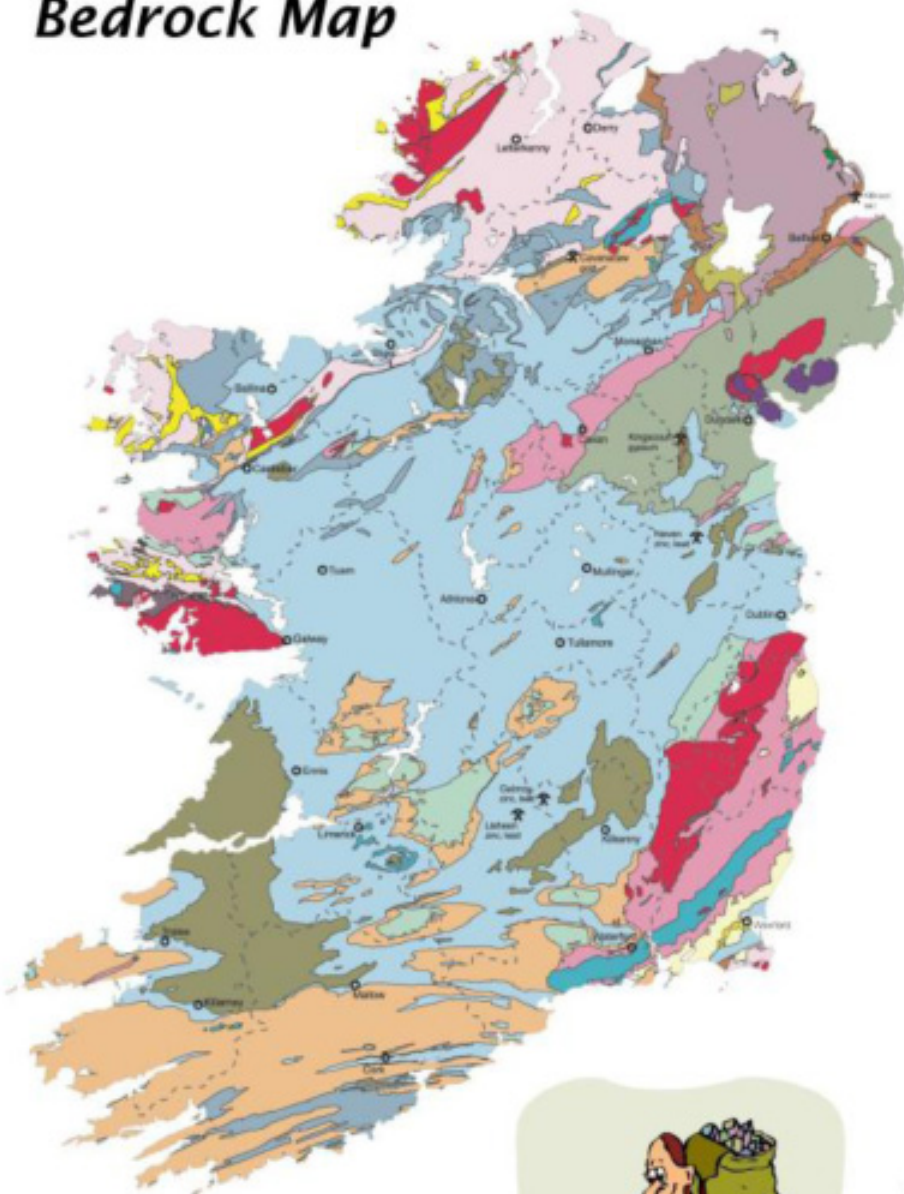
# Rocking Around Ireland















BURREN AND CLIFFS OF MOHER



PEOPLE. PLACE. LEARNING. LIVELIHOOD.

## Bedrock Map



-  Clay (35 m.y.)
-  Basalt (60 m.y.)
-  Granite & gabbro (<65 m.y.)
-  Chalk (70 m.y.)
-  Sandstone (220 m.y.)
-  Volcanic rocks (>300 m.y.)
-  Sandstone & shale (318 m.y.)
-  Limestone (330 m.y.)
-  Sandstone (380 m.y.)
-  Sandstone & shale (420 m.y.)
-  Granite (400-450 m.y.)
-  Gabbro (450 m.y.)
-  Shale & sandstone (460 m.y.)
-  Sandstone and slate (520 m.y.)
-  Schist & gneiss (>540 m.y.)
-  Working mine

(ages are given in millions of years (m.y.))

**GEOLOGY ROCKS!**



# ROCKING AROUND IRELAND



Q. Name three counties in Ireland where you find large areas of granite. \_\_\_\_\_  
\_\_\_\_\_

Q. There is only one area of basalt in Ireland. How old is it? \_\_\_\_\_  
\_\_\_\_\_



Basalt at the Giant's Causeway

Q. What makes the basalt at the Giant's Causeway so interesting? (hint: look at the picture!)  
\_\_\_\_\_  
\_\_\_\_\_



Carrauntoohil

Q. Carrauntoohil is Ireland's highest mountain. What rock is it made of? \_\_\_\_\_  
How old is it? \_\_\_\_\_

Q. What is the only county in Ireland where you can find chalk deposits? \_\_\_\_\_

Q. What rock type lies under the following towns and cities:

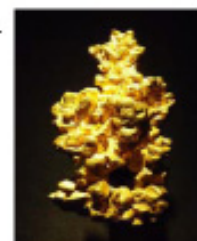
Belfast \_\_\_\_\_ Ennis \_\_\_\_\_  
Dublin \_\_\_\_\_ Letterkenny \_\_\_\_\_

Q. How many different rock types are there in County Clare? \_\_\_\_\_

Q. In what county is Ireland's only gold mine? \_\_\_\_\_

Q. What other minerals and metals are mined in Ireland (name four)?  
\_\_\_\_\_

Q. What county in Ireland do you think has the most complicated geology? Why? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# ROCKING AROUND IRELAND



The map on this page shows the highlands and lowlands of Ireland. Use this map with the Geology Map to answer these questions.

Q. What do you notice about areas of sandstone? Do they tend to form mountains or lowlands? \_\_\_\_\_  
Why do you think this is? \_\_\_\_\_

Q. What do you notice about areas of limestone? Do they tend to form mountains or lowlands? \_\_\_\_\_  
Why do you think this is? \_\_\_\_\_



Highlands = mountains  
Lowlands = plains and river valleys

# Bedrock Geology Map - the Burren

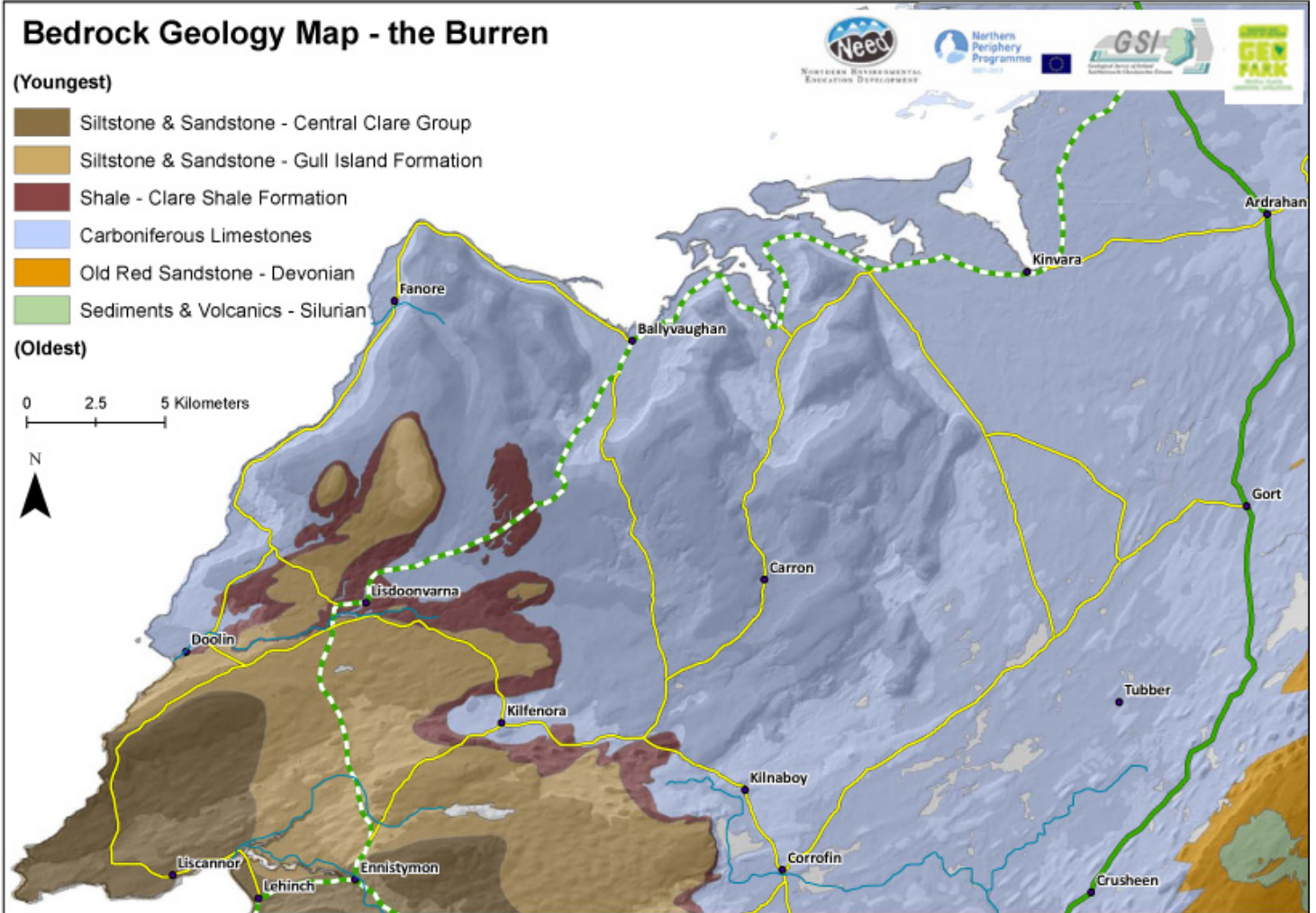


(Youngest)

- Siltstone & Sandstone - Central Clare Group
- Siltstone & Sandstone - Gull Island Formation
- Shale - Clare Shale Formation
- Carboniferous Limestones
- Old Red Sandstone - Devonian
- Sediments & Volcanics - Silurian

(Oldest)

0 2.5 5 Kilometers



# The Rocks of the Burren and North County Clare

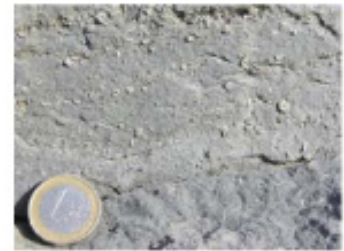
Look at the Bedrock Geology Map of Ireland and the Bedrock Geology Map of The Burren

Q. What is the most common rock type in the Burren and north Clare

---

Q. What age is the limestone in the Burren and north Clare

---



Q. What rock type is older - limestone or shale?

---

Crinoid Fossils in Limestone



Limestone erratic at Doolin.  
Cliffs of Moher in background

Q. Can you name one town/village that is located mainly on shale?

---

Q. Can you name one town/village that is on the boundary between the limestone and shale/siltstone/sandstone?

---

Q. Why is there no siltstone and sandstone found in the north part of the Burren?

---



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# READING THE ROCKS



Use this table to describe your rocks. We have listed 7 ways to describe them. Can you think of any more? (use the bottom row of the table)

Colour of paint spot on rock			
Colour			
Grains	Colour		
	Size		
	Shininess		
Roughness			
Crumbliness (rub with sandpaper)			
Reacts with acid			



Q. Which rock do you prefer and why?

---



---

Q. How would you describe this rock to your friend?

---



---



---



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# READING THE ROCKS



Your teacher will now tell you the names of your rock samples.  
Write these names in the table below.

Look at the geological map of Ireland and fill in the rest of the table.

Colour of paint spot on rock		
Scientific name		
Is it a common rock in Ireland?		
How old is this rock in Ireland?		

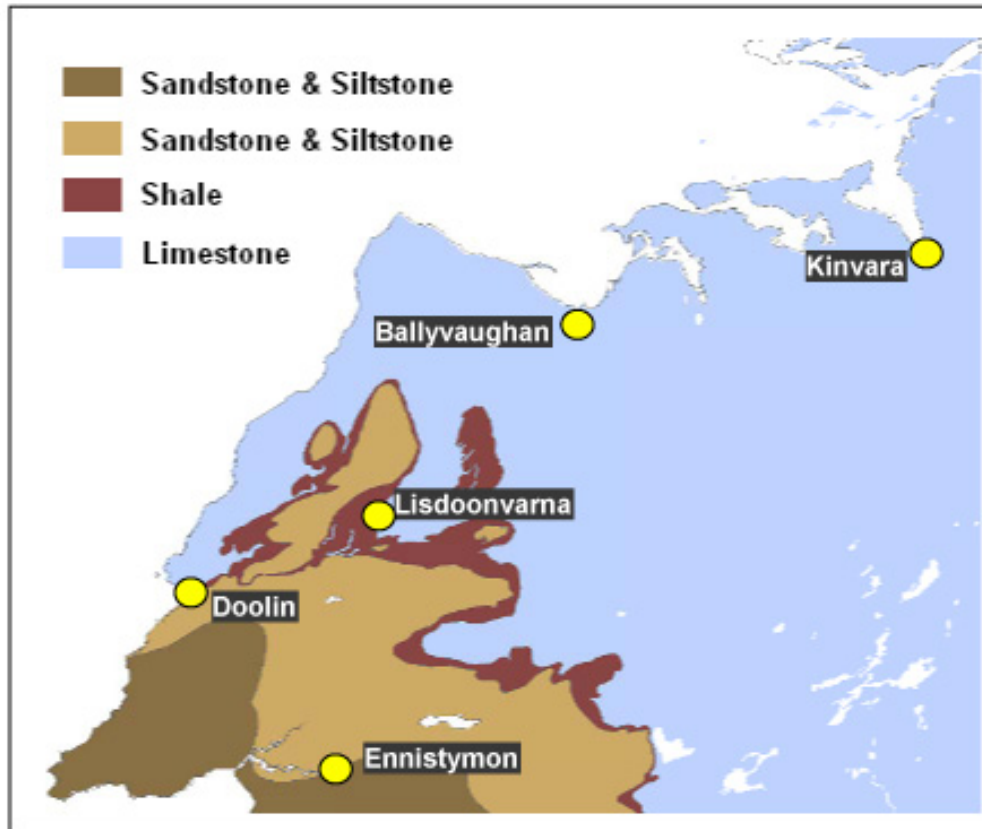


# THE ROCKS UNDER MY FEET



This map shows where the three main rocks in the Burren region are found. They are:

- > LIMESTONE
- > SHALE
- > SANDSTONE & SILTSTONE







# LIMESTONE



## Chemistry Experiment:

Put a drop of dilute HCl acid onto a piece of limestone - and see what happens....



Q. What happens when you put a drop of dilute HCl acid on limestone? \_\_\_\_\_

\_\_\_\_\_

Q. Why do you think this is? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Q. Could this happen naturally outdoors? \_\_\_\_\_ If so, how?

\_\_\_\_\_

\_\_\_\_\_

Q. How might this affect the Burren limestone landscape in the far off future? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Missing Word Puzzle



The Burren limestones were formed in a \_\_\_\_\_ environment, during the \_\_\_\_\_ time period. At this time, sea-level was \_\_\_\_\_ than it is today. This is because the Earth was in the middle of a great \_\_\_\_\_ age. The Burren limestones were deposited when Ireland was \_\_\_\_\_ of the Equator.

Limestone is composed of the mineral \_\_\_\_\_ - \_\_\_\_\_. The Burren limestones were formed from layers of the \_\_\_\_\_ parts of sea-creatures. Sometimes these parts are visible today in the rocks – these are called \_\_\_\_\_.

The limestone layers are sometimes separated by thin layers of \_\_\_\_\_ which was laid down on top of the limestone when sea-level \_\_\_\_\_.

Layers of a dark grey and black coloured rock, called \_\_\_\_\_ also formed between the limestones. The limestones stopped forming when sea-level rose around 326 million years ago.

**WORDS:**      HARD    SOUTH    LOWER    ICE  
                  CALCIUM-CARBONATE      FOSSILS    CHERT  
                  MARINE      MUDSTONE    CARBONIFEROUS    FELL



# SHALE



## Chemistry Experiment:



Examine a piece of shale with your eye. Next drop some dilute HCl onto the rock and see what happens! Next rub the rock with sandpaper...

Q. What happens when you put a drop of dilute HCl acid on shales? \_\_\_\_\_

\_\_\_\_\_

Q. Why do you think this is? \_\_\_\_\_

\_\_\_\_\_

Q. Does the rock scratch easily? \_\_\_\_\_

\_\_\_\_\_

Q. Name an extinct animal that can be found as a fossil in the Clare Shales?

A. \_\_\_\_\_

Q. Name a living creature that is related to this fossil?

A. \_\_\_\_\_

\_\_\_\_\_



## Missing Word Puzzle

Shale is a \_\_\_\_\_ rock, which means it forms from compacted particles of other rocks. Shale is a \_\_\_\_\_-grained rock. The Clare Shales are a \_\_\_\_\_ colour. This is because they formed in an environment that had very low \_\_\_\_\_ levels.

In the 1940s the mineral \_\_\_\_\_ was extracted from the shales by people in the Burren for making chemical \_\_\_\_\_.

Shale is only found at the surface in the Burren along a narrow band. This is because it has been \_\_\_\_\_ in the north and because it is \_\_\_\_\_ by the sandstones and siltstones in the south.

WORDS: COVERED FINE FERTILISER ERODED  
PHOSPHATE OXYGEN SEDIMENTARY BLACK

# SANDSTONE & SILTSTONE



## Chemistry Experiment:



Examine a piece of sandstone and siltstone with your eye. Next drop some dilute HCl onto the rock and see what happens! Next rub the rock with sandpaper...

Q. What happens when you put a drop of dilute HCl acid on sandstone? \_\_\_\_\_

\_\_\_\_\_

Q. Why do you think this is? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Q. Does the rock scratch easily? \_\_\_\_\_

\_\_\_\_\_

Q. Name a famous type of Flagstone that is quarried near the Cliffs of Moher?

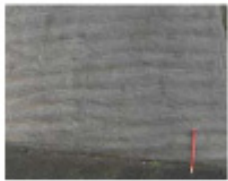
A. \_\_\_\_\_



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## Missing Word Puzzle



The Burren sandstones and siltstones were laid down in the sea by a large \_\_\_\_\_ at the mouth a great river system.

The sandstones and siltstones were deposited when sediments were washed into the \_\_\_\_\_ after huge \_\_\_\_\_ happened on land. Mudstones were also deposited when the seafloor was calm. We can still see evidence of sea current in the \_\_\_\_\_ left in the mudstones.

There is also evidence of life on the seafloor from the \_\_\_\_\_ trails left in the fine grain sediments.

As more and more sediments were deposited, the sea became \_\_\_\_\_. \_\_\_\_\_-level rose and fell five times. We know this because of repeating units of sandstone and siltstone visible in the Cliffs of \_\_\_\_\_. These units are called cyclothem. The changes were caused by the same \_\_\_\_\_-\_\_\_\_\_ that affected the formation of the older Burren limestones.

WORDS    SHALLOW    FIVE    FLOODS

DELTA SEA    ICE-AGE    RIPPLES

MOHER    SEA    FOSSIL    RIVERS



# WASHING LINE OF TIME



After you have completed the washing line, answer these questions.

Q. In general, do you think you placed the events in the correct order or not? \_\_\_\_\_  
What events did you place in roughly the correct position? \_\_\_\_\_

\_\_\_\_\_

What events did you place far from the correct position? \_\_\_\_\_

\_\_\_\_\_

Q. Which events were hard to place on the washing line? \_\_\_\_\_

\_\_\_\_\_

Why? \_\_\_\_\_

\_\_\_\_\_

Q. Did anything surprise you? \_\_\_\_\_

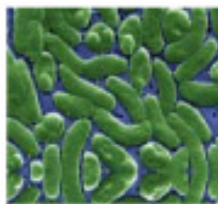
Why? \_\_\_\_\_

\_\_\_\_\_

Q. What was the most interesting thing you learned? \_\_\_\_\_

Why? \_\_\_\_\_

\_\_\_\_\_



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