

# Shore Shapers

ROCKY SHORES ARE GREAT PLACES TO LOOK FOR WILDLIFE BUT HAVE YOU EVER WONDERED HOW ROCK POOLS ARE FORMED?

**Look inside to explore how animals, seaweeds and life forms too small to see with the naked eye, help shape the shore.**



# Shore Shapers

How do living things help shape the shore?

**SHORE SHAPERS** are the living things that help to 'shape' rocks on the shore. Some you can see and some are too small.

Sun, wind, frost, rain, and the sea wear away rock, playing an important role in shaping the shore, as do the things that live there. This is called **geomorphology**.

## THINK OF THE ROCK YOU SEE AS A CAKE!

The type of cake depends on the rock type as softer kinds are easier to sculpt. Shore Shapers help shape the cake.

Waves hitting rocks can cause them to break and move.

Heat from the sun and water from the sea make rocks expand.

Cooling and drying makes them contract.

This breaks rocks slowly over time. Salt in seawater also cracks rocks when it crystallises.

## 3 groups of shore shaper



**Rock eaters** shape rocky shores by eating or dislodging rock particles as they feed.



**Rock borers** are like living drills, grinding or dissolving rock as they excavate a home.



**Rock protectors** form crusts or blanket rocks protecting them from the elements.



**Limpets and snails** graze for food with their hard mouthparts so they EAT the cake, helping to shape it over time.



**Worms, piddocks, bacteria and tiny algae** bore into rock, creating holes and tunnels like Swiss cheese, making the cake light and delicate.



**Larger seaweeds** cover the cake protecting it from the elements and keeping it from getting too dry – like clingfilm!



*See for yourself!*  
On a sunny day, touch some bare rock and some covered by seaweed. How do they feel different?



**Barnacles, tube worms and encrusting pink algae** form a thick icing that protects the cake from the elements.



**LOOK INSIDE TO MEET THE SHORE SHAPERS!**

**WHERE DID YOU FIND YOUR SHORE SHAPERS?**

Draw where you found your shore shapers here.  
Why not take photos to create a shore shapers logbook?

# How hard is your rocky shore?

Rocks are made up of minerals, shells and fossils.

**chalk** and other soft rocks wear down more easily than hard rock.

The type of rock on your shore affects what it will look like and how shore shapers shape it. Softer rocks are home to more shore shapers and borers are usually missing or less active on medium to hard rocks.

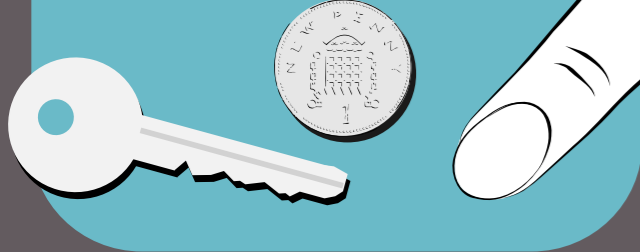
## THE ROCK SCRATCH TEST

Before you begin your hunt, test how hard your rocks are with a **scratch test**. To test how hard your rock is scratch it with:

1. your finger nail
2. a penny
3. a key (a silver coin works too) in that order.

On the key below, tick the SOFTEST test material that scratched the rock. If the key couldn't scratch it your rock is really hard – tick hard.

- SOFT Can scratch with a finger nail
- MEDIUM SOFT Can scratch with a copper coin but not a finger nail
- MEDIUM HARD Can only scratch with a key or silver coin
- HARD Can't even scratch with a key or silver coin (e.g. granite)



**When exploring:**  
Wear sensible footwear. Watch the tide so you don't get stranded. Always go with another person. Shore creatures don't like being poked and prodded or pulled off the rocks! Handle them carefully, leaving rocks and seaweeds as you found them.

# Let the hunt for the SHORE SHAPERS begin!

Use these cards to help find shore shapers and the signs they leave on your rocky shore.



**CHITONS**

Rock Scratch Test

**What am I?** Animals with a shell made of segments that look like a woodlouse.

**What to look for.** Do not leave an obvious trail, so look for them stuck underneath rocks or in pools.

**How I shape the shore.** Graze tiny algae using a toothed 'tongue', called a radula, scraping off pieces of rock at the same time.

**BORING WORMS**

Rock Scratch Test

**What am I?** A few kinds of worms that live in the rocks, catching particles of food with sticky tentacles.

**What to look for.** Tiny (1 mm) pinholes like specks on rock in wetter areas of the shore. Look carefully for small tentacles sticking out of the holes.

**How I shape the shore.** Bore tunnels up to 2 cm deep in rocks using chemicals and strong bristles. This erodes the rock.

**SEAWEEDS**

Rock Scratch Test

**What am I?** Seaweeds grow using energy from the sun and can be red, green or brown.

**What to look for.** Brown, green or red, plant-like growths or crusts attached to rocks.

**How I shape the shore.** Many kinds blanket rocks protecting them from damage by salts, frost and heat.

**LIMPETS**

Rock Scratch Test

**What am I?** Snail-like creatures, with a cone-shaped shell and strong foot to stick to the rock.

**What to look for.** Circles cut into the rock – called home scars and zig-zag grazing trails etched into the rock.

**How I shape the shore.** Graze tiny algae using a toothed 'tongue', called a radula, scraping the rock at the same time.

**PIDDOCKS**

Rock Scratch Test

**What am I?** Two-shelled animals burrowing inside rock, using 2 tubes to feed.

**What to look for.** Small holes in rock up to 1 cm across and up to 5 cm deep.

**How I shape the shore.** Drill into rocks as they grow which weakens rock encouraging damage.

**BARNACLES**

Rock Scratch Test

**What am I?** Relatives of crabs and prawns, many kinds live attached to rocks.

**What to look for.** Dense crusts of white cone-shaped, plated cases that look like tiny volcanos.

**How I shape the shore.** I slow the rate of rock breakdown by protecting the rock from the elements.

**GRAZING SNAILS**

Rock Scratch Test

**What am I?** Topshells and periwinkles are common snails with round or oval openings.

**What to look for.** Scattered scrape marks. Topshells have shiny pearly colour inside, periwinkles are cream coloured.

**How I shape the shore.** Graze tiny algae using a toothed 'tongue', called a radula, scraping off pieces of rock at the same time.

**MICROORGANISMS**

Rock Scratch Test

**What am I?** Tiny algae and bacteria that live on and in rocks. They provide food for grazers.

**What to look for.** Slippery greenish tinged rocks (like Shrek!) that do not look like anything is growing on them.

**How I shape the shore.** On soft to medium-soft rocks they drill into the thin outer layer of rocks. On all rocks, they are eaten by rock eaters.

**TUBE WORMS**

Rock Scratch Test

**What am I?** Worms, which make and live in protective white calcium tubes.

**What to look for.** Hard, white, curved or spiral tubes with an opening at one end, stuck to rocks.

**How I shape the shore.** They form crusts and probably slow the rate of rock breakdown.

**Important!**  
Only look for those species that have a rock scratch test score  which is the SAME or SOFTER than yours – these are the ones you are more likely to find on your shore.



## WHICH SHORE SHAPERS DID YOU FIND?

Use this tick-list to mark off which shore shapers you've found.

- Limpets
- Chitons
- Grazing Snails
- Piddocks
- Boring worms
- Microorganisms
- Barnacles
- Tube worms
- Seaweeds



# ACTIVITY ZONE

Below are a few more ways for you to have fun with shore shapers! of all rocky seashores.



For more resources, games and activities as well as more in depth information about the species you are likely to find visit [www.mba.ac.uk/learningzone](http://www.mba.ac.uk/learningzone) and follow the link to [shore shapers](#). You can also learn about other shore shapers such as corals that build.

## Investigate how shore shapers affect the rocks

1. Build two sandcastles (think of them as very soft rock!) Cover one with seaweeds or shells, leaving the other bare. Pour water (at the same speed) over both. **Which takes the most water to break down? Why?**



2. Build two sandcastles. Make small holes over one with your finger, leaving the other one nice and smooth. Very slowly pour equal amounts of water (at the same speed) over both sandcastles. **Did the two sand castles absorb water differently?**

## Card Games

Carefully (or with the help of an adult) cut out all 9 species cards or download and print the cards from the website to save your guide.



### WHO'S WHO

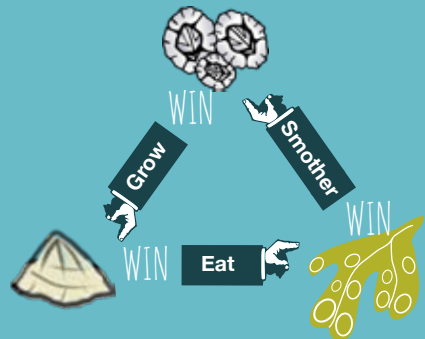
1. Turn the cards face down. Each player selects one card (without peeking!) and sticks it to their forehead with a little water.
2. Take it in turns to ask yes/no questions and try to guess which card you have on your head.
3. If they answer YES to your question, have another GO!
4. The winner is the first to guess their card correctly.

### MEMORY

1. Print and/ or cut out 2 sets of cards
2. Lay the cards face down
3. Take it in turns to turn over 2 cards.
4. If you get a pair keep them.
5. The winner is the person with the most pairs at the end of the game.

### BARNACLE LIMPET SEAWEED

Play this game as you would Rock-Paper-Scissors



This multi-partner project is funded by the Esmée Fairbairn Foundation.

For further information, contact: [shoreshapers@gmail.com](mailto:shoreshapers@gmail.com) or [www.biogeomorph.org/coastal/shoreshapers](http://www.biogeomorph.org/coastal/shoreshapers)