

The formation of coastal stacks



1. The base of the cliff is subjected to constant erosion from the waves. The main types of coastal erosion are **corrosion**, **attrition**, **solution** and **hydraulic action**.
2. Over time the **joints**, **faults** and **bedding planes** in the base of the cliff become eroded and larger cracks appear.
3. The cracks become wider and weaker as the erosion continues, causing caves to form. Caves are often found on headlands because wave erosion is particularly strong here. In some cases the roofs of caves may be broken through to form **blowholes**.
4. When caves develop on opposite sides of a **headland** they will join up to form a natural arch, as the cliff is being eroded from both sides.
5. The arch continues to be eroded and will gradually become bigger and bigger until just a slim pillar is left, attached to the top of the cliff.
6. The top of the pillar collapses as it can no longer support the weight of the connecting rock, leaving behind a stack.
7. The stack is then continuously eroded at the base by the waves, and eventually will be worn down until only a stump remains. These can become so eroded that they are only visible at low tide.
8. Stumps will eventually be worn away until they remain constantly underwater as areas of shallow water, known as reefs.
9. Over a period of hundreds of years this process will continue until all evidence of past landscapes has been eroded and coastal retreat occurs.

Glossary

Attrition – particles in the water rubbing against each other and being worn away

Bedding Plane - the surface that separates one horizontal layer, or bed, of rock from another

Blowhole - a hole in the roof of a cave through which sea water is sprayed up.

Corrosion (abrasion) – the stones and sand in the water grinding the rock away

Fault - a break in the continuity of the rock

Hydraulic action – air pockets trapped in cracks can split rocks apart

Headland - area of land running out into the sea. They usually have steep cliffs, and may be made of more resistant rock than adjacent bays.

Igneous Rock – formed from magma below the earth's surface

Joint - a vertical crack in the rock

Solution – sea water dissolves chemicals in the rocks

Wave-cut platform – the low base of the old cliffs which are only exposed at low tide