



Spit Spotter!

Welcome to Hurst Castle Spit! The process of longshore drift has been shaping this shingle spit on the Hampshire coast for hundreds of years. In this study you will learn about:

- ✓ The process of longshore drift
- ✓ The development of a spit and their key characteristics
- ✓ Saltmarsh development.

All adrift...

Longshore drift is the **movement** of **sediment** along the coast in a **zig-zag** pattern, by **waves** approaching the beach at an **angle**.

Sediment is being constantly moved along the coast by the waves.

In some places, waves approach the coast 'head-on' and sediment will simply be moved up and down the beach.

However, in other places, waves approach the coast at an angle and the swash carries material up the beach in this direction. The backwash carries material back down the beach at right angles. This continues along the coast, resulting in a zig-zag pattern of movement which gradually moves sediment along the coastline.



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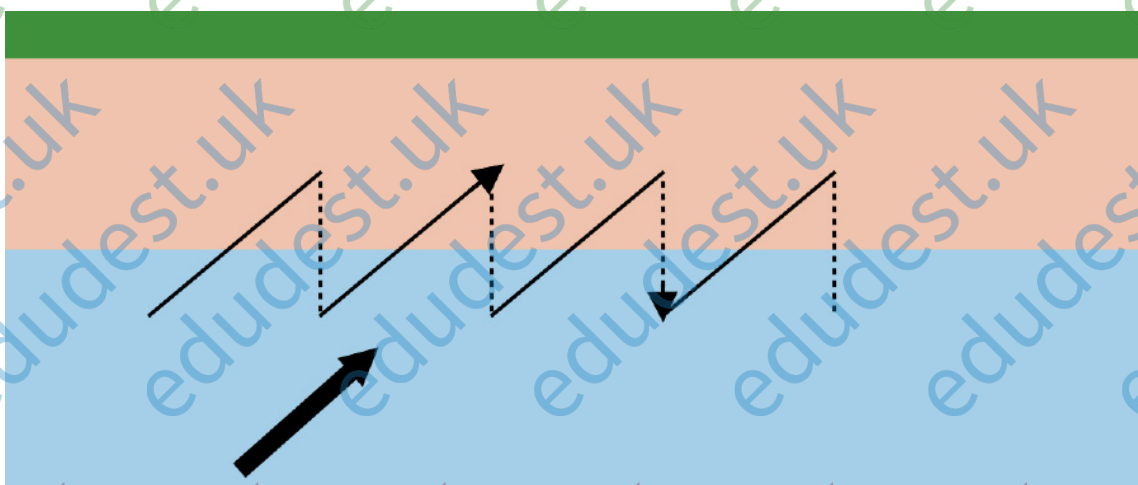
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Activity: Annotation

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Add the following sentences to the diagram (in an appropriate place), to describe the process of longshore drift.

- Waves approach the beach at an angle – a similar direction to that of the prevailing wind.
- The Swash carries material up the beach at an angle
- The backwash carries material back down the beach at right angles
- The next swash carries the material back up the beach at an angle, and the next backwash carries it back down at right angles
- The process continues along the coast
- Material is carried along the coast in a zig-zag pattern.



The shaping of a spit...

A spit is a long, and relatively narrow, 'finger' of land which juts out into the sea from the land. Longshore drift is the key process in the development of a spit. Spits often form where there is an abrupt change in the direction of the coastline, or where there is a break in the coastline at a river mouth.

At Hurst, a sudden change in the direction of the coast to the south-east of Milford-on-Sea has allowed long-shore drift to build up a 2km long shingle spit – see map.

So, how does a spit form in the first place? Material that has been carried by longshore



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As further sediment is deposited, the feature builds up and extends out into the sea.

When enough sediment has built up it will break the surface and form new land. Vegetation may start to colonise it and humans may even build on it.



Occasionally, a spit will grow all the way across to form a bar but, more often than not, its growth is 'arrested' by an opposing current, e.g. from a river entering the sea, and/or wind direction and it develops a curved end.

At Hurst, the combination of tidal currents, river currents from the Lymington River and strong winds have led to a distinctive curved end (see photo and map). Behind the spit where it is very sheltered, deposition occurs and a salt marsh may develop.

At Hurst, extensive saltmarsh has developed (Keyhaven Marshes).

Spit Sketch!

In the frame below, you should make a sketch of the spit. Try to show the main and behind, the length and shape of the spit, and the saltmarsh behind. You should then label its key features, and annotate it to explain its development.



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Keyhaven Saltmarshes

Due to the sheltered conditions behind Hurst Spit, extensive saltmarsh has developed: Keyhaven Marshes. These marshes started life as no more than an accumulation of mud and silt, deposited here because it is sheltered by the spit, meaning that the waves lose energy and deposition occurs. Over time, deposition of more and more sediment leads to the formation of mudflats.

This is a hostile environment, and only salt-tolerant vegetation can colonise the mudflats. These first species are known as pioneer species (or colonisers!). Cordgrass is an example of a pioneer species in a salt marsh. It has long roots which trap sediment and stabilise the mud, and also prevent it from being swept away at high tide. Gradually, as the level of mud increases further rainwater begins to dilute the salt content and the decomposition of pioneer plants increases the nutrient levels.

This allows other plants to grow and the vegetation gradually becomes more diverse. Sea purslane, sea aster and sea lavender start to grow. The process described is known as succession and it describes the series of changes taking place in the plant community from the initial colonisation of a previously unvegetated surface, through to the development of a fully diverse ecosystem. More specifically, succession in a salt marsh is called a 'halosere'.

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Activity: Wildlife Hunt! How many of these can you find?



Oystercatchers that feed and nest in the marshes



A creek – these drain the marsh and are important areas for feeding birds and a safe haven for fish



A marbled White butterfly, or any other of the many species of butterfly found here



Sea Lavender with its attractive purple flowers which attract insects and butterflies



Cordgrass (left) – a tough spikey salt-tolerant plant that grow quickly on mudflats. Samphire (right) which is edible and served in top restaurants!

