



Welcome to Hurst Castle Spit! If you have taken a boat across to the spit, you have probably been dropped off at the jetty near the Castle at the end of the spit. Turn and look west and you will see the spit extending out before you towards the mainland coast. The best view is from the top of the castle if you are able to go in (more on the castle later on!)

It is a 2 km shingle spit, which has formed here due to physical geographical processes operating along this stretch of coast over hundreds of years.

The process of longshore drift is constantly moving sediment along the coastline. Waves approaching the coast at an angle will transport material up the beach in their swash, and then carry material back down the beach at right angles in their backwash. This process repeats and results in a zig-zag pattern of



Teaching resources by Education Destination Ltd.

Curriculum relevant materials supporting school trips to the Isle of Wight
Book today with Education Destination and get full access to this and hundreds more quality resources

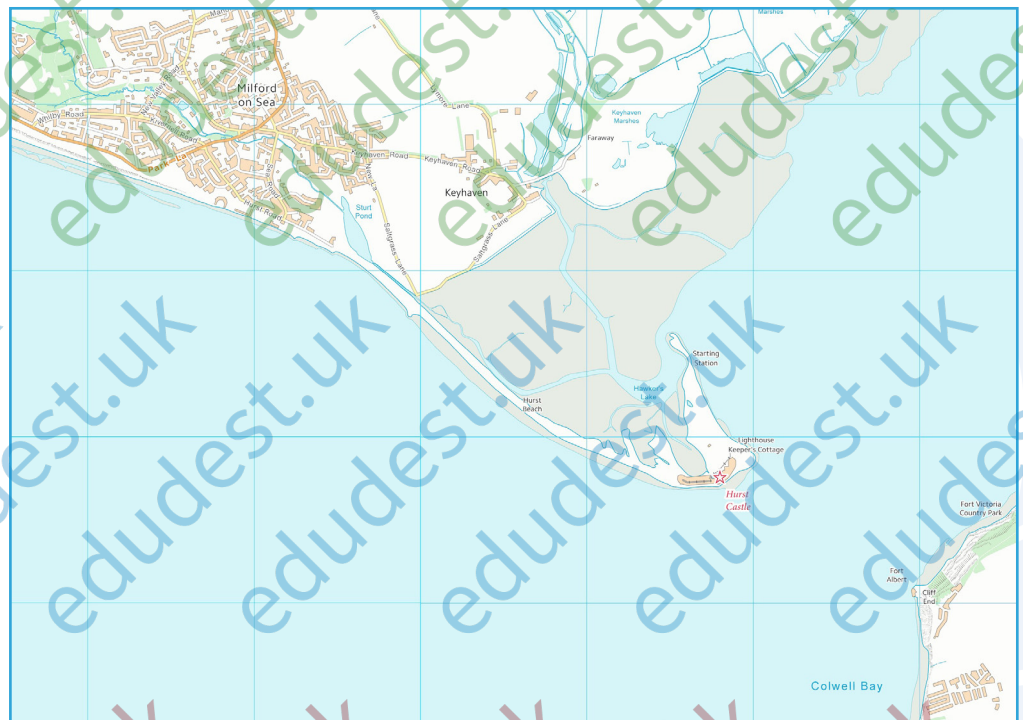
www.edudest.uk

Sometimes, the spit may extend all of the way across a bay, forming a bar. However, more often than not, the combined effects of tides, currents (both sea and river, often a river current where it meets the sea will arrest the development of a spit across a bay) and winds arrest its development and the spit will reach a maximum length and then develop a curved end.

Activity: Map Detectives!

Using the map, which shows Hurst Spit, can you answer these questions?

1. At what point does the change in direction of the coast occur?
2. In which direction is longshore drift occurring in this part of the coast? How do you know?!
3. What has caused the curved end of the spit here?
4. What type of ecosystem has developed behind the spit, and why do you think conditions are ideal here for it to develop?



A Salty Haven!

The area behind a spit is very sheltered and is a low-energy environment which allows deposition to occur. At first, deposited mud and sediment creates mudflats. Mudflats are well named; they are muddy and, well, pretty flat! They are often covered by the tide, only exposed at low tide. Therefore, they do not have any vegetation cover, but they do have a covering of algae. The thick gloopy mud may not appeal to us, but it is teeming with life and mudflats are a productive feeding ground for large flocks of wading birds, geese and ducks.



As the mud builds up further, some areas are exposed above the high tide mark and provide an, albeit very hostile, environment for vegetation and a saltmarsh will start to

develop. The early 'pioneer plants' need to be tough little cookies; they have to deal with extremely high salinity, practically no nutrients and a good drenching from the sea here and there! Salt tolerant (halophytic) plants such

Teaching resources by Education Destination Ltd.

Curriculum relevant materials supporting school trips to the Isle of Wight

Book today with Education Destination and get full access to this and hundreds more quality resources

www.edudest.uk

cordgrass fertilises it to enhance nutrient levels. This allows other plant species to grow such as sea purslane and, as the level builds even higher, sea aster, sea lavender and in the marsh uplands even trees like oak and alder will develop to create *Carr woodland*. 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'.



A saltmarsh contains networks of creeks which drain the marsh at low tide, and bring water in on the high tide. Salt pans, which are shallow pools of sea water, often develop between the creeks within the marsh and these are too salty for any plants to develop.

Butterflies and birds...

The saltmarsh behind Hurst Spit is called Keyhaven Marshes, and they are very valuable, both in terms of their conservation value and also as a recreational resource. The marshes are an SSSI (Site of Special Scientific Interest), a NNR (National Nature Reserve) and are a candidate for SAC (Special Area of Conservation) status. The higher marsh contains a diverse community of plants, and their flowers attract a wide range of invertebrates including a great many species of butterfly. The creeks are a nursery for fish, and the marshes provide a feeding/breeding/roosting ground for many native and migratory birds. The natural beauty of the area attracts many visitors and is used for a variety of recreational activities.

Activity: Count!

1. How many different varieties of a) birds, and b) butterflies and c) plants can you spot on or around the spit and marshes?
2. You could complete a tally in the table below. There are some pictures of the various plants, birds and butterflies that you may see below the table...

Birds	Butterflies	Plants

Teaching resources by Education Destination Ltd.

Curriculum relevant materials supporting school trips to the Isle of Wight

Book today with Education Destination and get full access to this and hundreds more quality resources

www.edudest.uk



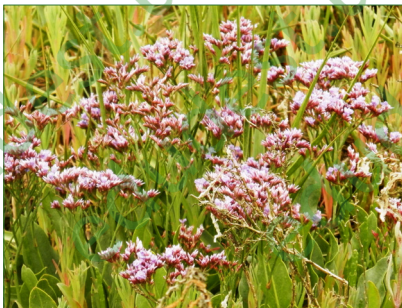
Oystercatchers feed and nest in the marshes



A black-headed gull - a very common sighting!



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



Other species of butterfly found include the Gatekeeper butterfly (left) or the six-spot Burnet Butterfly (right)



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

Storms!

Hurst Spit is under threat, and has been for some time.

Large scale hard engineering coastal protection projects in Christchurch Bay to the west has interrupted the supply of sediment to the spit.

Also, it is believed that global warming is causing sea levels to rise and also bringing more extreme weather to the UK; winter storms such as those of winter 2013/14 have breached the spit on several occasions.

The seaward side of the spit and saltmarshes are eroding at a rate of about 3 metres per year.

Various measures have been put into place to address



Teaching resources by Education Destination Ltd.

Curriculum relevant materials supporting school trips to the Isle of Wight

Book today with Education Destination and get full access to this and hundreds more quality resources

www.edudest.uk

The shingle is artificially replenished on a regular basis to maintain the height and width of the spit, and rock armour and groynes protect the seaward edge of the end of the spit, behind the castle.

But take a close look, and you will find evidence of past defences that have failed and been broken up by the forces of the sea...

Stronghold!

Hurst Castle, at the end of the spit was built by Henry VIII as a defence against the French between 1541 and 1544. It is a scheduled ancient monument.

It was one of eight forts built by Henry to protect the Solent, and its commanding position at the western end of the entrance to the Solent meant that it did its job so well that none of its guns ever needed to be fired; all enemies approached from the west!

Also used as a prison in the 17th century, the castle has seen many periods of updating and renovations but the tudor fort at its heart remains relatively unchanged.



The castle's nooks and crannies make for a really interesting exploration and it is well worth a visit if you can!