



## Spits & Saltmarshes at Hurst

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 physical processes responsible for the development of Hurst Spit
- ✓ The key characteristics of the spit
- ✓ The development of Salt Marsh ecosystems and the importance of Keyhaven Marshes
- ✓ Current threats and management on the spit.



### Introduction to Hurst 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 but, in the case of Hurst Spit Sea level

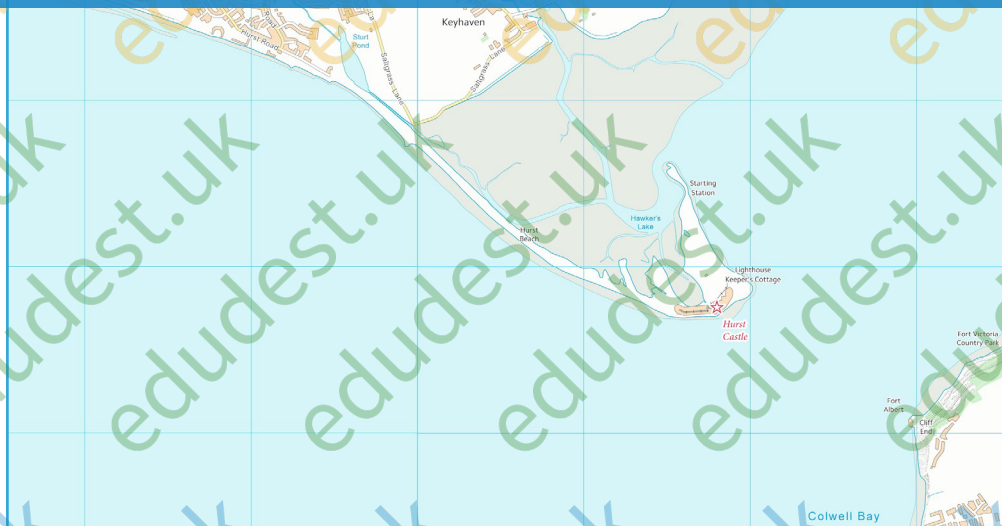
rise has also played a role. Spits often form where there is an abrupt change in the direction of the coastline, or where there are headlands. In the case of Hurst Spit, the coastline turns abruptly from the north-east of Milford-on-Sea to the south-east of Milford-on-Sea, allowing long shore drift to build up a 2km long shingle spit.

## 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](http://www.edudest.uk)



### longshore drift

Hurst Spit is composed of sub-angular flint beach shingle which has been moved progressively eastward by longshore drift as a result of the prevailing south-west winds. The material originates from the cliffs of Highcliff, Barton-on-Sea and Hordle Cliff to the west. Due to the abrupt change in the direction of the coast, the long-shore movement of sediment is interrupted and deposition has gradually formed the spit.

However, although longshore drift plays a significant part in the formation of the spit, the role of sea level rise is often underestimated. During the Pleistocene Epoch of the Earth's geological history the Solent was a shallow dry valley, criss-crossed with small rivers and dotted with trees, and with animals such as elks and mammoths roaming. The last Ice Age occurred during this time and, when the ice sheets began to melt, the valley was flooded and the Solent was born. This almost certainly caused a major change in the dynamics of the coastal system and transformed it from a low to a high tidal energy environment. This would have contributed significantly to the development of the spit.

Complex local variations in sediment supply, currents and tidal movements have led to several recurved ends of the spit along its length. Behind the spit where it is very sheltered, deposition has occurred and a salt marsh has developed (Keyhaven Marshes). Today, intensive coastal management engineering to the west in Christchurch Bay has interrupted the supply of sediment to the spit and it has been breached on many occasions. Its height is now increased and maintained through regular shingle replenishment (more on this later!)

should produce a detailed annotated sketch



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](http://www.edudest.uk)

**Activity: Sketch!**

Using your own knowledge of coastal processes, as well as the information on page 1, you should produce a detailed annotated sketch of Hurst Spit to show its key features and explain its formation and development.





### Salt Marsh Development

**Salt marshes** are an ecosystem of the intertidal zone. The low marsh is usually covered at high tide, but the high marsh is above all but the highest spring tides.

Salt marshes are vegetated, although they begin life as little more than an accumulation of mud and silt, which is deposited in a sheltered location. As the mud and silt builds up, salt tolerant (halophytic) plants such as cordgrass (*spartina* is its latin name) colonise the area.

These first plants are called pioneer plants and they are tough little things – able to tolerate the high salinity (salty conditions) and exposure; cordgrass has long roots to stop it being swept away, and its tangled roots help to stabilise the mud and trap further sediment so that the level of the mud builds up. This higher level is not covered by the sea so often, rainwater dilutes the salt content, and decomposing 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...

## 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

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'.

[www.edudest.uk](http://www.edudest.uk)

A salt marsh 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.

### Keyhaven Saltmarshes

Keyhaven Marshes are drained by an intricate pattern of saltmarsh creeks; three major creeks dominate – Mount Lake, alongside the spit, Keyhaven Lake and Hawker's Lake. This complex network of creeks and the geomorphological features of the marshes are of high scientific interest, and the creeks are an important nursery for fish. The higher-level marshes support a diverse community of saltmarsh vegetation including: Sea purslane,



common sea-lavender, sea plantain, sea meadow-grass, common seablite, glasswort and sea aster. This diversity of vegetation attracts a wide variety of invertebrates such as a wide range of butterflies, e.g. the Marbled White Butterfly (pictured). The marshes are also of international importance for their bird life as they provide an important feeding, nesting and roosting site for species such as Black-headed Gulls, Little and Sandwich Terns which breed here in significant numbers, along with waders such as

Oystercatcher (pictured), Ringed Plover and Redshank. 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 marshes are renowned for their natural beauty and the area is a popular visitor destination and is used for a variety of recreational activities.



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. The marshes also contain archaeological relics of a once thriving salt industry, and the marsh affords the coastal settlements of Keyhaven and Lymington a great deal of natural protection from the open sea.

**Activity!**

Walk around and look for as many different types of plants, birds and invertebrates as you can find. Try to take a good picture of each. You will do some research to identify what they are!



**Threats**

The seaward side of the saltmarsh is eroding at a rate of about 3m/year.

Sediment supply has diminished due to coastal protection further west in Christchurch Bay.

The reduction in sediment supply, coupled with severe

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](http://www.edudest.uk)

**Management**

Regular shingle recharge is undertaken to maintain the height and stability of the spit. What other measures can you see, and what are they doing to protect and maintain this coastline?

Management Strategy	Explanation



107594