

## INTERTIDAL ROCKY REEFS INCLUDING LITTORAL CHALK

# What are Intertidal Rocky Reefs?

Reefs are rocky marine habitats or biological concretions that rise from the seabed. Those that occur in the intertidal zone, where they are exposed to tidal inundation, are known as littoral reefs. There are two main types of reef: those where animal and plant communities develop on rock or stable boulders and cobbles, and those where structure is created by the animals themselves (biogenic reefs). The specific communities that occur vary according to a number of factors. For example, rock type is important, with particularly distinct communities associated with chalk and limestone.

The southern shore of the Isle of Wight includes a number of reefs that extend into the intertidal zone. It supports a variety of reef types and associated communities, including chalk, limestone and sandstone reefs. To the west and southwest some of the most important subtidal British chalk reefs occur, representing over five percent of Europe's coastal chalk exposures, including the extensive tide-swept reef off the Needles and examples at Culver Cliff and Freshwater Bay. These support a diverse range of species in both the subtidal and intertidal. Other reef habitats include areas of large boulders off the coast around Ventnor and the cobble and boulder shore of the Yar Estuary.



## Species Supported

Intertidal reefs are extremely variable, both in structure and in the communities they support. They are characterised by communities of attached algae and invertebrates, usually associated with a range of mobile animals, including invertebrates and fish. There may be further variety associated with topographical features such as vertical rock walls, gully and canyon systems, outcrops from sediment, and rockpools on the shore. The high biodiversity of chalk reefs arises from its degree of hardness; hard enough to provide a stable attachment site for a diverse plant and animal turf, yet soft enough to permit occupation by boring worms and molluscs.

In general, littoral rock tends to be colonised by algae in wave-sheltered conditions, and by limpets, barnacles and mussels as wave-exposure increases. A strong vertical zonation is apparent. In the intertidal zone, lichens occur at the top of the shore, with littoral biotopes characterised by barnacles, mussels or species of furoid (wrack) seaweeds.

Chalk reefs support a diversity of flora and fauna. This includes foliose red algae and small brown algae on upward facing surfaces, turfs of hydroids and sea-mats, and an abundance of sponges and animals which bore into the soft rock such as worms and piddocks (bivalve molluscs). Intertidal pools support a diverse marine life, including a number of rare or unusual seaweeds, such as the shepherd's purse seaweed.

The limestone rock at Bembridge provides a rich diversity of marine life in both the intertidal and subtidal. The bedrock is extensively bored by bivalves. Some species are at the eastern edge of their range. The undisturbed cobble and boulder shore in the Yar Estuary has important communities associated with wave-sheltered but current-swept reefs.

The large littoral caves in the chalk cliffs at Culver Cliff on the Isle of Wight host many rare algal species, which are restricted to this type of habitat. The fauna of these sea caves includes a range of mollusc species such as limpets and the horseshoe worm.



## Economic and Social Value

Reefs provide important feeding, breeding and nursery grounds for many species of fish. They also dissipate wave energy, acting as natural coastal defences.

They also have a recreational value as people like to visit intertidal reefs to appreciate this special and distinct seascape.



## Designations

Most of the rocky reefs in the Solent are designated as Sites of Special Scientific Interest, offering protection to the foreshore as far as the low water mark. In addition, a number of other designations apply, such as Heritage Coast and Area of Outstanding Natural Beauty on the Isle of Wight.

The South Wight Maritime European Marine Site (SWMEMS) is a dynamic site comprising a large range of different reef types and associated marine communities on the south coast of the Isle of Wight. It qualifies as a European Marine Site for its reef features and sea caves. The JNCC classifies the South Wight Maritime reefs as grade A/B. This means that they are outstanding examples of the feature in a European context (A) or excellent examples of the feature, significantly above the threshold for SSSI notification (B).

## Did you Know?

- South Wight supports a variety of reef types and associated communities, including chalk, limestone and sandstone reefs.
- The large littoral caves in the chalk cliffs at Culver Cliff on the Isle of Wight host many rare algal species, which are restricted to this type of habitat.
- Many of South Wight's reefs are outstanding examples of the feature in a European context.



## Issues, Threats and Opportunities

- Pollution - communities of species on rocky shores are sensitive to a variety of both acute (e.g. oil spills) and chronic impacts (e.g. tributyl tin based paints). The reefs of South Wight are believed to have acted as a vital source of recruits in the recovery of populations of the dog whelk, which was badly affected by tributyl tin in the 1970s.
- Climate change - sea level rise and post-glacial land adjustment will submerge a greater area of the littoral (intertidal) chalk platform.
- Coastal development - modification due to coastal defence works can result in the loss of a wide range of micro-habitats on the upper shore and the removal of splash-zone communities. In the Solent, coastal chalk remains in a largely natural state.
- Human disturbance - of littoral plant and animal communities especially by trampling, stone-turning, small-scale fishery and damage to rocks.
- Introduction of alien species - research has indicated that native species along the English Channel have been displaced by the incursion of non-native species such as Japanese seaweed, *Sargassum muticum*.
- Increased turbidity - rocky shores may also be adversely affected by increases in turbidity and siltation caused by dredging, the disposal of spoil, sewage etc.