

Coastal vegetated shingle



Corwall Port © Chris Cathrine

Introduction

Although shingle is a globally restricted coastal sediment type with few occurrences outside north-west Europe, Japan and New Zealand, shingle beaches are widely distributed round the coast of the UK, where they develop in high energy environments. In Scotland it is estimated that nearly 3000 kilometres of the coastline is fringed with shingle. However most of this length consists of simple fringing beaches, so shingle structures sufficiently stable to support perennial vegetation are a comparatively rare feature.

Shingle with the highest terrestrial invertebrate interest is that which extends above the normal tidal limit and is at least partly vegetated. Here, diverse invertebrate communities are found, with some species restricted to coastal shingle habitats. Some 692 hectares of vegetated shingle is present in Scotland, mainly located in Dumfries and Galloway, Morayshire and the North West. The Spey Bay complex comprising of Kingston Shingles and the Culbin Bar are the best examples of shingle features in Scotland. Indeed, Kingston shingles is second in importance only to Dungeness in Kent. Culbin bar is unusual in being almost completely undisturbed.

Threats

Lack of sediment supply

Shingle is unstable and requires a steady supply of new material. Coastal defence structures, offshore aggregate extraction or artificial redistribution of material within the site or on adjacent coast interrupt this process. On some coasts protective shingle ridges are becoming depleted thus enabling more frequent breaches and over-topping during storms, inundating low-lying semi-natural habitats and farmland behind.

Natural mobility

Many structures exhibit continuous long-shore drift, and ridges lying parallel to the shoreline tend to be rolled over towards the land by wave action in storm events. Thus whilst the eroding front edge retreats, it is possible for shingle to be thrown back to bury the low-lying habitat behind as the whole shingle structure rolls inland. Movement is likely to be accelerated by climate change resulting in sea level rise and extreme weather conditions.

Exploitation

Aggregate extraction may result in severe

alteration of morphology and vegetation (for example at Kingston Shingles) or almost total destruction of major parts of the feature.

Development

Industrial plant, defence infrastructure, recreational facilities (golf courses, for example) and housing built on shingle structures destroy vegetation and ridge morphology.

Water abstraction

Where water is abstracted from the groundwater; there is some evidence of drought stress on the shingle vegetation, but it is difficult to distinguish the effects of water abstraction from those of gravel extraction.

Disturbance

Shingle vegetation is fragile; the wear and tear caused by access on foot, and particularly by vehicles, has damaged many sites. Military activities also damage shingle habitats (for example at Kingston Shingles).

Afforestation

Afforestation on shingle, such as at Culbin Bar, causes direct habitat loss, affects hydrology, and immobilises the shingle features.

Habitat Management

Minimise disturbance

The best management practice for coastal vegetated shingle is to leave it alone. Shingle communities are slow to establish and are easily damaged by disturbance; without intervention, the natural processes of wind and waves will maintain the various stages from mobile to completely stable shingle.

Management of the habitat will largely involve management of public pressure since both walkers and off-road vehicles cause considerable damage to shingle habitat and heavy public pressure can lead to complete loss of shingle communities. Redistribution of beach materials for flood defences is also very damaging to specialist shingle invertebrates.

Maintain habitat diversity

A mosaic of habitats and high plant diversity will provide the widest range of habitats for invertebrate species, so it is important to ensure that full successional stages from bare shingle to short herbaceous vegetation and deep grassland are maintained. Seepage areas should always be treated as important. Shingle ridges are very important features, supporting different plant and

animal communities on ridge tops and in hollows.

Maintaining large areas of unimproved flower-rich grassland next to coastal vegetated shingle will benefit bumblebees, hoverflies and other flower-visiting insects. Continue traditional management of cutting and grazing and leave patches of coarse vegetation over banks and slopes and hedge-banks on grassland next to coastal vegetated shingle. Tussocky vegetation will provide shelter for many invertebrates. It is also important to ensure that some grasses and flowering plants can set seed each year as the larval stages of some flies live in the flowerheads.

Prevent excessive scrub encroachment

Some scrub and stabilised grassland on shingle can be valuable, but excessive scrub encroachment on stabilised grassland may need controlling. Low scrub of Broom and Blackthorn supports considerable invertebrate communities and should not be cleared indiscriminately. Clumps of bramble can also be beneficial for bees, as can willow species.

Retain tide-swept debris

Management should aim to reduce public disturbance of drift material or the collection of driftwood and avoid any attempts to “tidy up” tide-swept debris, especially seaweed. The use of driftwood for beach barbecues is damaging.

Ensure unimpeded tidal patterns

Shingle features can show long term deterioration following the construction of nearby coastal defences. Coastal planning needs to be sensitive to these threats. Rising sea level is likely to mean that managed retreat of the coastline may need to be considered.

Prevent pollution

Oil pollution could be particularly damaging if oil was deposited onto shingle during a spring tide.



A jumping spider (*Heliophanus* sp.) on shingle © Chris Cathrine

Further Information

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