



# UK Biodiversity Action Plan Priority Habitat Descriptions

## Tide-swept Channels

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## Tide-swept Channels

This habitat description has been adapted from the 1994 UK BAP Action Plan for *Sabellaria spinulosa* reefs and therefore would benefit from an update (<https://webarchive.nationalarchives.gov.uk/20110303145909/http://www.ukbap.org.uk/UKPlans.aspx?ID=38>).

In addition, the Steering group associated with the marine BAP review, agreed in 2007 that this habitat would benefit from being expanded and will be eventually renamed 'Tide-swept communities'. The resulting habitat will encompass broader and deeper channels with strong currents rather than a much more restricted definition of very shallow channels with very rapid water movement. It is likely that, sometime in the future, CCW will take the lead on drafting the habitat definition.

### Correspondence with existing habitats

Habitats Directive Annex I: Reefs and large shallow inlets and bays

### Description

In this habitat action plan, the term 'tidal rapids' is used to cover a broad range of high energy environments including deep tidal streams and tide-swept habitats. The JNCC's Marine Nature Conservation Review (MNCR) defined rapids as 'strong tidal streams resulting from a constriction in the coastline at the entrance to, or within the length of, an enclosed body of water such as a sea loch. Depth is usually shallower than five metres.' In deeper situations, defined in this plan as being more than 5m, tidal streams may generate favourable conditions for diverse marine habitats (e.g. the entrances to fjordic sea lochs, between islands, or between islands and the mainland, particularly where tidal flow is funnelled by the shape of the coastline). Wherever they occur, strong tidal streams result in characteristic marine communities rich in diversity, nourished by a constantly renewed food source brought in on each tide.

The marine life associated with these habitats is abundant in animals fixed on or in the seabed, and typically include soft corals, hydroids (sea firs), bryozoans (sea mats), large sponges, anemones, mussels and brittlestars in dense beds. In shallow water, bedrock and boulders often support kelp and sea oak plants, which grow very long in the tidal currents, and have a variety of animals growing on them. Other smaller red and brown seaweeds grow on cobbles and pebbles, many of these being characteristic of tide-swept situations. Both the Menai Strait in North Wales and the Scilly Isles provide good examples of tide-swept communities considered to be of national importance. Also, the Dorn in Strangford Lough MNR is remarkable for its diversity of flora and fauna and for displaying a marked emergence phenomenon. Coarse gravel is a more difficult habitat for animals to colonise, as it is constantly moving, yet even here there are typical animals, such as sea cucumbers, worms and burrowing anemones. Maerl beds are also closely identified with the conditions found in tidal narrows and rapids in the south-west (the Fal estuary) and the north of the British Isles (Orkney).

In deeper water, such as between islands, strong tidal streams may be felt down to 30m. For example, between the Pembrokeshire islands strong tidal currents in the centre of Ramsey Sound provide conditions for a distinctive community, unrecorded elsewhere in south-west Britain.

An important range of tidal rapid habitats are found in Scottish and Irish fjordic and fjardic sea lochs. Fjordic sea lochs occur in the more mountainous areas of the Scottish west coast and islands and were formed by the scouring action of glaciers and ice sheets. The result was an over-deepened basin (with some examples recording a charted depth of 200m) or a series of basins connected to each other and the open sea by narrow and shallow 'sills' at

depths of less than 30m, with many less than 20m. It is this high energy sill habitat, over which the tide flows, that produces the diverse communities that inhabit this environment. A considerable volume of water may move over the sill during the tidal cycle, with a tidal range in some Scottish sea lochs of up to 5m on spring tides, generating a tidal flows of up to 10 knots. For example, Strangford Lough in Northern Ireland also has a long rapids system with very strong tidal streams up to 8 knots.

The variability of sea lochs in size, shape, number of basins and length and depth of sills, produces a wide range of marine communities. The seabed may be of bedrock and boulders, or a range of mixed material down to coarse shell gravel. The species composition of tidal rapids in some sea lochs may also be influenced by marked variations in salinity.

Fjardic sea lochs are much shallower often with a maze of islands and shallow basins connected by rapids, which are usually less than 5m deep and often intertidal. Fjardic sea lochs are found mainly in the Western Isles.

The morphology of fjords and fjards is therefore very different to lowland marine inlets and the estuaries of the south and east of the British Isles. However, in south-west England, eustatic change has created rias by drowning coastal river valleys such as the Dart, Tamar and Fal. At the narrow entrances of these rias, strong tidal currents have generated diverse habitats of biological significance.

### **Illustrative biotopes – marine habitat classification scheme v4.05**

LR.HLR.FT – Fucoids in tide-swept conditions

LR.HLR.FT.FserTX – *Fucus serratus* with sponges, ascidians and red seaweeds on tide-swept lower eulittoral mixed substrata

IR.MIR.KR.LhypT – *Laminaria hyperborea* on tide-swept, infralittoral rock

IR.MIR.KR.LhypTX – *Laminaria hyperborea* on tide-swept, infralittoral mixed substrata.

IR.MIR.KT – Kelp and seaweed communities in tide-swept sheltered conditions

CR.HCR.FaT – Very tide-swept faunal communities

CR.MCR.CFaVS – Circalittoral faunal communities in variable salinity

SS.SMp.KSwSS.LsacR.CbPb – Red seaweeds and kelps on tide-swept mobile infralittoral cobbles and pebbles

Please note the above biotopes may or may not be present in the newly defined and expanded habitat 'Tide-swept communities'.

### **Current and potential threats**

- *Obstruction to the water flow* (e.g. ferries running the entrance to sea lochs, bridges, causeways), i.e. the causeway joining Vatersay with Barra (Churchill Barriers, Orkney).
- *Tidal power generation* (in conjunction with bridge construction) change the ecology of the lochs considerably through restriction of seawater influence and consequent changes in salinity. The effects on the connecting rapids can also be expected to be drastic.
- *Fishing*: rapids often have dense beds of animals, for example mussels, which may become attractive for exploitation in the future. Rapids can be a sanctuary for crustaceans because strong tidal currents make creeling difficult.
- *Water pollution*: Although the currents in rapids may quickly disperse one-off sources of pollution, chronic continuing pollution could affect sensitive marine life.