



UK Biodiversity Action Plan Priority Habitat Descriptions

Estuarine Rocky Habitats

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Estuarine Rocky Habitats

Correspondence with existing habitats

- UK BAP broad habitat: Littoral rock
- May be a component part of Annex I habitats
- Numerous illustrative biotopes

Description

This habitat encompasses rocky habitats in estuaries, extending from supralittoral lichens down to the subtidal circalittoral. Estuarine rocky habitats incorporate substrata types such as bedrock and stable boulders. Generally rias, fjords and fjards are the most relevant types of inlet for rocky estuarine habitats.

Rocky habitat is a comparatively uncommon feature in estuaries in the UK. Although generally forming small areas in comparison with the extent of sediment substrates in estuaries, estuarine rocky habitats contribute much to the overall biodiversity within estuaries. Estuarine rocky habitats, along with a complex of other estuarine habitats, are part of the 'connectivity' of land, estuary and open sea. For example, the rich and sheltered waters of estuaries provide nursery grounds for fish, and estuarine rocky habitats are an important component of these nursery grounds.

Conditions in estuaries are distinctly different to those on the open coast, where rocky habitats are generally more abundant. Rocky habitats in estuaries are typically located in low wave energy environments with reduced salinity, and experience accelerated tidal streams with increased turbidity and siltation. The communities present on rocky habitats are adapted to these conditions and consequently their composition and character is different to that found on similar substrata on the open coast (e.g. the cape form of the sugar kelp *Laminaria saccharina* and the tasselled morphology of sponges such as *Halichondria panicea*).

Depending on the extent and heterogeneity of the substrate, there can be a wide variety of community types associated with estuarine rocky habitats. The extent of rocky habitat in estuaries can range from a narrow strip restricted to the top of the shore to littoral reef structures extending to the subtidal, particularly in rias. Similarly, the topography of estuarine rocky shores varies from flat and gently sloping to rugged reefs and large boulders with many microhabitats.

In general terms, the supralittoral of rocky habitat supports yellow and grey lichens, with a band of the black lichen *Verrucaria maura* below. These bands may be unusually narrow in areas of low wave exposure. The remainder of the shore can be dominated by fucoids and kelp with an understory of barnacles, algae, grazing molluscs and gammarids, and occasionally sponges and seasquirts. Where the topography is varied, there is added community interest – for example entangled turfs of the red algae *Gelidium pusillum* and *Catenella caespitosa* on shaded surfaces, dense covers of the seasquirt *Dendrodoa grossularia* on overhangs, variable salinity hydroids on shaded verticals, and green algae dominated rockpools in depressions.

The communities on subtidal estuarine rocky habitats are equally variable, and at the most diverse end of the scale, may support a rich and exceptionally abundant sessile epibiota of anemones (e.g. *Metridium senile* and *Diadumene sincta*), filter feeding sponges (e.g. *Halichondria panicea*, *Hymeniacion perleve*, *Haliclona oculata*, *Raspalia* spp., *Suberties* spp. and *Stelligera* spp.), bryozoa (e.g. *Alcyonidium digitata*), hydroids (e.g. *Sertularella gaudichaudi*, *Bugula* spp. and *Tubularia* spp.) and seasquirts (e.g. *Asciidiella aspersa* and *Dendrodoa grossularia*).

Estuarine rocky habitats often display a transition of community types down the length of an estuary, reflecting the different environmental conditions i.e. those at the upper ends of estuaries being specific to ultra sheltered and low salinity to communities similar to open coast rock communities towards the mouth of estuaries.

This habitat excludes rocky habitats in areas of permanent full salinity. Some occurrences of estuarine rocky habitats may also fall within the BAP habitat of 'Tideswept Channels' and may contain examples of the BAP 'Intertidal Underboulder Community' habitat. The fucoid alga *Ascophyllum nodosum mackaii* and the native oyster *Ostrea edulis*, both UK BAP priority species, can be associated with estuarine rocky habitats.

Summary of environmental preferences:

Salinity	Variable – reduced
Wave exposure	Moderately exposed to ultra sheltered
Tidal streams	Weak – strong
Substratum	Bedrock, stable boulders
Zone/depth	Supralittoral to circalittoral

Most estuarine rocky habitats are found in the north and western UK; few examples are found on the predominantly soft shores of eastern England.

Illustrative biotopes

Some of the identified biotopes are associated with estuarine conditions only. However, not all biotopes identified are exclusive to an estuarine environment, and additional biotopes are included which may be found in estuarine conditions, but not exclusively.

- LR.LLR.FVS – Fucoids in variable salinity
- LR.LLR.FVS.PeIVS – *Pelvetia canaliculata* on sheltered variable salinity littoral fringe rock
- LR.LLR.FVS.FspiVS – *Fucus spiralis* on sheltered variable salinity upper eulittoral rock
- LR.LLR.FVS.FvesVS – *Fucus vesiculosus* on variable salinity mid eulittoral boulders and stable mixed substrata
- LR.LLR.FVS.AscVS – *Ascophyllum nodosum* and *Fucus vesiculosus* on variable salinity mid eulittoral rock
- LR.LLR.FVS.Ascmac – *Ascophyllum nodosum* ecad *mackaii* beds on extremely sheltered mid eulittoral mixed substrata
- LR.LLR.FVS.FserVS – *Fucus serratus* and large *Mytilus edulis* on variable salinity lower eulittoral rock
- LR.LLR.FVS.FCer – *Fucus ceranoides* on reduced salinity eulittoral rock
- IR.LIR.KVS.Cod – *Codium* spp. with red seaweeds and sparse *Laminaria saccharina* on shallow, heavily-silted, very sheltered infralittoral rock
- IR.LIR.KVS.LsacPsaVS – *Laminaria saccharina* and *Psammechinus miliaris* on variable salinity grazed infralittoral rock
- IR.LIR.KVS.LsacPhyVS – *Laminaria saccharina* with *Phyllophora* spp. and filamentous green seaweeds on variable or reduced salinity infralittoral rock

Further biotopes which are not exclusive to an estuarine environment:

LR.FLR.Eph.EntPor – *Porphyra purpurea* and *Enteromorpha* spp. on sand-scoured mid or lower eulittoral rock

LR.FLR.Eph.Ent – *Enteromorpha* spp. on freshwater-influenced and/or unstable upper eulittoral rock

LR.FLR.CvOv.SpR.Den – Sponges, shade-tolerant red seaweeds and *Dendrodoa grossularia* on wave-surged overhanging lower eulittoral bedrock and caves

LR.FLR.Rkp.G – Green seaweeds (*Enteromorpha* spp. and *Cladophora* spp.) in shallow upper shore rockpools

LR.FLR.Lic.Ver.Ver – *Verrucaria maura* on very exposed to very sheltered upper littoral fringe rock

LR.FLR.Lic.YG – Yellow and grey lichens on supralittoral rock

Current and potential threats

- *Commercial fisheries*: Communities in naturally sheltered conditions, such as those of estuarine rocky habitats, are not resilient to physical disturbance type impacts caused by mobile fishing gear.
- *Water Quality*: Estuaries are often major areas of urban and industrial development. As a result, estuaries and estuarine rocky habitats have experienced substantial losses through land claim, reduction in water quality (through industrial contaminants and also agricultural practices resulting in enhanced nutrient input and silt loading). Estuaries also receive dispersed and point contaminant inputs from inland areas.
- *Dredging*: Estuaries form natural harbours and are used as safe havens for vessel traffic. With this use of estuaries is the associated need for navigational channels and dredging, with both direct and indirect impacts on estuarine rocky habitats.
- *Coastal Protection*: Coastal defence is widespread in estuarine environments to protect private dwellings and also industrial infrastructure. This can have immediate direct impacts on estuarine rocky habitats or indirect impacts away from the point of coastal defence.
- *Climate Change*: In Wales, sea-level rise and increased storminess are likely to exacerbate the existing infilling of south- and west-facing estuaries, where eroded sediment is deposited within the estuary, gradually covering rocky outcrops.
- *Non-natives*:



Figure 1. Estuarine rock habitat with *Ascophyllum nodosum* (Photo: CCW).

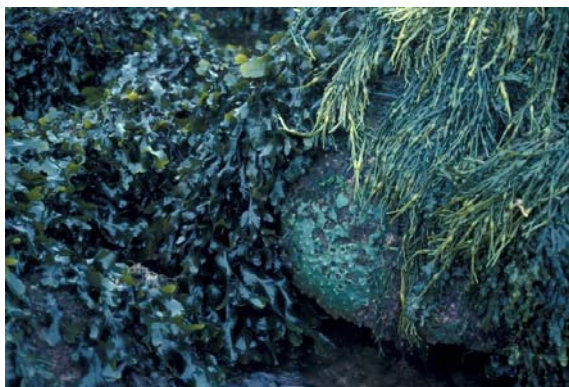


Figure 2. *Fucus serratus* and *Ascophyllum nodosum* on boulders (Photo: JNCC image collection, Roger Mitchell).

Author Aethne Cooke, CCW