

Rough Guide to Biotopes

October 2008



Introduction

During 2007 Seasearch carried out an exercise to try to assign biotopes to all Seasearch Survey Forms. Two versions of a Biotope Key were produced and two consistency checks were carried out in which a range of assessors assigned biotope codes to the same forms. There was insufficient consistency to roll out the process to all of the Seasearch data and the 2007 data was only coded with the Seasearch biotopes.

A report on the process was produced and can be downloaded from the Seasearch web site. The final version of the Seasearch Biotope Key is also available on the website.

MCS/Seasearch (2007) Assigning Biotopes to Seasearch Data. JNCC Peterborough. 82pp. JNCC Report NO. 418

Irving, R & Wood, C. (2007) The Seasearch Biotope Key. Marine Conservation Society/ JNCC/ Sea-Scope. 52pp.

2008 Seasearch Survey Form Data

Early in 2008 the Seasearch Survey Forms were revised and new Guidance Notes were produced and circulated to all survey level recorders. The Surveyor Training programme was completely updated to place more emphasis on the information needed to assess biotopes. As a result of this the 2008 Survey data has the following improvements designed to assist the biotope coding process:

- Each site (form) has been assessed for exposure and tidal streams
- Each habitat has had Seasearch seabed types and communities assessed (formerly only done of the site as a whole)
- Species lists have been organised to make identification of the groups and characterising species easier.

Those survey organisers/data entry personnel who are reasonably confident with the biotope process may now assign JNCC biotopes to the 2008 data using the Biotope key and JNCC website.

It is possible to enter both Seasearch biotopes and JNCC biotopes for the same sample in Marine Recorder and this is what we would like people to do. This allows us to search over the broader Seasearch biotopes on the whole dataset, but the more detailed JNCC data is also available for those forms which have been so entered.

In the majority of cases survey organisers and data entry personnel will not have the confidence to do that. Accordingly this Rough Guide has been produced which we hope can be easily applied to all of the Survey Forms for 2008.

It is based on the broad categories and individual biotopes that can be identified straightforwardly and will go part way along the road of making Seasearch data more accessible in habitat terms.

It is suggested that survey organisers go through this process for all of the Survey Forms they are responsible for as part of the validation process prior to data entry. Whilst it can be done at a later date it is most efficient if all data is entered together.

THE ROUGH GUIDE TO BIOTOPES

The Guide is in three stages which you need to work through for each Survey Form

Stage 1: Belt and Braces

When entering data into Marine Recorder, for each habitat on the Survey Form check that the Communities boxes fit in with the other data and enter these in the sample screen using the Biotope Tab.

Click **Add Biotope** and in the **Show in drop down** tab click **Seasearch**, Enter the community types in the normal way.

Stage 2: Top Down

Here you go as far as you easily can using the JNCC codes in a hierarchical fashion.

Broad Habitats are level 2 and are:

Littoral Rock **LR**

Littoral Sediment **LS**

Neither of these normally apply to Seasearch data but might to skorkel records or very shallow dives undertaken at high tide.

Infralittoral Rock **IR**

Circalittoral Rock **CR**

Sublittoral Sediment **SS**

It should be possible to assign every Survey Form habitat at least to this level and it is better than nothing.

Main Habitats are Level 3

In the case of all of the rock categories this is where the concept of energy regimes comes in and where we had a lot of difficulty and inconsistency. Thus in most cases it may not be wise to go any further. However, using the exposure and tidal streams data, it may be possible to identify level 3 habitats at the extremes of the range.

For rocky sites which are assessed as extremely exposed or very exposed either of the following will apply:

High energy infralittoral rock

IR.HIR

High energy circalittoral rock

CR.HCR

For rocky sites that are very sheltered or extremely sheltered either of the following will apply:

Low energy infralittoral rock

IR.LIR

Low energy circalittoral rock

CR.LCR

For sediment sites you may be able to go to this level. The options are:

Sublittoral coarse sediment

SS.SCS (unstable cobbles, pebbles, gravels and coarse sand)

Sublittoral sands and muddy sands

SS.SSa (medium/fine sand, low silt content, usually on open coasts)

Sublittoral cohesive mud and sandy mud

SS.SMu (usually found in sheltered conditions – sealochs estuaries etc)

Sublittoral mixed sediment

SS.SMx (mixtures of muddy gravelly sands and sand/gravel/mud with cobbles & pebbles)

Sublittoral macrophyte-dominated communities on sediments

SS.SMp (sediments with plant communities such as maerl, seagrass, sugar kelp, foliose green seaweeds)

Sublittoral biogenic reefs on sediment **SS.SBR** (includes worm reefs and mussel beds – these come up in the bottom up approach too)

For each form identify the broad and main habitats as appropriate and write the code in the Biotope Code box for each habitat.

When entering the data into Marine Recorder enter both the Seasearch and JNCC codes so that search on either type will give the answer. You will need to enter one and save it and for the next biotope select the other in the *Show in drop down box*.

Stage 3: Bottom Up

This stage starts with the habitats and communities that can be identified without going through the whole key process. It will only apply in a few cases and many of the habitats commonly encountered on Seasearch surveys will not appear here. The prime example is kelp forest where there are 12 different biotopes, and kelp appears in many others as well. This is why we continue to enter the Seasearch biotopes because things like kelp forest can be identified there.

For those habitats and species that are identified here we can go all the way and assign the full biotope. When you have identified one of these biotopes enter it into the Biotope box for that habitat on the Survey Form and into Marine Recorder using the Biotope tab. Multiple biotopes (such as Seasearch and a JNCC biotope) must be entered using the full sample pages – the quick sample option will only allow the entry of one.

Habitat based biotopes

- **Caves**

Shallow caves – IR.FIR.SG (usually subject to surge and wave action). There are 7 more detailed biotopes within this complex covering entrances, floors, walls, and back of caves. Often they will not be separated on Survey Forms. See *Biotope Key Box A61 Page 19*

Circalittoral caves – CR.FCR.CV (circalittoral zone, no wave action)

- **Surge Gullies**

Shallow surge gullies – IR.FIR.SG (included with shallow caves above)

- **Wrecks**

Wrecks in the seaweed zone – IR.FIR.IFou (also applies to other seaweed covered artificial substrata)

Deep wrecks without seaweed – CR.FCR.FouFa (also applies to other seaweed free artificial substrata) but often you can go further to:

Metal wrecks with dead men's fingers and plumose anemones – CR.FCR.FouFa.AdigMsen

- **Bored rock** (limestone, chalk, clay, mudstone with many holes)

Shallow bored vertical rock – IR.MIR.KR.HiaSw (in the seaweed zone and usually weak tidal streams. Red nose, *Hiatella arctica* + sponges)

Circalittoral soft rock communities – CR.MCR.SfR There are 3 biotopes within this complex:

Circalittoral vertical bored rock – CR.MCR.SfR.Hia (normally chalk bored by *Hiatella*)

Circalittoral upward facing chalk/clay with piddocks –

CR.MCR.SfR.Pid (normally *Pholas* the main species, limited other life)

Worm and sponge bored chalk/limestone – CR.MCR.SfR.Pol

(characterised by *Polydora* worm tubes and may be riddled with boring form of *Cliona celata*)

- **Urchin grazed rock**
Echinoderms and crustose communities – where there are relatively bare rocky areas below the kelp line with echinoderms (mostly *Echinus*), and extensive encrusting pink algae and/or encrusting bryozoans they will come within **CR.MCR.EcCr**. However you may be able to go further as there are 5 biotopes below this and a further 10 sub-biotopes below that. Many of these will come out below in the species section. The typical grazed communities in NE England/SE Scotland with bare encrusted surfaces with urchins and some dead mens fingers is **CR.MCR.EcCr.FaAICr** whereas in the same areas where you have vertical faces dominated by dead mens fingers they are **CR.MCR.EcCr.AdigVt**
- **Maerl** **SS.SMp.Mrl** this biotope complex covers all types of maerl. There are 4 separate biotopes based on the maerl species but this will not normally be available on a Survey Form
- **Seagrass**
SS.SMp.SSgr.Zmar applies where the seagrass is *Zostera marina* as is normally the case in sublittoral seagrass beds

Species based biotopes (these are arranged in taxonomic order) These will be relevant when the species concerned is the dominating or characterising species, not when it only occurs occasionally.

- **Sea pens**
Slender sea pens (*Virgularia*) with sand brittlestars and scallops on sandy or shelly mud – **SS.SMu.CSaMu.VirOphPmax** if the sediment is coarser with shelly gravel, shell debris or small stones with hydroids and ascidians in addition to the above then add **.Has** to the code above
Sea pens (*Virgularia* and *Pennatula*) in fine mud often with *Nephrops* burrows – **SS.SMu.SpnMeg**
Tall sea pens (*Funiculina*) in addition to the above – **SS.SMu.SpnMeg.Fun**
- **Fireworks anemones** (*Pachycerianthus multiplicatus*) can also occur in either of the two muddy sea pen biotopes above
- **Pink sea fans** (*Eunicella verrucosa*)
Wave exposed circalittoral bedrock often surrounded by coarse sediment with sea fans common, plus potato crisp bryozoan (*Pentapora*) and cup-corals (*Caryophyllia*) – **CR.HCR.XFa.ByErSp.Eun**
Fewer sea fans on vertical bedrock with a mixed turf of hydroids, bryozoans and sponges – **CR.HCR.XFa.SpAnVt**
- **Northern sea fans** (*Swiftia pallida*)
Northern sea fans with abundant cup-corals and large solitary ascidians and also a variety of sponges, hydroids and bryozoans – **CR.HCR.XFa.SwiLgAs**
As above but with less diversity and generally lacking sponges, hydroids and bryozoans – **CR.MCR.EcCr.CarSwi.LgAs**
On more sheltered sites with less tidal streams than either of the above, heavily silted with northern sea fans, cup-corals and red fingers (*A. glomeratum*) – **CR.MCR.EcCr.CarSwi.Aglo**
- **Jewel anemones** (*Corynactis viridis*)
Jewel anemone walls in wave exposed areas with abundant jewel anemones with cup-corals and short bryozoan turf – **CR.HCR.XFa.CvirCri**
- **Ross worms** (*Sabellaria spinulosa*)
Ross worm reefs and agglomerations on mixed sediments – **SS.SBR.PoR.SspiMx**
Ross worm encrusted rock in areas of high turbidity **CR.MCR.CSab.Spi**

- **Hornwracks** (*Flustra foliacea* & *Securiflustra securifrons*)
Dense *Flustra* with other bryozoans and colonial ascidians on circalittoral bedrock in areas subject to scour/siltation (e.g. W Anglesey, N. Llyn) – **CR.HCR.XFa.FluCoAs**
Flustra on cobbles and pebbles in areas of strong tidal streams with large finger growths of *Haliclona oculata* (e.g. Menai Strait) – **CR.HCR.XFa.FluHocu**
Flustra on slightly scoured rock with dead men's fingers and keelworms, some sandy patches causing scour and with dahlia anemones (e.g. Eyemouth/St Abbs, Farne Islands) – **CR.MCR.EcCr.FaAICr.Flu**
Securiflustra on upper and vertical rock faces with dead mens fingers (*A. digitatum*) and urchin grazed bare surfaces with encrusting pink algae (e.g. St Abbs/Eyemouth) – **CR.MCR.EcCr.FaAICr.Sec**
- **Mussel Beds** (all species)
Blue/common mussel (*Mytilus edulis*) beds on the upper faces of tide swept **rock**, boulders and mixed substrata below the kelp line – **CR.MCR.CMus.CMyt**
Blue/common mussel (*Mytilus edulis*) beds on **rock** and boulders in shallow, wave sheltered, tide-swept reduced salinity conditions – **IR.LIR.IFaVS.MytRS**
Musculus discors beds on moderately exposed and tide swept **rock** (e.g. Llyn Peninsula) – **CR.MCR.CMus.Mdis**
Blue/common mussel (*Mytilus edulis*) beds on shallow mixed sediment (e.g. W. Sussex) - **SS.SBr.SMus.MytSS**
Horse mussel (*Modiolus modiolus*) beds on sediment have four biotopes – if none of the following seems appropriate then put - **SS.SBr.SMus** (but this includes blue mussel beds as well. The three horse mussel biotopes which occur in diving depths are:
Horse mussel (*Modiolus modiolus*) beds on tide swept cobbles, pebbles and coarse muddy sediments (e.g. N Llyn Peninsula) – **SS.SBR.SMus.ModT**
Horse mussel (*Modiolus modiolus*) beds or clumps in sheltered conditions with little tidal movement and solitary ascidians and fine hydroids (e.g. sealochs and sheltered Shetland voes) - **SS.SBR.SMus.ModHAs**
Horse mussel (*Modiolus modiolus*) beds covered by hydroids and bryozoans on soft mud with pebbles in sheltered conditions. Often accompanied by variegated scallop (e.g. Strangford Lough) - **SS.SBR.SMus.ModCvar**
- **Flame shell beds** (*Limaria hians*)
Flame shell beds in tide-swept narrows in the entrances of sills of sealochs (e.g. Laudale Narrows, Loch Sunart) – **SS.SMx.IMx.Lim**
- **Brittlestar beds** (all species)
Brittlestar beds (*O. fragilis* and/or *O. nigra*) on exposed circalittoral bedrock and boulders on open coasts overlying cup-corals and coralline crusts of bryozoans, algae, keelworms and barnacles (few examples) – **CR.MCR.EcCrCarSpBri**
Brittlestar beds (*O. fragilis*, *O. nigra* &/or *O. Albida*) on circalittoral bedrock and other hard substrata. Often dense beds with little other fauna except encrusting algae and keelworm tubes. Distinguished from above by less diversity and less exposed locations (e.g. St Abbs/Farne Islands) – **CR.MCR.EcCr.FaAICr.Bri**
Brittlestar beds (*O. fragilis*, *O. nigra* &/or *O. Albida*) on circalittoral bedrock and other hard substrata in more sheltered situations than either of the above (most records W. Scotland) – **CR.LCR.BrAs.AmenCio.Bri**

Dense brittlestar beds (*O. fragilis* and/or *O. nigra*) on circalittoral sediment often containing cobbles and pebbles (e.g. Lyme Bay) –

SS.SMx.CMx.Oph.Mx

- **Sea cucumber beds**

Gravel sea cucumbers (*Neopentadactyla mixta*) on plains of clean shell, gravels or coarse sand (e.g. White Nothe, Dorset) – **SS.SCS.CCS.NMix**