

## Gathering data on Marine Conservation Zone Features in Kent

Kent currently has 3 Marine Conservation Zones (MCZs) around Dover – Dover to Deal MCZ, Dover to Folkestone MCZ (both designated in 2016) and Folkestone Pomerania MCZ (designated in 2013). An additional MCZ was recommended further to the west in Hythe Bay for possible consideration in the next tranche of designations.

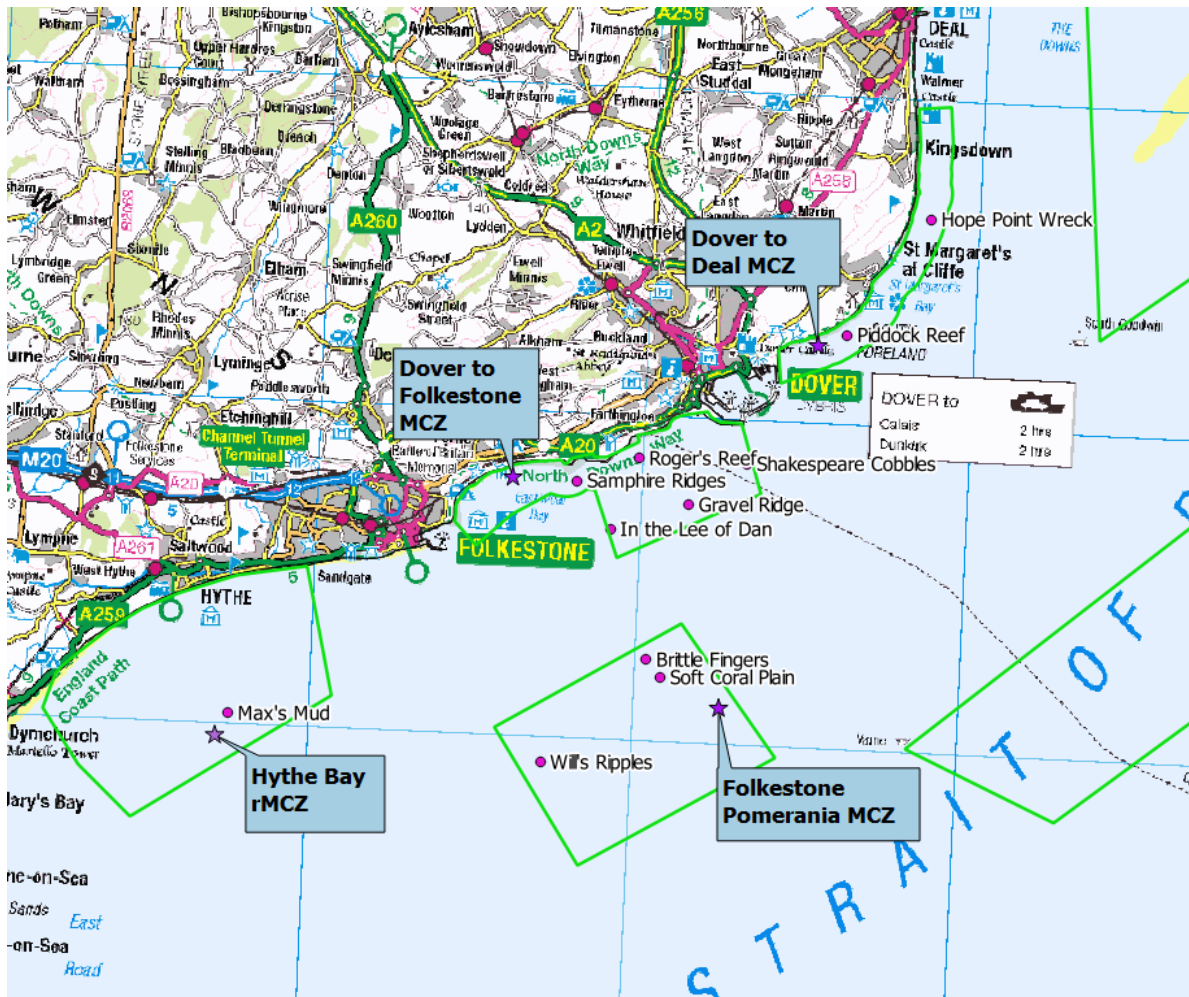
In 2017, Kent Wildlife Trust organised and ran 11 diving surveys across these designated MCZs and the recommended MCZ in Hythe Bay. All surveys focused on finding evidence of Marine Conservation Zone Features.

In the Folkestone Pomerania MCZ the dives focused on finding evidence of ross worm *Sabellaria spinulosa* and honeycomb worm *Sabellaria alveolata* to determine the distribution of these species in the site, returning to places they have been recorded before. Both species are important reef builders creating a complex habitat and increasing the biodiversity of areas in which they occur.

In the MCZs either side of Dover Harbour (Dover to Deal and Dover to Folkestone) the purpose of the dives was to gather current evidence of the on-going presence of certain features that were left out of the original designation due to a technicality. These features may need certain fishing activities to be managed for their protection, but the previous consultation did not highlight this, so their designation was deferred to give the fishermen involved a chance to comment during the consultation on the next tranche of designations. The dives focused on ensuring that there is sufficient up to date data according to the statutory protocol (where evidence older than 5 years is disregarded). In Dover to Deal MCZ these features included blue mussels *Mytilus edulis*, ross worm reef *Sabellaria spinulosa*, moderate- and high-energy sub tidal rock. In Dover to Folkestone five recommended features were omitted from the designation – ross worm reefs, clay exposures, sub tidal chalk, and high- and moderate-energy sub tidal rock.

The purpose of the dive in the recommended MCZ in Hythe Bay was to gather evidence of the presence of spoon worms *Maxmuelleria lankesteri* (a key species in the community proposed for protection) and to visit an area of the site that is believed not to be trawled, to investigate whether the community differed from a trawled area previously surveyed.

This report includes the results of these surveys.



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## Folkestone Pomerania MCZ

### 1. Brittle Fingers

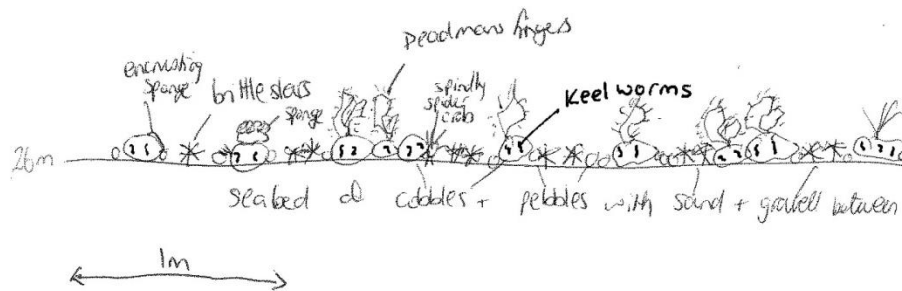
Lying in the north east corner of the Folkestone Pomerania MCZ, this site is where ross worm *Sabellaria spinulosa* has been previously recorded. The area surveyed was limited to 5m<sup>2</sup> as the depth (26m below sea level) limited the time available to survey.



*Brittle Fingers survey site, photo by Fiona White*

The level seabed comprised pebbles and cobbles over a finer sediment of sand and gravel. There was a very distinctive community dominated by keel worms *Spirobranchus* sp. and deadman's fingers *Alcyonium digitatum* on the cobbles and brittlestars *Ophiothrix fragilis* across the entire survey area. A sponge sampled on this dive was later confirmed as either *Clathria fallax* or *C. spinarcus* neither of which has previously been recorded in Kent. The goosebump sponge *Dysidia fragilis* was also recorded along with the hydroids *Nemertesia antennina*, *Tubularia indivisa* and *Abietinaria abietina*. *Sabellaria spinulosa* was not observed at this survey site.

Survey area was only around 5m<sup>2</sup> as depth limited survey time.



**Figure 1:** Sketch of Brittle Fingers survey site by Fiona White

Whilst a particularly distinctive community dominated by three species was observed it was not possible to assign a biotope beyond SS.SMX.Cmx circalittoral mixed sediment. Many of the habitats that are recorded in the south east of England do not have a perfect fit within the list of MNCR biotopes, which results in the assignment of a more general one as exemplified here.

## 2. Soft Coral Plain

This site was also in the vicinity of an area where *Sabellaria spinulosa* has been recorded previously and lay just to the south east of the Brittle Fingers survey site. As was the case with the Brittle Fingers site, this site comprised a level seabed of cobbles and pebbles with an underlying finer sediment of sand at 26m below sea level. Species diversity was greater at this site. Deadman's fingers *Alcyonium digitatum* was the dominant feature along with the brittlestar *Ophiothrix fragilis* and numerous keel worms *Spirobranchus* sp. on the cobbles.



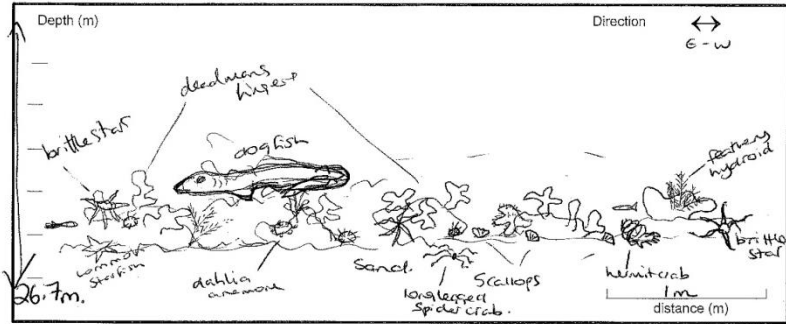
The chocolate finger sponge *Raspailia ramosa*, was recorded along with hydroids including the antenna hydroid *Nemertesia antennina* and *Abietinaria abietina*. Anemones recorded included dahlia anemone *Urticina felina* and *Sagartia troglodytes*, and sea squirts included *Asciidiella aspersa* and *Molgula* sp. *Sabellaria spinulosa* was not recorded at this site.

Soft Coral Plain survey site, photo by Jason Armstrong





*Dahlia anemones Urticina felina* at Soft Coral Plain, photo by Dave Wood



**Figure 2:** Sketch of Soft Coral Plain survey site, by Anna Read

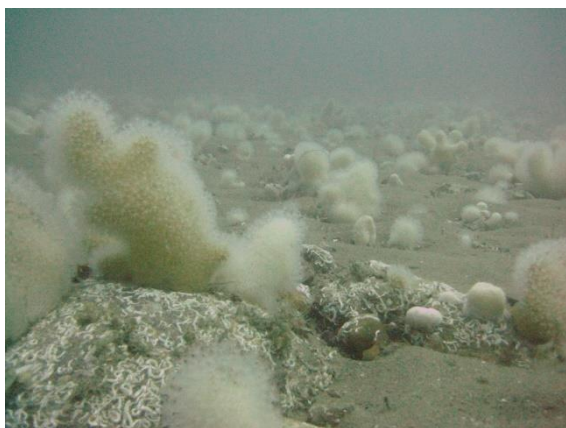


*Brittlestars at Soft Coral Plain,* photo by Dave Wood

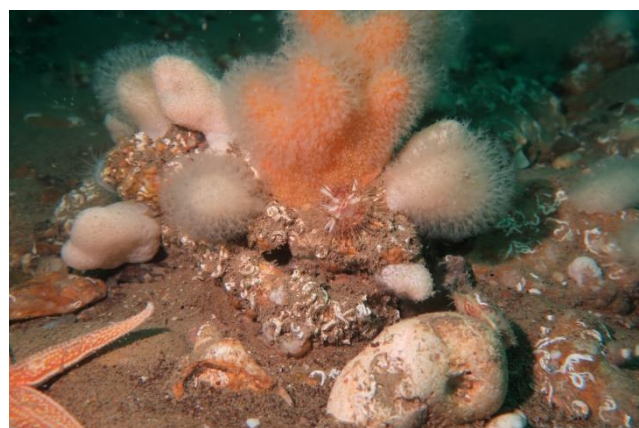
The distinctive community of three dominant species *Alcyonium digitatum*, *Ophiothrix fragilis* and *Spirobranchus* sp. recorded at Brittle Fingers was also present here but due to the presence of hornwrack *Flustra foliacea*, it was possible to assign a more specific biotope SS.SMx.CMx.FluHyd *Flustra foliacea* and *Hydrallmania falcata* on tideswept circalittoral mixed sediment.

### 3. Will's Ripples

This survey site lies on the western edge of the Folkestone Pomerania MCZ close to a site where ross worm *Sabellaria spinulosa* has previously been recorded. The level seabed at 27m comprised cobbles and pebbles overlying sand which in places formed ripples. Deadman's fingers *Alcyonium digitatum* and keel worms *Spirobranchus* sp. were the dominant species and sand mason worms *Lanice conchilega* were also noted as common. The brittlestar *Ophiura albida* was recorded here along with the common starfish *Asterias rubens* and the green shore urchin *Psammechinus miliaris*. *Sabellaria spinulosa* was not found at this site.



*Will's Ripples survey site,* photo by Jason Armstrong



*Typical community at Will's Ripples survey site,* photo by Will Martin

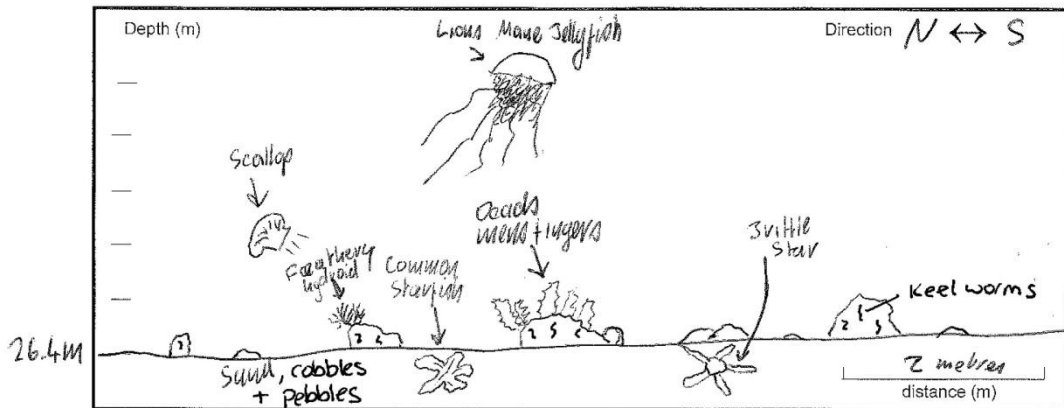


Figure 3: Sketch of Will's Ripples survey site by Will Martin

The community at this site was similar to the other sites surveyed this year within this MCZ, but once again it was not possible to assign a biotope beyond the more general circalittoral mixed sediment SS.SMX.Cmx .

## Dover to Deal MCZ

### 4. Piddock Reef

Lying just below South Foreland lighthouse, this site comprised a heavily piddock bored chalk reef with abundant piddock holes and occasional live piddocks. Two habitats were recorded at this site but post-dive observation of photographs determined a distinct and separate third biotope comprising the vertical chalk surfaces dominated by the piddock *Hiatella arctica*. The tops of the chalk reef at 9.5m below sea level were covered in a dense hydroid and bryozoan turf with numerous heavily silted sea squirts *Molgula* sp. and several erect and encrusting sponges including chocolate finger sponge *Raspailia ramosa*, shredded carrot sponge *Amphilectus fucorum*, mermaid's glove sponge *Haliclona oculata* and *Myxilla rosacea*. The antenna hydroid *Nemertesia antennina* was frequently observed along with oaten pipe hydroids *Tubularia indivisa*. Bryozoans included *Bugula* sp. and *Chartella papyracea*. In addition to the piddocks, other molluscs recorded included painted topshells *Calliostoma zizyphinum*, the spotted cowrie *Trivia monacha* and the crystal seaslug *Janolus cristatus*.

The lower lying exposed chalk bedrock at 11m below sea level was scoured in many places by the small chalk pebbles and flint cobbles which lay over the bedrock. This habitat exhibited less attached life and less diversity of species. Sponges of the genus *Suberites* were occasionally observed as were the bryozoans *Cellapora pumicosa* and *Alcyonidium diaphanum*. Piddock holes were abundant and live piddocks were recorded as occasional in abundance. Mobile life included velvet swimming crabs *Necora puber*, hermit crabs *Pagurus* sp. and the edible crab *Cancer pagurus*.



Piddock Reef survey site, photo by Fiona White



Chalk reef tops and sides at Piddock Reef, photo by Fiona White



Close up of live piddocks at Piddock Reef, photo by Fiona White



Habitat 2 at Piddock Reef, photo by Fiona White

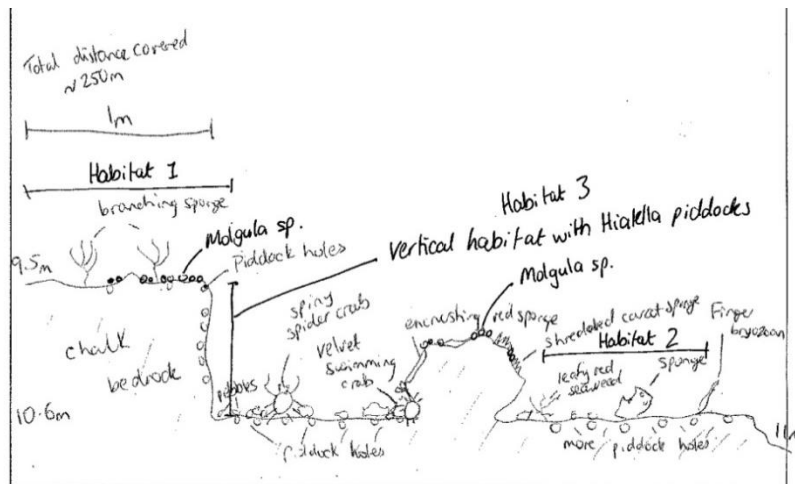


Figure 4: Sketch of Piddock Reef survey site by Fiona White

This survey evidenced the presence of target habitats: high energy and moderate energy sub tidal rock.

The top of the chalk reef exhibited the circalittoral rock mixed faunal turf community biotope CR.HCR.XFa. Despite the rich variety of life, there were insufficient erect sponges to assign the bryozoan turf and erect sponges on tide-swept

circalittoral rock biotope CR.HCR.XFa.ByErSp and therefore the more general biotope was assigned. Due to the common occurrence of *Molgula sp.* it was also possible to assign the biotope *Molgula manhattensis* with a hydroid and bryozoan turf on tide-swept moderately wave-exposed circalittoral rock CR.HCR.XFa.MoI.



It was possible to assign the lower lying chalk (habitat 2) to the CR.MCR.SfR.Pid Piddocks with a sparse associated fauna in circalittoral very soft chalk or clay biotope. The vertical sides of the chalk reef housed a community of the wrinkled rock borer *Hiatella arctica* and it was therefore possible to assign the *Hiatella*-bored vertical sublittoral limestone rock biotope CR.MCR.SfR.Hia. Both of these are moderate energy rock biotopes.

### 5. Hope Point Wreck

The target site here was a ridge which was evident in detailed bathymetric data for the area. The ridge was in fact the flattened steel wreckage of a large ship with debris protruding from a seabed of pebbles. The wreck lay at 13m below sea level. As an artificial structure and despite supporting a community typical of high energy circalittoral rock (CR.HCR.XFa.Mol) this does not constitute an example of this feature.

## Dover to Folkestone MCZ

### 6. Lee of Dan



Lee of Dan survey site, photo by Fiona White

At the western edge of the deeper section of this MCZ, this site comprised a level seabed of cobbles and pebbles with occasional small boulders at a depth of 22m below sea level. Cobbles and boulders were covered in a silty hydroid and bryozoan turf including the hydroids *Kirchenpaueria pinnata/similis*, antenna hydroid *Nemertesia antennina* and herringbone hydroid

*Halecium halecinum* and the bryozoans hornwrack *Flustra foliacea*

and potato crisp bryozoan *Pentapora foliacea*. Erect and encrusting sponges were recorded including *Suberites ficus* and mermaid's glove sponge *Haliclona oculata*.

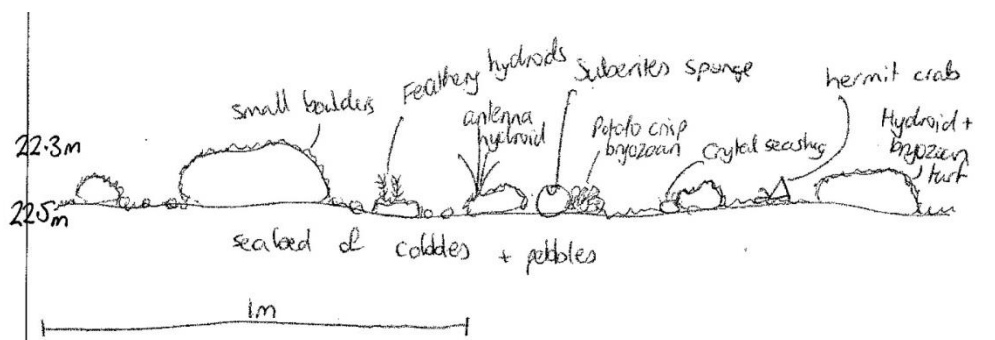


Figure 5: Sketch of Lee of Dan survey site by Fiona White

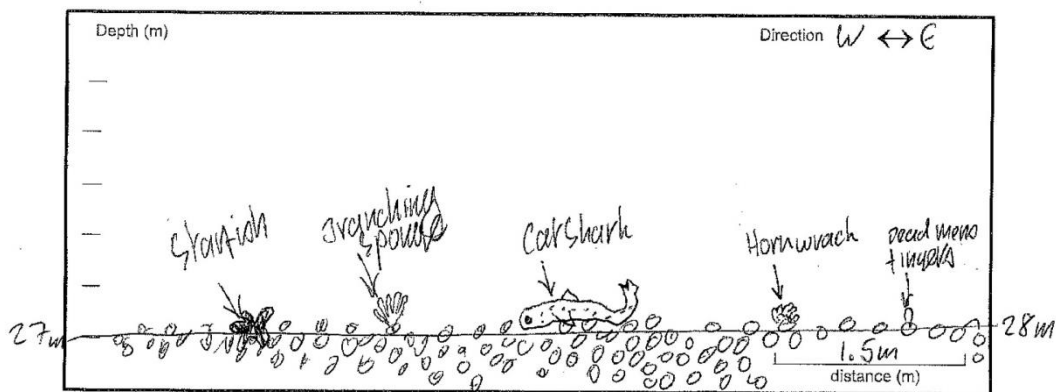
The presence of the boulders provided for a more stable substrate and the assignment of the circalittoral rock mixed faunal turf community biotope CR.HCR.XFa and evidenced the presence of high energy sub tidal rock, one of the target habitats.

### 7. Shakespeare Cobbles

Located at the very eastern edge of this MCZ this site comprised a gently sloping and undulating seabed of cobbles, pebbles, sand and gravel with some shell fragments at a depth of 26-27m. Larger cobbles were covered in silted short hydroid and bryozoan turf and taller turf, clean of silt, including hornwrack *Flustra foliacea* and finger bryozoan *Alcyonidium diaphanum*. Dahlia anemones *Urticina felina* were also present.



*Dahlia anemones at Shakespeare Cobbles, photo by Will Martin*



**Figure 6:** Sketch of Shakespeare Cobbles survey site by Will Martin



*Shakespeare Cobbles survey site, photo by Will Martin*

The survey area exhibited one biotope - SS.SMx.CMx.FluHyd *Flustra foliacea* and *Hydrallmania falcata* on tideswept circalittoral mixed sediment.

None of the features requiring evidence were found at this site.

### 8. Gravel Ridge

This survey uncovered an area of very loose, soft and mobile gravel and coarse sand with deep scours approximately 0.5-1m deep. Life was exceptionally sparse and limited to occasional keel worms *Spirobranchus* sp., a hermit crab, occasional starfish *Asterias rubens* and a lesser spotted catshark *Scyliorhinus canicula*. Due to the lack of life on the seabed only the general Sublittoral Mixed Sediment SS.SMx biotope can be assigned.





Gravel Ridge survey site, photo by Will Martin

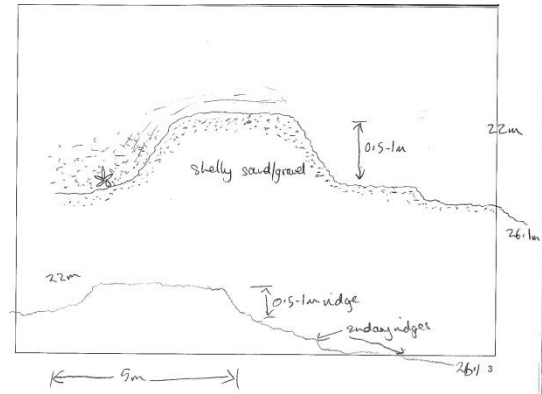


Figure 7: Sketch of Gravel Ridge survey site by Bryony Chapman

None of the features requiring evidence were found at this site.

## 9. Roger's Reef

Located just off the artificial platform at Samphire Hoe created from the spoil from the Channel Tunnel, this survey was on a level seabed of marly, grey chalk at 22m depth. A thin veneer of sediment covered the bedrock; small boulders, cobbles and pebbles were scattered across the survey area. The bedrock was broken in places exposing raised areas with piddock holes. The boulders and chalk bedrock outcrops exhibited a dense cover of hydroid and bryozoan turf and crusts including hornwrack *Flustra foliacea* and *Cellapora pumicosa*, as well as erect and encrusting sponges including mermaid's glove sponge *Haliclona oculata*. Plumose anemones *Metridium senile* were frequently observed along with deadman's fingers *Alcyonium digitatum*.



Plumose anemones and hornwrack at Roger's Reef, photo by Will Martin



Finger bryozoan at Roger's Reef, photo by Will Martin

The lower lying marly, chalk bedrock had sparser and less diverse life. Finger bryozoan *Alcyonidium diaphanum* and the bryozoan *Vesicularia spinosa* were most noticeable along with occasional dahlia anemones *Urticina felina*.

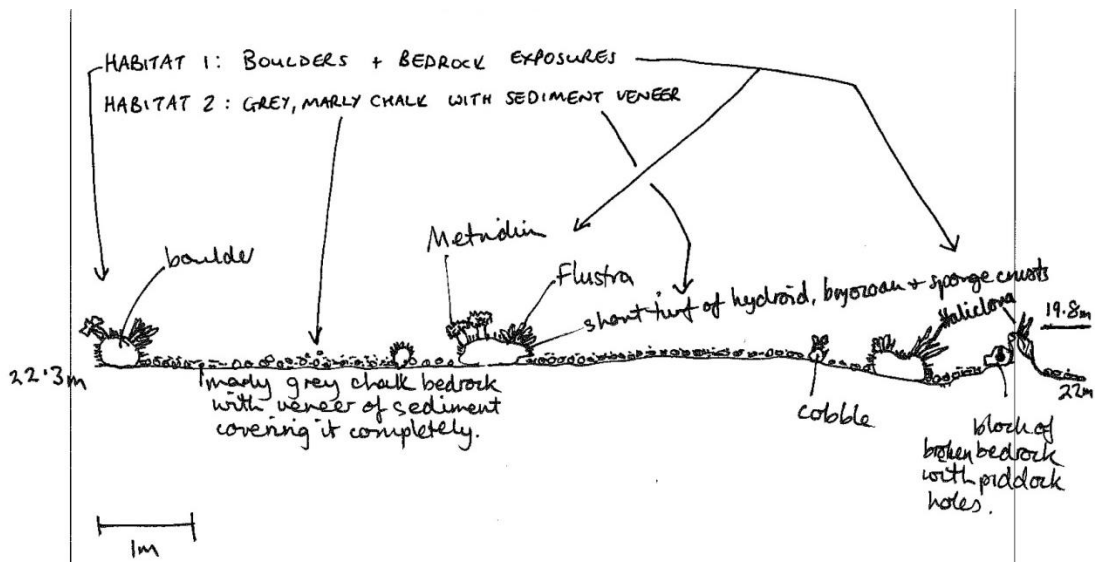


Figure 8: Sketch of the survey site at Roger's Reef by Bryony Chapman

Whilst it was not possible to assign biotopes beyond the more general CR.HCR.XFa circalittoral rock mixed faunal turf community for habitat 1 and SS.SMx.CMx circalittoral mixed sediment for habitat 2, this site provided evidence of subtidal chalk and high energy sub tidal rock.

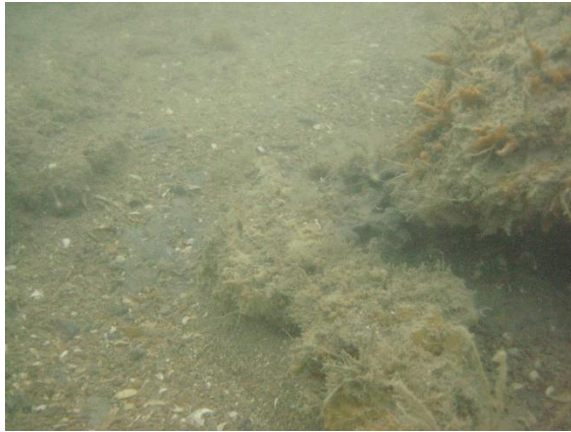
## 10. Sapphire Ridges

This site was also located just off the Sapphire Hoe platform, but further to the west. The chart showed a low mound with surface roughness rising above the surrounding seabed, and the divers found an area of low sandstone bedrock eroded into low ledges of varying size and shape at a depth of 12-13m. The tops of the ledges were eroded into miniature gullies and ridges with occasional slabby boulders present and in between were flat-bottomed basins and valleys of various depths (all shallow) and sizes. All were floored with piddock bored black, friable rock with small boulders, cobbles and drifts of coarse sand.

Most rock surfaces were covered in a dense turf of sponges, sea squirts and anemones, with tall turf species especially pronounced on the tops, but large mermaid's glove sponge *Haliclona oculata* were dotted about at all levels. The tops and sides of the ledges were covered by a rich variety of turf species dominated by *Haliclona oculata*, hornwrack *Flustra foliacea*, the bryozoan *Bowerbankia pustulosa* and *Molgula* sea squirts. The antenna hydroid *Nemertesia antennina* was also particularly noticeable. Piddocks were common in the tops and sides of the ledges (habitat 1) as well as the flat bottomed basins (habitat 2).



Rich turf cover at Sapphire Ridges survey site, photo by Jason Armstrong



Flat-bottomed basins at Samphire Ridges, photo by Jason Armstrong

The lower lying areas (habitat 2) were characterised by a shorter animal turf of *Molgula* sea squirts, sponges, bryozoan turf and crusts. Taller turf of deadman's fingers *Alcyonium digitatum* and mermaid's glove sponge *Haliclona oculata* were present but to a much lesser extent than on the sides and upper surfaces. In this habitat the finger bryozoan *Alcyonidium diaphanum* was more

prominent along with the commonly observed piddocks.

Towards the end of the survey an *Ampelisca* bed was found but not surveyed in detail. This was quite extensive, at least 10m across and was therefore included as a third habitat.

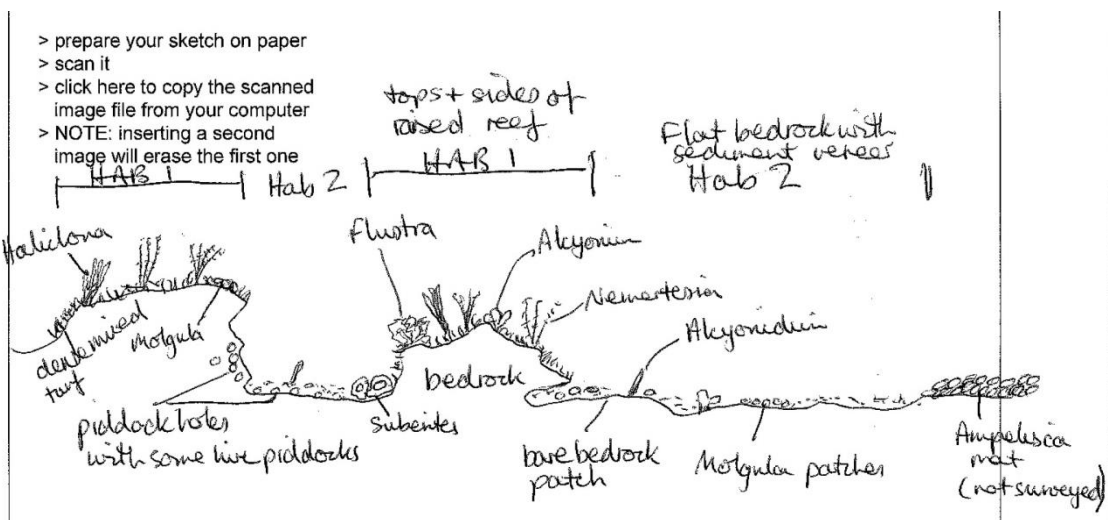


Figure 9: Sketch of the Samphire Ridges survey site by Bryony Chapman

Three biotopes were identified at this site. The tops and sides of the ledges were the mixed faunal turf community CR.HCR.XFa. The most appropriate biotope for the lower lying basin areas was the 'Piddocks with a sparse associated fauna in circalittoral very soft chalk or clay' biotope CR.MCR.SfR.Pid. The *Ampelisca* bed biotope was the sediment biotope SS.SMu.ISaMu.AmpPlon *Ampelisca* spp., *Photis longicaudata* and other tube building amphipods and polychaetes in infralittoral sandy mud.

This survey provided evidence of high and moderate energy sub tidal rock.



## Hythe Bay recommended MCZ

### 11. Max's Mud

The survey site lay towards the south eastern boundary of the proposed MCZ in an area that is believed not to be trawled and at a depth of 22-24m. Small mounds (around 10cm across) and occasional burrows were observed across the gently undulating muddy seabed. Most of the holes seen were around 1cm diameter, some were smaller and some 2-3cm diameter.



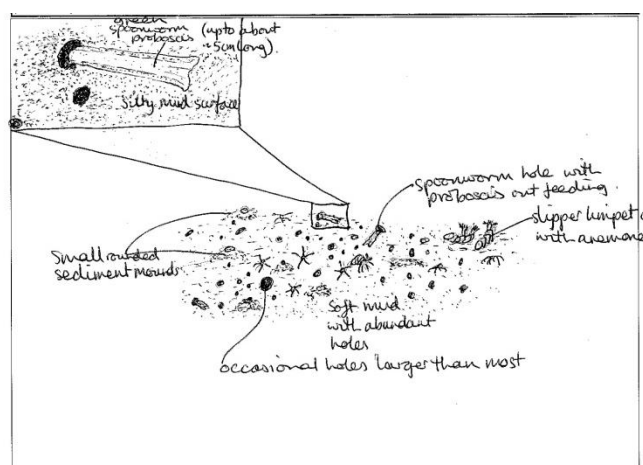
*Proboscis of a spoonworm Maxmuelleria lankesteri at Max's Mud survey site*

Probosces of spoon worms *Maxmuelleria lankesteri* were seen along with many small bivalves (*Abra* sp.), chains of slipper limpets *Crepidula fornicata* and abundant brittlestars *Ophiura albida*. Very small plumose anemones *Metridium senile* were attached to slipper limpets.



*Sequence showing the retraction of a spoon worm proboscis, taken from video by Bryony Chapman*

The spoon worms were observed to be feeding on a sunny day with reasonable ambient light. It was understood that feeding usually occurred in lower light situations. The probosces remained extended when exposed to red light, but withdrew upon exposure to strobe or white light.



**Figure 10:** Sketch of Max's Mud survey site by Bryony Chapman

This survey provided evidence of the presence of spoon worms at this site a key component of the MCZ habitat feature of 'seapens and burrowing megafauna', this example being the SS.SMu.CFiMu.MegMax Burrowing megafauna and *Maxmuelleria lankesteri* in circalittoral mud.

## Summary:

The surveys undertaken in the existing MCZs did not find any *Sabellaria* spp., even in the locations it had previously been recorded. *Sabellaria spinulosa* is known to be an ephemeral species<sup>1</sup> therefore further surveys remain a high priority in order to elicit records of this species in future diving seasons. *Sabellaria alveolata* reefs are similarly ephemeral but they have very particular requirements and therefore potentially have less suitable habitat available<sup>2</sup> and consequently potentially trickier to find. Further surveys are recommended.

The surveys in the MCZs either side of Dover Harbour provided evidence of both high and moderate energy sub tidal rock. Evidence of subtidal chalk was obtained in the Dover to Folkestone MCZ. Further dive surveys are required in the Dover to Deal MCZ to provide evidence of the location of blue mussels beds *Mytilus edulis*, and in the Dover to Folkestone MCZ to provide additional evidence of clay exposures. Clay exposures are known to be present on the shore and very shallow subtidal areas at the western section of this MCZ in Wear Bay, however due to the friable nature of the substrate and the shallow depth of water in this area it can be extremely difficult to get the right conditions with sufficient visibility to carry out a dive survey in order to obtain the up to date evidence required.

The survey in the Hythe Bay recommended MCZ provided further data and photographic evidence of spoon worms *Maxmuelleria lankesteri*, the key species of a community recommended for protection in this area. It is hoped that the imagery obtained of the animals in their habitat will help to illustrate the importance of the site and the need for its protection.

*This report has been compiled by Fiona White, Marine Officer at Kent Wildlife Trust using data collected by Kent Seasearch divers on dives organised and run by Kent Wildlife Trust during 2017.*

*Seasearch is a partnership between the Marine Conservation Society (MCS), The Wildlife Trusts, statutory nature conservation bodies and others, co-ordinated nationally by MCS and co-ordinated and delivered locally in England by Wildlife Trust and MCS local co-ordinators.*

*Kent Wildlife Trust is grateful to the dive boat charter skippers Dave Bachelor of Datum Marine Services and Chris Webb of Mutiny Divers. Thanks go to all the volunteer Seasearch divers who helped in gathering the data this year and to The Crown Estate via National Seasearch for its financial contribution.*

## References:

1. <http://jncc.defra.gov.uk/page-5706>
2. <http://www.marlin.ac.uk/species/detail/1129>

