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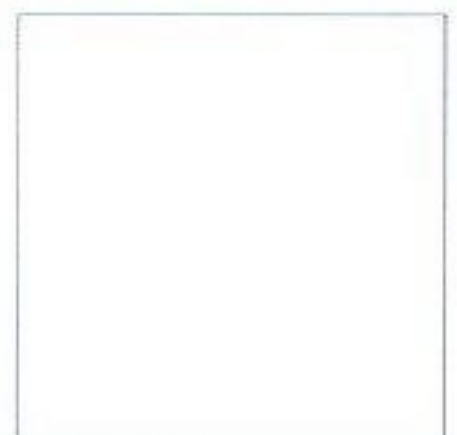
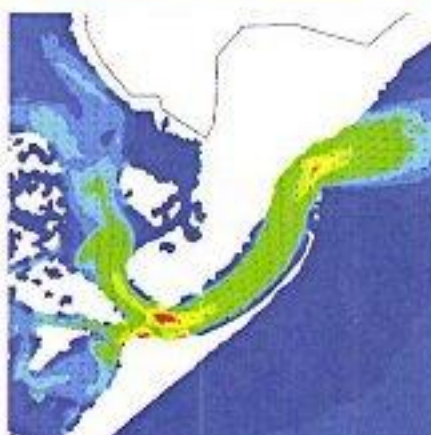
Intertidal ha

June 2017

APPENDIX ①
INTERTIDAL
HABITAT
SURVEY

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Innovative Thinking - Sustainable Solutions



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Southmoor Managed Realignment Site, Langstone Harbour

Intertidal habitat survey to inform Environmental Impact Assessment

June 2017



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1 Introduction

This report has been prepared by ABPmer for AECOM on behalf of the Environment Agency. It reviews the baseline ecological characteristics of the foreshore fronting the proposed Southmoor managed realignment scheme based on a field survey of the site that was undertaken by ABPmer in March 2016. The specific objectives of the survey were to achieve the following:

- Produce a broad-scale map the foreshore habitats in the vicinity of the proposed Southmoor managed realignment scheme; and
- Confirm the presence and distribution of designated features as well as rare species or nationally important biotopes.

The shoreline and intertidal area adjacent to the site is designated as a Special Area for Conservation (SAC), Special Protection Area (SPA), Ramsar Site and a Site of Special Scientific Interest (SSSI) (Figure 1).

2 Survey Methods

The intertidal habitat mapping survey was undertaken on the 28 March 2017 and was scheduled to coincide with an equinoctial spring tidal period. The survey approach was based on the standardised Phase 1 mapping methodology as detailed in the Marine Monitoring Handbook, Procedural Guidance No 3-1 (Wyn and Brazier, 2001) and Countryside Council for Wales (CCW) Handbook for Marine Intertidal Phase 1 Survey and Mapping (Wyn *et al.*, 2000). The landward boundary of this survey was Mean High Water Springs (MHWS). The seaward boundary was the lowest part of the shore which could be accessed safely at the time of low water.

The habitat survey was undertaken on foot. Aerial photography and satellite images were taken into the field to create sketch maps. Habitats in the area were mapped using a Garmin Global Positioning System (GPS) (average accuracy ± 5 m) as polygons using the Marine Habitat Classification for Britain & Ireland (MHCBI) 04.05 to biotope class levels 4 or 5 (Conner *et al.*, 2004). Biotopes, or other notable features, covering less than 5 m² were recorded using referenced target notes. Following the completion of the survey, the biotope extents across the area were mapped into Geographical Information System (GIS) layers using ArcGIS and using positional information derived from the GPS readings.

3 Results

To summarise the key findings from this work, the survey area was divided into three broad areas as shown on Figure 2. These areas are as follows:

- **Southmoor West:** The foreshore below the western section of the Southmoor scheme site;
- **Southmoor East:** The shoreline below the eastern section of the Southmoor scheme site to west of the Lavant stream; and
- **Lavant Stream to Langstone Sailing Club:** The foreshore east of the Lavant stream to the Langstone Sailing Club.

The boundaries of these areas and the spatial distribution of biotopes recorded are shown in Figure 2. Target notes and photos describing the species and habitats recorded in more detail are included in Appendix A.

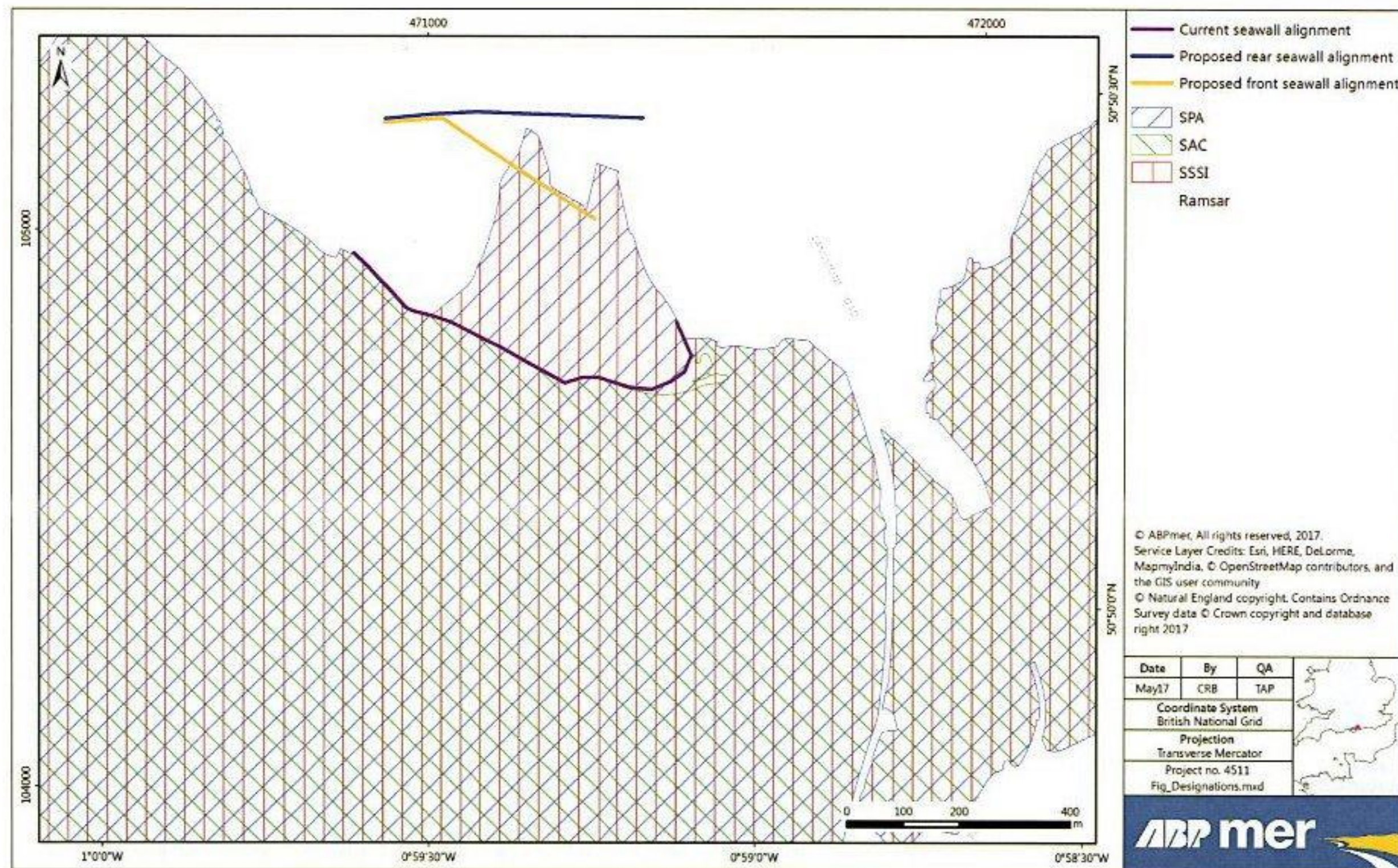


Figure 1. Location of the proposed Southmoor Managed Realignment site showing the extent of international and national designated areas



Figure 2. Habitats on the foreshore fronting the proposed Southmoor managed realignment site during the Phase 1 mapping survey

The habitats observed in each area are described in the following sections. Each section is structured so that habitats recorded on the lower shore are described first, followed by mid-shore habitats and finally those habitats observed on the upper shore.

3.1 Southmoor West

3.1.1 Lower shore habitats

The lower shore appeared to consist of soft mud with some gravel evident (LS.LMu: Littoral mud/LS.LCSLittoral coarse sediment). However, observations were undertaken at a distance as the soft nature of the sediment prevented accessing this section of the shore safely on foot.

3.1.2 Middle shore habitats

The upper mid shore was covered in a relatively stable mixed substratum habitat (consisting of sandy mud, gravel, pebbles, cobbles and occasional small boulders) that was colonised predominantly by spiral wrack *Fucus spiralis* (LR.LLR.F.Fspi.X: *F. spiralis* on full salinity upper eulittoral mixed substrata). The gutweed *Ulva intestinalis* was also present in large clumps (Image 1). Other epifaunal species recorded in this habitat included the common periwinkle *L. littorea*, limpets and barnacles.



Image Source: ABPmer, March 2017

Image 1. Upper shore shingle beach habitat and mid shore mixed sediment habitat (colonised by *F. spiralis* and gutweed *U. intestinalis*)

The lower mid shore consisted of mixed substratum with periwinkles and barnacles on the larger pebbles and cobbles. Patches of red seaweed (such as Irish moss *Chondrus crispus* and *Dumontia contorta*), gutweed *U. intestinalis*, clumps of the sponge *Hymeniacidon perlevis*, and occasional serrated wrack *F. serratus* were also recorded. This habitat has been assigned to the biotope LR.FLR.Eph.BLitX (Barnacles and *Littorina* spp. on unstable eulittoral mixed substrata).

Other species recorded in this area included the Pacific oyster *Crassostrea gigas* and flat top shell *Gibbula umbilicalis*. The shore crab *Carcinus maenas*, common blenny *Lipophrys pholis* and broad-clawed porcelain crab *Porcellana platycheles* were also recorded under boulders in this area. There was also evidence of bottom trawl fisheries disturbance in this area.

3.1.3 Upper shore habitats

The upper shore consisted of shingle (LS.LCS.Sh.BarSh: Barren littoral shingle) directly below the seawall. Within this zone there were several strandline areas characterised by sand hoppers (Talitrid amphipods) on decomposing seaweed (LS.LSa.St.Tal: Talitrids on the upper shore and strandline).

3.2 Southmoor East

3.2.1 Lower shore habitats

Based on observations made from a safe location, it appears as though the lower shore habitat was the same as recorded further west (see Section 3.1.1).

3.2.2 Middle shore habitats

The mid shore consisted of broadly the same substratum type as described further west (i.e. a mixture of sandy mud, gravel, pebbles and cobbles). However, the area has been much more extensively disturbed through bait digging with far less colonisation of algae species such as spiral wrack *F. spiralis* and gutweed *U. intestinalis*. Epifaunal invertebrates such as gastropods and barnacles were also less abundant (Image 2). Cockles *Cerastoderma edule* and polychaetes such as ragworms *Hediste* spp were present in the sediment. This habitat has been assigned to the biotope LS.LMx.GvMu (Hediste-dominated gravelly sandy mud shores).



Image Source: ABPmer, March 2017

Image 2. Bait digging disturbance on the mid shore

On the eastward bank of the mouth of the Lavant stream, accreted mud with abundant live cockles *Cerastoderma edule* and polychaete worm casts was recorded (LS.LSa.MuSa.CerPo: *Cerastoderma edule* and polychaetes in littoral muddy sand).

3.2.3 Upper shore habitats

On the upper shore, shingle habitat (LS.LCS.Sh.BarSh: Barren littoral shingle) was evident directly below the seawall. Within this zone there were several strandline areas characterised by sand hoppers

(talitrid amphipods) on decomposing seaweed (LS.LSa.St.Tal: Talitrids on the upper shore and strandline).

3.3 Lavant Stream to Langstone Sailing Club

3.3.1 Lower shore habitats

The lower shore habitat was the same as recorded further west (Section 3.1.1).

3.3.2 Middle shore habitats

The shoreline east of Lavant stream consisted of gravelly mud, pebbles and cobbles. The spiral wrack *F. spiralis* and gutweed *U. intestinalis* were attached to the larger pebbles and cobbles. Some bait digging was also evident in this area. The habitat in this area was considered to be a mixture of the LS.LMx.GvMu (Hediste-dominated gravelly sandy mud shores) and spiral wrack *Fucus spiralis* (LR.LLR.F.Fspi.X: *F. spiralis* on full salinity upper eulittoral mixed substrata).

3.3.3 Upper shore habitats

The upper shore consists of areas of seawall, shingle (LS.LCS.Sh.BarSh: Barren littoral shingle) and some debris such as bricks and concrete blocks. Several small patches of *Spartina spp* (LS.LMp.Sm.SM6: *Spartina Anglica* or LS.LMp.Sm.SM4: *Spartina maritima*) were also present along the upper shore near the mouth of the Lavant stream.

3.4 Ornithology observations

Flocks of between 10 and 40 Dark-bellied Brent Geese (Image 3) as well as several hundred gulls (mainly Black-headed gulls and smaller numbers of Herring Gull) were recorded feeding on the foreshore, particularly in the vicinity of the Lavant creek. In addition, low numbers (< 20 individuals) of waders (Oystercatcher and Curlew), wigeon and swans were recorded in this area.



Image Source: ABPmer, March 2017

Image 3. Dark-bellied Brent Geese feeding and loafing on the foreshore near the Lavant stream

4 Conclusions

The upper shore was predominately characterised by barren shingle habitat and also sections of seawall. Several patches of *Spartina* spp. were also present on the upper shore near the mouth of the Lavant stream. Below this zone, along the mid shore, the area consisted of mixed sediment habitat (sandy mud, gravels, pebbles and cobbles) with infaunal species such as cockles and polychaete worms present. In the more stable areas of the upper mid shore (particularly along the western section of the foreshore), marine algae (such as furoid seaweeds and gutweed) were attached to the larger pebbles and cobbles. Red seaweeds, sponges and occasional serrated wrack were present on the lower mid shore. The lower shore consisted of soft mud with some gravel evident.

Several habitats recorded in the survey (mixed sediment habitat, intertidal mudflats and *Spartina* marsh) are features of the Solent Maritime Special Area of Conservation (SAC) and supporting features of the Chichester and Langstone Harbours Special Protection Area (SPA) and Chichester and Langstone Harbours Ramsar. These habitats along are also listed as Biodiversity Action Plan (BAP) Priority Habitats and Habitats of Principal Importance in England under the Natural Environment and Rural Communities (NERC) Act 2006 Section 41 (NERC, 2008; UK Biodiversity Action Plan, 2008a; UK Biodiversity Action Plan, 2008b; UK Biodiversity Action Plan, 2008c). No other protected habitats or species were recorded in the surveys.

5 References

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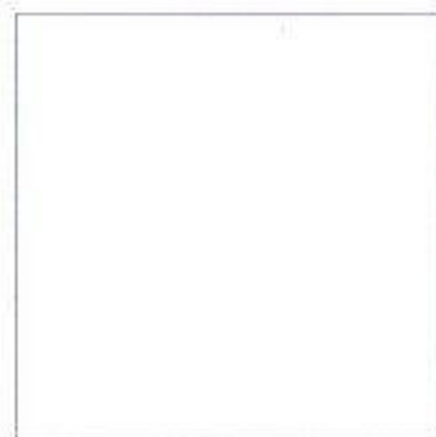
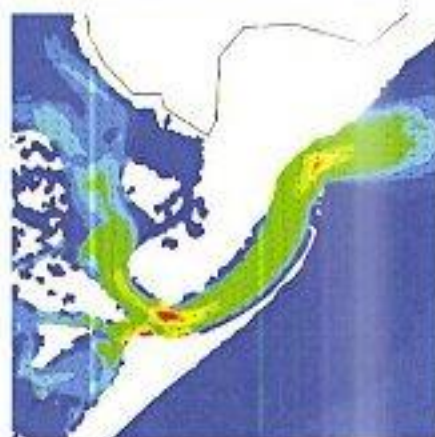
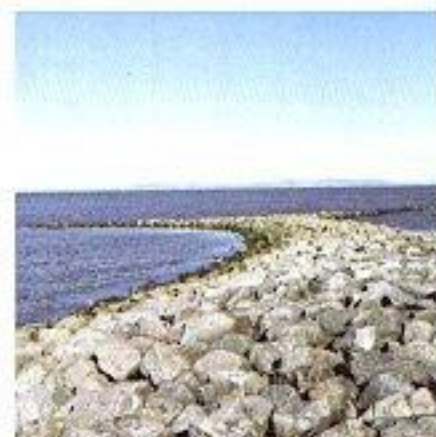
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Appendix



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A Species Recorded in the Surveys

Species	Photo
Common limpet - <i>Patella vulgata</i>	
<i>Spartina</i> spp.	
Sponge - <i>Hymeniacidon perlevis</i> with Common periwinkle - <i>Littorina littorea</i> .	
Common cockle - <i>Cerastoderma edule</i>	
Worm casts	
Spiral wrack - <i>Fucus spiralis</i>	

Species	Photo
Serrated wrack - <i>Fucus serratus</i>	
Gutweed - <i>Ulva intestinalis</i>	
Pacific oysters - <i>Crassostrea gigas</i>	
Under boulder community with Flat top shell - <i>Gibbula umbilicalis</i> , Keel worm - <i>Pomatoceros spp</i> , Barnacles and Sponges	
Common blenny - <i>Lipophrys pholis</i>	
Sponge - <i>Hymeniacidon perlevis</i> , Irish moss - <i>Chondrus crispus</i> and <i>Dumontia Contorta</i>	

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