

Intertidal decapod survey of the northeast coast – September 2022

Saltburn	54.58755 N, -0.948189 W	Photos 152-162
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26/09/22 09:12 – 09:30

A flat wave cut platform on this wave-exposed shore east of Saltburn towards Hunt Cliff. A sparse limpet/ Barnacle biotope (LR.HLR.MusB.Sem) dominates on the soft mudstone rock surface with mussel spat and juvenile *Littorina littorea* in the rock pools. The faults in the rock platform create long thin shallow pools in which boulders have become embedded in coarse sand and shingle (LR.FLR.Rkp.SwSed). Most of the appropriate boulders with a cryptic environment beneath, possess small numerous hermit crabs and juvenile shore crabs (*Carcinus maenas*) taking refuge. All those seen were sub-30mm across the carapace. The majority of which were also “peelers” and had recently shed their exoskeletons. The rockpools were also full of *Steromphala cineraria* (*Gibbula*) giving a clear indication this was a lower shore habitat. The sparse algal component was composed of stunted *Chondrus crispus*, *Hildenbrandia rubra* and green *Verrucaria* lichen species. On the boulders higher up the shore green algae and *Ulva* species frequently covered the surfaces indicating the frequent disturbance by gales and onshore winds. Occasionally there were small patches of *Osmundea pinnatifida*, *Fucus vesiculosus* and fucoid sporelings on the middleshore boulders.

Note: The sand flats on the approach to the wave-cut platform, east of Saltburn were covered in vast quantities of stranded kelp and large numbers of razor shell valves, indicating that recent strong onshore winds had been apparent. The razor shells were not recently dead however, but long dead as no traces of flesh were present within the valves and the valves were thin and abraded.



Cowbar Nab	54.55961 N, -0.79660 W	163-191
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26/09/22 10:07 – 10:30

A survey of Staithes harbour revealed numerous juvenile *Carcinus maenas* and hermit crabs beneath most of the suitable boulders. The shore was composed of sparse boulders

embedded in muddy sand and outcrops of reef. The reef was colonised by mixed fucoids; *Fucus serratus* and *F. vesiculosus* in particular (LR.LLR.F.Fserr.X) and large rip rap coastal defence boulders that are stacked at the top of the beach were covered in green filamentous algae. *Pelvetia canaliculata* and *F. spiralis* colonised these boulders and *Ulva spp.* also colonised the shore habitats affected by freshwater from the Easington Beck that flows across the beach. The numerous *C. maenas* found all had carapace widths smaller than 20mm and again many had recently moulted. Beneath the boulders were also abundant 5 bearded rockling, butter fish, scorpion fish and *Palaemon serratus* prawns. Sand mason polychaete worms (*Lanice conchelig*a) were numerous in the surrounding sediments.



Runswick Bay	54.53394 N, -0.74768 W	Photos 193-222
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26/09/22 10:54 – 11:30

A broken boulder shore on a “mud stone/shale” wave-cut platform with many shallow scoured pools and a mosaic of barnacle dominated bedrock and boulders interspersed with a mixed fucoid biotope . The tops of the boulders were colonised by limpets, barnacles, dog whelks, edible periwinkles and top shells (LR.HLR.MusB.Sem). The sides of the boulders were colonised by *F. serratus*, *F. vesiculosus* and *Ascophyllum nodosum*, with the epiphyte *Vertebrata lanosa* present (LR.LLR.F). Also on the sides of the boulders were the small foliose red algae *Lomentaria articulata*, *Osmundea pinnatifida*, *Chondrus crispus* and *Corallina spp.*, whilst the lower boulder surfaces were often dominated by serpulids tube worms. Where stable rockpools occur coralline crusts were able to dominate the pool’s floor and dense growths of *Corallina spp.* also flourish (LR.FLR.Rkp.Cor). Nearer the lower shore and the supply of wave-carried beach sand, *Rhodothamniella floridula* formed cushions of bound sand on the boulder tops. A 15 minute timed search for decapods revealed numerous *Carcinus maenas* all with carapace widths smaller than 25mm and the occasional *Pisidia longicornis* beneath the boulders. One solitary specimen of the velvet swimming crab (*Necora puber*) was also found. Hermit crabs were numerous as were shore fish; 5 bearded rockling, butter fish, worm pipes and *Palaemon serratus* prawns. As with Saltburn, vast amounts of cast kelp had accumulated in the northern end of the bay in front of the lifeboat station because of recent onshore winds.



Robin Hood's Bay	54.430305 N, -0.529514 W	Photos 241-263
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27/09/22 09:50 – 10:30

The upper shore is a thin strip of beach comprised of medium sand running north/ south down the bay. South of the village and the slipway there was a strandline of thick cast kelp deposits. In the middle and lower shore there is an extensive, level wave-cut platform with shallow gullies running down the shore where the strata are broken or faulted. In the gullies there are long, shallow rock pools (LR.FLR.Rkp.SwSed) in which boulders have accumulated providing ideal habitat for decapod, gastropods and shore fish fauna. However the soft mudstone also results in very turbid pool water as the tide recedes making any mobile fauna difficult to observe. During a 15 minute timed search *Carcinus maenas* crabs were found in good numbers beneath suitable boulders with carapace widths of 50mm plus. These were accompanied by numerous small hermit crabs and shore fish. The reef itself is a mosaic of two shore biotopes alternating on the wavecut platform; a mixed fucoid biotope, (LR.LLR.F) dominated by the fucoids *F. vesiculosus* and *F. serratus* and the small foliose red and green algae *Osmundea pinnatifida* and *Cladophora rupestris* on the extensive level reef face and an open rock, limpet/ barnacle biotope (LR.HLR.MusB.Sem) dominated by *Patella vulgata* and *Semibalanus balanoides* near the broken edges of the strata along the gully edges.



Whitby Harbour	54.490940 N, -0.610180 W	Photos 264-298
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27/09/22 10:40 – 11:15

A shallow sloping shore on the eastern side inside Whitby harbour breakwater. The lower shore substrate was composed of muddy sand, gravel and cobbles with embedded boulders, encrusted with *Semibalanus balanoides* barnacles, *Patella sp.* limpets and *Spirobranchus sp* tube-worms with coralline crustose algae, *Mastocarpus stellatus*, *Chondrus crispus*, *Cladophora rupestris* and *Hildenbrandia sp.* (LR.FLR.Eph.BLitX). A 15 minute timed search on the lower shore revealed *Carcinus maenas* crabs in good numbers beneath suitable boulders, but all with carapace widths of less than 20mm. Also recorded there were many shore fish; rockling, blenny, butterfish and sea scorpion as well as occasional pea crabs, squat lobsters and mussels. At the top of the shore a mixed fucoid biotope of *F. vesiculosus*, *Ascophyllum nodosum* (LR.LLR.FVS.FvesVS) and *F. spiralis* with *Ulva spp.* and green filamentous algae (LR.FLR.Lic) covering the available hard substrata. Fewer crabs were recorded on the upper shore as the substrate had a greater mud component and the boulders were frequently embedded in the sediment. Here inside the breakwater the beach was clean and there were no deposits of stranded kelp or dead shell.



Hartlepool Headland	54.693654 N, -1.178405 W	Photos 299-332
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28/09/22 10:05 – 10:45

The middle and lower shore reef is a relatively level, but broken magnesian limestone platform with gullies and rock pools interspersed across the surface. The gullies are generally filled with flat boulders, an ideal habitat for decapod crustaceans. The bulk of the reef supports a mixed fucoid biotope of *Fucus vesiculosus*, *Ascophyllum nodosum* and *Fucus serratus* (LR.LLR.F.Fserr) and occasional large patches of green algae. The broken rock strata edges, support a limpet/ barnacle biotope (LR.HLR.MusB.Sem). Periwinkles, dogwhelks and top shells are all also abundant on the rock surface. *Carcinus maenas* juveniles were found in abundance during a 15 minute timed search, though all had carapace widths smaller than 20mm across. *Palaemon serratus* prawns were also common in the pools (LR.FLR.Rkp.SwSed), as were chitons on the underside of the boulders. The pools were frequently encrusted with coralline algae and *Hildenbrandia rubra* and colonised by the red *Chondrus crispus* and green *Cladophora rupestris* and *Ulva* species. Here inside the breakwater the beach was clean and there were no deposits of stranded kelp or dead shell. A little coal dust can still be seen on the sandy areas immediately adjacent to the breakwater wall.



Ryhope beach	54.870691 N, -1.352185 W	Photos 333-360
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28/09/22 11:15 – 11:45

Ryhope beach has an upper shore of mixed sand, gravel, cobbles and boulders that runs up to a magnesian limestone cliff. The middle and lower shores consist of patches of medium sand between areas of broken magnesian limestone reef. The reef contains gullies and pools which in turn are filled with boulders and they therefore possess ideal habitat for shore decapod populations. A 15 minute timed search revealed numerous *Carcinus maenas* up to 40mm carapace width along with hermit crabs and prawns. The biotopes dominating the reef are typical mosaics of limpet/ barnacle assemblages and mixed fucoids of *F. vesiculosus* and *F. serratus* (LR.LLR.F.Fserr), whilst on the lowershore the abundant sand supply allows cushions of *Rhodothamniella floridula* to colonise the rock surface. *Laminaria digitata* kelp dominate the sublittoral fringe with *Mastocarpus stellatus* and coralline crusts (IR.MIR.KR.Ldig). *Laminaria hyperborea* kelp forests were visible beyond. At Ryhope, the beach was clean and there were no deposits of stranded kelp or dead shell in the vicinity of the beach access path.



South Shields – Little Haven	55.00733 N, -1.42688 W	Photos 361-375
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28/09/22 12:15 – 12:45

A muddy boulder shore beneath a semi-consolidated sea wall. The lower shore is adjacent to a discreet sandy beach over which the yacht club slipway runs. The boulders are often embedded in the sediment, but those with a cryptic element to their undersides usually have several live shore crabs (*Carcinus maenas*). A 15 minute timed search revealed numerous crabs with carapace widths of up to 42mm. The dominant taxa on the lower boulder shore were *Fucus serratus* and *Rhodothamniella floridula* though *F. vesiculosus*, *Mastocarpus stellatus* and *Chondrus crispus*, *Patella sp.*, *Spirobranchus sp.*, spirorbidae, *Actinia equina* and *Semibalanus balanoides* were also present in this sheltered muddy biotope (LR.LLR.F.Fserr.X). Above the mixed fucoids on the uppershore is a *F. spiralis* biotope on the consolidated seawall (LR.LLR.F.Fspi.FS) along with a filamentous green algal biotope (LR.FLR.Lic) just above the *F. spiralis*.



Summary

A rapid field survey of intertidal reef habitats in the northeast of England was undertaken in late September 2022. Shores between South Shields to the north and Robin Hood's Bay to the south were investigated. Eight rocky shores were studied and at each a 15 minute timed search was undertaken in the appropriate habitat. *Carcinus maenas* (shore crabs) were found at each of the eight shores in 2022, in apparently healthy numbers. In January 2022, no shore crabs had been recorded between Seaham on the Durham coast and Runswick Bay on the North Yorkshire coast. In September, those shores north of Ryhope on the Durham coast appeared to hold crabs with a full range of size classes as did Robin Hood's Bay in the south (up to 50mm+). Those shores between these points appeared to only hold juvenile crabs of much smaller size classes (generally around 20mm). This possibly indicates that these populations had only settled from the plankton in the last 12 months following the mass decapod mortality incident in September/October 2021 which appeared to have wiped them out. A single velvet swimming crab specimen was recorded at Runswick Bay and no others were found on any of the shores studied. No juvenile *Cancer pagurus* (edible crabs) were found on either survey. Common shore hermit crabs do not appear to have been effected by the incident.