Seasearch Survey Report of Flamborough Head No Take Zone

Harbour crab (*Liocarcinus depurator*) - Paula Lightfoot

A report to North Eastern Sea Fisheries Committee

January 2010

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Acknowledgments

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Seasearch is co-ordinated by the Marine Conservation Society on behalf of the Seasearch Steering Group which comprises the Marine Conservation Society, Wildlife Trusts, Joint Nature Conservation Committee, Natural England, Countryside Council for Wales, Scottish Natural Heritage, Environment and Heritage Service Northern Ireland, Environment Agency, Marine Biological Association, Nautical Archaeological Society, British Sub Aqua Club, Sub Aqua Association, Professional Association of Diving Instructors, Scottish Sub Aqua Club, Irish Underwater Council and independent marine life experts.

Seasearch receives financial support from the organisations with logos below.

Introduction

Seasearch Northeast was commissioned by the North Eastern Sea Fisheries Committee[3] to carry out an initial survey of the location of the proposed Flamborough no take zone.

The area of Flamborough Head was designated a Special Area of Conservation in 2005 for the regionally rare intertidal and subtidal chalk reefs, sea caves and for seacliff vegetation (Fig. 1). The chalk cliff of the headland has been reported as contributing 9% of Europe's coastal chalk exposure[4]. *Sabellaria spinulosa* habitat is found further offshore. The Joint Nature Conservation Ccommittee considers that the intertidal and subtidal reefs of the headland are amongst the most diverse reefs of the entire UK.

The site was designated as a Special Protection Area in 1993 for the bird populations found nesting on the cliffs of the headland, and made a Site of Special Scientific Interest in 1986 for its coastal geology, cliff top plant communities and breeding seabird colonies, including the only mainland gannetry in England. The SSSI covers the coastal cliffs between Reighton and Sewerby with a total area of 315.2ha. The Countryside Commission and the local authorities defined 19km of coastline between Reighton and Sewerby as Heritage Coast in 1979.

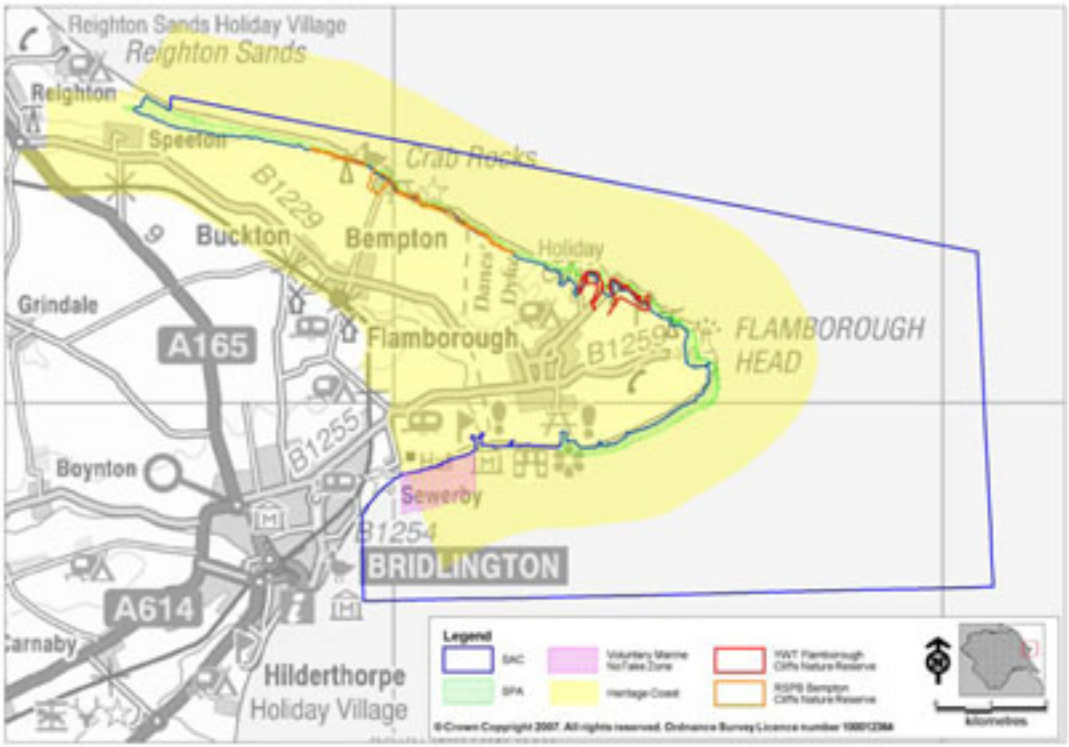


Figure 1. Current designations for Flamborough Head. The no take zone is in pink to the southwest of the SAC area.

[3] North Eastern Sea Fisheries Committee, Town Hall, Bridlington , East Riding of Yorkshire, YO14 4LP www.neseafish.gov.uk
[4] Flamborough Head Management Plan, 1997 - www.eastriding.gov.uk

The NESFC and Natural England have discussed the implementation of Britain's third no take zone in the area of Flamborough since 2007. In January 2009, the sea fisheries committee agreed a proposed bylaw for the no take zone, which is currently out to consultation. The proposed area will be implemented for an experimental period of 5 years, after which the results of the area will be assessed. The area is being set up as a trial, and the science behind the results of the no take zone are seen as being key to the development of any further no take zone areas in this region.

For a BBC report on the no take zone, visit
http://news.bbc.co.uk/1/hi/sci/tech/8188935.stm

Location

The location of the no take zone is to the south of the Flamborough chalk cliff headland, extending 700m out to sea in a southerly direction from the cliff base, with a west – east length of approximately 1500m (Fig 2). The total area for the NTZ is 1km^2, 20% of which is intertidal.

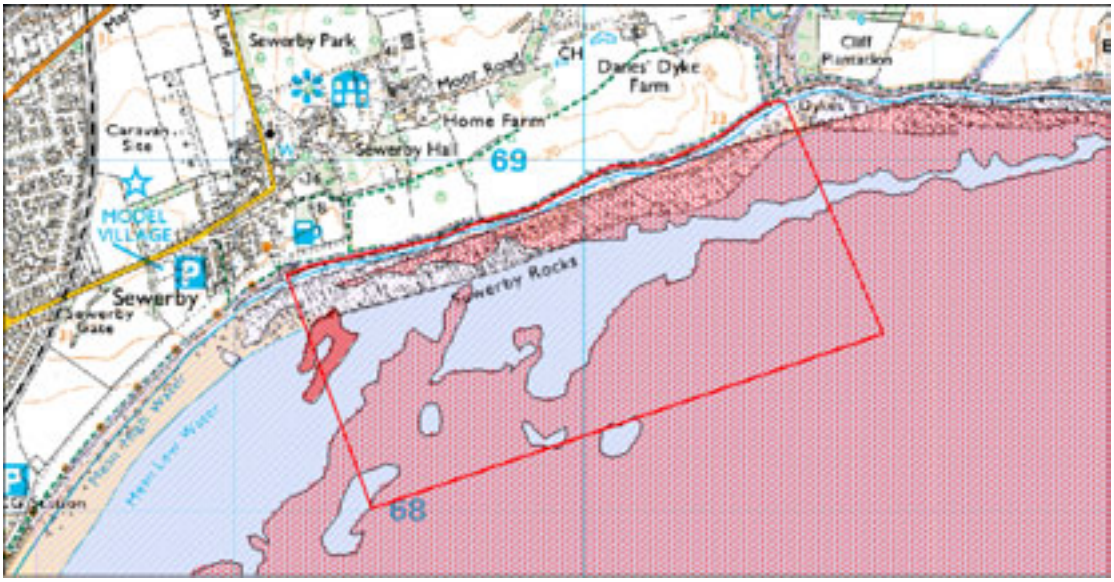


Figure 2. Extent and location of the Flamborough Head no take zone, to the south of Flamborough. Image courtesy of Natural England, NESFC showing hard ground (hatched area).

Methods

The survey dives were carried out on 26th July 2009 and the locations are recorded in appendix 1. They were carried out using Seasearch Observation and Survey techniques and five Survey Forms and nine Observation Forms were completed from within the no take zone.

Dive 1:
Survey divers were dropped off to the southwest extent of the NTZ, and drifted to the northeast with the prevailing current. Five dive buddy pairs were deployed on July 26th 2009 at approximately 10am separated by a distance of 50-100m. (Figure 3).

Dive 2:
The second dive took place on an easterly current, but closer inshore, approximately 200m from the shore. Buddy pairs were deployed in an west-east pattern, 50-100m apart.

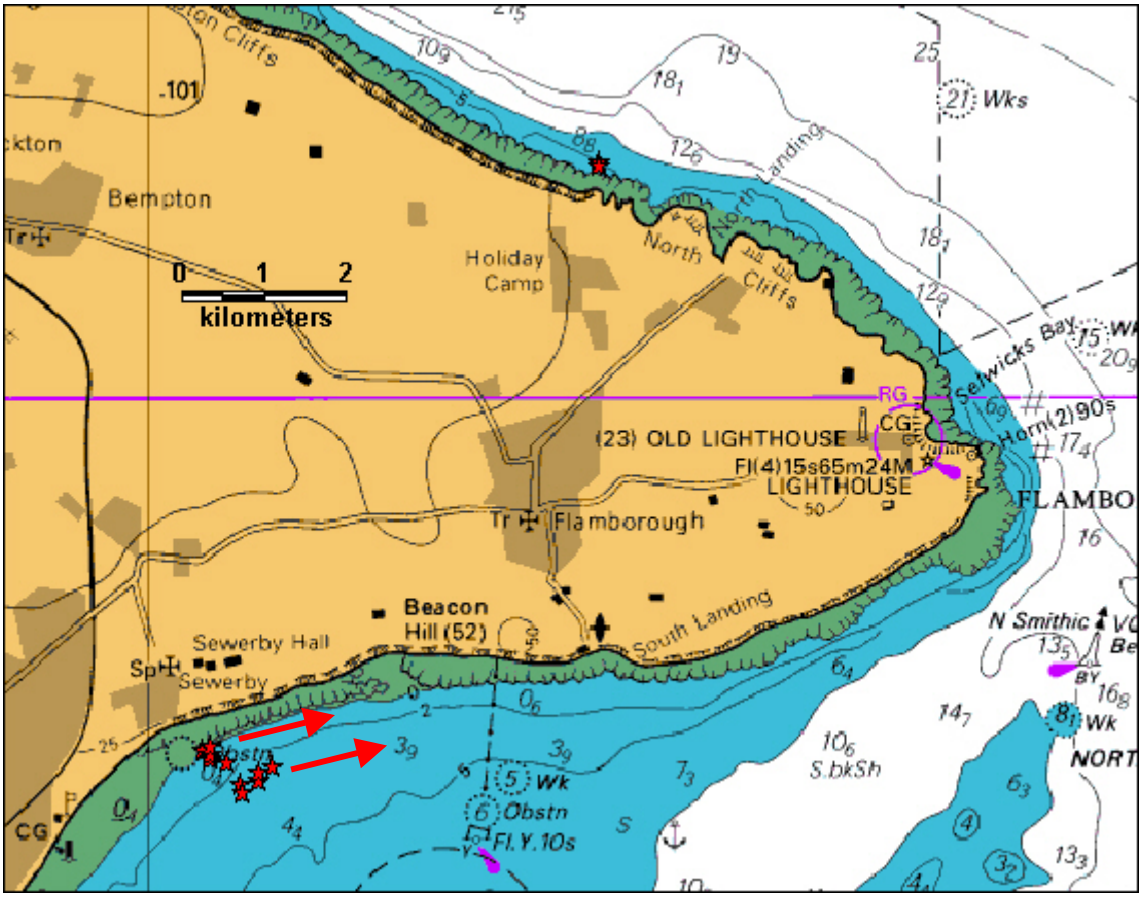


Figure 3. Approximate start points and trajectory of the dive surveys carried out at Flamborough Head on 26/7/09. The location of the first wave of divers in deeper (8m) of water is seen by the lower arrow. The second wave of divers followed the same direction, but in shallower water (approximately 3m deep). Both waves consisted of four buddy pairs. Dives were carried out at high tide. A final dive was carried out to the north of the headland.

Conditions for the survey dives were difficult, with a strong easterly current, and visibility of approximately 2-4m. However, it was possible to record seabed features.

Results

Dive 1. (see figure 4)
Distance covered: **Approximately 350m**: Approximate depth range: **9-7m**;
Visibility: **4m**; Number of habitats recorded: **2**

Habitat 1: Sediment with life apparent.

Fine rippled sand with sand mason worms (*Lanice conchilega*), occasional shore crabs, harbour crabs (*Liocarcinus depurator*) and razor shells.

PL

Habitat 2: Mussel beds on sand and cobbles (sediment with life apparent)

Small boulders, chalk cobbles and pebbles and areas of consolidated chalk fragments, with small mussels, forming almost complete cover over any hard substrate, except where *Laminaria spp* holdfasts were apparent. Fine sand occurred between the cobble / mussel areas, with a variety of decapod crustaceans including shore crab, edible crab and small lobsters. Surprisingly few starfish were recorded, given the quantity of available mussels.

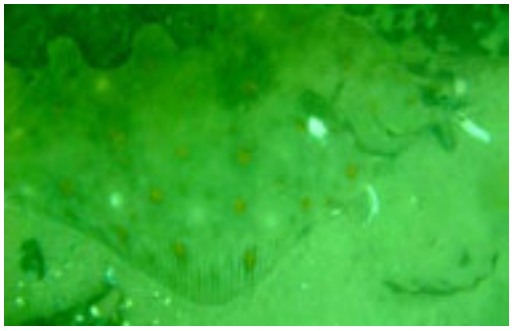
CB

Figure 4. All divers recorded two habitats – the first was a sandy seabed with little epibenthic life, some flatfish, sandmason worms, spider crab and blennies. The second habitat had boulders and pebbles with attached *Laminaria* kelps (usually *saccharides*).

Dive 2: (see figure 5)
Approximate depth range: **2-4m**; Visibility: **2m**; Number of habitats recorded: **3**

Habitat 1: Sediment with life apparent.

Including the harbour crab, plaice (*Pleuronectes platessa*), and an abundance of razor shell burrows.



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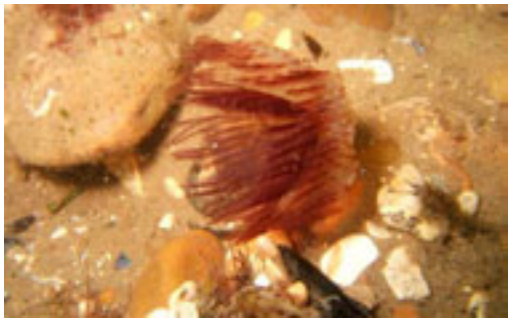
Habitat 2: Chalk and rock boulders, cobbles and reef.

A rich community of chalk and rock boulder cobbles and reef with mussel beds and kelp park, interspersed with considerable numbers of shore crabs, swimming crabs, the occasional lobster, and edible crab.



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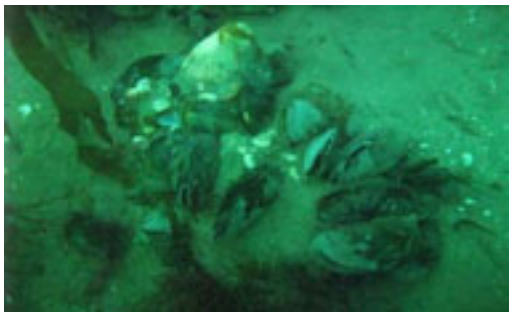
Habitat 3: Mussel beds

Blue mussel beds on sediment. There was a high frequency of patches of mussels which were attached to the sediment. This habitat was added to the UK Biodiversity Action Plan in 2007.



CB

Figure 5. The boulder / kelp park / mussel bed community at the latter part of the dive (to the right of the figure), was dominated by chalk boulders. This was soft, and easily broken up.

A third dive was undertaken to the NE of Flamborough on the afternoon of 26th July 2009 over chalk reef habitat. Divers were deployed in approximately 8m of water. Visibility was very poor which made extensive recording difficult.

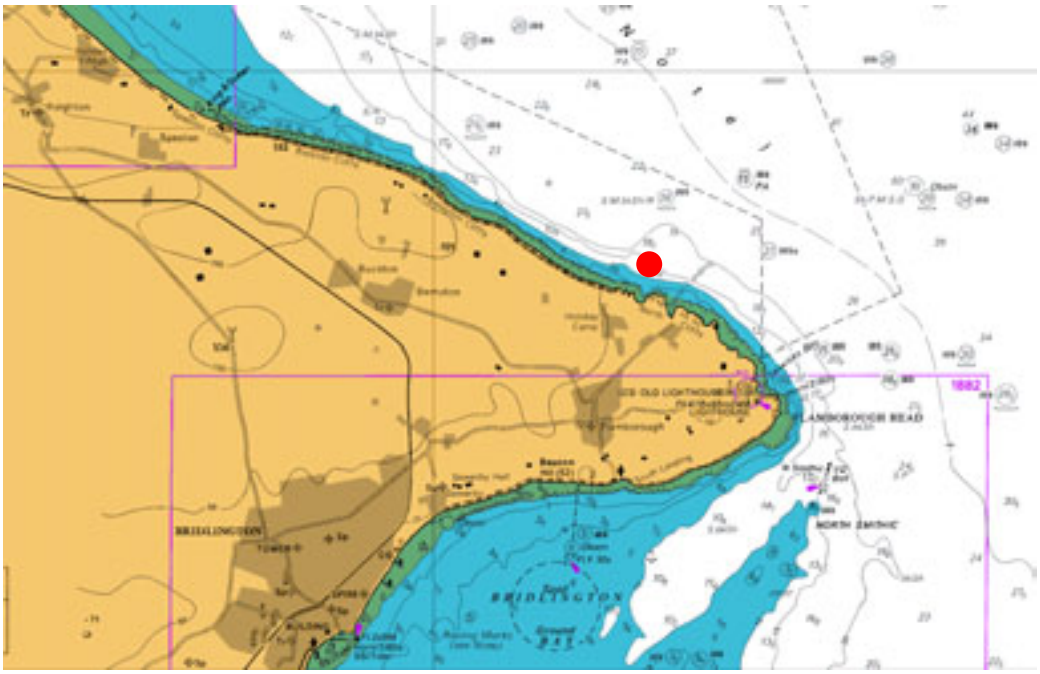


Figure 6. Location of the dive at Thornwick Bay, 26 July 2009.

Dive 3: (see figure 7)
Approximate depth range: **10-5m**; Visibility: **2m**; Number of habitats recorded: **2**

Habitat 1 : Chalk boulders / cobbles

Bore holes were seen in the cobbles. Short animal turf of hydroids, keelworms and barnacles covered the surface of the chalk reef features.

PL

Habitat 2: Chalk bedrock gullies and outcrops

Animal turf (dead mens fingers, antenna hydroids) on walls. Short turf (hydroids, club sea squirts sponge crusts) on upper surfaces with occasional red seaweeds.

PL

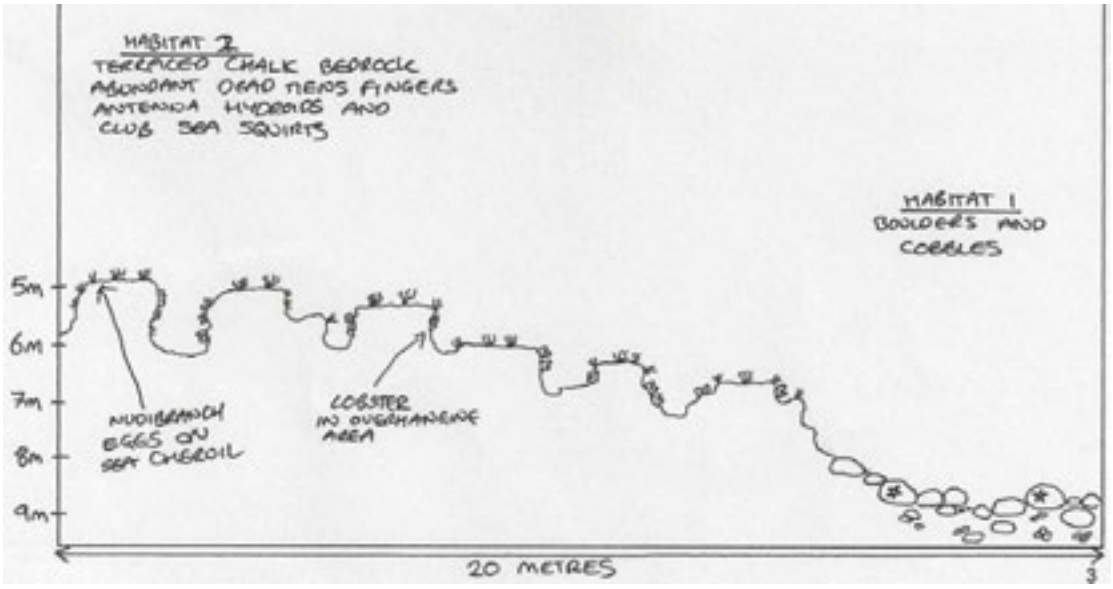


Figure 7. Schematic diagram of the seabed at Thornwick Bay.

Species recorded at the no take zone

51 species were recorded at the no take zone during dive surveys (see appendix II). Crustaceans dominated the site, with thirteen species recorded, including the spider crab, spiny squat lobster, velvet swimming crab, common shore crab, harbour, and edible crab. Other groups recorded included algae (10 species); cnidarians (7 species); fish (6 species including plaice, dragonet, whiting and sand goby); bryozoans (4 species); ascidians (4 species); worms (3 species); molluscs (3 species); and echinoderms (2 species).

Further dives took place at and around Flamborough Head during April and May 2009 (see Appendix I). The data is available from Seasearch NE for these dives on request.

Evidence of human impact and use

A string of lobster pots was recorded within the area of the no take zone. However, as the site wasn't legally a no take zone at the time of the surveys, it was still legal to fish inside the area. However, the skipper of the dive vessel informed the skipper of the potting boat that the area they were potting in was a proposed no take zone, and that they should endeavour to keep out of the area. The only other evidence of human use was of a fishing lure recorded on the shallow surveys.

There was some kayaking recorded at the Thornwick Bay site, and pleasure boats have been observed at the site.

Figure 8. Vessel potting within the proposed no take zone during the survey, which was later seen landing the catch in Bridlington harbour (Photo: Chris Barrett).

Discussion

The dominant habitats in the area of the no take zone are sandy areas with life apparent and areas of rubble, pebble and cobble interspersed with a large cover of mussels. The area is frequently scoured by wave swell and strong tidal action. The bedrock chalk substrate is particularly vulnerable to erosion, and it is likely the area hadn't been trawled for at least 10 years (Tony Pockley, *pers. comm.*).

2008-2009 has seen a large spat-fall of mussels in all UK waters, both in the area of Flamborough, and more widely around other UK coastal areas. Similar observations of considerable mussel abundance have been recorded from Devon and Pembrokeshire. Some of the mussels in the no take zone – particularly close to shore - were recorded on sandy sediments. 'Blue mussels on sediment' was listed as a new priority BAP habitat in 2007. There was a very low abundance of common starfish (*Asterias rubens*) recorded on and around the reefs of the area. Local experts have seen these increase and decrease in areas of widespread mussel populations over a number of years (K Hiscock, *pers comm.*). It may be that *Asterias rubens* numbers will increase in time in the area to take advantage of the large amount of available food.

The most abundant animal group in the area was the decapoda, principally dominated by the common shore crab, however lobster were present in fairly significant numbers for an area of such flat, relatively featureless habitat.

Potential Conservation benefits from the site

The area of the no take zone, although small, may show some increased numbers of previously exploited species such as flatfish and lobster. However, as the area has limited shelter habitat for lobsters (boulders were too small and sparse to be considered to form reef habitat), the carrying capacity of the area may be limited compared to adjacent more complex reef habitats, for example on reefs around the headland, further to the east.

The lobster population of the eastern coast of Britain undertakes a seasonal offshore migration into deeper waters to breed. The limited seaward extent of the no take zone will likely result in lobsters from inside the NTZ spending a proportion of their time outside the boundary of the site, where they would potentially be subject to pot-fishing in deeper waters.

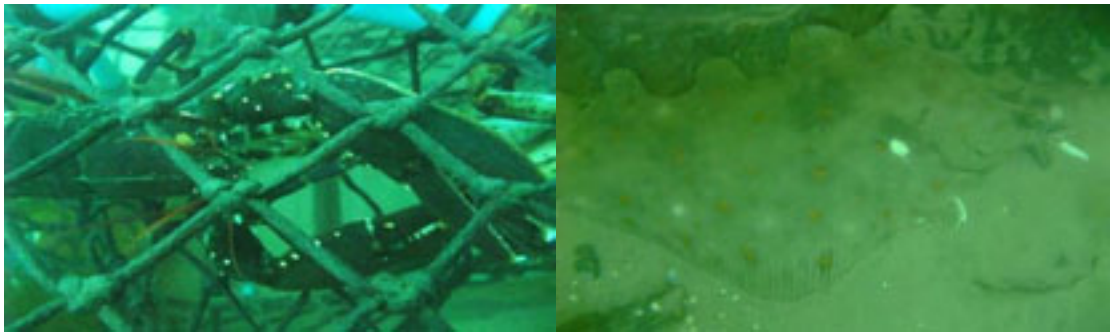


Figure 9. Two commercial species that may increase in size and abundance from protection in the no take zone. (photo: Chris Barrett).

Surveyors also reported seeing numbers of juvenile fish and plaice (*Pleuronectes platessa*) and whiting (*Merlangius merlangius*) in the sandy areas closer to the intertidal. These species may benefit from being protected from static set fishing nets, and more likely, from the effects of shore-based recreational angling. Although, the site is very small, there may be some increase in the size and density of these species, but this depends to some degree on the typical range of these species.

Recommendations:

- Further surveys should be carried out both inside and outside the NTZ with quantitative surveys on commercial fish and crustaceans, and the distribution and densities of key flora and fauna.
- Belt transects marked by buoys should be carried out at regular intervals (at least biannually) in order to assess habitat change over time.
- Sites should be chosen as 'controls' adjacent to the no take zone, and a similar transect-based methodology should be used as to compare any changes to benthic communities between inside and outside the no take zone. These surveys should be BACI (before/after/control/impact) designs if at all possible
- Studies should be undertaken on lobster and crab populations inside and outside the NTZ, similar to the methodology used for monitoring of Lundy Island, which has effectively shown population changes of decapods inside and outside NTZs.
- Cost-effective Seasearch dive surveys should also be used to monitor changes to the broad habitat types.
- Carry out an assessment on the fishing effort both inside and outside the no take zone both before and during the implementation of the NTZ.
- Carry out a social study on the socio-economic impact of the no take zone within the local fishing community, and with the general public of Flamborough and Bridlington.
- Carry out workshops and events, and generate publicity (documents / websites / materials) in order to inform local stakeholders the results of the surveys.

References

Biodiversity Reporting and Information Group (2007). *Report on the Species and Habitat Review: Report to the UK Biodiversity Partnership*. http://www.ukbap.org.uk/library/BRIG/SHRW/SpeciesandHabitatReviewReport2007andAnnexes1-3.pdf http://www.ukbap.org.uk/library/BRIG/SHRW/SpeciesandHabitatReviewReport2007Annexes4-6.pdf

Flamborough Head Management Group (2007) *Flamborough Head Management Plan*, *www.eastriding.gov.uk/EasySiteWeb/GatewayLink.aspx?alId=2253*

Joint Nature Conservation Committee (accessed 2010) 'Special Areas of Conservation: Flamborough Head Site Details' http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013036

The following guides were used to aid species identification during this survey:

Dipper, F. (2001) *British Sea Fishes* (2nd edn.) Underwater World Publications Ltd, Middlesex

Gibson, R., Hextall, B. and Rogers, A. (2001) *Photographic Guide to the Sea and Shore Life of Britain and North-West Europe* Oxford University Press, Oxford

Hayward, P. J. and Ryland, J. S. (eds.) (1996) *Handbook of the Marine Fauna of North-West Europe* Oxford University Press, Oxford

Picton, B. E. and Morrow, C. C. (1994) *A Field Guide to the Nudibranchs of the British Isles* Immel Publishing Ltd, London

Wood, C. (2005) *Seasearch Guide to Sea Anemones and Corals of Britain and Ireland* Marine Conservation Society, Ross-on-Wye

Wood, C. (2007) *Seasearch Observer's Guide to Marine Life of Britain and Ireland* Marine Conservation Society, Ross-on-Wye

Appendix I: Survey dives and locations

Form No	Date	Site Name/Location	Easting	Northing	Lat (WGS84)	Long (WGS84)	Form Type	Recorder
NE9/001	21/04/09	Thornwick Bay, Flamborough	523400	472300	54.13174	-0.11289	Survey	Paula Lightfoot
NE9/002	04/05/09	North Landing, Flamborough	523909	472175	54.1305	-0.10516	Observation	Greg Knapton
NE9/006	09/05/09	Thornwick Bay, Flamborough	523436	472335	54.13205	-0.11233	Survey	Paula Lightfoot
NE9/007	04/05/09	North Landing, Flamborough	523909	472175	54.1305	-0.10516	Observation	Graham Clark
NE9/008	17/05/09	North Landing, Flamborough	523909	472175	54.1305	-0.10516	Observation	Frank Lintott
NE9/009	17/05/09	North Landing, Flamborough	523909	472175	54.1305	-0.10516	Observation	Graham Clark
NE9/010	17/05/09	North Landing, Flamborough	523909	472175	54.1305	-0.10516	Observation	Pam Campbell
NE9/011	17/05/09	North Landing, Flamborough	523909	472175	54.1305	-0.10516	Observation	Peter Lamb
NE9/012	17/05/09	Thornwick Bay, Flamborough	523489	472384	54.13248	-0.1115	Observation	Phil Lightfoot
NE9/013	17/05/09	North Landing, Flamborough	523909	472175	54.1305	-0.10516	Survey	Paula Lightfoot
NE9/014	17/05/09	North Landing, Flamborough	523909	472175	54.1305	-0.10516	Observation	Andrew Austwick
NE9/015	17/05/09	Thornwick Bay, Flamborough	523489	472384	54.13248	-0.1115	Observation	Andrew Austwick
NE9/057	26/07/09	NTZ Flamborough Head	520364	468456	54.09793	-0.16090	Observation	Joanna Jackson
NE9/058	26/07/09	NTZ Flamborough Head	520364	468456	54.09793	-0.16090	Observation	Gavin Scott
NE9/059	26/07/09	NTZ Flamborough Head	520635	468220	54.09575	-0.15685	Observation	Gavin Scott
NE9/060	26/07/09	NTZ Flamborough Head	520635	468220	54.09575	-0.15685	Observation	Joanna Jackson
NE9/061	26/07/09	NTZ Flamborough Head	520859	468363	54.09698	-0.15333	Observation	Mark Hammond
NE9/062	26/07/09	NTZ Flamborough Head	520422	468396	54.09738	-0.16	Observation	Mark Hammond
NE9/063	26/07/09	North Cliff Flamborough Head	523034	472675	54.1352	-0.11833	Observation	Mark Hammond
NE9/064	26/07/09	North Cliff Flamborough Head	523034	472675	54.1352	-0.11833	Observation	Chris Wood
NE9/065	26/07/09	NTZ Flamborough Head	520422	468396	54.09738	-0.16	Observation	Chris Wood
NE9/066	26/07/09	NTZ Flamborough Head	520859	468363	54.09698	-0.15333	Survey	Chris Wood
NE9/067	26/07/09	NTZ Flamborough Head	520753	468260	54.09608	-0.155	Survey	Chris Barrett
NE9/068	26/07/09	NTZ Flamborough Head	520421	468426	54.09765	-0.16	Survey	Chris Barrett
NE9/069	26/07/09	North Cliff Flamborough Head	523034	472675	54.1352	-0.11833	Survey	Chris Barrett
NE9/071	26/07/09	NTZ Flamborough Head	520751	468316	54.09658	-0.155	Survey	Paula Lightfoot
NE9/072	26/07/09	NTZ Flamborough Head	520531	468377	54.09718	-0.15833	Survey	Paula Lightfoot
NE9/073	26/07/09	North Cliff Flamborough Head	523035	472660	54.1350	-0.11833	Survey	Paula Lightfoot
NE9/074	26/07/09	NTZ Flamborough Head	520646	468172	54.09531	-0.15666	Observation	Caroline Slater
NE9/075	26/07/09	NTZ Flamborough Head	520419	468491	54.09823	-0.16	Observation	Caroline Slater

Appendix II: Seasearch dives species list

Table 1: Summary of species recorded during Seasearch dives at Flamborough in 2009

	Thornwick Bay (incl. North Cliff)	**North Landing**	**No Take Zone**
Bryozoans	6	2	4
Cnidarians	6	4	7
Crustaceans	7	4	13
Ctenophora	0	0	1
Echinoderms	3	0	2
Fish	5	4	6
Molluscs	9	5	3
Sea squirts	2	0	4
Seaweeds	12	10	10
Sponges	6	1	0
Worms	5	5	3
Total species	**61**	**35**	**53**
Survey effort:	4 Survey forms 3 Observation forms	1 Survey form 4 Observation forms *(NB poor visibility at North Landing)*	5 Survey forms 6 Observation forms

Table 2: Summary of species recorded during Seasearch dives at Flamborough in 2009 and Shoresearch[5] surveys at Flamborough in 2008

	Thornwick Bay (incl. North Cliff)	**North Landing**	**No Take Zone**
Bryozoans	6	2	4
Cnidarians	8	4	8
Crustaceans	8	8	14
Ctenophora	1	0	1
Echinoderms	3	0	2
Fish	5	5	7
Molluscs	13	6	6
Sea squirts	2	0	4
Seaweeds	19	13	12
Sponges	6	1	1
Worms	4	6	4
Total species:	**75**	**45**	**63**
Survey effort:	4 Survey forms 3 Observation forms 1 day shore survey	1 Survey form 4 Observation forms 1 day shore survey *(NB poor visibility at North Landing)*	5 Survey forms 6 Observation forms 1 day shore survey

[5] Shoresearch is a method of recording intertidal habitats and species developed by the Wildlife Trusts. The recording methodology and survey form is similar to that developed by Seasearch, but has been adapted to the intertidal zone. Shoresearch recording does not involve diving; surveyors record species from rock pools, sediment and under-boulder communities.

Full species list for Flamborough Head (Seasearch and Shoresearch surveys 2008-2009)

Group	Scientific name	Common name	Thornwick Bay Seasearch	Thornwick Bay Shoresearch	North Landing Seasearch	North Landing Shoresearch	No Take Zone Seasearch	No Take Zone Shoresearch
Sponges	*Cliona celata*	Boring sponge	✓					
Sponges	*Haliclona oculata*	Mermaid's glove	✓					
Sponges	Porifera	Orange/yellow sponge crusts	✓		✓			✓
Sponges	*Myxilla incrustans*	Encrusting sponge	✓					
Sponges	*Scypha ciliata*	Purse sponge	✓					
Sponges	*Scypha compressa*	Purse sponge	✓					
Cnidarians	*Abietinaria abietina*	A feather hydroid		✓				
Cnidarians	*Actinia equina*	Beadlet anemone	✓	✓	✓	✓		✓
Cnidarians	*Alcyonium digitatum*	Dead men's fingers	✓					
Cnidarians	*Cereus pedunculatus*	Daisy anemone					✓	
Cnidarians	Hydroida	Feather hydroids					✓	
Cnidarians	*Nemertesia antennina*	Antenna hydroid	✓				✓	
Cnidarians	*Obelia geniculata*	Kelp fir		✓	✓			
Cnidarians	*Sagartia troglodytes*	An anemone	✓		✓			
Cnidarians	*Sagartiogeton undatus*	An anemone					✓	
Cnidarians	*Sertularia sp.*	Squirrel's tail hydroid					✓	
Cnidarians	*Tubularia indivisa*	Oaten pipe hydroids	✓					
Cnidarians	*Urticina eques*	Horseman anemone					✓	
Cnidarians	*Urticina felina*	Dahlia anemone	✓		✓		✓	
Worms	*Eulalia viridis*	Green leaf worm	✓					✓
Worms	*Harmothoe sp.*	A scale worm				✓		
Worms	*Lanice conchilega*	Sandmason worm	✓		✓	✓	✓	
Worms	*Polydora sp.*	Boring worm	✓	✓	✓			
Worms	Polynoidae	Scale worms			✓			
Worms	*Pomatoceros sp.*	Keel worm	✓		✓	✓	✓	
Worms	*Sabella pavonina*	Peacock worm					✓	
Worms	*Sabellaria spinulosa*	Ross worm	✓					
Worms	*Spirobis sp.*	Spiral worm			✓			
Crustaceans	*Balanus balanus*	Greater acorn				✓		

Group	Scientific name	Common name	Thornwick Bay Seasearch	Thornwick Bay Shoresearch	North Landing Seasearch	North Landing Shoresearch	No Take Zone Seasearch	No Take Zone Shoresearch
		barnacle						
Crustaceans	*Cancer pagurus*	Edible crab	✓		✓	✓	✓	
Crustaceans	*Carcinus maenas*	Shore crab	✓	✓	✓	✓	✓	✓
Crustaceans	Cirripedia	Barnacles	✓		✓		✓	✓
Crustaceans	*Corystes cassivelaunus*	Masked crab					✓	
Crustaceans	*Crangon crangon*	Brown shrimp					✓	
Crustaceans	*Galathea strigosa*	Spiny squat lobster					✓	
Crustaceans	*Gammarus sp.*	An amphipod				✓		
Crustaceans	*Homarus gammarus*	Common lobster	✓				✓	
Crustaceans	*Inachus sp.*	Sponge spider crab					✓	
Crustaceans	*Lekaenasphaera sp.*	An isopod						✓
Crustaceans	*Liocarcinus depurator*	Harbour crab					✓	
Crustaceans	*Macropodia sp.*	Long-legged spider crab					✓	
Crustaceans	*Necora puber*	Velvet swimming crab	✓		✓	✓	✓	
Crustaceans	*Pagurus bernhardus*	Hermit crab					✓	
Crustaceans	*Palaemon elegans*	Shore prawn		✓				
Crustaceans	*Palaemon sp.*	A prawn	✓					
Crustaceans	*Pisidia longicornis*	Long-clawed porcelain crab				✓		
Crustaceans	*Porcellana platycheles*	Broad-clawed porcelain crab				✓		
Crustaceans	*Semibalanus balanoides*	A barnacle	✓	✓			✓	
Molluscs	*Acanthodoris sp. (eggs)*	Nudibranch eggs	✓					
Molluscs	*Ancula gibbosa*	A nudibranch	✓					
Molluscs	*Calliostoma zizyphinum*	Painted topshell	✓					
Molluscs	*Doto sp. (eggs)*	Nudibranch eggs	✓					
Molluscs	*Ensis sp*	Razor shell					✓	
Molluscs	*Gibbula cinerarea*	Grey topshell	✓	✓	✓	✓		
Molluscs	*Glycymeris glycymeris*	Dog cockle			✓			

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Molluscs	*Helcion pellucidum*	Blue-rayed limpet	✓					
Molluscs	*Hiatella arctica*	Wrinkled rock borer		✓		✓		
Molluscs	*Lepidochitona cinereus*	A chiton						✓
Molluscs	*Littorina littorea*	Common periwinkle		✓	✓			✓
Molluscs	*Littorina obtusata*	Flat periwinkle		✓				
Molluscs	*Mytilus edulis*	Blue mussel		✓			✓	✓
Molluscs	*Nucella lapillus*	Dog whelk	✓		✓	✓		✓
Molluscs	*Patella sp*	A limpet	✓	✓	✓	✓	✓	✓
Molluscs	*Polycera faroensis*	A nudibranch	✓					
Bryozoans	*Alcyonidium diaphanum*	Sea chervil	✓					
Bryozoans	*Bugula plumosa*	Spiral bryozoan	✓				✓	
Bryozoans	*Bugula sp.*	Spiral bryozoans	✓				✓	
Bryozoans	*Crisia sp.*	White claw sea moss	✓	✓				
Bryozoans	*Electra pilosa*	Frosty sea mat					✓	
Bryozoans	*Flustra foliacea*	Hornwrack	✓		✓	✓		
Bryozoans	*Membranipora membranacea*	Sea mat	✓	✓	✓		✓	
Echinoderms	*Asterias rubens*	Common starfish	✓				✓	
Echinoderms	*Henricia sp.*	Bloody henry	✓				✓	
Echinoderms	*Echinus esculentus*	Common urchin	✓					
Sea squirts	*Aplidium punctum*	Club sea squirt	✓					
Sea squirts	*Botryllus schlosseri*	Flower sea squirt					✓	
Sea squirts	*Clavelina lepadiformis*	Light bulb sea squirt	✓				✓	
Sea squirts	*Sidnyum sp*	A sea squirt					✓	
Sea squirts	Ascidiacea	Other small sea squirts					✓	
Fish	*Callionymus lyra*	Common dragonet					✓	
Fish	*Ciliata mustela*	5 bearded rockling						✓
Fish	*Ctenolabrus rupestris*	Goldsinny	✓					
Fish	*Cyclopterus lumpus*	Lumpsucker	✓		✓			
Fish	*Lipophrys pholis*	Shanny	✓	✓	✓	✓		

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Fish	*Merlangius merlangius*	Whiting					✓	
Fish	*Microstomus kitt*	Lemon sole			✓			
Fish	*Pholis gunnellus*	Butter fish	✓			✓	✓	✓
Fish	*Pleuronectes platessa*	Plaice			✓		✓	
Fish	*Pomatoschistus minutus*	Sand goby					✓	
Fish	*Taurulus bubalis*	Long-spined sea scorpion	✓				✓	
Seaweeds	*Calliblepharis ciliata*	A red seaweed					✓	
Seaweeds	*Ceramium sp.*	A red seaweed	✓					
Seaweeds	*Chondrus crispus*	Carragheen	✓	✓	✓			
Seaweeds	*Corallina officinalis*	Coral weed	✓	✓	✓	✓		
Seaweeds	*Delessaria sanguinea*	Sea beech	✓				✓	
Seaweeds	*Desmarestia ligulata*	A brown seaweed					✓	
Seaweeds	*Dictyota dichotomoa*	Brown fanweed	✓					
Seaweeds	*Enteromorpha linza*	A green seaweed		✓	✓	✓		
Seaweeds	*Fucus ceranoides*	Horned wrack	✓					
Seaweeds	*Fucus serratus*	Toothed wrack	✓	✓	✓	✓		✓
Seaweeds	*Fucus vesiculosus*	Bladder wrack		✓	✓	✓		✓
Seaweeds	*Gigartina stellata*	Carragheen moss		✓		✓		
Seaweeds	*Laminaria digitata*	Oarweed	✓		✓		✓	
Seaweeds	*Laminaria hyperborea*	Cuvie	✓		✓		✓	
Seaweeds	*Laminaria saccharina*	Sugar kelp		✓			✓	
Seaweeds	*Laurencia pinnatifida*	Pepper dulse	✓		✓			
Seaweeds	*Lomentaria articulata*	A red seaweed		✓				
Seaweeds	*Palmaria palmata*	Dulse				✓		
Seaweeds	*Petalonia fascia*	A brown seaweed					✓	
Seaweeds	*Plocamium cartilagineum*	A red seaweed	✓	✓			✓	
Seaweeds	*Phycodris rubens*	Sea oak		✓				
Seaweeds	*Porphyra umbilicalis*	Purple laver				✓	✓	
Seaweeds	*Ulva latuca*	Sea lettuce		✓	✓		✓	

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Seaweeds	Lithophylloideae	Pink alga	✓	✓	✓			
Ctenophora	Ctenophora	Comb jelly					✓	
Ctenophora	*Pleurobrachia pileus*	Comb jelly		✓				