Scarborough Sub Aqua Club

Real Reefs Project Report

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Contents

Project Summary

The main aims of the Real reefs project were:

- To survey 20 reefs between Whitby and Flamborough Head using Seasearch methodology
- To provide more accessible diving and 'diving with a purpose' opportunities to our own club members and divers from other BSAC clubs.
- To provide a wide range of training opportunities to divers and snorkelers.

We have surveyed 19 of the 20 listed reefs but have also surveyed additional reefs not initially included in the list. Some of the reefs have been surveyed more than once. The results way exceeded our expectations.

Photos of the marine life have been made available here:
http://www.flickr.com/photos/54901272@N07/sets/72157631560810656/with/7997333460/ and can be viewed as a slide show here:
http://www.flickr.com/photos/54901272@N07/sets/72157631560810656/show/with/7997333460/

The diver training aspect of the project was the most disappointing aspect. Though the club had 9 trainee Ocean Divers this year, not one of them took up any of the diving opportunities offered even though the conditions were ideally suited to trainee divers. Other aspects of the training worked well especially all aspects of marine conservation training.

The Real Reef diving offered was very well attended with **212** person dives being done by **62** different divers. There is obviously a demand for this more accessible diving and 'diving with a purpose'.

Unexpected benefits :

- As the pub where we completed the survey forms was also used by local anglers and fisherman there was much interaction with them as we filled the forms in. They showed a great interest in what we were doing and showed none of the negative response predicted by club members who were also fishermen. We also learnt from them in these discussions.
- Interclub liaison – 9 different clubs were involved in the project in total – we made new friends and useful contacts so that in the future we can plan diving and training events together.

Challenges:

- The weather – the late start to the diving season put us under pressure to ensure we finished before the end of the season which can be as early as the end of August.
- Organising so many different people – unlike having the same crew on most dives so that you can work together as a team on most dives there were some new people who needed instruction on boat use etc
- Instructing trainee boat handlers as well as dive managing – ideally need a dedicated boat handling instructor to keep a constant eye on trainee boat handlers

High points:

- The thrill of divers returning to the boat describing what they had seen – the highlight of every evening.
- The excitement of going diving with no idea of the topography or marine life on the dive site.
- Being awarded a BEGS Grant for the Project
- The Sport England Award of £10,000
- Making a significant contribution of data to Seasearch – over 30% of Seasearch forms for the North East England region were completed on Real Reef dives

Most frequently asked question:

Where shall I park my car?

Main aims of the expedition

- To use the Seasearch methodology to survey 20 reef areas (many not previously dived and none surveyed) between Flamborough and Whitby as well as the two recommended Marine Conservation Zones (MCZs) just to the north and south of the area from Flamborough to Whitby (see Appendix 1).
- To gather data on marine species and habitats within the expedition area and to make these data freely available via the National Biodiversity Network (http://data.nbn.org.uk/) so that they can be used to support conservation, policy making, research and education.
- To provide more accessible diving opportunities to our own and other BSAC club members. (The diving off this coast has traditionally been deeper wreck diving)
- To provide a wide range of training opportunities for both divers and snorkelers to improve their skills and experience in areas including boat handling, dive planning, dive management, underwater photography, Seasearch survey techniques and marine life identification.

Inspiration

1. Whilst diving and collecting data for the local Bioblitz in 2011 a reef was dived which as far as we know has not been dived before. This reef had an unexpected abundance of life (see YouTube slide show by club member Zoe Frank: http://www.youtube.com/watch?v=zHvlryig8UQ) and generated much enthusiasm within the club for "wildlife" dives as opposed to wreck diving.
2. The proposed Marine Conservation Zones around the country are being delayed due to lack of data (see Appendix 1: article by Paula Lightfoot stating how vital the survey work is)
3. The East Coast of England from St Abbs to Norfolk has been under-surveyed in comparison to the West Coast, resulting in considerable gaps in our understanding about the distribution of marine species and habitats.
4. As the areas are relatively un-dived it is therefore likely that we may find some wreckage on the reefs from the many ships that stranded on this coast. (See Shipwrecks of the Yorkshire Coast- Arthur Godfrey and Peter J Lassey)

Training Opportunities

This project was planned to promote personal improvement in the diving experience and skill levels of club members who have the potential to cascade that experience to other members. Within the safe but challenging environment of an expedition with clear aims, divers and snorkelers were offered the opportunity to improve their skills in many areas.

Training offered prior to start of Project

(see Appendix 3 Training record)

Marine Life Identification for snorkelers and Ocean Divers - Course Tutor Paula Lightfoot who is also a Seasearch Tutor.

Boat Handling Training for members who have already done the BSAC boat handling - this training was done on an ongoing basis as the boats went out with the main instructor Heath Samples who qualified as MCA Boat Master in January 2012. (see Appendix 4 Trainee Boat handler's Report)

Oxygen Admin Refresher Course - SSAC ran the usual oxygen admin refresher course open to all club members.

BSAC Oxygen Admin Course – this was run by Dr Ian Hamp

VHF Radio Course – 3 people attended a VHF radio course which was run by Scarborough Yacht Club and received the VHF radio Licence .

Ongoing training during the Project

Advanced Diver Assessments

Seasearch Qualifying Dives

Dive Sites

Initial pin pointing of the reefs was done using OS maps scale 1:25,000 which show reef areas which dry out at low water. We assumed that these rocky areas continued under water for a distance.

These areas were cross-referenced with Admiralty Charts no 129 & 134 to check the existence of the reefs under water.

In the time period when the visibility was not good enough to dive but the sea conditions were suitable to take the boats out some reefs were identified using the chart plotter and sounder in order that we were prepared when conditions are suitable for diving. These trips were also used as boat handling training opportunities.

(See Appendix 2 GPS positions and maps of proposed dive sites).

The maximum depth planned to dive on these reefs was 20m. The deepest depth actually dived on any of the reefs was 16m on Old Horse Rocks Reef (excluding Ruffian's mast which was in 23m)

The Proposed MCZ between Filey Brigg and Scarborough is an intertidal zone and is therefore suitable for snorkelers. (see Appendix 1) The snorkelling group made the most of this doing many snorkel dives in this area as well as around Flamborough Head area.

(See Appendix 5 Report by a club snorkeller).

The other two proposed MCZs (Holderness and Runswick Bay) were also be surveyed. We aimed to survey each of these twice during the season but due to the late start have only dived once in each of these proposed MCZs so far.

<u>One of our Proposed dive sites</u>

Pursglove Stye above the surface

Pursglove Stye below the surface

Expedition time frame

We planned to do the 20 dives sites as one dive per week between April and September starting as soon as the visibility and sea conditions permitted. We planned to dive every Thursday as that has traditionally been the night the club boats have gone out with trainees and the depth of the dives was appropriate for trainee Ocean Divers.

Unfortunately the weather was unsuitable until 18th June which gave us a very late start to the project. Because of this we then took every opportunity to dive on the reefs. The boats were often out 3 times in a week. The down side of this was that as people have a limited amount of time that they can go diving so we rarely had the 2 boats going out together as usually there was 10 crew or less available.

The up side was that there was enough daylight straight away to do 2 dives in an evening – we made the most of this.

Weather and Sea conditions

Except for one dive on 29th March the sea conditions (visibility and swell) were unsuitable for diving until 18th June. During this time we did plan various dives hoping the weather/visibility would be suitable but each time they had to be cancelled (see Project diary)

The dive planned on 29th March was planned for a Thursday in an attempt to stick to the plan (though Tuesday looked the better day) and in fact by Thursday there was an underlying northerly swell which destroyed the visibility and made diving uncomfortable. The lesson learnt from that was that we had to grasp the opportunity when it arose as conditions can deteriorate very rapidly and take days, if not longer to recover.

Monitoring the weather and visibility was a constant preoccupation throughout the time of the project. The sea state and visibility could change, improving or deteriorating very rapidly therefore to ensure safe and enjoyable dives and that we missed no opportunities the project leader was very vigilant. Because of this constant monitoring we had very few dives with poor visibility and missed few diving chances.

Tides

The tides were, as anticipated were not a problem on the dive sites. When there was any tidal flow we planned the dive as a drift dive with the boat free to follow divers and SMB used by the divers. The tidal range and tide times have been noted on the dive diary. The tides were, as expected, quite dramatic mid tide around Flamborough Head and in fact un-diveable except at slack water.

The main problem caused by the tide was getting the boats on and off the berth and out of the harbour due to the shifting sandbanks in the harbour. On more than one occasion the boats were stuck on a sandbank waiting for the tide to come in and float them off (especially on "The Grand Day Out" which was planned for a spring tides weekend)

<u>Photos of harbour at low water</u>.

Expedition participants (see Appendix 6)

It was planned that any club member who has done a minimum of 10 open water dives and with the approval of the diving officer could participate in the survey. The snorkelers could also participate in the survey provided they are Advanced Snorkelers.

Prior to the start of the survey all club members were asked to complete a short questionnaire and a data base was created of all interested members with qualifications, training requirements and contact details .

Places on the boat were allocated on a first come first served basis by creating event on Facebook and email supported by text. The Dive Manager for the event ensured, before putting the event on Facebook/club email that the minimum crew was available ie Boat handler, Assistant boat handler, VHF radio operator, Oxygen Administrator, and qualified Seasearchers.

There was the capacity to take 16 people out each time the boats went out providing suitable crew (ie qualified observers/surveyors boat handlers etc are available) but as the time for the completion of the project was compressed due to a late start and more than one dive trip went out each week there was less people on each dive, than if there had been only one trip offered per week.

In order to maximise results from boat usage a database was also created of other local divers who were interested in participating in the survey and have experience of Marine Life surveying. Both BSAC and other qualifications were included as the local university has a Marine Biology Department and PADI School. Divers from other organisations were encouraged to join either BSAC through SSAC or BSAC direct. Priority was given to our own club members.

Appendix 7 Report from a visiting diver

To participate in Seasearch dives, divers must be BSAC Sports Divers or PADI Advanced open water, SAA Club diver or Cmas 2* and have done 20 dives, (10 of them in temperate waters).These criteria were applied to non-club divers. The permission of their diving officer or equivalent was required. Also proof of recent dives (in the current year) in UK waters was a requirement. Non club members were required to join BSAC direct or Scarborough Sub Aqua Club to participate. All divers participating had to sign a Fitness to dive medical declaration.

The North East Regional Seasearch coordinator Paula Lightfoot was so enthused by the project that she and her partner have joined Scarborough Sub Aqua Club and though Paula lives in York she has participated in the majority of the dives. Non divers who are experienced boat handlers were also informed of the dives and encouraged to participate as boat handlers.

In total 6 people became members of Scarborough SAC so that they could participate in the project.

Boats to be used

The boats used during the expedition were mainly the two of the club boats:

Richards S

Starfish 28 8.5m hardboat berthed on a pontoon in Scarborough harbour allowing 24 hour usage.

The 24 hour usage was only available to very skilled boat handlers as the berth almost dries out at low water.

<u>Electronic navigation equipment:</u>

Simrad GPS	Simrad Colour radar
Koden Colour Sounder	Icom VHF with digital selective calling

Propulsion is by an inboard 4 cylinder marinised diesel engine, giving cruising speed of average 6 knots. Divers enter water by backward roll and egress by staggered run ladder.

In addition a laptop with Maxsea software was donated for use as a chart plotter. This was invaluable when approaching the reefs which we had not approached before.

<u>The boat is also equipped with:</u>

Gas detector	Bilge alarm

Flares

Fire Blanket and extinguisher

First Aid Kit

Marinox Oxygen Therapy unit.

Fuel tank is 160 litres with a fuel consumption of 20l per hour and average speed 6 knots gives the boat a range of around 50 miles.

Neptune

7.2m Coastline RIB with a Volvo Penta 160D3 inboard turbo charged diesel engine. It has a cruising speed of 20 knots with 6 fully kitted divers or 8 snorkelers.

<u>On board equipment:</u>

Raymarine GPS and Echo Sounder

Flares

Lowrance HDS Colour sounder

First Aid Kit

DSC enabled VHF radio

Marinox Oxygen Therapy Unit

Neptune has an average fuel consumption of 15l per hour and a 140l tank therefore has a range of 230 miles.

Richard S was used to survey the sites nearest to Scarborough and Neptune was used to survey the further sites from Scarborough

On certain tides Neptune's berth was dried out by the time we returned in which case it was moored somewhere else in the harbour and arrangements made for it to be re-moored on its berth at the earliest opportunity. This was also the responsibility of the boat marshal. Harbour was contacted on Channel 12 to check where it could be berthed.

Richard S and Skipper Heath Samples awaiting the return of Seasearchers

Neptune with Skipper Carl Racey setting off to survey

In addition to the two club boats, as the Project was nearing completion and to ensure we managed all the reefs before the weather broke, two boats belonging to club members also participated.

Bel Raiser – a 9m RIB with inboard diesel engine which belongs to a group of club members and is berthed in Whitby was used for a day to complete 3 Reefs close to Whitby.

Frances Anne

Frances Anne, which also belongs to a group of club members, took part in the final day of the project – "The Grand Day Out"

Diving Methods

BSAC Safe Diving Practices Guidelines will be adhered to.
www.**bsac**.com/core/core_picker/download.asp?id=999

Differing diving methods were used depending on the conditions when the dive site is reached

Non-drift dives

If the tide was of a speed that divers could swim against it then the boat was anchored and DSMB deployed at the end of the dive. If the divers did surface too far from the boat then the boat put a buoy on the anchor line and picked the divers up – they were encouraged to surface as near the boat as possible when the boat was anchored

Drift dives

If the tide was of a speed that divers could not swim against it then a drift dive was planned.

The boat did not anchor and the divers used a surface marker buoy throughout the dive.

The decision was the boat marshal's at the time.

Night Dives

As yet no night dives have been done. They have been planned but the weather deteriorated and the dives had to be cancelled. We plan to do night dives before the end of the project, on familiar reefs weather permitting.

Snorkelling

Except for one instance all the snorkelling was done from the shore either in the proposed MCZ which is the intertidal area between Filey Brigg and Scarborough or around Flamborough Head.

Snorkelers Matt and Kath ready to go with SMB

	Project Diary
5th Nov 2011	Seasearch Observer course attended by 16 club members aboard the MFV Hatherleigh. Course tutors Paula Lightfoot and Nic Faulks. 
Dec-11	Decide to make one evening a week a Seasearch night so that we use the skills learnt on Seasearch course to assist Marine Conservation. Based on the fact that one reef we had not dived before had lots of marine life we decide to explore other un-dived reefs between Flamborough Head and Whitby. The Real Reefs Project was born.

Jan-12	Encouraged by Jim Watson of BSAC safety Officer we draw up a draft Project Plan and after feedback from Jim submit a BEGS grant application.
Feb-12	When a survey to assess interest was completed the idea of "Real Reef" diving had such a positive response it was decided that it fitted the criteria of Sport England small grants criteria ie it increased participation in Sport and that we should put in an application for £10,000 towards the Nitrox compressor we were planning to install
2nd March 2012	The Sport England Grant Application was submitted. Training needs for the Real Reef Project addressed.
14th March 2012	Club Meeting to discuss "The Real Reefs Project"
29th March 2012	The first "Real Reefs " dive - conditions were not good. 0.5m viz and uncomfortable swell – but still, it's a start and we did manage to record 14 species!
1st April 2012	Connections with the Sealife Centre through the Real Reefs Project led to us being asked to help with release of seals from the sanctuary back on Castle Rocks. Unfortunately when came to tie to start the boat the starter motor seized and seals returned to their pool.
6th April 2012	Richard S repaired starter motor refitted.
11th April 2012	Relationship with Sealife Centre develops further and they aske if we will help with their Shark tagging Project - a talk to members at the club
14th May 2012	Awarded a BEGS grant of £500
10th May 2012	Neptune now repaired and on its berth in Scarborough Harbour ready to go.
27th May 2012	Last minute Real Reef dive planned but no crew available - viz looked fantastic
28th May 2012	Dive to locate "Ruffians Mast" - AD assessment. Mast located and buoyed visibility 10m
28th May 2012	Oxygen admin Refresher course led by Dr Ian Hamp
29th May 2012	Real Reefs dive organised but a big swell had developed -dive cancelled
31st May 2012	Real Reefs dive arranged but cancelled again due to conditions
10th June 2012	Reef dives arranged for 9.30 am, 1pm and 4pm - all fully crewed but had to be cancelled. Wind had been forecast Westerly 15mph but was actually NW 15mph
	Will conditions ever come right? - despondency setting in all round
13th June 2012	A talk by Beccy MacDonald from the Seahorse Trust who we had met as she was interested in helping with the Real Reefs Project
	At last !!!!! Need to go all out now

18th June 2012	Real Reefs dive to <u>Calf Allen rocks and Perilous Rocks</u> - visibilty 8m+ outstanding dives - worth the waiting. Over 50 species were recorded at Calf Allen Rocks. The Seasearch form was completed in the Golden Ball Pub in a window seat which became known as Seasearch corner - the pub nearest the harbour and frequented by local anglers. This tradition continued through the rest of the project.  Seasearch Corner
19th June 2012	<u>Castle Rocks and Red Cliff</u> Castle Rocks is a boulder reef between 10-12m depth. Three very large lumpsuckers were seen and numerous crystal sea slugs spawning. Lobster pots were also seen. Red Cliff consisted of clean gullies between kelp covered boulders. Grey seals were present but did not approach the divers. Large pollock were seen amongst the kelp.
20th June 2012	<u>Shore Dive Thornwick Bay, Flamborough</u> Divers explored four different habitats: (1) intertidal chalk bedrock with mixed seaweeds, (2) kelp forest on vertical chalk cliffs, (3) sea cave walls covered in sea squirts, sponges and anemones, (4) scoured chalk bedrock seabed. Many fish were seen including a male lumpsucker guarding eggs on a ledge in a cave, leopard spotted gobies hiding under overhangs at the base of the cliffs, viviparous blennies, plaice, ballan wrasse and butterfish. As chalk is a very soft rock, we recorded the boring sponge (*Cliona celata*),boring bivalves (*Hiatella arctica*) and boring worms (*Polydora ciliata*) – but it certainly wasn't a boring dive! After the dive we watched puffins flying to and from their perches on the cliffs to go fishing.
21st June 2012	Dive planned but cancelled 20mph easterly
23rd June 2012	<u>Old Horse Rocks Reef</u> Large boulders covered in sponges including the chimney sponge *Polymastia penicillus*. Numerous crystal sea slugs spawning. Grey seals and ballan wrasse seen swimming amongst the kelp.
24th June 2012	<u>North Landing Flamborough and North Landing Wreck</u> Wreckage covered in pink encrusting algae and kelp lying on clean white sand at 8 metres. Few species recorded as the wreckage is probably scoured by sand, preventing all but the most scour-tolerant species, such as dahlia anemones, from settling. Seasearch divers always record human impacts such as litter and fishing activity – at this site we recorded a plastic frog!
28th June 2012	Dive planned but cancelled due to weather

30th June 2012	Dives to Robin Hood's Bay and Peak Steel - a lovely dramatic wall with seals all around. 
1st July 2012	Dive planned but cancelled - westerly 30 mph winds
2nd July 2012	<u>Filey Brigg (North side)</u> Unpleasant conditions on surface - rain and mist, but superb under water. Seven species of sea slugs were recorded (Appendix 8) including huge numbers of spawning crystal sea slugs. A variety of sponges are present on the reef walls, including white lace sponge, chimney sponge, mermaid's glove and purse sponge.
5th July 2012	Dive planned but cancelled - thick fog came down at the last min (4.30pm)
9th July 2012	Letter offering us a Sport England Grant of £10,000 towards a Nitrox compressor - total cost of project around £24,000 Conditions of the Grant were that we delivered 26 sessions and did a total of 162 person Real Reef Dives 
12th July 2012	<u>Filey Brigg (South side)</u> This shallow boulder reef is aptly named 'Crab Hole' as it was literally crawling with crabs and other crustaceans. Shore crabs, harbour crabs, velvet swimming crabs, edible crabs and hermit crabs were all recorded here in abundance. Human impacts recorded at this site included lobster potting and a salmon net, which was being carefully watched by a couple of seals looking for an easy dinner!
15th July 2012	Proposed MCZ Holderness, Bridlington Bay - sand and little else on this dive

17th July 2012	Long Nab and Scalby Ness These reefs are very different to those south of Scarborough. Very tide swept bedrock and boulders covered in dead men's fingers, hydroids and the ross worm *Sabellaria spinulosa*.
23rd July 2012	Casty Rocks A bad evening for Anne Morrison Project leader - under pressure because there is a BBC camera man aboard filming divers for "Helicopter Heroes", when demonstrating engine checks to trainee boat handler puts water in the oil - 3 whole bottles (woops) Fortunately realised and skipper Heath rapidly brought Neptune round and we were still able to dive. Ben the BBC camera very excited by the boat being surrounded, on the dive site, by 11 playful seals which he filmed. 
24th July 2012	Knipe Point A mountain of rock covered in dead men's fingers and surrounded by white sand - lovely scenic dive.
26th July 2012	Cow and Calf A fascinating underwater landscape of bedrock ridges carved into sinuous shapes by the action of the waves. Oaten pipe hydroids, which like strong tidal conditions, were commonly recorded at this site. Long-spined sea scorpions were frequently seen here, despite their excellent camouflage!
1st August 2012	Committee meeting discuss the target 162 person Real Reef dives and how to meet it before the weather brings the season to an end. The idea of "The Grand Day Out" is suggested. This will be the final day of the Real Reefs Project and followed by an End of Project Party and Project display which will be open to the public.
2nd August 2012	Filey Brigg (North Side) Exactly one month since our last visit on 2nd July! The sea slug spawning has ended, but the reef is still teeming with life and over 50 species were recorded, including the sea toad *Hyas araneus*, which had not been seen on any previous Real Reef dives.
2nd August 2012	Bempton Cliffs - videoed by Andy Jackson
2nd Augsut 2012	Thornwick Bay - videoed by Andy Jackson
4th August 2012	Thornwick Bay - shore dive An early evening dive to explore the sea caves. A colourful dive, with pink encrusting algae, purple *Henricia* starfish and bright red dahlia anemones standing out against the white chalk background.

	
9th August 2012	Flamborough Head - videoed by Andy Jackson -clean white rock gullies
9th August 2012	Cayton Reef - a lot of swell plenty of life
9th August 2012	Red Cliff
10th August 2012	Holbeck Intertidal Proposed MCZ - snorkel dive
11th August 2012	Pursglove Stye - Bel Raiser helps out from the Whitby end as the season is moving on. Rocky bottom and big boulders covered in dead men's fingers - lovely dive.
11th August 2012	Black Nab - on this dive we found some wreckage not previously recorded which is possibly the Middlesborough a sailing ship which sunk in 1837. Also a Bel Raiser dive
11th August 2012	Saltwick Nab - from Bel Raiser. Stepped bedrock reef. Tides not as expected
12th August 2012	North Landing Flamborough - snorkel Dive
19th August 2012	Register with BSAC to incorporate Underwater Litter Pick into our " Grand Day Out " Also decide its time a very large piece of litter was removed from the seabed - Ruffians Mast must come up!!
20th August 2012	Runswick Bay proposed MCZ - shore dive 37 species ID –see Paula's article
23rd August 2012	Calf Allen Rocks - our old favourite. Viz 2m due to swell during the week
23rd August 2012	Perilous Rocks - not the prettiest site but teeming with life-many prawns, lobsters and huge edible crabs.
24th August 2012	Dive on Ruffians mast to attach lines ready for lifting on "The Grand Day Out" but we were amazed at the amount of life which has colonised the folds of the sail - much discussion about whether to leave or raise the mast. Eventually it was decided to attempt to lift the mast and leave the sail. A Seasearch survey was completed of the marine life on the sail which has only been there since winter 2011.
31st August 2012	A north westerly swell has been running all week but the forecast is to go westerly overnight on Friday - will it be enough to flatten the sea and make it diveable for "The Grand Day Out"? Despite there being visitors from clubs as far away as Barnsley and Tyneside it was decided to leave the decision until Saturday morning.
The Grand Day Out 1st September 2012	Swell has died away but the viz does not look good - we did it anyway!!
	Planned to dive Rohilla and White Stone Hole - the one reef yet to be done to complete the 20 - both from Bel Raiser. A call from Andy at 8.30 - Bel Raiser has a problem and it's not safe to go out. Quick calls to those on the way to Whitby to come back to Scarborough and go out on Richard S - who was due to have a well earned rest in the morning before the Litter Pick. White Stone Hole still remains un-dived.
9am	Calf Allen Rocks on Richard S - not good viz but as usual lots of life.

9am	Old Horse Rocks Reef on Francis Anne and Neptune - planned to do Filey Brigg but still a big swell there
12.30pm	Litter Pick and Seasearch Survey on the Accropodes installed between 2002 and 2005. Survey to check colonisation - very well colonised with good variety of small fish (see Paula's article)- with Richard S and Neptune
12.30pm	Francis Anne & Empress leave to attempt to lift Ruffians Mast - after the survey has been done. (8 lobsters amongst other things.)
2pm	Photographer from BSAC PR company comes to take photos for articles to go in local papers.
3.45pm	Francis Anne and Empress return with top part of the mast. The photo featured on the BSAC Litter Pick Facebook page as the biggest piece of 'litter' collected!
4pm	Richard S revisits Calf Allen Rocks and Empress takes photographers to Old Horse Rocks

End Of Real Reefs Project Party

Attended by more than 60 members and non members who viewed the Real Reef Project display

(and enjoyed BBQ & Bubbly to celebrate with us)

Expedition Outputs

Where do we start??

The Real Reefs Project greatly exceeded our expectations in the interest and excitement it generated, the enthusiasm of the divers, both our own club members and other clubs involved, and above all the variety of marine life recorded and differing underwater topography.

Having a written up project plan to present to interested parties was invaluable – it generated much interest at the Sealife Centre with whom we now have a developing relationship – helping with seal releases and their Shark tagging project.

It also gave our divers a clear idea of the aims and objectives and created 'diving with a purpose' opportunities throughout the summer, as well as being of great benefit to marine conservation.

Several divers joined Scarborough Sub Aqua Club purely to take part in the Real Reefs Project.

One Club are hoping to do their own "Real Reef Project" next year.

Below is a summary of the outputs of the Real Reefs Project

Statistics

In the period from 18th June to 1st September (11 weeks and 5 days) we:

- Did 212 person Real Reef dives and snorkel dives
- 62 different divers and snorkelers were involved
- Visited 30 different sites and did 44 dives
- Had 14 different boat handlers and boat maintenance people
- Had 9 different clubs involved
- 10 dives involving 69 divers were arranged but cancelled due to unsuitable weather.

Outputs

- A total of 32 Observer forms and 12 Survey forms were completed on Real Reef dives, and a further 6 Observer forms and 2 Survey forms were completed on dives organised by the regional Seasearch coordinator and attended by SSAC club members. At the time of writing, this constituted **over 30%** of the total number of Seasearch forms submitted for the North East England region, which covers the Scottish Border to the Humber. Paula Lightfoot states that the Real Reef Project has made a significant contribution of data to Seasearch North East this year. Copies of the forms will be kept with the project files in the clubhouse and originals have been sent to Paula for verification and collation into the national Marine Recorder database and onward supply to the NBN Gateway. In time it is hoped that the Seasearch forms and photographs will be the basis of a booklet on diving the reefs of this area for visiting divers. (Appendix 12)

- Dive proformas were completed after each dive and given to the club DO.

- After each dive Paula Lightfoot and other photographers uploaded their photos onto Seasearch North East Facebook Group or SSAC Facebook Group where they often prompted discussion and comment on what we had seen on the dives. These photos were looked at by divers and non divers alike and many people followed the progress of the Project with interest. As Paula commented on Facebook "There's always something new on a Real Reef dive"

- A Flickr set has been created with an assortment of photos taken during the project. The Flickr set can be found here: http://www.flickr.com/photos/54901272@N07/sets/72157631560810656/ and viewed as a slide show here: http://www.flickr.com/photos/54901272@N07/sets/72157631560810656/show/

- Andy Jackson of club member and owner SUBSEA TV took video footage of 3 full dives around Flamborough.

- A display presenting the results of the project was created in the SSAC club house which was available for viewing at the End of Project Party on 1st September and also when the club was open to the public on 11th September for Maritime Heritage weekend. (Appendix 11)

- This display will also be used at a public event at Robin Hoods Bay on 10th November and hopefully at the Yorkshire Dive Conference next spring. It may also be displayed in the local library. It will also be used at a Festival of Ecology at Scarborough Spa on the 14th-15th June 2013 as part of the British Ecological Society's Centenary.

- The BSAC PR company wrote an article covering the Real Reefs Project and BSAC Underwater Litter Pick to be distributed to local media. It appeared in the Scarborough News week ending 9th September. It also appeared on the Calendar News website at that time.

- Paula Lightfoot has written several articles about Real Reef dives which have appeared in:
    - Discover Filey Project Website (Appendix 8 Exotic Sea slugs of Filey Bay)
    - Seasearch News Appendix 9
    - Yorkshire Naturalists Union – Life on the Accropodes Appendix 10
    - Meet the Species website

- Paula is speaking at the Seasearch co-ordinators annual workshop in Birmingham on 26th October about the Real Reefs Project and on 26th September at North Yorkshire & Cleveland Coastal Forum.

- Mr Mike Windle, Director of North East Yorkshire Geology Trust has agreed to provide us with information about the geology of the dive sites for the final project report and is going to use material from the Real Reefs Project in a book he is writing about Robin Hood's Bay.

- SCUBA magazine have asked us to write a 1500 word article on the Real Reefs Project.

- One of Paula's photos of a *Polycera quadrilineata* nudibranch taken on a Real Reef dive at Black Nab near Whitby has been used on the website of the Conchological Society of Great Britain and Ireland as an example of an unusual colour variation of this species.

It can be seen from the above that the publicity generated by project has far exceeded expectations and is continuing.

We will continue with this work next year.

Acknowledgements

As Project Leader I would like offer my personal thanks to Paula Lightfoot for her dedication and never ending enthusiasm (as well as her incredible photographs) to Heath Samples for his boat handling skills which took a great burden off my shoulders, to Dave Horsley for keeping the hard worked boats going and to Maximilian Ruffert BSAC Expeditions Officer for his assistance and support.

Anne Morrison

Appendices

Appendix 1: Marine Conservation Zones within the expedition survey area

By Paula Lightfoot

In August 2011, protection for important marine and coastal sites came a step closer when stakeholder recommendations for a network of Marine Conservation Zones (MCZs) were sent to the Government's nature conservation advisors. The proposals could create up to 127 MCZs in the seas around England, potentially affording some level of protection to over a quarter of the English seabed. Currently, less than 0.001% of the UK's marine environment is fully protected from damaging activities.

Following the passing of the Marine and Coastal Access Act in 2009, four regional projects were established to enable stakeholders from a wide range of sectors to provide input on where MCZs should be located. The aim of this approach was to use local knowledge to verify the ecological and socio-economic importance of potential sites, in order to create an ecologically coherent and well managed network of MCZs that will be well understood and supported by sea users**.**

The Yorkshire coast lies within the area covered by the Net Gain project, which extends from East Anglia to the Scottish border and from estuaries and intertidal areas to deep offshore waters.

Between March 2010 and June 2011, Net Gain facilitated six rounds of regional stakeholder meetings, drawing on an estimated 5,500 hours of stakeholder effort. Following ecological network design principles produced by Natural England and the Joint Nature Conservation Committee, stakeholders were tasked with recommending the size, location, boundaries and conservation objectives of proposed sites. Their aim was to protect a target percentage of broad scale habitats as well as habitats and species of conservation importance, and to fulfil criteria of representativity, replication, adequacy, viability and connectivity.

To support them in this task, stakeholders were provided with a collation of the best available scientific evidence such as hydrographic data, fishing vessel monitoring data, information on geology and geomorphology, benthic habitats and species distributions including seabird foraging areas and fish spawning grounds. Wildlife data provided by volunteer recorders were a crucial source of information during this process. One key dataset which informed the evaluation of inshore sites was provided by the Marine Conservation Society's national recording scheme Seasearch, which provides training and support to enable volunteer SCUBA divers to record the species and habitats they see while diving in the UK. The publicly available Seasearch dataset currently comprises over 304,000 verified records of over 2,500 species at 7,400 sites.

Between them, the four regional projects recommended 127 sites for protection as MCZs, ranging from thin strips of coastline to vast swathes of seabed. The Yorkshire and Humber area contains six proposed MCZs and two proposed highly protected reference areas, within which all anthropogenic pressures should be removed to allow the features of the site to achieve 'reference conditions'. Three of these proposed MCZs and one proposed highly protected reference area lie on the Yorkshire coast and are accessible to divers and snorkelers.

Holderness Inshore (site NG 8)

Stretching from the tip of Spurn Point in the south to Skipsea in the north, this site covers 307km^2 of seabed extending 3 nautical miles from the shore. It was proposed to protect broad scale habitats of mixed sediments and sand, as well as priority features including subtidal chalk, clay exposures and reefs constructed by the Ross worm, *Sabellaria spinulosa*. The site has additional ecological importance as a resource for foraging birds, including puffin (*Fratercula arctica*), common guillemot (*Uria algae*), European shag (*Phalacrocorax aristotelis*), great cormorant (*P. carbo*), black legged kittiwake (*Rissa tridactyla*), fulmar (*Fulmar glacialis*) and northern gannet (*Morus bassanus*). Data to support the proposed designation of this site were provided by a wide range of sources, notably the University of Hull, the RSPB and

Seasearch. The site is already subject to a year-round trawling ban and is deemed to be in favourable condition, so the proposed conservation objective is to maintain the condition of all the features for which the site is designated.

Castle Ground (site NG 10)

Although it is named after its prominent feature, Scarborough Castle, this site runs from Scalby Mills in the north to the southern side of Filey Brigg in the south. It is a long narrow site, proposed for its mosaic of intertidal habitats, including sand, mud, coarse sediments and rocky shores ranging from sheltered bays to exposed headlands. The intertidal sediments are an important foraging area for seabird species including kittiwakes (*Rissa tridactyla*), turnstones (*Arenaria interpres*) and purple sandpipers (*Calidris maritime*), while the rocky shores support a great diversity of flora and fauna. A 1995 survey recorded 225 species in 10 Phyla around Filey Brigg (Hull, 1995), providing a useful source of baseline data for this site. Intertidal underboulder communities are a habitat of particular conservation importance proposed for protection within the site. All of the habitats within this 3.7km^2 site were deemed to be in favourable condition, so the aim of MCZ designation would be to maintain this condition through responsible management.

Runswick Bay (site NG 11)

This site lies adjacent to the North Yorkshire and Cleveland Heritage Coast with its northern boundary at Staithes, its southern boundary just north of Sandsend, and Runswick Bay at its centre. It extends 3nm out to sea, encompassing a mosaic of habitats and reaching depths of up to 30m. The site is of particular interest as it contains a matrix of broad scale habitats, each supporting diverse and unique communities. Its waters provide suitable spawning areas for herring (*Clupea harengus*) and lemon sole (*Microstomus kitt*) and nursery areas for sprat (*Sprattus sprattus*), cod (*Gadus morhua*), whiting (*Merlangius merlangus*) and plaice (*Pleuronectes platessa*). It is proposed for designation in order to protect seven different broad scale habitats and one habitat of particular conservation importance, subtidal sands and gravels. Its designation would also offer protection to the long-lived bivalve mollusc ocean quahog (*Arctica islandica*), which has been recorded at several locations within the site. The site falls within a current no-trawl zone and its features are judged to be in favourable condition.

Flamborough Head No Take Zone (Reference Area 9)

Stakeholders proposed the designation of a 0.94km^2 highly protected reference area to the south of Flamborough Head in order to protect the littoral chalk with its communities of seaweeds and invertebrates. The site boundaries are largely coincident with the boundaries of the existing Flamborough Head No Take Zone which runs from Sewerby Steps to Danes Dyke and extends 700m from the cliff base out to sea. A Seasearch survey conducted in 2009 found extensive mussel beds, forming a biogenic reef which provides a substrate for seaweed and sessile fauna and shelter for mobile fauna including 13 species of crustacean.

The need for ecological data

In a written ministerial statement issued on the 15th November 2011, Environment Minister Richard Benyon assured stakeholders that the full network of 127 proposed Marine Conservation Zones will be put forward for public consultation by the end of 2012. However, the Minister also stated that "there are a number of gaps and limitations in the scientific evidence base supporting the MCZ recommendations" and that the need to strengthen the evidence base for the MCZ recommendations could delay the designation of these sites, postponing the delivery of much-needed protection for marine species and habitats.

Surveys by divers and snorkelers from Scarborough Sub Aqua Club during 2012 will provide vital data that could help to assure the prompt designation of the proposed MCZs on the Yorkshire coast. The provision of Seasearch training to club members will build up a strong network of local volunteers, willing and able to continue to survey these sites after they are (we hope) designated as Marine Conservation Zones.

Following designation, ongoing surveillance and monitoring of these sites will crucial to ascertain whether they are achieving their conservation objectives. Just as information provided by volunteer recorders played an important role in determining the location, size and boundaries of the proposed sites, so it will be vital in monitoring changes in biodiversity in years to come.

References:

Hull, S. (1995) *The Underwater Biology of Filey Brigg* (unpublished report)

Natural England and JNCC (2010) *Marine Conservation Zone Project Ecological Network Guidance*

Net Gain (2011) *Final Recommendations Submission to Natural England & JNCC*

Marine Conservation Zone interactive map http://www.mczmapping.org/# accessed December 2011

Written Ministerial Statement by Richard Benyon MP http://www.defra.gov.uk/news/2011/11/15/wms-marine-conservation-zones/ accessed December 2011

Appendix 2: List and map of dive sites

	Reef name	GPS Lat	Long	Distance from Scarborough In Km(aprox)	Travel time Richard S Aprox Hrs	Travel Time Neptune/Fin S Aprox Mins
1	Flamborough Head	54 06 886N	00 04.422W	15.30	2.55	46
2	Bempton Cliffs	54 09.000N	00 08.947W	12.80	2.13	38
3	Buckton Cliffs	54 09.299N	00 11.158W	10.60	1.77	32
4	Filey Brigg (S)	54 13.007N	00 16.335W	6.70	1.12	20
5	Filey Brigg (N)	54 13.125N	00 16.339W	5.80	0.97	17
6	Old Horse Rock	54 14.181N	00 18.821W	4.05	0.68	12
7	Casty Rocks	54 14.324N	00 19.157W	3.80	0.63	11
8	Castle Rocks	54 14.638N	00 19.839W	3.35	0.56	10
9	Red Cliff	54 14.638N	00 20.158W	3.10	0.52	9
10	Calf Allen Rocks	54 14.752N	00 21.025W	2.85	0.48	9
11	Knipe Point	54 15.101N	00 21.451W	1.94	0.32	6
12	Perilous Rocks	54 15.725N	00 22.113W	1.45	0.24	4
13	Scalby Ness	54 18.413N	00 24.132W	1.95	0.33	6
14	Long Nab	54 19.932N	00 24.822W	3.55	0.59	11
15	Peak Steel	54 24.404N	00 29.234W	8.50	1.42	26
16	Cow & Calf	54 26.797N	00 31.158W	11.50	1.92	35
17	White Stone Hole	54 28.629N	00 33.655W	13.10	2.18	39
18	Pursglove Stye	54 27.683N	00 32.371W	13.30	2.22	40
19	Black Nab	54 29.146N	00 34.720W	14.30	2.38	43
20	Saltwick Nab	54 29.413N	00 34.967W	15.80	2.63	47

Map of dive sites

The Real Reefs project has made a major contribution to the available data on marine species and habitats on the Yorkshire coast. The above map shows the sites for which Seasearch already had data (green circles) and the sites for which the Real Reefs project generated data (red stars). Recording effort had previously been focussed around Flamborough, with a small amount of data for Filey and Robin Hoods Bay. The Real Reefs project has helped to fill the gaps by generating data from a much greater variety of sites along the Yorkshire coast.

Appendix 3: Training undertaken as part of Real Reefs Project

Training and Participants		**Instructor**
Boat handling - for BSAC Boat handlers		**Instructor - Heath Samples (MCA Boat Master)**
Iain Scott	Edmund Ulliott	
Ian Abraham	John Jobson	
Zoe Frank	Edd Peacock	
Adam Naylor	Jon Dean	
Bsac Oxygen Administraion		**Instructor - Dr Ian Hamp**
Andy Jackson	Daryl Johnston-Theasby	
Steve Wright	Edmund Ulliott	
Heath Samples	Gary Bolton	
Darren Spencer		
VHF Radio Course -		**Scarborough Yacht Club**
Gary Bolton		
Peter Bridgewood		
Heath Samples		
SSAC Oxygen Admin Refresher Course		**Instructor Dr Ian Hamp/Dr Anne Polkey**
Joyce Jesson	Julie Wilkinson	
Adam Naylor	Mike Gent	
Iain Scott	Pete bridgewood	
Anne Morrison	Matt Newsome	
Jojo Hartley	John Jopson	
Heath Samples	Caroline Pindar	
Allan Bellerby	Zoe Frank	
Andy Naylor		
Advanced Diver Assessments		**Assessor/Instructor - Anne Morrison**
Dive Manager		
Heath Samples x 6		
Ian Abraham x 2		
Drift Dives		
Heath Samples x 2		
Daryl Johnston-Theasby x 1		
Underwater Search		
Heath Samples x 1		
Adam Naylor x 1		
Marine Life Identification for Snorkelers and Ocean Divers		**Instructor - Paula Lightfoot**
Julie Wilkinson	Maggie Martin	
Kath Johnson	3 x members of other clubs	
Luke Wilkinson	Iain Scott	
Alice Wilkinson		
Seasearch Qualifying Dives		**Instructor/Assessor -Paula Lightfoot**
Matt Newsome	Byron Nilsson	
Caroline Pindar	Haydn Wilsher	
Pete Bridgewood	Simon Smith	

Appendix 4: Report from a Trainee Boat Handler

BOAT HANDLING TRAINING

A major aspect of being in a club is taking on a fair share of the work required to make the club work. One small but important part of this is taking a turn at boat handling on dive trips, ensuring that everyone gets the opportunity to dive rather than being relied upon to do the driving.

Opportunities for members to gain the practice and knowledge for safe boat handling are generally few and far between, several members want the opportunities and the dive trips are on an ad-hoc basis making it difficult for trainees to get constant practice behind the wheel. From my perspective, I completed the BSAC boat handling course two years ago, this gave me the basic knowledge of boat controls and how to manage basic boat manoeuvres, this is a good, sound basis for progression however I have found progress slow due to lack of regular opportunities.

The structured nature of the Reel Reefs project and the frequency of dive outings has ensured that during this summer there have been regular opportunities for boat handling training and practice in relatively safe environments, supervised by experienced boat handlers.

The regular opportunities have allowed be to focus on all aspects of the boat handling, developing competence in each one, these include:

- Initial boat checks (Oil, Water, Fuel level, Safety equipment)
- Taking the boat off the berth at various tide levels, avoiding sand banks and other harbour hazards.
- Safe and responsible exit and entry of a harbour which still has a fishing fleet, and a growing level of pleasure craft, both private and commercial.
- Use of AIS and navigation equipment to locate the required dive site, use of sonar to select the specific target.
- Anchor deployment and retrieval, monitoring for any drift.
- Weather and tide consideration, monitoring and observation.
- Returning the boat onto the berth, ensuring secure moorings.
- Ensuring the boat is clean and all equipment cleared before divers retire to the local pub to complete sea-search forms.

The training and development I have received is now paying off by allowing me to put effort back in to the club, regularly taking my turn at driving, helping maximise the usage of the club boats. The level of skill I have achieved is an ideal basis for furthering related qualifications such as VHF Radio and Dive Leader, both of which I am enthused to undertake as I can now apply them more readily to my hobby rather than being just a passenger.

Appendix 5: UK North Sea Snorkelling Report: Summary of around the Scarborough region

My interest in the intertidal areas of our UK coast stems from the many years growing up locally, learning to appreciate and identify the diverse sea life, whilst rock-pooling, shore-fishing and for a short time native marine fish keeping. That last hobby quickly turned into possibly a more responsible activity of scuba diving and snorkelling, but generally in warmer shores abroad.

However, my favourite times were still to be had in those tidal zones around my home. This caused me to invest in appropriate equipment and get into the sea around Scarborough. It was everything I expected it to be and it soon became apparent that somehow I wanted to share the beauty and interest with the wider audience, especially local people. In my opinion, people were really missing out in what we had locally. I felt that should they become aware of it, they would want to protect it.

That is when I was delighted to come across the Reel Reefs Project. To have this opportunity to learn, educate others and to protect, fit perfectly with the aims of the Project. After joining the local BSAC club, going through some snorkel training sessions to check my capabilities and safety awareness, I started to join surveys. What's more, I became more aware and inspired from the many surveys I was not able to participate in. The dedication of the team was enormous; to organise, carry out and catalogue the quantity of surveys they did. To see so many stunning photos of the diverse kinds of life and the abundance of such, I found breath-taking. Here are some reports and photos of the snorkelling trips I did participate in.

Holbeck, all from shore, most recent first

Snorkel 4: 09/09/12:Sunny, Calm, South Westerly breeze, approx. 9am HT, in water by 9.30am, visibility 1-3m

- Herring sailse (common, small shoal)
- Sand Eel (common, small shoal)
- Crabs; Green Shore, Edible, Hermit (very common)
- Sea anemones; Beadlet (common)
- Common seaweeds; Kelp, Bladderwrack, Green and red seaweeds
- Common molluscs; Mussels, Limpets, Cockles, Barnacles

Holbeck, all from shore, continued..

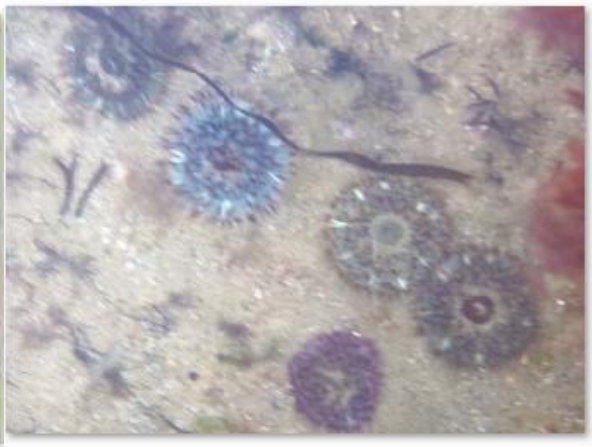
Holbeck, all from shore, continued..

Snorkel 3: 29/07/12: (notes over and above those listed)Sunny, Calm, no wind, approx. 1pm HT, in water 10am, visibility 2-3m

- Ballan Wrasse - saw two or three (could have seen one twice), first I have seen there
- Small aggressive codling (first I have seen there)

- Bullhead (first I have seen there)
- Very large shoal Herring Sailse (second time only I have seen such a quantity there)
- Crabs; Velvet (common)
- Blenny (common)
- Butterfish (common)
- Glass Shrimps (common)
- Sea anemones; Dahlia? or unidentified small group on sand, "Burrowing"?

Sample photos, small video available:

<u>Snorkels 1 and 2,21/08/11, 04/09/11:</u> (recollections over and above those listed)

- Flounder (not common)
- Spiny red sea urchin, out of water (not common)

<u>Thornwick Bay, from shore</u>

02/09/12: Sunny, Calm, no wind, approx. 7pm HT, in water 1pm, visibility 2-4m

- Small codling
- Sea anemones; Beadlet (common) , Dahlia (not common)
- Breadcrumb sponges (exposed)
- Common seaweeds; Kelp, Bladderwrack, Green and red seaweeds
- Common molluscs; Mussels, Limpets, Cockles, Barnacles

Thornwick Bay, from shore continued…





Flamborough North Landing, from shore

Snorkel 2) 15/09/12: Sunny, Calm, no wind, approx. 5pm HT, in water 11am, visibility nil.

- Beadlet sea anemones
- Common seaweeds; Kelp, Bladderwrack, Green and red seaweeds
- Common molluscs; Mussels, Limpets, Cockles, Barnacles

Snorkel 1) 12/08/12:Sunny, Calm, no wind, approx. 1pm HT, in water 1pm, visibility 2-4m

- Conger eel (approx. 2ft long)
- Several Ballan wrasse (up to approx. 2kg)

Flamborough North Landing, from shore…continued

Redclifffe, from boat:

09/08/12 :Sunny, Calm, no wind, approx. approx. 8pm HT, in water 9pm, visibility <1m

- Common seaweeds; Kelp, Bladderwrack, Green and red seaweeds
- Common molluscs; Mussels, Limpets, Cockles, Barnacles

Appendix 6: List of dives and divers

Date	Dive Site	Divers	Skipper/Assistant
29.03.2012	Perilous Rocks	Heath samples	Heath Samples
		Anne Morrison	
		Paula Lightfoot	
		Caroline Pindar	
		Darren Bedford	
		Phil Lightfoot	
18.06.2012	Calf Allen Rocks	Anne Morrison	Zoe Frank
		Paula Lightfoot	
		Phil Lightfoot	
		Pete Bridgewood	
		Darren Bedford	
		Paul Wilson	
18.06.2012	Perilous Rocks	Anne Morrison	Zoe Frank
		Paula Lightfoot	
		Phil Lightfoot	
		Darren Bedford	
19.06.2012	Castle Rocks	Paula Lightfoot	Heath Samples
		Alan Bellerby	
		Darrebn Bedford	
		Thom Dowkes	
		Paul Wilson	
		Heath Samples	
19.06.2012	Red Cliff	Paula Lightfoot	Heath Samples
		Darren Bedford	
20.06.2012	Thornwick Bay	Paula Lightfoot	Shore Dive
		Phil Lightfoot	
		Anne Morrison	
23.06.2012	Old Horse Rocks	Anne Morrison	Carl Racey
		Matt Newsome	
		Haydn Wilsher	
		Mick lawson	
24.06.2012	North landing Wreck	Heath Samples	Heath Samples
		Anne Morrison	
		Timmy Lamplough	
		Darren Bedford	
		Mike Gent	
		Paul Wilson	
24.06.2012	North landing bay	Heath Samples	Heath Samples
		Anne Morrison	
		Timmy Lamplough	
		Darren Bedford	
30.06.2012	Paris RHB	Anne Morrison	Iain Scott
		Darren Bedford	Anne Morrison
		Paul Wilson	
		JoJo Harley	
30.06.2012	Peak Steel	Annie Morrison	Iain Scott
		Darren Bedford	Anne Morrison
		Paul Wilson	
		JoJo Hartley	
02.07.2012	North Filey Brigg	Anne Morrison	Heath Samples
		Paula Lightfoot	
		Thom Dowkes	
		Caroline Pindar	
12.07.2012	Filey Brigg South	Haydn Wilsher	Carl Racey
		Mick lawson	
		Paula Lightfoot	
		Jim Green	
15.07.2012	Holderness MCZ	Annie Morrison	Bill Swales
		Daryl Johnston-Theasby	
17.07.2012	Long Nab	Paula Lightfoot	Iain Scott
		Jim Green	Anne Morrison
		Darren Spencer	
		Darren Bedford	
		Alan Bellerby	
		Paul Wilson	
		Anne Morrison	
17.07.2012	Scalby Ness	Paula Lightfoot	Iain Scott
		Jim Green	Anne Morrison

Date	Dive Site	Divers	Skipper/Assistant
		Darren Spencer	
		Darren Bedford	
23.07.2012	Casty Rocks	Paula Lightfoot	Heath Samples
		Anne Morrison	Ben from BBC
		Darren Bedford	
		Caroline PIndar	
24.07.2012	Knipe Point	Anne Morrison	Iain Scott
		Rob Everiss	Anne Morrison
		Alan bellerby	
		Paul Wilson	
		Caroline Pindar	
26.07.2012	Cow & Calf	Alan Bellerby	Heath Samples
		Paula Lightfoot	Anne Morrison
		Haydn Wilsher	
		Mick lawson	
		Darren Bedford	
		Byron Nilsson	
02.08.2012	Filey Brigg N	Anne Morrison	Ian Abraham
		Paula Lightfoot	
		Matt Newsome	
		Steve Wright	
		Jim green	
04.018.2012	Thornwick Bay	Paula Lightfoot	Shore Dive
		Kerry Netherway	
		Will MacLennan	
		Greg Wilkinson	
09.08.2012	Cayton Reef	Anne Morrison	Paula Wilkinson
		Paula Lightfoot	Ian Abraham
		Danny Brocksbank	Luke Wilkinson
		Julie Wilkinson	
		Kath Johnson	
		Steve Wright	
09.08.2012	Red Cliff	Paula Lightfoot	
		Paul Wilson	
10.08.2012	Holbeck Intertidal	Matt Newsome	Snorkel Dive
	Proposed MCZ	Kath Johnson	
		Danny Brocksbank	
11.08.2012	Pursglove Stye	Paula Lightfoot	Andy Jackson
		Rob Everiss	
		Darren Bedford	
		Annie Morrison	
		Ian Hamp	
		Byron Nilsson	
11.08.2012	Black nab	Paula Lightfoot	
		Rob Everiss	
		Darren Bedford	
		Annie Morrison	
		Ian Hamp	
		Byron Nilsson	
11.08.2012	Saltwick Nab	Byron Nilsson	Mally Jenks
		Annie Morrison	
		John Camm	
		Nic Faulks	
		Simon Smith	
11.08.2012	Rohilla	Byron(Cleveland)	Mally Jenks
		Annie Morrison	
		John Camm	
		Nic Faulks	
		Simon Smith	
12.08.2012	North Landing	Matt Newsome	Snorkel Dive
		Kath Johnson	
		Danny Brocksbank	
02.08.2012	Flamborough area	Andy Jackson	Vinny Fox
3 dives		Anne polkey	
		Andy Jackson	
		Anne polkey	
		Andy Jackson	
		Anne polkey	
09.08.2012	Flamborough area	Andy Jackson	
		Anne polkey	

Date	Dive Site	Divers	Skipper/Assistant
		Andy Jackson	
		Anne polkey	
		Andy Jackson	
		Anne polkey	
20.08.2012	Runswick Bay PMCZ	Kerry Netherway	Shore Dive
		Derek Weldon	
		Debbie Weldon	
		Ann Bailey	
		Trevor Bailey	
		Nathan Molyneaux	
		Dane Meech	
		Karen Boswarva	
		Mark Askew	
		Philip Askew	
		Mark Hammond	
		David Wightman	
		Paul Mills	
		Paula Lightfoot	
		Phil Lightfoot	
		Nik Faulks	
		Simon Smith	
		Kath Johnson	
		Matt Newsome	
23.08.2012	Perilous Rocks	Paula Lightfoot	Heath Samples
		Matt Newsome	
		Anne Morrison	
		Iain Scott	
		Pete Bridgewood	
		Alan Bellerby	
		Paul Wilson	
23.08.2012	Calf Allen Rocks	Kevin Ord	Carl Racey
		Clare Ord	
		Haydn Wilsher	
		Andrew	
24.08.2012	Ruffians Mast	Bince Robinson	Adam Naylor
		Anne Morrison	
		Jojo Hartley	
01.09.2012	Filey Brigg (North)	Phil Bennett	Bince Robinson
		Jojo Hartley	
		Iain Scott	
		Pete bridgewood	
		Rob Everiss	
		Kath Johnson	
01.09.2012	Acropods	Pete Bridgewood	Carl Racey
		Phil Bennett	Anne Morrison
		Paula Lightfoot	
		Phil Lightfoot	
		Jojo Hartley	
		Iain Scott	
		Rob Everiss	
		Zoe Frank	
01.09.2012	Calf Allen Rocks	Paula Lightfoot	
		Phil Lightfoot	
		Jojo Hartley	
		Matt Newsome	
01.09.2012	Calf Allen Rocks	Nik Faulks	Anne Morrison
		Simon Smith	
		John Camm	
		Matt Newsome	
		Dave Jowett	
		Spud Ulliott	
01.09.2012	Cayton Reef	Nik Faulks	
		Simon Smith	
		Daryl Johnston-Theasby	
		Matt Newsome	
		Timmy Lamplough	
		Spud Ulliott	
01.09.2012	Old Horse Rocks	Rob Broadhead	Rob Broadhead
		Anne Polkey	
		Caroline Pindar	

Date	Dive Site	Divers	Skipper/Assistant
		Ian Hamp	
01.09.2012	Calf Allen Rocks	Rob Broadhead	Rob Broadhead
		Anne Polkey	
		Caroline Pindar	
		Ian Hamp	

Boat handlers		Divers
Zoe Frank		Alan Bellerby
Heath Samples		Andy Jackson
Carl racey		Anne Morrison
Iain Scott		Anne polkey
Bill Swales		Byron Nilsson
Ian Abraham		Caroline Pindar
Paul Wilkinson		Danny Brocksbank
Mally Jenks		Darren Bedford
Annie Morrison		Daryl Johnston-Thesby
Andy Jackson		Haydn Wilsher
Vinny Fox		Heath Samples
		Ian Hamp
Boat Repairer		Jim Green
Dave Horsley		John Camm
		JoJo Hartley
		Julie Wilkinson
		Kath Johnson
Clubs Involved		Matt Newsome
York University		Mick lawson
Hull University		Mike Gent
Tyneside BSAC		Nic Faulks
Cleveland BSAC		Paul Wilson
Barnsley Sub Aqua Club		Paula Lightfoot
Overland Underwater		Pete Bridgewood
Harrogate BSAC		Phil Lightfoot
Scarborough Sub Aqua Club		Rob Everiss
Huddersfield Cormorants		Simon Smith
		Steve Wright
		Thom Dowkes
		Timmy Lamplough
		Kerry Netherway
		Will MacLennan
		Greg Wilkinson
		Kerry Netherway
		Derek Weldon
		Debbie Weldon
		Ann Bailey
		Trevor Bailey
		Nathan Molyneaux
		Dane Meech
		Karen Boswarva
		Mark Askew
		Philip Askew
		Mark Hammond
		Paul Mills
		Karen Boswarva
		Mark Askew
		Philip Askew
		Mark Hammond
		David Wightman
		Paul Mills
		Kevin Ord
		Clare Ord
		Andrew
		Darren Spencer
		Iain Scott
Booked but dive cancelled		Edd Peacock
		Allison Gleadhill

Appendix 7: *Short report from the point of view of a visiting diver.*

I first heard of the Real Reefs Project via an email sent to RYSAC by Anne Morrison in late February. As a local and fairly new diver (qualifying as a Sports Diver last year with Ryedale Sub Aqua Club), the prospect of this project really caught my attention. Having completed several local wreck dives from Whitby, and others in Cornwall, this appeared to be a great opportunity to put purpose to my diving by contributing to marine conservation, exploring local waters, and studying the local environment; for the Clubs in the area I felt the project would be a great opportunity to dive together and strengthen ties.

What I did on the Real Reefs Project

During this year I've dived on six Real Reef Project dives between Filey and Robin Hood's Bay. I can honestly say that every one has been different – not only in the depths (between 2mtr and 16mtrs) tides (anywhere between slack and full flow) and times of day (weekends and evenings), but also in the local conditions, environment and wildlife. All of these dives I undertook included members from both Scarborough and other BSAC Clubs, often including some of my friends from RYSAC.

Anne emailed me a copy of the Seasearch form which needs to be completed by Observers. This, along with the expedition document and a Seasearch presentation evening at SSAC Club, enabled me to understand the species and habitats data gathering objective of the dives which we were to undertake. During each dive my buddy and I made a mental note of the layout of the environment and the animal/plant life we witnessed. After the first dive this was backed up with photos and video. Involvement in the project inspired me to purchase a camera, though the quality of the images wasn't always great it really helps and is evidence of that 'strange creature' you saw but don't have a clue what it is! Excited discussion about what life forms the diving pairs witnessed always takes place once back on the boat. As soon as possible afterwards the information was committed to paper.

What I gained from the Real Reefs Project

For me Reel Reef diving has been a lot different from my previous diving experiences. Whereas before my buddy and I would try to cover as much of a wreck as possible in the time available, this has been about careful observation and from that enquiry and hopefully some understanding. Completing the Seasearch forms really prompts thought about the environment being studied: the sea bed type, its geographical location, the plant and animal life – what was it, why is it here, why wasn't it seen in other locations. Armed with a copy of 'Great British Marine Animals' and referencing the 'Encyclopedia of Marine Life of Britain and Ireland' on the internet it's been fascinating to identify the marine life I've seen in the local waters. One thing that has really surprised me is how rich the marine life is, literally sometimes just off the shore - Filey Brig and Scarborough headland spring to mind. You don't need to travel far and go deep to see an abundance of varied and unusual life.

Diving with members of other clubs has been a great way to improve my own diving skills and increase my experience.

As a visitor to the club I cannot speak highly enough of the way that this project has been undertaken by SSAC. Under the dedicated leadership of Anne, and with the expertise and the wealth of experience at Scarborough Sub Aqua Club visitors are always made to feel welcome, the diving has been well planned, safely conducted and made a thoroughly enjoyable experience. I'm now booked on an Seasearch Observers course for the end of September with the intention that next year I can continue to be an active participant in this valuable endeavour.

Haydn Wilsher

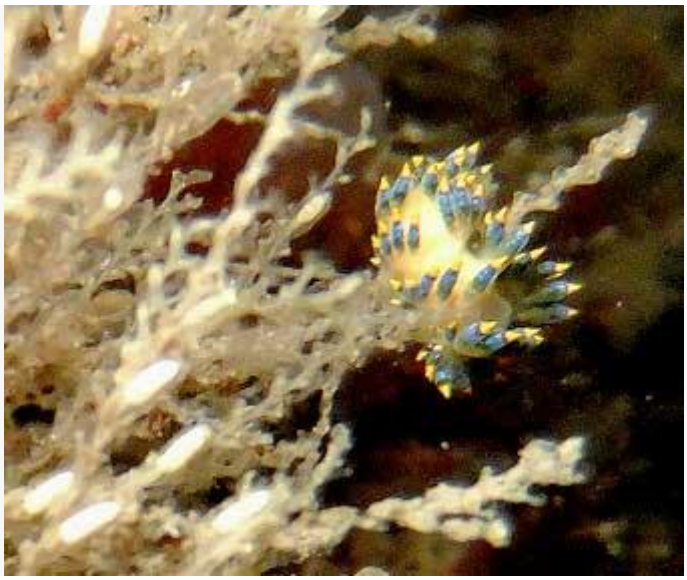
16 September 2012

Appendix 8: *Report on the Discover Filey website*

http://www.discoverfiley.org.uk/the-exotic-seaslugs-of-filey-brigg-seasearch-visit-filey/

The Exotic Seaslugs of Filey Brigg – Seasearch visit Filey

by RB



Cuthona caerulea © copyright P. Lightfoot reproduced with permission all rights reserved

Seasearch divers based in Yorkshire recently visited Filey Brigg and took photographs of some of the incredibly exotic and diverse marine life found just a few hundred metres from Filey's beach. On one dive alone they recorded 56 species, including 7 species of seaslug. The word 'seaslug' implies the kind of slimy animal found in gardens but simply doesn't do justice to the colourful beauty and exoticism of these tiny animals. They are often difficult to spot, but tend to eat specific animals, such as certain types of seamats or bryozoans, so if you can find their food, a seaslug that eats that food can often be found nearby. The above photograph is of a seaslug called Cuthona caerulea which is snacking off its favourite hydroid food on Filey Brigg. seaslugs or Nudibranchs, as they are known by scientists are usually short lived and can have several generations each year.

Nudibranchs have always attracted a considerable following. If you want a riveting bedtime read go to A monograph of the British nudibranchiate Mollusca (1845) . The authors of which were Joshua Alder, Albany Hancock and Sir Charles Eliot. Albany Hancock was one half of the Hancock Brothers of Newcastle upon Tyne. His brother John is known as the 'father of modern taxidermy' .

Such publications fuelled the Victorian passion for collecting marine life and hordes of 'would be naturalists' ripped up British seashores or nearby rocky seabeds with their 'naturalists dredges'. The wonderful underwater photographs of Seasearch Divers are a much better way of examining these wonderfully colourful animals and their natural habitats.

Appendix 9: Report on Seasearch National Website

www.seasearch.org.uk

Seasearch News

Updated 10th July 2012

Real Reefs Project – filling gaps on the Yorkshire Coast

Thanks to funding from the BSAC Expedition Grants Scheme, Scarborough Sub Aqua Club have launched an exciting and ambitious project called Real Reefs. The aim of the project is to carry out Seasearch surveys of twenty unexplored reefs between Whitby and Flamborough this summer, as well as gathering data within two proposed Marine Conservation Zones.

The project was due to start in April, but sea conditions made diving impossible until almost the end of June. Since then, the dedicated Scarborough divers have made up for lost time by surveying on every available evening and weekend, and have already completed Seasearch forms for nine of their target sites.

As hoped, the dives are filling gaps in our knowledge about the distribution of species on the Yorkshire Coast. For example, there are currently no Yorkshire records of the nudibranchs *Aeolidiella glauca* and *Cuthona caerulea* (pictured) on the NBN Gateway, but both were recorded on Real Reef dives in July. Well done SSAC divers, and good luck with the next eleven sites!

Appendix 10: *Reports on the Yorkshire Naturalists' Union website and Meet the Species website*

www.ynu.org.uk

Life on the Accropodes!

Members of the YNU's affiliated society **Seasearch** carried out survey dives on Scarborough's coastal defences on Saturday 1st September. The coastal defences consist of rock revetment and pre-cast concrete Accropodes installed between 2002 and 2005. Since their installation, the subtidal sections of the defences have become richly covered in seaweeds, sponges, bryozoans and hydroids, providing habitat for a variety of mobile creatures such as fishes, prawns and crabs. Seasearch divers recorded 37 species, including the seaweeds *Dilsea carnosa*, *Dictyota dichotoma* and *Delesseria sanguinea*, sea slugs *Goniodoris nodosa* and *Jorunna tomentosa,* as well as common lobsters, velvet swimming crabs, common starfish, long-spined sea scorpions, dragonets and butterfish.

Left to right: The sea slug *Jorunna tomentosa*, a butterfish *Pholis gunnellus* and a dragonet*Callionymus lyra*.
The dives were carried out with Scarborough Sub Aqua Club and marked the successful completion of their Real Reefs Project, which surveyed the wildlife and habitats on 20 reefs between Flamborough and Whitby this summer with funding from BSAC and Sport England.

Report from the Meet the Species Website

http://meetthespeciesdotorg.wordpress.com/2012/08/26/seasearchers-dive-in-and-get-new-records-for-meet-the-species/

Seasearchers dive in and get new records for Meet the Species!

August 26, 2012 by meetspecies

Seasearch divers visited Runswick Bay in North Yorkshire last Saturday to record the wildlife and habitats at this beautiful site which has been recommended for designation as a Marine Conservation Zone. Seasearch divers love a challenge, so we gave them the additional task of finding species on the Meet the Species list to help with the final lap of the project!

The divers recorded over 60 different marine species, including 12 from the Meet the Species list that had not been recorded at any previous events.

One of these was *Obelia geniculata*, a small hydroid that is known as 'kelp fir' because it grows on the fronds of kelp plants, sometimes creating a dense 'fuzz' of white zig-zag stems which are each 2-3cm long. It was recorded on forest kelp, *Laminaria hyperborea*, so we got two Meet the Species target species for the price of one!

Kelp fir growing on a frond of Laminaria hyperborea kelp

Hydroids are related to sea anemones, corals and jellyfish. Most hydroids are colonial, consisting of lots of tiny polyps connected together to form a stalked, branching or bushy structure – which is why hydroids are often mistaken for plants! Each feeding polyp has stinging tentacles to catch food as it drifts by in the current.

Close-up of Obelia geniculata kelp fir showing the fine tentacles extended to trap passing food

If you want to take a closer look at this fascinating group of species, we strongly recommend the newly published Seasearch Guide to Bryozoans and Hydroids by Dr. Joanne Porter, which is available from the Marine Conservation Society online shop.

Seasearch is a national recording scheme for recreational SCUBA divers co-ordinated by the Marine Conservation Society. Dedicated Seasearch volunteers have already made over 350,000 species records fully publicly available through the NBN Gateway. For more information visit the Seasearch website.

Appendix 11: Real Reef Display

Appendix 12: Example Seasearch Observation Form

Thank you for completing this form

Seasearch
Marine Conservation Society
Unit 3, Wolf Business Park
Alton Road
Ross-on-Wye
Herefordshire
HR9 5NB

www.seasearch.org.uk

Seasearch Observation Form

Record no

Name

Address

Postcode

Tel Home

Mobile

Email

Buddy's Name

Site Name

Red Cliff

Date of Dive

Start of dive

Dive duration

General Location (inc county)

South Cayton Bay

Scarborough N. Yorks

Max depth of survey

U/W visibility

Sea Temperature

Position at start of dive

or OS Grid Reference

Position derived from (circle)

GPS Chart OS Map Web mapping site

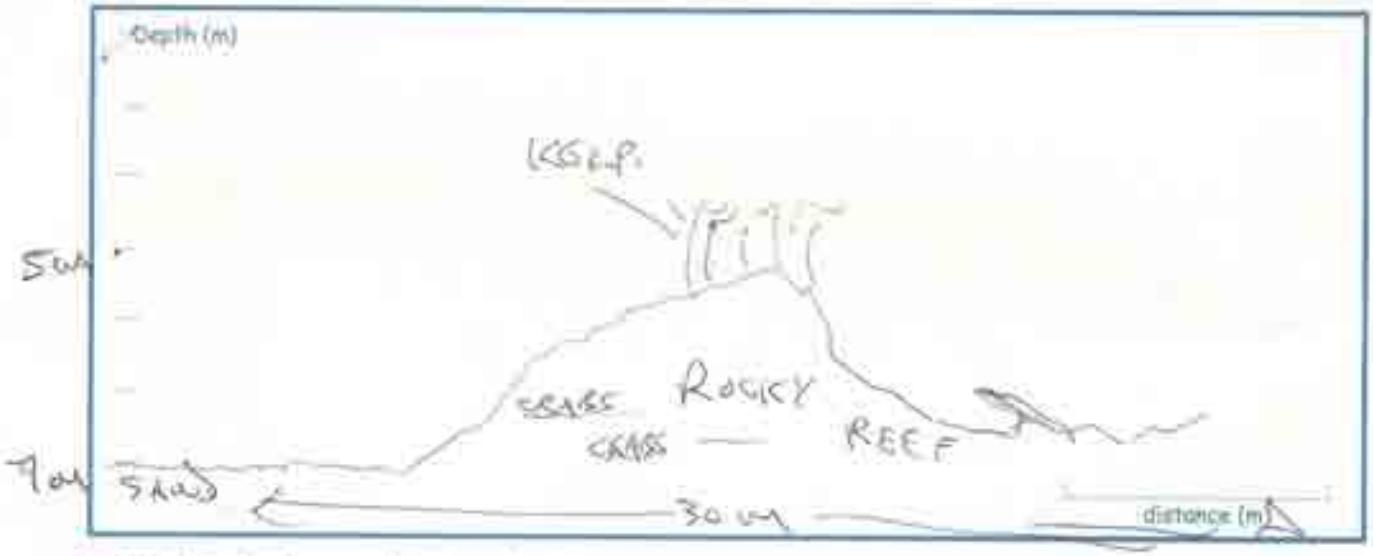
Drift dive? yes / no

Night dive? yes / no

Did you take any photographs? yes / no or video footage? yes / no

Description of the seabed

Please draw an approximate profile of the seabed (i.e. a side-on view), labeling features and dominant forms as appropriate. Remember to show the depth range and a distance scale.



Types of seabed present: (please tick all that you saw and circle the dominant one)

Rocky Reef	Boulders	Cobbles and Pebbles	Mixed Ground	Sand and Gravel	Mud	Wreckage	Other
☑	☑	☐	☐	☑	☐	☐	☐

Did you notice anything unusual or noteworthy about the seabed or the marine life?

Was there any litter or were there any man-made objects apparent?

1 BEER CAN 1666
1 PLASTIC BAG ASDA

What marine life did you see on your dive?

Seabed cover types (tick all those present)

Kelp forest ☑

Kelp park ☑

Mixed seaweeds ☑

Encrusting pink algae ☐

Barren sediment (no life or structures apparent) ☑

Animal turf on rocks

☐ Short

☐ Tall

Animal Beds (e.g. mussels, brittlestars, scallops - state which) ☐

Sediment with life apparent (tubes, burrows etc) ☐

Illustrations by Ben Fraser-Smith

Species you saw

Show abundance of each species as Rare, Occasional, Common, or if you're unsure, Present.

Species	Abundance
STAR FISH COMMON	C
LUMPSUCKER	2
WRASSE BALLAN	1
VELVET SWIMMING CRAB	0
HERMIT CRAB	0
BLOODY HENRY	R
SEA URCHIN	R
RAZOR SHELLS	0
LOBSTERS	0
MASKED CRAB	0
EDIBLE CRABS	0
SCITH	0
KING	R
SPINY SQUAT LOBSTER	R
LEOPARD SPOTTED GOBY	R
Dahlia Anemones	C
Plumose Anemones	O

Appendix 13: Risk Assessment

Risk Assessment Form

Branch: Scarborough Sub Aqua Club
Location: Coastal dive sites within 20 miles of Scarborough
Dates: April to September 2012

Hazard	Who is at risk	Evaluation	Controls	Immediate measures to deal with consequences if risk does occur
Back Injury	All	low	Ensure all know how to lift cylinders Use of loading trolley	Provide appropriate first aid and hospitalise as required
Poor VHF coverage/radio failure in an emergency	All	High	Radio check prior to leaving. Leave details of plans and expected return time with harbour personnel	Try mobile phone Take backup handheld radio
Rapid ascent	All divers	High	Ensure all divers suitably qualified and experienced. Ensure all divers have done warm up dives to check skills and equipment just prior to start of project	Recover diver and assess Administer oxygen Monitor diver Contact HMCG if deco missed
Separation from boat	All divers/ snorkellers	High	Boat Marshall to monitor diver positions Use of SMB if drift diving DSMB deployed at end of dive if not on anchor line. Divers to stick to maximum dive time given to dive marshall	Each diver to carry visual detection aid or whistle to be deployed. Search commenced. Contact HMCG
Heart Attack	All divers/ snorkellers	Medium	Ensure medical self-declaration completed	CPR by instructor Emergency services contacted
Ear damage	All divers/ snorkellers	Medium	Do not dive while suffering from a cold or ear infection	Assisted by buddy. Refer to A&E on return
Mask squeeze	All divers	Low	Mask should enclose eyes/nose in same airspace	Assistance from buddy. Refer to A&E if required
Running out of air	All divers	High	All scuba sets fitted with pressure gauges. Buddy check prior to diving.	All divers carry AAS
Trips/slips & tumbles on boat	All divers	Low	Dive marshal to point out any hazards. Equipment to be stowed neatly prior to and after diving	Provide appropriate first aid and hospitalise as required
Decompression illness	All divers	Medium	Dives planned and conducted in accordance with BSAC 88 tables or dive computers. Ensure sufficient surface interval if repetitive diving. All divers have depth/timing device	Oxygen administration. Contact HMCG
Bad visibility	All divers	Medium	Use of buddy line if required. Good fining technique.	Dive aborted if visibility unsuitable for divers
Diver separation	All divers	High	Divers to remain in contact throughout the dive. Buddy lines to be carried.	Divers to surface according to BSAC training

Entanglement in nets/underwater obstructions	All divers	medium	All divers to carry knives/cutters. Divers to dive in buddy pairs. Gear configured to be neatly stowed.	Assistance from buddy. Deploy cutting device
Contact with dive boat/propeller	All divers	Medium	Only trained Cox'ns allowed to operate boats. Entry and exit from boat controlled by cox'n	First aid administered Hospitalise as required
Injury from other boats	All divers	Low	'A' flown while divers down. Other surface vessels monitored. Divers to use SMB/DSMB	First Aid administered. Contact HMCG and hospitalise as required
Deteriorating weather	All divers	High	Diving planned using latest weather information. Weather monitored whilst on dive site. Diver recall mechanism available	Dive plan changed dive aborted. Divers recalled.
Jelly fish stings	All divers	Low	Vaseline on lips. Look out for tentacle .Gloves	Apply first aid(vinegar)
Boat malfunction	All divers	Low	Ensure all boat checks carried out prior to dive. Carry tool kit. Boats go out together	Deploy anchor. Contact other boat via VHF and request assistance
Seasickness	Some divers	Low	Take seasickness pills prior to departure. Stay outside on the centre line of the boat. Look at the horizon	Abort dive Assist with de-kitting.
Propeller foul	All boat divers	Low	Avoid fishermens pots. Cox'n and all crew to maintain good look out for obstacles in sea	Stop engine. Deploy anchor if required. Diver to remove foul from propeller.
Cold	All divers	Low	Maximum dive time 1 hour. All divers to bring windproof/waterproof jacket and hat	Change clothes if wet. Remove from wind