Centre for Environment Fisheries & Aquaculture Science

Cefas

RESEARCH VESSEL PROGRAMME

RV CEFAS ENDEAVOUR
Survey: CEND 23X - 2016

STAFF: Cefas/JNCC/NE staffing requirements TBC
POMS, 24 hr deck operations required

Name	Role	Cabin	Shift
Chris Jenkins	SIC		
Dan Wood	Day shift lead		
Marc Whybrow	Night shift lead		
Paul McIlwaine	Survey planning lead / Deputy SIC		

DURATION: **30th October to 9th November 2016**

LOCATION: ***Please provide a detailed map and state longitudes and latitudes***

Area name/Extent DD WGS84	N	S	E	W
Pisces Reef Complex SAC	54.212	54.06	-5.143	-5.346
Uptopia MCZ	50.676	50.623	-0.834	-0.922

1). Pisces Reef Complex SAC

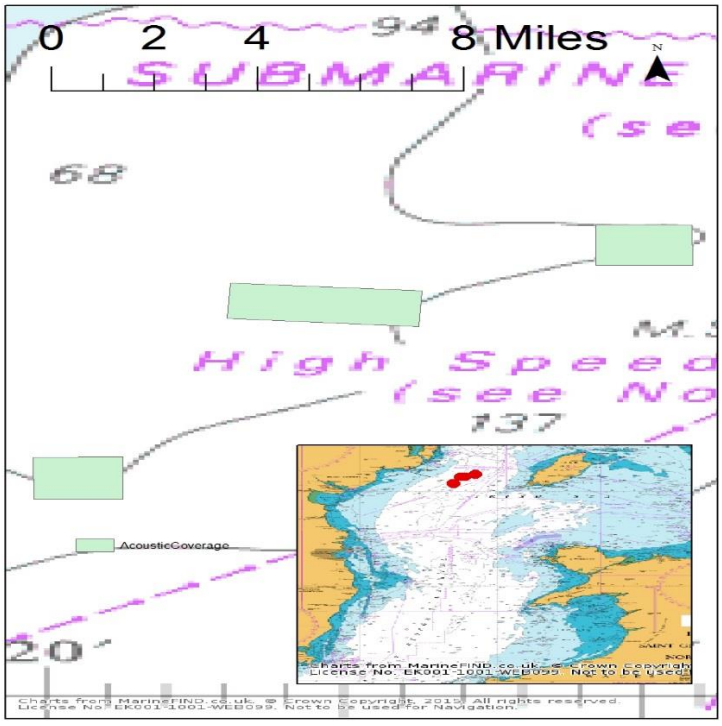

Figure 1 Pisces Reef Complex SAC

AIMS:

The aim of the survey is to acquire **sentinel monitoring (Type 1 monitoring)** data to contribute to the development of a monitoring time-series for Pisces Reef Complex cSAC/SCI.

The survey will gather evidence on the structure, function and condition of Annex I Reefs (both rocky and stony reefs), against which the rate and direction of change can be inferred in the long term. The primary objectives of the survey are presented in
Table 1, and have been developed based on the feature attributes defined in the Conservation Objectives for the site (JNCC, 2012).

Table 1. Monitoring objectives for the CEND2316 survey of Pisces Reef Complex cSAC/SCI

Objective	Sub-objectives	Priority	Rationale
1. Collect evidence to inform monitoring of the **extent, distribution and physical structure** of the features within the MPA.	**1.1.** Acquire full coverage acoustic data across the site.	**1**	Produce an updated habitat map for the site. Ground-truthing will primarily be achieved through sub-objectives 1.4,1.5 & 1.6 (with additional stations if needed).
	1.2. Ground-truth the acquired acoustic data	**1**	
	1.3. Investigate the depth of sediment veneers across the site (in particular Area P2) using sub-bottom acoustic method.	**2**	Determine whether buried reef areas are likely to constitute Annex I Reef in terms of habitat provision (i.e. is the rock buried too deeply to support attached epifauna?). Particularly relevant for disputed Area P2.
2. Collect evidence to inform monitoring of the **diversity and structure of biological communities, and typical species** within the site.	**1.4.** Acquire quantitative photographic data on epifaunal communities across the reef features, stratifying effort by a) Areas P1, P2 & P3, b) exposed rock & sediment veneer.	**1**	Supply data for Annex I Reef monitoring time-series, and characterise the different communities associated with rock and sediment veneers. Collect data to allow future identification of any differences in habitat condition between areas where buffered (P1 & P3) and non-buffered (P2) fisheries management measures have been applied.
	1.5. Acquire qualitative photographic data on epifaunal communities across wider areas of sediment within the site	**3**	Provide comparison to sediment veneer communities.

	boundary, including scour hollows.		
3. Acquire data to improve understanding of environmental conditions and sediment dynamics within the site.	**1.6.** Revisit photographic transects surveyed in 2004 (SEA6), 2005 (MESH), CEND1911 & CEND1414.	**2**	Qualitative comparison to previously acquired photographic data, to investigate whether rock has been exposed/buried, and whether there is any evidence for mobility of sediment veneers.
	1.7. Acquire environmental data (conductivity, turbidity, temperature etc) at photographic stations.	**1**	Full list of parameters TBC. To support development of sublittoral rock indicator.

2). Utopia Marine Conservation Zone

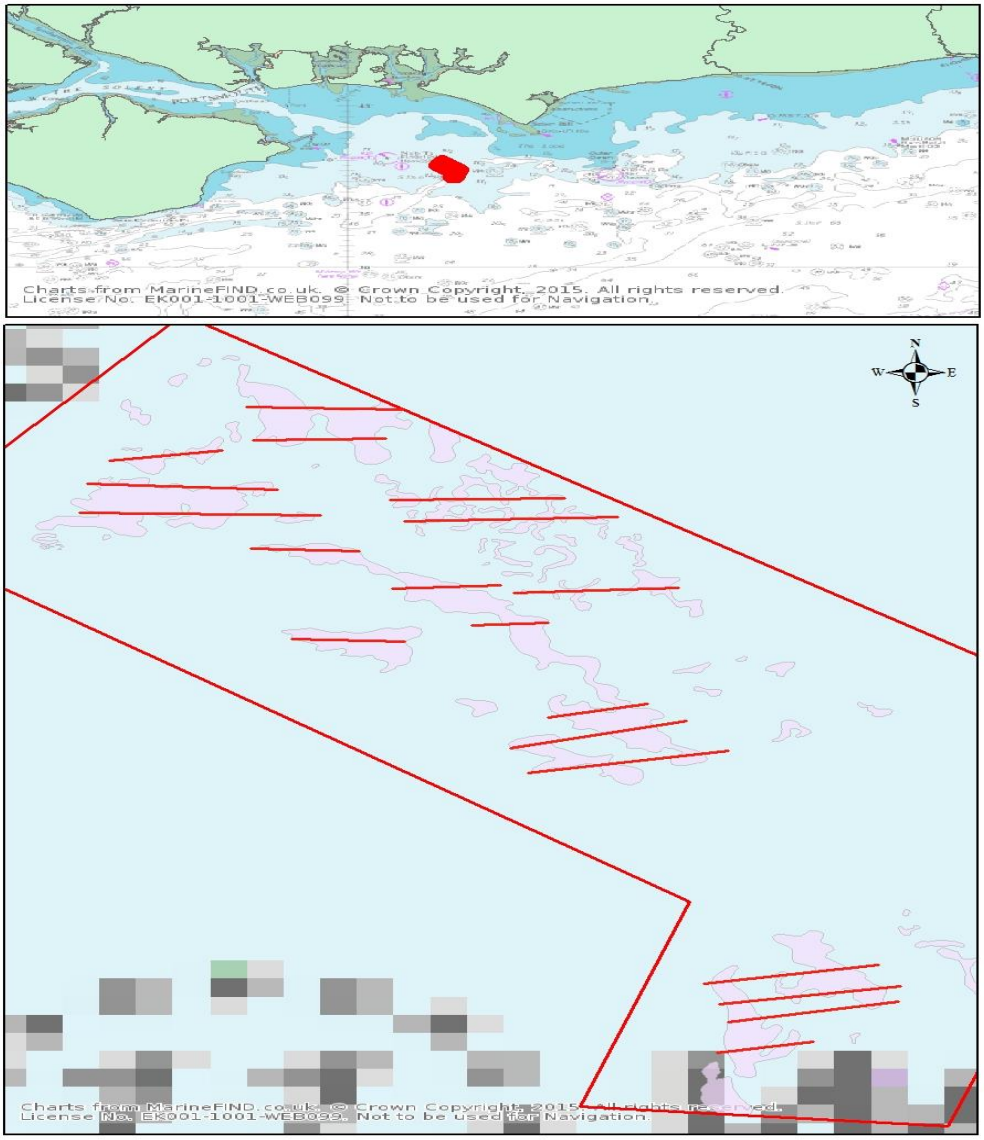

Figure 2 Utopia MCZ Drop camera run lines

AIMS:
The aim of the survey is to acquire data to contribute to the development of a monitoring time-series for the Utopia MCZ.

Objective	Sub-objectives	Priority	Rationale
1. Collect evidence to inform monitoring of the **extent, distribution and physical structure** of the features within the MCZ (and immediately outside)	**1.1.** Acquire seabed imagery from rock feature	**1**	Investigate reef community
	1.2 Acquire sediment samples	**2**	Verify sediment type inside and immediately outside of the MCZ.

PLAN:
Leave Liverpool at XX:XX on the XX tide of 30th Oct 2016 to transit to a wreck calibration site (Bill M to confirm location) on route to the Pisces Reef complex SIC. Following successful calibration, we will transit

to the Pisces Reef Complex SAC to commence acoustic survey operations. This will consist of multibeam echo sounder survey run lines and simultaneous sub bottom profiler (SBP) data acquisition on a sub set of these. The SBP will be mounted on the instrument cage and deployed via the 'moon pool'. Seabed imagery will then be collected from stations previously surveyed (SOL and EOL to be provide to the ship in Transas format in advance of survey) while acoustic data are being processed and interpreted to inform placement of the next series of run lines.
Following successful completion of these objective and/ or 6 days into the survey timeline, the vessel will transit to the Utiopia MCZ to acquire seabed imagery from pre-defined stations (SOL and EOL to be provide to the ship in Transas format in advance of survey). Sediment samples will be collected using the $0.1m^2$ mini Hamon grab from approx. 80 station inside and immediately outside of the Utopia MCZ.
The vessel will leave Utopia MCZ in advance of returning to Lowestoft port on the 9th Nov (tide to be discussed at pre cruise).

GEAR:
A full gear list will be provided in advance of the survey via MIS. In summary:

- $0.1m^2$ mini Hamon grab
- Drop camera frame, electronic hardware and acquisition equipment and software
- Data loggers for Dc frame
- EM2040 and calibration/acquisition and processing equipment and software
- Sub bottom profiler and acquisition and processing equipment and software
- Moon pool instrument cage

Paul McIlwaine
Survey planning lead/deputising for SIC
Chris Jenkins
Scientist in Charge
21/09/2016

INITIALLED:
Paul McIlwaine