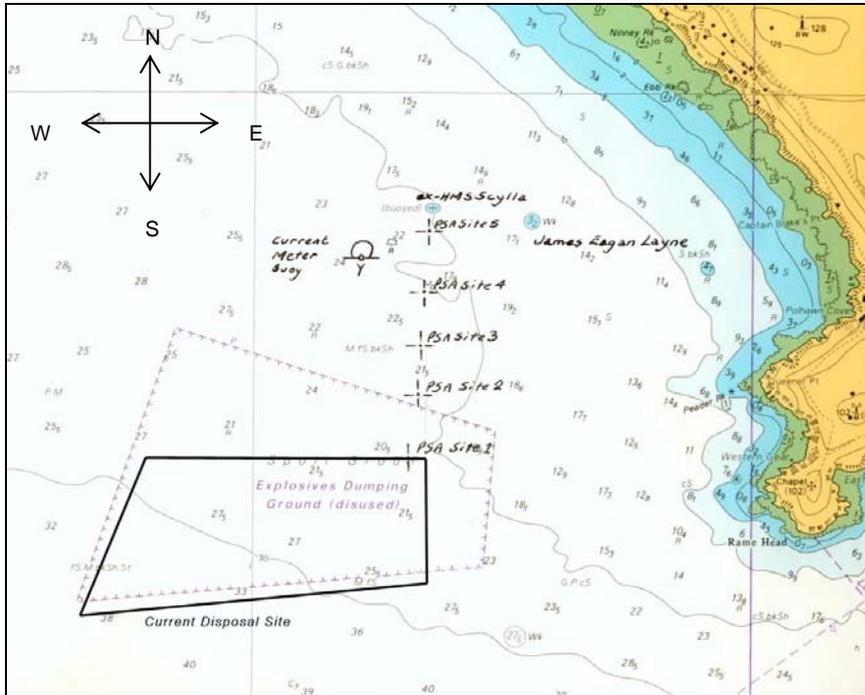


Case study – HMS Scylla

Location: Whitsand Bay, Cornwall, United Kingdom, in 23 – 28 metres of water close to the James Eagan Layne, a World War II vessel, and the most dived wreck in British waters, but which was disintegrating.



Extract of Admiralty Chart 1900 showing the positions of the Scylla, the James Eagan Layne, the Nortek current meter, and the grab sample sites for the particle size analysis of sediment. © Crown Copyright. Reproduced from Admiralty Chart 1900 by permission of the Controller of Her Majesty's Stationary Office and the UK Hydrographic Office (www.ukho.gov.uk). Not to be used for Navigation.

Authorisation: the reef was licensed by Department for Environment, Food and Rural Affairs under the Food and Environment Protection Act, following the completion of an Environmental Impact Assessment. One of the conditions was the implementation of a monitoring programme.

Date of placement: 2004.

Purpose of reef: the primary purpose was to provide a venue for recreational diving, but the reef has now also become an education and research centre linked to the National Aquarium in Plymouth.

Size, design and materials: The vessel was a decommissioned Royal Navy Frigate. It is 113 metres long, made of steel, and weighs 2 300 tonnes. It was thoroughly cleaned both during decommissioning and again prior to placement on the seabed.

Monitoring programmes: A 10 year monitoring programme is underway looking at the following:

- i) Migration of Tributyltin (TBT) from the hull paint into the surround area



Differences in colonization between areas with and without an antifouling paint covering. (Photograph taken by Keith Hiscock 23rd April 2005).

- ii) Changes in sedimentary processes as a result of the placement of the vessel

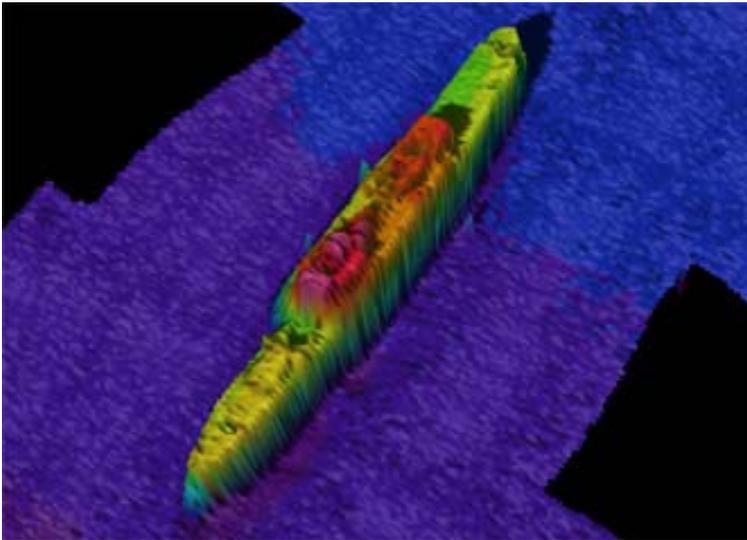
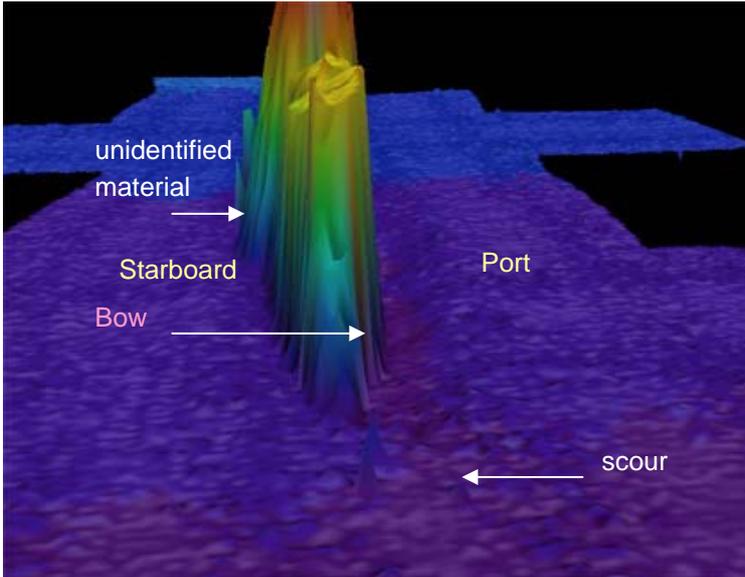


Image courtesy of the Royal Navy, Maritime Warfare School, Hydrographic and Meteorological Training Group, HMS Drake, Plymouth.



Close up Fledermaus 3D image showing scour especially on port side. Image courtesy of the Royal Navy, Maritime Warfare School, Hydrographic and Meteorological Training Group, HMS Drake, Plymouth.

iii) Colonisation of the vessel



Colonization on deck netting including *Metridium senile*, and *Tubularia sp.* (Photograph taken by Keith Hiscock 23rd April 2005).



Scylla, starboard side. (Photograph taken by Keith Hiscock - 28th January 2006).

Scylla is now closely resembling the reference vessel, the James Eagan Layne (approx.600 m south-east from Scylla).



Video image of the James Eagan Layne, bow - April 2005.

A number of other organizations have been involved, to varying degrees, with data collection and analysis including Plymouth Marine Laboratory, University of Plymouth, University of Southampton, the Royal Navy, Unicomarine Ltd, Marine Life Information Network and Centre for Environment, Fisheries and Aquaculture Science (CEFAS).

Did the reef fulfil its purpose? The artificial reef was primarily created as a resource for divers. A study carried out shortly after Scylla was placed indicated that Scylla Reef was a popular dive site (there was an increase in boat traffic in Whitsand Bay of between 200-300% in the first six months following placement), which generated additional income for the local economy.

Scylla Reef has also proved to be an excellent platform for science and education for example:

- Approximately 230 species have been recorded on or around Scylla to date, including the nationally rare nudibranch, *Trapania maculata*;
- Various in-house displays and out-reach programmes;
- The Virtual Scylla project, carried out in partnership with the University of Birmingham and the Marine Biological Association, uses computer gaming technology to create a three dimensional model of the reef and run artificial life programming to enable prediction of the responses of marine life to environmental change.

Environmental impacts: Tri-butyl tin has been found in biota samples collected from Scylla. This was not unexpected: DEFRA decided that the antifouling paint need not be removed from the hull due to the length of time since Scylla was last painted, and the environmental issues surrounding disposal of TBT containing paint. To date, there has been little, if any, colonisation on areas of Scylla still coated with antifouling paint, although it is expected that this will change over time. It should be noted that biota samples collected from the nearby wreck of the James Eagan Layne, as part of the baseline survey, also contained elevated levels of TBT before Scylla was placed on the seabed – the source of this TBT is unknown as it is outside the scope of the monitoring programme.

There has been anecdotal evidence of some siltation on the reef, the source of which has been suggested as the Rame Head disposal site located nearby – again investigation of this is outside the scope of the monitoring programme.

Further reading/information: www.national-aquarium.co.uk for background information on the project. For details of the monitoring programme (up to and including data for 2007) a report was completed by the National Marine Aquarium and sent to DEFRA.

→ *Go to full QSR assessment report on construction or placement of artificial reefs (publication number 438/2009)*