

Report of the
**ROCKY SHORE
TRANSECT MONITORING
IN MILFORD HAVEN**

OCTOBER 1995



a Report to the
**MILFORD HAVEN WATERWAY ENVIRONMENTAL
MONITORING STEERING GROUP**

OPRU ENVIRONMENTAL SCIENCE AND INTERPRETATION

3 Dolphin Court, Brunel Quay, Neyland,
Pembrokeshire SA73 1PY
Tel: +44 (0)1646 691000 Fax: +44 (0)1646 691001
E-mail: opru@opru.co.uk

Title:

Rocky Shore Transect Monitoring in Milford Haven, October 1995


Client:

*A report to the Milford Haven Waterway
Environmental Monitoring Steering Group from OPRU.*

Recommended citation:

Moore, J. (1997). *Rocky Shore Transect Monitoring in Milford Haven, October 1995*. A report to the Milford Haven Waterway Environmental Monitoring Steering Group from OPRU, Neyland, Pembrokeshire. Report No. OPRU/14/96. 36 pp. plus appendices.

Authorisation:

Prepared by:	Jon Moore
Report No:	OPRU/14/96
Status:	Final
Version:	n/a
Date:	February 1997
Approved and authorised for issue:	
	
David Levell Manager 27 February 1997	

CORDAH
Group Member

European Environmental Management Institute Ltd
Registered in Scotland. No. 163413
Registered Office: 27 Albyn Place, Aberdeen AB1 1YL

OPRU is part of CORDAH, the trading name of EEMI the European Environmental Management Institute Ltd which includes CEMP and has offices in Aberdeen, Falkirk, London and Pembrokeshire.

Acknowledgements

Field survey team: Annette Little
 Dale Rostron
 Christine Maggs
 John Woolford
 Francis Bunker

The following organisations and individuals provided information and advice during the survey and the report preparation:

Mark Williams, NRA/EA

Stephen Evans, CCW

Jane Hodges, PCNPA

Blaise Bullimore, CCW

Adrian Worley, Napier University

Anita Barnard, OPRU

Ray Fletcher, OPRU

Jan Smith, OPRU



Summary

The Milford Haven Waterway Environmental Monitoring Steering Group (MHWEMSG) commissioned OPRU to carry out surveys of rocky shore fauna and flora at fixed transect sites throughout the Haven and the Daugleddau Estuary. The main aim of these surveys was to provide a baseline for future monitoring of the rocky shore life. The work was part of an on-going MHWEMSG programme of baseline and monitoring surveys of the environmental quality of the Haven to assess the effects of pollution and other impacts.

The survey was carried out during periods of low spring tides in October/November 1995 by rocky shore ecologists working in pairs. Twenty four previously established rocky shore transect sites were used as the basis for the site selection and seven additional sites were established to provide further geographic coverage, particularly in the Daugleddau Estuary. One of the new sites was established on the open coast just outside the Haven as a reference site.

The survey methodology was the same as that used in previous rocky shore transect surveys in Milford Haven. Discontinuous belt transects run down the shore on a fixed bearing from a fixed point at the top of the shore. Site location sheets from previous surveys provided directions and information to aid relocation of the already established transects. The stations (3m wide by 30cm deep) were marked at 60cm height intervals along each transect. All conspicuous species of fauna and flora were recorded and their abundance assessed using semi-quantitative abundance scales. A pat of concrete and yellow road paint was used to mark the site and some of the stations. Photographs, sketches and notes were taken along each transect and used to aid description of the habitats and communities and for new site location sheets. Annotated photographs have also been used in new site location sheets which have been prepared for the 31 sites. The sheets are encapsulated in plastic for field use.

Descriptions of each transect site and the habitats and communities found at the stations are given in the results section of the report. The descriptions of the habitats and communities are put in the context of recognised UK rocky shore 'biotopes' which are briefly described in an appendix. Photographs of the sites have also been annotated with biotope codes to show the relationship of the transect stations to the rocky shore biotopes.

The species abundance data have been entered into a computer database and then tabulated as an appendix to the report. Data from two previous surveys of rocky shore transects in Milford Haven (in 1979 and 1982) were also entered into the computer database and a simple comparative analysis used to highlight changes in species abundance. Although some changes in taxonomy and recording methodology require caution when assessing differences in the data, it is clear that some species and groups of species had undergone significant changes since the earlier surveys. The most notable changes include the following:

Dogwhelks, *Nucella lapillus*, populations declined dramatically between 1982 and 1995, probably due to contamination from the anti-fouling paint additive tributyl-tin (TBT). Populations of the grey topshell *Monodonta lineata* and the edible winkle *Littorina littorea* were also reduced at most sites in the Haven. The reason for these reductions are not known, but it is known that the *Monodonta* populations had been gradually decreasing for many years.

Densities of the australasian immigrant barnacle *Elminius modestus* were also lower than in 1982. The only significant increase in any animal species was in populations of the beadlet anemone *Actinia equina*. There were decreases in some rocky shore plants - particularly the red algae *Dumontia contorta*, the furoids *Ascophyllum nodosum* and *Pelvetia canaliculata*, and the black lichen *Verrucaria mucosa*. It is suggested that some of these changes may be due to a slight increase in wave exposure from either increased boat wash or a natural shift in wind direction/strength.

Site specific changes were also described. Changes were particularly marked at Gelliswick where construction of a promenade near to the site is thought to have resulted in some changes to the shore environment.

Overall, however, the Milford Haven rocky shore communities are considered to be healthy and many are very rich in species. A number of recommendations for future work have been made:

Following the Sea Empress oil spill of February 1996 it is recommended that a full re-survey of the rocky shore sites is carried out at around the same time of year (i.e. autumn) in 1996 and then annually at selected impacted sites for at least 3 years. In general it is recommended that the rocky shore transect sites are re-surveyed at intervals of 3 years to maintain the baseline and monitor any changes in the health of the shores. It is suggested that a pre-survey training day is essential for quality control in any future rocky shore surveys in Milford Haven if the rocky shore ecologists have not had recent experience of the methodology used in this programme.

The decline in dogwhelk populations is thought to warrant a survey of 'imposex' levels and a monitoring programme to assess whether recovery is underway. It is also suggested that analysis of local weather and shipping data might show whether there has really been an increase in wave-exposure.

More detailed analysis of the data from the 1995 survey and previous surveys would certainly provide more useful information on the ecology of the rocky shore communities in Milford Haven. It is suggested that a research project could be initiated.