

Harper's Island



Sampling Fish for the Water Framework Directive - Transitional Waters 2008



The Central and Regional
Fisheries Boards

ACKNOWLEDGEMENTS

The authors wish to gratefully acknowledge the help and co-operation of the CEO Mr. Aidan Barry, the assistant CEO Dr. Patrick Buck and the staff of the Southern Regional Fisheries Board. The authors would also like to gratefully acknowledge the help and cooperation from all their colleagues in the Central Fisheries Board and especially Dr. Jimmy King for his guidance with the transitional waters surveys.

We would also like to thank Dr. Martin O' Grady (CFB) and No. 3 Operational Wing, Irish Air Corps (Aer Chór na hÉireann) for the aerial photographs.

The authors would also like to acknowledge the funding provided for the project from the Department of Communications Energy and Natural Resources for 2008.

The report includes Ordnance Survey Ireland data reproduced under OSi Copyright Permit No. MP 007508.

*Unauthorised reproduction infringes Ordnance Survey Ireland and Government of Ireland copyright.
© Ordnance Survey Ireland, 2009*

INTRODUCTION

A fish stock survey was carried out at sites in the Harpers Island transitional waterbody, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 15th to the 16th of October 2008 by staff from the Central Fisheries Board (CFB) and the South Western Regional Fisheries Board (SWRFB).

Harper's Island waterbody is part of the greater Cork Harbour and is located approximately six kilometres east of Cork city on Ireland's south coast (Fig. 1). The waterbody covers an area of 2.05km². The predominant bed type in the estuary is mud with some areas of gravel and stones intermixed. The upper estuary contains extensive mud flats and was not accessible even at high tide, thus sampling was restricted to the lower estuary (Plate 1). The estuary receives the water of the Slatty Water which drains the area around the town of Carrigtohill which lies 1km east of the eastern edge of the estuary. The towns waste water treatment plant discharges into the tidal area of the upper estuary just west of Slatty Bridge.

Like the rest of Cork Harbour, which is a wetland of international importance for the birds it supports, Harpers Island waterbody is extremely important for over wintering waterfowl.

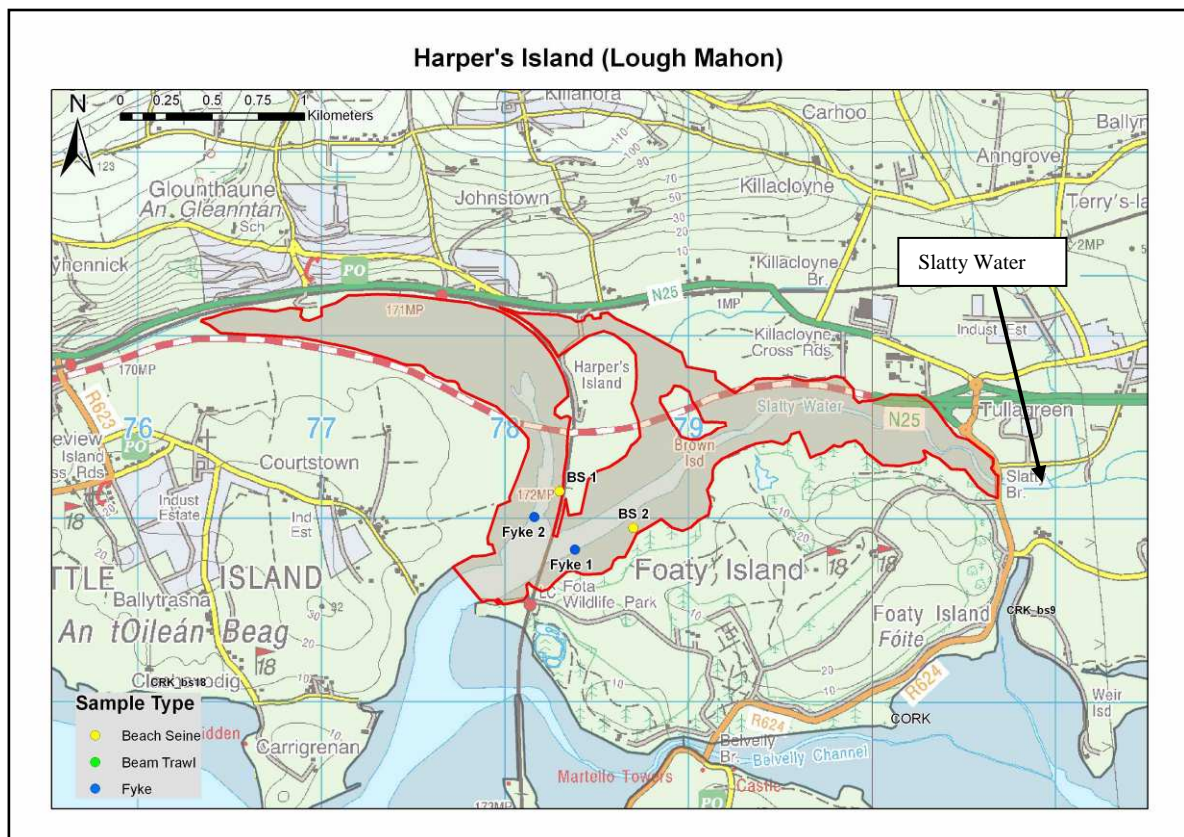


Fig. 1: Location map of Harper's Island waterbody showing sampling sites, October 2008



Plate 1: Beach seining Harper's Island Estuary, October 2008

METHODS

Current work in the UK indicates the need for a multi-method netting approach (seine nets, fyke nets and beam trawls) to sampling for fish in estuaries and these procedures are now the standard CFB methodology for fish stock surveys in transitional waters for the WFD monitoring programme. Two sampling methods were used during the Harpers Island waterbody survey (i.e. beach seines and fyke nets). Only two beach seine sites were surveyed in 2008 due to the small size of the estuary. Beam trawling was not attempted due to the soft mud substrate and shallow nature of most of the estuary. Portable GPS instruments were used to mark the precise location of each sampling site (Fig. 1).

RESULTS

Both seine net sites were located in the lower estuary as access was restricted in the upper estuary due to its shallow nature. All sites were chosen to encompass the majority of geographical and, where possible, habitat ranges of the estuary. Species diversity was low with only six fish species captured (Table 1). The most frequently occurring and abundant fish species was sprat, common goby and thick-lipped grey mullet which were captured in each seine net haul (Table 1).

Two fyke nets locations were surveyed in 2008; all sites were set using the same criteria as the site selection for beach seine sites. Species diversity and abundance was low with only two fish species (pollack and conger eel) captured and only three fish recorded in total (Table 1). Flounder were surprisingly absent as they are typically captured in fyke nets. Several large thick-lipped grey mullet were captured using the beach seine (Plate 2).

Overall eight fish species were captured in the survey. More fish species may have been recorded if the upper estuary had been accessible. No flounder were captured using either sampling method which is unusual as they are generally common in most estuaries.

Salinity values taken at beach seine sites ranged from 21.10ppt to 23.40ppt



Plate 2: Large thick-lipped grey mullet

Table 1: List of fish species and abundances of each species by net type in Harper’s Island Estuary, October 2008

Scientific name	Common Name	Harper’s Island	
		Beach seine (2)	Fyke net (4)
<i>Chelon labrosus</i>	Thick Lipped Grey Mullet	17	-
<i>Sprattus sprattus</i>	Sprat	1,416	-
<i>Pomatoschistus microps</i>	Common Goby	154	-
<i>Pleuronectes platessa</i>	Plaice	1	-
<i>Atherina prebyter</i>	Sand Smelt	30	-
<i>Gasterosteus aculeatus</i>	3-Spined Stickleback	1	-
<i>Pollachius pollachius</i>	Pollack	-	2
<i>Conger conger</i>	Conger Eel	-	1

DISCUSSION

An essential step in the WFD monitoring process is the classification of the status of transitional waters, which in turn will assist in identifying the objectives that must be set in the individual River Basin Management Plans.

The EPA have assigned the Harpers Island Estuary an interim draft classification of “Moderate” status, i.e. must be improved to “Good” status by 2015, based on general physico-chemical elements, phytoplankton and macroalgal growths (SWRBD 2008).

A new WFD fish classification tool, Transitional Fish Classification Index or TFCI, has been developed for the island of Ireland (Ecoregion 1) using NIEA and CFB data. This is a multi-metric

tool based on similar tools developed in South Africa and the UK (Harrison and Whitfield, 2004; Coates *et al.*, 2007). The Harper's Island Estuary has been classed as "Poor" status (EQR=0.350) using the fish classification tool.

A final overall classification will be assigned to the estuary in December 2009 after the RBD consultation and review period has been completed.

REFERENCES

- Coates, S., Waugh, A., Anwar, A. and Robson, N. (2007) Efficacy of a multi-metric fish index as an analysis tool for the transitional fish component of the Water Framework Directive. *Marine Pollution Bulletin*, **55**, 225-240 www.sciencedirect.com
- Harrison, T.D. and Whitfield, A.K. (2004) A multi-metric index to assess the environmental condition of estuaries. *Journal of Fish Biology*, **65**, 683-710 (www.blackwell-synergy.com)
- SWRBD (2008) *Water matters, "Help us plan"*. Draft River Basin Management Plan for the South Western River Basin District.

**The Central Fisheries Board
Swords Business Campus,
Swords,
Co. Dublin,
Ireland.**

**Web: www.wfdfish.ie
www.cfb.ie
Email: info@cfb.ie
Tel: +353 1 8842600
Fax: +353 1 8360060**



**The Central and Regional
Fisheries Boards**