

Lough Mahon



Sampling Fish for the Water Framework Directive - Transitional Waters 2008



The Central and Regional
Fisheries Boards

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INTRODUCTION

A fish stock survey was carried out at sites on Lough Mahon Estuary, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 15th and the 17th of October 2008 by staff from the Central Fisheries Board (CFB) and the South Western Regional Fisheries Board (SWRFB).

Lough Mahon is a large waterbody within Upper Cork Harbour, stretching from Blackrock to Passage West and incorporating the estuary of the Douglas River (Fig. 1). Several of Cork City's southern suburbs, including Blackrock, Mahon, Douglas and Rochestown lie along its shores. The estuary covers an area of 12.23km² and is influenced by the marine environment. The estuary receives the water of the River Lee, Glashaboy and Douglas.

Little Island, one of the major centres of chemical and pharmaceutical activities in the country, is located on the eastern side of Lough Mahon Estuary. Cork city's sewage outfall pipe is also located in the estuary. As Lough Mahon is adjacent to a major urban centre and a major industrial centre, water quality is variable, with parts of it being somewhat eutrophic (NPWS, 2004). The estuary has a shipping channel passing through the middle of it, allowing large ocean going vessels access to the Port of Cork. Oil pollution from shipping in Cork Harbour is a general threat. The estuary is considered to be the second most valuable bird habitat in the harbour. At low tide, its extensive mudflats are widely used as feeding grounds for waders. Damp grassland on the southern side extends to some low islands which are submerged in very high tides. The area also serves as a high tide roost for waterfowl (NPWS, 2004).

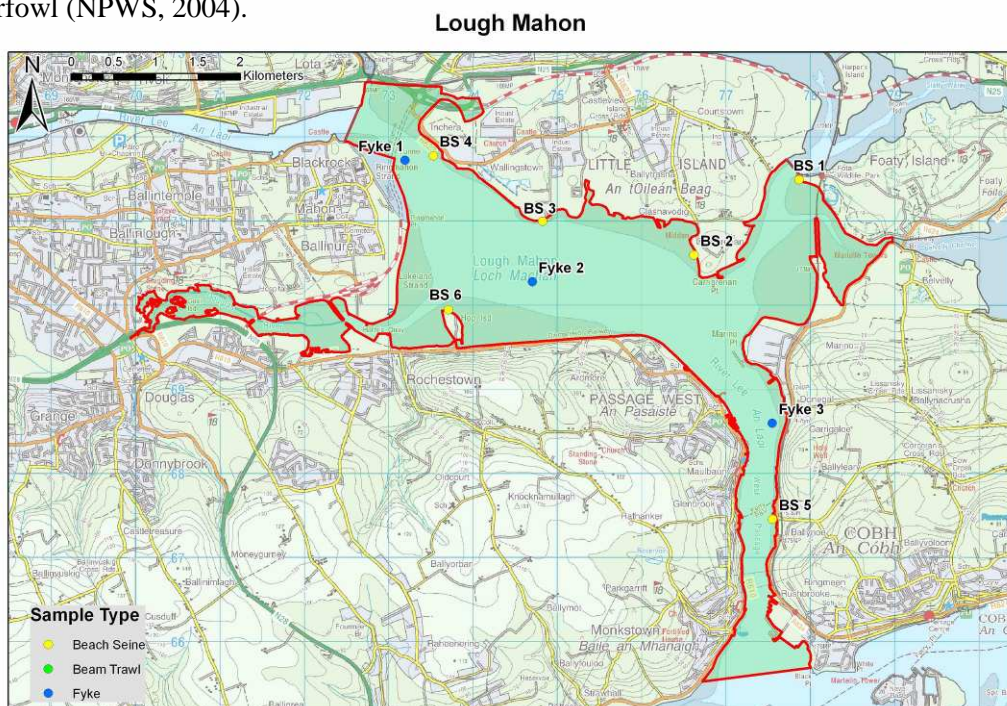


Fig. 1: Location map of Lough Mahon Estuary indicating sampling sites, October 2008

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 Lough Mahon survey (i.e. beach seines and fyke nets). Beam trawling was not attempted due to the soft mud substrate and constant boat traffic in the shipping channel. Portable GPS instruments were used to mark the precise location of each sampling site (Fig. 1).

Six beach seine and three fyke nets sites were surveyed in 2008. All sites were chosen to encompass the majority of geographical and, where possible, habitat ranges of the estuary.

RESULTS

Fish species diversity was low at the seine net sites with nine species being captured. The most frequently occurring and abundant fish species was sprat and thick-lipped grey mullet which were captured in five out of six seine net hauls (Table 1). Species diversity was also low at the fyke nets sites, with five fish species captured (Table 1).

Salinity values taken at beach seine sites ranged from 7.00ppt to 25.80ppt.

Table 1: List of fish species and abundances of each species by net type in Lough Mahon Estuary, October 2008

Scientific name	Common Name	Lough Mahon	
		Beach seine (6)	Fyke net (3)
<i>Chelon labrosus</i>	Thick Lipped Grey Mullet	263	-
<i>Platichthys flesus</i>	Flounder	4	4
<i>Sprattus sprattus</i>	Sprat	547	-
<i>Pomatoschistus microps</i>	Common Goby	224	-
<i>Pleuronectes platessa</i>	Plaice	1	-
<i>Gobius niger</i>	Black Goby	1	-
<i>Atherina prebyter</i>	Sand Smelt	17	-
<i>Ciliata mustela</i>	5-Bearded Rockling	-	2
<i>Gasterosteus aculeatus</i>	3-Spined Stickleback	2	-
<i>Merlangus merlangus</i>	Whiting	-	2
<i>Gadus morhua</i>	Cod	-	1
<i>Pollachius pollachius</i>	Pollock	-	3
<i>Syngnathus acus</i>	Greater Pipefish	4	-

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 Lough Mahon an interim draft classification of “Good” status, i.e. must prevent deterioration below “Good” status, 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). Lough Mahon has been assigned a draft classification of “Good” (EQR=0.625) using the fish classification tool which agrees with the classification assigned to the estuary by the EPA.

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

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