

Garavoge Estuary



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 the Garavoge Estuary, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 8th and the 9th of October 2008 by staff from the Central Fisheries Board (CFB) and the North Western Regional Fisheries Board (NWRFB).

The Garavoge Estuary is located adjacent to Sligo town on Ireland's North West coast (Plate 1 and Fig. 1). The estuary drains almost completely at low tide leaving a small narrow channel and is strongly influenced by the marine environment (Plate 1). It covers an area of 8.82km². The substrate is dominated by soft mud and extensive mud flats are present at low tide.

The principal source of freshwater in the estuary comes from the Garavoge River which drains a catchment of approximately 360 km². The Garavoge River is a small river approximately 4 km in length which flows out of Lough Gill. This catchment is noted for having good stocks of salmon and sea trout. Smaller streams, such as the Cregg, the Cummeen and Donally river, also discharge into the estuary over a lowland catchment of approximately 40 km². These streams account for less than 10% of the total freshwater input into the estuary. Sligo town fails to carry out secondary treatment of waste water; however a new treatment is in the process of being built. The estuary receives inputs from organic material both from municipal outfalls and from a meat plant in Sligo town as well as sewage effluent from a hospital on the north shore (Marine Institute, 1999).



Plate 1: Aerial photo of Sligo town and the Garavoge Estuary. (Photo courtesy of CFB and No. 3 Operational Wing, Irish Air Corps [Aer Chór na hÉireann])

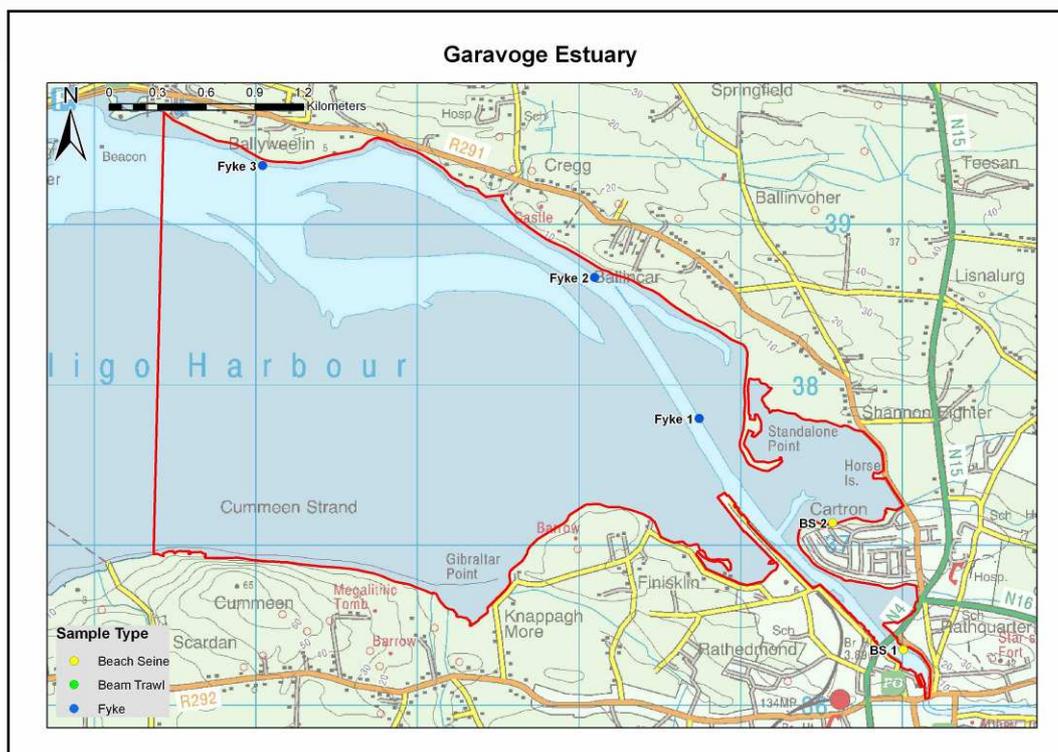


Fig. 1: Location map of Garavoge Estuary showing sampling sites, October 2008

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 Garavoge Estuary survey (i.e. beach seines and fyke nets). Beam trawling was not attempted due to the soft mud substrate and shallow nature of most of the estuary. Due to extreme weather only two beach seine sites (Plate 2) were surveyed in 2008. Portable GPS instruments were used to mark the precise location of each sampling site (Fig. 1).

RESULTS

All beach seine sites were chosen to encompass the majority of geographical and, where possible, habitat ranges of the estuary. Five fish species were captured and the species list was dominated by gobies. The most frequently occurring species was 3-spined stickleback followed by sand goby; they were captured in both seine net hauls (Table 1).

Three fyke nets locations were selected during the survey in 2008; all sites were chosen using the same criteria as the site selection for beach seine sites. Seven fish species were captured in the fyke nets. The most frequently captured and abundant species was five-bearded rockling which was recorded at two of the three sites (Table 1).

Overall eleven fish species were captured in the survey. Abundant of each fish species was pretty low. Flounder was the only species captured by both sampling methods.

Salinity values taken at beach seine sites ranged from 1.30ppt to 7.45ppt.

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

Scientific name	Common Name	Garavogue	
		Beach seine (2)	Fyke net (3)
<i>Platichthys flesus</i>	Flounder	3	2
<i>Gobiusculus flavescens</i>	2-Spotted Goby	3	-
<i>Pomatoschistus minutes</i>	Sand Goby	5	-
<i>Pomatoschistus microps</i>	Common Goby	2	-
<i>Anguilla anguilla</i>	Eel	-	1
<i>Taurulus bubalis</i>	Long-Spined Sea-Scorpion	-	1
<i>Ciliata mustela</i>	5-Bearded Rockling	-	13
<i>Agonus cataphractus</i>	Pogge	-	1
<i>Pollachius pollachius</i>	Pollack	-	1
<i>Scylliorhinus canicula</i>	Lesser Spotted Dogfish	-	1
<i>Gasterosteus aculeatus</i>	3-Spined Stickleback	2	-



Plate 2: Beach seining the upper limits of the Garavoge Estuary with Sligo town in the background.

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 Garavoge Estuary 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 (WRBD, 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 Garavoge Estuary has been classed as “Good” status (EQR=0.600) using the fish classification tool which agrees with the classification assigned to the estuary by the EPA (WRBD, 2008).

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