

North Channel Great Island



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 North Channel Great Island, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 13th and the 15th of October 2008 by staff from the Central Fisheries Board (CFB) and the South Western Regional Fisheries Board (SWRFB).

The North Channel Great Island Estuary is located approximately 15 kilometres east of Cork on Ireland's south coast and is part of greater Cork Harbour (Fig. 1). The predominant bed type in the estuary is mud with some areas of gravel and stones intermixed. The west side of the upper estuary contains extensive mud flats and was not accessible for sampling even at high tide. The estuary covers an area of 7.96km² and is strongly influenced by the marine environment. The main land use within the waterbody is aquaculture (oyster farming); however the greatest threats to its conservation significance come from road works, infilling, sewage outflows and possible marina developments (NPWS, 2001).

The site is an integral part of Cork Harbour which is a wetland of international importance for the birdlife it supports. The site is extremely important for wintering waterfowl and is considered to contain three of the top five areas within Cork Harbour (NPWS, 2001).

The estuary receives the water of the Owenacurra River which runs south through the town of Middleton and into the estuary. The river is noted as having good stocks of sea trout. The estuary is promoted by the South Western Fisheries Board as a bottom fishing venue for flounder, plaice, dogfish and thornback ray.

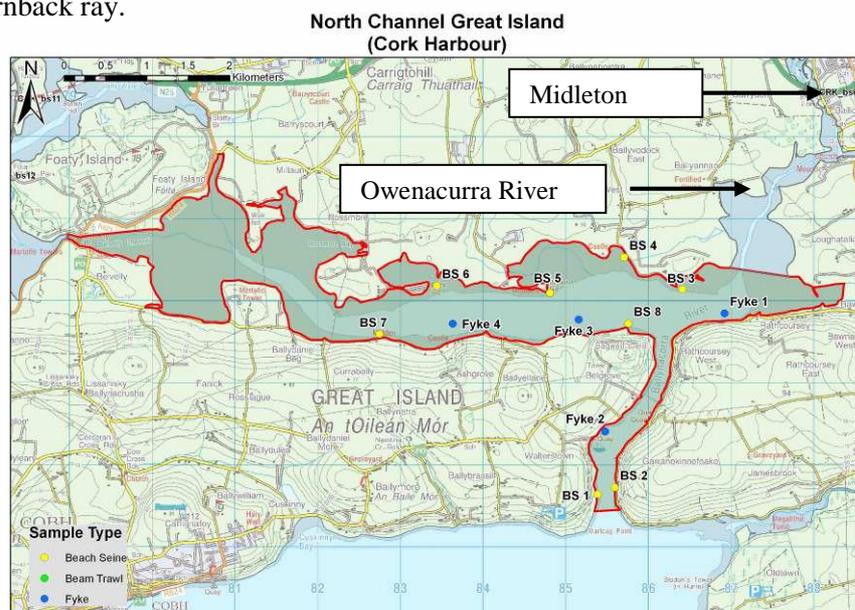


Fig. 1: Location map of North Channel Great Island Estuary showing sampling sites, October 2008

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 North Channel Great Island 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. Portable GPS instruments were used to mark the precise location of each sampling site (Fig. 1).

Eight beach seine sites and four fyke net sites were surveyed in 2008. Sites were chosen to encompass the majority of geographical and, where possible, habitat ranges of the estuary.

RESULTS

Fifteen fish species were captured in the seine nets and the species list was dominated by marine species. The most frequently occurring and abundant species was sprat which was captured in every seine haul. Common goby, sand smelt and two-spotted goby were captured in the majority of beach seinea. One fish species rarely recorded in estuary surveys, lumpsucker (*Cyclopterus lumpus*), 3.3cm in length, was captured during the survey. Lumpsucker are common all around the coast of Ireland. Adults of breeding age live on the sea bottom amongst rocks from shallow water to depths of at least 200m, whereas non-breeding adults can also live in deep open water. Juveniles of the species can be found in low tide rock pools (Dipper, 2001).

Ballan wrasse was the most abundant species captured in the fyke nets (Table 1). Five-bearded rockling and pollock were also captured in the fyke nets. Flounder were surprisingly absent from the samples as they are typically captured in fyke nets.

Twenty fish species were captured in the survey. Overall the most abundant species were sprat (1,175) followed by common goby (749), thick-lipped 347 and sand smelt (236) (Table 1).

Salinity values taken at beach seine sites ranged from 21.45ppt to 29.55ppt.

Table 1: List of fish species and abundances of each species by net type in North Channel Great Island Estuary, October 2008

Scientific name	Common Name	North Channel Great Island	
		Beach seine (8)	Fyke net (4)
<i>Chelon labrosus</i>	Thick Lipped Grey Mullet	347	-
<i>Platichthys flesus</i>	Flounder	3	-
<i>Sprattus sprattus</i>	Sprat	1,175	-
<i>Pomatoschistus microps</i>	Common Goby	749	-
<i>Pleuronectes platessa</i>	Plaice	3	-
<i>Entelrus aequoreus</i>	Snake Pipefish	2	-
<i>Anguilla anguilla</i>	Eel	-	2
<i>Gobius niger</i>	Black Goby	12	-
<i>Atherina prebyter</i>	Sand Smelt	236	-
<i>Ciliata mustela</i>	5-Bearded Rockling	-	7
<i>Pollachius pollachius</i>	Pollock	-	6
<i>Labrus bergylta</i>	Ballan Wrasse	6	32
<i>Spinachia spinachia</i>	15-Spined Stickleback	14	-
<i>Gobiusculus flavescens</i>	2-Spotted Goby	36	-
<i>Symphodus melops</i>	Corkwing Wrasse	3	-
<i>Conger conger</i>	Conger Eel	-	2
<i>Liza aurata</i>	Golden-Grey Mullet	4	-
<i>Lipophrys pholis</i>	Blenny	-	2
<i>Ctenolabrus rupestris</i>	Goldsinny	2	2
<i>Cyclopterus lumpus</i>	Lumpsucker	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 North Channel Great 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 North Channel Great Island has been assigned a draft classification of “Good” (EQR=0.625) using the fish classification tool.

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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