

Rogerstown 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 Rogerstown Estuary, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 10th and the 12th of September 2008 by staff from the Central Fisheries Board (CFB) and the Eastern Regional Fisheries Board (ERFB).

Rogerstown Estuary is located just north of the Donabate-Portrane peninsula, and south of Rush, on Ireland's east coast approximately 25 kilometres north of Dublin (Fig. 1). It is a relatively small, narrow estuary separated from the sea by a sand and shingle bar (Plate 1). The estuary's mouth separates the beaches of Donabate and Rush. The estuary covers an area of 3.05 km², and is divided by a causeway and narrow bridge, built in the 1840s to carry the Dublin-Belfast railway line.

The estuary drains almost completely at low tide. The intertidal flats of the outer estuary are composed mainly of sand, with soft muds in the north-west sector and along the southern shore. The lugworm (*Arenicola marina*) is common in the estuary and large mussel beds (*Mytilus edulis*) are present at the outlet to the sea. It is a favorite fishing destination for many Dublin anglers. The area of intertidal flats in the inner estuary is reduced as a result of the local authority landfill on the north shore (Fig. 1) (Plate 1).

The estuary is internationally recognised as one of the most important east coast sites for wintering wildfowl and waders and birds on passage to breeding grounds. Local bird-watch groups have built modern bird-watching hides on both the north and south shores of the estuary. The estuary receives the waters of the Ballyboghil and Ballough rivers, both of which flow through intensive agricultural catchments.



Plate 1: Ariel photo of Rogerstown Estuary showing the towns of Donabate (on left) and Rush (on right). (Photo courtesy of CFB and No. 3 Operational Wing, Irish Air Corps [Aer Chór na hÉireann])

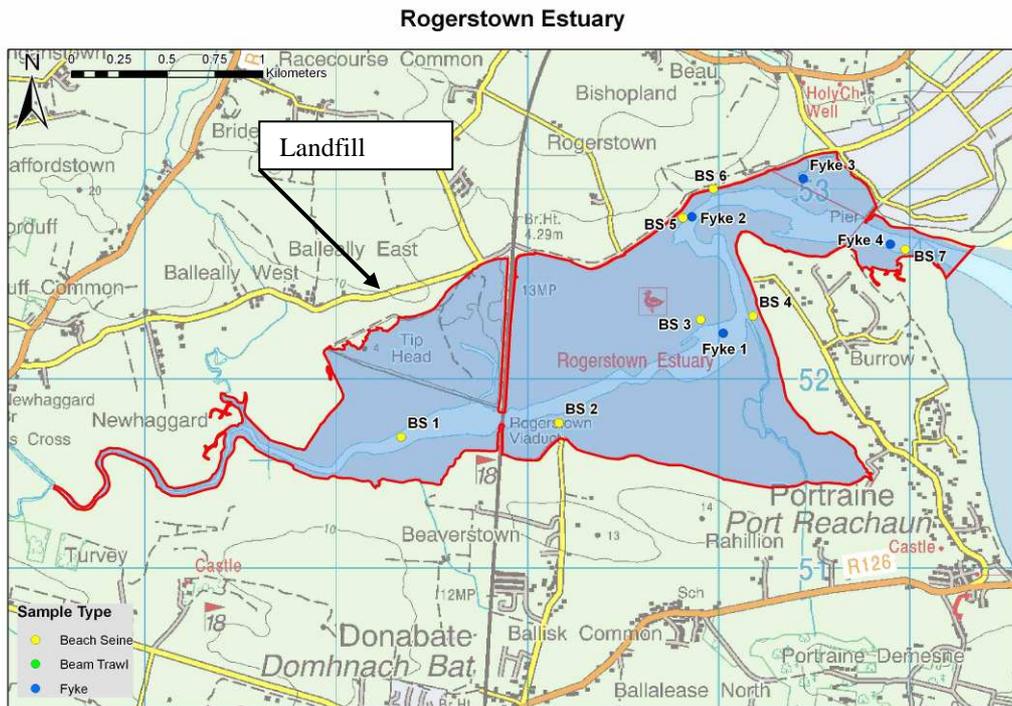


Figure 1: Location map of Rogerstown Estuary indicating sampling sites, September 2008

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 Rogerstown Estuary survey (i.e. beach seines and fyke nets). However, due to a lack of depth, even at high water, sampling of the upper areas of the estuary was limited. 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 (Figure 1).

A total of seven beach seine and four fyke net sites were selected encompassing the majority of geographical and where possible, habitat ranges of the estuary.

RESULTS

Sprat was captured at all beach seine sites and several large hauls were recorded in the lower estuary (Table 1). Sand goby and thick-lipped grey mullet were also widespread (Table 1). Most of the mullet were juveniles indicating that the estuary is providing important nursery habitat for the species. Sea bass were captured in three of the seven sites; however, a large haul of 0+ bass was captured in the mid-estuary (Figure 2). Again this is a positive sign and indicates the estuary is vital in the life-cycle of this species.

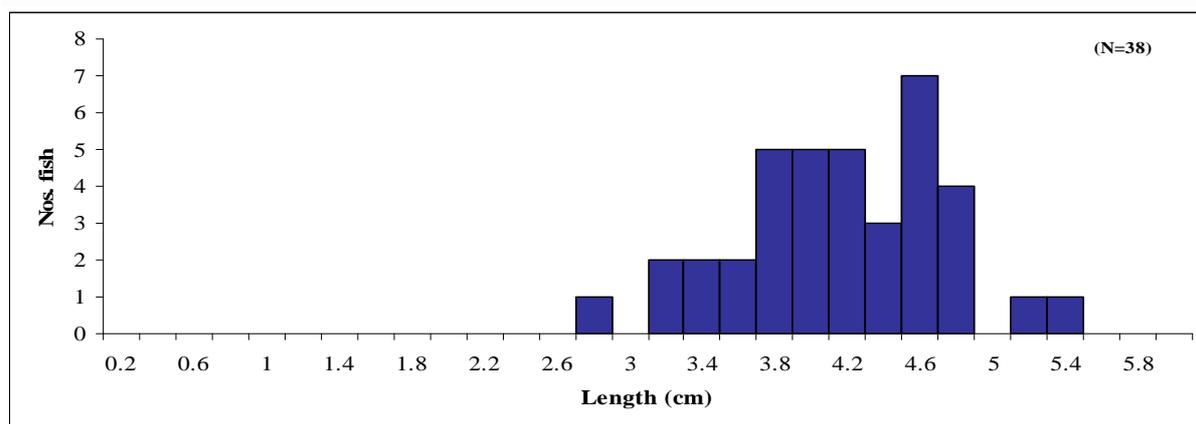


Figure 2: Length frequency distribution of 0+ sea bass on Rogerstown Estuary, September 2008

Three fish species were captured in the fyke nets (Table 1). Five-bearded rockling were the most abundant species and were found in three of the four sites. All specimens of eels were captured in mid-estuary. No nets were set in the upper estuary as low tide and shallow water prevented access to the upper estuary.

A total of fifteen fish species were captured during the survey. The majority of the habitat present in the estuary is shallow mud flat, hence influencing species diversity and abundance. Flounder, sprat, sand goby, and thick-lipped mullet were the fish typically captured in this type of habitat, while most of the other fish species were captured in mid estuary where there was stony habitat with mussel beds and seaweeds, all of which provided cover.

Salinity values taken at beach seine sites ranged from 1.80ppt in the upper channel to 26.90ppt in the lower estuary.

Table 1: List of fish species and abundances of each species by net type in Rogerstown Estuary, September 2008

Scientific name	Common Name	Rogerstown	
		Beach seine (7)	Fyke net (4)
<i>Chelon labrosus</i>	Thick Lipped Grey Mullet	488	-
<i>Platichthys flesus</i>	Flounder	17	5
<i>Dicentrarchus labrax</i>	Sea Bass	94	-
<i>Sprattus sprattus</i>	Sprat	2,213	-
<i>Pleuronectes platessa</i>	Plaice	12	-
<i>Ammodytes tobianus</i>	Lesser Sandeel	15	-
<i>Anguilla anguilla</i>	Eel	-	23
<i>Taurulus bubalis</i>	Long-Spined Sea- Scorpion	1	-
<i>Pholis gunnellus</i>	Gunnel (Butterfish)	4	-
<i>Atherina prebyter</i>	Sand Smelt	26	-
<i>Pomatoschistus minutus</i>	Sand Goby	3289	-
<i>Ciliata mustela</i>	5-Bearded Rockling	1	27
<i>Myoxocephalus scorpius</i>	Short Spined Sea Scorpion	1	-
<i>Labrus bergylta</i>	Ballan Wrasse	1	-
<i>Psetta maxima</i>	Turbot	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 Rogerstown 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 (ERBD, 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 Rogerstown has been assigned a draft classification of “Good” (EQR=0.600) using the fish classification tool and this agrees with the draft classification assigned to it by the EPA.

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. & Robson M. 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.
- ERBD (2008) *Draft River Basin Management Plan for the Eastern River Basin District*.
- 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)

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