

Limerick Docks



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. Eamon Cusack, the assistant CEO Mr. Sean Ryan and the staff of the Shannon 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.

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INTRODUCTION

A fish stock survey was carried out at sites on the Limerick Docks Estuary, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 29th September and the 1st of October 2008 by staff from the Central Fisheries Board (CFB) and the Shannon Regional Fisheries Board (ShRFB).

Limerick Docks Estuary runs through the centre of Limerick city (Plate 1 and Fig. 1). The estuary covers an area of 2.49km² which includes the Limerick city canal. The area is heavily impacted by human activities with the deep water port and urban area of Limerick. The majority of the estuary has been walled for flood defence and navigation purposes and an additional canal (Park Canal) was created for navigation through the city to access the upper Shannon River. There is a large dockland area downstream of Limerick which acts as a deep water port. The majority of the estuary area is unvegetated with a narrow intertidal zone caused by channelisation. Access to the lower portion of the estuary was restricted during the survey due to the construction of a new tunnel under the River Shannon just downstream of Limerick (Plate 1). The predominant bed type in the estuary is mud with some areas of gravel and stones intermixed. The estuary receives the waters of the River Shannon, which is Ireland's largest river system and drains a substantial portion (17,700km²) of the centre of Ireland. Thus the estuary has a strong freshwater influence and is riverine character in the upper estuary (Plate 2).



Plate 1: Aerial photo of Limerick Docks showing Limerick City in the background and the construction of the new tunnel under the River Shannon. (Photo courtesy of CFB and No. 3 Operational Wing, Irish Air Corps [Aer Chór na hÉireann])

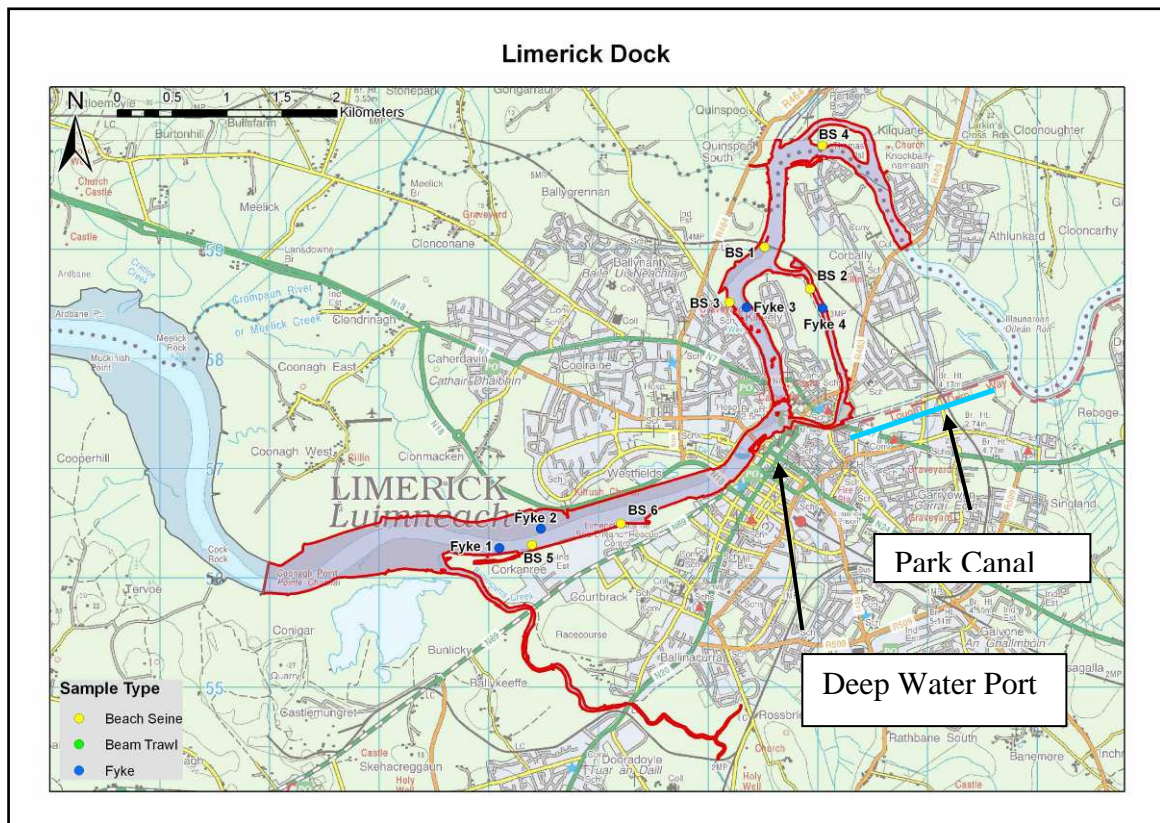


Fig. 1: Location map of Limerick Docks Estuary indicating sampling sites, September 2008

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 Limerick Docks Estuary survey (i.e. beach seines and fyke nets). Beam trawling was not attempted due to the presence of a soft mud substrate. Portable GPS instruments were used to mark the precise location of each sampling site (Fig. 1).

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

RESULTS

Fish species diversity was low with a total of nine fish species captured; eight species captured using the beach seine and four species using the fyke nets (Table 1). The majority of the fish recorded were species generally associated with freshwater (pike, roach and perch). Flounder and eel were captured with both methods (Table 1). Flounder and three-spined stickleback were the most common species captured in the beach seines while flounder and eel were the most common using fyke nets (Table 1).

The most abundant fish species captured was flounder (42) followed by common goby (34), roach (29) and eels (21) (Table 1). Salinities taken at all beach seine sites measured 0.10ppt.

Plate 2: Beach seining in Limerick Docks Estuary, September 2008



Table 1: List of fish species and abundances of each species by net type in Limerick Docks Estuary, September-October 2008

Scientific name	Common Name	Limerick Docks	
		Beach seine (6)	Fyke net (4)
<i>Platichthys flesus</i>	Flounder	14	28
<i>Pomatoschistus microps</i>	Common Goby	34	-
<i>Anguilla anguilla</i>	Eel	3	18
<i>Salmo trutta</i>	Brown Trout	-	1
<i>Salmo salar</i>	Salmon	3	-
<i>Gasterosteus aculeatus</i>	3-Spined Stickleback	8	-
<i>Rutilus rutilus</i>	Roach	25	4
<i>Perca fluviatilis</i>	Perch	1	-
<i>Esox lucius</i>	Pike	2	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 Limerick Docks transitional waterbody 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 (ShIRBD 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 Limerick Docks waterbody has been assigned a draft classification of “Good” (EQR= 0.65) using the fish classification tool which does not agree with the classification assigned to the estuary by the EPA (ShIRBD 2008).

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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