Colligan 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 selected sites on the Colligan Estuary, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 9th and the 10th of October 2008 by staff from the Central Fisheries Board (CFB) and the Southern Regional Fisheries Board (SRFB).

The Colligan Estuary is located in County Waterford, on the south-east coast of Ireland (Fig. 1). The estuary covers an area of 10.03km². The estuary is almost split into two by a long (approximately 2.5km) narrow sand bar called the Cunnigar (Fig. 1). The estuary empties at low water with little depth left even in the main channels (Plate 1). The dominant habitat in the lower estuary was mixed sand while fine mud predominated in the upper channels of the Colligan and Glendine. The estuary receives the waters of the Colligan, Brickey and Glendine rivers which rise in the Monavallagh Mountains of south Waterford.

The estuary is subjected to anthropogenic impacts from the town of Dungarvan with its associated sea walls in the inner part of the estuary. The sand flats to the east of the Cunnigar support an extensive oyster farming operation. There is also some commercial exploitation of dogfish and mullet using gill nets in the estuary. This estuary is one of the most important sea angling locations in the southeast with bass and gilt-head bream caught regularly by anglers. The Colligan River is noted for having excellent runs of sea trout. A major part of the ecological importance of the bay is the over wintering birdlife which is present in large numbers. The estuary receives untreated municipal waste water as well as substantial inputs from industry and landfill run-off (Marine Institute, 1999).

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

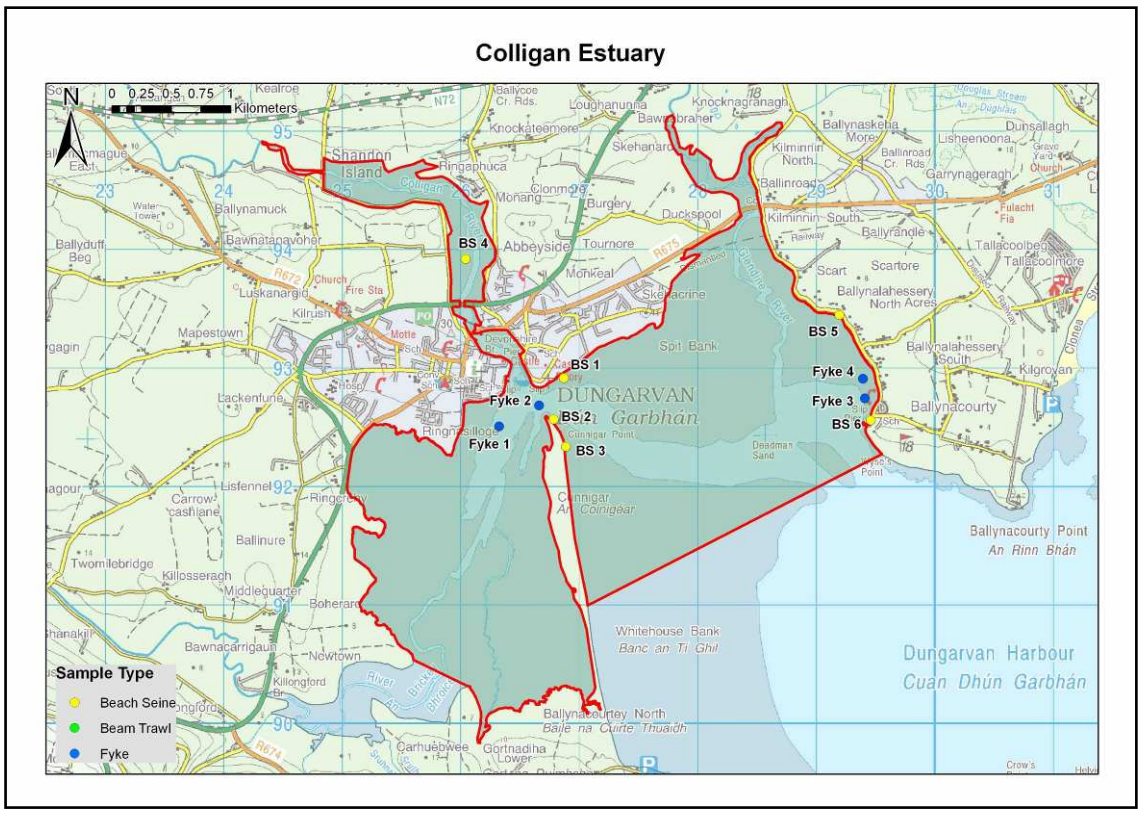

Fig. 1: Location map of the Colligan Estuary indicating sampling sites, October 2008

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 Colligan Estuary survey (i.e. beach seines and fyke nets). Beam trawling was not attempted due to the shallow nature of the estuary and the presence of many navigation hazards. Portable GPS instruments were used to mark the precise location of each sampling site (Fig. 1).

RESULTS

A total of six beach seine sites were selected encompassing the majority of geographical and, where possible, habitat ranges of the estuary. Ten fish species were captured with the beach seine. The most frequently occurring and abundant species was common goby (Table 1). Sand eel and sand smelt were also abundant (Table 1).

Six fish species were captured in four sets of fyke nets which were set using similar criteria as the site selection for beach seine sites. Five-bearded rockling was the most abundant fish species captured in the fyke nets (Table 1). Flounder and pollack were also common and were captured in three out of four fyke net sites (Table 1).

Overall a total of sixteen fish species were captured during the survey. The most abundant species were common goby (301), followed by lesser sand eel (164) and sand smelt (101) (Table 1). 2-spotted goby were captured in seine hauls on the east side of the estuary and were associated with a rocky habitat which is typical for this species. The low number of flounder captured during the survey was a little surprising as they are usually quite abundant in estuaries.

Salinity values taken at beach seine sites ranged from 21.15ppt to 33.05ppt.

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

		Colligan	
Scientific Name	**Common Name**	**Beach seine (6)**	**Fyke net (4)**
Chelon labrosus	Thick Lipped Grey Mullet	1	-
Platichthys flesus	Flounder	-	9
Sprattus sprattus	Sprat	2	-
Pomatoschistus microps	Common Goby	301	-
Pleuronectes platessa	Plaice	7	-
Ammodytes tobianus	Lesser Sandeel	164	-
Atherina prebyter	Sand Smelt	101	-
Hyperoplus lanceolatus	Greater Sandeel	3	-
Ciliata mustela	5-Bearded Rockling	-	21
Salmo trutta	Sea Trout	1	-
Merlangus merlangus	Whiting	-	1
Gadus morhua	Cod	-	1
Pollachius pollachius	Pollock	-	7
Gobiusculus flavescens	2-Spotted Goby	28	-
Syngnathus acus	Greater Pipefish	1	-
Scyliorhinus canicula	Lesser-Spotted Dogfish	-	4

Plate 2: Beach seining the Colligan Estuary with the Southern Regional Fisheries Board, October 2008

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 Colligan 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 (SERBD 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 Colligan Estuary has been classed as "Good" (EQR=0.70) (i.e. must prevent deterioration from "Good" status) using the fish tool.

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

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The Central Fisheries Board
Swords Business Campus,
Swords,
Co. Dublin,
Ireland.

Web: www.wfdfish.ie
www.cfb.ie
Email: info@cfb.ie
Tel: +353 1 8842600
Fax: +353 1 8360060

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