Moy Estuary

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. Vincent Roche, the assistant CEO Dr. John Conneely and the staff of the North Western 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.

INTRODUCTION

A fish stock survey was carried out at sites on the Moy Estuary, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 6th and the 8th of October 2008 by staff from the Central Fisheries Board (CFB) and the North Western Regional Fisheries Board (SWRFB).

The Moy Estuary is located north of the town of Ballina, County Mayo. The estuary is funnel-shaped approximately three kilometres wide at its outer most limit of the lower estuary (Plate 1). It covers an area of 7.42km². Bartragh Island, located at the outer limits of the estuary extends across much of the mouth of estuary and serves to shelter a large extent of the water body. There are extensive intertidal sand and mud flats along the estuary which are exposed at low tide. These habitats provide important food sources for many water fowl species.

The Moy estuary supports a wide diversity of bird species and is an important area for wintering waterfowl. The estuary supports six bird species which are of national importance and an internationally important community of Brent Geese (NPWS, 2005). There are three bird species found on the Moy estuary which are listed on Annex I of the E.U. Habitats Directive. These include the red throated diver, the golden plover and the bar-tailed godwit.

The estuary receives the water of the River Moy. The Moy has long been famous as Ireland's premier salmon river. The river is approximately one hundred kilometres in length and with its extensive tributaries, it drains a catchment of over two thousand square kilometres. For much of its course, the Moy flows through pastureland. The Nephin Beg range lines the western horizon and the Ox Mountains mark the eastern watershed. The river is also an excellent sea trout fishery.

Plate 1: Beach seining in the lower Moy Estuary, October 2008

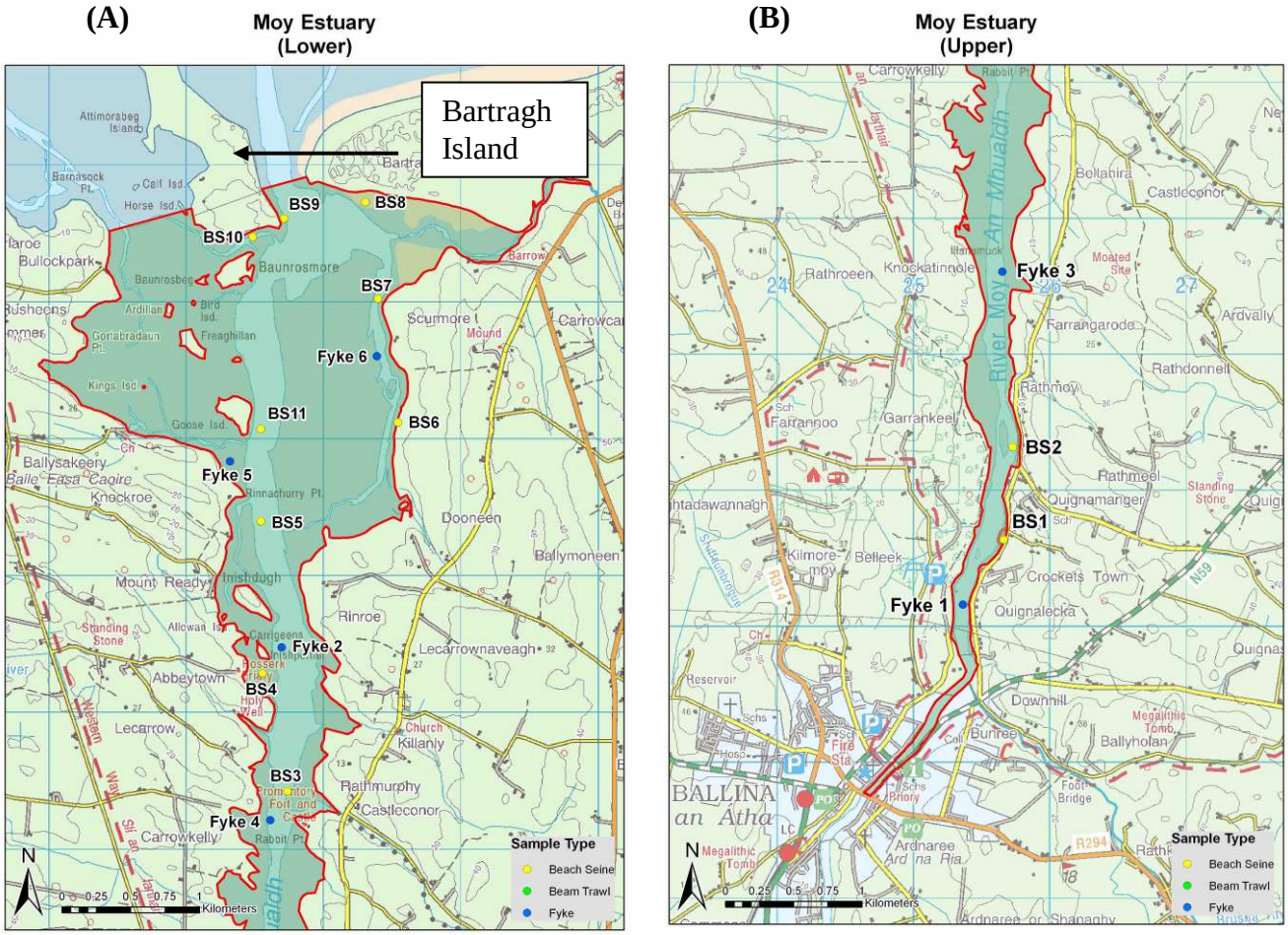

Figure 1: Location map of the Moy Estuary, (A) lower estuary and (B) upper estuary, indicating sampling sites, October 2008

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 Moy 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 (Figure 1).

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

RESULTS

Ten fish species were captured in the seine nets and these were dominated by marine species. The most frequently occurring fish species was common goby followed by sand goby (Table 1). Three-spined stickleback was the most abundant fish species (Table 1).

Nine fish species were captured in the fyke nets. The most frequently captured and abundant species was flounder which was captured at all but one fyke net site (Table 1). Length frequency analysis for flounder showed at least three distinct age classes. Flounder ranged in length from 4.9cm to 28.2cm (Figure 2).

Overall sixteen fish species and sea trout were captured during the survey. The most abundant fish species overall were flounder (68) followed by three-spined stickleback (46) and sand goby (38). Flounder, plaice and sea trout were all captured utilizing both sampling techniques.

Salinity values taken at beach seine sites ranged from 0.10ppt to 32.45ppt.

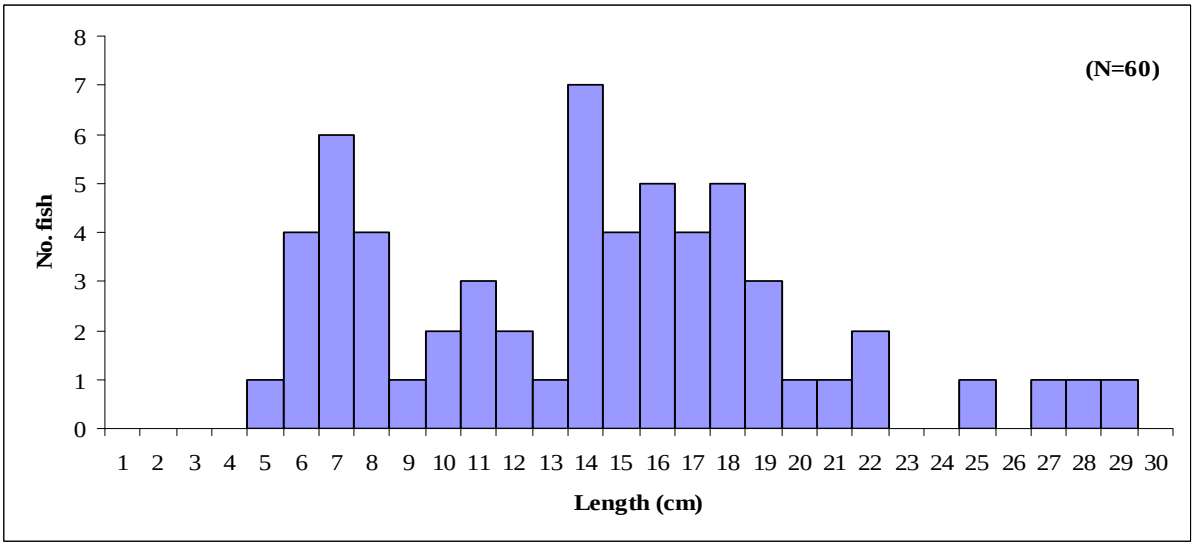

Figure 2: Length frequency distribution of flounder from the Moy Estuary, October 2008

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

Scientific name	Common Name	Argideen	
		Beach seine (11)	Fyke net (6)
Platichthys flesus	Flounder	15	54
Gobiusculus flavescens	2-Spotted Goby	7	-
Pomatoschistus minutes	Sand Goby	38	-
Pomatoschistus microps	Common Goby	10	-
Pleuronectes platessa	Plaice	1	5
Anguilla anguilla	Eel	-	7
Taurulus bubalis	Long-Spined Sea Scorpion	-	2
Ciliata mustela	5-Bearded Rockling	-	12
Salmo trutta	Brown Trout	-	2
Salmo trutta	Sea Trout*	1	6
Merlangus merlangus	Whiting	-	1
Pollachius pollachius	Pollack	-	6
Pholis gunnellus	Gunnel (Butterfish)	1	-
Pollachius virens	Saithe (Coalfish)	-	2
Syngnathus acus	Greater Pipefish	1	-
Gasterosteus aculeatus	3-Spined Stickleback	46	-
Syngnathus typhle	Deep-Snouted Pipefish	1	-

*sea trout are included as a separate "variety" of trout

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 Moy 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 (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 Moy has been assigned a draft classification of "Good" (EQR=0.70) using the fish classification tool which does not agree with the classification assigned to the estuary by the EPA (WRBD, 2008).

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

REFERENCES

Coates, S., Waugh, A., Anwar, A. and Robson, N. (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 (www.sciencedirect.com)

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)

NPWS (2005) Site synopsis: Killala Bay/Moy Estuary SPA (http://www.npws.ie/en/media/Media,4450,en.pdf) (accessed 24.4.2009)

WRBD (2008) *Water matters, "Help us plan*". Draft River Basin Management Plan for the Western River Basin District.

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

The Central and Regional
Fisheries Boards