

Newport Bay



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 Newport Bay, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 20th and the 21st of October 2008 by staff from the Central Fisheries Board (CFB) and the North Western Regional Fisheries Board (NWRFB).

Newport Bay is located in the north-eastern corner of Clew Bay in County Mayo (Fig. 1). The bay is bordered to the east by the town of Newport (Plate 1). The total area of the bay is approximately 9.35km² and is strongly influenced by the marine environment. Bed types in the estuary range from mud predominating in the upper estuary to mostly rocky shores in the lower estuary with some gravel and coarse sand areas. The bay is open to the westerly swells and winds from the Atlantic with Clare Island giving only a small amount of protection. The drumlin landscape was formed during the last glacial period when sediments were laid down and smoothed over by advancing ice - the sea has subsequently inundated this area, creating a multitude of islands and a complex series of interlocking bays thereby creating a wide variety of marine habitats. It is one of Ireland's best examples of sunken drumlins.

There are a number of anthropogenic impacts on the bay including aquaculture in the outer bay, sewage outflows from the town of Newport at the upper end of the estuary and seaweed harvesting. The surrounding catchment is mainly agricultural. The Newport River flows into the bay from the east and the Burrishoole River enters the bay from the north. The Newport River is known to contain good stocks of salmon and sea trout. The Burrishoole fishery is comprised of a series of freshwater and brackish water lakes and is owned and run by the Marine Institute and is one of Ireland's premier lake fisheries for salmon.



Plate 1: Aerial photo looking west across Newport Bay, the town of Newport is in the foreground (Photo courtesy of CFB and No. 3 Operational Wing, Irish Air Corps [Aer Chór na hÉireann])

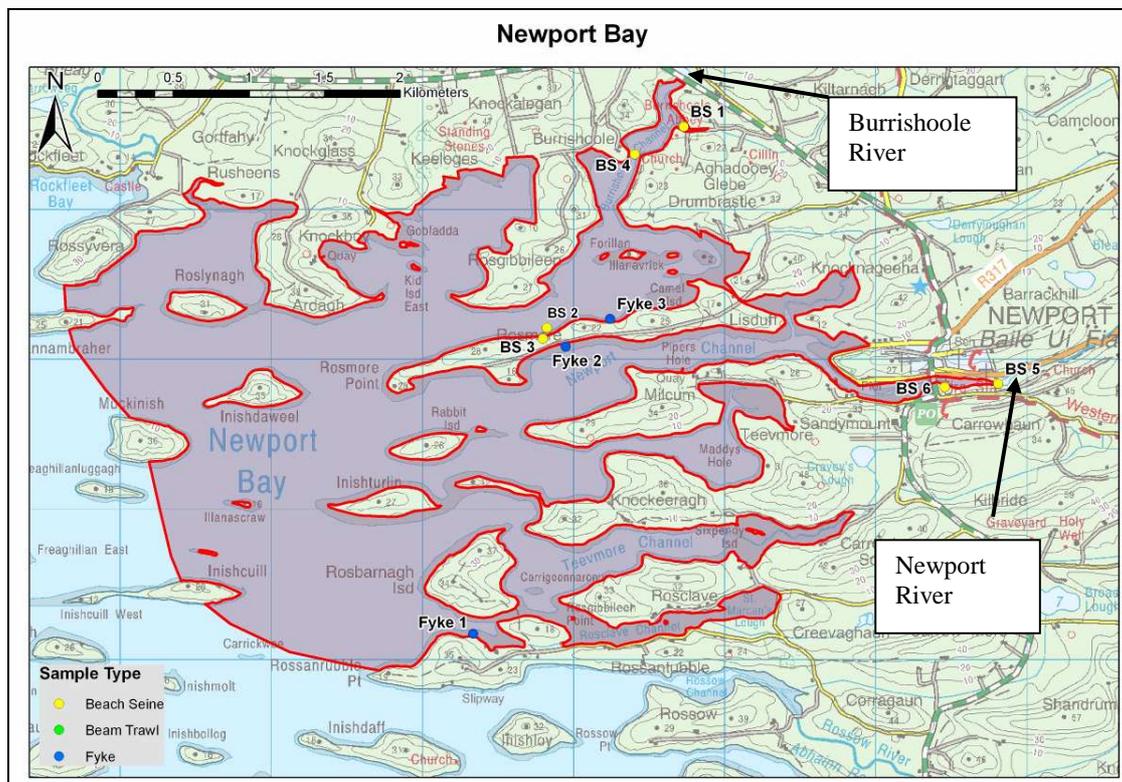


Fig. 1: Location map of Newport Bay indicating sampling sites, 2008

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 Newport 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).

Six beach seine sites and three 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. Due to adverse weather only the more sheltered portions of the estuary were sampled.



Plate 2: Seine netting in upper Newport Bay, Newport, October 2008

RESULTS

Eight fish species were captured in the seine nets. The most frequently occurring and abundant species was three-spined stickleback (Table 1). Generally low numbers of fish were recorded in each seine haul. Eight fish species were also captured in the fyke nets. The most frequently captured fish species was corkwing wrasse followed by eel, five-bearded rockling, flounder and pollack (Table 1).

Overall thirteen fish species and sea trout were captured during the survey. Catch numbers were generally low and the adverse weather may have had an impact. It is likely that additional fish species would have been captured if part of the outer estuary could have been sampled.

Salinity values taken at beach seine sites ranged from 0.0ppt to 14.90ppt.

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

Scientific name	Common Name	Newport	
		Beach seine (6)	Fyke net (3)
<i>Platichthys flesus</i>	Flounder	9	4
<i>Pomatoschistus minutes</i>	Sand goby	1	-
<i>Pomatoschistus microps</i>	Common Goby	8	-
<i>Anguilla anguilla</i>	Eel	-	2
<i>Taurulus bubalis</i>	Long-Spined Sea Scorpion	-	1
<i>Ciliata mustela</i>	5-Bearded Rockling	-	3
<i>Salmo trutta</i>	Brown trout	2	-
<i>Symphodus melops</i>	Corkwing Wrasse	3	4
<i>Salmo trutta</i>	Sea Trout*	-	1
<i>Spinachia spinachia</i>	15-Spined Stickleback	7	-
<i>Gasterosteus aculeatus</i>	3-Spined Stickleback	128	-
<i>Agonus cataphractus</i>	Pogge	-	1
<i>Salmo salar</i>	Salmon	4	-
<i>Pollachius pollachius</i>	Pollack	-	6

*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 Newport Estuary an interim draft classification of “High”, i.e. must prevent deterioration, 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). Newport Bay has been assigned a draft classification of “Moderate” (EQR=0.575) 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.

REFERENCES

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