# Tullaghan Bay

# Sampling Fish for the Water Framework Directive - Transitional Waters 2008

The Central and Regional Fisheries Boards

## ACKNOWLEDGEMENTS

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## INTRODUCTION

A fish stock survey was carried out at sites on Tullaghan Bay Estuary, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 13th and the 17th of October 2008 by staff from the Central Fisheries Board (CFB) and the North Western Regional Fisheries Board (NWRFB).

Tullaghan Bay is located in north County Mayo on the North West coast of Ireland (Figs. 1 and 2). The bay is orientated in a south-westerly direction, covers an area 17.25km² and is strongly influenced by the marine environment. The estuary is relatively shallow; the middle and upper parts of the estuary empty out at low tide leaving a complex series of channels and sand banks running through the middle leading to a wider area at the mouth (Plate 1). Habitat types in the estuary range from muddy and rocky substrates in the middle and upper estuary to extensive sandy shores in the lower reaches of the estuary. The majority of the estuary is made up of sand banks with some areas of *Fucus spp.* in the backwaters off the main channel.

The main land uses in the area are agricultural, peat cutting and forestry. The bay and surrounding area supports an internationally important population shore birds and water fowl. The surrounding landscape has important areas of lowland blanket bog which is considered to be an extreme hyperoceanic variant of the habitat type, which is found exclusively in Ireland and along coastal fringes of north-west Scotland (NPWS, 2004).

Tullaghan Bay receives the water from two rivers, the Owenmore River which flows in from the northeast and the Owenduff River which flows into the southern end of the estuary from the west (Figs. 1 and 2). The Owenduff River is promoted by the North Western Regional Fisheries Board as an excellent salmon and seatrout venue.

**Plate 1: Aerial photo of Tullaghan Estuary. (Photo courtesy of CFB and No. 3 Operational Wing, Irish Air Corps [Aer Chór na hÉireann])**

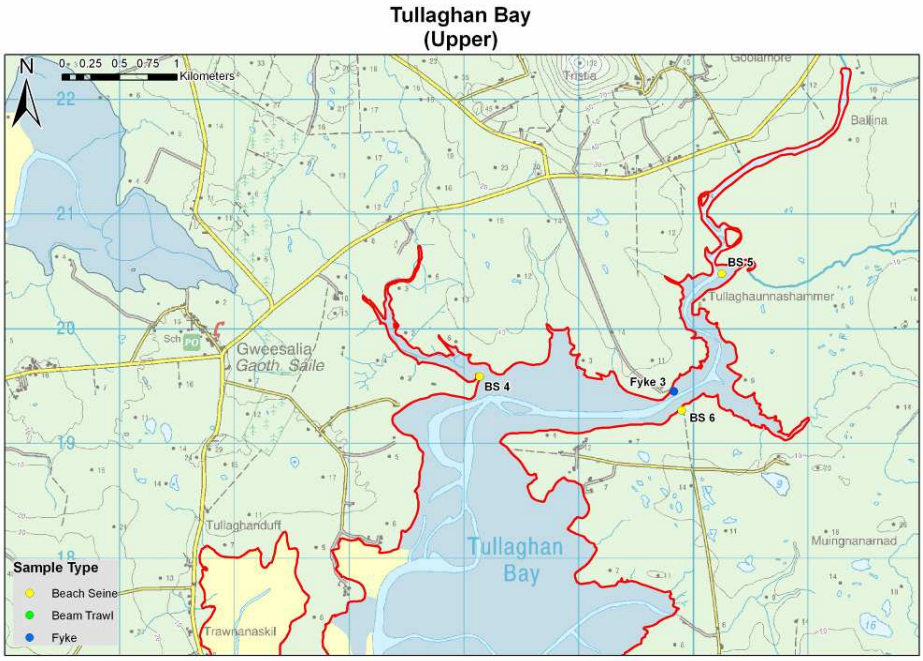


**Figure 1: Location map of Tullaghan Bay (upper) indicating sampling sites, 2008**

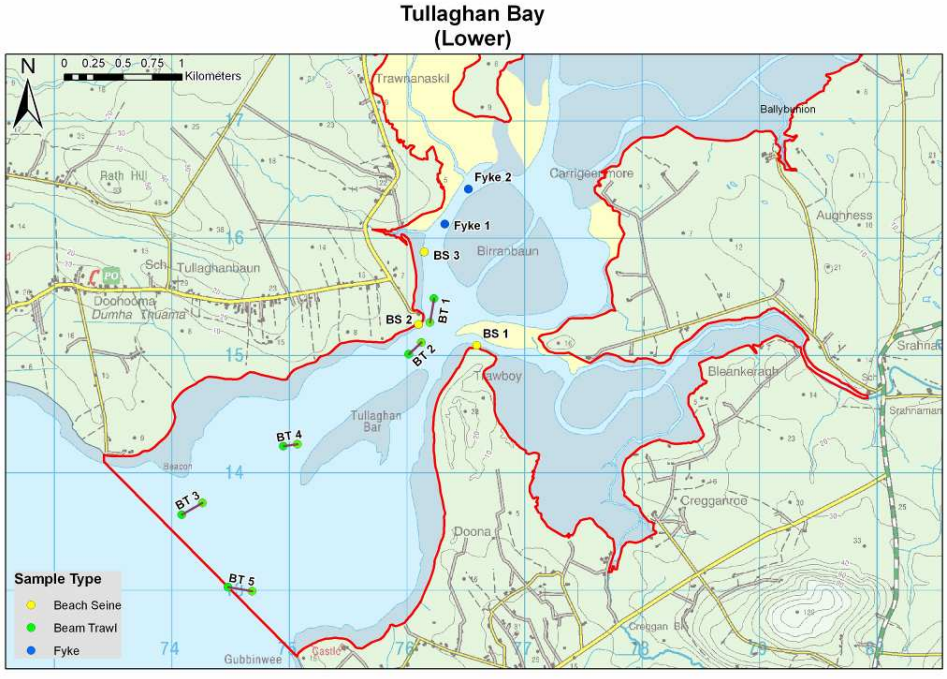


**Figure 2: Location map of Tullaghan Bay (lower) indicating sampling sites, 2008**

## 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. Three sampling methods were used during the Tullaghan Bay survey (i.e. beach seines, fyke nets and beam trawl). Portable GPS instruments were used to mark the precise location of each sampling site (Fig. 1).

Beam trawling was conducted in the deep portions of the bay at five transects. Six beach seine 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.

**Plate 2: Seine netting on Tullaghan Bay, October 2008**

## RESULTS

Eight fish species were captured in five trawls, however catch numbers of fish were relatively low and there were no dominant species (Table 1).

Seven fish species were captured in the seine nets and these were dominated by marine fish species (Table 1). The most frequently occurring and abundant species was common goby followed by sand goby and plaice. Eight fish species were captured in the fyke nets. The most frequently captured and abundant species was five-bearded rockling which was captured in all three sites.

Overall sixteen fish species were recorded during the survey (Table 1). The most abundant fish species were common goby (58) followed by five-bearded rockling (35) and sand goby (22). Plaice was the only species captured by all three sampling techniques.

Salinity values taken at beach seine sites ranged from 1.35ppt in the upper estuary to 23.75ppt in the lower estuary.

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

| | | Tullaghan Bay | | |
|---|---|---|---|---|
| **Scientific name** | **Common Name** | **Beam trawl (5)** | **Beach seine (6)** | **Fyke net (3)** |
| *Platichthys flesus* | Flounder | - | 6 | 8 |
| *Pomatoschistus minutes* | Sand goby | 1 | 21 | - |
| *Pomatoschistus microps* | Common Goby | - | 58 | - |
| *Pleuronectes platessa* | Plaice | 1 | 8 | 1 |
| *Taurulus bubalis* | Long-Spined Sea Scorpion | - | - | 2 |
| *Ciliata mustela* | 5-Bearded Rockling | - | - | 35 |
| *Ammodytes tobianus* | Lesser Sandeel | 1 | - | - |
| *Symphodus melops* | Corkwing Wrasse | - | - | 1 |
| *Spinachia spinachia* | 15-Spined Stickleback | - | 1 | 2 |
| *Agonus cataphractus* | Pogge | 1 | - | 1 |
| *Hyperoplus lanceolatus* | Greater Sandeel | 2 | - | - |
| *Pollachius pollachius* | Pollack | 1 | - | 1 |
| *Sprattus sprattus* | Sprat | - | 3 | - |
| *Echiichthys vipera* | Lesser Weever Fish | 2 | - | - |
| *Entelrus aequoreus* | Snake Pipefish | 2 | - | - |
| *Syngnathus acus* | Greater Pipefish | - | 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 Tullaghan Bay an interim draft classification of "High" status, 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). Tullaghan 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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