

# Sruwaddacon 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 the Sruwaddacon Bay, as part of the programme of monitoring for the Water Framework Directive (WFD), between the 13<sup>th</sup> and the 15<sup>th</sup> of October 2008 by staff from the Central Fisheries Board (CFB) and the North Western Regional Fisheries Board (NWRFB).

Sruwaddacon Bay is located in north County Mayo on the northwest coast of Ireland (Fig. 1). The estuary extends over an area of 8.39 km<sup>2</sup>. Most of the estuary is marine-dominated with extensive areas of shallows in the upper and middle sections at low water and a significant intertidal area.

There are a variety of bed types along the estuary ranging from mudflats and sand banks in the upper estuary to extensive areas of sandy shore in the outer parts of the estuary. The northern shore of the estuary is characterised by extensive ranges of sandy shores while the southern shore is dominated by rocky shores which contain large beds of *Laminaria* seaweed.

The estuary has few anthropogenic impacts with the surrounding catchment being agricultural. The villages of Rossport and Pollatomish are located at the centre of the waterbody (Fig. 1). The Sruwaddacon Estuary has recently become infamous for the decision to run a gas pipeline across the estuary with the development of a gas processing plant located further inland. Sruwaddacon Bay is designated as a Special Protection Area (SPA) and is an important site for wintering wildfowl species, in particular for brent geese which are listed on Annex II of the EU Birds directive.

The estuary is northwesterly orientated and the main rivers entering it are the Glenamoy and Muingnabo rivers (Plate 1). A second channel flows around the village of Ross Port from the northwest and is fed by the Gweedaney stream (Plate 1). Both channels join into a fast-flowing channel which widens out into an exposed bay at the mouth (Plate 2).



**Plate 1: Upper Sruwaddacon Bay fed by the Glenamoy and Muingnabo river and the Gweedaney Stream (left) (Photo courtesy of CFB and No. 3 Operational Wing, Irish Air Corps [Aer Chór na hÉireann])**





Plate 2: Lower Sruwaddacon Bay at low tide looking west towards the Atlantic Ocean. (Photo courtesy of CFB and No. 3 Operational Wing, Irish Air Corps [Aer Chór na hÉireann])

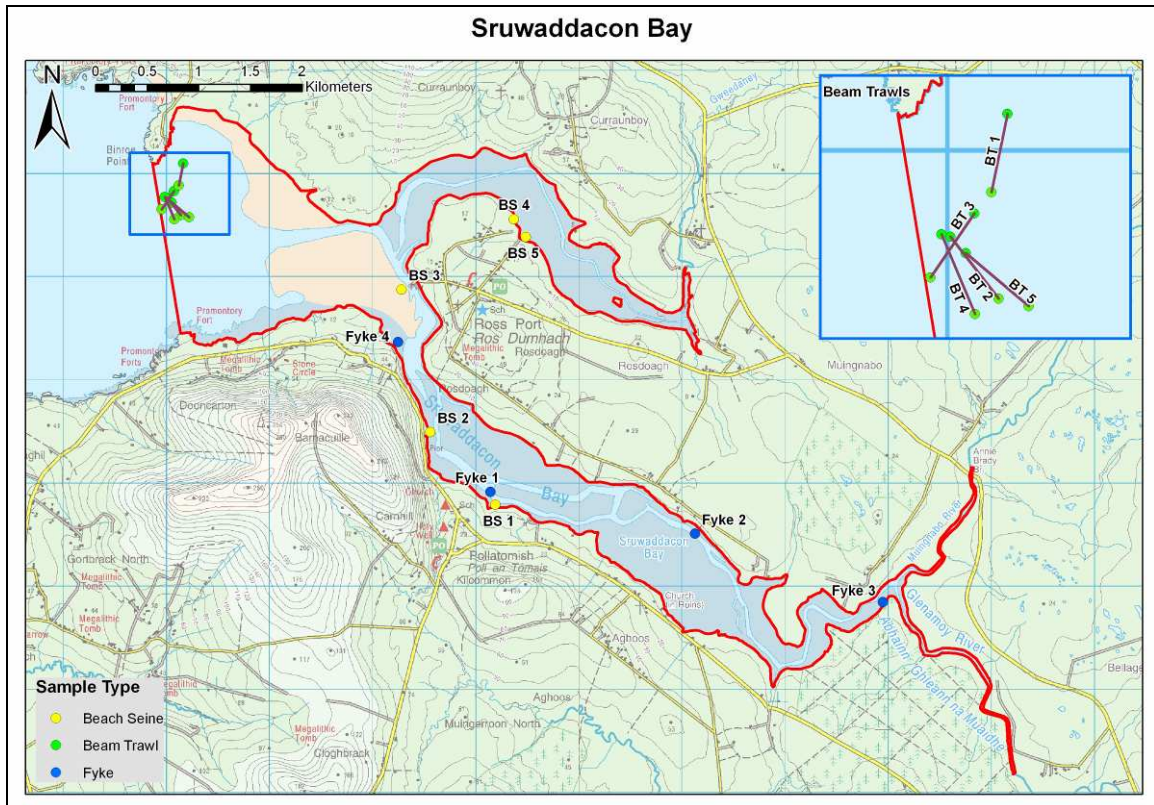


Fig. 1: Location map of Sruwaddacon Bay indicating sampling sites, October 2008

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

Five beach seine, four fyke nets and five trawl sites were sampled during the October 2008 survey. Beam trawling was conducted in the deep portions of the bay. All sites were chosen to encompass the majority of geographical and, where possible, habitat ranges of the estuary.

## **RESULTS**

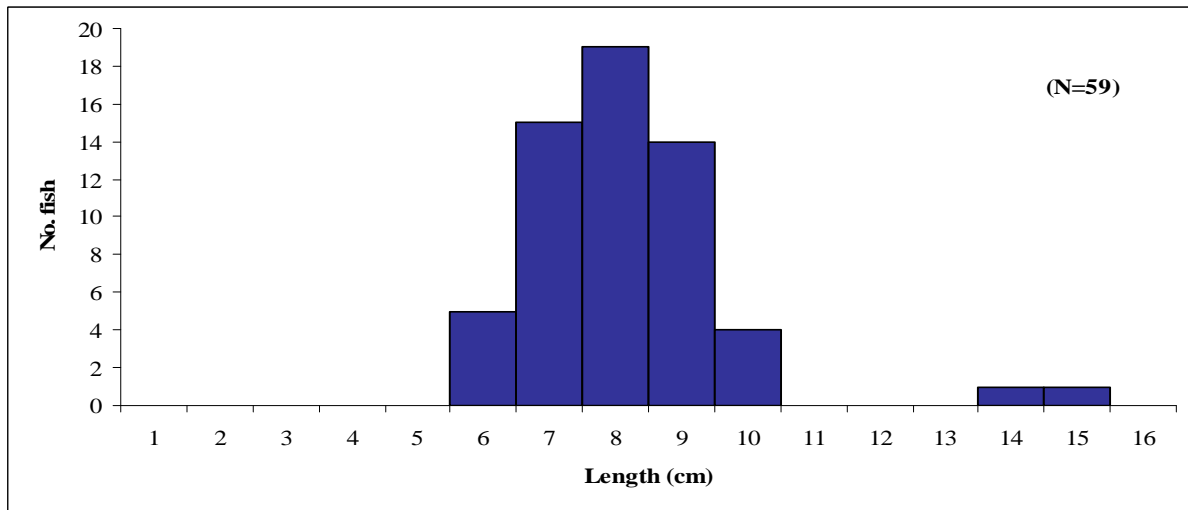
Nine fish species were captured in the seine nets and the hauls were dominated by marine fish species. The most frequently occurring and abundant species was sand goby which were captured in every haul (Table 1).

Seven fish species were captured in the fyke nets. The most frequently captured and abundant species was flounder and eel which were captured in all four sites. Pollack and five-bearded rockling were also common in the fyke nets, being captured in three of the four sites.

Fourteen fish species were captured in the beam trawls. The most frequently captured and abundant species were long-spined sea scorpion and ballan wrasse which were captured in four of the five trawls. Length frequency analysis showed two possible age classes of long-spined sea scorpion (Fig. 2).

Overall twenty three fish species were captured during the survey. Overall the most abundant species were sand goby (68) followed by long-spined sea scorpion (59) eel (31) and five-bearded rockling (31). Plaice and 15-spined stickleback were the only species captured by all three sampling techniques.

Salinity values taken at beach seine sites ranged from 26.60ppt to 31.00ppt.



**Fig. 2: Length frequency distribution of long-spined sea scorpion, Sruwaddacon Bay October 2008**

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

| Scientific name               | Common Name              | Sruwaddacon Bay |              |                |
|-------------------------------|--------------------------|-----------------|--------------|----------------|
|                               |                          | Beach seine (5) | Fyke net (4) | Beam trawl (6) |
| <i>Platichthys flesus</i>     | Flounder                 | 40              | 1            | -              |
| <i>Gobiusculus flavescens</i> | 2-Spotted Goby           | 8               | -            | -              |
| <i>Pomatoschistus minutes</i> | Sand Goby                | 68              | -            | -              |
| <i>Pomatoschistus microps</i> | Common Goby              | 20              | -            | -              |
| <i>Pleuronectes platessa</i>  | Plaice                   | 1               | 2            | 1              |
| <i>Anguilla anguilla</i>      | Eel                      | -               | 31           | -              |
| <i>Taurulus bubalis</i>       | Long Spined Sea Scorpion | 1               | -            | 58             |
| <i>Ciliata mustela</i>        | 5-Bearded Rockling       | -               | 31           | -              |
| <i>Salmo trutta</i>           | Brown Trout              | -               | 1            | -              |
| <i>Symphodus melops</i>       | Corkwing Wrasse          | -               | -            | 7              |
| <i>Gaidropsarus vulgaris</i>  | 3-bearded rockling       | -               | -            | 2              |
| <i>Spinachia spinachia</i>    | 15-spined stickleback    | 5               | 7            | 2              |
| <i>Callionymus lyra</i>       | Dragonnet                | -               | -            | 2              |
| <i>Agonus cataphractus</i>    | Pogge                    | -               | -            | 1              |
| <i>Pollachius pollachius</i>  | Pollack                  | -               | 11           | 1              |
| <i>Labrus bergylta</i>        | Ballan Wrasse            | -               | -            | 15             |
| <i>Limanda limanda</i>        | Dab                      | -               | -            | 1              |
| <i>Gobius niger</i>           | Black Goby               | 1               | -            | -              |
| <i>Scophthalmus rhombus</i>   | Brill                    | -               | -            | 1              |
| <i>Trisopterus minutes</i>    | Poor Cod                 | -               | -            | 8              |
| <i>Entelrus aequoreus</i>     | Snake Pipefish           | -               | -            | 3              |
| <i>Microstomus kitt</i>       | Lemon Sole               | -               | -            | 1              |
| <i>Atherina prebyter</i>      | Sand Smelt               | 10              | -            | -              |

## 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 Sruwaddacon Bay an interim draft classification of “Good” status, i.e. must prevent deterioration below “Good” status, 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). Sruwaddacon Bay has been assigned a draft classification of “Good” (EQR=0.70) using the fish classification tool which agrees 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

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