Erne Estuary

Sampling Fish for the Water Framework Directive - Transitional Waters 2009

The Central and Regional Fisheries Boards

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1. INTRODUCTION

A fish stock survey was conducted on the Erne Estuary as part of the fish monitoring programme for the Water Framework Directive (WFD), between the 28th and 29th of September 2009 by staff from the Central Fisheries Board (CFB) and the Northern Regional Fisheries Board (NRFB).

The Erne Estuary covers an area of 2.57 km² and is located on Ireland's north-west coast, adjacent to the town of Ballyshannon, Co. Donegal (Fig. 1.1). It extends for approximately 4km westwards from Balllyshannon to Tullan Strand, with large portions draining on a low tide to expose sandy beaches. It receives waters from the River Erne and the Abbey River.

This water body lies within the Donegal Bay SPA which is important for the protection of a large number of birds that inhabit its wetlands (NPWS, 2010).

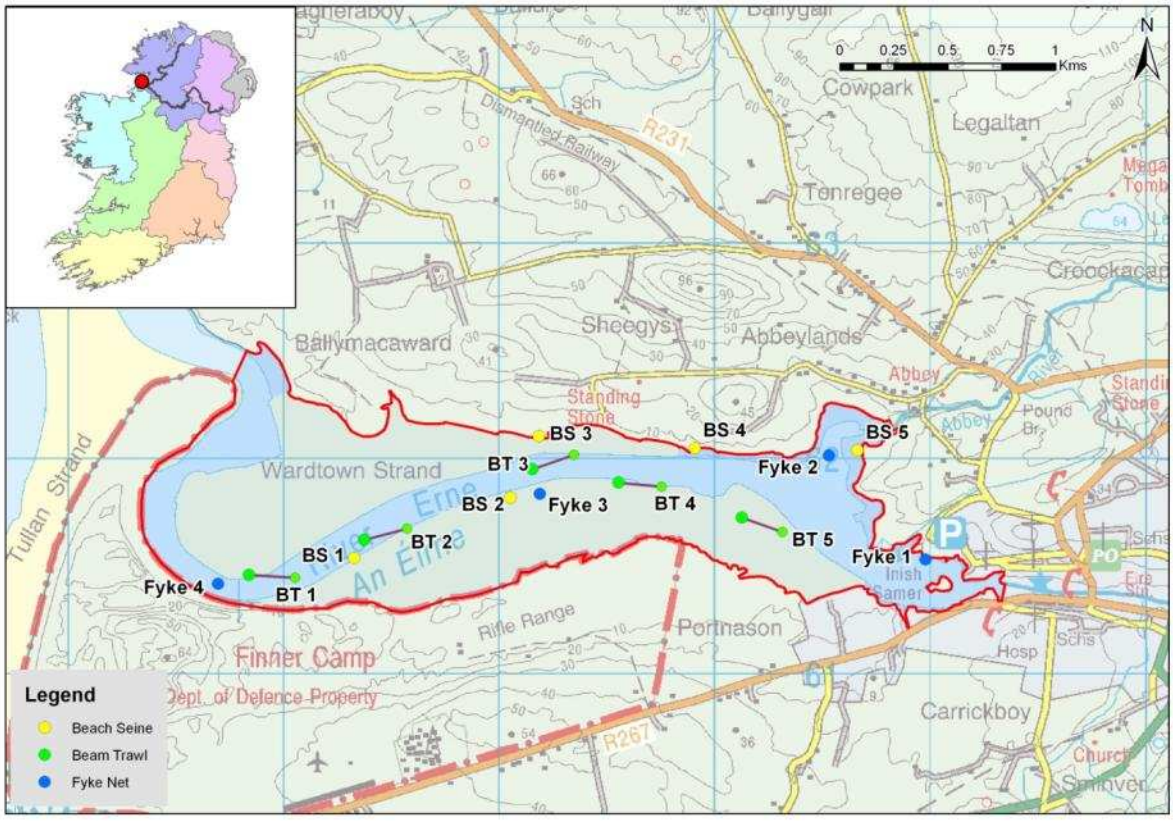

Fig 1.1. Location map of the Erne Estuary indicating sample sites, September 2009

2. METHODS

Current work in the UK and ROI indicates the need for a multi-method (beach seine, fyke net and beam trawl) approach to sampling fish in estuaries and these procedures are now the standard CFB methodology for fish stock surveys in transitional waters for the WFD monitoring program.

Beach seining is conducted using a 30m x 3m net (10mm mesh size) to capture fish in littoral areas. The bottom of the net has a weighted lead line to increase sediment disturbance and catch efficiency. Fyke nets (15m in length with a 0.8m diameter front hoop, joined by an 8m leader with a 10mm square mesh) are used to sample benthic fish in the littoral areas. Beam trawls are used for sampling benthic fish in the littoral and open waters, where bed type is suitable. The beam trawl measures 1.5m x 0.5m, with a 10mm mesh bag, decreasing to 5mm mesh in the cod end. The trawl is attached to a 20m tow rope and towed by a boat. Trawls are conducted along transects of 100 – 200m in length.

Sample sites are selected to represent the range of geographical and habitat ranges within the water body, based on such factors as exposure/orientation, shoreline slope, and substrate type. A handheld GPS is used to mark the precise location of each site.

All nets are processed on-site by identifying the species present and counting the total numbers caught in each. Length measurements are recorded for each species using a representative sub-sample of 30 fish, while scales are only collected for certain species, such as salmon and sea trout. Unidentified specimens were retained for subsequent identification in the laboratory.

A total of five beach seines, five beam trawls and four fyke nets were deployed in the Erne estuary in September 2009.

3. RESULTS

A total of 16 fish species (sea trout are included as a separate 'variety' of trout) were recorded in the Erne Estuary in September 2009 (Table 3.1). Lesser sandeel was the most abundant species captured, followed by sand goby, plaice and flounder (Table 3.1). Sand goby, plaice and flounder were the only species captured using all three netting methods. Brown trout, sea trout, three-spined stickleback, eels and flounder were also recorded.

Flounder ranged in length from 5.5cm to 27.2cm (Fig. 3.2).

Salinity values taken at beach seine sites ranged from 0.260ppt to 2.10ppt.

Table 3.1. Number of each species captured by each gear type in the Erne Estuary, September 2009

Scientific name	Common Name	Beach seine (5)	Fyke net (4)	Beam trawl (5)	Total
Ammodytes tobianus	Lesser sandeel	2542	-	-	2542
Pomatoschistus minutus	Sand goby	148	2	105	255
Pleuronectes platessa	Plaice	44	2	8	54
Platichthys flesus	Flounder	10	35	7	52
Pollachius pollachius	Pollack	-	10	-	10
Ciliata mustela	Five-bearded rockling	-	8	-	8
Pollachius virens	Coalfish (Saithe)	-	5	-	5
Scophthalmus rhombus	Brill	2	-	2	4
Chelon labrosus	Thick-lipped grey mullet	3	-	-	3
Salmo trutta	Sea trout	3	-	-	3
Anguilla anguilla	Eel	-	3	-	3
Gasterosteus aculeatus	Three-spined stickleback	2	-	-	2
Gadus morhua	Cod	-	2	-	2
Salmo trutta	Brown trout	-	1	-	1
Spinachia spinachia	Fifteen-spined stickleback	-	-	1	1
Syngnathus acus	Greater pipefish	1	-	-	1

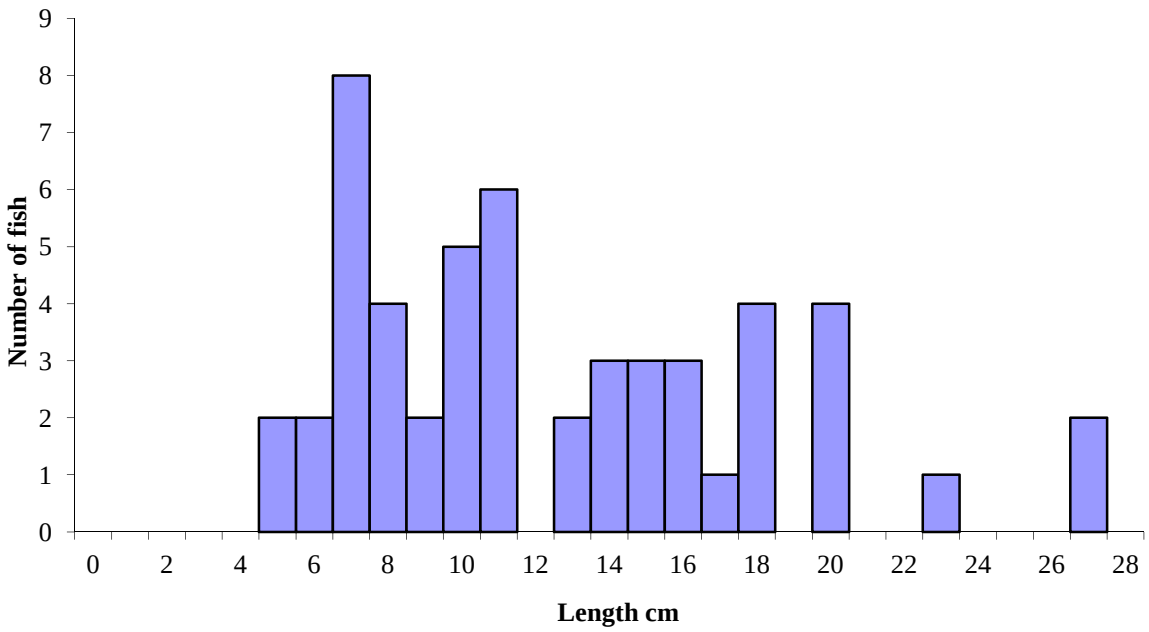

Fig. 3.2. Length frequency distribution of flounder captured in the Erne Estuary, September 2009 (n = 52)

4. SUMMARY

A total of 16 fish species (sea trout are included as a separate 'variety' of trout) were recorded in the Erne Estuary, which is similar to other transitional water bodies surveyed in the NRFB during 2009. Juveniles of a number of commercially important species were present, including cod, plaice, pollack and coalfish, as well as other species of angling importance, such as sea trout, flounder and thick-lipped grey mullet. Species richness and distribution among all transitional water bodies surveyed during 2009 can be seen in the 2009 WFD summary report (Kelly *et al*., 2010).

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.

A new WFD fish classification tool, Transitional Fish Classification Index or TFCI, has been developed for the island of Ireland (Ecoregion 1) using Northern Ireland Environment Agency (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 TFCI is still undergoing further development in order to make it fully WFD compliant and to account for differences in estuary typologies; however, at this stage it has been used, along with expert opinion, to provide draft ecological status classifications for each transitional water body surveyed for the WFD.

Using this approach, the Erne Estuary has been assigned a draft ecological status classification of "Good" based on the fish populations present.

The EPA have assigned the Erne Estuary an overall interim draft classification of "Moderate status", based on general physico-chemical elements, phytoplankton, fish and macroalgal growths.

5. REFERENCES

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