



Sampling Fish for the Water Framework Directive

Transitional Waters 2013

Drongawn Lough



Iascach Intíre Éireann
Inland Fisheries Ireland

Water Framework Directive Fish Stock Survey of Transitional Waters in the South Western River Basin District – Gill Lough

Fiona L. Kelly, Ronan Matson, John Coyne, Rory Feeney, Emma Morrissey, and Kieran Rocks

Inland Fisheries Ireland, Swords Business Campus, Swords, Co. Dublin

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PROJECT STAFF

Project Director/Senior Research officer:	Dr. Fiona Kelly
Project Manager:	Ms. Lynda Connor
Research Officer:	Dr. Ronan Matson
Technician	Mr. John Coyne
Technician	Mr. Rory Feeney
Technician:	Ms. Emma Morrissey
GIS Officer:	Mr. Kieran Rocks
Fisheries Assistant:	Mr. Johannes Bulfin
Fisheries Assistant:	Mr. John Finn
Fisheries Assistant:	Ms. Karen Kelly
Fisheries Assistant:	Ms. Roisin O' Callaghan
Fisheries Assistant:	Ms. Laura Walsh

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1. INTRODUCTION

A fish stock survey was conducted on Drongawn Lough in the South Western River Basin District (SWRBD) as part of the programme of fish monitoring for the Water Framework Directive (WFD), between the 16th and 17th of October 2010 by staff from Inland Fisheries Ireland.

Drongawn Lough is a small transitional water body, covering an area of 0.12km², situated on Ireland's south-west coast, approximately 4.7km south-east of Sneem Village in Co. Kerry (Fig. 1.1, Plate 1.1 and Plate 1.2). The estuary is connected to Coongar Harbour and the Kenmare River Estuary by a very narrow and silled inlet that restricts tidal exchange. As a result this transitional water is classed as a lagoon. Drongawn Lough is deep in places, with a maximum depth of 18m recorded (NPWS 2000). Access to this site is difficult due to its remote location, with little or no agricultural or anthropogenic activity in the surrounding area.

This water body lies within the Drongawn Lough SAC and, as a moderately sized saline lake lagoon, is listed in Annex I of the EU Habitats Directive as a priority habitat for protection (NPWS, 2000).

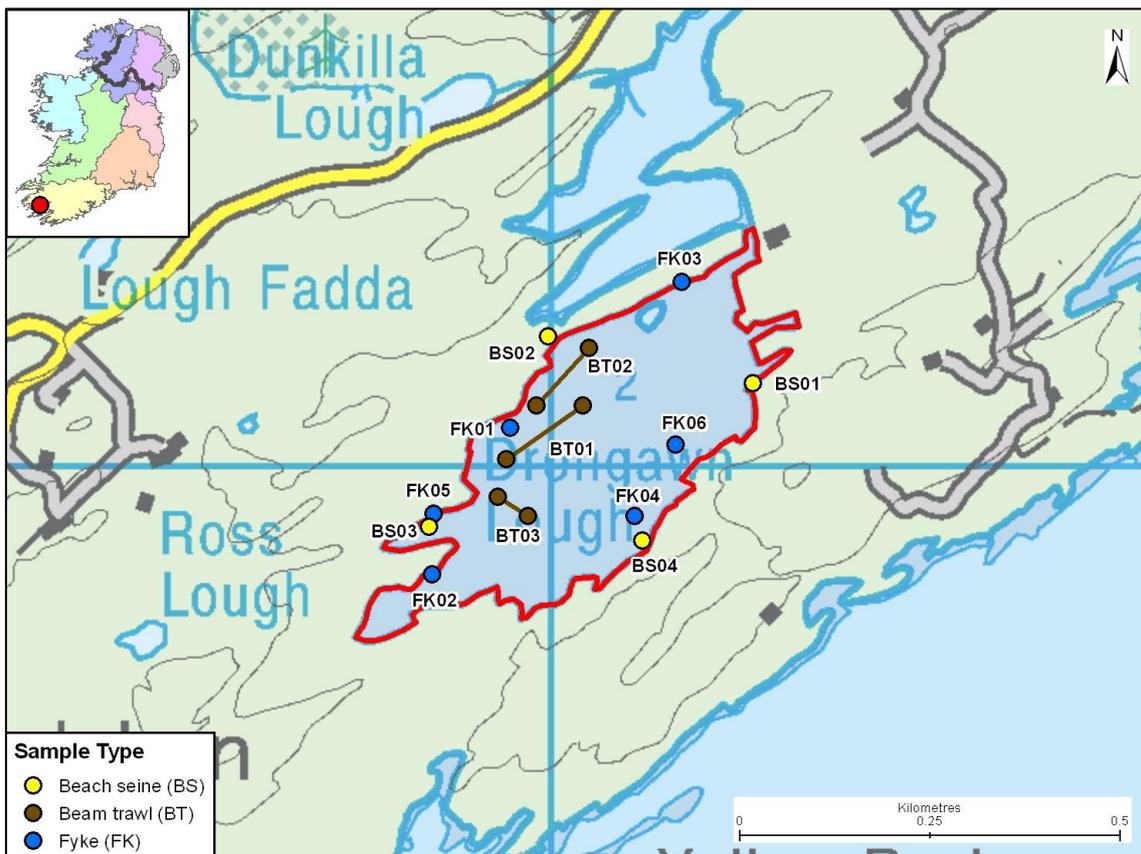


Fig. 1.1. Location map of Drongawn Lough indicating sample sites, October 2013



Plate 1.1. Drongawn Lough, October 2013



Plate 1.2. Seine netting on Drongawn Lough, October 2013

2. METHODS

Current work in the Republic of Ireland and United Kingdom 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 IFI 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 (Plate 1.2). 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 100m 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 were 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 four beach seines, six fyke nets and three beam trawls were deployed in Drongawn Lough in October 2013.

3. RESULTS

Fifteen fish species were recorded in Drongawn Lough in October 2013. Table 3.1 shows a comparison between 2013 and the previous survey in 2010. A number of species were newly recorded in 2013, including sprat, European sea bass, sand goby, deep-snouted pipefish, rock cook wrasse, Nilsson's pipefish and plaice. Flounder was the only species caught in 2010 that was absent in the 2013 survey.

Sand smelt was the most abundant species, followed by European eels and painted gobies. No species was captured using all three methods. This was the only transitional waterbody surveyed in 2013, where flounder were not recorded.

One endangered fish species; European eel, which is listed as critically endangered in the Irish Red Data Book (King *et al.*, 2011) was recorded during this survey. Other notable species recorded, include European sea bass, thick-lipped mullet and Pollack.

Salinity values taken at beach seine sites ranged from 53.3ppt to 54.08ppt. These unusually high salinity levels may have been due to reduced freshwater input during the warm dry summer of 2013.

Table 3.1. Number of each species captured by each gear type in Drongawn Lough, October 2013

Common name	Beach seine		Fyke net		Beam trawl		Total	
	2010 (2)	2013 (4)	2010 (4)	2013 (6)	2010 (0)	2013 (3)	2010	2013
Sand smelt	2	182	-	-	-	-	2	182
European eel	-	-	20	33	-	-	20	33
Painted goby	27	23	-	-	-	6	27	29
Three-spined stickleback	51	28	-	-	-	-	51	28
Thick-lipped grey mullet	1	19	-	-	-	-	1	19
Black goby	-	6	14	6	-	-	14	12
Sprat	-	7	-	-	-	-	-	7
Corkwing wrasse	-	-	2	4	-	-	2	4
European seabass	-	-	-	4	-	-	-	4
Sand goby	-	4	-	-	-	-	-	4
Pollack	-	-	4	3	-	-	4	3
Deep-snouted pipefish	-	2	-	-	-	-	-	2
Rock cook wrasse	-	2	-	-	-	-	-	2
Nilsson's pipefish	-	1	-	-	-	-	-	1
Plaice	-	-	-	-	-	1	-	1
Flounder	-	-	1	-	-	-	1	-

Eels captured during the 2013 survey ranged in length from 30.0cm to 78.0cm (mean = 46.4cm) (Fig. 3.1). Eels captured during the 2010 survey ranged in length from 33.0cm to 58.6cm (mean = 46.6cm).

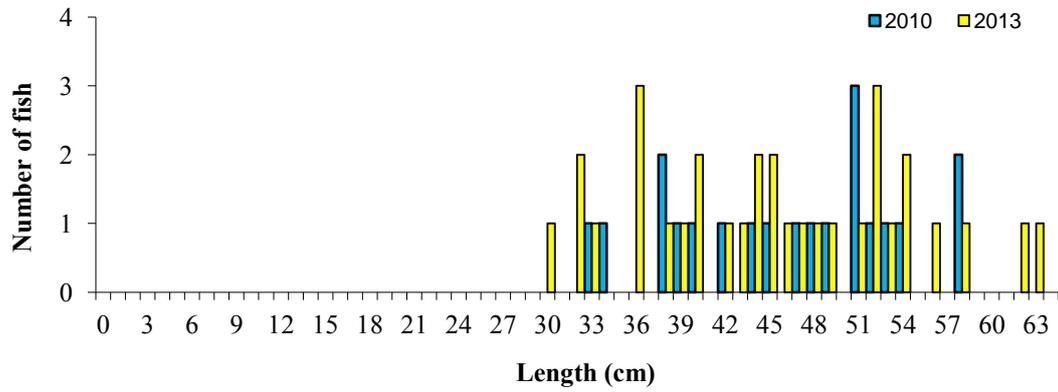


Fig. 3.1. Length frequency distribution of eels in Dromgawn Lough, October 2010 (n = 20) and October 2013 (n=33)

4. SUMMARY

A total of fifteen fish species were recorded in Drongawn Lough. Unlike the more riverine transitional waters surveyed this year, this is a saline lagoon and as such contains a very different compliment of species. As a result there is a notable absence of many of the freshwater species and more of the marine residents associated with lower estuaries. The greater numbers of marine fish recorded in this waterbody during 2013 may be due to the high salinity levels recorded, which probably resulted from low freshwater input during the warm summer during 2013.

An essential step in the WFD monitoring process is the classification of the ecological 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 WFD fish classification tool, Transitional Fish Classification Index or TFCI, has been developed for the island of Ireland (Ecoregion 1) using IFI and Northern Ireland Environment Agency (NIEA) 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 has recently completed the intercalibration process, in order to make it fully WFD compliant and to account for differences in estuarine typologies.

Using this approach combined with expert opinion, Drongawn Lough has been assigned a draft ecological status classification of “Good” based on the fish populations present.

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**Inland Fisheries Ireland
Swords Business Campus,
Swords,
Co. Dublin,
Ireland.**

**Web: www.fisheriesireland.ie
Email: info@fisheriesireland.ie
Tel: +353 1 8842 600
Fax: +353 1 8360 060**