



Sampling Fish for the Water Framework Directive

Transitional Waters 2010

Drongawn Lough



Iascach Intíre Éireann
Inland Fisheries Ireland

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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 26th and the 27th 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). 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 was 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).

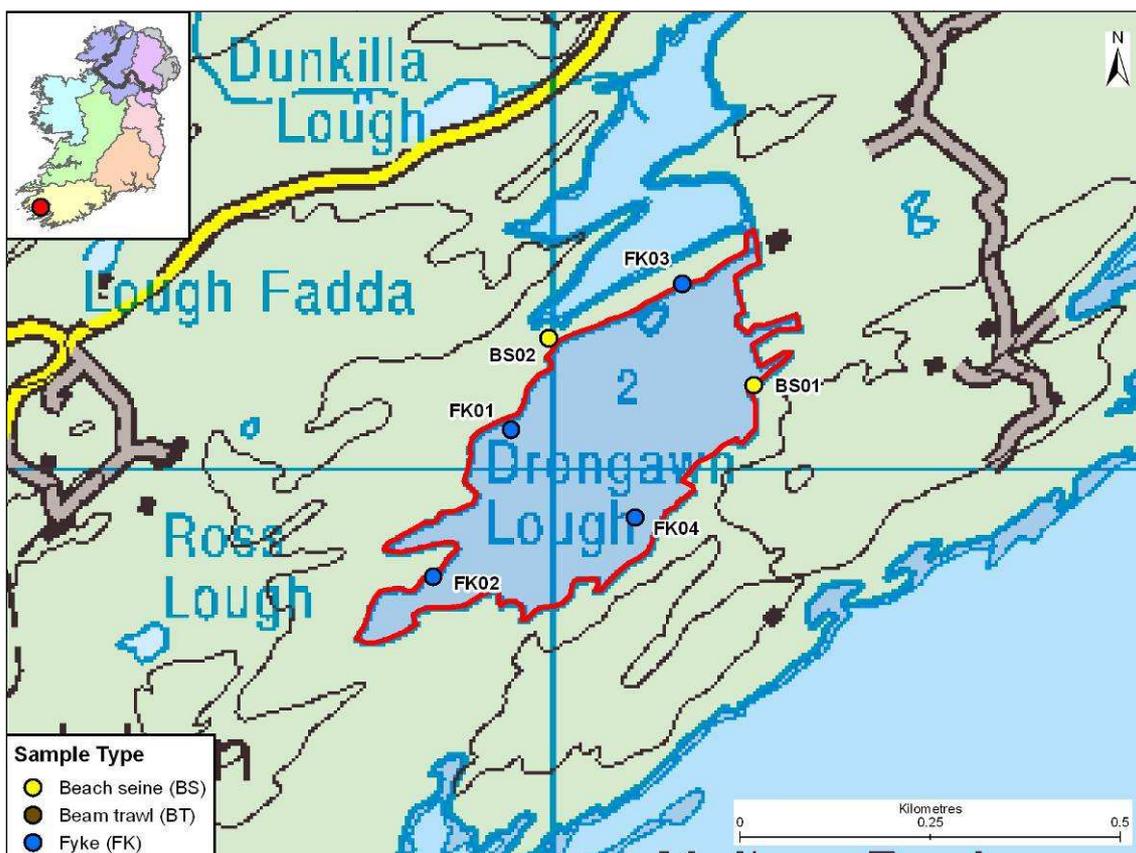


Fig. 1.1. Location map of Drongawn Lough indicating sample sites, October 2010



Plate 1.1. Drongawn Lough

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. 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 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 two beach seines and four fyke nets were deployed in Drongawn Lough in October 2010. No beam trawls were conducted due to the shallow depth and rocky nature of the substrate.

3. RESULTS

Nine fish species were recorded in Drongawn Lough in October 2010 (Table 3.1). Three-spined stickleback was the most abundant species, followed by painted goby and European eel. No species was captured using both netting methods, indicating the effectiveness of each individual method in targeting certain species.

Eels ranged in length from 33.0cm to 58.6cm (Fig. 3.1). Their length frequency distribution suggests that there may have been several age classes present (Fig. 3.1).

Salinity values taken at beach seine sites ranged from 20.9ppt to 22.0ppt.

Table 3.1. Number of each species captured by each gear type in Drongawn Lough, October 2010

Scientific name	Common name	Beach seine (2)	Fyke net (4)	Beam trawl (0)	Total
<i>Gasterosteus aculeatus</i>	Three-spined stickleback	51	-	-	51
<i>Pomatoschistus pictus</i>	Painted goby	27	-	-	27
<i>Anguilla anguilla</i>	European eel	-	20	-	20
<i>Gobius niger</i>	Black goby	-	14	-	14
<i>Pollachius pollachius</i>	Pollack	-	4	-	4
<i>Crenilabrus melops</i>	Corkwing wrasse	-	2	-	2
<i>Atherina presbyter</i>	Sand smelt	2	-	-	2
<i>Platichthys flesus</i>	Flounder	-	1	-	1
<i>Chelon labrosus</i>	Thick-lipped grey mullet	1	-	-	1

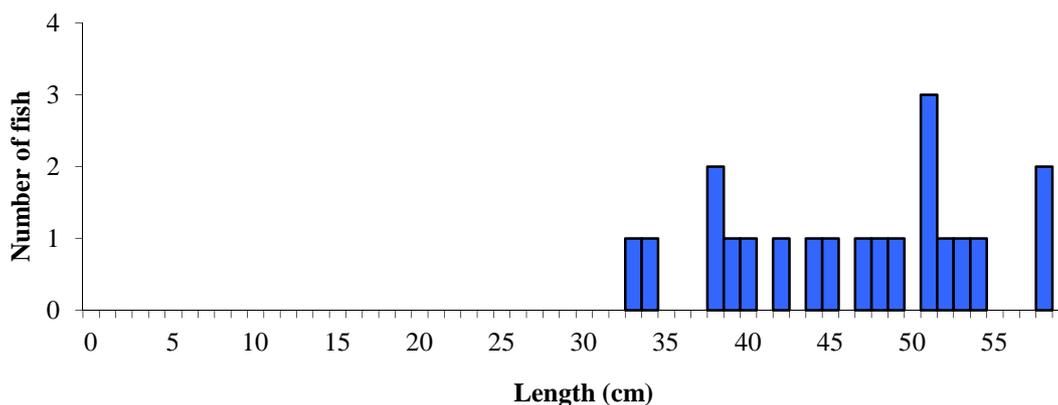


Fig. 3.1. Length frequency distribution of eels in Drongawn Lough, October 2010 (n=20)

4. SUMMARY

A total of nine fish species were recorded in Drongawn Lough. This is relatively low compared to other transitional water bodies surveyed around Ireland in 2010, however, this water body is classed as a lagoon, and together with its relatively small size and limited connectivity to the sea, would not be expected to contain the same number or diversity of species found in large estuarine systems. Species richness and distribution of selected fish species among all transitional water bodies surveyed during 2010 can be seen in the 2010 WFD summary report (Kelly *et al.*, 2011).

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 new 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 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, Drongawn Lough has been assigned a draft ecological status classification of “Good” based on the fish populations present.

The EPA have assigned the Drongawn Lough an overall interim draft classification of “Good” status, based on general physico-chemical elements, phytoplankton, fish and macroalgal growths.

5. REFERENCES

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