



# Sampling Fish for the Water Framework Directive

Transitional Waters 2010

**Lough Gill**



Iascach Intíre Éireann  
Inland Fisheries Ireland

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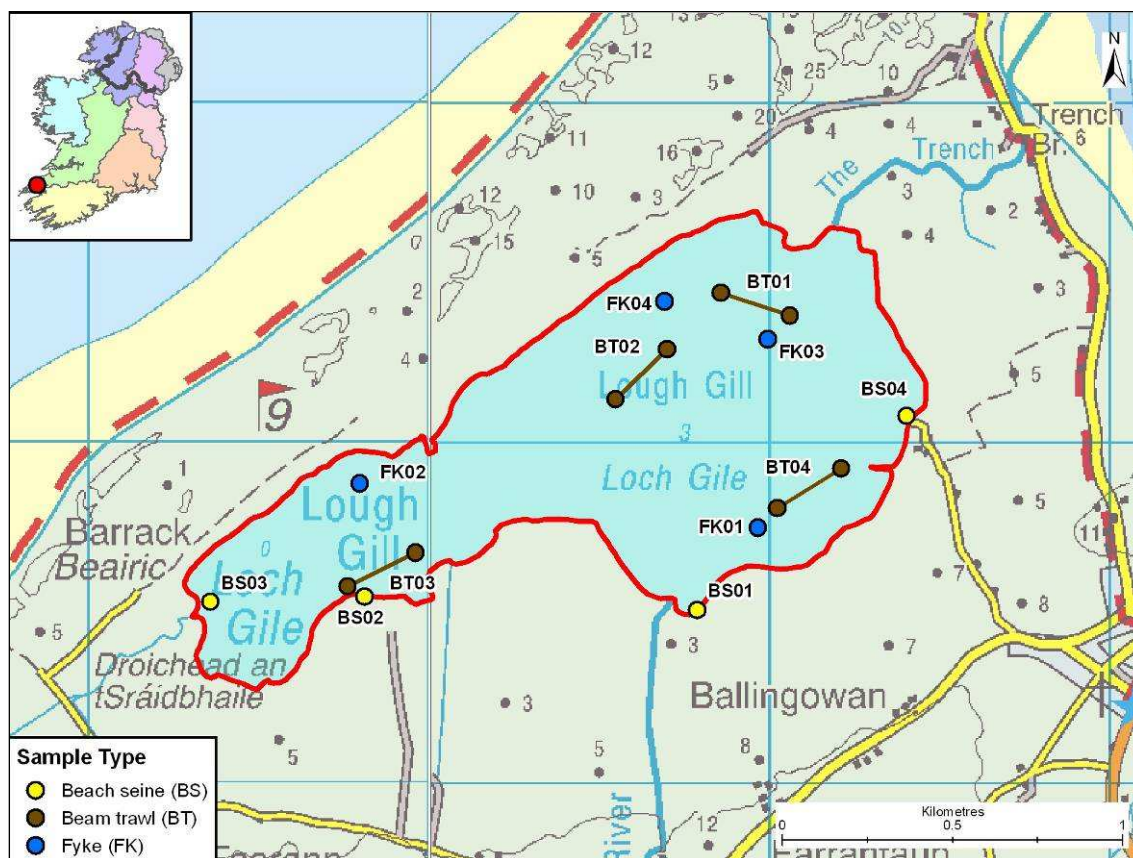
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## 1. INTRODUCTION

A fish stock survey was conducted on Lough Gill in the South Western River Basin District (SWRBD) as part of the programme of fish monitoring for the Water Framework Directive (WFD), between the 27<sup>th</sup> and the 28<sup>th</sup> of September 2010 by staff from Inland Fisheries Ireland.

Lough Gill covers an area of 1.4km<sup>2</sup> and is situated on Ireland's south-west coast, approximately 1km north-west of Castlegregory village, Co. Kerry (Fig. 1.1, Plate 1.1). The lough is classified as a large, natural sedimentary lagoon that drains into Tralee Bay through a modified outlet and sluice gate (NPWS, 2004). Lough Gill is relatively shallow (<0.5m) and has a predominately firm sand substrate. It receives the waters of the Killiney River and another unnamed stream that flows from Stradbally Mountain, located approximately 3km to the south and southwest.

Lough Gill is situated within the Tralee Bay and Magharees Peninsula, West to Cloghane SAC. This is a large SAC containing a number of important bird species, as well as coastal habitats, including lagoon and fixed dunes, both of which are listed in Annex I of the EU Habitats Directive (NPWS, 2003).



**Fig. 1.1. Location map of Lough Gill indicating sample sites, September 2010**



**Plate 1.1. Aerial photo of Lough Gill looking north towards Brandon Bay. (Photo courtesy of IFI and No. 3 Operational Wing, Irish Air Corps [Aer Chór na hÉireann])**

## **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 (Plate 2.1 and 2.2) 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 four beach seines, four fyke nets and four beam trawls were deployed in Lough Gill in September 2010.



**Plate 2.1. Beach seine along an exposed edge of Lough Gill**



**Plate 2.2. Beach seine among emergent weeds (*Typha*) in Lough Gill**

### 3. RESULTS

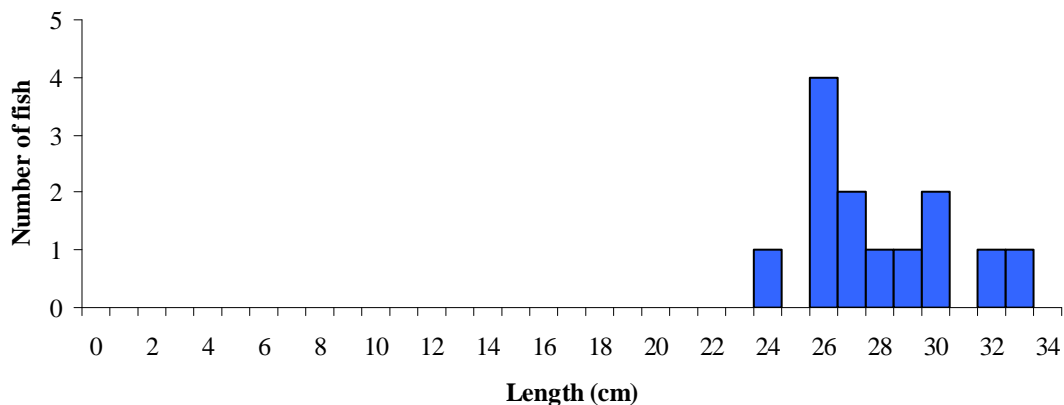
A total of six fish species were recorded in Lough Gill in September 2010 (Table 3.1). Three-spined stickleback was the most abundant species, followed by sand goby, brown trout and flounder.

Eel was the only species captured using all three netting methods. Brown trout ranged in length from 24.3cm to 33.2cm.

Salinity values taken at beach seine and beam trawl sites ranged from 0.043ppt to 0.913ppt.

**Table 3.1. Number of each species captured by each gear type in Lough Gill, September 2010**

Scientific name	Common name	Beach seine (4)	Fyke net (4)	Beam trawl (4)	Total
<i>Gasterosteus aculeatus</i>	Three-spined stickleback	634	-	77	711
<i>Pomatoschistus minutus</i>	Sand goby	19	-	3	22
<i>Platichthys flesus</i>	Flounder	1	12	-	13
<i>Salmo trutta</i>	Brown trout	-	13	-	13
<i>Anguilla anguilla</i>	European eel	4	5	1	10
<i>Chelon labrosus</i>	Thick-lipped grey mullet	3	-	-	3



**Fig. 3.1. Length frequency distribution of brown trout in Lough Gill, September 2010 (n=13)**

#### 4. SUMMARY

Six fish species were recorded in Lough Gill during the current survey. This was a relatively low number of species when compared with other transitional water bodies surveyed around Ireland in 2010. This is likely due to its small size, shallow depth and limited connectivity to the sea. The low salinity levels recorded throughout this water body, suggest that freshwater influences this water body to a greater extent than salt water. Furthermore, the species present were all either freshwater species, or those tolerant of brackish conditions. Species richness and distribution for selected species among all transitional water bodies surveyed 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, Lough Gill has been assigned a draft ecological status classification of “Moderate” based on the fish populations present.

The EPA have assigned Lough Gill 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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