

Lady's Island Lake



Sampling Fish for the Water Framework Directive - Transitional Waters 2009



The Central and Regional
Fisheries Boards

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PROJECT STAFF

Project Director/Senior Research officer:	Dr. Fiona Kelly
Project Manager:	Dr. Andrew Harrison
Research Officer:	Dr. Ronan Matson
Research Officer:	Ms. Lynda Connor
Technician:	Ms. Róisín O'Callaghan
Technician	Ms. Gráinne Hanna
Technician	Mr. Rory Feeney
Technician:	Mrs. Ciara Wögerbauer
Technician:	Ms. Emma Morrissey
GIS Officer:	Mr. Kieran Rocks

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1. INTRODUCTION

A fish stock survey was conducted on Lady's Island Lake as part of the programme of fish monitoring for the Water Framework Directive (WFD), between the 21st and the 23rd of September 2009 by staff from the Central Fisheries Board (CFB) and the Eastern Regional Fisheries Board (ERFB).

Lady's Island Lake covers an area of 2.96km² and is located on Ireland's south-eastern coast, just south of the village of Lady's Island, Co. Wexford (Fig. 1.1; Plate 1.1). It is a brackish coastal lagoon separated from the sea by a sand and shingle barrier (NPWS, 2001). Salt water seeps through the barrier, while freshwater flows into the lake from run-off from the land around the lagoon and from several small unnamed streams that flow into the north and western shores, draining predominately agricultural land. The barrier is also breached regularly allowing salt water to flow into the lagoon (NPWS, 2001).

This water body lies within Lady's Island Lake SAC, which is important for habitats listed in Annex I of the EU Habitats Directive, including sedimentary lagoons. This site also provides an important habitat to many different species of plants and birds (NPWS, 2001).

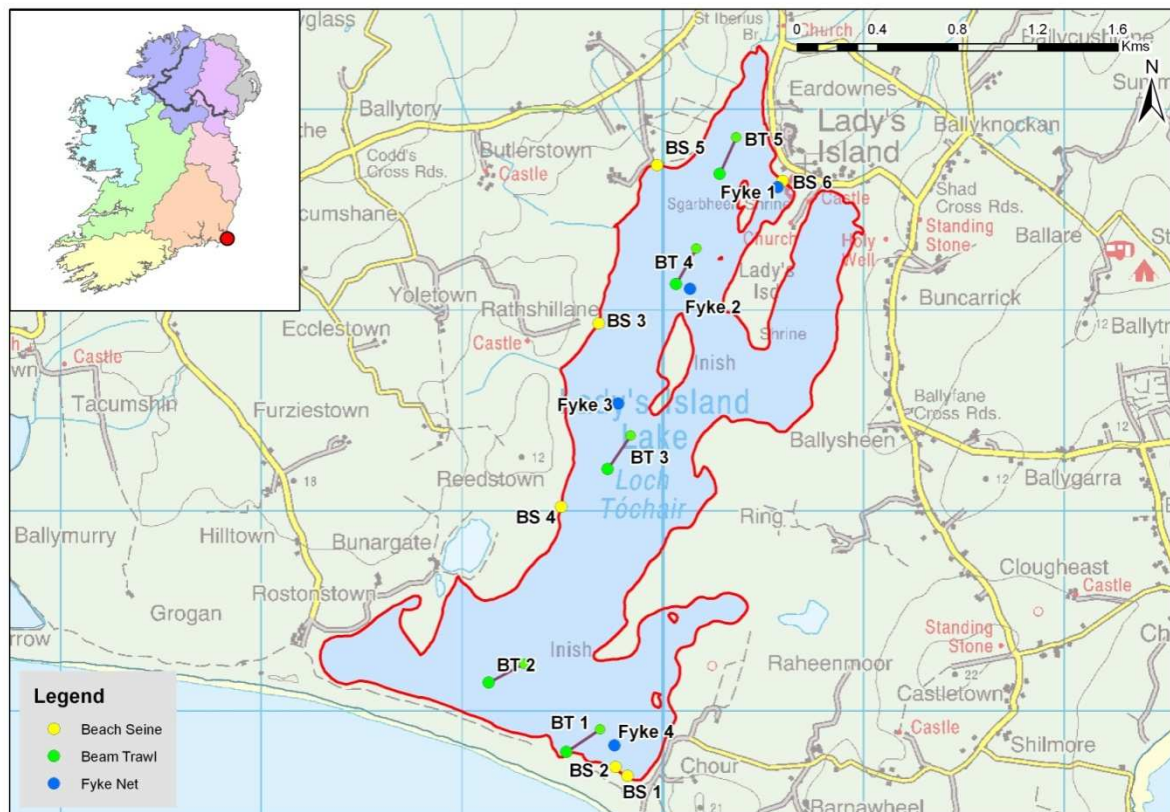


Fig 1.1. Location map of Lady's Island Lake, indicating sampling sites, September 2009



Plate 1.1. Lady's Island Lake, 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 six beach seines, four fyke nets and five beam trawls were deployed in Lady's Island Lake in September 2009.

3. RESULTS

A total of seven fish species were recorded in Lady’s Island Lake in September 2009 (Table 3.1). Sand goby was the most abundant species, followed by eels and three-spined stickleback (Table 3.1). Plaice, nine-spined stickleback, flounder and cod were also present. Lady’s Island Lake was the only WFD transitional water body surveyed in 2009 in which nine-spined stickleback was recorded.

Greater numbers of European eel (listed as critically endangered in the Irish Red Data Book (King *et al.*, 2011)) were captured in Lady’s Island Lake than in any other WFD transitional water body surveyed in 2009. European eels ranged in length from 28.6cm to 59.5cm (Fig. 3.1).

Salinity values taken at each beach seine site ranged from 4.93ppt to 9.04ppt.

Table 3.1. Number of each species captured by each gear type in Lady’s Island Lake, September 2009

Scientific name	Common Name	Beach seine (6)	Fyke net (4)	Beam trawl (5)	Total
<i>Pomatoschistus minutus</i>	Sand goby	1469	-	400	1869
<i>Anguilla anguilla</i>	Eel	-	44	-	44
<i>Gasterosteus aculeatus</i>	Three-spined stickleback	18	-	12	30
<i>Pleuronectes platessa</i>	Plaice	-	3	2	5
<i>Pungitius pungitius</i>	Nine-spined stickleback	2	-	1	3
<i>Platichthys flesus</i>	Flounder	-	-	1	1
<i>Gadus morhua</i>	Cod	-	1	-	1

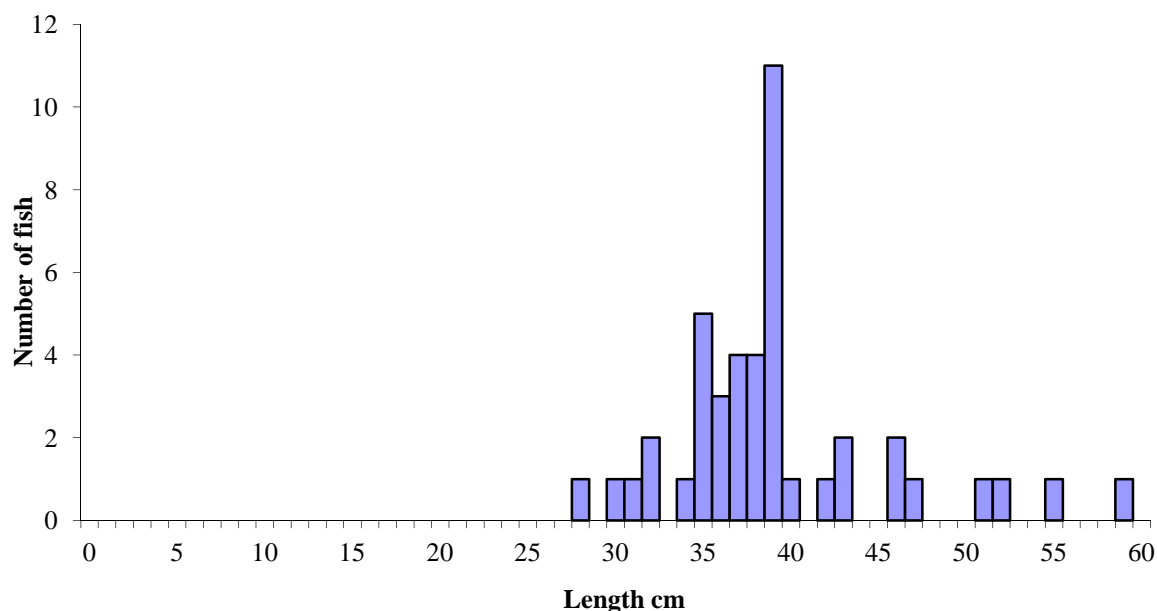


Fig. 3.1. Length frequency distribution of European eels captured in Lady’s Island Lake, September 2009 (n = 44)

4. SUMMARY

A total of seven fish species were recorded in Lady's Island Lake, which is relatively low when compared with other transitional water bodies surveyed in the ERFB during 2009. This is likely due to the lagoon having limited connectivity with the sea, thus preventing the entry of more marine species to the system. 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, Lady's Island Lake has been assigned a draft ecological status classification of "Moderate" based on the fish populations present.

The EPA have assigned Lady's Island Lake an overall interim draft classification of "Moderate", based on general physico-chemical elements, phytoplankton and macroalgal growths.

5. REFERENCES

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**The Central Fisheries Board
Swords Business Campus,
Swords,
Co. Dublin,
Ireland.**

**Web: www.wfdfish.ie
www.cfb.ie
Email: info@cfb.ie
Tel: +353 1 8842600
Fax: +353 1 8360060**



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