

# Lough Easky



## Sampling Fish for the Water Framework Directive - Lakes 2008



The Central and Regional  
Fisheries Boards

## **ACKNOWLEDGEMENTS**

The authors wish to gratefully acknowledge the help and co-operation of the CEO Mr. Vincent Roche, ACEO Dr. John Conneely and their staff from the North Western Regional Fisheries Board. The authors would also like to gratefully acknowledge the help and cooperation from all their colleagues in the Central Fisheries Board (CFB).

The authors would also like to acknowledge the funding provided for the project from the Department of Communications, Energy and Natural Resources for 2008.

*The report includes Ordnance Survey Ireland data reproduced under OSi Copyright Permit No. MP 007508.*

*Unauthorised reproduction infringes Ordnance Survey Ireland and Government of Ireland copyright.  
© Ordnance Survey Ireland, 2009*

## 1.1 Introduction

Lough Easky is located in the Ox Mountains, south of Dromore West, Co. Sligo (Plate 1.1 and Fig. 1.1). The lake has a surface area of 119ha, mean depth of 3m and maximum depth of 13m. The lake falls into typology class 2 (as designated by the EPA for the Water Framework Directive), i.e. shallow (mean depth <4m), greater than 50ha and low alkalinity (<20mg/l CaCO<sub>3</sub>).

Lough Easky forms part of the Ox Mountain Bogs Special Area of Conservation. Several oligotrophic lakes occur within the SAC, the largest of which is Lough Easky. Lough Easky is a stony-bottomed lake which supports aquatic vegetation typical of such oligotrophic lakes e.g. shoreweed (*Littorella uniflora*), quillwort (*Isoetes* sp.), bulbous rush (*Juncus bulbosus*), water lobelia (*Lobelia dortmanna*), common spike-rush (*Eleocharis palustris*), water horsetail (*Equisetum fluviatile*), sharp-flowered rush (*Juncus acutiflorus*) and bog pondweed (*Potamogeton polygonifolius*) (NPWS, 1997). Lough Easky historically contained brown trout, sea trout salmon and char (O'Reilly, 1998).

The lake was previously surveyed to assess its fish stocks in 1986 and 1991 by the Central Fisheries Board and the North Western Regional Fisheries Board (CFB and NWRFB, unpublished data). Brown trout was the dominant fish species recorded during both surveys, however Arctic char were recorded in the latter survey (NWRFB, *pers. comm.*). A survey in 2004 on Lough Easky, carried out by the Irish Char Conservation Group, found no record of char in the lake even though the species was recorded in the 1991 survey (Neylon, *pers. comm.*). In the first half of 2008 a small landslide was observed on the eastern shore of the lake due to high levels of rainfall. It resulted in the accumulation of silt and debris on the shore of the lake (NWRFB, *pers. comm.*).

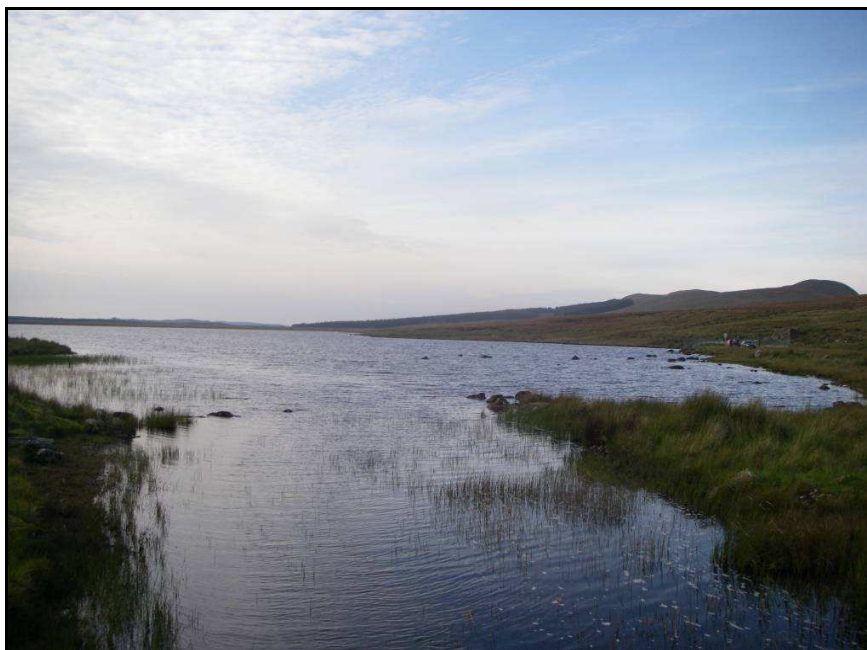
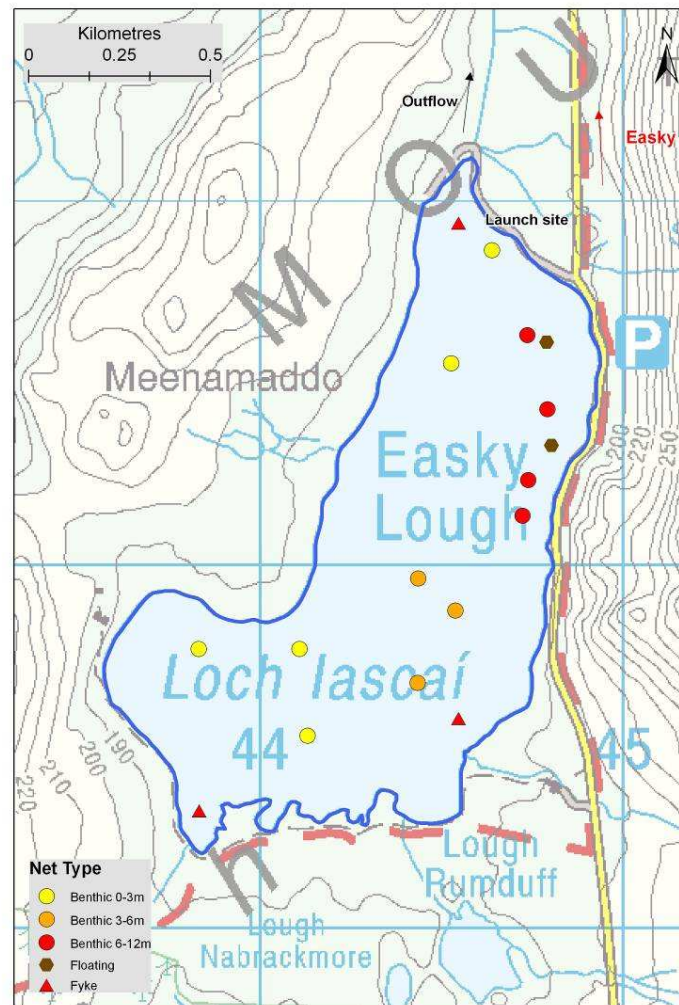


Plate 1.1. Lough Easky at the outflow





**Fig. 1.1. Location map of Lough Easky showing locations and depths of each net (outflow is indicated on map)**

## 1.2 Methods

The lake was surveyed over one night on the 24<sup>th</sup> of September 2008. A total of three sets of Dutch fyke nets, 12 benthic monofilament multi-mesh (12 panel, 5-55mm mesh size) survey gill nets (4 @ 0-2.9m, 4 @ 3-5.9m and 4 @ 6-11.9m) and two surface floating monofilament multi-mesh (12 panel, 5-55mm mesh size) survey gill nets were deployed randomly in the lake (17 sites). Survey locations were randomly selected using a grid placed over the map of the lake. A handheld GPS was used to mark the precise location of each net. The angle of each gill net in relation to the shoreline was randomised.

All fish were measured and weighed, and scales were removed from brown trout and salmon on site. Live fish were returned to the water whenever possible (i.e. when the likelihood of their survival was considered to be good). Samples of fish were returned to the laboratory for further analysis.

### 1.3 Results

#### 1.3.1 Species Richness

Two fish species were recorded on Lough Easky in September 2008. The number of each species captured by each gear type is shown in Table 1.1. A total of 163 fish were captured during the survey. Brown trout were the most common fish species encountered in the benthic gill nets. Small numbers of eels were also captured.

**Table 1.1. List of fish species recorded (including numbers captured) during the survey on Lough Easky, September 2008**

Scientific name	Common name	Number of fish captured			Total
		Benthic mono multimesh gill nets	Surface mono multimesh gill nets	Fyke nets	
<i>Salmo trutta</i>	Brown trout	125	4	22	151
<i>Anguilla anguilla</i>	Eel	0	0	12	12

#### 1.3.2 Fish abundance

Fish abundance was calculated as the mean number of fish caught per metre of net, i.e. mean CPUE. Mean CPUE for all fish species per gear type on Lough Easky are summarised in Table 1.2. Fish biomass (BPUE) was calculated as the mean weight of fish caught per metre of net (Table 1.2).

**Table 1.2. Mean CPUE (mean number of fish per metre of net) and mean BPUE (mean weight of fish per m of net) for all fish species recorded on Lough Easky, September 2008**

Gear type	Brown trout	Eels
<b>Mean CPUE (mean number of fish/m of net)</b>		
Gill nets (all)	0.307	-
Fyke nets	0.122	0.067
<b>Mean BPUE (mean weight (g) of fish/m of net)</b>		
Gill nets (all)	18.723	-
Fyke nets	5.622	27.017

#### 1.3.3 Length frequency distributions

Brown trout ranged in length from 7.0cm to 25.0cm (mean = 16.8cm) (Fig. 1.2). Eels ranged in length from 38.0cm to 84.0cm (mean = 51.6cm) (Fig. 1.3).

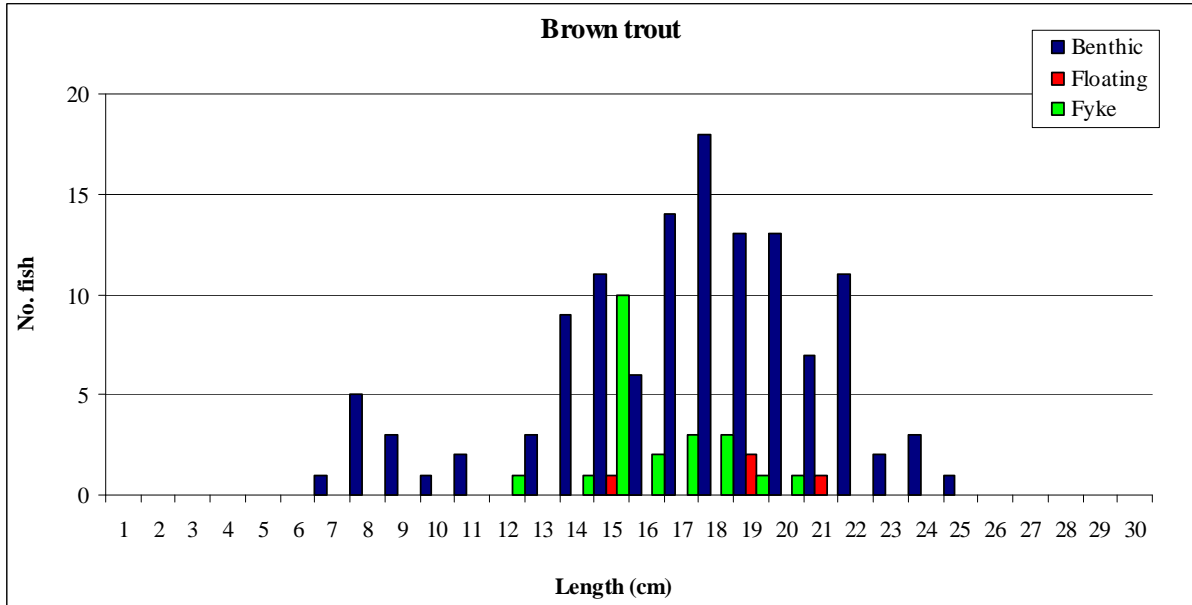


Fig. 1.2. Length frequency of brown trout captured on Lough Easky, September 2008

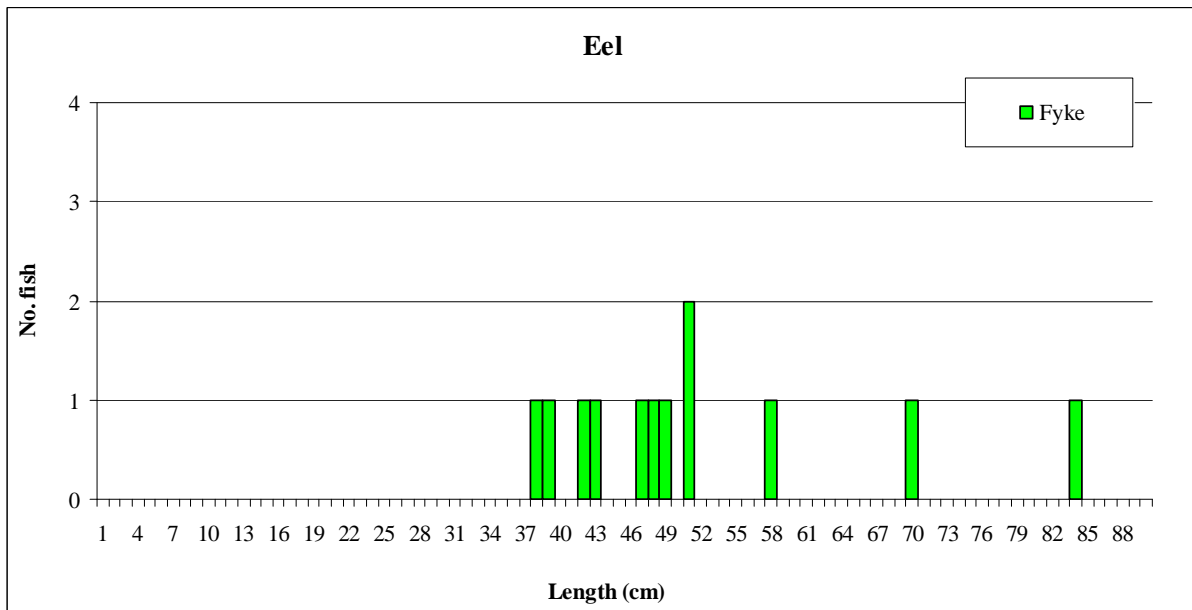


Fig. 1.3. Length frequency of eels captured on Lough Easky, September 2008

#### 1.3.4 Fish age and growth

Brown trout ranged in age from 0+ to 3+. Brown trout aged 2+ accounted for the largest proportion of the population captured in the gill nets (approximately 21%), followed by 1+ (32%) and 3+ (21%). Mean brown trout L1 was 6.5cm.

**Table 1.3. Mean brown trout length at age data (and SD) for Lough Easky, September 2008**

	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>
Mean	6.5 (1.48)	14.8 (1.68)	19.4 (1.9)
N	60	41	20
Range	3.9-10	11.8-17.8	15.9-22.6

#### 1.4 Summary

Brown trout and eel were the only fish species recorded in Lough Easky during the survey, with brown trout being the dominant species. Mean CPUE for brown trout in the lake was average when compared with other low alkalinity lakes surveyed during 2008, e.g. Lough Beagh, Co. Donegal and Lough Brin, Co. Kerry. The CPUE for eels was below average in Lough Easky compared with other lakes surveyed (Kelly *et al.*, 2009). Salmon and sea trout have also been recorded in Lough Easky in the past (O'Reilly, 1998; CFB & NWRFB, unpublished data); however, no specimens of these species were captured during this survey and may simply have been missed during the one night netting exercise due to the non-resident nature of their life cycle.

A small number of Arctic char were recorded during the 1991 survey by the CFB and NWRFB however they were not recorded in the previous 1986 survey (CFB & NWRFB unpublished data). Arctic char are a rare and threatened species listed in the Irish Red Data Book for fish as vulnerable (Whilde, 1993). The ICCG surveyed the lake in 2004 and found no record of char in the lake (Neylon, *pers. comm.*). The nets were covered with filamentous algae when recovered from the lake, which indicates a change in the ecology of the lake that is unsuitable to Arctic char, which require 'pristine' conditions in order to thrive (Western People Press Release, 2004). Algal cover of spawning gravels can inhibit oxygen exchange and can lead to an increase in the mortality rates of char eggs. The species was again absent from the species complement during the current survey which confirms that the status of the char population in the lake is now extinct. Igoe *et al.* (2003) stated that 24 out of the 70 native char populations in Ireland have probably become extinct and list the three biggest threats to the survival of char populations as eutrophication as a consequence of water quality degradation, non-native fish introductions and acidification.

Brown trout growth was similar to Lough Brin, Co. Kerry but below average in comparison with other low alkalinity lakes surveyed in 2008, e.g. Lough Caragh and Glenbeg Lake, Co. Kerry.

Classification and assigning lakes with an ecological status is a critical part of the WFD monitoring programme. It allows River Basin District managers to identify and prioritise lakes that currently fall short of the minimum "Good Ecological Status" that is required by 2015 if Ireland is not to incur penalties. A new WFD multimetric fish classification tool has been developed for the island of Ireland (Ecoregion 17) using Agri-Food and Biosciences Institute Northern Ireland (AFBINI) and CFB data (Kelly *et al.*, 2008). Using this tool and expert opinion, Lough Easky has been assigned a draft

classification of good status for fish. The EPA has assigned good status to Lough Easky in an overall interim draft classification. This is based on physico-chemical parameters and biotic elements, such as macroinvertebrates, macrophytes and fish.



## 1.5 References

- Kelly, F.L., Harrison, A., Connor, L., Allen, M., Rosell, R. and Champ, T. (2008) *FISH IN LAKES Task 6.9: Classification tool for Fish in Lakes. FINAL REPORT*. Central Fisheries Board, NS Share project.
- Kelly, F.L., Connor, L., Wightman, G., Matson, R. Morrissey, E., O'Callaghan, R., Feeney, R., Hanna, G. and Rocks, K. (2009) *Sampling fish for the Water Framework Directive – Summary report 2008*. Central and Regional Fisheries Boards report.
- Igoe, F., O' Grady, M.F., Tierney, D. and Fitzmaurice, P. (2003) Arctic Char *Salvelinus alpinus* (L.) in Ireland – A millennium review of its distribution and status with conservation recommendations. *Biology and Environment: Proceedings of the Royal Irish Academy*, **103B** (1), 9-22
- NPWS (1997) <http://www.npws.ie/en/media/Media,4135,en.pdf>
- O' Reilly, P., (1998) *Loughs of Ireland, A Flyfisher's Guide 3<sup>rd</sup> edition*. UK. Merlin Unwin Books.
- Western People Press Release (2004) <http://www.westernpeople.ie/news/story.asp?j=18490>
- Whilde, A (1993) Threatened Mammals, Birds, Amphibians and Fish in Ireland. *Irish Red Data Book 2: Vertebrates*. HMSO Belfast.

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

**Web: [www.wfdfish.ie](http://www.wfdfish.ie)  
[www.cfb.ie](http://www.cfb.ie)  
Email: [info@cfb.ie](mailto:info@cfb.ie)  
Tel: +353 1 8842600  
Fax: +353 1 8360060**



**The Central and Regional  
Fisheries Boards**