Corglass Lough

Sampling Fish for the Water Framework Directive - Lakes 2008

The Central and Regional Fisheries Boards

ACKNOWLEDGEMENTS

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1.1 Introduction

Corglass Lough is situated in the Erne catchment, north of Killeshandra, Co. Cavan. The lake has a surface area of 34ha and is relatively shallow, with a mean depth of 1.6m and a maximum depth of 6m. Corglass Lake falls into typology class 9 (as designated by the EPA for the Water Framework Directive), i.e. shallow (mean depth <4m), less than 50ha and high alkalinity (>100mg/l $CaCO_3$). Corglass Lough falls into the Lough Oughter and its associated loughs Special Area of Conservation (NPWS, 2002). The geology of the area is predominantly Lower Carboniferous Limestone.

The lake is a popular coarse fishery and has historically held a good stock of coarse fish species, including rudd, roach, perch, bream, pike, tench, roach x bream hybrids and roach x rudd hybrids (M. Fitzpatrick, *pers. comm.*). It was previously surveyed in July 2005 by the Central and Regional Fisheries Boards and the Agri-Food and Biosciences Institute Northern Ireland (AFBINI) for the NS Share "Fish in Lakes Project", with six species (plus two hybrids) being captured – perch, pike, roach, bream, tench, eels, roach x bream hybrids and roach x rudd hybrids (Kelly *et al.*, 2007). The lake has also been long-lined for eels in the past. Zebra mussels are present in the lake and are thought to have colonised post 2003 (M. Fitzpatrick, *pers. comm.*).

Plate 1.1. Retrieving a gill net on Corglass Lough

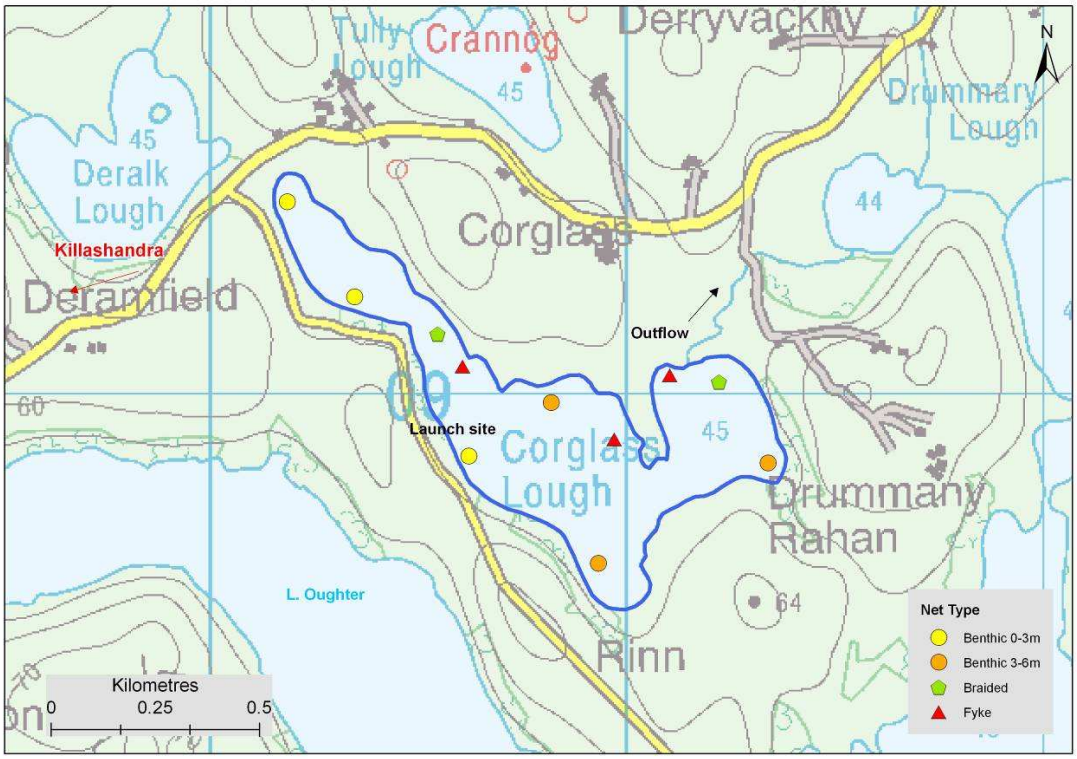

Fig. 1.1. Location map of Corglass Lough showing locations and depths of each net (outflow is indicated on map)

1.2 Methods

Corglass Lough was surveyed over two nights between the 7th and 8th of July 2008. A total of three sets of Dutch fyke nets and six benthic monofilament multi-mesh (12 panel, 5-55mm mesh size) survey gill nets (3 @ 0-2.9m, 3 @ 3-5.9m) were deployed randomly in the lake (nine sites). The netting effort was supplemented using two benthic braided survey gill nets (62.5mm mesh knot to knot) at two additional sites. Survey locations were similar to those from the 2005 survey. 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, apart from perch, were measured and weighed on site and scales were removed from roach, bream, hybrids and pike. 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*

A total of five fish species and one hybrid were recorded on Corglass Lough in July 2008. The number of each species captured by each gear type is shown in Table 1.1. A total of 493 fish were

captured during the survey. Perch were the most common fish species encountered in the benthic gill nets, followed by roach. This dominance has not changed since 2005. Eels dominated the fyke net catches in the 2005 and 2008 surveys.

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

Scientific name	Common name	Number of fish captured			
		Benthic mono multimesh gill nets	Benthic braided gill nets	Fyke nets	Total
Perca fluviatilis	Perch	295	0	2	297
Rutilus rutilus	Roach	152	0	0	152
	Roach x bream hybrids	31	0	0	31
Esox lucius	Pike	2	1	0	3
Abramis brama	Bream	1	0	0	1
Anguilla anguilla	Eel	0	0	9	9

1.3.2 *Fish abundance*

Fish abundance was calculated as the mean number of fish caught per metre of net, i.e. mean CPUE. Fish biomass was calculated as the mean weight of fish caught per metre of net, i.e. mean BPUE. A summary of CPUE and BPUE data for each species and gear type is shown in Table 1.2.

Table 1.2. Mean CPUE and mean BPUE of fish captured on Corglass Lough, July 2008

Gear type	Perch	Roach	Pike	Roach x bream hybrids	Bream	Eel
Mean CPUE (mean number of fish/m of net)						
Gill nets (all)	1.229	0.633	0.013	0.129	0.004	-
Fyke nets	0.011	0	0	0	0	0.05
Mean BPUE (mean weight (g) of fish/m of net)*						
Gill nets (all)	22.546	39.176	24.300	9.525	11.667	-
Fyke nets	0.211	0	0	0	0	11.344

* In the rare occasion where biomass data was unavailable for an individual fish, this was determined from a length/weight regression for that species

1.3.3 *Length frequency distributions*

Length frequencies for perch, roach and roach x bream hybrids are shown in Figures 1.2, 1.3 and 1.4 respectively. In 2008, perch ranged in length from 4.1cm to 22.9cm (Fig. 1.2), compared with a range of 4.0cm to 26.0cm in 2005. In 2008, roach ranged in length from 6.0cm to 28.5cm (Fig. 1.3), compared with a range of 6.0cm to 26.5cm in 2005. Roach x bream hybrids ranged in length from 7.2cm to 36.2cm (Fig. 1.4). Eels ranged in length from 41.0cm to 62.0cm. Three pike had lengths between 39.0cm and 78.5cm, and one bream at 53.4cm was also captured.

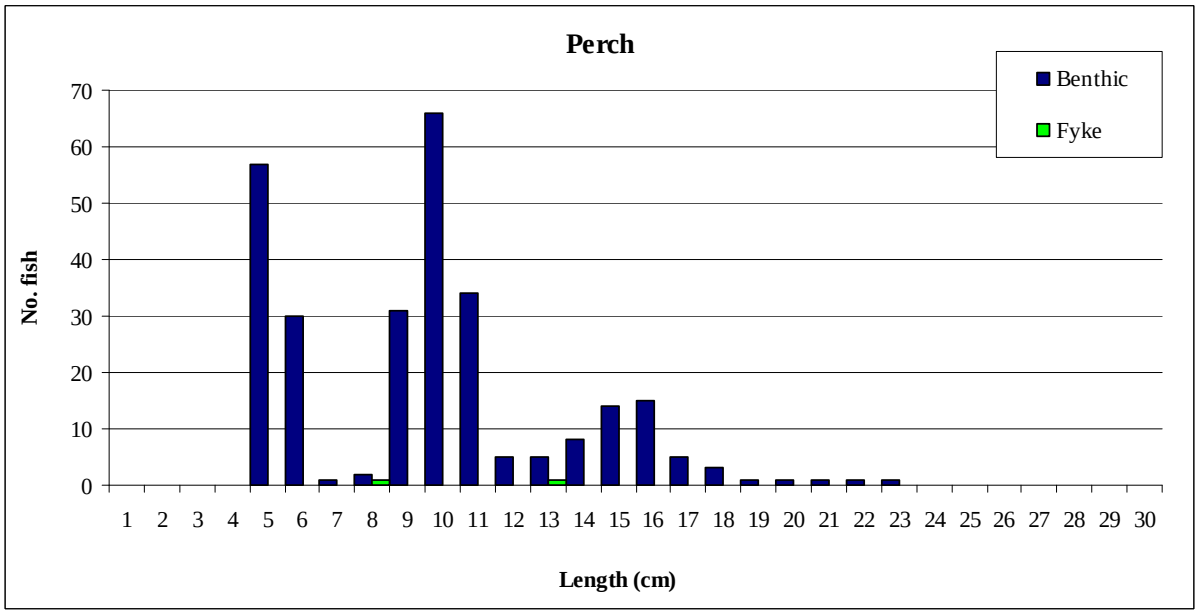

Fig. 1.2. Length frequency of perch captured on Corglass Lough, July 2008

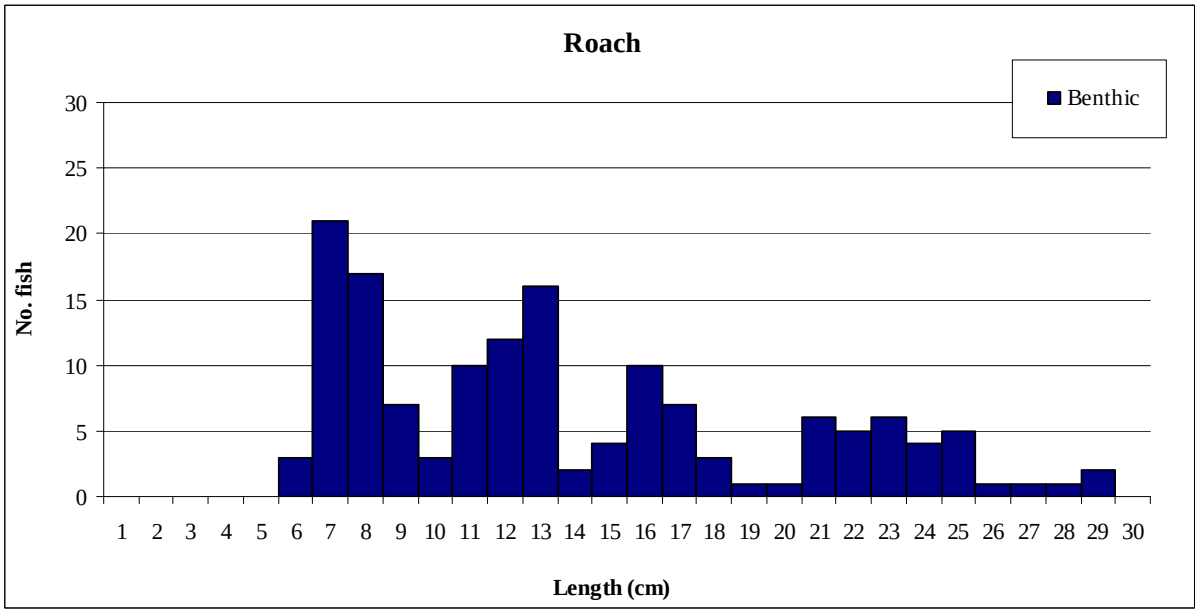

Fig. 1.3. Length frequency of roach captured on Corglass Lough, July 2008

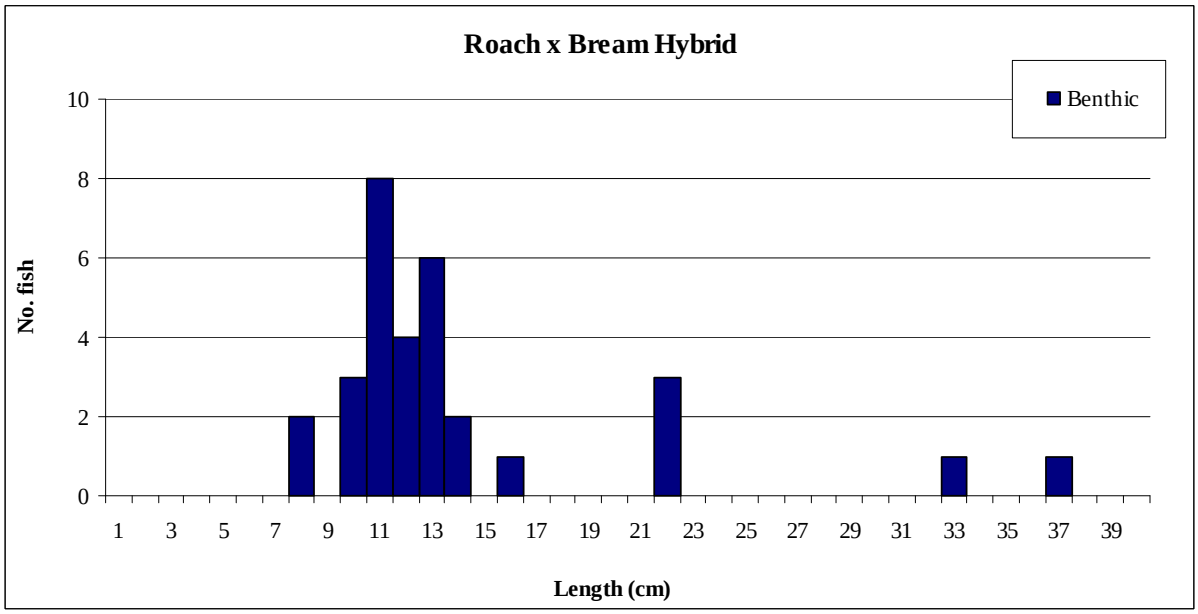

Fig. 1.4. Length frequency of roach x bream hybrids captured on Corglass Lough, July 2008

1.3.4 *Fish age and growth*

Perch were aged 0+ to 5+. Mean perch L1 was 6.5cm (Table 1.3). During the 2005 survey the ages of roach ranged from 2+ to 7+. In the 2008 survey, the roach captured had a larger range which spanned from 1+ to 9+ (Table 1.4). Mean roach L1 was 3.9cm in 2008 and 2.7cm in 2005. Pike ranged in age from 2+ to 4+ and roach x bream hybrids ranged from 2+ to 11+. The bream captured in 2005 ranged from 3+ to 9+. In 2008, one bream aged 11+ was present.

Table 1.3. Mean (SD) perch length at age (cm) for Corglass Lough, July 2008

	L_1	L_2	L_3	L_4	L_5
Mean	6.5 (0.65)	11.2 (1.58)	14.8 (3.2)	17.8 (0.73)	19.8
N	45	28	5	3	1
Range	5.4-8.2	8.8-15.0	10.6-19.0	17.1-18.5	19.8

Table 1.4. Mean (SD) roach length at age (cm) for Corglass Lough, July 2008

	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9
Mean	3.9 (0.42)	7.5 (0.74)	11.3 (1.28)	15.1 (1.19)	18.5 (1.0)	21.4 (1.21)	24.5 (1.52)	26.5 (0.21)	27.9
N	49	42	32	27	21	16	6	2	1
Range	3.0-4.7	6.0-8.7	8.4-13.4	13.1-17.5	17.0-19.9	19.4-23.9	22.5-26.8	26.4-26.7	27.9

1.4 Summary

Corglass Lough is naturally eutrophic. Results show that, although fish are highly abundant in the lake, their rate of growth is relatively slow. Unfortunately a large colony of zebra mussels has become established in the lake.

In 2005, a total of six species and two hybrids were captured during the survey (perch, pike, roach, bream, tench, eels, roach x bream hybrids and roach x rudd hybrids). In 2008, this number had dropped to five species and one hybrid (perch, pike, roach, bream, eels and roach x bream hybrids). Historically, Corglass Lough has held a population of rudd; however this population appears to have disappeared completely. In 2005, roach x rudd hybrids were captured, along with roach, but no true rudd were detected. In 2008, roach were abundant, but none were identified as roach x rudd hybrids. It would appear that the stock of rudd once present in the lake has declined to the point of extinction through interbreeding with the abundant roach population present. Tench were also missing in the 2008 survey, having previously been captured in the 2005 survey; however this is not entirely unexpected, as this fish species is often only captured in small numbers during lake surveys (only three individuals were captured during the 2005 survey) and so could have been missed by the most recent survey in 2008.

Perch was the dominant fish species in Corglass Lough, followed by roach and roach x bream hybrids. Perch growth was quite fast in the first year but slowed down thereafter, and this was the second slowest growth rate when compared with other high alkalinity lakes surveyed during 2008, e.g. Lough Nanoge. The survey also showed that Corglass Lough had the highest mean CPUE for perch when compared with the other high alkalinity lakes surveyed, e.g. Lough Egish and Lough Sheelin (Kelly *et al.*, 2009). This is in contrast to the 2005 survey, where the CPUE for perch was found to be low when compared with other high alkalinity lakes surveyed in the study area, e.g. Lough Egish, Deralk Lake and Bawn Lake.

Roach growth rates in Corglass Lough were slow compared with other high alkalinity lakes that contained roach, e.g. Lough Sheelin (Kelly *et al*., 2009). This trend was also detected during the 2005 survey when roach growth rates were also found to be slow when compared with other high alkalinity lakes surveyed in the area, e.g. Derrybrick Lake., Lough Egish and Gortnawinny Lake. However, the mean CPUE for roach was second highest when compared with other high alkalinity lakes surveyed during 2008. Only Cavetown Lough had a higher CPUE (Kelly *et al*., 2009).

There was also a healthy population of roach x bream hybrids in the lake. Pike were also present, but they had a lower mean CPUE compared with other high alkalinity lakes, e.g. Templehouse Lake (Kelly *et al.*, 2009).

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 AFBINI and CFB data (Kelly *et al*., 2008). Using this tool and expert opinion, Corglass Lake has been assigned a draft classification of moderate. This is the same status class that was assigned to the lake in 2005.

The EPA has assigned moderate status to Corglass Lough in an interim draft classification. This is based on physico-chemical parameters and biotic elements, such as macroinvertebrates and macrophytes.

1.5 References

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