

Lough Talt



Sampling Fish for the Water Framework Directive - Lakes 2008



The Central and Regional
Fisheries Boards

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1.1 Introduction

Lough Talt (Plate 1.1 and Fig. 1.1) is situated in Co. Mayo in the Ox Mountains, between Tobercurry and Ballina in the Moy catchment. The lake has a surface area of 97ha and a maximum depth of approximately 40m. The lake falls into typology class 8 (as designated by the EPA for the Water Framework Directive), i.e. deep (mean depth >4m), greater than 50ha and moderate alkalinity (20-100mg/l CaCO₃).

Lough Talt forms part of the Lough Hoe Bog Special Area of Conservation (NPWS, 1997). The shores of Lough Talt are home to the rare semi aquatic snail *Vertigo geyeri*. This endangered species is found at very few sites around Ireland and is listed on Annex II of the EU Habitats Directive. This oligotrophic lake is also home to a population of white-clawed crayfish (*Austropotamobius pallipes*), a species also listed on Annex II of the EU Habitats Directive (NPWS, 1997). Lough Talt is historically recognized as a good brown trout fishery and also holds an Arctic char population, a rare and threatened species listed in the Irish Red Data Book for fish as vulnerable (NPWS, 1997; O'Reilly, 1998; Whilde, 1993).

The Northwestern Regional Fisheries Board (NWRFB) undertook a fish stock survey of Lough Talt during 1986. Good numbers of small trout (up to 540g in weight; average 226g), small numbers of perch (up to 880g in weight; average weight 510g) and two Arctic char (average weight = 255g) were recorded (NWRFB, unpublished data). A fish stock survey carried out in November 2003, by the Irish Char Conservation Group (ICCG), found Arctic char still to be present in the lake (Western People Press release, 2004). Even though this is a good sign for the lake, substantial algal growths were noted on the gravels used by char for spawning. In light of these findings the lake was resurveyed in 2004 and on that occasion not only were high levels of algae discovered but a substantial number of dead char eggs were found where the char had spawned. Despite this algal growth, char did spawn and a number of age classes were present in the lake (Western People Press release, 2004). Lough Talt contains the sole remaining population of char in the Moy catchment.



Plate 1.1. Lough Talt

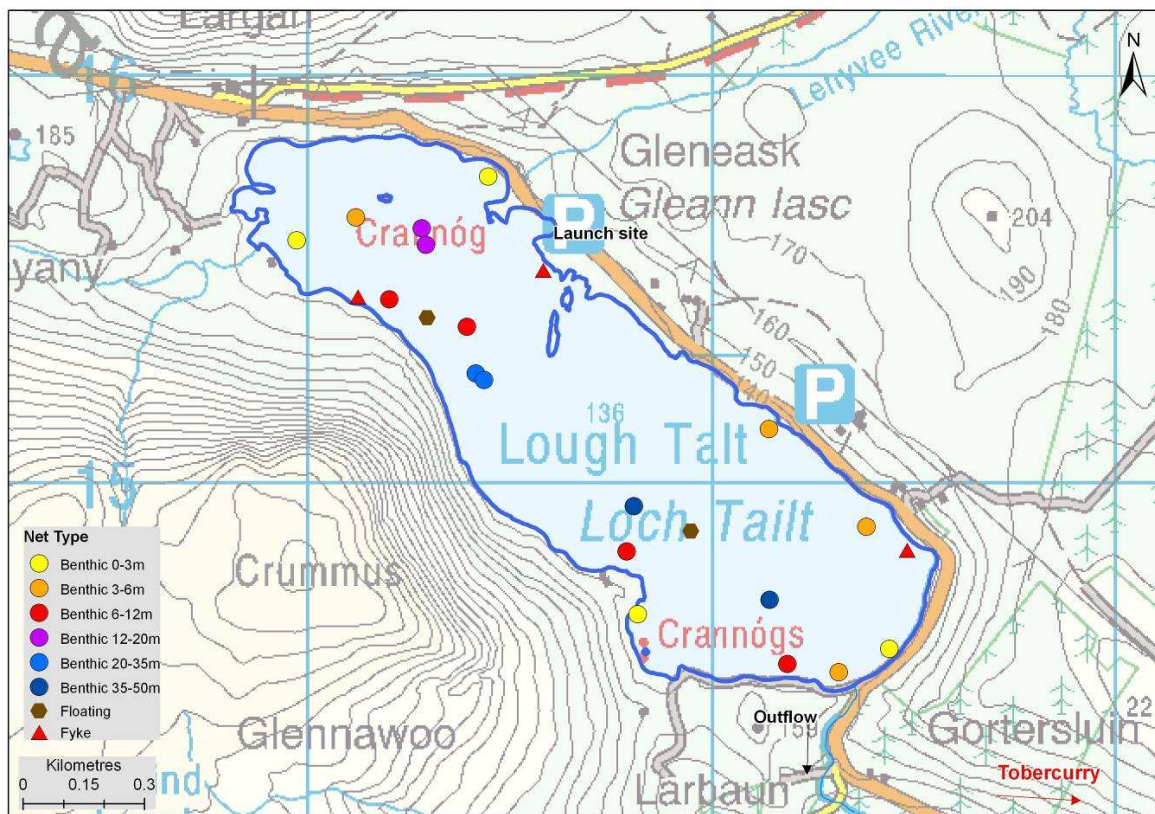


Fig. 1.1. Location map of Lough Talt showing locations and depths of each net (outflow is indicated on map)

1.2 Methods

The lake was surveyed over two nights between the 22nd and 24th of September 2008. A total of three sets of Dutch fyke nets, 18 benthic monofilament multi-mesh (12 panel, 5-55mm mesh size) survey gill nets (4 @ 0-2.9m, 4 @ 3-5.9m, 4 @ 6-11.9m, 2 @ 12-19.9m, 2 @ 20-34.9m and 2 @ 35-50m) and two surface floating monofilament multi-mesh (12 panel, 5-55mm mesh size) survey gill nets were deployed randomly in the lake (23 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 apart from perch were measured and weighed and scales were removed from brown trout 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

A total of five fish species were recorded on Lough Talt in September 2008. A list of the species encountered and numbers captured by each gear type is compiled in Table 1.1. A total of 134 fish were captured during the survey. Brown trout were the most common fish species encountered in the benthic gill nets. A small number of Arctic char were also captured in the gill nets. Eels, perch and 3-spined stickleback were present in the lake.

Table 1.1. List of fish species recorded (including numbers captured) during the survey on Lough Talt, 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	86	2	2	90
<i>Salvelinus alpinus</i>	Arctic char	12	0	0	12
<i>Perca fluviatilis</i>	Perch	28	0	0	28
<i>Anguilla anguilla</i>	Eel	0	0	3	3
<i>Gasterosteus aculeatus</i>	3-spined stickleback	1	0	0	1

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 (mean number of fish per m of net) and mean BPUE (mean weight of fish per m of net) for all fish species recorded on Lough Talt, September 2008

Gear type	Brown trout	Artic char	Perch	Eel	3-spined stickleback
Mean CPUE (mean number of fish/m of net)					
Gill nets (all)	0.147	0.020	0.047	-	0.002
Fyke nets	0.011	0.000	0.000	0.017	0.000
Mean BPUE (mean weight (g) of fish/m of net)					
Gill nets (all)	18.667	1.497	8.838	-	0.007
Fyke nets	0.417	0.000	0.000	11.067	0.000

* 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

Brown trout ranged in length from 13.3cm to 34.0cm. (mean = 21.7cm) (Fig. 1.2). Perch ranged in length from 9.8cm to 35.5cm (mean = 20.3cm) (Fig. 1.3). Artic char had measured lengths ranging from 7.5cm to 23.3cm (Fig. 1.4). Eel lengths ranged from 54.0cm to 77.0cm. A single 3-spined stickleback was captured measuring 4.5cm.

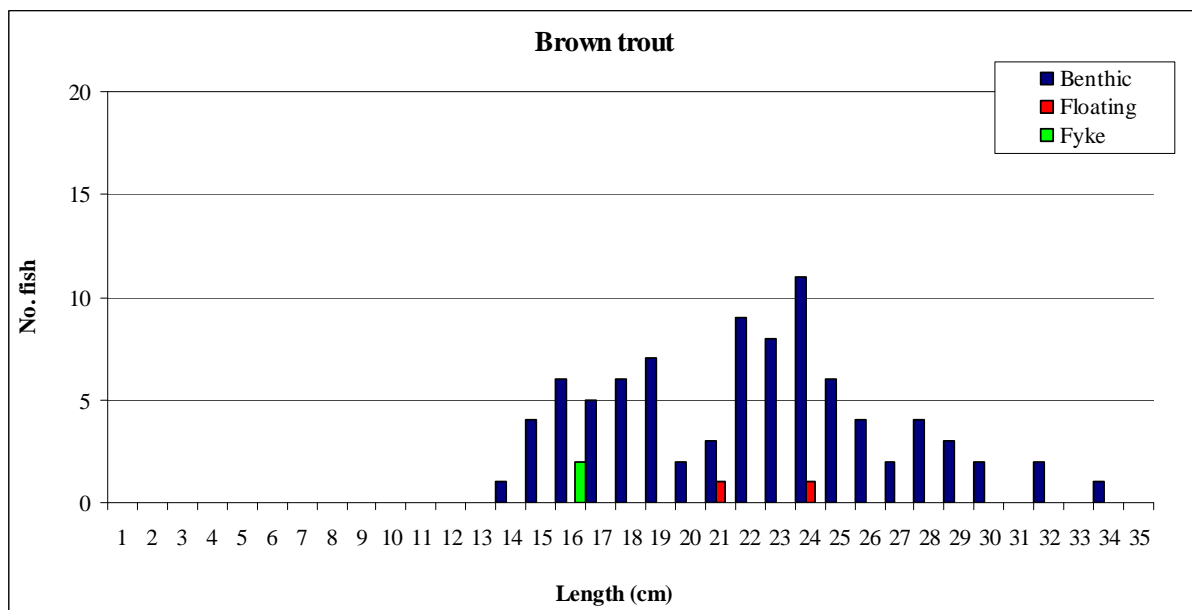


Fig. 1.2. Length frequency of brown trout captured on Lough Talt, September 2008

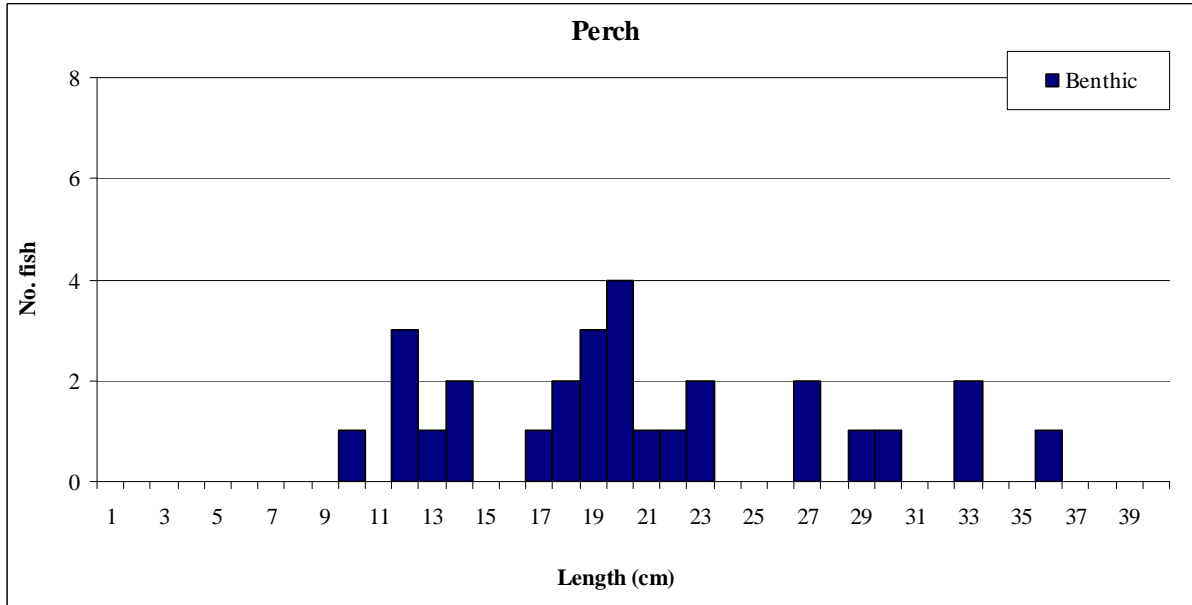


Fig. 1.3. Length frequency of perch captured on Lough Talt, September 2008

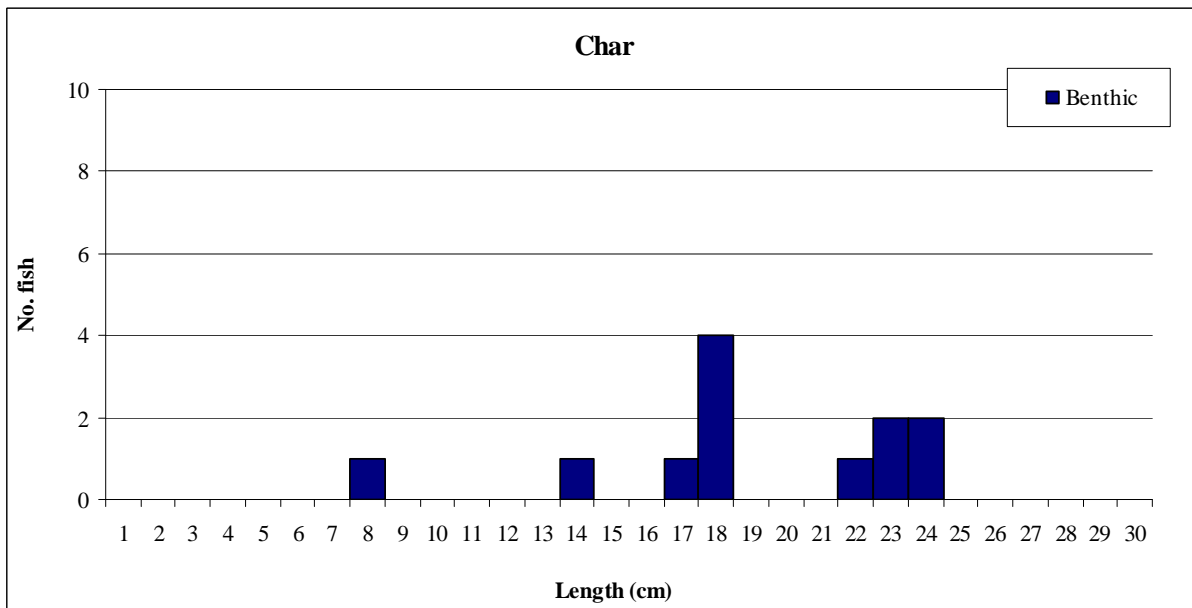


Fig. 1.4. Length frequency of arctic char captured on Lough Talt, September 2008

1.3.4 Fish age and growth

Brown trout ranged in age from 1+ to 3+ (Table 1.3). Brown trout aged 3+ accounted for the largest proportion of the population captured in the gill nets (approximately 44%), followed by 1+ (32%) and 2+ (23%). The mean brown trout L1 was 7.1cm.

Perch ranged in age from 1+ to 7+. Aging and length frequency analyses revealed that 2+ was the dominant age class in the sample of perch taken from the lake. The mean perch L1 was 5.0cm. Arctic char ranged in age from 0+ to 3+.

Table 1.3. Mean (SD) brown trout length at age for Lough Talt, September 2008

	L ₁	L ₂	L ₃
Mean	7.1 (0.82)	16.1 (1.86)	21.2 (1.97)
N	25	21	11
Range	5.1-8.8	12.6-19.7	18.5-24.5

Table 1.3. Mean (SD) perch length at age for Lough Talt, September 2008

	L ₁	L ₂	L ₃	L ₄	L ₅	L ₆	L ₇
Mean	5.0 (1.01)	11.8 (1.39)	18.5 (3.05)	26 (1.27)	30 (0.41)	31.8	33.9
N	14	8	5	3	3	1	1
Range	4 -7.3	9.6-14.3	15.2-22.5	24.8-27.3	29.5-30.3	31.8-31.8	33.9-33.9

1.4 Summary

Brown trout was the dominant species in Lough Talt, followed by perch, Arctic char, 3-spined stickleback and eels. The mean CPUE for brown trout in the lake was average when compared with other moderate alkalinity lakes, e.g. Lough Fern and Lough Owel. The CPUE for perch was the lowest of all the lakes sampled. Lough Talt had the higher mean CPUE for arctic char out of the two moderate alkalinity lakes sampled that contained char during 2008. Lough Talt had one of the lowest mean CPUEs for eels when compared with other moderate alkalinity lakes surveyed (Kelly *et al.*, 2009)

The brown trout in Lough Talt displayed an average growth when compared with other moderate alkalinity lakes surveyed in 2008, e.g. Lough Gill and Carrowmore Lake (Kelly *et al.*, 2009). Brown trout growth was relatively fast between L1 and L2, but slowed thereafter. The oldest brown trout found in the survey was 3+. Perch growth was above average for moderate alkalinity lakes surveyed in 2008 (Kelly *et al.*, 2009). The oldest perch recorded was 7+. Young of the year Arctic char were present in the lake indicating that the species continue to spawn successfully in the lake.

It is important that the fish population in Lough Talt should be monitored closely due to the current practice of water abstraction. Duration of drawdown and extent of exposure will determine the impact on macroinvertebrates, lake productivity and the availability and type of food for fish (Igoe and Hammar, 2004). Water level fluctuations are particularly detrimental to species such as *Gammarus* sp. that are an important food base for trout (Igoe, *pers. comm.*). The lowering of water levels as a consequence of water abstraction can also be detrimental to the spawning success of resident fish

populations that may utilise shallow, gravelly lake margins as spawning substrate in the absence of suitable inflowing streams. In the case of Lough Talt, however, this is unlikely to be a major issue, as there are two inflowing streams and one outflowing stream that may potentially be utilised by spawning fish. Assessing/monitoring spawning activity in these streams would be useful to establish the importance (if any) of the littoral lake area as spawning habitat. An appropriate water abstraction management regime needs to take into account the spawning times and ova incubating period of the resident brown trout population in order to prevent egg desiccation

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 1) using Agri-Food and Biosciences Institute Northern Ireland (AFBINI) and CFB data (Kelly *et al.*, 2008). Using this tool and expert opinion, Lough Talt has been assigned a draft classification of good status for fish. The EPA has assigned high status to Lough Talt in an overall 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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