

Lough Nasnahida



Sampling Fish for the Water Framework Directive - Lakes 2009



The Central and Regional
Fisheries Boards

ACKNOWLEDGEMENTS

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1.1 Introduction

Lough Nasnahida (Plate 1.1, Fig. 1.1) is located in western Donegal, approximately 10km from the town of Dungloe, near Doochary. It is a small oligotrophic lake on the Owenamarve system, situated at an altitude of 189m a.s.l., with an approximate area of 12.1ha and a maximum depth of 11m. It is located within the Cloghernagore Bog and Glenveagh National Park Special Area of Conservation (SAC). This is a particularly large SAC located in north-west Donegal containing many different habitats ranging from exposed rock and scree mountains to blanket bogs, lakes and rivers (NPWS, 2009).

The lake is not heavily fished and appears to be in a natural state with good spawning streams (Gerry McCafferty NRFB, *pers. comm.*) The lake is categorised as typology class 1 (as designated by the EPA for the purposes of the Water Framework Directive), i.e. shallow (<4m), less than 50ha and low alkalinity (<20 mg/l CaCO₃).



Plate 1.1. Lough Nasnahida

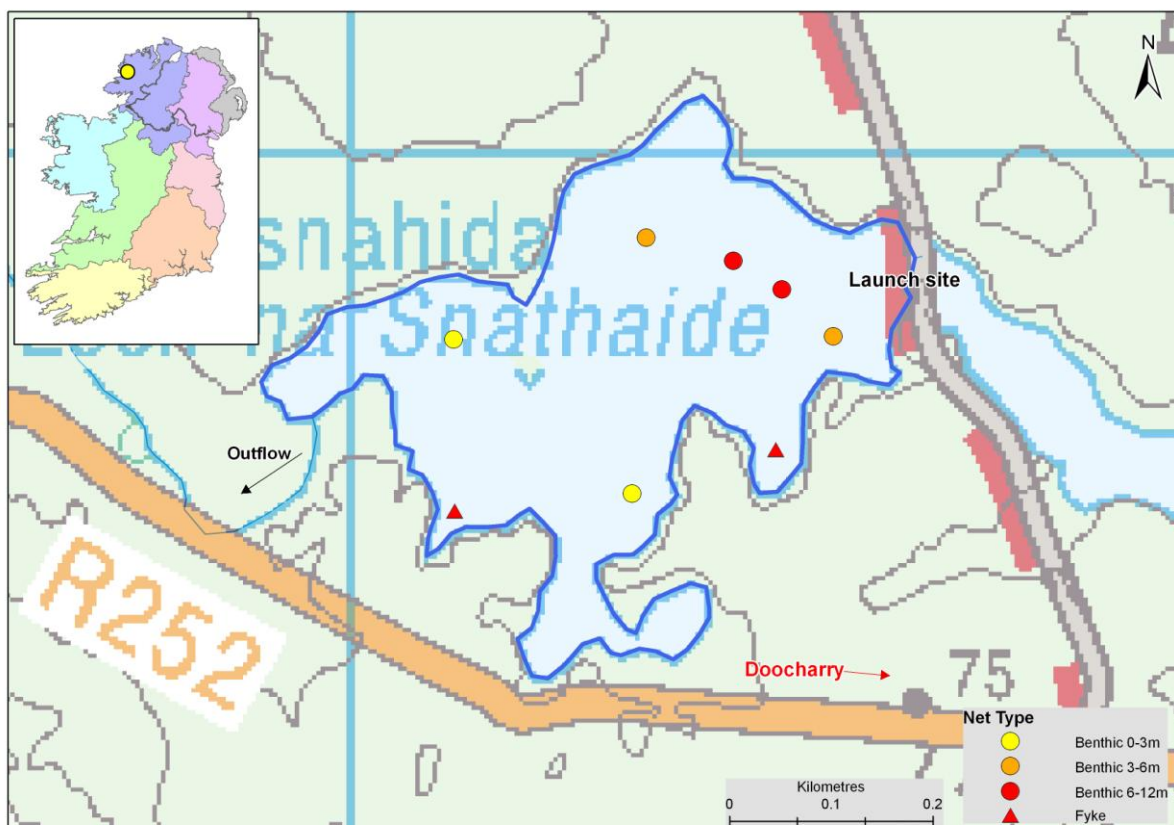


Fig. 1.1. Location map of Lough Nasnahida showing locations and depths of each net (outflow is indicated on map)

1.2 Methods

Lough Nasnahida was surveyed over one night on the 11th August 2009. A total of two sets of Dutch fyke nets and six benthic monofilament multi-mesh (12 panel, 5-55mm mesh size) CEN standard survey gill nets (2 @ 0-2.9m, 2 @ 3-5.9m and 2 @ 6-11.9m) were deployed randomly in the lake (8 sites). Survey locations were randomly selected within each depth zone using a grid placed over a 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 on site and scales were removed from all brown trout. 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 two fish species were recorded on Lough Nasnahida during the survey, with 68 fish being captured (Table 1.1). Brown trout was the most abundant fish species recorded. Two eels were captured in the fyke nets.

Table 1.1. List of fish species recorded (including numbers captured) during the survey on Lough Nasnahida, August 2009

Scientific name	Common name	Number of fish captured		
		Benthic mono multimesh gill nets	Fyke nets	Total
<i>Salmo trutta</i>	Brown trout	63	3	66
<i>Anguilla anguilla</i>	European eel	0	2	2

1.3.2 Fish abundance

Fish abundance (mean CPUE) and biomass (mean BPUE) were calculated as the mean number/weight of fish caught per metre of net. For all fish species except eel, CPUE/BPUE is based on all nets, whereas eel CPUE/BPUE is based on fyke nets only. Mean CPUE and BPUE for all fish species are summarised in Table 1.2.

The differences in the mean brown trout CPUE between Lough Nasnahida and three other similar lakes were assessed and although the mean CPUE was higher for Lough Nasnahida this was not statistically significant (Fig. 1.2).

Table 1.2. Mean (S.E.) CPUE and BPUE for all fish species captured on Lough Nasnahida, August 2009

Scientific name	Common name	
		Mean CPUE
<i>Salmo trutta</i>	Brown trout	0.269 (0.080)
<i>Anguilla anguilla</i>	European eel	0.017 (0.017)
		Mean BPUE
<i>Salmo trutta</i>	Brown trout	15.121 (4.466)
<i>Anguilla anguilla</i>	European eel	3.900 (3.900)

* On the rare occasion where biomass data was unavailable for an individual fish, this was determined from a length/weight regression for that species. Standard error is displayed in brackets.

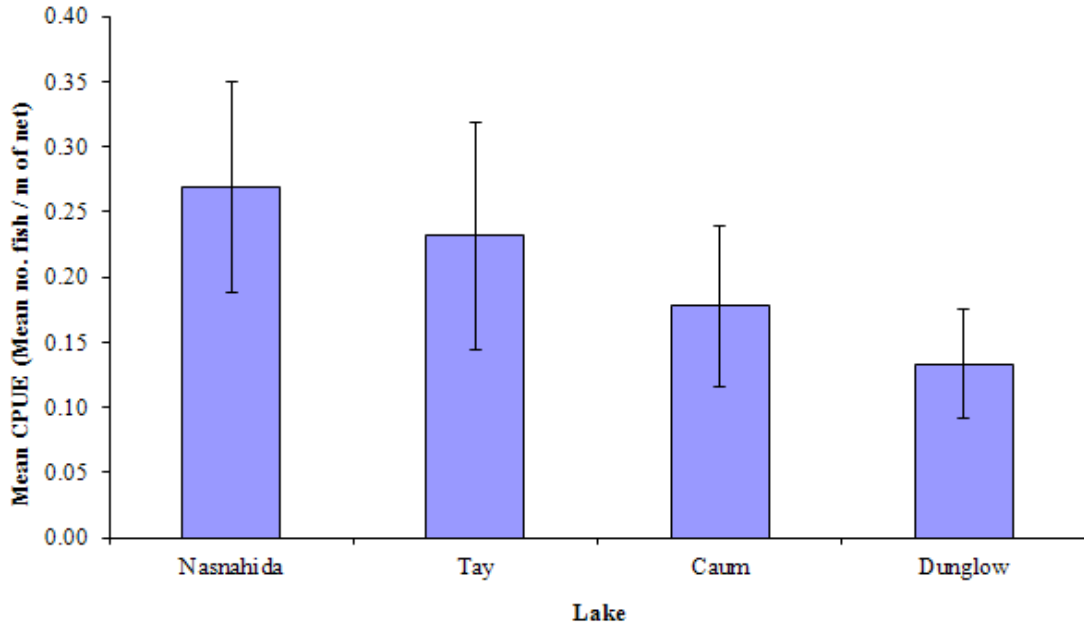


Fig. 1.2. Mean (\pm S.E.) brown trout CPUE in four lakes surveyed during 2009

1.3.3 Length frequency distributions

Brown trout ranged in length from 9.8cm to 24.8cm (mean = 16.1cm) (Fig. 1.3). Eels ranged in length from 49.0cm to 53.0cm.

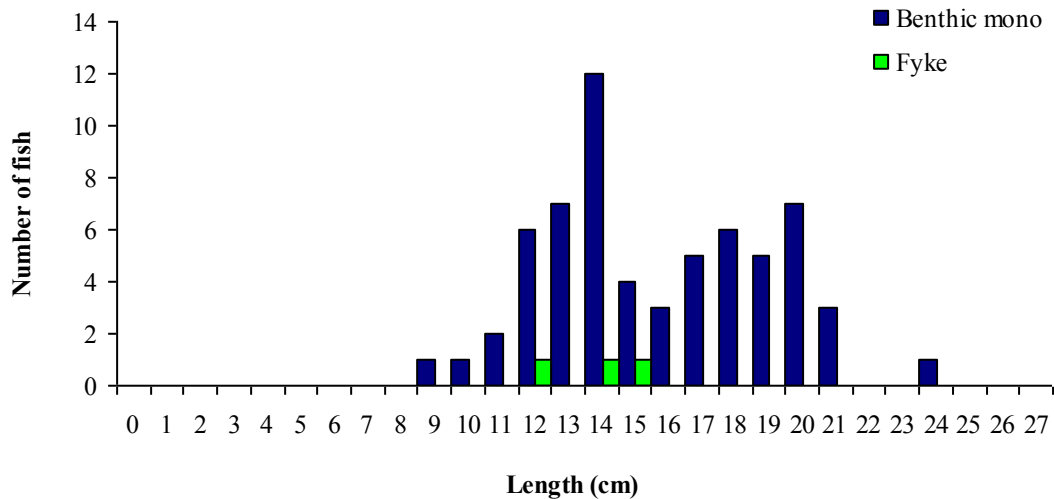


Fig. 1.3. Length frequency of brown trout (n=66) captured on Lough Nasnahida, August 2009

1.3.4 Fish age and growth

Three age classes of brown trout were present, ranging from 0+ to 3+, with a mean L1 of 6.5cm (Table 1.3).

Table 1.3. Mean (\pm SE) brown trout length at age for Lough Nasnahida, August 2009

	L₁	L₂	L₃
Mean	6.5 (0.2)	13.5 (0.3)	17.9 (0.3)
N	57	39	15
Range	3.3-10.6	9.2-16.8	15.7-20.6

1.4 Summary

There were only two fish species recorded in Lough Nasnahida, brown trout and eel. Brown trout was the dominant species in terms of both abundance (CPUE) and biomass (BPUE).

The mean brown trout CPUE in Lough Nasnahida was higher than the mean CPUE from other similar lakes; however, these differences were not statistically significant.

Brown trout ranged in age from 0+ to 3+, indicating reproductive success in each of the previous four years.

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 WFD multimetric fish classification tool has been developed for the island of Ireland (Ecoregion 17) using CFB and Agri-Food and Biosciences Northern Ireland (AFBINI) data generated during the NSSHARE Fish in Lakes project (Kelly *et al.*, 2008). Using this tool, Lough Nasnahida has been assigned an ecological status classification of Good based on the fish populations present.

The EPA has assigned an overall status of Good to Lough Nasnahida in an 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, NSSHARE project.

NPWS (2009) *Site synopsis: Cloghernagore Bog and Glenveagh National Park. Site code: 002047.* Site Synopsis report, National Parks and Wildlife Service.

**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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