A Preliminary Synopsis of the WFD Surveillance Monitoring Fish Stock Survey on Lough Mask, June 2009

1.1 Introduction

Lough Mask is the sixth largest lake in Ireland with a surface area of approximately 8218ha. It is situated north of Lough Corrib close to Castlebar, Claremorris, Ballinrobe and Westport. The lake is 16 kilometres in length and 6.4 kilometres in width (O'Reilly 1998). The underlying geology is Carboniferous limestone, with areas of shale and sandstone (NPWS, 2009). The main inflowing rivers into Lough Mask are the Cloon, Robe, Owenbrin, Finny, Glensaul, Glentraig and Keel (the outflowing stream from Lough Carra). Lough Mask is generally a shallow lake with a mean depth of 5m. The shallowest area of the lake is along the eastern shore and it gradually gets deeper towards the western shore with a maximum depth of 57m occurring in a long narrow trench in the north western and western shore of the lake (NPWS, 2009).

The waters of Lough Mask are noted for its populations of brown trout, ferox trout and salmon. It also holds populations of pike and perch (Anon, 2009). Arctic char populations have been recorded from Lough Mask (Igoe *et al.* 2001). The lake is categorised as typology class 12 for the purposes of the WFD (as designated by the EPA), i.e. deep (>4m), greater than 50ha and highly alkaline (>100mg/l CaCO3).

Plate 1.1: Lough Mask

1.2 Methods

The lake was surveyed over seven nights between the 8th and the 17th of June 2009. A total of nine sets of Dutch fykes, 66 benthic monofilament survey gill nets in seven depth zones (10 @ 0-2.9m, 10 @ 3-5.9m, 10 @ 6-11.9m, 10 @) 12-19.9m, 10 @ 20-34.9m, 10 @ 35-49.9m and 6 @ 50-74.9m) and 20 surface floating survey gill nets were deployed randomly in the lake (95 sites). The netting effort was supplemented using 20 benthic braided (62.5mm mesh knot to knot) survey gill nets (20 additional sites). Survey locations were randomly selected using a grid placed over the map of the lake. Portable GPS instruments were 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 trout, roach, bream and pike. Where possible, live fish were returned to the water when the likelihood of their survival was considered to be good. Samples of fish were retained for further analysis.

Plate 1.2 Char recorded on Lough Mask

1.3 Results

1.3.1 Species Richness

A total of seven fish species were recorded on Lough Mask during the survey. A list of the fish species encountered and numbers captured by each gear type is compiled in Table 1.1. A total of 962 fish were captured during the survey. Perch were the most common fish species encountered in the

benthic gill nets followed by roach. Small numbers of brown trout and char were captured in the gill nets. Eels were also captured during the survey.

Table 1.1: List of fish species recorded (including numbers captured) during the survey on Lough Mask, June 2009

Scientific names	Common names	Number of fish captured				
		Benthic monofilament gill nets	Benthic braided gill nets	Surface gill nets	Dutch fykes	Total
Salmo trutta	Brown trout	26	6	5	1	38
Salvelinus alpinus	Char	29	0	1	0	30
Perca fluviatilis	Perch	624	4	0	7	635
Rutlius rutilus	Roach	176	52	2	0	230
Esox lucius	Pike	1	6	0	0	7
Abramis brama	Bream	1	13	0	0	14
Anguilla anguilla	Eel	0	0	0	8	8

1.3.2 *Fish abundance*

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

Table 1.2: Mean CPUE (mean number of fish per m of net) on Lough Mask, June 2009

	Mean CPUE (mean number of fish/m of net)						
Gear type	**Brown trout**	**Char**	**Perch**	**Roach**	**Pike**	**Bream**	**Eel**
Gill nets (all)	0.011	0.009	0.197	0.074	0.002	0.004	/
Fykes	0.001	/	0.012	0	0	0	0.014

1.4 Further work

A hydroacoustic survey was carried out on Lough Mask over three days, following four days of setup and training, using two Simrad EY60 portable scientific echosounders with split beam transducers, i.e. two horizontal (1 x 120kHz and 1 x 200kHz) and two vertical transducers (1 x 120kHz and 1 x 200kHz) (Plates 1.3 and 1.4). A total of 25 transects were carried out at a distance of 500 metres apart. This data will be analysed in the winter of 2009/2010 after the fieldwork season has been completed.

Plate 1.3: Hydroacoustic boat with two transducers (horizontal and vertical) mounted on the port side

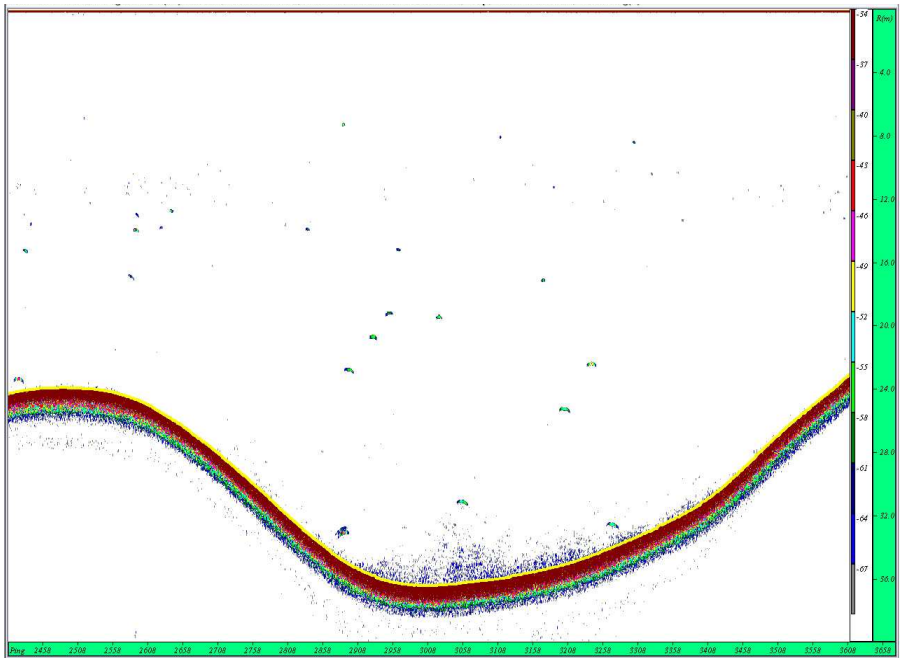

Plate 1.4: A typical output from the 200kHz vertical transducer

All fish apart from perch were measured and weighed and scales were removed from brown trout, bream, pike and roach on site. Perch will be measured and weighed and opercular bones will be removed in the laboratory and fish will be aged. A water sample was taken; the chemical results and age analysis will be available in due course. A more detailed report will be available in 2010.

1.5 References

Anon (2009) http://www.irishfisheries.com/waterways.asp?P=3&W=29

Igoe, F., O'Grady, M., Byrne, C., Gargan, P., Roche, W. and O'Neill, J. (2001) Evidence for the recent extinctions of two Arctic charr *Salvelinus alpinus* (L.) populations in the west of Ireland. *Aquatic Conservation; Marine and Freshwater Ecosystems*, **11**, 77 to 92.

NPWS (2009) http://www.npws.ie/en/media/Media,4107,en.pdf

O'Reilly P (1998) *Loughs of Ireland. A Flyfisher's Guide*. 3rd edition. Merlin Unwin Books.