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National Research Survey Programme

Lakes 2015

Dromore Lough

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Inland Fisheries Ireland

National Research Survey Programme

Fish Stock Survey of Dromore Lough, September 2015

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Cover photo: Netting survey on Lough Dan © Inland Fisheries Ireland

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1.1 Introduction

Dromore Lough is a limestone rich water body located approximately 10km north of Ennis and 6km east of Corrofin, County Clare (Plate 1.1, Fig. 1.1). It has a surface area of 49ha, a maximum depth of 20m and a mean depth of 5.9m. The main outflow from Dromore Lough to the River Fergus is via Black Lake (Fig. 1.1). The lake is categorised as typology class 11 (as designated by the EPA for the purposes of the Water Framework Directive), i.e. deep (mean depth >4 m), less than 50 ha and high alkalinity (>100 mg/l CaCO3).

Dromore Lough is located in the Dromore Woods and Loughs Special Area of Conservation (NPWS, 2002). The lake is important both regionally and nationally as a waterfowl sanctuary. Dromore Lough and its surrounding area also provides important habitat for a number of mammal species such as pine marten, stoat and otter. One of the largest nursery colonies of the Lesser Horseshoe Bat in Ireland is located along the shores of Dromore Lough. This nursery is of international importance as the lesser horseshoe bat is a rare and endangered species listed on Annex II of the EU Habitats Directive (NPWS, 2002).

The lake holds tench, perch, rudd, pike and eels (IFT unpublished data). Historically, the lake has produced brown trout up to 2.5kg in weight (O'Reilly, 2007).

This lake was surveyed as part of the Water Framework Directive surveillance monitoring programme and in 2009 and 2012 (Kelly *et al*., 2010 and 2013). During both of these surveys, perch were found to be the dominant species present in the lake. Rudd, pike and eels were also captured during the surveys.

Plate 1.1. Dromore Lough

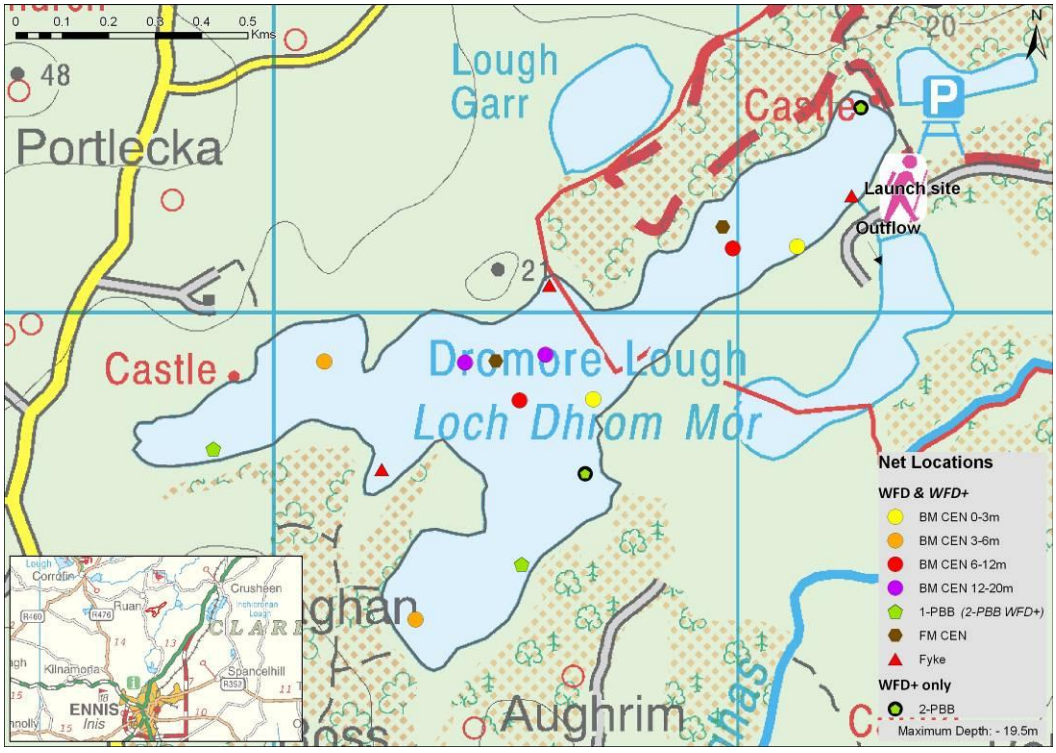

Fig. 1.1. Location map of Dromore Lough showing locations and depths of each net (outflow is indicated on map)

1.2 Methods

1.2.2 Netting methods

Dromore Lough was surveyed over one night on the 14th of September 2015. A total of three sets of Dutch fyke nets, eight benthic monofilament multi-mesh (12 panel, 5-55mm mesh knot to knot) CEN standard survey gill nets (BM CEN) (2 @ 0-2.9m, 2 @ 3-5.9m, 2 @ 6-11.9m, 2 @ 12-19.9m and 2 @ 20-34.9m) and two surface monofilament multi-mesh (FM CEN) (12 panel, 5-55mm mesh knot to knot) CEN standard survey gill nets were deployed in the lake (13 sites). The netting effort was supplemented using four two-panel benthic braided (63.5mm and 88.9mm mesh knot to knot) survey gill nets (1-PBB or 2-PBB).

The nets were deployed in the same locations as randomly chosen in the previous surveys. Site locations for additional two-panel benthic braided survey gill nets (2-PBB) were chosen randomly within fixed depth zones. 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 also randomised.

All fish apart from perch were measured and weighed on site and scales were removed from all brown trout, pike and roach. 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.

1.2.2 Biosecurity - disinfection and decontamination procedures

Procedures are required for disinfection of equipment in order to prevent dispersal of alien species and other organisms to uninfected waters. A standard operating procedure was compiled by Inland Fisheries Ireland for this purpose (Caffrey, 2010) and is followed by staff on the IFI NRSP team when moving between water bodies.

1.3 Results

1.3.1 Species Richness

A total of four fish species were recorded on Dromore Lough in September 2015, with 160 fish being captured. The number of each species captured by each gear type is shown in Table 1.1. Perch was the most abundant fish species recorded, followed by eels, pike and rudd. During the previous surveys in 2009 and 2012 the same species composition was recorded (Kelly *et al*., 2010 and 2013).

Table 1.1. Number of each fish species captured by each gear type during the survey on Dromore Lough, September 2015

Scientific name	Common name	Number of fish captured				
		2-PBB	BM CEN	FM CEN	Fyke	Total
Perca fluviatilis	Perch	0	145	0	0	145
Esox Lucius	Pike	1	3	0	0	4
Scardinius erythropthalmus	Rudd	0	0	3	0	3
Anguilla anguilla	European eel	0	0	0	8	8

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 (WFD and WFD+). 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 captured in the survey are summarised in Table 1.2. Perch was the dominant fish species in terms of abundance (CPUE) and eel was the dominant species in terms of biomass (BPUE) (Table 1.2).

Table 1.2. Mean (S.E.) CPUE and BPUE for all fish species captured on Dromore Lough, 2015

Scientific name	Common name	Mean CPUE (±S.E.)**
Perca fluviatilis	Perch	0.284 (0.106)
Esox Lucius	Pike	0.007 (0.003)
Scardinius erythropthalmus	Rudd	0.006 (0.006)
Anguilla anguilla	European eel	0.044 (0.022)
		Mean BPUE (±S.E.)**
Perca fluviatilis	Perch	10.278 (5.123)
Esox Lucius	Pike	6.813 (5.869)
Scardinius erythropthalmus	Rudd	0.233 (0.233)
Anguilla anguilla	European eel	11.631 (6.459)

Note: On the rare occasion where biomass data was unavailable for an individual fish, this was determined from a length/weight regression for that species.

*Eel CPUE and BPUE based on fyke nets only

**CPUE and BPUE data above for all fish species except eels are not comparable to earlier surveys as an extra panel was added to the 2-PBB to provide additional information on large coarse fish.

1.3.3 Length frequency distributions and growth

Perch captured during the 2015 survey ranged in length from 6.0cm to 25.1cm (mean = 10.9cm) (Fig.1.2) with seven age classes present, ranging from 0+ to 6+ with a mean L1 of 7.3cm (Table 1.3). The dominant age class was 0+ (Fig. 1.2).

Eels captured during the 2015 survey ranged in length from 45.5cm to 65.0cm. Four pike captured were aged from 0+ to 5+ and ranged in length from 18.4cm to 88.0cm. Three rudd were recorded and they ranged in length from 8.0cm to 14.6cm.

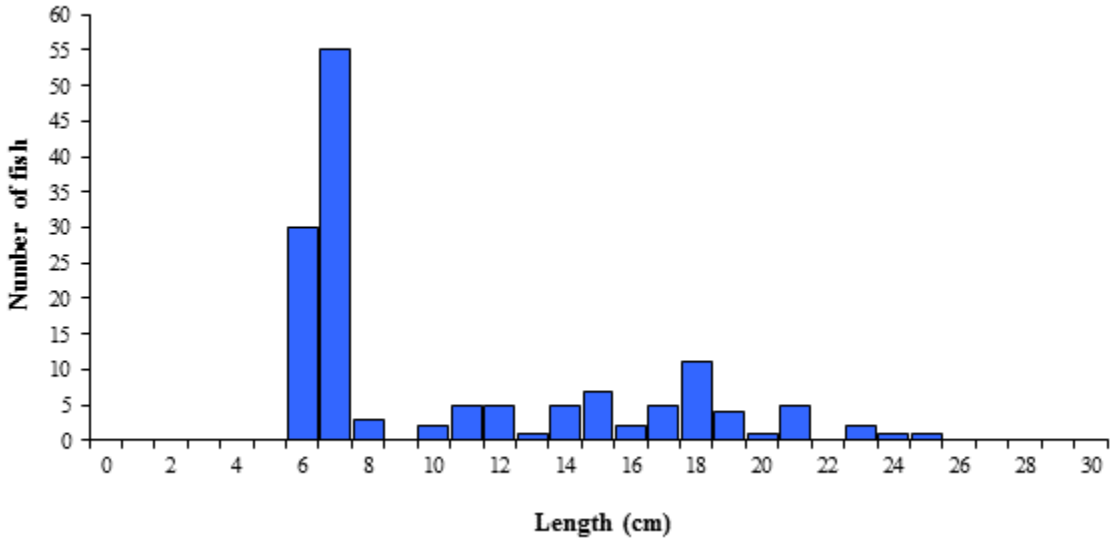

Fig. 1.2. Length frequency of perch captured on Dromore Lough, 2015

Table 1.3. Mean (±S.E.) perch length (cm) at age for Dromore Lough, September 2015

	L_1	L_2	L_3	L_4	L_5	L_6
Mean (±S.E.)	7.3 (0.3)	12.9 (0.4)	17.4 (0.7)	19.3 (1.9)	20.6 (0.6)	22.9
N	30	16	12	4	2	1
Range	4.4-10.2	9.0-15.8	13.3-21.9	16.3-25.1	20.0-21.2	22.9-22.9

1.3.4 Stomach and diet analysis

Feeding studies provide a good indication of the availability of food items and the angling methods that are likely to be successful. However, the value of stomach content analysis is limited unless undertaken over a long period as diet may change on a daily basis depending on the availability of food items.

Perch initially start to feed on pelagic zooplankton. Once they reach an intermediate size they start feeding on benthic resources eventually moving on to feed on fish once they are large enough (Hjelm *et al*., 2000). The food items recorded in a subsample of perch captured during the survey were dominated by unidentified fish remains and zooplankton (Fig 1.3).

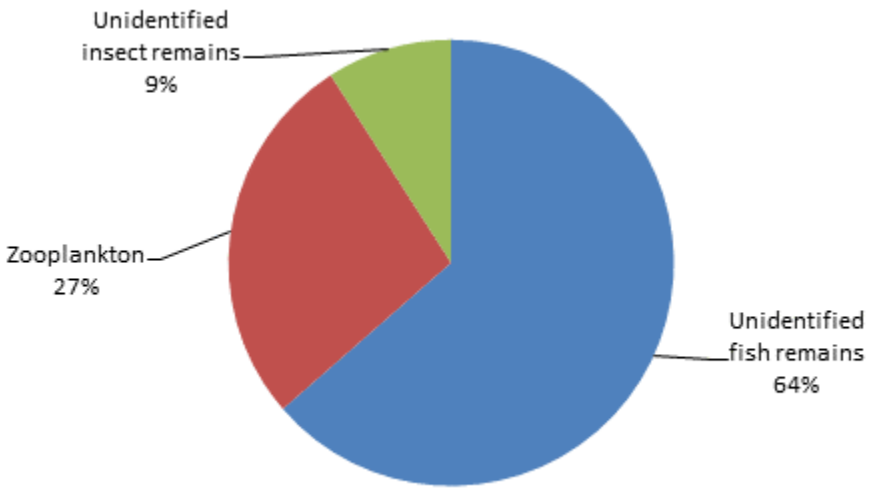

Fig. 1.3. Diet of perch captured on Dromore Lough 2015 (% occurrence) n=22

1.4 Summary and ecological status

Perch was the dominant species in terms of abundance (CPUE) and eel was the dominant species in terms of biomass (BPUE) captured in the survey gill nets during the 2015 survey.

Perch ranged in length from 6.0cm to 25.1cm and ranged in age from 0+ to 6+, indicating reproductive success in each of the previous seven years. The dominant age class was 0+.

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 multimetric fish ecological classification tool (Fish in Lakes – 'FIL') was developed for the island of Ireland (Ecoregion 17) using IFI and Agri-Food and Biosciences Institute Northern Ireland (AFBINI) data generated during the NSSHARE Fish in Lakes project (Kelly *et al.*, 2008). This tool was further developed during 2010 (FIL2) in order to make it fully WFD compliant, including producing EQR values for each lake and associated confidence in classification (Kelly *et al*., 2012b). Using the FIL2 classification tool, Dromore Lough has been assigned an ecological status of Good for 2009 and High for 2012 and 2015 based on the fish populations present.

In the 2010 to 2012 surveillance monitoring reporting period, the EPA assigned Dromore Lough an overall draft ecological status of Good, based on all monitored physico-chemical and biological elements, including fish. This status classification will be revised during 2016.

1.5 References

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