National Research Survey Programme

Lakes 2024

Lough Leane

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Fish Stock Survey of Lough Leane, September 2024

National Research Survey Programme

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1. Introduction

Lough Leane forms part of the Killarney National Park, Macgillycuddy's Reeks and Caragh River catchment candidate Special Area of Conservation (Plate 1.2 and Figure 1.1). This is a large area that encompasses a wide variety of habitats designated under Annex I of the EU Habitats Directive, including blanket bog, alluvial woodlands, alpine heath and both upland and lowland oligotrophic lakes. The site has also been selected for the following species, Killarney fern, slender naiad, freshwater pearl mussel, Kerry slug, marsh fritillary, Killarney shad, Atlantic salmon, brook lamprey, river lamprey, sea lamprey, lesser horseshoe bat and otter; all listed on Annex II of the EU Habitats Directive (NPWS, 2018).

Lough Leane itself is the largest of the Killarney lakes, with a surface area of 1,978ha, a mean depth of 13m and a maximum depth of 66m. The lake is categorised as typology class 8 (as designated by the EPA for the Water Framework Directive (WFD)), i.e. deep (mean depth >4m), greater than 50ha and moderate alkalinity (20-100mg/l $CaCO_3$).

A decline in water quality in the Lough Leane catchment was evident throughout the latter part of the twentieth century and in 1997 Lough Leane was classified as hypertrophic (Anon, 2003). This decline in water quality was principally attributed to increased levels of nutrients, most significantly phosphorus, being transported via the rivers to the lakes, which led to eutrophication (Anon, 2003). The trophic status of the lake had the potential to cause significant damage to the ecology of the lake. In response to this, Kerry County Council set up the Lough Leane Working Group to co-ordinate efforts to monitor and manage water quality within the catchment between 1998 and 2001 (Anon, 2003). This monitoring and management programme was a catchment wide initiative, aimed at stopping the eutrophication process and restoring the rivers and lakes to a satisfactory state by reducing phosphorus inputs from all sources. The project also aimed to identify and quantify all significant point and diffuse sources of pollution input, in particular inputs from local authority activities, agriculture, forestry and septic tanks. Activities are ongoing to restore and protect water quality in the catchment and lake since the inception of the WFD in Ireland in 2003.

Lough Leane contains a variety of fish species, including brown trout, sea trout, ferox trout, Atlantic salmon, perch, flounder, eel, rudd, tench and Arctic char. A landlocked sub-species of the twaite shad known as the Killarney shad (*Alosa fallax killarnensis*) is also present and is unique to this lake (Plate 1.2). The Killarney shad is listed in Annex II of the EU Habitats Directive.

Lough Leane is famous for its free rising trout and good salmon fishing (O' Reilly, 2007), with hundreds of spring salmon and grilse being caught on the troll every year. Brown trout in the lake average 0.5lb (0.23kg); however, a specimen ferox trout was caught in 2005 weighing nearly 17.5lb (8kg) (O' Reilly, 2007).

Inland Fisheries Ireland (previously the Central Fisheries Board) has undertaken several fish stock surveys on Lough Leane. Two surveys were undertaken in 2001 and 2003 to assess the status of the Killarney shad population (Roche and Rosell, 2003). The Killarney shad population size at the time was estimated to be in excess of 20,000 individuals of 1+ and older fish (Roche and Rosell, 2003). A small number of Arctic char were also recorded during the 2003 survey. In 2002, the Irish Char Conservation Group carried out fish surveys on all three Killarney Lakes and brown trout were recorded in all. Muckross (Middle) lake was the only lake in which Arctic char were captured, with the population in Lough Leane believed to be extinct due to the eutrophication of the lake (Igoe, *pers. comm*.).

Since 2003 Lough Leane has been surveyed on five occasions (2008, 2011, 2014, 2017 and 2021) using IFI's fish in lakes monitoring protocol (Connor *et al.* 2018a; Kelly *et al*., 2009, 2012a, 2015a and 2015b; McLoone *et al*., 2022). During the 2021 survey, brown trout and perch were found to be the most abundant species present in the lake. Rudd, Killarney shad, salmon, tench, flounder, minnow, Arctic char and European eel were also captured during the survey.

This report summarises the results of the 2024 fish stock survey carried out on the lake using Inland Fisheries Ireland's fish in lakes monitoring protocol. The protocol is WFD compliant and also provides insight into fish stock status in the lake.

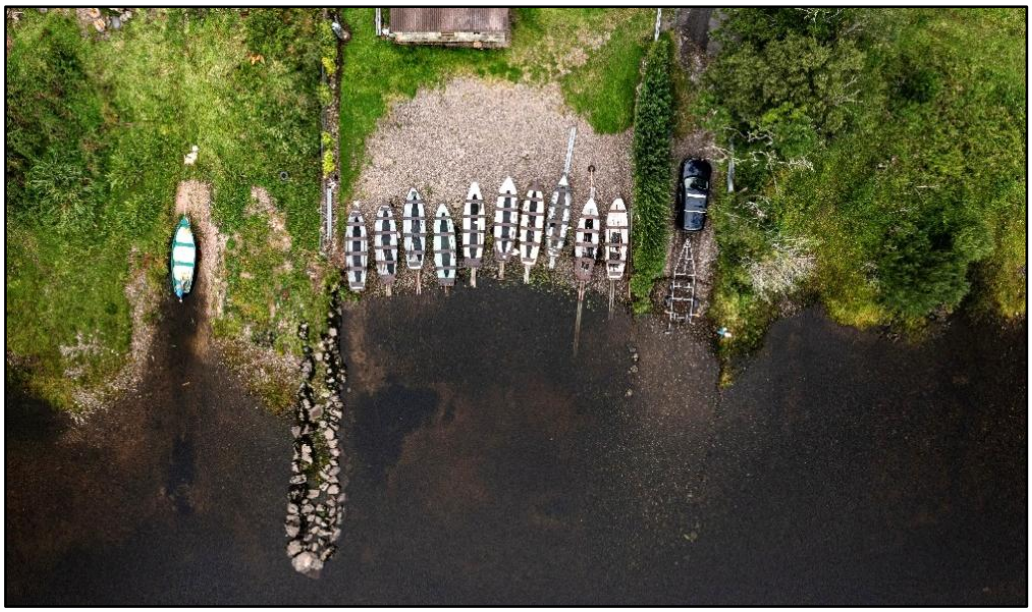

Plate 1.1. Launch site (Tomies, Ballinlough) on Lough Leane, September 2024.

Plate 1.2. Aerial view of Lough Leane looking north across the lake, September 2024.

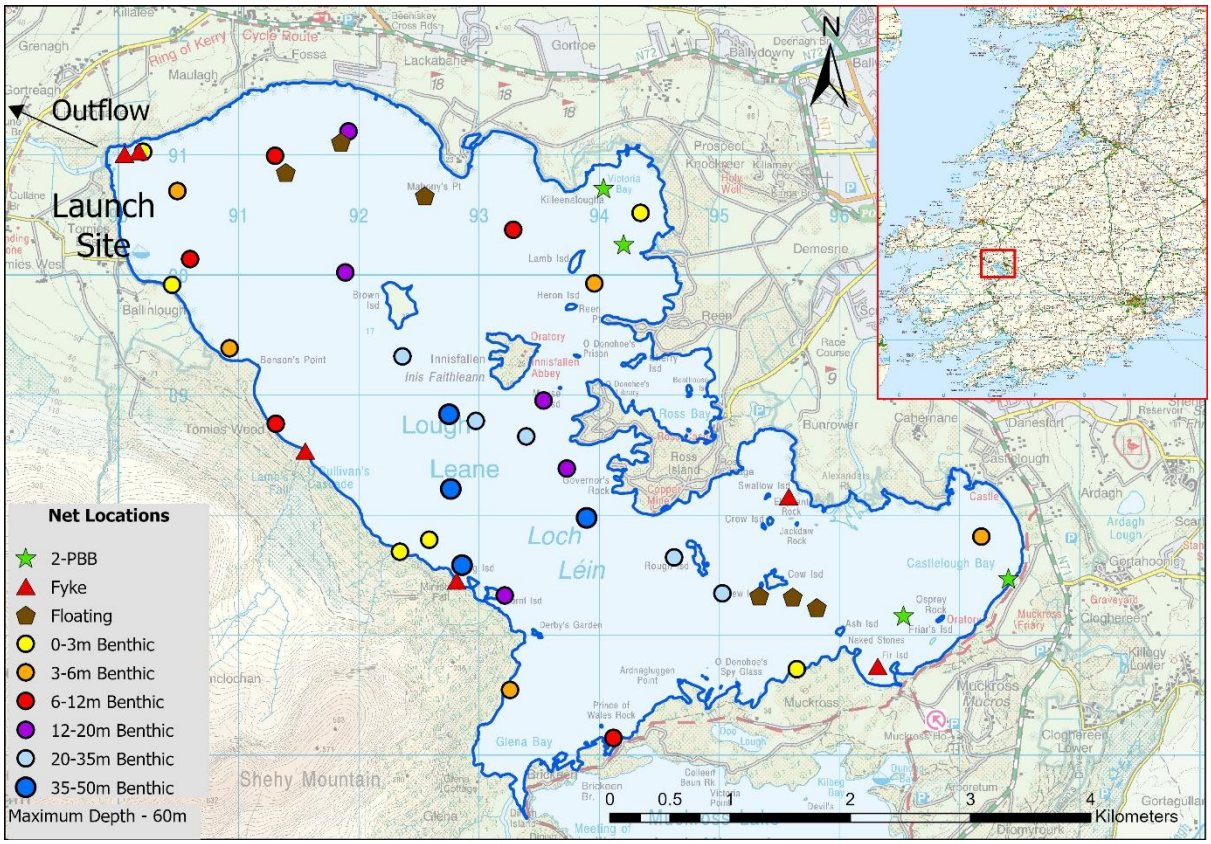

Figure 1.1. Location map of Lough Leane, showing locations and depths of each net.

2. Methods

2.1. Netting methods

Lough Leane was surveyed over three nights from the 2nd to the 5th of September 2024. A total of six sets of Dutch fyke nets (Fyke), 30 benthic monofilament multi-mesh (BM CEN) (12 panel, 5-55mm mesh size) CEN standard survey gill nets (6 @ 0-2.9m, 5 @ 3-5.9m, 5 @ 6-11.9m, 5 @ 12-19.9m, 5 @ 20-34.9m and 4 @ 35-49.9m) and six floating monofilament multi-mesh (FM CEN) (12 panel, 5-55mm mesh size) CEN standard survey gill nets were deployed randomly in the lake (42 sites) (Figure 1.1). The netting effort was supplemented using two-panel benthic braided survey gill nets (2-PBB) at four additional sites. The two-panel survey gill nets are composed of two 27.5m long panels each a different mesh size (60mm and 90mm) tied together. Nets were deployed in the same locations as were randomly selected in the previous surveys. 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 a sub-sample of other species. 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 retained for further analysis. Fish were frozen immediately after the survey and transported back to the IFI laboratory for later dissection.

2.2. Fish diet

Total stomach contents were inspected, and individual items were identified to the lowest taxonomic level possible. The percentage frequency occurrence (%FO) of prey items were then calculated to identify key prey items (Amundsen *et al.*, 1996).

$$\mathbf{FO}_i = \left(\frac{\boldsymbol{N_i}}{\boldsymbol{N}}\right) * \mathbf{100}$$

Where:
$\mathbf{FO}_i$ is the percentage frequency of prey item i,
$\boldsymbol{N_i}$ is the number of fish with prey i in their stomach,
$\boldsymbol{N}$ is total number of fish with stomach contents.

2.3. Biosecurity - disinfection and decontamination procedures

Procedures are required for disinfection of equipment 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 in IFI when moving between water bodies.

3. Results

3.1. Species Richness

Eleven fish species, including two types of trout (brown trout and sea trout) and one cyprinid hybrid variety (rudd x bream) were recorded in Lough Leane in September 2024. A total of 723 fish were captured. Perch and rudd were the most numerous fish species recorded. Together they represented *c*. 68% of all fish captured in the survey. Brown trout (including sea trout) were also captured in relatively high numbers (18%). Killarney shad, rudd x bream hybrids, tench, Atlantic salmon flounder, bream, Arctic char, minnow and European eel were also recorded. Bream and rudd x bream hybrids were recorded for the first time in 2024. All other species have been captured in previous surveys of the lake since 2008, with minnow recorded for the first time in the 2021 survey (Kelly *et al*., 2009, 2012a, 2015a and 2015b, Connor *et al.* 2018a, McLoone *et al*., 2022).

Table 3.1. Number of each fish species captured by each gear type during the survey on Lough Leane, September 2024.

Scientific name	Common name	Number of fish captured				
		BM CEN	FMCEN	2-PBB	Fyke	Total
Perca fluviatilis	Perch	240	18	2	6	266
Scardinius erythrophthalmus	Rudd	205	0	0	24	229
Salmo trutta	Brown trout	89	13	9	18	129
	Sea trout	1	0	1	0	2
Allosa fallax killarnensis	Killarney Shad	30	3	0	0	33
S. erythrophthalmus x Abramis brama	Rudd x bream hybrid	13	0	0	0	13
Tinca tinca	Tench	5	0	6	2	13
Salmo salar	Atlantic salmon	4	0	4	0	8
Platichthys flesus	Flounder	6	0	2	0	8
Abramis brama	Bream	5	0	0	1	6
Salvelinus alpinus	Arctic char	2	0	0	0	2
Phoxinus phoxinus	Minnow	1	0	0	0	1
Anguilla anguilla	European eel	1	0	0	12	13

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. Perch and rudd were the dominant species with respect to both abundance (CPUE) and biomass (BPUE). The biomass of brown trout, tench and migratory adult Atlantic salmon was also relatively high (Table 3.2)

Table 3.2. Mean (S.E.) CPUE and BPUE for all fish species captured on Lough Leane, September 2024.

Scientific name	Common name	Mean CPUE (± S.E)	Mean BPUE (± S.E)
Perca fluviatilis	Perch	0.190 (0.046)	13.213 (3.247)
Scardinius erythrophthalmus	Rudd	0.157 (0.037)	15.781 (3.814)
Salmo trutta	Brown trout	0.084 (0.027)	10.556 (3.300)
	Sea trout	0.001 (0.001)	1.137 (0.868)
Allosa fallax killarnensis	Killarney shad	0.024 (0.009)	2.407 (0.895)
Scardinius erythrophthalmus x Abramis brama	Rudd x bream hybrid	0.009 (0.006)	0.566 (0.342)
Tinca tinca	Tench	0.007 (0.003)	9.965 (4.717)
Salmo salar	Atlantic salmon	0.005 (0.002)	11.914 (5.531)
Platichthys flesus	Flounder	0.005 (0.002)	1.155 (0.549)
Abramis brama	Bream	0.004 (0.003)	0.318 (0.212)
Salvelinus alpinus	Arctic char	0.001 (0.001)	0.157 (0.157)
Phoxinus phoxinus	Minnow	0.001 (0.001)	0.001 (0.001)
*Anguilla anguilla**	European eel	0.033 (0.024)	4.396 (2.923)

Note: Where biomass data was unavailable for an individual fish, this was determined from a length/weight regression for that species (Connor et al., 2017). *Eel CPUE and BPUE based on fyke nets only.

3.3. Species Profiles

Perch

Perch captured in the 2024 survey ranged in length from 5.5cm to 37.0cm (mean = 15.7cm) (Figure 3.2). The overall length range has remained relatively similar across all surveys of the lake, with the majority of perch measuring between 10cm and 20cm. A tendency towards small numbers of fish attaining much greater lengths was a feature of perch in the lake. Perch were aged between 0+ and 8+ and all intervening age classes were represented in the sample aged. The two largest cohorts were 1+ (10cm-15cm) and 3 + (13cm–22cm) (Figure 3.2). Mean L1 (i.e. length at the end of the 1st year) was 6.2cm (Table 3.3).

Perch abundance (CPUE) and biomass (BPUE) have remained relatively stable across all surveys and no obvious population trends were apparent (Figure 3.1).

Table 3.3. Mean (±S.E.) perch length (cm) at age for Lough Leane, September 2024.

	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8
Mean (±S.E.)	6.2 (±0.12)	11.4 (±0.3)	15.1 (±0.3)	17.4 (±0.33)	19.4 (±0.5)	22.5 (±1.03)	26.6 (±2.32)	29.5 (±5.25)
N	84	64	51	27	18	11	5	2
Range	3.6–7.9	6.9–15.8	10.2–19	13.2–20.4	15.9–23.6	18–27.4	19.9–31.5	24.2–34.7

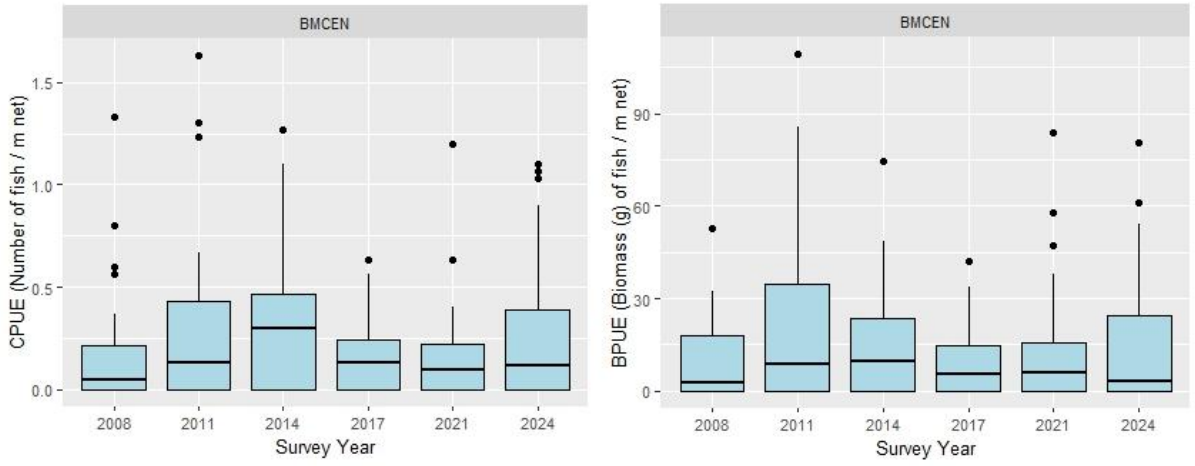

Figure 3.1. CPUE and BPUE of perch captured during surveys of Lough Leane between 2008 and 2024. Figures are expressed as numbers of fish captured per linear meter of net deployed. The horizontal bars represent the median value of the sample, while the 75th and 25th percentiles are marked by the upper and lower boundary of each box. The vertical 'whiskers' show the data range. Outliers are marked by dots.

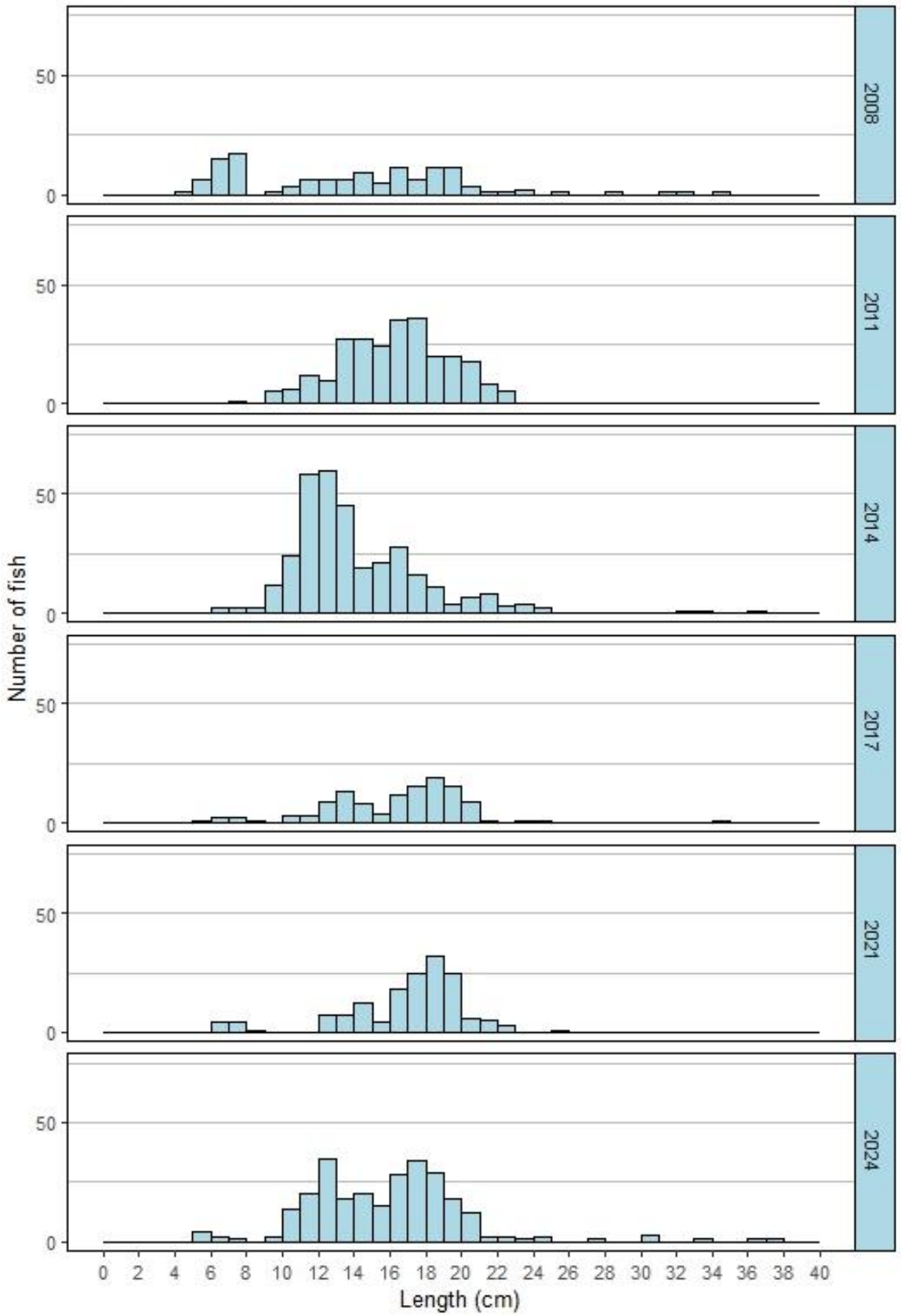

Figure 3.1. Length frequency of perch captured on Lough Leane between 2008 and 2024.

Rudd

Rudd captured during the 2024 survey ranged in length from 8.0cm to 24.4cm (mean 17.5cm) (Figure 3.4). Length range of rudd was broadly similar across all surveys of the lake. While the overall length range of rudd has remained relatively stable, an overall increase in numbers was reflected in an increased proportion of moderately size rudd (i.e. 15-20cm) in the latter surveys of the lake. In 2024 rudd were aged between 2+ and 9+ and all intervening age classes were represented in the sample aged (Table 3.4). Rudd aged between 3+ (12cm-15cm) and 7+ (20cm-23cm) (Table 3.4 and Figure 3.4) represented *c*.84% of all the rudd in the sample aged.

There was an increasing trend in both abundance (CPUE) and biomass (BPUE) of rudd in the lake (Figure 3.3)

Table 3.4. Summary age data from rudd captured on Lough Leane, September 2024. Number of fish and length ranges of all fish aged in the sample is presented.

Length (cm)	Age class									
	0+	1+	2+	3+	4+	5+	6+	7+	8+	9+
N	-	-	2	11	11	9	7	11	3	4
Mean	-	-	9.8	13.3	15.4	17.3	19.0	21.4	22.9	23.1
Min	-	-	8.5	12.1	13.9	15.0	18.4	20.2	22.4	22.4
Max	-	-	11.1	15.5	16.8	19.9	19.6	23.1	23.3	24.4

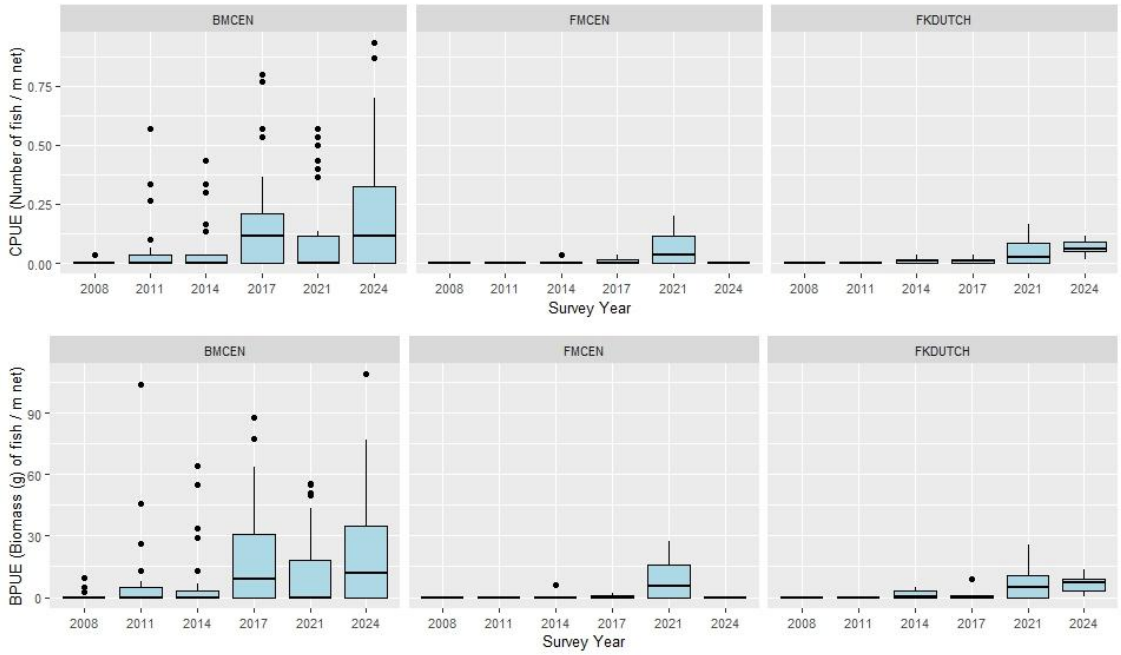

Figure 3.3. CPUE and BPUE of rudd captured during surveys of lough Leane between 2008 and 2024. Figures are expressed as numbers of fish captured per linear meter of net deployed. The horizontal bars represent the median value of the sample, while the 75th and 25th percentiles are marked by the upper and lower boundary of each box. The vertical 'whiskers' show the data range. Outliers are marked by dots.

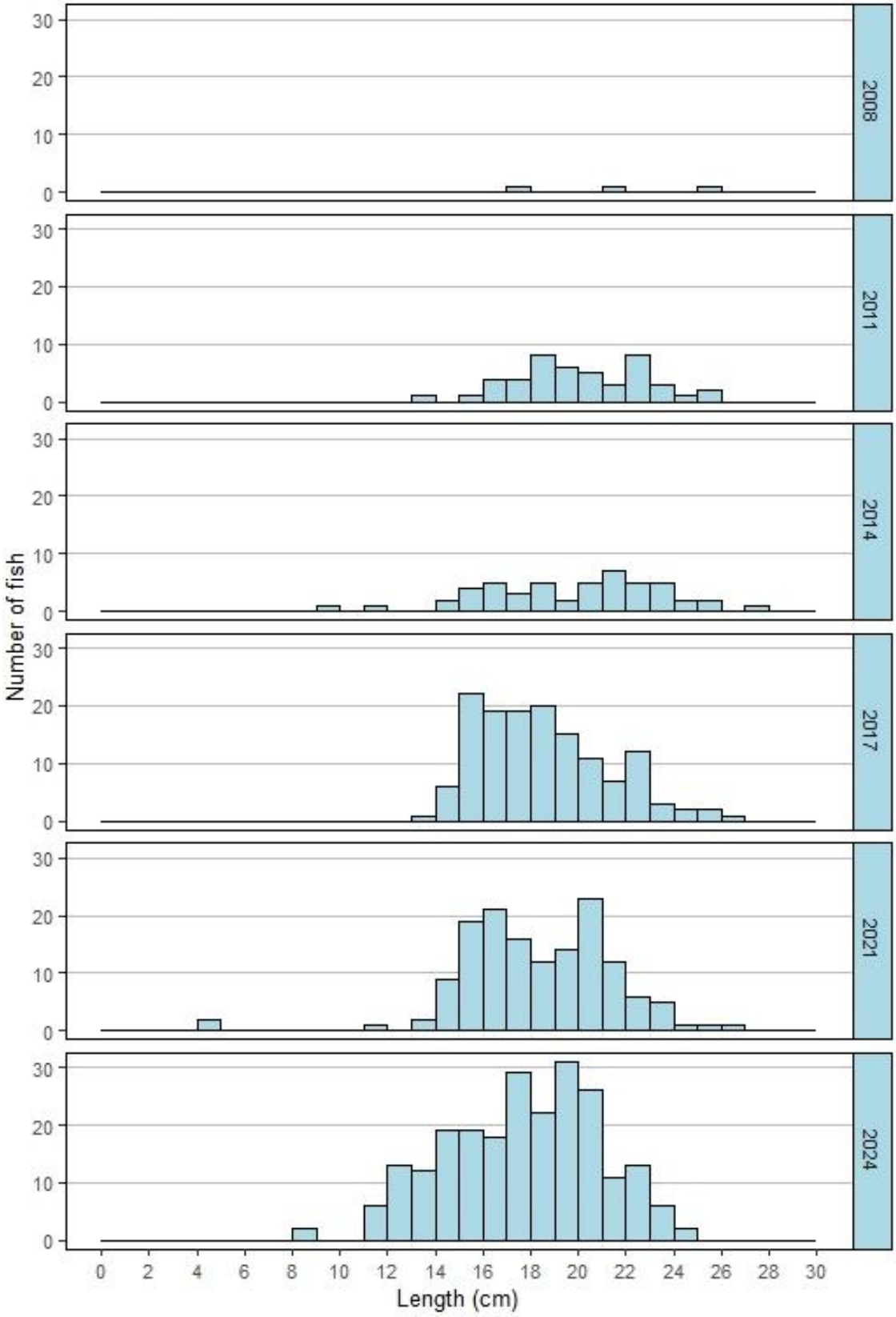

Figure 3.4. Length frequency of rudd captured on Lough Leane between 2008 and 2024.

Brown trout

Brown trout captured during the 2024 survey ranged in length from 13.3cm to 52.5cm (mean 20.6cm). (Figure 3.6). In common with previous surveys, the brown trout population in 2024 was dominated by smaller fish (i.e. < 25cm) with a small number of fish reaching a greater size. Brown trout were aged between 1+ and 5+ and all intervening age classes were present in the sample aged. Brown trout aged 2+ and 3+ (13cm-26cm) dominated the population, representing *c.* 77% of all fish aged (Figure 3.6). Mean L1 (i.e. length at the end of the 1st year) was 6.3cm (Table 3.5).

While brown trout abundance (CPUE) and biomass (BPUE) have fluctuated across all surveys of the lake, there is some evidence of a decline in both metrics since the earlier surveys of the lake (Figure 3.5).

Table 3.5. Mean (±S.E.) brown trout length (cm) at age for Lough Leane, September 2024.

Length (cm)	L_1	L_2	L_3	L_4	L_5
Mean (±S.E.)	6.3 (0.06)	13.3 (0.17)	18.7 (0.29)	24.0 (0.77)	27.6
N	50	50	26	6	1
Range	4.7-7.3	10.8-16.4	15.4-21.7	21.2-26.8	27.6

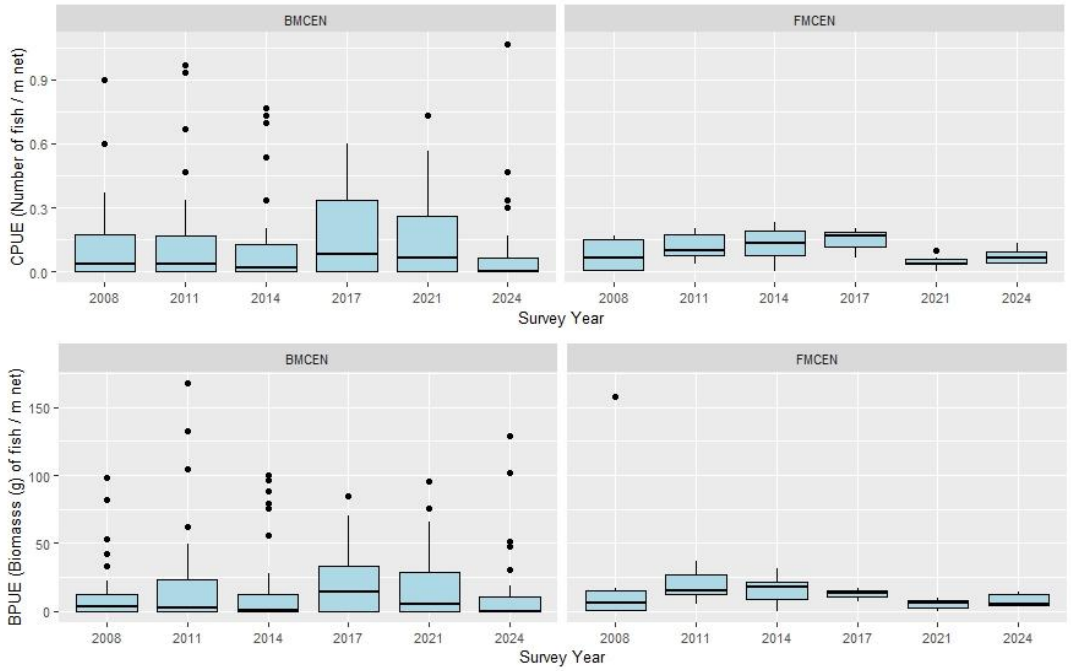

Figure 3.5 CPUE and BPUE of brown trout captured during surveys of lough Leane between 2008 and 2024. Figures are expressed as numbers of fish captured per linear meter of net deployed. The horizontal bars represent the median value of the sample, while the 75th and 25th percentiles are marked by the upper and lower boundary of each box. The vertical 'whiskers' show the data range. Outliers are marked by dots.

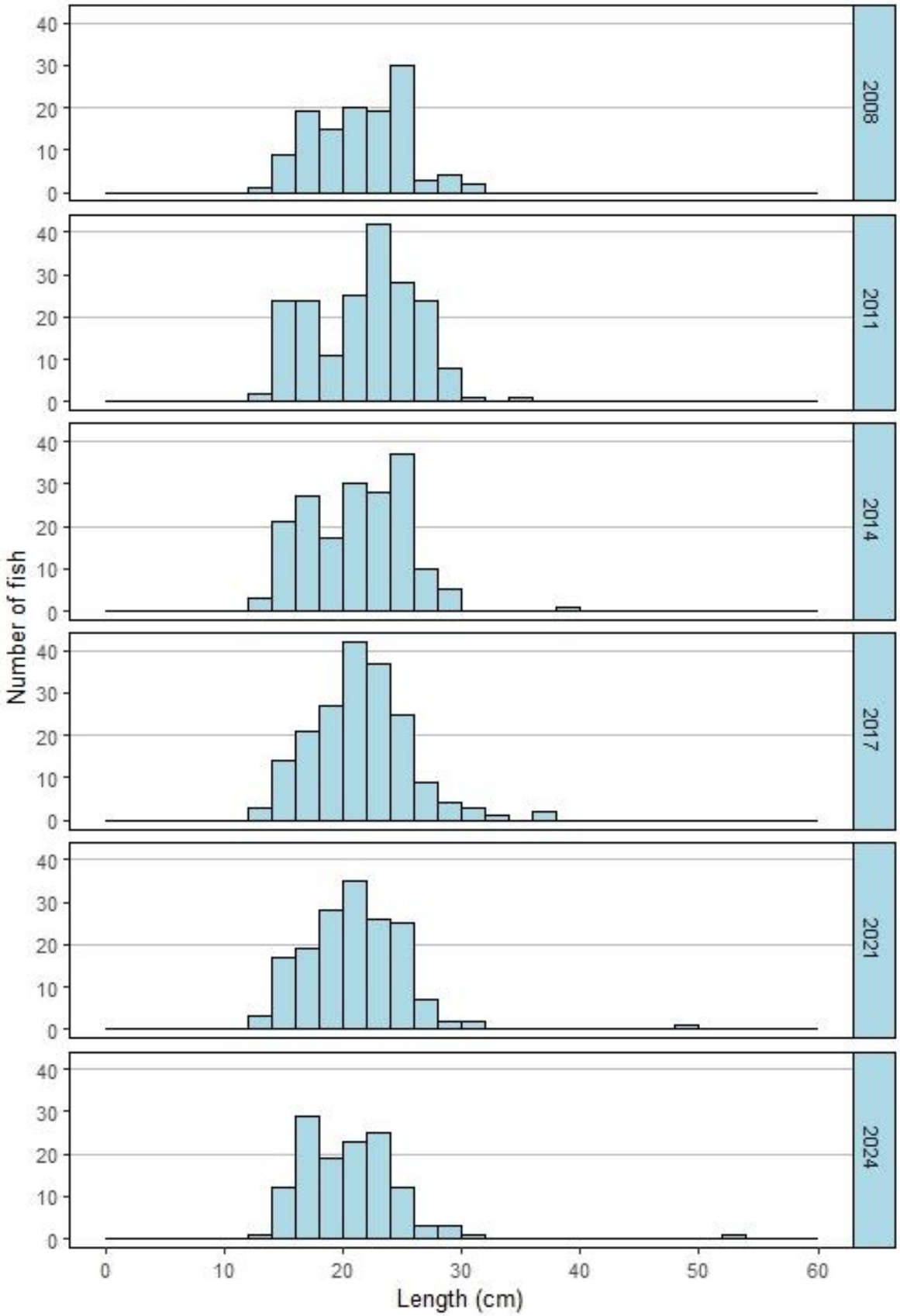

Figure 3.6. Length frequency of brown trout captured on Lough Leane between 2008 and 2024.

Killarney shad

Killarney shad captured during the 2024 survey ranged in length from 15.3cm to 21.8cm (mean 20.6cm) (Figure 3.8). While the size range has been broadly similar across all surveys of the lake, the smallest fish (i.e. < 13cm) were captured in the 2014 and 2017 surveys only. In 2024 all Killarney shad were aged 3+ and 4+ (Table 3.6).

Killarney shad abundance (CPUE) and biomass (BPUE) have remained relatively stable across all surveys and no obvious population trends were apparent (Figure 3.7).

Table 3.6. Summary age data from Killarney shad captured on Lough Leane, September 2024. Number of fish and length ranges of all fish aged in the sample is presented.

Length (cm)	Age class				
	0+	1+	2+	3+	4+
N	-	-	-	6	11
Mean	-	-	-	17.9	20.1
Min	-	-	-	15.3	16.8
Max	-	-	-	19.6	21.8

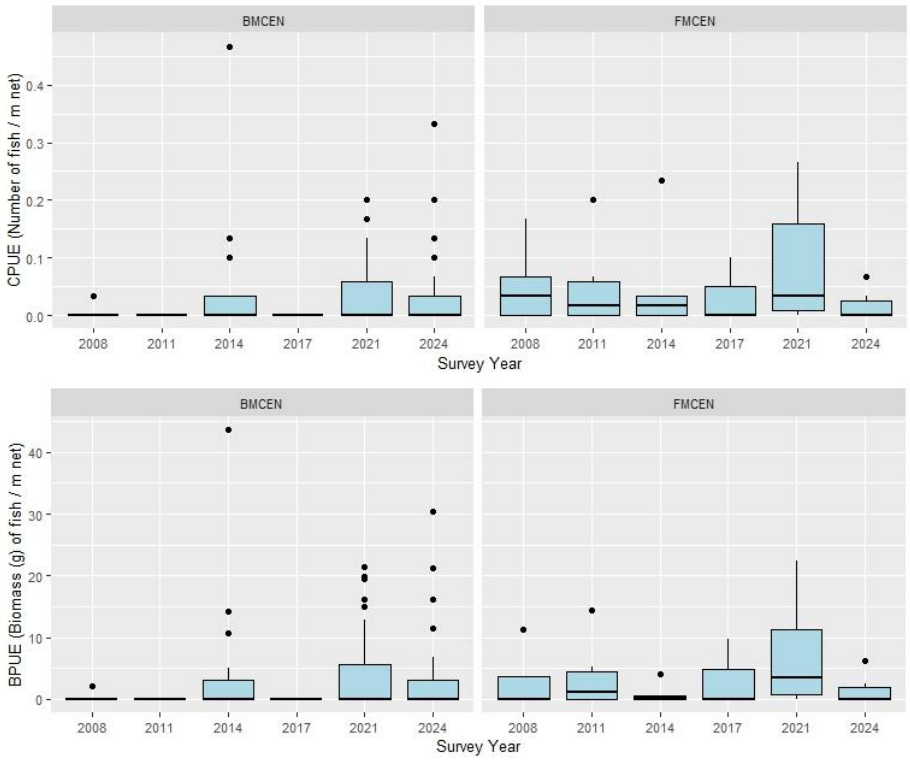

Figure 3.7. CPUE and BPUE of Killarney shad captured during surveys of lough Leane between 2008 and 2024. Figures are expressed as numbers of fish captured per linear meter of net deployed. The horizontal bars represent the median value of the sample, while the 75th and 25th percentiles are marked by the upper and lower boundary of each box. The vertical 'whiskers' show the data range. Outliers are marked by dots.

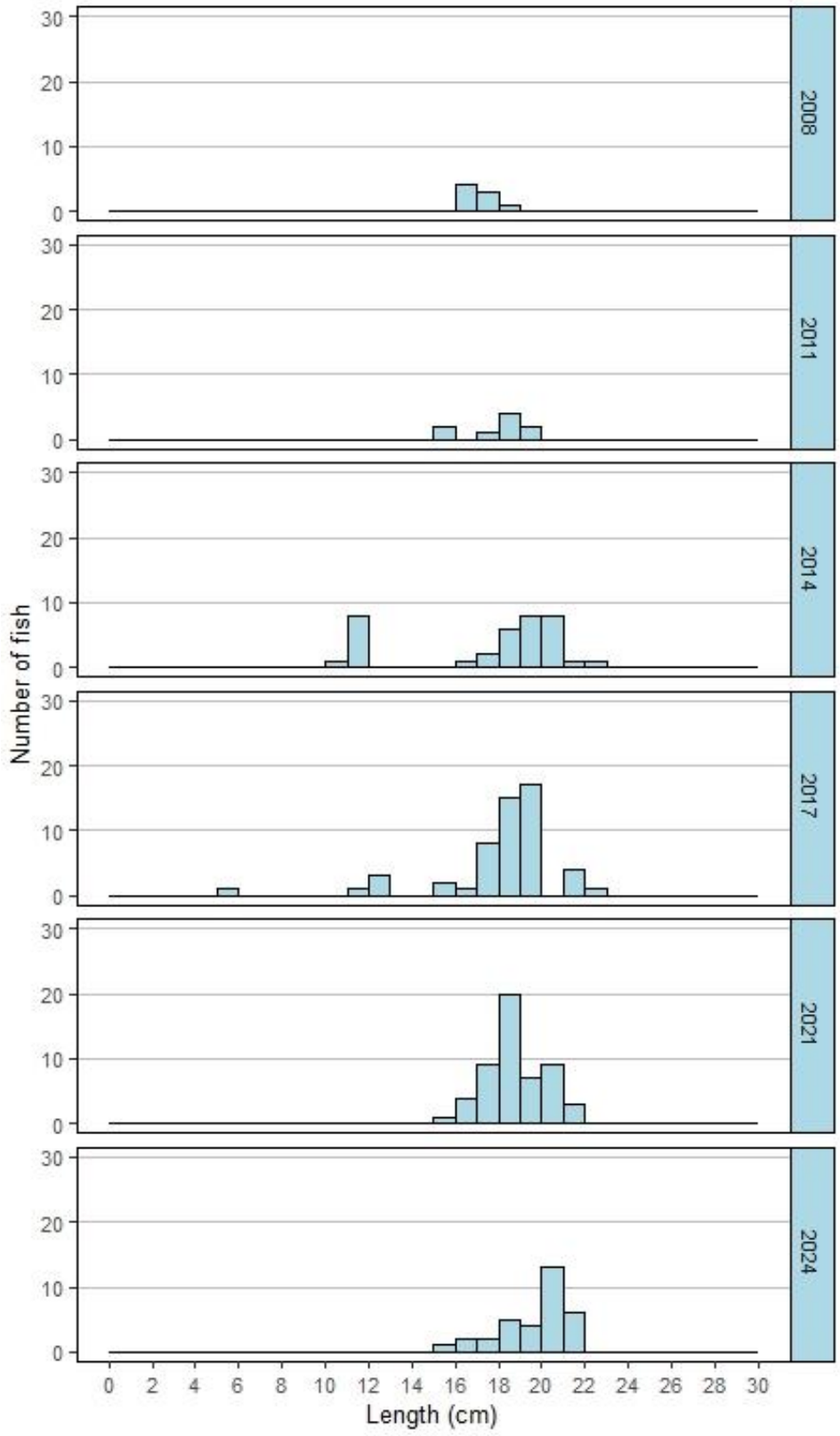

Figure 3.8. Length frequency of Killarney shad captured on Lough Leane between 2008 and 2024.

Bream and rudd x bream Hybrids

Bream and rudd x bream hybrids captured ranged in length from 15cm - 16cm and 12cm – 17cm respectively (Figure 3.9). Bream were aged 3+ and 4+ (Table 3.7). Rudd x bream hybrids were also aged at 3+ and 4+ (Table 3.8). Both bream and rudd x bream hybrids were recorded for the first time in 2024.

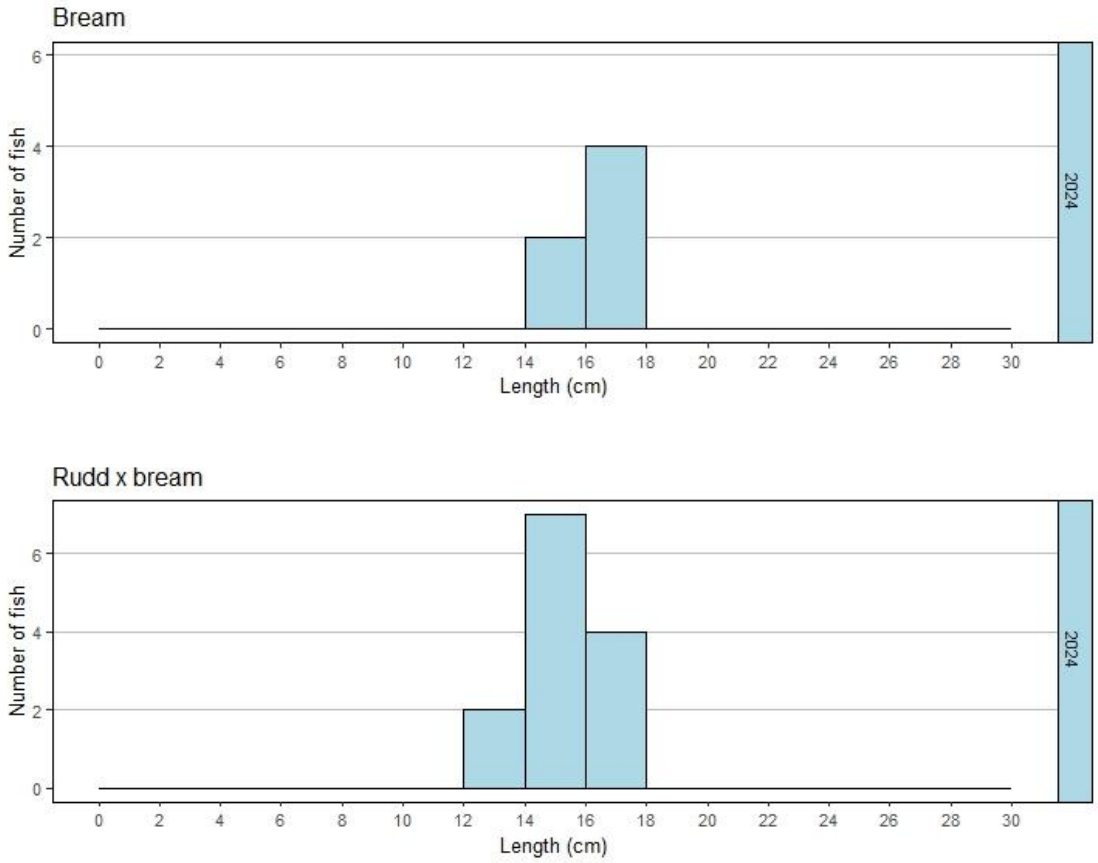

Figure 3.9. Length frequency of bream and rudd x bream hybrids captured on Lough Leane between 2008 and 2024.

Table 3.7. Summary age data from bream captured on Lough Leane, September 2024. Number of fish and length ranges of all fish aged in the sample is presented.

Length (cm)	Age class				
	0+	1+	2+	3+	4+
N	-	-	-	4	2
Mean	-	-	-	15.9	16.6
Min	-	-	-	15.0	16.4
Max	-	-	-	16.8	16.8

Table 3.8. Summary age data from rudd x bream hybrids captured on Lough Leane, September 2024. Number of fish and length ranges of all fish aged in the sample is presented.

Length (cm)	Age class				
	0+	1+	2+	3+	4+
N	-	-	-	10	2
Mean	-	-	-	15.0	16.9
Min	-	-	-	12.3	16.3
Max	-	-	-	16.4	17.6

Arctic char

Two arctic char were captured in 2024. These fish measured 18.9cm and 22.7cm. Both fish were aged 2+.

European eel

European eel captured in the 2024 survey ranged in length from 31.7 to 58.7cm (mean = 42.4cm) (Figure 3.10). There is evidence of a declining trend in both abundance (CPUE) and biomass (BPUE) between 2008 and 2024 (Figure 3.10).

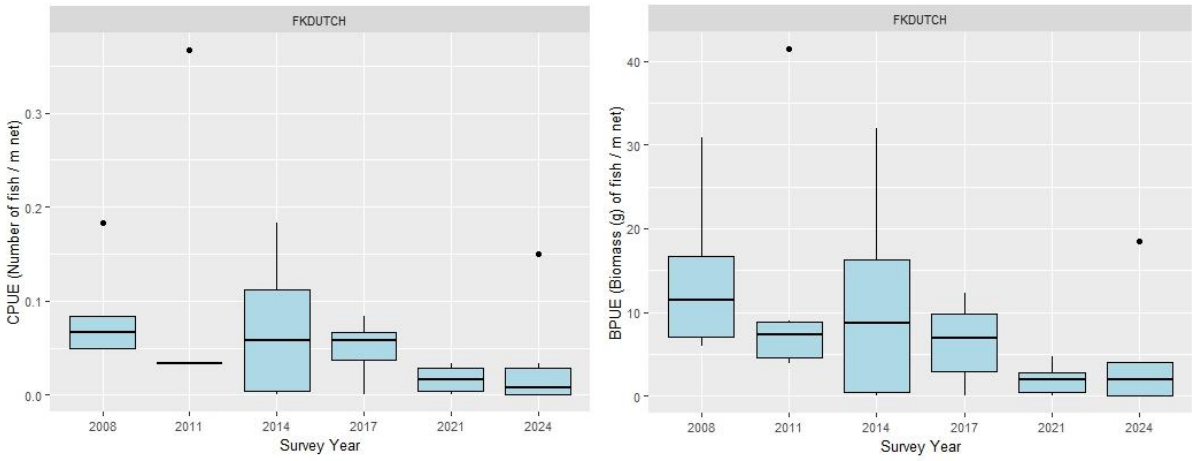

Figure 3.10. CPUE and BPUE of eel captured during surveys of Lough Leane between 2008 and 2024. Figures are expressed as numbers of fish captured per linear meter of net deployed. The horizontal bars represent the median value of the sample, while the 75th and 25th percentiles are marked by the upper and lower boundary of each box. The vertical 'whiskers' show the data range. Outliers are marked by dots.

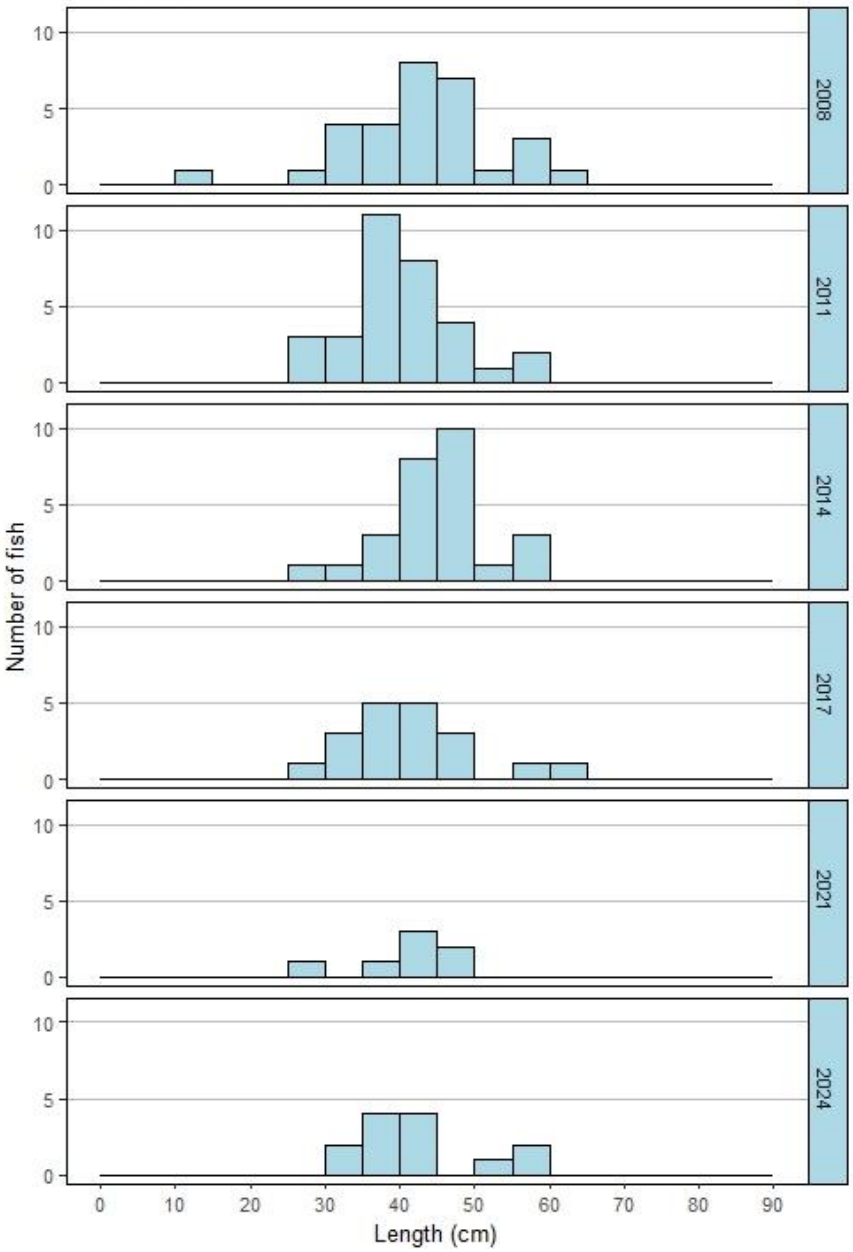

Figure 3.11. Length frequency of eel captured on Lough Leane between 2008 and 2024.

Other fish species

Thirteen tench were captured. They ranged in length from 27.4cm to 53.5cm (mean = 41.6cm). It was possible to obtain age estimates from five tench. All five were aged between 5+ and 6+.

Eight adult Atlantic salmon captured ranged in length from 52.7cm to 75.4cm (mean = 61.5cm). One salmon was a grilse (i.e. had spent one winter at sea). The remaining salmon were multi sea-winter fish.

Eight flounder captured ranged in length from 18.0cm to 31.1cm (mean = 22.4cm).

One minnow captured measured 6cm.

Plate 3.1. IFI survey boat on Lough Leane, September 2024.

3.4. Stomach and diet analysis

The dietary analysis conducted provides insight to the prey of examined fish immediately prior to capture. Longer term and seasonal studies provide a more robust assessment of fish diet. The stomach contents of a subsample of perch, brown trout, Killarney shad and Arctic char captured during the survey were examined and are presented below.

Perch

A total of 78 perch stomachs were examined. Fifty-nine stomachs contained food (76%). Zooplankton was the sole prey type recorded in 38 (64%) stomachs and was found together with invertebrates in two (3%) stomachs. Fish was the sole prey type recorded in seven (12%) perch stomachs. Invertebrates were the sole prey type recorded in 13 (22%) perch stomachs. Fish was found in the stomach of one perch (Figure 3.12).

Brown trout

A total of 53 brown trout stomachs were examined. Thirty-nine stomachs contained food (74%). Invertebrates were the sole prey type recorded in 21 (54%) brown trout stomachs. Invertebrates were found together with fish in 8 (21%) stomachs. Zooplankton was the sole prey type recorded in 9 (20%) trout stomachs (Figure 3.13).

Killarney Shad

Fourteen Killarney shad stomachs were examined. Twelve stomachs (86%) contained food. Zooplankton was the sole prey type recoded in 11 (92%) stomachs and was found together with invertebrates in one (8%) shad stomach (Figure 3.14).

Arctic char

Two arctic char stomachs were examined. Zooplankton was the sole prey type recorded in one stomach, while zooplankton was recorded with invertebrates in the other stomach.

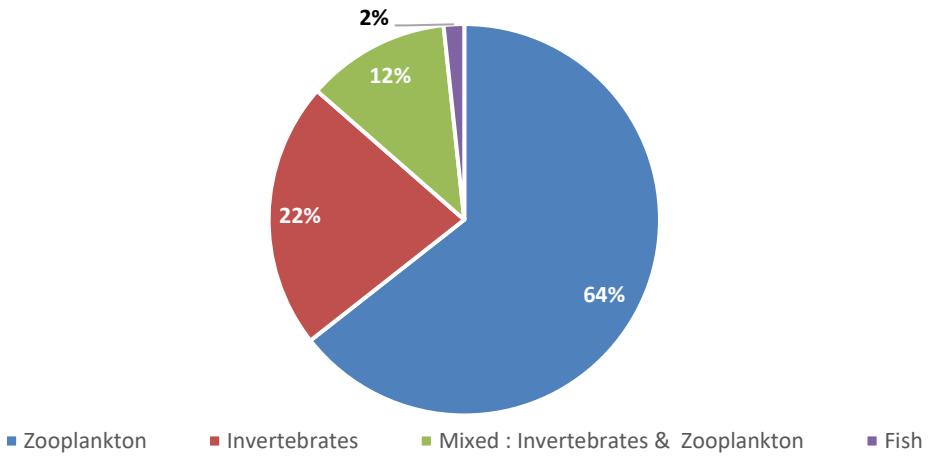

Figure 3.12. Diet of perch (N =59) captured on Lough Leane, 2024 (% FO).

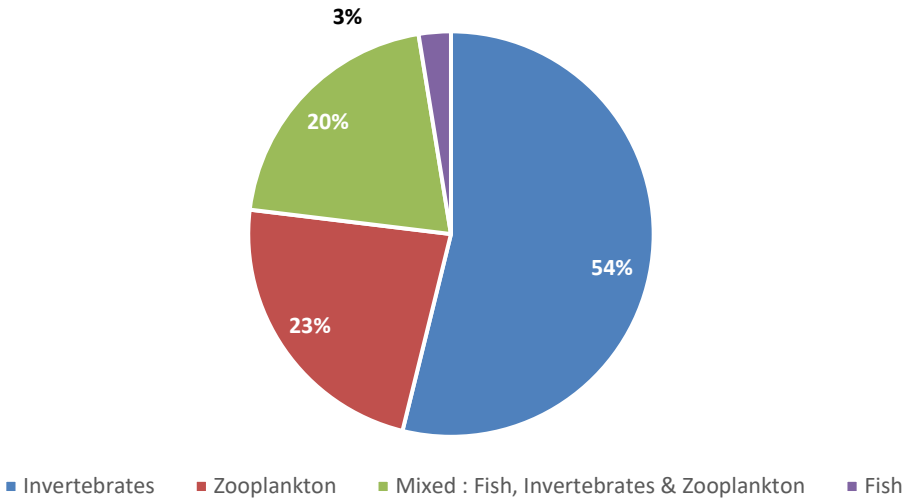

Figure 3.13. Diet of brown trout (N =39) captured on Lough Leane, 2024 (% FO).

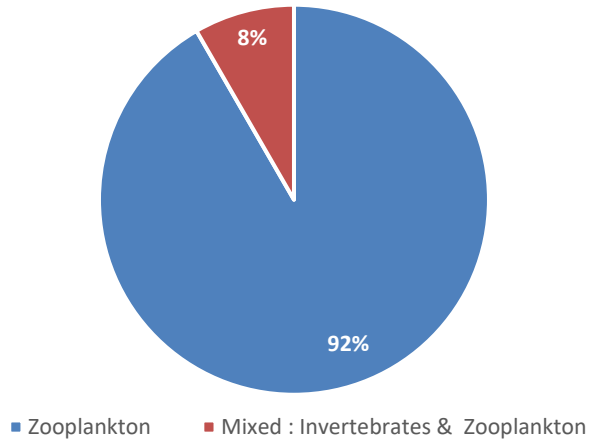

Figure 3.14. Diet of Killarney shad (N =12) captured on Lough Leane, 2024 (% FO).

4. Summary and fish ecological status

A total of eleven fish species, including two types of trout (brown trout and sea trout) and one type of cyprinid hybrid were recorded in Lough Leane in September 2024

Perch and rudd were the dominant species with respect to both abundance (CPUE) and biomass (BPUE). The biomass of brown trout, tench and migratory Atlantic salmon were also relatively high.

The two most abundant species (i.e. perch and rudd) are both recruiting regularly in the lake. Rudd were first recorded in the 2008 fish stock survey and both abundance and biomass have increased since that time. Populations of perch have fluctuated across all surveys of the lake and no clear population trends were apparent.

Brown trout are also recruiting regularly to the lake and the population is dominated by smaller, younger fish. However, while both abundance and biomass have fluctuated across all surveys of the lake, there is some evidence to suggest a decline in both metrics in 2024.

The abundance and biomass of Killarney shad recorded in 2024 are comparable to those recorded in previous surveys and no obvious population trends were apparent.

In common with previous surveys of the lake, Arctic char abundance remained low.

In 2024, bream and rudd x bream hybrids were recorded in a survey of the lake for the first time. This follows reports of angling captures of cyprinid hybrids earlier in the year (William Roche *pers. com.*).

A total of six bream were recorded. They ranged in length from 15cm to 16.8cm. Thirteen rudd x bream hybrids were also captured. They ranged in length from 12.3cm to 17.6cm. These are the first records of bream or bream hybrids recorded in fish stock surveys on the lake.

Hybridization requires that populations of both parent species are present in the lake (Hayden *et al.*, 2010). The presence of rudd x bream hybrids would therefore suggest that a spawning population of bream is now present in the lough. Age analysis indicates that all bream and rudd x bream hybrids captured were three to four years old. It is possible that these fish may represent spawning between recently introduced bream and the established rudd population.

While the potential long-term impacts of bream are unclear in Lough Leane, rapid expansion of bream and (roach) bream hybrid populations have occurred following the recent colonisation of bream in Lough Mask (McLoone *et al*., 2023). Newly introduced bream have been shown to impact the ecology of (shallow) lakes following colonisation (e.g. Volta *et al*., 2013).

Lough Leane supports a small population of native Arctic char, whose populations have been shown to be threatened by deteriorating water quality, climate change and a combination of climate change and colonization of non-native fish populations (Connor *et al*., 2019; Morrissey-McCaffrey *et al*., 2019).

The population of Killarney shad is unique to the lake and is not recorded in any other lake.

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 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) to make it fully WFD compliant, including producing EQR values for each lake and associated confidence in classification (Kelly *et al*., 2012).

Using the FIL2 classification tool, Lough Leane has been assigned an ecological status of Moderate for 2024 based on the fish populations present and expert opinion. Lough Leane was assigned a status of Good following all previous WFD compliant fish stock surveys of the lake.

In the 2016 to 2021 surveillance monitoring reporting period, the EPA assigned Lough Leane an overall ecological status of Good, based on all monitored physio-chemical and biological elements, including fish (EPA, 2021).

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