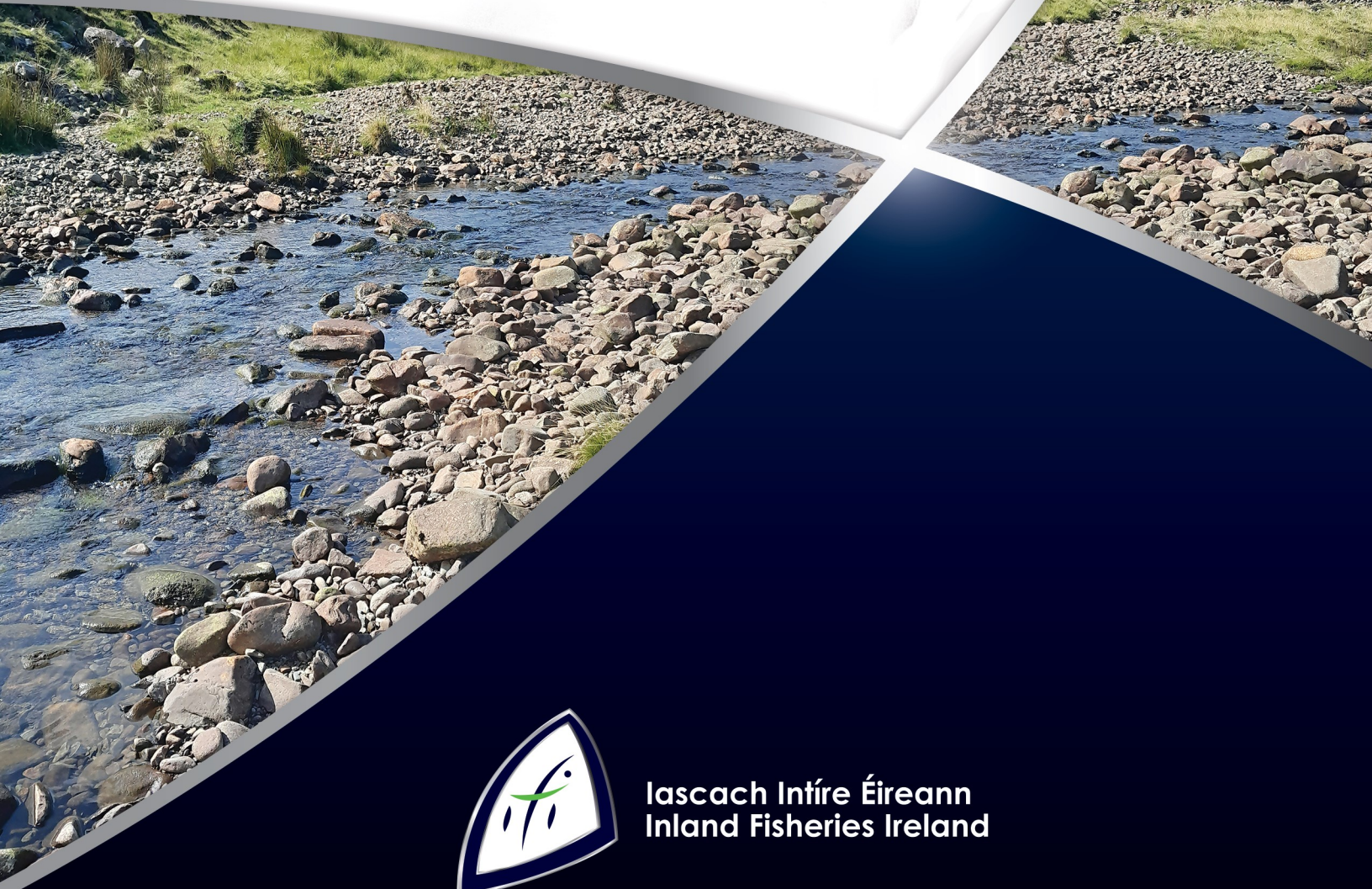


Salmon monitoring programmes 2023 funded under the Salmon and Sea Trout Rehabilitation, Conservation and Protection Fund

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1 Executive Summary

The Salmon and Sea Trout Rehabilitation, Conservation and Protection Fund (SSTRCPF) provided funding for the Salmon Monitoring Programmes in 2023. The work comprised three separate elements: 1) catchment-wide electrofishing (CWEF) programme; 2) estimation of salmon smolt to adult return survival rates; and 3) determination of the life history characteristics of adult salmon in selected catchments.

The principal objective of the CWEF programme is to provide catchment-level assessments of salmon fry distribution and relative abundance in salmon rivers where there is no or a paucity of other information available (such as angling catch or fish counters) to determine the status of salmon stocks. This information is used as part of the annual scientific stock assessment and catch advice process undertaken by the Technical Expert Group on Salmon (TEGOS). For rivers assessed as being under their conservation limit (CL), a mean fry catchment value of 17 salmon fry per five-minutes fishing is used as the threshold value in the provision of catch advice. If this threshold is met, TEGOS advise that rivers which would otherwise be closed to all salmon fishing, may to open for catch and release-only angling.

During 2023, catchment-wide electro-fishing was undertaken in 35 catchments or sub-catchments to assess abundance and distribution of salmon fry. High water levels throughout the summer prevented the commencement or completion of several surveys. 29 catchments were surveyed completely. A further six catchment surveys were commenced, and despite not being entirely completed, these provide an indication of fry abundance in the areas where surveys were undertaken. A total of 722 sites were visited. In the seventeen years of the programme (2007-2023), 631 catchment/sub-catchment surveys in 165 catchments or sub-catchments have been undertaken comprising 13,524 site surveys. For the catchments surveyed in 2023, salmon fry abundance ranged from an average of 0.60 fry/5min on the Ballinglen, to a catchment average of 35.95 fry/5min on the Barrow. The Barrow, Bride, Clady and Erriff recorded an annual catchment wide average of >17 fry in 2023.

In general, rivers where the CWEF threshold value was ≥ 17 over the 2007-2023 period, (based on an average of the most recent five CWEF surveys), are advised by TEGOS to open as catch and release-only fisheries so that catch information can be generated for stock assessments. Overall, good agreement was observed between stock indicators using rod catch or counter data (from index or well monitored catchments) and the results of the CWEF surveys.

In order to enhance smolt to adult marine survival data for wild salmon in Irish rivers, a PIT (Passive Integrated Transponder) tag recording system was installed in the River Erriff (National Salmonid Index Catchment) in 2016 to provide a direct count of the numbers of returning tagged adult fish. Up to 3,500 adult salmon run the system annually and its research facilities include a full upstream trap/counter at the head of the tide which allows for full counts of upstream migrating fish and detection of returning PIT tagged adults. Wild salmon smolts have been captured and PIT tagged annually since spring 2016 at two sites on the system. A corresponding programme also commenced in the Corrib system in 2017, with smolts tagged annually at the Galway weir where a PIT tag detector is present in the Denil fish pass and associated submersible PIT tag antenna are deployed to detect PIT tagged returning adults.

In 2023, a total of 22 PIT tagged adult one-sea winter (1SW) salmon returned to the Erriff from the smolt cohort tagged in 2022, representing a provisional 1SW marine survival of 2.3%. Any multi-sea-winter fish which will return in 2024 will have to be considered when finalising this estimate. For salmon PIT tagged in 2017, 2018, 2019, 2020 and 2021 marine survival was 2%, 3.8%, 3.2%, 1.5% and 1.5% respectively. Marine survival of PIT tagged fish in the Corrib from the cohort tagged in 2017, 2018, 2019, 2020 and 2021 were estimated as 7.4%, 4%, 5.3%, 2.8% and 2.7%, respectively. The Corrib rates are considered to be minimum marine survival estimates as some fish may avoid detection on return when the majority of gates are open in the Galway weir. Marine survival data for the Corrib in 2023 is pending and will be published in the next report. A more comprehensive picture of salmon marine survival trends will become available when a more long-term time series of results from both the Erriff and Corrib are available.

2 Introduction

The Salmon and Sea Trout Rehabilitation, Conservation and Protection Fund (SSTRCPF) provided funding for the Salmon Monitoring Programmes in 2023. The work comprised three separate elements:

- 1) catchment-wide electrofishing (CWEF) programme;
- 2) estimation of salmon smolt to adult return survival rates; and
- 3) determination of the life history characteristics of adult salmon in selected catchments.

This report presents the results of each of these activities in 2023.

2.1 Catchment-wide electrofishing programme

The principal objective of the CWEF programme is to provide catchment-level assessments of salmon fry distribution and relative abundance in salmon rivers where there is no or a paucity of other information available (such as angling catch or fish counters) to determine the status of salmon stocks. This information is used as part of the annual scientific stock assessment and catch advice process undertaken by the Technical Expert Group on Salmon (TEGOS). For rivers assessed as being under their conservation limit (CL), a mean fry catchment value of 17 salmon fry per five-minutes fishing is used as the threshold value in the provision of catch advice. If this threshold is met, TEGOS advise that rivers which would otherwise be closed to all salmon fishing, may to open for catch and release-only angling. For catch advice purposes for a specific river, the CWEF value is determined from the average of mean values of up to five preceding annual surveys with a minimum of at least two survey years required. The generation of angling catches in rivers which would otherwise be closed to fishing enables TEGOS to assess their stock status *via* this information. The programme also provides valuable information on salmon distribution in Ireland as required for the EC Habitats Directive Article 17 reporting and contributes to the identification of channel and site-specific issues as pollution incidents, local habitat pressures, presence of invasive species and the identification of potential barriers to migration. A wider benefit of the programme is the recording of the distribution of other fish species encountered including those of conservation importance.

Electrofishing of juveniles presents an alternative (and fisheries independent) source of population information, as the numbers of juveniles should be a good reflection of the number of adults which produced them and the relative productive capacity of that river. This method is based on a relationship between fry abundance (which may be measurable annually) and

adult returns for rivers as informed by estimates of stock from rod catches or fish counters. The long-term objective of the CWEF programme is to develop a robust index of juvenile salmon abundance (0+ salmon fry) as a complementary tool to inform the assessment of CL attainment on individual rivers. Where sufficient data can be accumulated in catchments with an independent adult stock monitoring system it is intended to explore the potential of building fry and adult return relationship models. The technique and associated models are likely to provide the best estimate of salmon stock status in closed rivers and in small rivers where rod catch was historically low (<10 salmon annual rod catch) and no other status assessment method is available

2.2 Use of telemetry (PIT tagging) to estimate smolt to adult survival rates

Salmon smolt to adult return rates are widely used for scientific assessments of salmon stock status (e.g. ICES Working Group on North Atlantic Salmon). Marine survival is considered a major factor in river stock size and understanding the reason for these losses is driving several marine phase research programmes. In order to establish such data for wild salmon in Irish rivers, a PIT tagging programme was initiated in the National Salmonid Index Catchment River Erriff (NSIC River Erriff) in 2016 to monitor annual marine survival in the salmon stock there. A corresponding programme also commenced in the Corrib system in 2017.

2.3 Biological assessment of salmon populations

Knowledge of salmon life history strategies is required to understand and model salmon populations in different systems. Biological data on salmon including sea age, run-timing, sex ratio and fecundity are necessary to understand population dynamics within a river. Changes to any of these inputs can influence the outcome of the production models used to predict the likely returns to a river and potential fishery performance. Life history traits such as smolt age, sea age, growth and frequency of spawning can be determined from scale reading. Combined with data on time of entry into the system, sex ratio and fecundity, the often complex characteristics of a population can be established and the models can be adjusted accordingly. For example, if the proportion of multi-sea-winter (MSW) salmon entering a system is greater than previously known this would have the effect of reducing the CL as these fish are likely to have a higher female:male ratio and would transport a greater number of eggs into a catchment because of their greater size compared to grilse.

3 Methods

3.1 Catchment-wide electrofishing programme

The CWEF programme is conducted between July and September annually since 2007 and provides a relative index of salmon fry abundance based on a semi-quantitative electrofishing technique (Crozier and Kennedy 1994; and Gargan et al., 2008). The method consists of surveying potential spawning and nursery sites in riffle habitat which are geographically spread throughout a given catchment. Only channels of stream orders > 1 are surveyed. At each sampling site, timed electrofishing (five-minutes duration) using electrofishing back-packs is employed. Numbers of salmon and trout fry and parr encountered are recorded, and the fork lengths of fry captured are measured in 1 cm increments. In addition, standard sampling site characteristics are also recorded. These include length and mean width fished, mean depth fished, relative substrate composition, and instream and riparian species present and their relative percentage cover. Other fish species and white-clawed crayfish present are also recorded as well as any invasive species, habitat issues or pollution concerns encountered. The mean catchment-wide numbers of salmon fry encountered are calculated by averaging all the individual sites sampled.

3.2 Use of telemetry (PIT tagging) to estimate smolt to adult survival rates

In the NSIC Erriff, up to 1,000 wild smolts per annum are PIT tagged (depending on smolt output) at two locations in the catchment (the smolt trap on the Black River downstream of Tawnyard Lough and at a screw trap in main channel). In the Corrib, up to 2,000 smolts are PIT tagged annually at the smolt trap at the Galway weir. In both instances, individual lengths of tagged smolts are recorded. The NSIC River Erriff research facilities include a full upstream trap/counter with a PIT tag detector at the head of the tide which allows for full counts of upstream migrating fish and monitoring of PIT tagged returns. In the Corrib, a PIT tag detector is present in the Denil fish pass at the Galway weir and a submersible PIT tag antenna is deployed immediately downstream of this to detect PIT tagged returning adults. Preliminary marine survival estimates for each system are calculated as the percentage of PIT tagged adult salmon detected on return in relation to the number of smolts tagged. This is further broken down by sea-age (i.e. one-sea-winter grilse and multi-sea-winter salmon). In addition, where possible, scale samples are taken from tagged returns captured by anglers or in the NSIC Erriff upstream trap and associate length and weight data are recorded.

3.3 Biological assessment of salmon populations

Salmon scales can be received from the commercial fisheries, anglers and from specific research projects each year and are aged using standard methods (Coyne et al. 2019).

4 Results

4.1 Catchment-wide electrofishing programme

4.1.1 Results from 2023

During 2023, catchment-wide electro-fishing was undertaken at a total of 722 sites in 35 catchments or sub-catchments to assess abundance and distribution of salmon fry. High water levels throughout the summer prevented the commencement or completion of several surveys. 29 catchments were surveyed completely. A further six catchment surveys were commenced, and despite not being entirely complete, these provide some indication of fry abundance in the areas where surveys were undertaken.

The results for catchments surveyed in 2023 are presented in Figure 1, Figure 2 and Table 1. Salmon fry abundance ranged from an average of 0.60 fry/5min on the Ballinglen, to a catchment average of 35.95 fry/5min on the Barrow. The Barrow, Bride, Clady and Erriff recorded an annual catchment wide average of >17 fry in 2023.

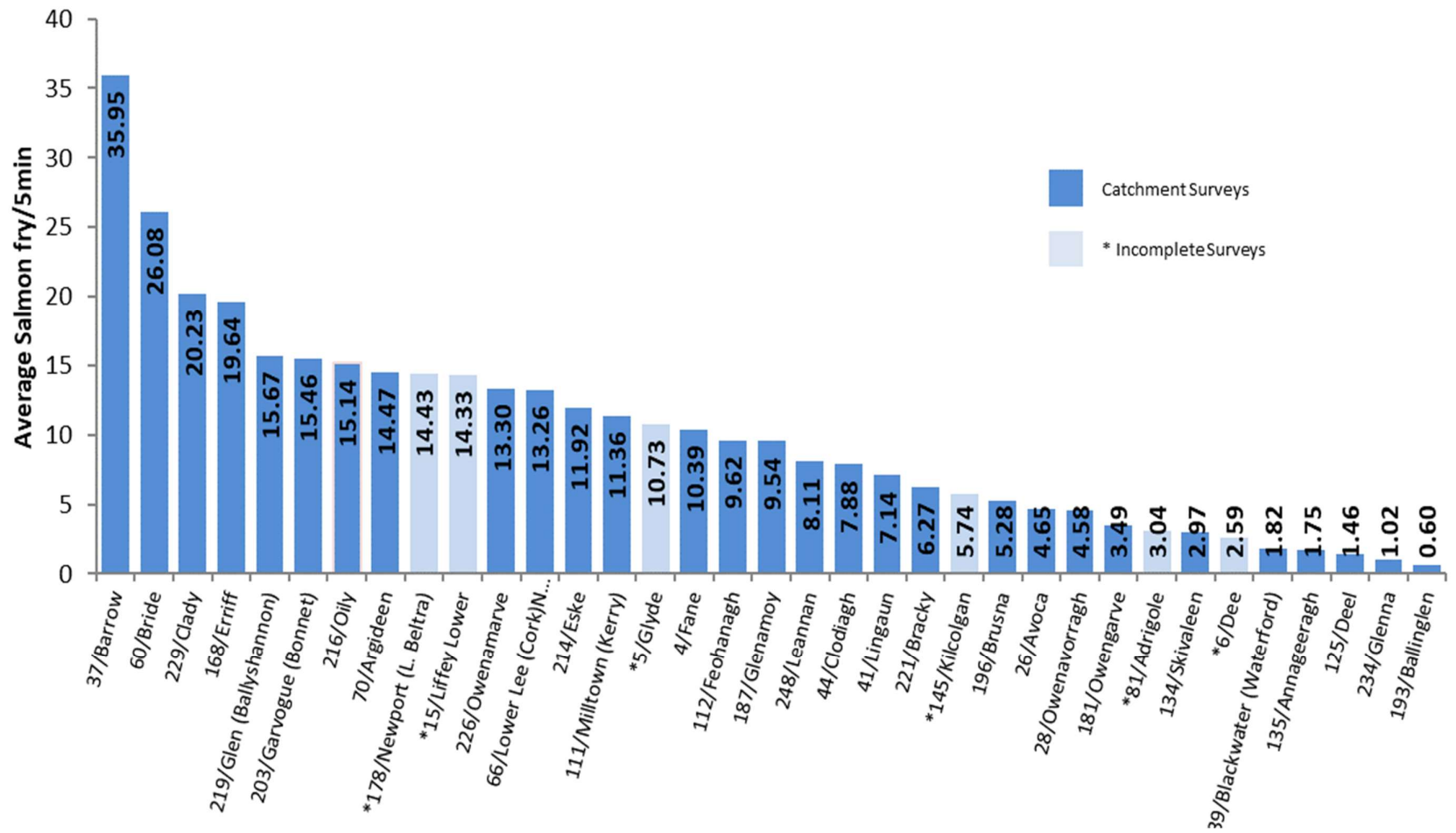


Figure 1: Summary of CWF results for the catchments surveyed in 2023.

Table 1 Summary of annual results (2012-2023) and current CWF indices for catchments surveyed in 2023.

Code/River	Fry Year												Most recent 5 surveys	
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Index	# Surveys Inc.
004/Fane	22.09			8.94*		0.5*	3.65					10.39	14.09	4
005/Glyde				5.188				4.024		6.582		10.73*	12.90	5
006/Dee				10.51				4.18*	7.59			2.59*	15.37	5
015/Liffey Lower	12.12				6.75		19.18				9*	14.33*	16.14	5
026/Avoca	5.15				1.89		8.37*	3.95				4.65	6.90	5
028/Owenavorrhagh		0.33		4.61			6.20			2.40		4.58	3.62	5
037/Barrow	27.11				8.93*	11.65		16.64				35.95	<u>22.75</u>	5
039/Blackwater (Waterford)									26.54			1.82	14.18	2
041/Lingaun					14.52				47.60			7.14	<u>23.09</u>	3
044/Clodiagh					11.77				51.00			7.88	<u>23.55</u>	3
060/Bride			19.85			7.65		18.93				26.08	<u>19.44</u>	5
066/Lower Lee (Shournagh/ Martin)							18.34†					13.26†	15.80	2
070/Argideen										28.92		14.47	<u>20.18</u>	3
081/Adrigole		4.68	1.33				17.20					3.04*	7.74	3
111/Milltown (Kerry)		13.02		8.76				11.25				11.36	14.17	5
112/Feohanagh		3.56	11.93					13.75				9.62	11.46	5
125/Deel			0.21		1.87	0.04				3.83		1.46	1.14	5
134/Skivaleen				11.70	14.54*				10.30			2.97	9.95	4
135/Annageeragh		1.82	9.24						0.84			1.75	3.41	4
145/Kilcolgan						0.10*	0.79*		11.95			5.74*	7.23	2
168/Erriff	24.45	27.45	24.90	28.52	21.72	13.69	22.81	22.25	31.95	40.49	37.18	19.64	<u>30.30</u>	5
178/Newport (L. Beltra)			17.40									14.43*	13.00	3
181/Owengarve			6.96	0.90					13.01			3.49	5.98	5
187/Glenamoy												9.54	14.45	3
193/Ballinglen		6.37			4.97					10.73		0.60	7.55	5
196/Brusna		14.16	14.74						6.73*			5.28	9.79	4
203/Garvogue (Bonnet)	18.54									19.53	16.37	15.46	15.53	5
214/Eske				14.07			10.94					11.92	14.04	5
216/Oily			16.62			21.26			18.64			15.14	<u>21.07</u>	5
219/Glen (Ballyshannon)				18.37			18.56		11.71			15.67	16.75	5
221/Bracky	21.57		12.24						5.31			6.27	11.24	5
226/Owenamarve		2.64	3.00							10.67		13.30	6.67	5
229/Clady	37.21											20.23	<u>24.52</u>	3
234/Glenna		7.77			4.00					11.43		1.02	5.60	5
248/Leannan	22.19	19.51	20.87	15.27	15.05*	19.47	20.11	21.33	20.50	18.23	13.83	8.11	16.40	5

* surveys not completed, † sub-catchment surveys.

4.1.2 Results from 2007 to 2023

From 2007 to 2023, a total of 165 separate catchments or sub-catchments have been sampled comprising a total of 14,801 site surveys. To facilitate assessment of status based on fry abundance, mean annual abundance values for the most recent five surveys, where data are available, is calculated. This approach is consistent with the TEGOS approach to other

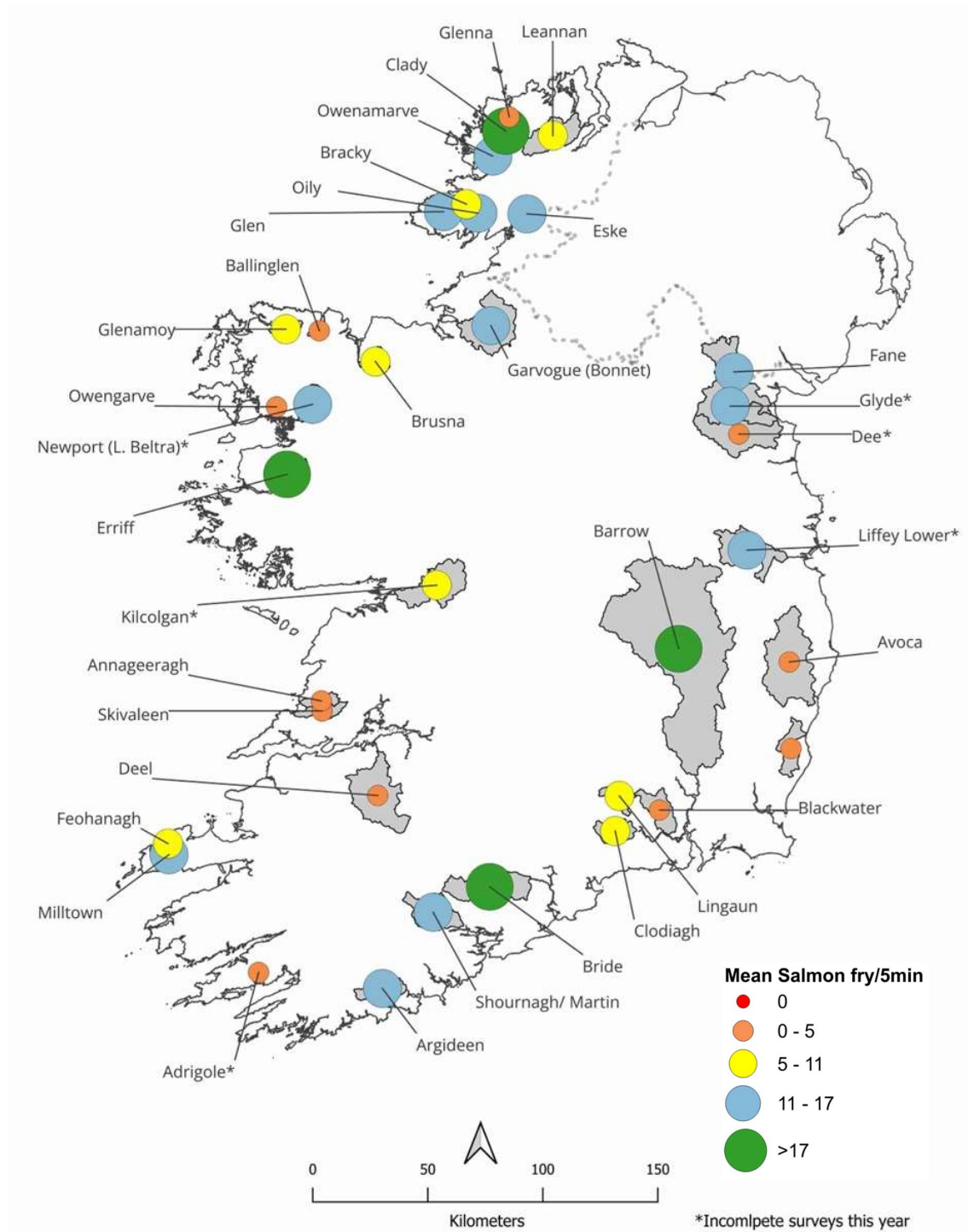


Figure 2 Mean salmon fry per five-minutes timed electrofishing for rivers sampled in 2023.

datasets and reduces the potential of an outlier result influencing the data disproportionately. The current catchment-specific CWF indices presented in this document are based on the most recent five CWF surveys of CWF data collated from survey activity since 2007. Annualised CWF results 2007 to 2023 for all catchment surveyed are presented in Appendix C.

Data in Figure 3 presents the CWF annual mean abundances of salmon fry in 165 discrete catchments where electrofishing results are available. Thirty-four catchments have only one survey within the period used to calculate the CWF index. Highest salmon fry numbers were recorded in rivers in the south and southwest and north and northwest of Ireland. The Shannon and eastern regions generally recorded low salmon fry abundance; and many of the smaller catchments along the west coast also had low numbers of fry. Catchment-wide salmon fry averages for rivers electrofished from 2007 to 2023 are presented in Figure 3 and Figure 4.

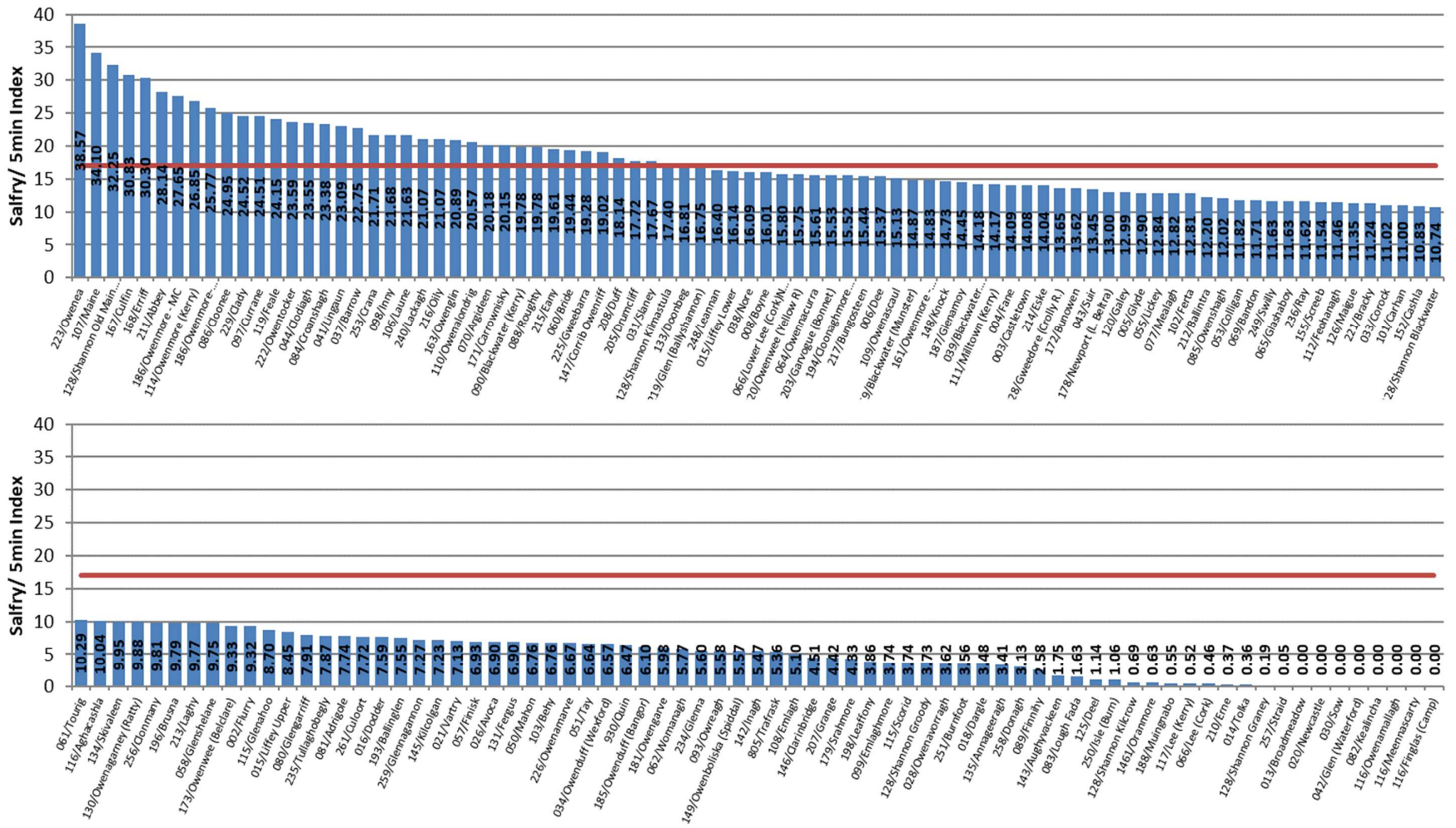


Figure 3 Current CWF index (mean salmon fry per 5 minutes) for all discrete catchments surveyed to date (red line indicates CWF threshold value to advise catch and release-only angling in systems below conservation limit)

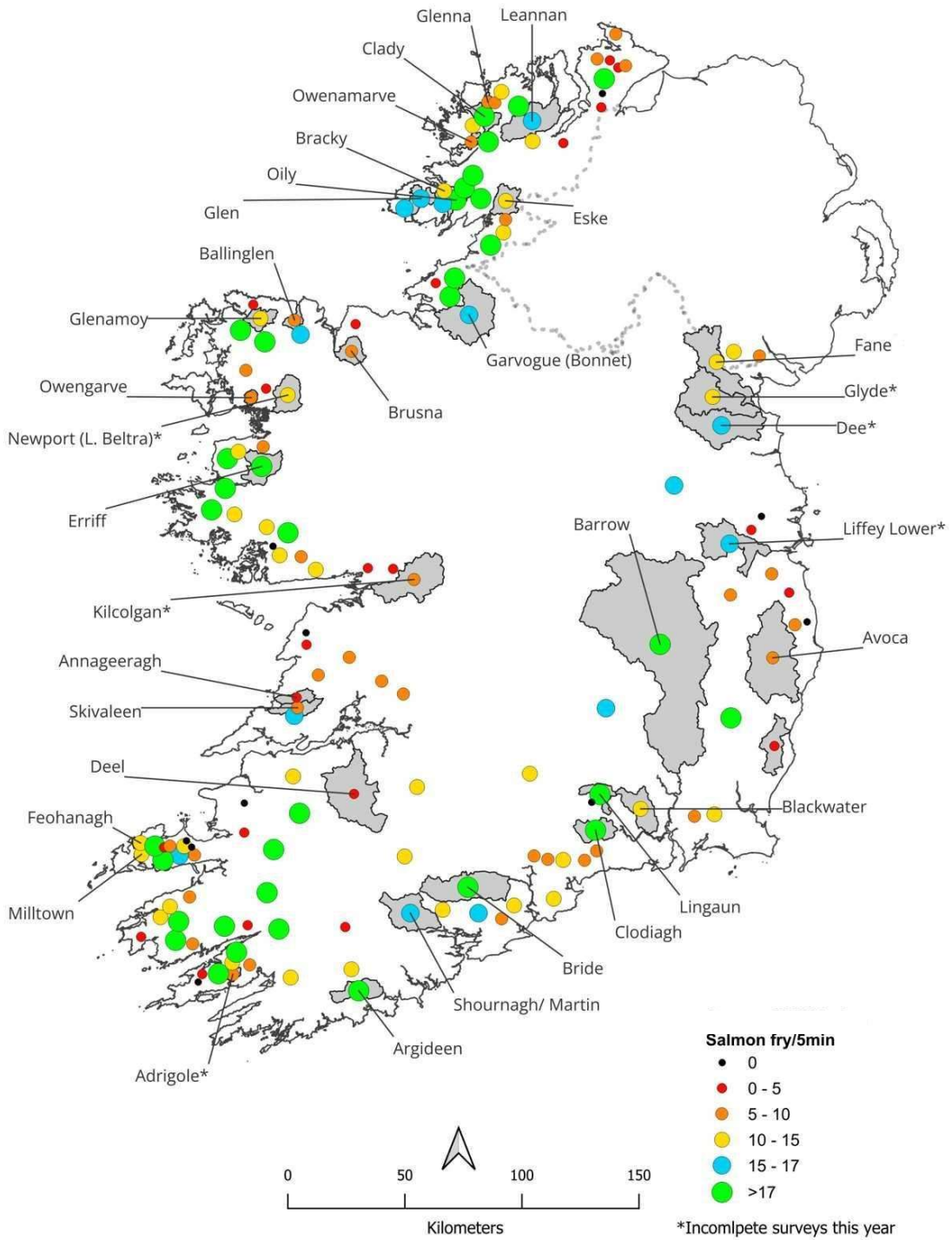


Figure 4 Current CWF index values for all discrete catchments surveyed to date

4.2 Use of telemetry (PIT tagging) to estimate smolt to adult survival rates

The number of salmon smolts tagged in each of the Erriff and Corrib systems and associated lengths data are presented in Table 2. In 2023, a total of 22 PIT tagged adult one-sea winter (1SW) salmon returned to the Erriff from the smolt cohort tagged in 2022, representing a provisional 1SW marine survival of 2.3%. Any multi-sea-winter fish which will return in 2024 will have to be considered when finalising this estimate. For salmon PIT tagged in 2017, 2018, 2019, 2020 and 2021 marine survival was 2%, 3.8%, 3.2%, 1.5% and 1.5% respectively. Marine survival of PIT tagged fish in the Corrib from the cohort tagged in 2017, 2018, 2019, 2020 and 2021 were estimated as 7.4%, 4%, 5.3%, 2.8% and 2.7%, respectively (Table 3). The Corrib rates are considered to be minimum marine survival estimates as some fish may avoid detection on return when the majority of gates are open in the Galway weir. Marine survival data for the Corrib in 2023 is pending and will be published in the next report. A more comprehensive picture of salmon marine survival trends will become available when a more long-term time series of results from both the Erriff and Corrib are available.

Table 2 Number and lengths of salmon smolts PIT tagged in the Erriff and Corrib systems since 2016.

Year	Location	No. of fish tagged	Mean (cm)	SD (cm)	Min (cm)	Max (cm)
2016	Erriff	1022	12.5	1.5	8.7	18
2017	Erriff	553	12.8	1.6	10	21.6
2018	Erriff	893	12.8	1.3	10	18.2
2019	Erriff	912	12.3	1.1	10	19.2
2020	Erriff	395	14	1.2	11.2	18.7
2021	Erriff	1302	12.4	1.2	10	17.6
2022	Erriff	1195	12.3	1.4	10	17.6
2023	Erriff	966	12.3	3.9	9.8	19.0
2017	Corrib	1600	16.5	2.3	11.2	24.8
2018	Corrib	1988	14.6	2	11.1	26.5
2019	Corrib	2057	14.9	1.8	9.6	21.6
2020	Corrib	1992	14.1	1.2	11	21.2
2021	Corrib	1999	15	1.5	12	22
2022	Corrib	1997	16	1.7	12.8	26.4
2023	Corrib	2000	14.5	1.3	10.8	22.4

Table 3 PIT tag detections from returning adult salmon tagged since 2016.

Tagging year	Location	No. of smolts tagged	No. of returning adults detected	% Marine survival
2016	Erriff	1022	36	3.5
2017	Erriff	553	11	2
2018	Erriff	893	34	3.8
2019	Erriff	912	29	3.2
2020	Erriff	395	6	1.5
2021	Erriff	1302	20	1.5
2022	Erriff	1195	22	2.3
2017	Corrib	1600	119	7.4
2018	Corrib	1988	78	4
2019	Corrib	2057	110	5.3
2020	Corrib	1992	50	2.5
2021	Corrib	1999	53	2.7

Figures may be revised based on additional adult returns in following years.

4.3 Biological assessment of salmon populations

4.3.1 Salmon life history overview

Salmon scales have been collected from the commercial fisheries, anglers and from research projects building up a scale collection for analysis. To date the collection consists of scales of 21,518 fish from 68 fisheries around the country. A sample of scales of these fish has been aged through scale reading. Of the 3,572 fish for which age has been determined, 1,160 of fish were MSW fish, 2,293 were grilse; 118 fish were previously spawned grilse (PSG), and one was a kelt. Of these fish types, the MSW were on average the largest, with a mean weight of 4.83 kg, PSG had an average weight of 4.66kg and grilse an average weight of 2.31 kg (Table 4). Most of the grilse were below 4 kg and most MSW and PSG were 4 kg or above (Figure 5). The relative occurrence of fish life history types in samples received from different catchments 1982-2023 is presented in Figure 6. MSW fish numbers peak earlier in the year than grilse and PSG (Figure 7).

Table 4 Summary of weights (kg) of fish for which age has been determined by scale reading 1982-2023.

Fish Type	Mean (kg)	SD	n
Grilse	2.31	0.81	1891
MSW	4.83	1.50	1068
PSG	4.66	1.90	89
Total			3048

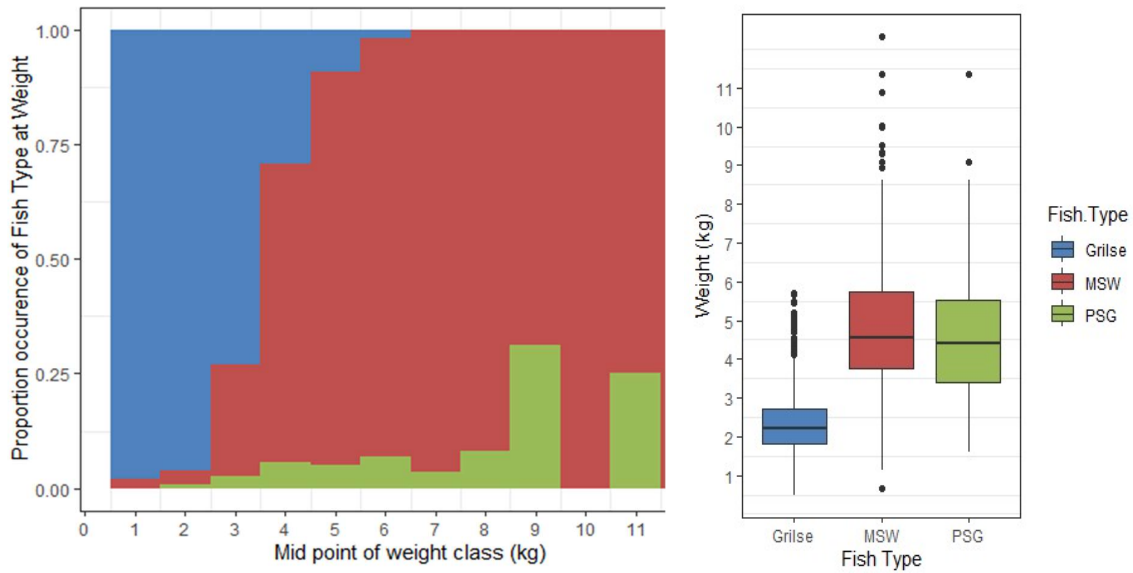


Figure 5 Left panel: Occurrence of fish life history by weight (kg) to end 2023. Right panel: Boxplots of weights (kg) of individual fish of different types (n: grilse-1891, MSW-1068, PSG-89).

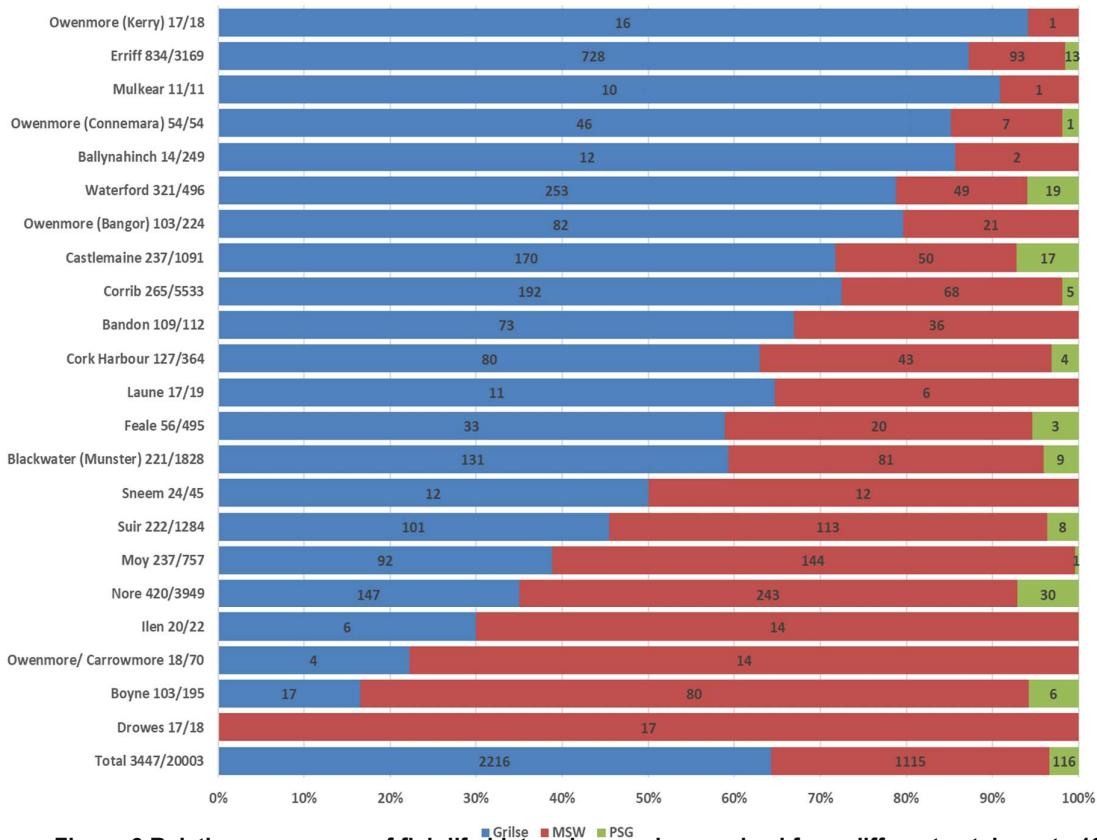


Figure 6 Relative occurrence of fish life history in samples received from different catchments 1982-2023 (Only rivers with >10 fish read are displayed) (Number of scales read/number of scales in database).

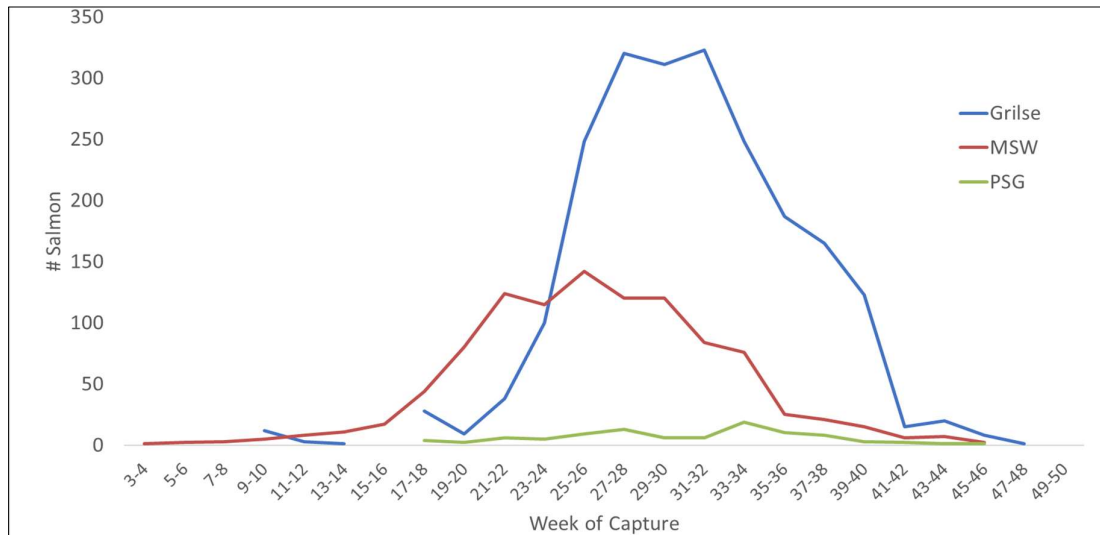


Figure 7 Life history of fish by week of capture. MSW fish are more abundant earlier in the year, grilse and PSG are more abundant later in the year (all years, all rivers, grouped into 2-week periods) (n = 2161 grilse, 1030 MSW & 96 PSG).

4.3.2 Salmon life history assessment 2023

Scale samples received in 2023 came from the Erriff catchments and were from fish captured in the Ashleigh trap during 2022 and 2023. Overall, 154 samples were received, 48 from 2022 and 106 from 2023. The scales of 154 fish were read to determine life history. Of those read 78% were grilse and 22% were MSW. Sizes of fish ranged from a 580 g grilse to a 5.85 kg MSW (Figure 8).

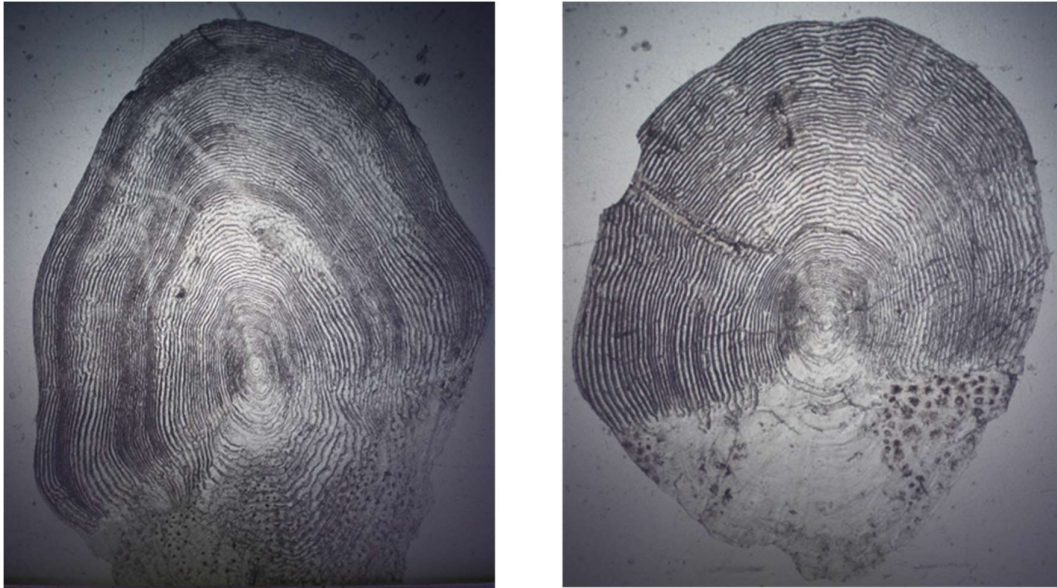


Figure 8 Left panel: 4.45kg multi sea-winter salmon caught 21/06/2023. Right panel: 1.65kg grilse caught on 31/7/2023, both fish caught and released on the Erriff.

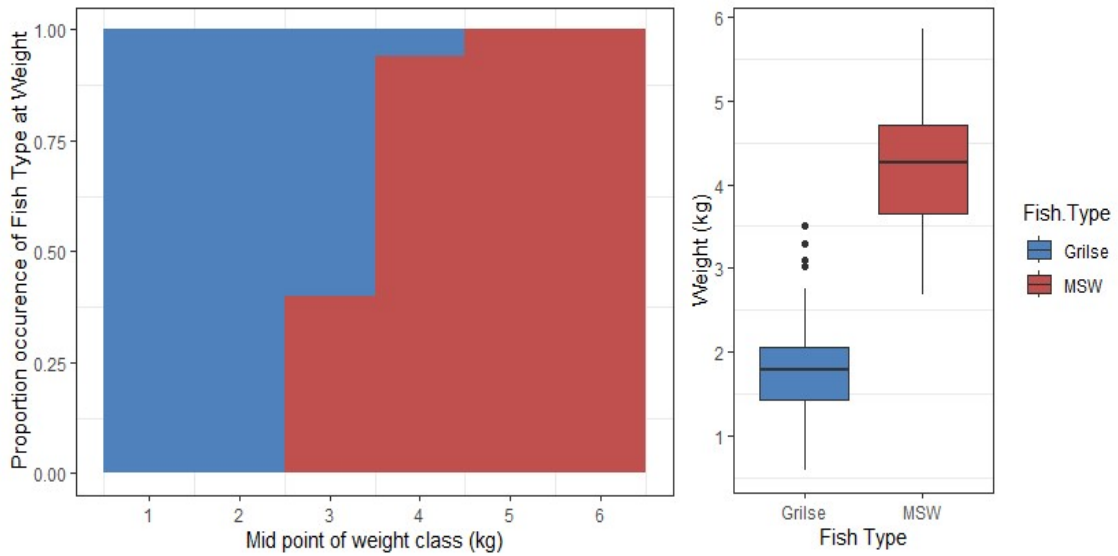


Figure 9 Left panel: Occurrence of fish life history by weight (kg) from samples examined in 2023. Right panel: Boxplots of weights (kg) of individual fish of different types from samples examined (n= 116 grilse, 32 MSW)

5 References

- Coyne, J., Connor, L. and Kelly, F.L. (2019). Manual for Ageing Common Freshwater Fish Species in Ireland. IFISH – Fish and Habitats: Science and Management. Vol. 1. Inland Fisheries Ireland, 3044 Lake Drive, Citywest Business Campus, Dublin 24, Ireland.
- Crozier, W.W. and Kennedy G.J.A (1994). Application of semi-quantitative electro-fishing to juvenile salmonid stock surveys. *Journal of Fish Biology*, 45:159-164.
- Gargan, P., Roche, W., Keane, S. and Stafford, T. (2008). Catchment-wide electrofishing Report. Central Fisheries Board, Mobhi Boreen, Dublin 9.

Appendices:

A Catchment-wide electrofishing

A.1 Neagh Bann International River Basin District

Summary

Since 2007, five rivers have been surveyed in the Neagh Bann International River Basin District (NBIRBD) as part of the ongoing catchment-wide electrofishing surveys. The results of these surveys are presented in Table 5 and Fig. 10. At the present time, none of the rivers meet the threshold index of 17 salmon fry/5min. A survey on the Fane was completed in 2023, while two further surveys on the Glyde and Dee Rivers were weather affected and not extensive enough to be considered complete.

Table 5 Catchment-wide electrofishing data for the Neagh Bann International River Basin District 2015-2023 showing the average salmon fry captured /5min for each year surveyed. Also shown is the current index, surveys prior to 2015 are included in Appendix C

Code/River	Survey Year										Current Index	# Annual Surveys Considered
	2015	2016	2017	2018	2019	2020	2021	2022	2022	2022		
002/Flurry	17.15					<u>37.55*</u>	1.35*	5.58			9.32	3
003/Castletown					5.58	1.87					14.08	5
004/Fane	8.94*		0.5*	3.65						10.39	14.09	4
005/Glyde	5.19				4.02		6.58			<u>10.73*</u>	12.90	5
006/Dee	10.51				<u>4.18*</u>	7.59				<u>2.59*</u>	15.37	5

Bold annual figures indicate years included in the calculation of current the CWEF index.

Underlined index figures indicate those exceeding the 17 salmon fry threshold.

* Incomplete surveys not included in the calculation of current index.

† Sub-catchment surveys.

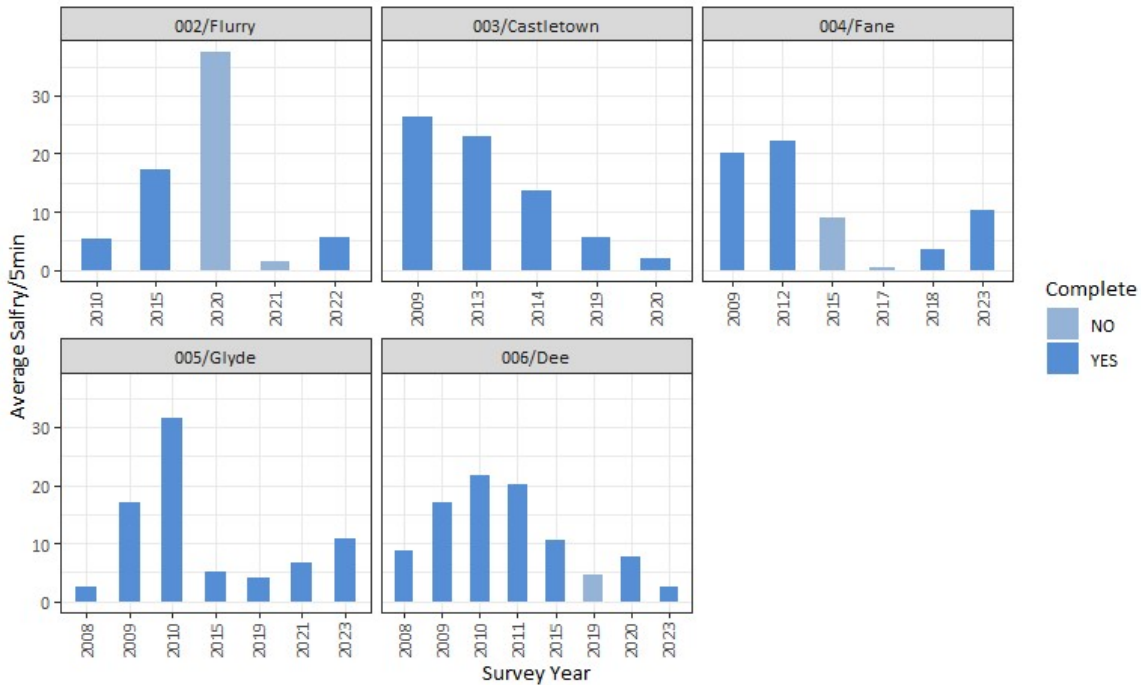


Fig. 10 Summary of results of annual CWEF surveys (average salmon fry per 5min) in Neagh Bann international River basin district 2007-2023.

A.1.1 Fane River

IFI Salmon Catchment #: 4
2023 survey dates: 11-12/9/2023
Mean Salmon Fry/5 min (2023): 10.39 fry/5min
CWEF Index: 14.09 fry/5min.

Sampling carried out by: Seamus Kelledy
 Steven McKenna

Fish Species Present: Brown Trout, Minnow, European Eel, Salmon, Gudgeon, Stone loach

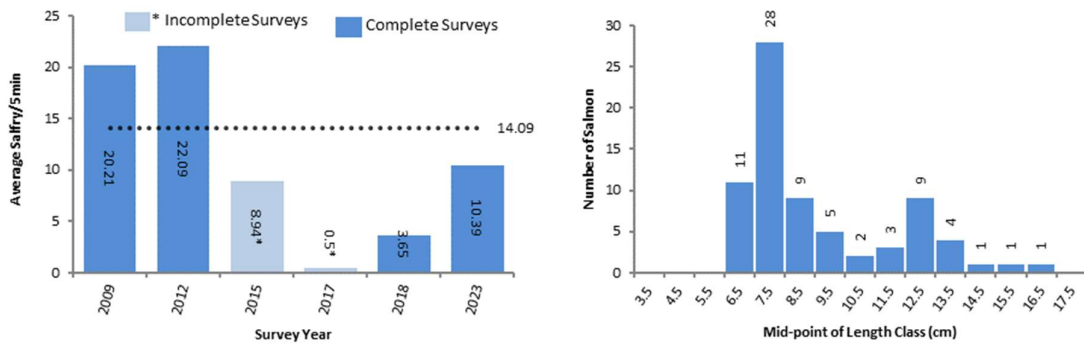


Fig. 11 Summary of results of annual CWEF surveys (salmon fry/5min) along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Fane River.

In this year's survey of the Fane, 11 sites were examined on September 11th and 12th. Salmon fry (0+) were found at 6 sites, with the highest number recorded at site 6, where 21 fry were observed. The modal length of 0+ salmon was 7.5 cm.

Five sites were included in the analysis; the mean catch at these sites was 10.39 salmon fry/5min. The highest salmon fry abundances were observed on the lower stretches of the main channel, no salmon fry were observed upstream from Lough Muckno.

Conclusion

The Fane had a salmon fry abundance of 10.39 salmon fry/5min in 2023. Taking the four previous complete surveys into account this results in a cumulative average of 14.09 salmon fry/5min which is below the 17 salmon fry threshold.

Table 6 Site specific results of CWF on the Fane River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	H 96614 03725	3	1	12	9	Include	17.71	13.29
002	H 91870 07622	2	1	10	9	Eff <60%		
003	H 90947 09590	3	1	10	1	Eff <60%		
004	H 89890 11175	2	1	1	2	Eff <60%		
005	H 88666 12907	2	1	9	0	Include	9.00	0.00
006	H 94852 04767	3	1	5	21	Include	6.92	29.08
007	H 93718 06754	3	1	4	6	Include	6.40	9.60
022	H 84955 20417	3	2	1	0	Us Muckno		
023	H 85512 21618	3	2	0	0	Us Muckno		
025	H 83275 21245	3	2	6	0	Us Muckno		
029	H 87509 14111	3	1	0	0	Include	0.00	0.00

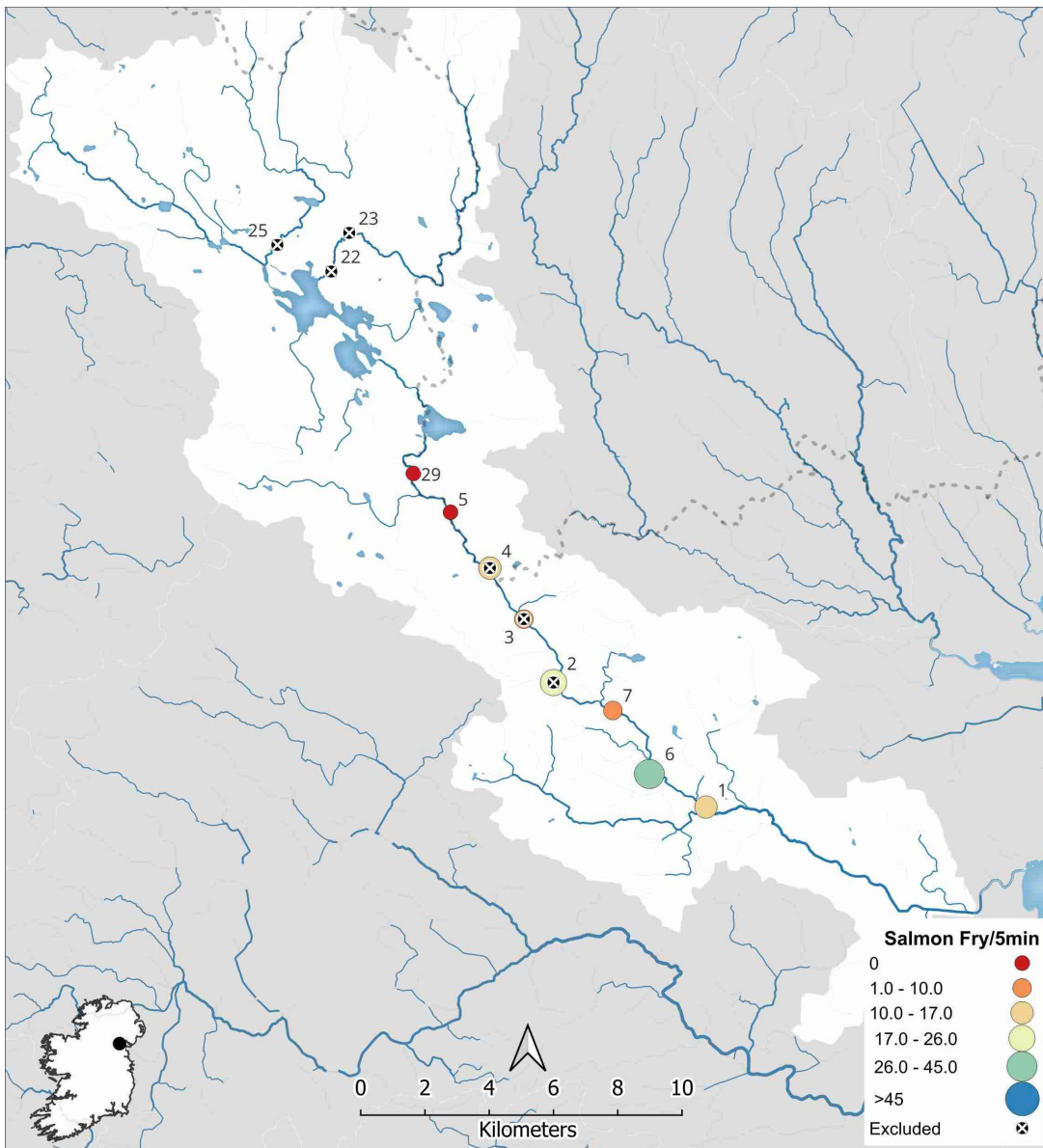


Fig. 12 Showing salmon fry/5min values and locations of surveys on the Fane River in 2023.

A.1.2 Dee River

IFI Salmon Catchment #: 6
2023 survey dates: 05-13/9/23
Mean Salmon Fry/5 min (2023): Incomplete fry/5min
CWEF Index: 9.32 fry/5min.

Sampling carried out by:

Aaron McManus
 Jason Mok
 Maurice Carolan
 Seamus Kelledey
 Steven McKenna

Fish Species Present:

Brown Trout Minnow
 Crayfish Salmon
 European Eel Stone Loach
 Gudgeon 3-Spined Stickleback

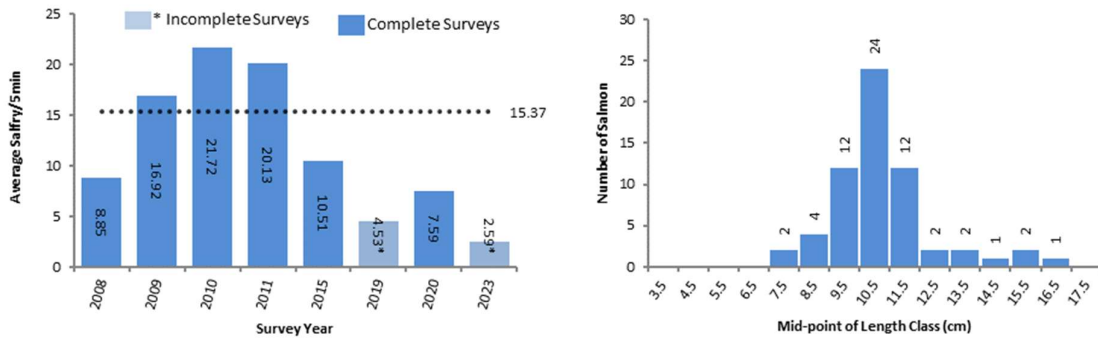


Fig. 13 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Dee River.

In this year's survey on the Dee 22 sites (Table 7) were fished from September 5th to 13th. Salmon fry (0+) were found at 15 sites, with the highest number recorded at site 999 where 15 fry were observed. The modal length of 0+ salmon was 10.5 cm (Fig. 13).

High water levels throughout the system prevented surveys on the main channel and the survey could not be completed.

Table 7 Site specific results of CWF on the Dee River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	O 06606 91181	5	0	0	0	Include	0.00	0.00
002	O 05268 90647	5	2	2	0	Include	2.00	0.00
005	N 78766 91409	3	1	2	1	Include	2.00	1.00
006	N 77267 92468	3	2	3	0	Include	3.00	0.00
007	N 77028 93921	3	2	7	0	Include	7.00	0.00
008	N 75463 94905	3	0	0	0	Unfishable		
009	O 05887 90322	4	1	4	1	Include	4.00	1.00
010	O 05892 89330	4	1	0	2	Include	0.00	2.00
011	O 05674 88746	3	1	7	2	Include	7.00	2.00
012	O 04630 88667	3	2	4	0	Include	4.00	0.00
013	N 94914 89392	3	1	5	0	Include	5.00	0.00
015	N 93166 87620	3	0	11	2	Include	12.69	2.31
016	N 93578 85575	3	3	13	0	Include	18.00	0.00
017	N 95061 84033	3	1	8	0	Include	8.00	0.00
018	N 95791 84467	2	2	0	0	Include	0.00	0.00
020	N 88603 85711	3	0	0	0	Include	0.00	0.00
027	N 79072 88974	3	0	1	15	Include	1.00	15.00
028	N 77537 89981	3	2	7	4	Include	7.00	4.00
029	N 73805 91827	4	3	3	0	Include	3.00	0.00
035	N 92298 88588	3	0	0	0	Include	0.00	0.00
998		0	0	0	26	Include	0.00	26.00
999		0	0	15	1	Include	15.00	1.00

Table 8 Comparison of site-specific results of CWF on the Dee River catchment in 2023 with previous surveys.

Site #	2008	2009	2010	2011	2015	2019	2020	2023
001	10.00	26.00	58.00	38.17	17.00	18.82	3.00	0.00
002	10.00	26.78	35.58	33.22	6.43		0.00	0.00
005	20.00	0.00	9.00	18.94	0.00	0.00	0.00	1.00
006	0.00						0.00	0.00
007	0.00						0.00	0.00
008	0.00						0.00	0.00
009	39.95		23.54	17.25	10.00	16.71	24.00	1.00
010	14.14	12.76	14.67	1.00	6.00	12.00	8.75	2.00
011	7.48	4.16	27.87	19.07	5.33	0.00	0.00	2.00
012	0.00							0.00
013	0.00							0.00
015	24.13	0.00	6.86	2.80	2.57	0.00	4.00	2.31
016	0.00							0.00
017	0.00							0.00
018	0.00							0.00
020	12.00	22.74	33.93	21.56	24.76	2.80	0.00	0.00
027	13.75	11.56	20.15	6.00	13.03	0.00	1.00	15.00
028	19.80	7.44	1.00	8.50	6.72	0.00	1.67	4.00
029	0.00							0.00
035			23.93	4.29	6.84			0.00

Conclusion

A comparison of results obtained this year with those from previous surveys (Table 8) indicates that salmon abundance at sites in 2023 was generally lower than had been previously observed. Since the survey could not be completed, the CWF index remains at 9.32 salmon fry/5min, which is below the 17 salmon fry threshold.

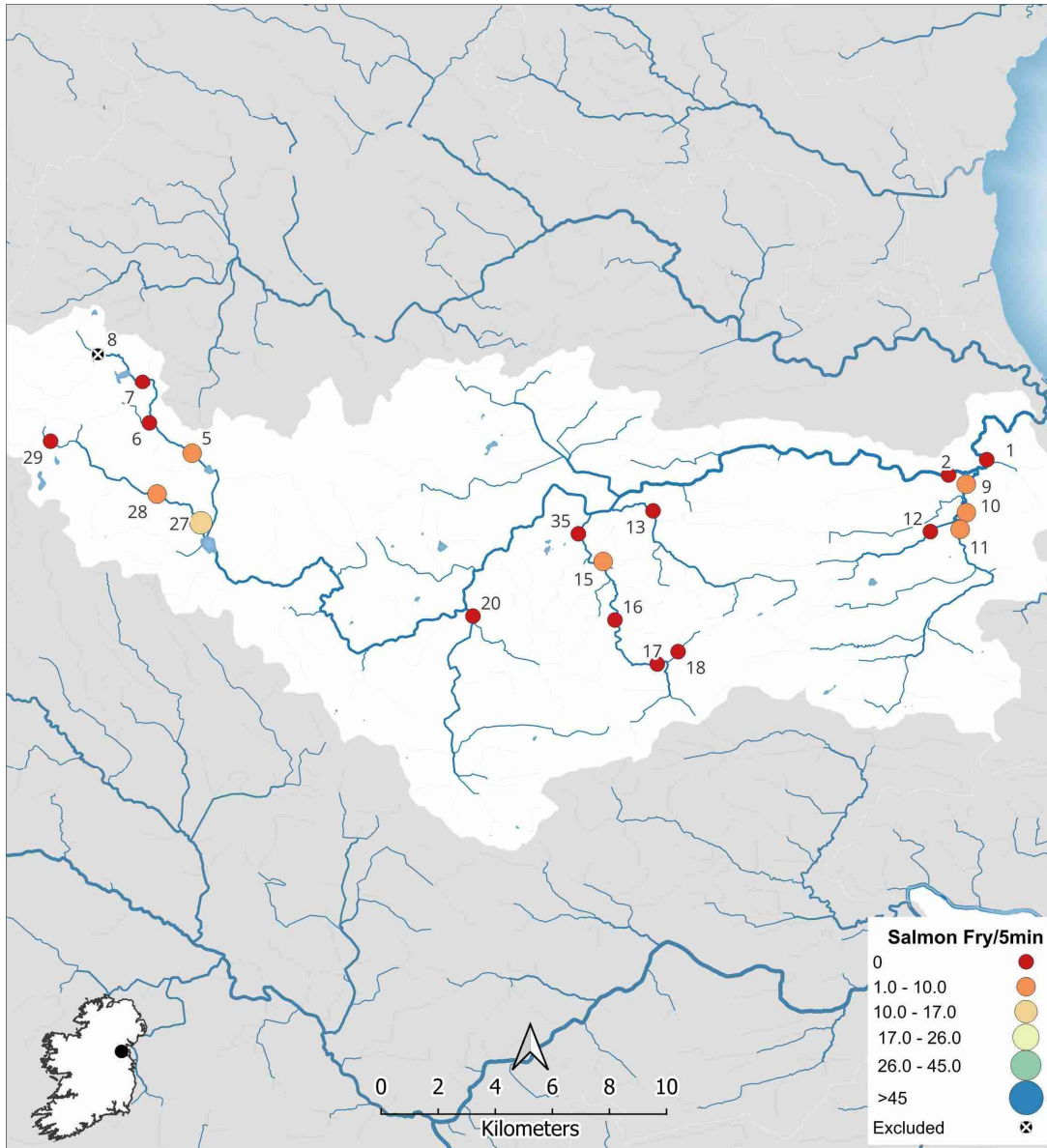


Fig. 14 Showing salmon fry/5min values and locations of surveys on the Dee River in 2023.

A.2 Eastern River Basin District

Summary

Since 2007, ten rivers have been surveyed in the Eastern River Basin District (ERBD) as part of the on-going catchment-wide electrofishing surveys. The results of these surveys are presented in Table 9 and Fig. 15. At the present time, none of the rivers meet the threshold index of 17 salmon fry/5min. A survey on the Avoca was completed in 2023, while a further survey of the lower Liffey was weather affected and is not considered complete.

Table 9 Catchment-wide electrofishing data for the ERBD 2015-2023 showing the average salmon fry captured /5min for each year surveyed. Also shown is the current index, surveys prior to 2015 are included in Appendix C

Code/River	Survey Year									Current Index	# Annual Surveys Considered
	2015	2016	2017	2018	2019	2020	2021	2022	2023		
008/Boyne		14.47				14.94				16.01	5
013/Broadmeadow										0.00	1
014/Tolka				0.00						0.36	3
015/Liffey Lower	6.75			19.18				9*	14.33*	16.14	5
015/Liffey Upper	2.63*			1.00*			1.50*	2.24		8.45	5
016/Dodder								1.25		7.59	2
018/Dargle	4.74				1.03					3.48	5
020/Newcastle				0.00						0.00	1
021/Vartry	6.31	1.75				9.63		2.88		7.13	5
026/Avoca		1.89		8.37*	3.95				4.65	6.90	5

Bold annual figures indicate years included in the calculation of current the CWF index.

Underlined index figures indicate those exceeding the 17 salmon fry threshold.

* Incomplete surveys not included in the calculation of current index.

† Sub-catchment surveys.



Fig. 15 Summary results of annual CWF surveys (average salmon fry per 5min) in results in ERBD 2007-2023, Broadmeadow and Newcastle omitted.

A.2.1 Lower Liffey River

IFI Salmon Catchment #: 15
2023 survey dates: 6/7/2023
Mean Salmon Fry/5 min (2023): Incomplete
CWEF Index: 16.14 fry/5min.

Sampling carried out by: Carl Owen
 Sean Dempsey

Fish Species Present:
 Brown Trout Pike
 European Eel Salmon
 Gudgeon Stonelaoch
 Minnow 3-Spined Stickleback

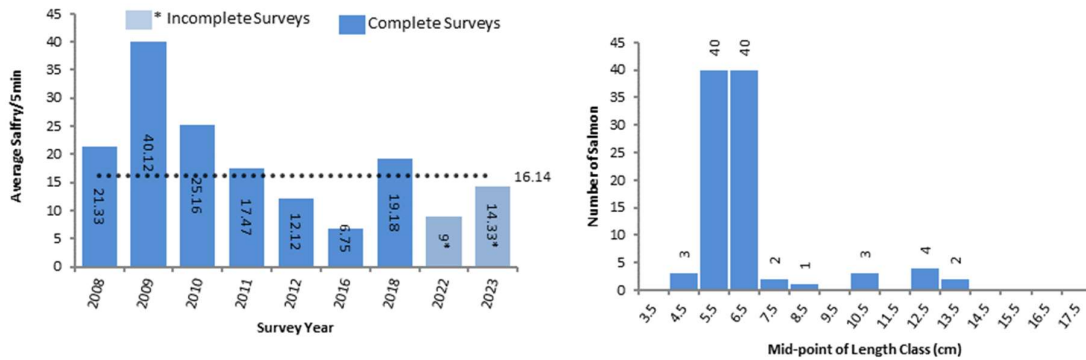


Fig. 16 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Lower Liffey river.

This year's survey on the Lower Liffey (that part of the Liffey not above the Leixlip hydro station) consisted of 6 sites fished on July 6th. Salmon fry (0+) found at all 6 sites, with the highest numbers at site 74 where 33 fry were observed. The modal length of 0+ salmon was 7.5 cm.

Many previously surveyed sites noted for their productivity on the Rye River were omitted from the survey and the survey is not extensive enough to be considered complete.

Table 10 Site specific results of CWEF on the lower Liffey catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	O 10070 34644	6	1	0	1	Include	0.00	1.00
004	O 00919 35793	6	1	0	21	Include	0.00	21.00
027	O 05363 36405	6	1	0	16	Include	0.00	16.00
028	O 03413 35512	6	1	0	2	Include	0.00	2.00
074	O 00430 35860	4	2	3	33	Include	3.00	33.00
113	O 06591 35760	6	2	1	13	Include	1.00	13.00

Table 11 Comparison of site-specific results (salmon fry/5min) of CWF on the Lower Liffey River catchment in 2023 with previous surveys.

Site #	2008	2009	2010	2011	2012	2016	2018	2022	2023
001	12.31	3.33		4			6		1
004	37	23	35			6.4	19		21
027		22.89		12.71		6	35.84	13	16
028		42.48	24	25		18.89	4	5	2
074			21.86	30	22.61	26.79	34		33
113							1		13
Average:	22.25	40.12	23.44	13.10	8.94	6.47	16.56	9	14.33

Conclusion

A comparison of results obtained this year with those from previous surveys (Table 11Table 10) indicates that salmon abundance at sites in 2023 was generally lower than had been previously observed. Since the survey could not be completed, the CWF index remains at 16.14 salmon fry/5min, which is below the 17 salmon fry threshold.

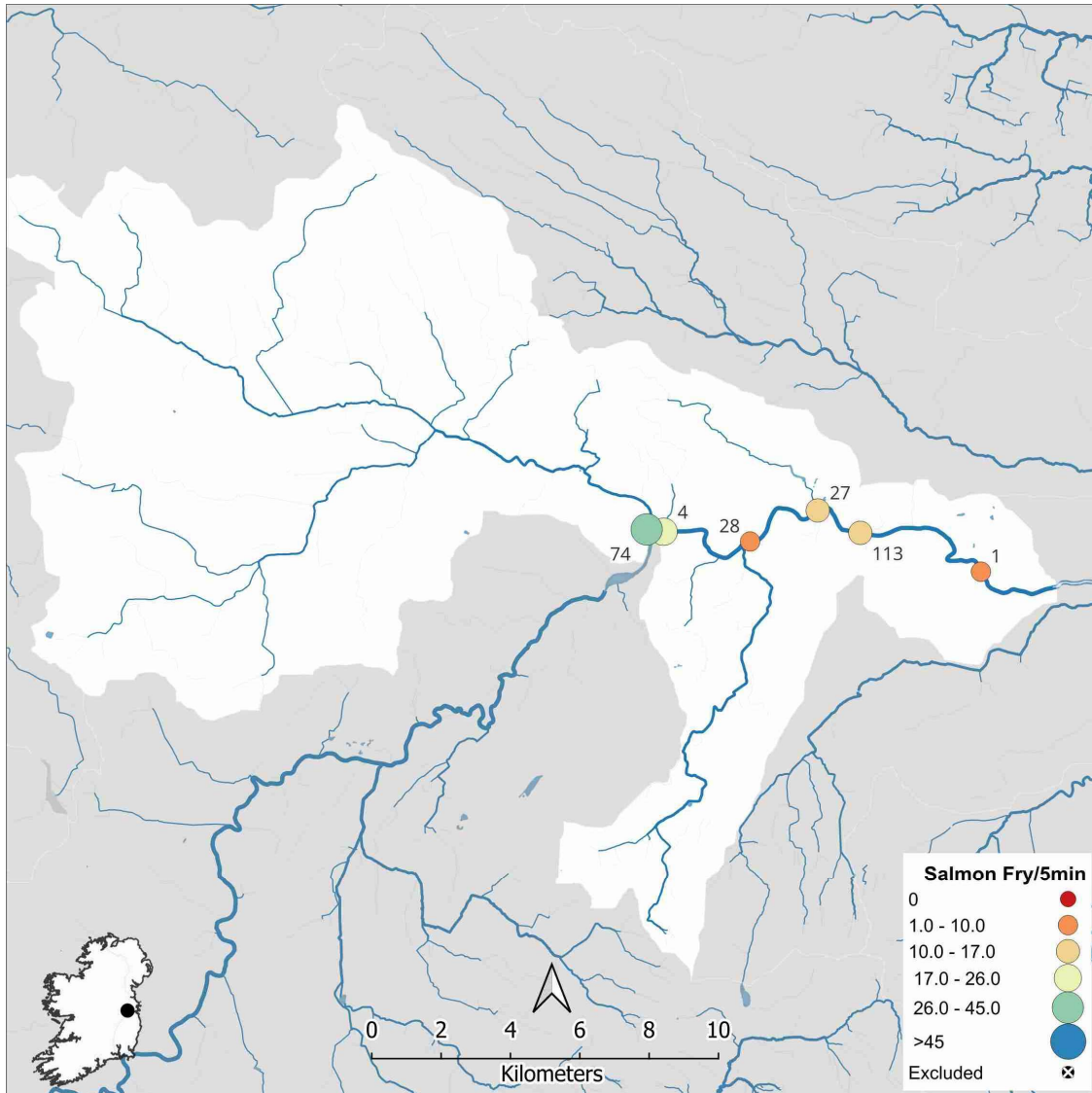


Fig. 17 Showing salmon fry/5min values and locations of surveys on the lower Liffey in 2023.

A.2.2 Avoca River

IFI Salmon Catchment #: 26
2023 survey dates: 28/8 - 12-9/2023
Mean Salmon Fry/5 min (2023): 4.65 fry/5min
CWEF Index: 6.90 fry/5min.

Sampling carried out by:	Fish Species Present:
Carl Owens	Brown Trout Salmon
Daniel Fildes	European Eel Sea Trout
Sean Dempsey	Lamprey sp. 3-Spined Stickleback
	Minnow

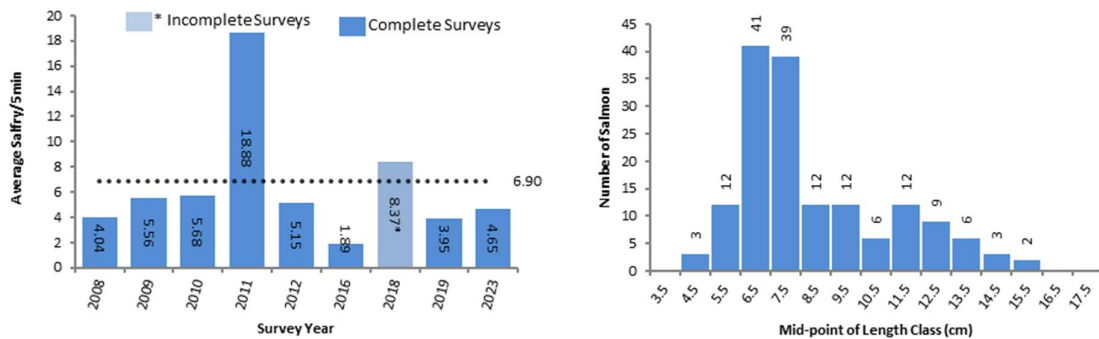


Fig. 18 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Avoca river.

In this year's survey of the Avoca, 23 sites were examined from August 28th to September 12th. Salmon fry (0+) were found at 14 sites, with the highest number recorded at site 26, where 26 fry were observed. The modal length of 0+ salmon was 6.5 cm.

All 23 sites were included in the analysis; the mean catch at these sites was 4.65 salmon fry/5min. Fry were well distributed throughout the system, with the highest abundance observed on the Avonmore River.

Conclusion

The Avoca had a salmon abundance of 4.65 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 6.9 salmon fry/5min which is below the 17 salmon fry threshold.

Table 12 Site specific results of CWF on the Avoca River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
003	T 19647 82194	5	2	1	5	Include	1.00	5.00
006	T 17211 84992	4	1	32	2	Include	32.00	2.00
007	T 14660 87292	4	2	8	3	Include	8.00	3.00
009	T 19258 88726	5	1	3	2	Include	3.00	2.00
013	T 15892 96911	4	1	3	24	Include	3.00	24.00
014	T 17275 99199	4	1	17	4	Include	17.00	4.00
020	T 09303 81516	4	1	14	0	Include	14.00	0.00
022	T 07657 83637	4	2	7	0	Include	7.00	0.00
023	T 14816 78941	5	1	14	1	Include	14.00	1.00
024	T 10532 90732	4	2	0	2	Include	0.00	2.00
025	T 10879 77849	4	1	5	11	Include	5.00	11.00
026	T 19266 88973	5	1	5	26	Include	5.00	26.00
027	T 15983 92960	5	1	3	8	Include	3.00	8.00
029	T 13810 97633	3	2	7	0	Include	7.00	0.00
031	T 12481 96767	3	1	4	0	Include	4.00	0.00
033	T 12319 96698	3	3	2	0	Include	2.00	0.00
034	T 20367 79914	5	3	0	0	Include	0.00	0.00
042	T 11023 96400	3	1	4	0	Include	4.00	0.00
048	O 16081 01723	4	2	8	0	Include	8.00	0.00
052	T 14450 95795	4	2	2	0	Include	2.00	0.00
071	T 05564 86050	2	2	0	8	Include	0.00	8.00
117	T 17024 92099	5	3	2	9	Include	2.00	9.00
137	T 19465 87901	5	2	8	2	Include	8.00	2.00

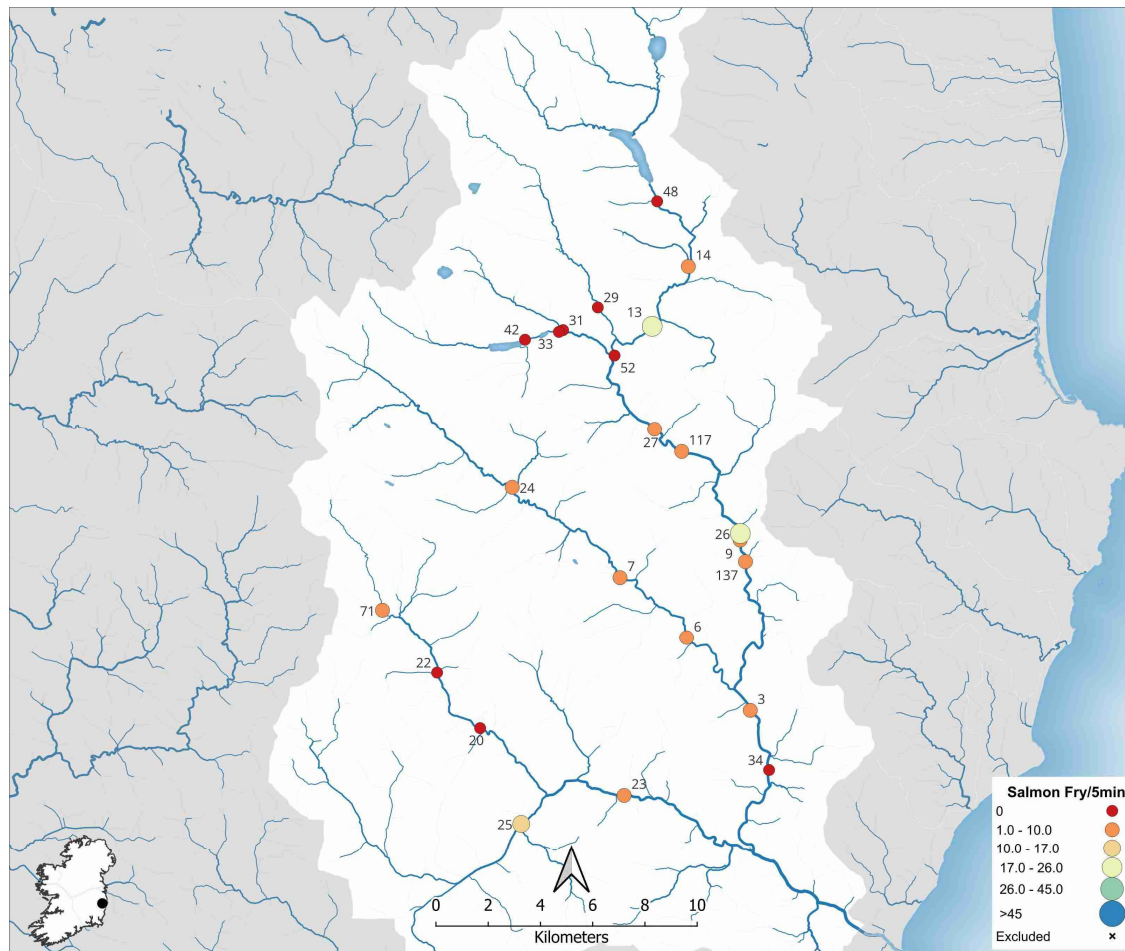


Fig. 19 Showing salmon fry/5min values and locations of surveys on the Avoca River in 2023.

A.3 South Eastern River Basin District

Summary

Since 2007, fourteen rivers have been surveyed in the South Eastern River Basin District (SERBD) as part of the ongoing catchment-wide electrofishing surveys. The results of these surveys are presented in Table 13 and Fig. 20. Currently four of these rivers are meeting the threshold index of 17 salmon fry/5min: the Slaney, Barrow, Lingaun and Clodiagh. In 2023 surveys were completed on the Owenavorrhagh, Barrow, Lingaun, and Clodiagh.

Table 13 Catchment-wide electrofishing data for the SERBD 2015-2023 showing the average salmon fry captured /5min for each year surveyed. Also shown is the current index, surveys prior to 2015 are included in Appendix C

Code/River	Survey Year									Current Index	# Annual Surveys Considered
	2015	2016	2017	2018	2019	2020	2021	2022	2023		
028/Owenavorrhagh	4.61			6.20			2.40		4.58	3.62	5
031/Slaney		8.77	14.52		3.61			28.39		<u>17.67</u>	5
033/Corock		5.47	1.23		6.47†			0.26		11.02	4
034/Owenduff (Wx.)		4.33	0.40		16.0*			1.56		6.57	5
037/Barrow		8.93*	11.65		16.64				35.95	<u>22.75</u>	5
038/Nore		12.44			12.70*		16.79			16.09	3
039/Blackwater (Wd.)						26.54			1.82	14.18	2
041/Lingaun		14.52				47.60			7.14	<u>23.09</u>	3
042/Glen (Wd.)		0.00								0.00	1
043/Suir		9.81						17.09		13.45	2
044/Clodiagh		11.77				51.00			7.88	<u>23.55</u>	3
050/Mahon	4.57				8.60					6.76	4
051/Tay	6.14	1.75			9.91					6.64	4
053/Colligan		3.62			4.84					11.82	4

Bold annual figures indicate years included in the calculation of current the CWF index.

Underlined index figures indicate those exceeding the 17 salmon fry threshold.

* Incomplete surveys not included in the calculation of current index.

† Sub-catchment surveys.

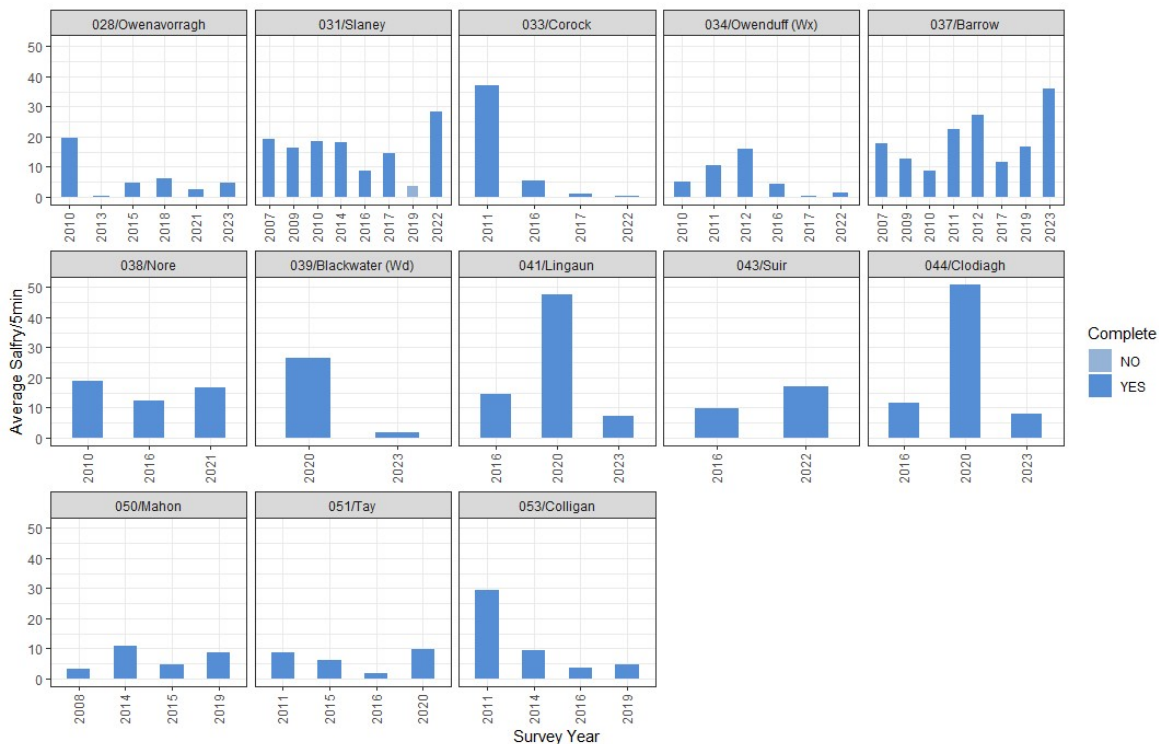


Fig. 20 Summary results of annual CWF surveys (average salmon fry per 5min) in results in SERBD 2007-2023, River Glen has been omitted.

A.3.1 Owenavorrhagh River

IFI Salmon Catchment #: 28
2023 survey dates: 20-27/7/2023
Mean Salmon Fry/5 min (2023): 4.58 fry/5min
CWEF Index: 3.62 fry/5min.

Sampling carried out by:	Fish Species Present:
Dawid Kopczynski	Brown Trout Salmon
Micheal Farnan	Dace Stone Loach
Rob Denby	European Eel 3-Spined Stickleback
Rob Dent	Lamprey sp.
Sam Fanadam	Minnow

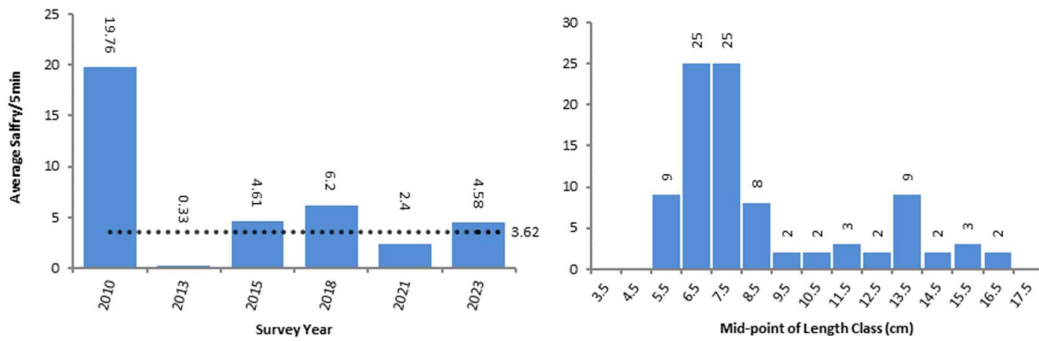


Fig. 21 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Owenavorrhagh river.

In this year’s survey of the Owenavorrhagh, 19 sites were examined from July 20th to 27th. Salmon fry (0+) were found at 10 sites, with the highest number recorded at site 1, where 12 fry were observed. The modal length of 0+ salmon was between 6.5 and 7.5 cm.

Seventeen sites were included in the analysis; the mean catch at these sites was 4.58 salmon fry/5min. Fry were only observed in the lower half of the main channel.

Conclusion

The Owenavorrhagh had a salmon abundance of 4.58 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 3.62 salmon fry/5min which is below the 17 salmon fry threshold.

Table 14 Site specific results of CWF on the Owenavorrhagh River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	T 14998 53140	4	2	9	9	Include	9.00	12.00
002	T 15971 51178	4	2	8	8	Include	9.33	11.67
003	T 15211 52032	4	2	18	18	Include	19.50	6.50
004	T 15538 55451	5	1	1	1	Include	1.14	6.86
005	T 15709 50498	4	3	10	10	Include	11.67	9.33
006	T 16164 49854	4	2	5	5	Include	5.91	7.09
007	T 16887 56062	5	2	0	0	Include	0.00	11.00
008	T 19253 56784	5	2	0	0	Include	0.00	5.00
009	T 19026 56622	5	2	1	1	Eff <60%		
010	T 15956 56339	3	1	3	3	Include	3.00	0.00
011	T 15853 56076	5	1	2	2	Include	3.00	0.00
012	T 14883 54489	4	3	4	4	Eff <60%		
013	T 15066 54204	4	2	23	23	Include	27.00	0.00
014	T 14433 50766	3	3	9	9	Include	10.50	3.50
015	T 15787 46159	4	3	6	6	Include	6.00	0.00
016	T 13686 42928	3	3	9	9	Include	9.00	0.00
017	T 12884 41733	3	3	9	9	Include	9.00	0.00
018	T 13150 40658	2	3	2	2	Include	3.00	0.00
019	T 15947 51047	4	3	9	9	Include	11.08	4.92

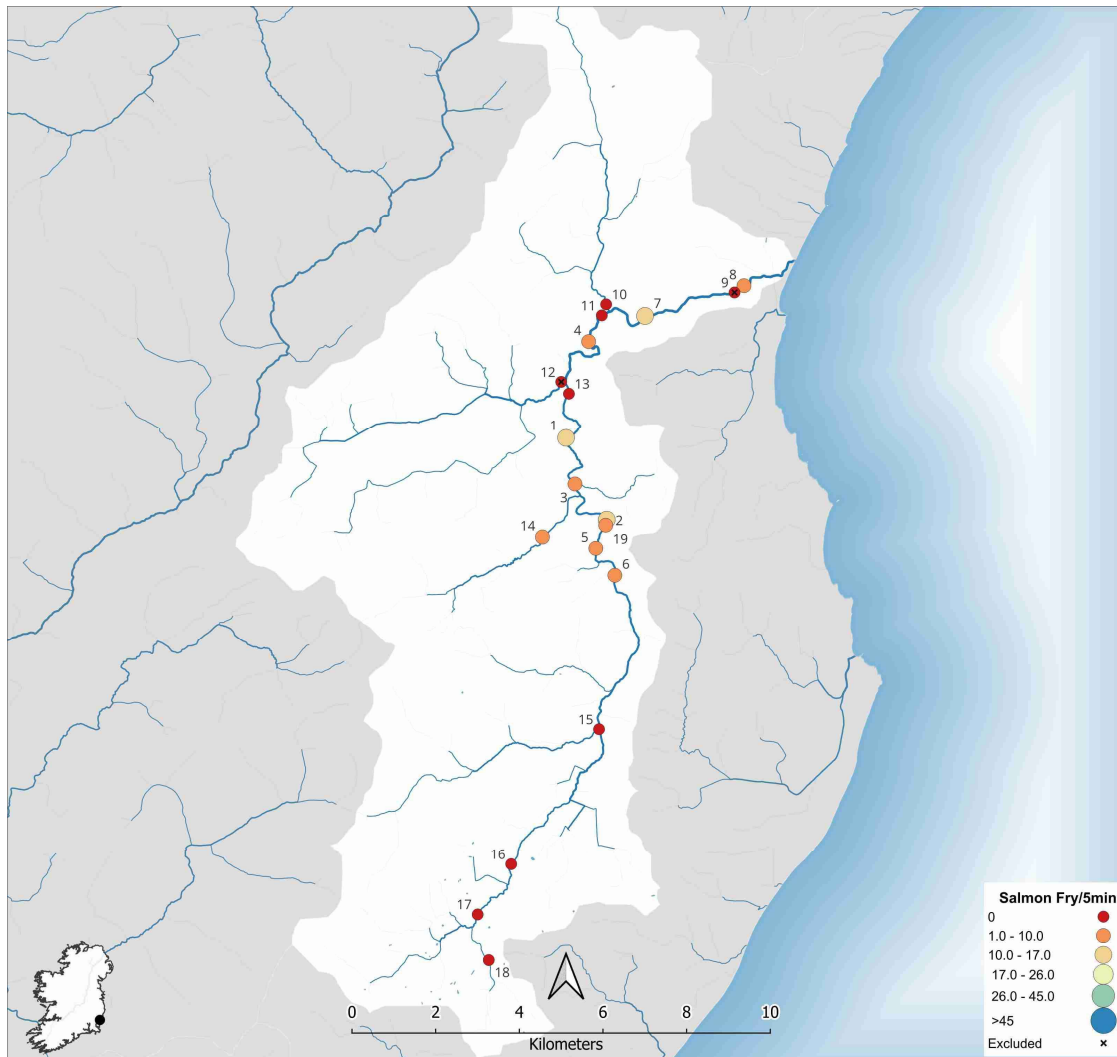


Fig. 22 Showing salmon fry/5min values and locations of surveys on the Owenavorrhagh River in 2023.

A.3.2 Barrow River

IFI Salmon Catchment #: 37
2023 survey dates: 6/7-28/8/2023
Mean Salmon Fry/5 min (2023): 35.95 fry/5min
CWEF Index: 22.75 fry/5min.

Sampling carried out by:	Fish Species Present:	
Tony Black	Brown Trout	Minnow
Tony Byrne	Crayfish	Salmon
Ken Wheelan	Dace	Stone Loach
	European Eel	3-Spined Stickleback
	Lamprey sp.	

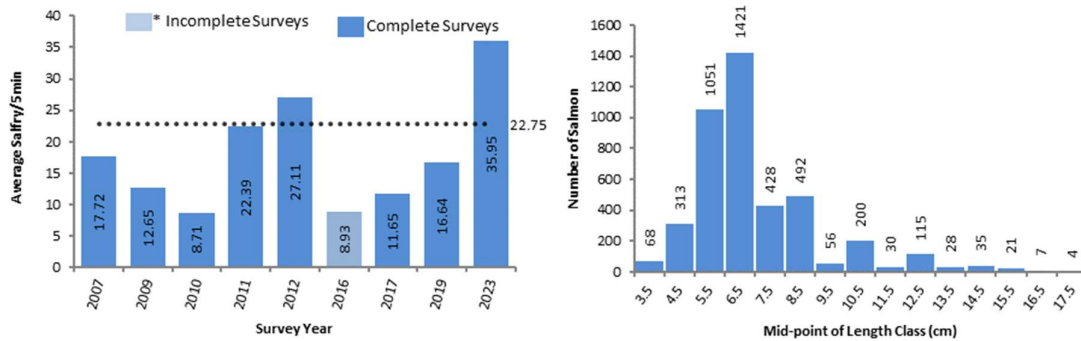


Fig. 23 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Barrow River.

In this year's survey of the Barrow (incorporating sites on the Aughnavaud and Pollmounty Rivers), 118 sites were examined from July 6th to August 28th. Salmon fry (0+) were found at 111 sites, with the highest number recorded at site 115, where 140 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

One hundred and eleven sites were included in the analysis; the mean catch at these sites was 35.95 salmon fry/5min. Salmon fry were well distributed throughout the system, with high abundance observed on many of the tributaries.

Conclusion

The Barrow had a salmon abundance of 35.95 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 22.75 salmon fry/5min which is above the 17 salmon fry threshold.

Table 15 Site specific results of CWF on the Barrow River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
2	S 75434 35309	3	2	3	14	Include	4.24	19.76
4	N 38563 14734	3	1	0	65	Include	0.00	80.00
6	N 36634 13219	3	1	0	71	Include	0.00	81.00
7	N 36087 13008	3	1	0	71	Include	0.00	81.00
8	N 34729 11076	3	1	0	89	Include	0.00	109.00
9	N 35145 10515	3	1	0	90	Include	0.00	110.00
13	S 74707 40018	3	1	1	12	Include	1.31	15.69
16	S 68469 44428	3	1	0	3	Eff <60%		
18	S 73310 50094	4	2	0	32	Include	0.00	38.00
21	S 74956 55815	4	2	2	5	Include	2.86	7.14
22	S 74425 50995	4	1	0	79	Include	0.00	79.00
23	S 78267 50994	3	2	0	33	Include	0.00	43.00
25	S 79039 51107	3	1	0	49	Include	0.00	59.00
26	S 81828 48116	2	2	1	24	Include	1.24	29.76
27	S 82657 47832	2	2	0	11	Include	0.00	13.00
28	S 68207 53890	3	2	0	13	Include	0.00	18.00
30	S 66591 56479	3	1	13	68	Include	14.44	75.56
31	S 65303 57010	3	1	0	35	Include	0.00	46.00
33	S 68739 64563	4	2	0	31	Include	0.00	31.00
35	S 78117 59568	2	1	3	23	Include	3.46	26.54
36	S 78723 58852	2	3	22	0	Include	22.00	0.00
38	S 81929 56875	2	3	2	0	Eff <60%		
40	S 69303 77259	4	2	0	22	Include	0.00	25.00
41	S 68860 78397	4	2	0	28	Include	0.00	32.00
42	S 67820 79355	4	1	0	37	Include	0.00	49.00
43	S 67299 80183	4	1	0	37	Include	0.00	49.00
44	S 71850 81637	4	1	0	25	Include	0.00	28.00
45	S 72634 82167	4	1	0	72	Include	0.00	78.00
46	S 74222 81486	4	1	0	17	Include	0.00	21.00
47	S 75938 83182	4	1	0	26	Include	0.00	34.00
49	S 69679 83295	4	2	0	18	Include	0.00	20.00
50	S 68889 83898	4	1	0	28	Include	0.00	28.00
51	S 65870 85987	4	2	0	10	Include	0.00	12.00
52	S 64945 85654	3	1	0	19	Include	0.00	29.00
53	S 64140 85582	3	1	0	32	Include	0.00	42.00
54	S 72922 84947	4	2	0	29	Include	0.00	45.00
55	S 77497 90557	4	1	0	42	Include	0.00	62.00
56	S 80129 97234	2	1	0	20	Include	0.00	23.00
57	S 79927 93234	4	2	0	30	Include	0.00	40.00
58	S 60265 98244	4	1	0	86	Include	0.00	106.00
59	S 57090 96149	4	2	0	76	Include	0.00	96.00
60	S 55219 93876	3	2	0	17	Include	0.00	27.00
61	N 67930 03365	3	2	0	22	Include	0.00	24.00
63	N 72264 02621	3	2	0	31	Include	0.00	37.00
66	N 70514 05613	2	2	0	9	Include	0.00	12.00
69	N 61060 02403	2	2	1	10	Include	1.36	13.64
71	N 66633 19136	3	2	0	42	Include	0.00	46.00
72	N 67556 19537	3	2	0	44	Include	0.00	50.00
73	N 70315 21660	3	3	0	0	Include	0.00	0.00
84	N 45517 07381	4	1	0	16	Include	0.00	18.00
85	N 44930 07316	4	2	0	21	Include	0.00	21.00
86	N 44132 06559	4	1	0	24	Include	0.00	32.00
88	N 41856 05260	4	1	0	24	Include	0.00	28.00
89	N 41693 05144	4	1	0	39	Include	0.00	41.00
91	N 34114 10386	2	1	0	49	Include	0.00	69.00
92	S 76956 51611	4	2	0	28	Eff <60%		
99	S 73482 87614	4	1	0	45	Include	0.00	55.00
100	S 64646 85618	3	2	0	39	Include	0.00	47.00
105	N 42870 05486	4	1	0	26	Include	0.00	35.00
111	S 61187 54352	3	2	0	0	Include	0.00	0.00

Table 15 Site specific results of CWF on the Barrow River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
112	S 62831 53091	3	2	3	0	Include	3.00	0.00
113	S 77358 47110	3	2	2	7	Eff <60%		
115	N 35239 12688	3	1	0	140	Include	0.00	210.00
118	S 59623 97162	4	1	0	61	Include	0.00	76.00
119	S 76200 46697	3	2	2	5	Include	2.86	7.14
120	S 72890 38171	3	2	0	4	Eff <60%		
121	S 80780 71348	4	1	5	19	Include	7.08	26.92
122	S 61409 99067	4	2	0	27	Include	0.00	30.00
123	S 71685 82946	4	2	0	51	Include	0.00	62.00
124	S 79647 96064	2	1	0	6	Include	0.00	6.00
125	S 74771 88757	4	1	0	36	Include	0.00	48.00
127	S 76823 84175	4	1	0	58	Include	0.00	78.00
128	S 64620 53080	3	2	0	17	Include	0.00	24.00
129	S 73192 50683	4	2	0	5	Include	0.00	8.00
130	S 75368 74585	4	2	9	22	Include	9.87	24.13
132	S 69984 44152	3	2	1	35	Include	1.19	41.81
135	S 65722 65381	3	2	0	8	Include	0.00	8.00
137	S 69532 74776	2	2	0	27	Include	0.00	34.00
142	S 79182 70027	4	1	7	34	Include	9.39	45.61
147	S 66923 53551	3	2	0	19	Include	0.00	25.00
148	S 70841 43847	3	2	2	71	Include	3.10	109.90
149	S 79917 95454	2	1	0	29	Include	0.00	39.00
151	N 74526 02652	0	2	0	3	Include	0.00	4.00
152	S 74784 89143	4	1	0	19	Include	0.00	23.00
155	N 67327 19322	3	2	0	57	Include	0.00	69.00
157	S 74459 39875	3	2	1	4	Eff <60%		
159	S 46517 99760	3	1	0	10	Include	0.00	11.00
162	S 69061 76274	4	1	0	28	Include	0.00	30.00
164	S 68400 68486	2	1	1	36	Include	1.00	36.00
165	S 68062 67673	3	1	0	28	Include	0.00	28.00
169	S 78800 92245	4	1	0	28	Include	0.00	33.00
170	S 78493 84907	4	1	0	11	Include	0.00	12.00
171	S 74341 75343	4	2	3	6	Include	4.00	8.00
173	S 79286 62872	4	2	3	8	Include	3.55	9.45
175	S 79572 52145	3	2	0	0	Include	0.00	0.00
176	S 81245 48399	2	2	3	10	Include	3.92	13.08
179	S 67931 55534	3	1	0	21	High Water		
179	S 67931 55534	3	1	0	44	Include	0.00	56.00
181	S 78559 85395	3	1	0	31	Include	0.00	51.00
182	S 78348 84729	4	1	0	21	Include	0.00	26.00
184	N 68190 04331	2	2	0	3	Include	0.00	3.00
186	S 63244 53167	3	2	0	27	Include	0.00	31.00
187	S 80283 57945	2	2	11	2	Include	14.38	2.62
191	S 79699 67737	4	2	15	37	Include	17.88	44.12
194	S 47375 98412	3	2	0	1	Include	0.00	1.00
195	S 47150 98688	3	2	0	5	Include	0.00	8.00
196	S 53611 90263	3	2	0	14	Include	0.00	20.00
197	S 56755 95612	3	2	0	21	Include	0.00	28.00
198	N 73249 03948	0	2	0	2	Include	0.00	2.00
199	N 68993 04922	2	2	0	5	Include	0.00	8.00
200	N 57746 02700	0	2	0	5	Include	0.00	5.00
201	N 58470 02754	0	2	0	2	Include	0.00	2.00
202	S 55428 93737	3	1	0	28	Include	0.00	31.00
203	S 55083 95012	3	1	0	33	Include	0.00	35.00
204	S 58197 97082	4	2	0	56	Include	0.00	65.00
205	S 64979 80365	3	3	0	0	Include	0.00	0.00
206	S 67309 79974	4	2	0	23	Include	0.00	38.00
207	S 67001 52045	3	2	0	13	Include	0.00	17.00

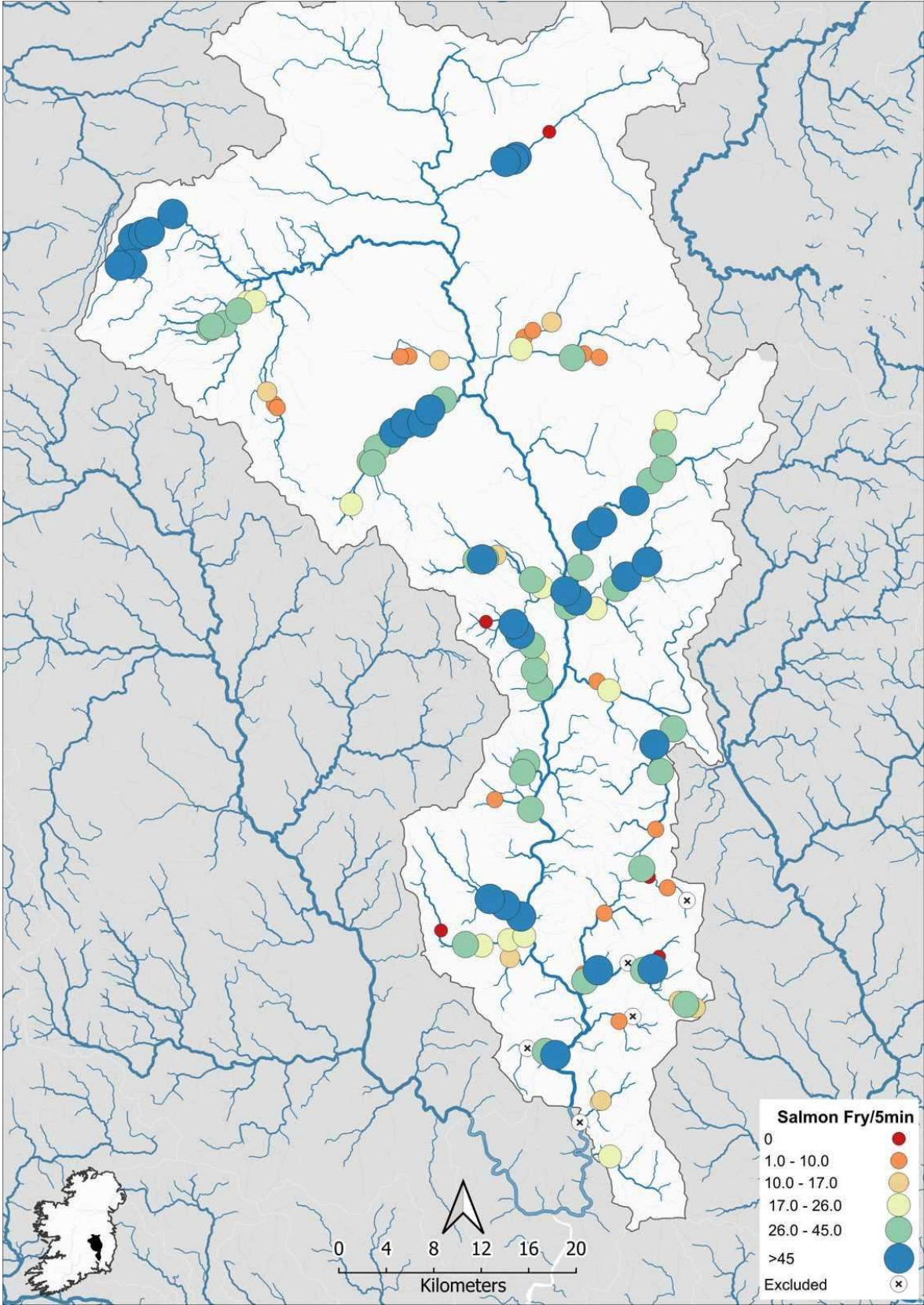


Fig. 24 Showing salmon fry/5min values and locations of surveys on the Barrow River in 2023.

A.3.3 Blackwater (Waterford) River

IFI Salmon Catchment #: 39
2023 survey dates: 30-31/8/2023
Mean Salmon Fry/5 min (2023): 1.82 fry/5min
CWEF Index: 14.18 fry/5min.

Sampling carried out by: James Robinson
 Liam Dowling
 Stephen Toolan

Fish Species Present: Brown Trout Salmon
 European Eel Stone Loach
 Minnow

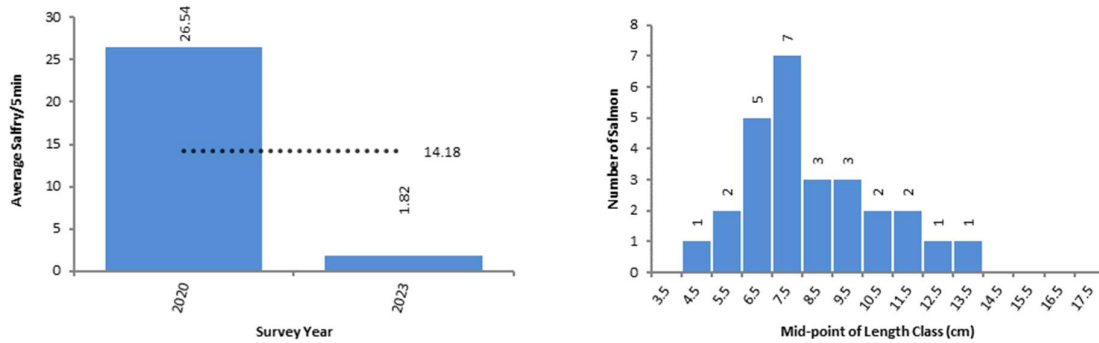


Fig. 25 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Blackwater River.

In this year's survey of the Blackwater, 11 sites were examined on August 30th and 31st. Salmon fry (0+) were found at 6 sites, with the highest number recorded at site 9, where 10 salmon fry were observed. The modal length of 0+ salmon was 5.5 cm.

All eleven sites were included in the analysis; the mean catch at these sites was 1.82 salmon fry/5min.

Table 16 Site specific results of CWEF on the Blackwater River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	S 53468 24656	3	2	2	0	Include	2.00	0.00
002	S 55771 24141	3	2	11	0	Include	13.00	0.00
003	S 55925 24119	3	2	9	2	Include	9.82	2.18
004	S 55626 27612	2	3	1	0	Include	1.00	0.00
005	S 56920 29392	2	2	5	0	Include	0.00	0.00
006	S 56235 24394	3	2	4	1	Include	4.00	1.00
007	S 56278 22484	4	2	1	1	Include	1.00	1.00
008	S 57021 19937	4	3	4	0	Include	4.00	0.00
009	S 56903 18223	6	2	1	10	Include	1.18	11.82
010	S 57197 16789	4	2	0	3	Include	0.00	3.00
011	S 59420 16134	3	2	4	1	Include	4.00	1.00

Conclusion

The Blackwater had a salmon abundance of 1.82 salmon fry/5min in 2023 considerably lower than the 2020 result of 26.54. Taking the two complete surveys into account this results in a cumulative average of 14.18 salmon fry/5min which is below the 17 salmon fry threshold.

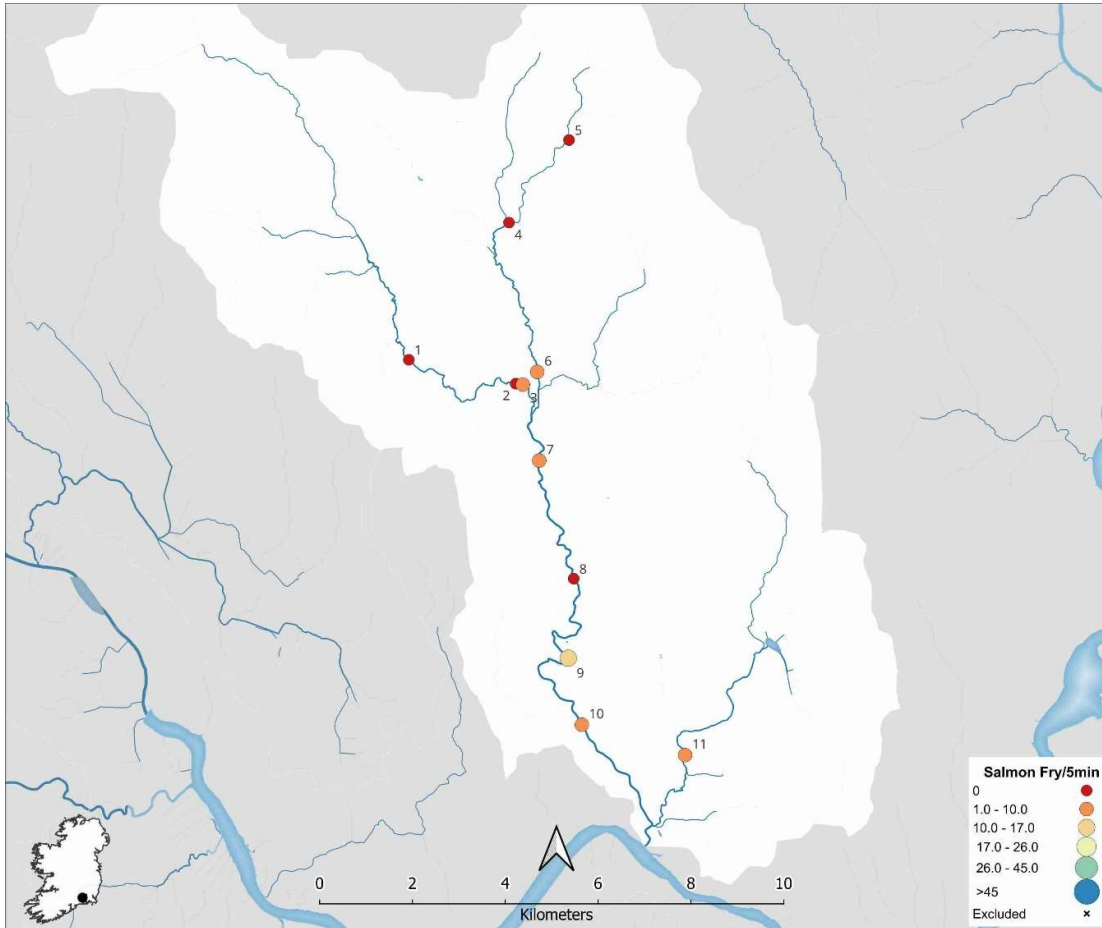


Fig. 26 Showing salmon fry/5min values and locations of surveys on the Blackwater River in 2023.

A.3.4 Lingaun River

IFI Salmon Catchment #: 41
2023 survey dates: 22/8/2023
Mean Salmon Fry/5 min (2023): 7.14 fry/5min
CWEF Index: 23.09 fry/5min.

Sampling carried out by: James Robinson
 James Corcoran
Fish Species Present: Brown Trout Stone loach
 Lamprey sp. 3-Spined Stickleback
 Salmon

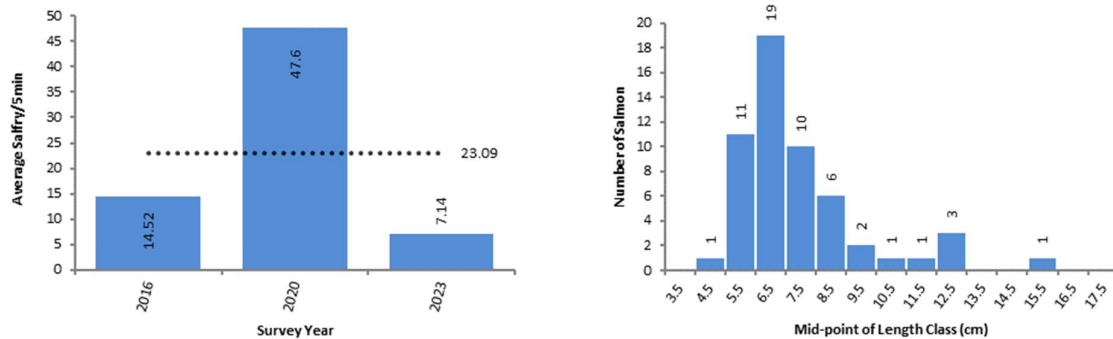


Fig. 27 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Lingaun river.

In this year's survey of the Lingaun, 8 sites were examined on August 22nd. Salmon fry (0+) were found at all 8 sites, with the highest number recorded at site 5, where 17 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

All 8 sites were included in the analysis; the mean catch at these sites was 7.14 salmon fry/5min. Salmon fry were well distributed throughout the system.

Table 17 Site specific results of CWEF on the Lingaun River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	S 36157 32553	3	2	27	3	Include	30.60	3.40
002	S 33401 31605	3	2	22	4	Include	28.77	5.23
004	S 35595 32438	3	1	30	1	Include	35.81	1.19
005	S 40720 31115	3	2	3	17	Include	3.90	22.10
006	S 37060 30592	3	1	7	8	Include	7.47	8.53
007	S 41858 29447	4	1	11	3	Include	14.14	3.86
008	S 41501 26829	4	1	11	8	Include	12.16	8.84
009	S 41326 24412	4	2	7	4	Include	7.00	4.00

Conclusion

The Lingaun had a salmon abundance of 7.14 salmon fry/5min in 2023 considerably lower than was observed in 2020. Taking the three complete surveys into account this results in a cumulative average of 23.09 salmon fry/5min which is above the 17 salmon fry threshold.

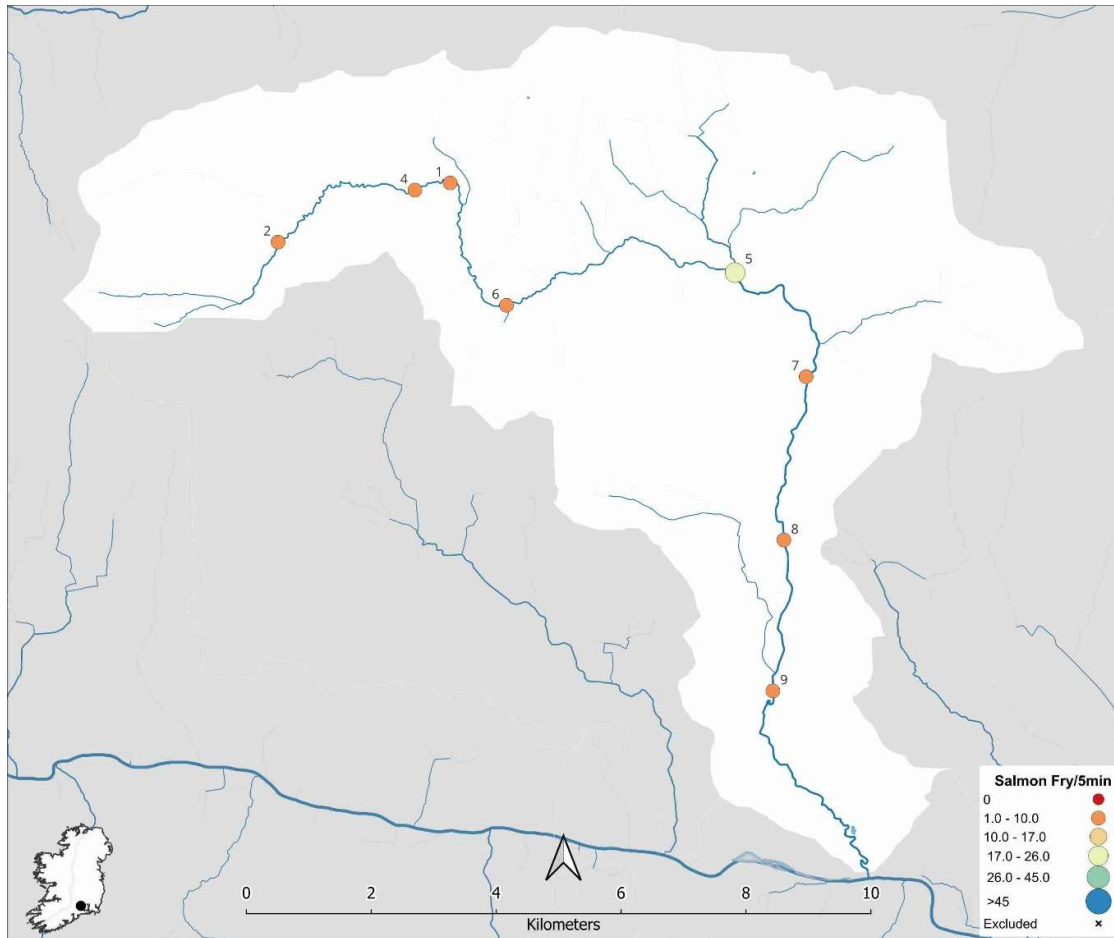


Fig. 28 Showing salmon fry/5min values and locations of surveys on the Lingaun River in 2023.

A.3.5 Clodiagh River

IFI Salmon Catchment #: 44
2023 survey dates: 6-12/9/2023
Mean Salmon Fry/5 min (2023): 7.88 fry/5min
CWEF Index: 23.55 fry/5min.

Sampling carried out by:	Fish Species Present:
James Robinson	Brown Trout James Robinson
James Corcoran	European Eel James Corcoran
Maurice Brown	Maurice Brown

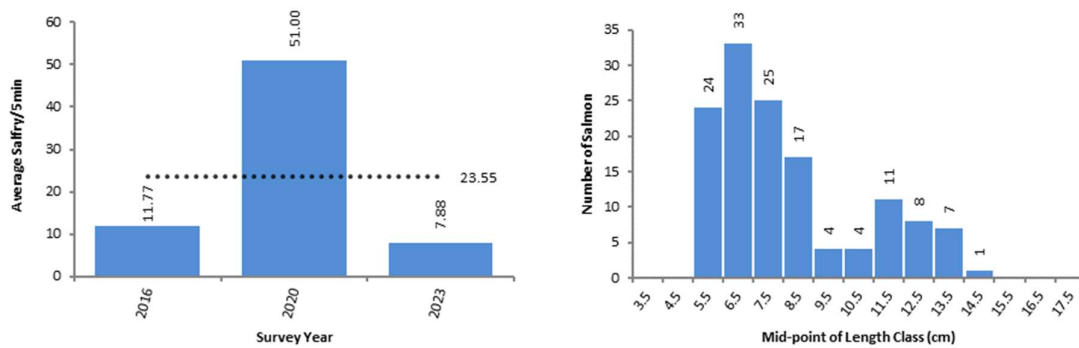


Fig. 29 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Clodiagh river.

In this year’s survey of the Clodiagh, 13 sites were examined from September 6th to 12th. Salmon fry (0+) were found at 12 sites, with the highest number recorded at site 5, where 14 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

All 13 sites were included in the analysis; the mean catch at these sites was 7.88 salmon fry/5min. Salmon fry were well distributed throughout the system.

Conclusion

The Clodiagh had a salmon abundance of 7.88 salmon fry/5min in 2023 considerably lower than was observed in 2020. Taking the three complete surveys into account this results in a cumulative average of 23.55 salmon fry/5min which is above the 17 salmon fry threshold.

Table 18 Site specific results of CWF on the Clodiagh River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	S 34954 15026	4	1	7	4	Include	7.64	4.36
002	S 35187 13724	5	1	0	12	Include	0.00	14.00
003	S 36296 12179	3	1	1	6	Include	1.00	6.00
004	S 38315 14107	5	1	2	9	Include	2.18	9.82
005	S 35071 11557	2	1	1	14	Include	1.00	14.00
006	S 40181 14663	5	1	8	10	Include	8.89	11.11
007	S 42085 14882	5	1	7	5	Include	8.75	6.25
008	S 44890 15544	5	1	2	7	Include	2.00	7.00
009	S 46845 15005	5	1	1	13	Include	1.07	13.93
010	S 30811 14953	3	3	5	0	Include	7.00	0.00
011	S 32194 16333	3	1	4	7	Include	4.00	7.00
012	S 32862 16425	4	1	8	4	Include	10.00	5.00
013	S 34396 15854	4	1	6	4	Include	6.00	4.00

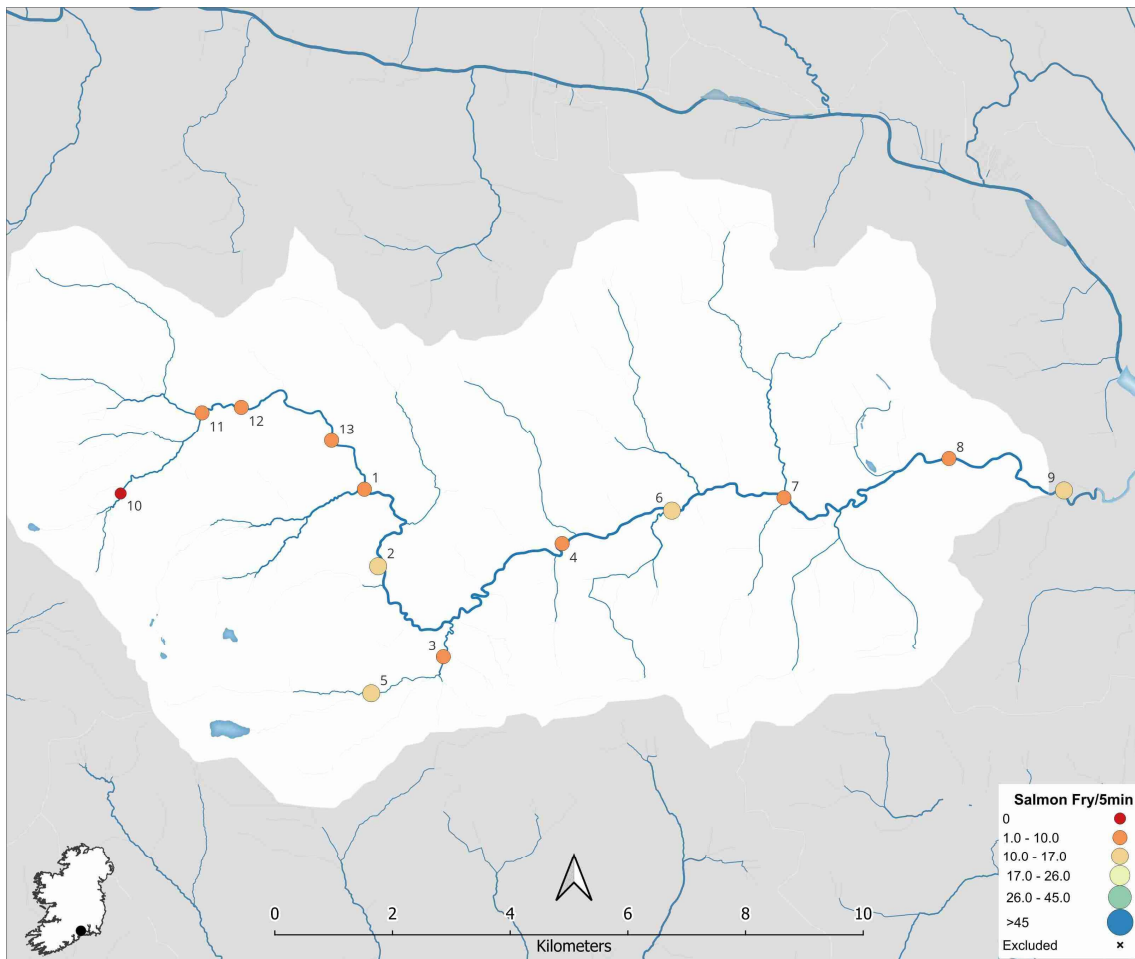


Fig. 30 Showing salmon fry/5min values and locations of surveys on the Clodiagh River in 2023.

A.4 South Western River Basin District

Summary

Since 2007, forty-six rivers have been surveyed in the South Western River Basin District (SWRBD) as part of the ongoing catchment-wide electrofishing surveys. The results of these surveys are presented in Table 19 and Fig. 31. Currently eight of these rivers are meeting the threshold index of 17 salmon fry/5min: the Bride, Argideen, Croanshagh, Cloonee, Roughty, Blackwater (Kerry), Currane, Inny, Laune, Maine, Owenalondrig, and Owenmore. In 2023 surveys were completed on the Bride, Argideen, Adrigole, Milltown (Kerry) and Feohanagh as well as sub catchment surveys on the Shournagh and Martin systems on the lower River Lee. A further survey on the Adrigole was weather affected and not completed.

Table 19 Catchment-wide electrofishing data for the SWRBD 2015-2023 showing the average salmon fry captured /5min for each year surveyed. Also shown is the current index, surveys prior to 2015 are included in Appendix C.

Code/River	Survey Year									Current Index	# Annual Surveys Considered	
	2015	2016	2017	2018	2019	2020	2021	2022	2023			
055/Lickey	14.14					12.00					12.84	3
057/Finisk		3.31									6.93	2
058/Glenshelane		2.87						2.44			9.75	4
059/Blackwater (Munster)		14.87						26.76†			14.87	1
060/Bride			7.65		18.93					26.08	19.44	5
061/Tourig			0.73*			11.19					10.29	2
062/Womanagh			1.54					3.68			5.77	4
064/Owennacurra			1.77*			9.47		21.58			15.61	3
065/Glashaboy								11.63			11.63	1
066/Lwr. Lee (Shourn. & Martin)				18.34†						13.26†	15.80	2
069/Bandon		11.71									11.71	1
070/Argideen							28.92			14.47	20.18	3
077/Mealagh											12.82	1
080/Glengarriff											7.91	1
081/Adrigole				17.20						3.04*	7.74	3
082/Kealincha	0.00					0.00					0.00	3
083/Lough Fada	1.68					0.00					1.63	3
084/Croanshagh		23.38									23.38	1
085/Owenshagh	6.73			19.27		17.33					12.02	4
086/Cloonee			24.09		26.48						24.95	4
088/Roughty											19.78	1
089/Finnihy			0.70		1.01						2.58	4
090/Blackwater (Kerry)											19.78	4
093/Owreagh					8.51						5.58	4
097/Currane											24.51	1
098/Inny				17.67				22.67			21.68	4
099/Emlaghmore	1.45					7.70					3.74	3
101/Carhan					7.55			17.03			11.00	5
102/Ferta			6.88		12.06						12.81	4
103/Behy		2.89			6.60			7.18			6.76	5
106/Laune			21.63								21.63	1
107/Maine			22.05†	19.61†			37.62				34.10	3
108/Emlagh		2.10					1.02				5.10	5
109/Owenascaul				9.51		11.52					15.13	5
110/Owenalondrig								19.23			20.57	2
111/Milltown (Ky)	8.76				11.25					11.36	14.17	5
112/Feohanagh					13.75					9.62	11.46	5
114/Owenmore (Ky)							28.62				26.85	2

Code/River	Survey Year									Current Index	# Annual Surveys Considered
	2015	2016	2017	2018	2019	2020	2021	2022	2023		
115/Scorid		1.86						5.62		3.74	2
115/Glenahoo		1.87						15.52		8.70	2
116/Aghacashla		4.89						15.18		10.04	2
116/Owenamallagh		0.00								0.00	1
116/Meennascarty		0.00								0.00	1
116/Finglas (Camp)								0.00		0.00	1
117/Lee (Kerry)			0.69					0.00		0.52	4

Bold annual figures indicate years included in the calculation of current the CWF index.
Underlined index figures indicate those exceeding the 17 salmon fry threshold.
* Incomplete surveys not included in the calculation of current index.
† Sub-catchment surveys.

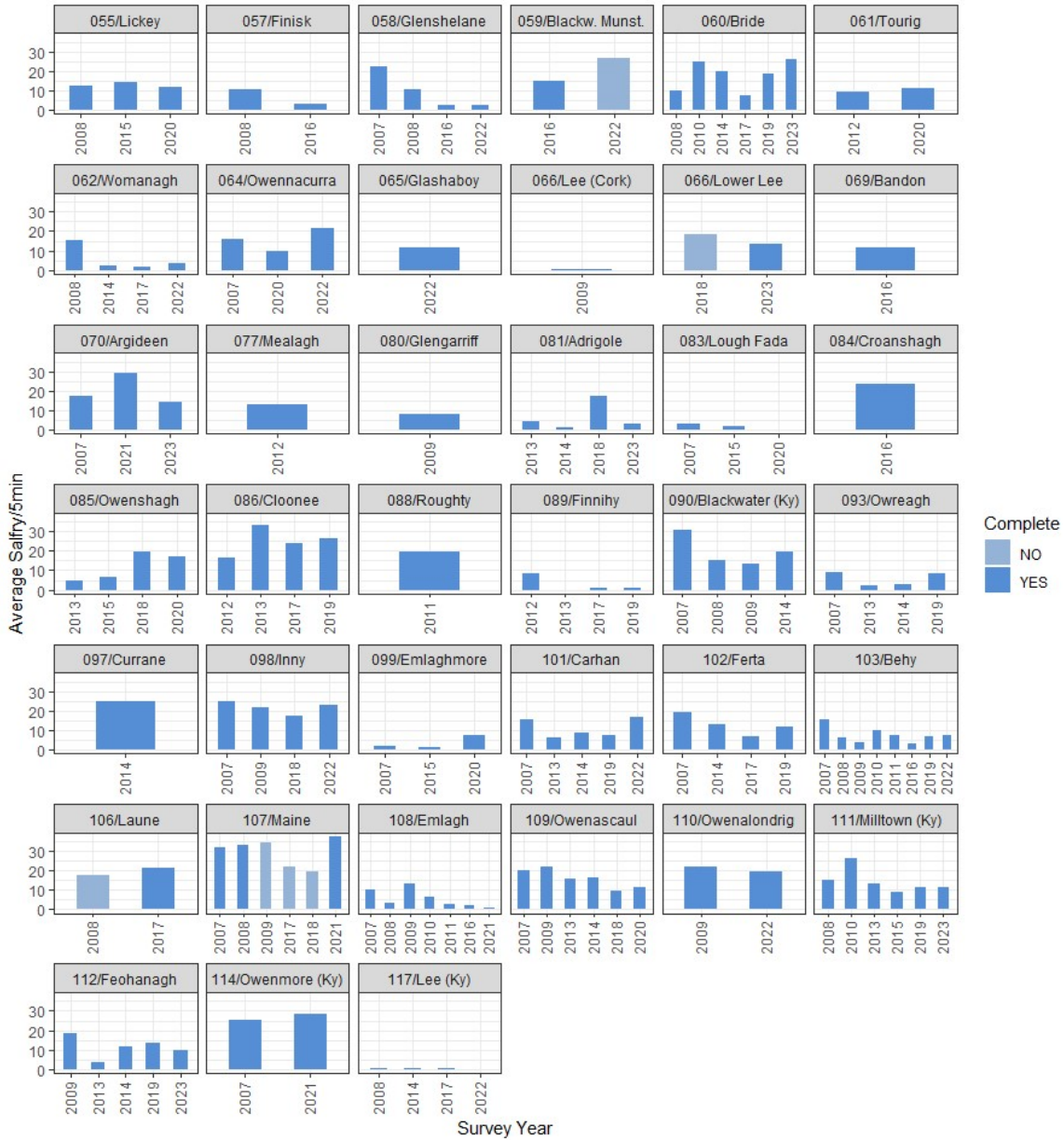


Fig. 31 Summary results of annual CWF surveys (average salmon fry per 5min) in results in SWRBD 2007-2023

A.4.1 Bride River

IFI Salmon Catchment #: 60
2023 survey dates: 5/7-16/8/2023
Mean Salmon Fry/5 min (2023): 26.08 fry/5min
CWEF Index: 19.44 fry/5min.

Sampling carried out by:	Fish Species Present:
Shannon Lauchlan	Brown Trout Salmon
Tony Holmes	European Eel Stone Loach
	Minnow 3-spined Stickleback

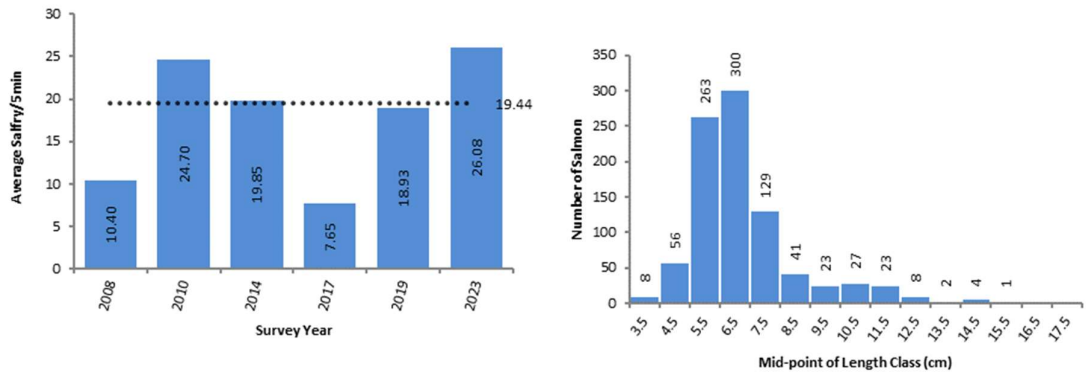


Fig. 32 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Bride River.

In this year’s survey of the Bride, 38 sites were examined from July 5th to August 16th. Salmon fry (0+) were found at 34 sites, with the highest number recorded at site 31, where 62 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

Thirty-five sites were included in the analysis; the mean catch at these sites was 26.08 salmon fry/5min. Salmon fry were well distributed and abundant throughout the system.

Conclusion

The Bride had a salmon abundance of 26.08 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 19.44 salmon fry/5min which is above the 17 salmon fry threshold.

Table 20 Site specific results of CWF on the Bride River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	W 89732 92892	5	1	1	36	Include	1.19	42.81
002	W 87832 91990	5	1	2	7	Include	2.22	7.78
003	W 84550 91686	5	1	0	47	Include	0.00	57.00
004	W 81312 90665	4	1	1	9	Include	1.20	10.80
005	W 77292 89403	3	2	1	56	Include	1.21	67.79
006	W 74526 88866	3	1	1	55	Include	1.25	68.75
007	W 71909 88741	3	1	0	55	Include	0.00	70.00
008	W 71389 89498	3	2	1	8	Include	1.56	12.44
009	X 03591 93032	2	0	13	0	Include	15.00	0.00
010	X 02400 93205	2	2	4	11	Include	5.07	13.93
011	W 99329 93479	3	2	3	7	Include	3.90	9.10
012	W 93542 94636	3	2	6	27	Include	7.27	32.73
013	W 83936 92915	3	3	9	9	Include	11.00	11.00
014	W 81850 89847	4	1	2	38	Include	2.25	42.75
015	W 80355 89295	3	1	10	15	Include	12.00	18.00
016	W 77684 87710	2	0	0	0	Overgrown - Apium		
017	W 82643 89165	3	2	10	10	Include	12.50	12.50
018	W 79610 87603	2	2	12	6	Include	14.00	7.00
019	W 78574 91201	3	1	14	35	Include	15.43	38.57
020	W 74300 89333	2	2	8	42	Include	9.60	50.40
021	W 70800 87730	2	2	40	0	Include	48.00	0.00
023	W 68376 90239	2	3	2	19	Include	2.48	23.52
024	W 68640 90782	2	2	31	21	Include	38.15	25.85
025	W 67371 89091	3	2	2	6	Eff <60%		
026	W 65436 88817	2	2	9	7	Include	11.81	9.19
027	W 71815 87727	2	2	5	6	Include	7.27	8.73
028	W 77583 89330	3	0	0	0	Exclude		
029	W 68296 89877	3	2	4	6	Include	6.00	9.00
030	W 75730 87326	2	3	21	0	Include	23.00	0.00
031	W 76292 89169	3	1	0	62	Include	0.00	77.00
033	W 92493 93432	5	1	0	5	Include	0.00	7.00
034	W 95681 94135	5	0	0	12	Include	0.00	16.00
035	W 92511 91107	2	2	0	8	Include	0.00	12.00
036	W 88367 91637	3	1	0	34	Include	0.00	41.00
037	W 90936 90911	3	2	4	9	Include	5.54	12.46
040	W 76687 90903	2	2	6	11	Include	7.41	13.59
041	W 94944 92460	2	1	17	31	Include	19.83	36.17
042	W 78235 89746	3	1	0	40	Include	0.00	48.00

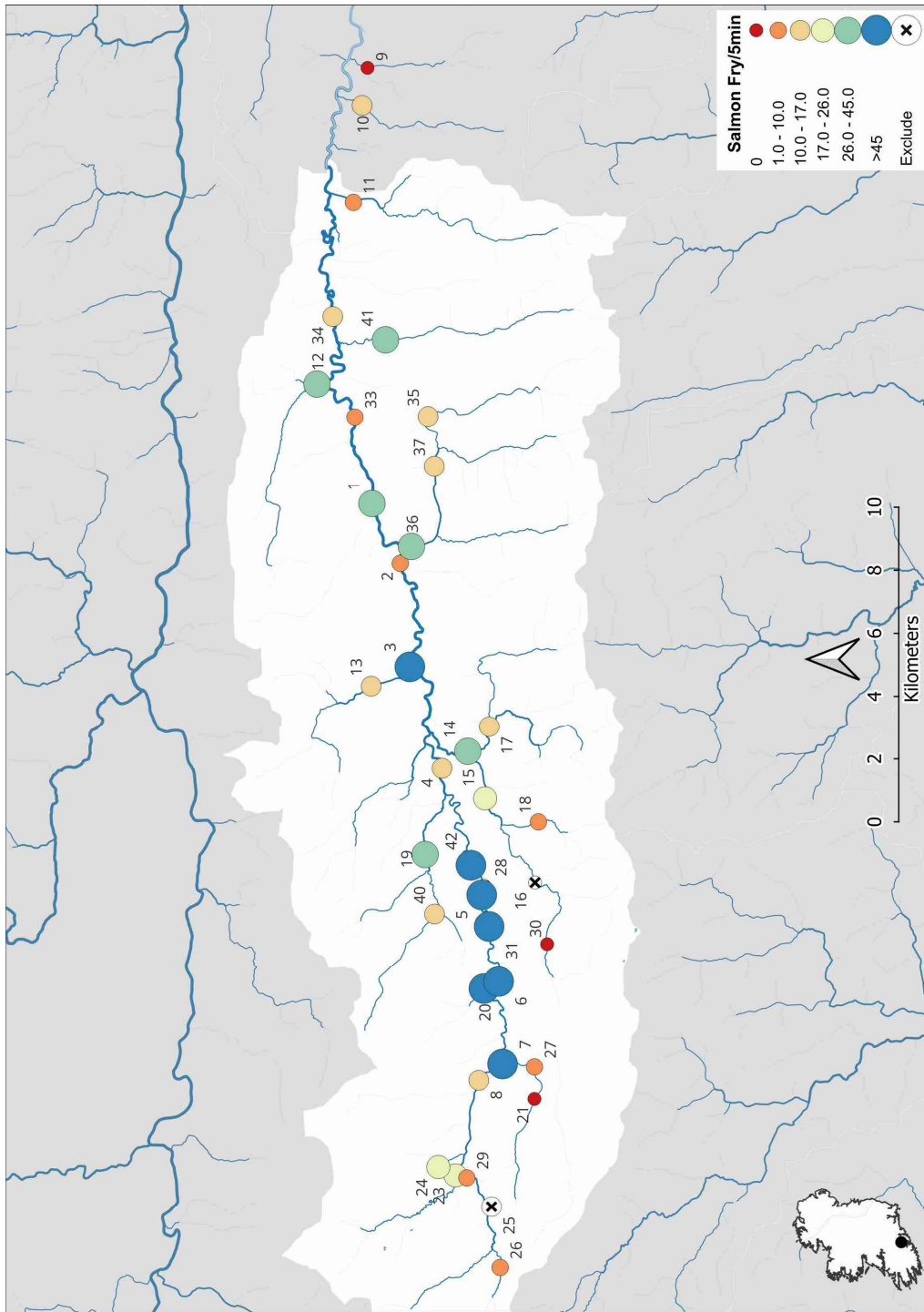


Fig. 33 Showing salmon fry/5min values and locations of surveys on the Bride River in 2023.

A.4.2 Martin and Shournagh Rivers, River Lee

IFI Salmon Catchment #: 66
2023 survey dates: 12-13/7/2023
Mean Salmon Fry/5 min (2023): 13.26 fry/5min
CWEF Index: 15.80 fry/5min.

Sampling carried out by:	Fish Species Present:	
Shannon Lauchlan	Brown Trout	Salmon
Tony Holmes	European Eel	Stone Loach
	Minnow	3-spined Stickleback

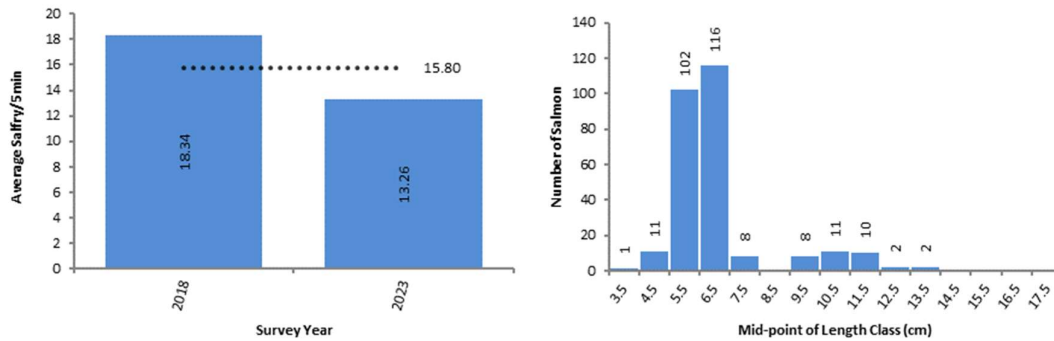


Fig. 34 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Shournagh and Martin Rivers.

The Shournagh and Martin Rivers both tributaries of the Lower Lee in the vicinity of Blarney, and below the Inniscarra dam. In this year's survey of these rivers 22 sites were examined on July 12th and 13th. Salmon fry (0+) were found at 15 sites, with the highest number recorded at site 118, where 31 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

Twenty-one sites were included in the analysis; the mean catch at these sites was 13.26 salmon fry/5min. Salmon fry were well distributed throughout the system. Highest abundances were seen in the lower half of the system.

Conclusion

The Shournagh and Martin Rivers together had a salmon abundance of 13.26 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 9.32 salmon fry/5min which is below the 15.80 salmon fry threshold.

Table 21 Site specific results of CWF on the Shournagh and Martin Rivers catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
103	W 58457 74468	5	1	0	25	Include	0.00	31.00
105	W 57361 76824	4	2	3	12	Include	4.20	16.80
106	W 56207 78354	4	1	5	19	Include	6.04	22.96
107	W 55563 79833	3	3	5	12	Include	6.18	14.82
109	W 53232 80568	3	1	12	21	Include	13.82	24.18
111	W 49616 82883	2	2	16	0	Include	23.00	0.00
112	W 48568 83417	2	2	18	0	Include	22.00	0.00
113	W 50957 84102	2	2	5	19	Include	6.04	22.96
114	W 47105 84110	2	2	2	0	Include	2.00	0.00
115	W 59773 75414	4	2	1	3	Eff <60%		
116	W 61251 75715	4	1	0	14	Include	0.00	19.00
117	W 61160 76962	4	1	15	23	Include	15.00	23.00
118	W 60432 78249	4	1	6	31	Include	7.14	36.86
121	W 59842 83016	3	1	7	5	Include	7.00	5.00
122	W 59448 83876	3	2	16	13	Include	18.21	14.79
123	W 61493 84986	2	1	18	0	Include	21.00	0.00
125	W 57856 85224	2	1	28	0	Include	32.00	0.00
127	W 58659 85933	2	2	10	0	Include	10.00	0.00
128	W 57587 74013	3	2	7	13	Include	9.10	16.90
129	W 56763 74186	3	1	4	27	Include	4.26	28.74
130	W 54446 75687	3	2	10	1	Include	13.64	1.36
131	W 53411 76671	3	2	26	0	Include	28.00	0.00

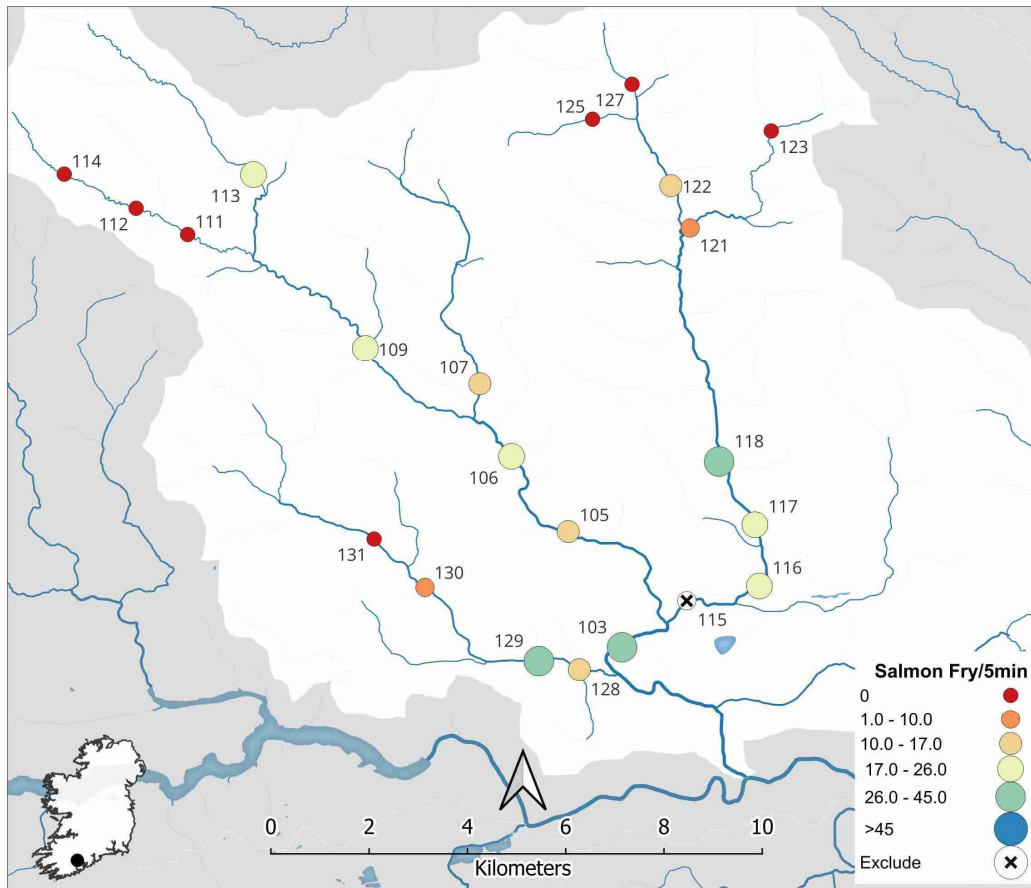


Fig. 35 Showing salmon fry/5min values and locations of surveys on the Shournagh and Martin Rivers in 2023. Shournagh and Martin Rivers

A.4.3 Argideen River

IFI Salmon Catchment #: 70
 2023 survey dates: 8-10/8/2023
 Mean Salmon Fry/5 min (2023): 14.47 fry/5min
 CWEF Index: 20.18 fry/5min.

Sampling carried out by: Shannon Lauchlan
 Tony Holmes

Fish Species Present: Brown Trout Salmon
 European Eel Stone Loach
 Minnow 3-spined Stickleback

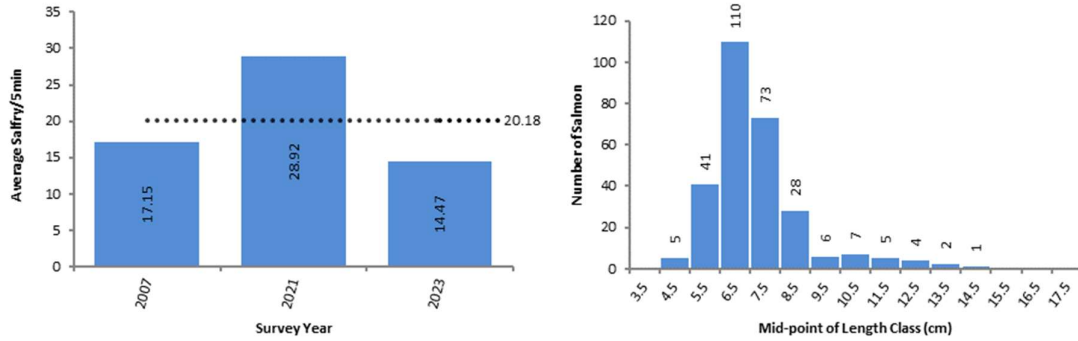


Fig. 36 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Argideen river.

In this year’s survey of the Argideen river, 24 sites were examined from August 8th to 10th. Salmon fry (0+) were found at 17 sites, with the highest number recorded at site 5, where 38 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

Twenty-one sites were included in the analysis; the mean catch at these sites was 14.47 salmon fry/5min. Salmon fry were well distributed throughout the system. Highest abundances were seen in the lower half of the system.

Conclusion

The Argideen had a salmon abundance of 14.47 salmon fry/5min in 2023- the lowest of any survey on this catchment. Taking the five most recent complete surveys into account this results in a cumulative average of 20.18 salmon fry/5min which is above the 17 salmon fry threshold.

Table 22 Site specific results of CWF on the Argideen River 2023.

Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
W 40498 44425	4	1	2	14	Include	2.75	19.25
W 39300 44125	4	1	1	26	Include	1.19	30.81
W 36292 45436	4	1	7	12	Include	8.84	15.16
W 32292 45564	3	1	0	38	Include	0.00	42.00
W 31271 44863	3	0	1	8	Include	1.44	11.56
W 28938 44321	3	1	2	16	Include	2.56	20.44
W 26359 43053	2	2	8	0	Include	11.00	0.00
W 44096 46845	3	2	4	9	Include	4.62	10.38
W 39834 50362	2	2	5	0	Too Much Instream Veg.		
W 40900 48154	2	2	3	4	Include	3.00	4.00
W 41543 49394	2	3	0	0	Too Much Instream Veg.		
W 35672 46212	2	2	13	2	Include	14.73	2.27
W 32493 48686	2	2	27	3	Include	31.50	3.50
W 29167 44711	2	1	6	25	Include	6.77	28.23
W 27894 45346	2	2	11	0	Include	11.00	0.00
W 25826 45071	2	2	7	0	Include	10.00	0.00
W 42469 44748	4	1	1	23	Include	1.00	23.00
W 40691 46968	3	3	3	4	Include	3.86	5.14
W 40295 47299	2	2	5	0	Include	5.00	0.00
W 45349 45818	4	1	0	6	Include	0.00	6.00
W 32616 47747	2	2	16	16	Include	19.50	19.50
W 34178 45382	4	0			Inaccessible - livestock.		
W 37259 45775	4	1	0	29	Include	0.00	36.00
W 35003 45352	0	1	2	22	Include	2.42	26.58
W 40498 44425	4	1	2	14	Include	2.75	19.25
W 39300 44125	4	1	1	26	Include	1.19	30.81
W 36292 45436	4	1	7	12	Include	8.84	15.16
W 32292 45564	3	1	0	38	Include	0.00	42.00
J 07496 17002	3	2	2	0	Include	2.00	0.00
J 08406 10853	3	1	12	5	Include	14.12	5.88

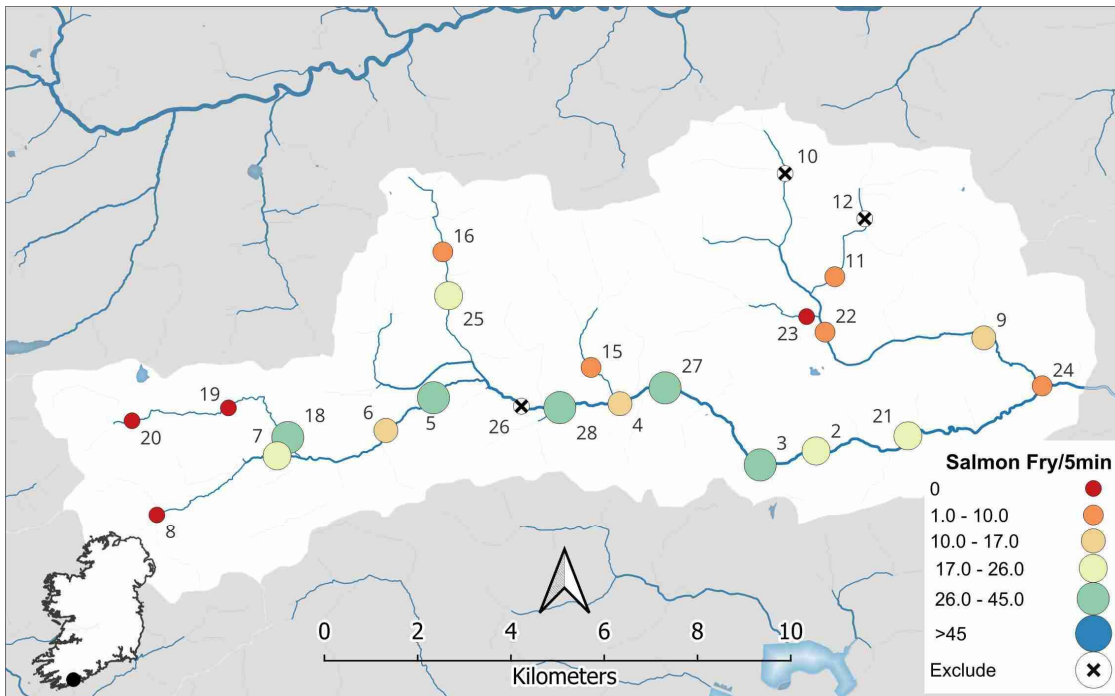


Fig. 37 Showing salmon fry/5min values and locations of surveys on the Argideen River in 2023.

A.4.4 Milltown River

IFI Salmon Catchment #: 111
2023 survey dates: 24/8/2023
Mean Salmon Fry/5 min (2023): 11.36 fry/5min
CWEF Index: 14.17 fry/5min.

Sampling carried out by: Karen Griffin
 Shannon Lauchlan
Fish Species Present: Brown Trout
 European Eel
 Salmon

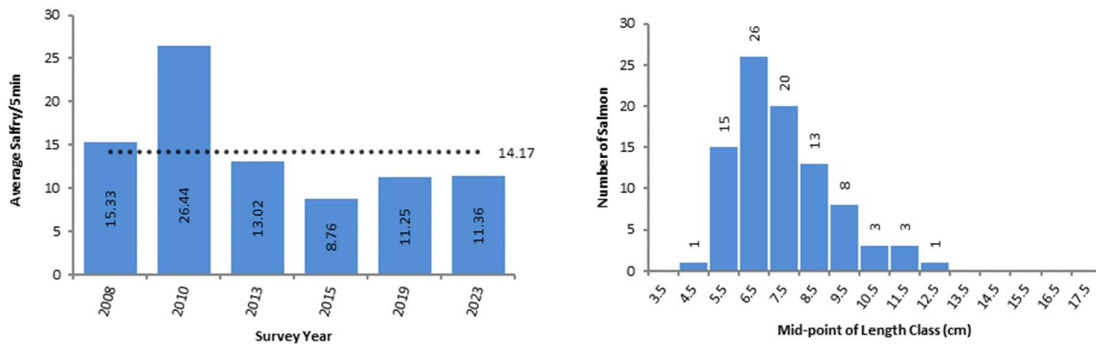


Fig. 38 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Milltown River.

In this year's survey of the Milltown River, 8 sites were examined from August 8th to 10th. Salmon fry (0+) were found at 7 sites, with the highest number recorded at site 5, where 22 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

All 8 sites were included in the analysis; the mean catch at these sites was 11.36 salmon fry/5min. Salmon fry were well distributed along the main channel.

Table 23 Site specific results of CWEF on the Milltown River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
002	Q 42927 01616	3	2	2	1	Include	2.00	1.00
004	Q 43102 05974	2	2	9	0	Include	12.00	0.00
005	Q 43107 04800	3	2	4	22	Include	4.92	27.08
006	Q 42962 02638	3	1	8	12	Include	9.60	14.40
007	Q 42998 02785	3	2	3	3	Include	4.00	4.00
008	Q 43105 03885	3	2	0	21	Include	0.00	25.00
009	Q 42891 02423	3	1	3	2	Include	3.60	2.40
010	Q 43114 03054	3	1	0	14	Include	0.00	17.00

Conclusion

The Milltown had a salmon abundance of 11.36 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 14.17 salmon fry/5min which is below the 17 salmon fry threshold.

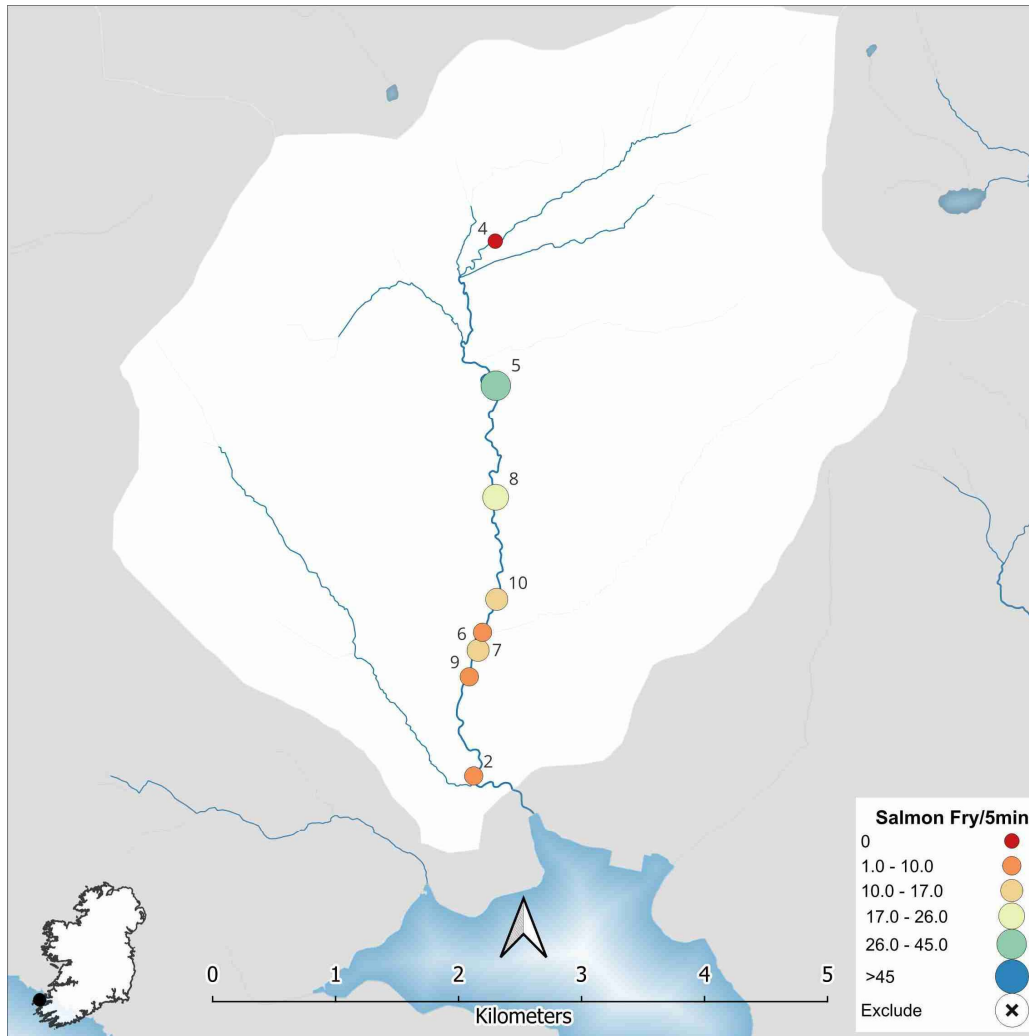


Fig. 39 Showing salmon fry/5min values and locations of surveys on the Milltown River in 2023.

A.4.5 Feohanagh River

IFI Salmon Catchment #: 112
2023 survey dates: 24-30/8/2023
Mean Salmon Fry/5 min (2023): 9.62 fry/5min
CWEF Index: 11.46 fry/5min.

Sampling carried out by: Karen Griffin
 Shannon Lauchlan
 Tony Holmes

Fish Species Present: Brown Trout
 European Eel
 Salmon

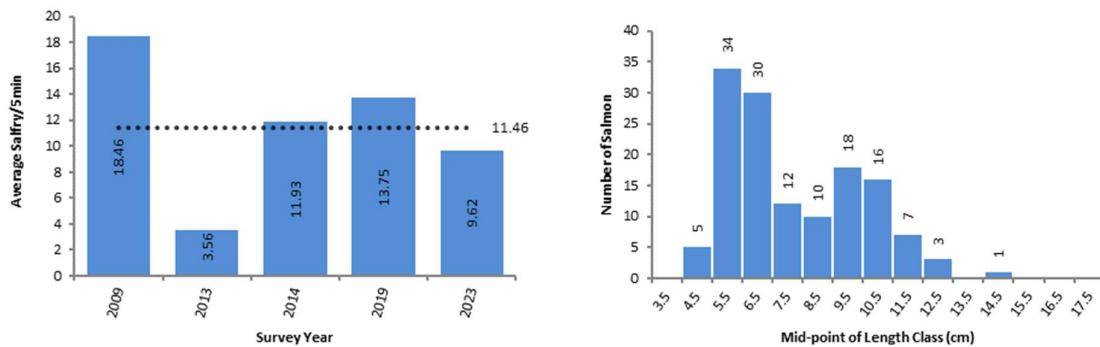


Fig. 40 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Feohanagh river.

In this year's survey of the Feohanagh river, 12 sites were examined from September 24th to 30th. Salmon fry (0+) were found at 10 sites, with the highest number recorded at site 3, where 17 salmon fry were observed. The modal length of 0+ salmon was 5.5 cm.

Eleven sites were included in the analysis; the mean catch at these sites was 9.62 salmon fry/5min. Salmon fry were well distributed throughout the system and most abundant along the main channel.

Table 24 Site specific results of CWEF on the Feohanagh River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	Q 40432 09927	4	1	0	17	Include	0.00	23.00
002	Q 40492 09642	4	2	0	10	Include	0.00	15.00
003	Q 41063 09391	4	1	2	17	Include	2.53	21.47
004	Q 41506 09259	4	1	1	11	Include	1.33	14.67
005	Q 41733 09020	4	1	2	12	Include	2.86	17.14
006	Q 42132 08760	4	1	4	0	Include	6.00	0.00
007	Q 43235 08478	4	1	16	5	Include	17.52	5.48
008	Q 43913 08471	4	3	2	0	Eff <60%		
009	Q 44647 08766	4	1	10	1	Include	11.82	1.18
010	Q 45129 09116	4	1	5	1	Include	6.67	1.33
011	Q 40649 10671	3	0	1	2	Include	1.00	2.00
012	Q 40742 09236	3	2	1	3	Include	1.50	4.50

Conclusion

The Feohanagh had a salmon abundance of 9.62 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 11.46 salmon fry/5min which is below the 17 salmon fry threshold.

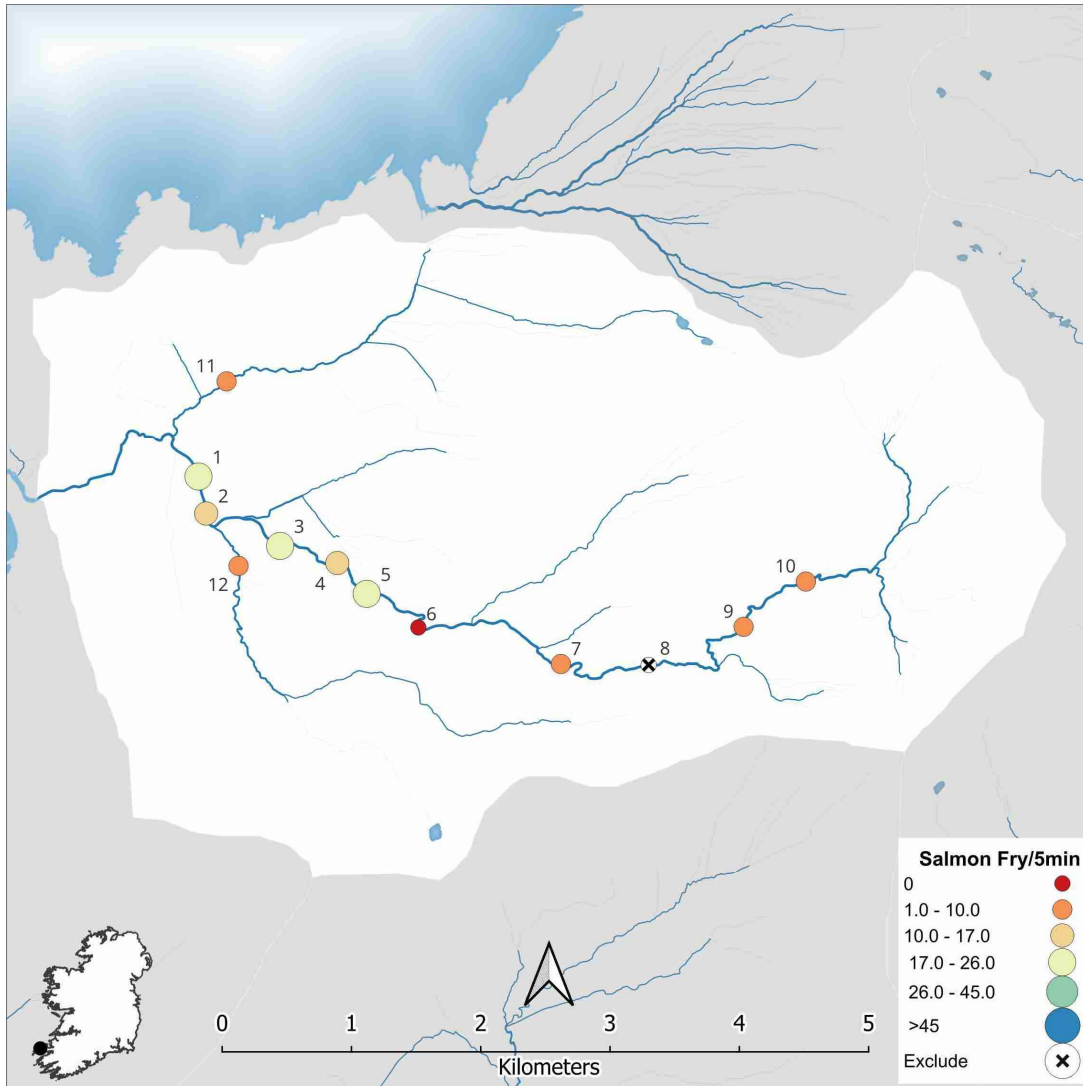


Fig. 41 Showing salmon fry/5min values and locations of surveys on the Feohanagh River in 2023.

A.5 Shannon River Basin District

Summary

Since 2007 twenty-two catchments or sub-catchments have been surveyed in the Shannon River Basin District (SHRBD) as part of the on-going catchment-wide electrofishing surveys. The results of these surveys are presented in Table 25 and Fig. 42. Currently three of these catchments are meeting the threshold index of 17 salmon fry/5min: the Feale, and Kilmastula Rivers and the Old Main channel of the Shannon. In 2023 surveys were completed on the Dell, Skivaleen and Annageeragh Rivers.

Table 25 Catchment-wide electrofishing data for the SHRBD 2015-2023 showing the average salmon fry captured /5min for each year surveyed. Also shown is the current index, surveys prior to 2015 are included in Appendix C

Code/River	Survey Year									Current Index	# Annual Surveys Considered
	2015	2016	2017	2018	2019	2020	2021	2022	2023		
118/Brick										0.00	1
119/Feale										<u>24.15</u>	1
120/Galey										<u>12.99</u>	1
125/Deel		1.87	0.04				3.83		1.46	1.14	5
126/Maigue							14.23			11.35	4
128/Shannon Kilcrow										0.69	1
128/Sh. Graney										0.19	1
128/Sh. Woodford										0.00	1
128/Sh. Mulkear				8.00†*						0.00	0
128/Sh. Blackwater			10.74†	10.74†						10.74	2
128/Sh. Groody			0.00†	7.45†						3.73	2
128/Sh. Kilmastula			10.35†	24.45†						<u>17.40</u>	2
128/Sh. Old MC			5.50*†	18.25*†	35.68†			28.82†		<u>32.25</u>	2
130/Owenagarney (Ratty)						3.82				9.88	3
131/Fergus	6.66					5.12*	9.68			6.90	5
133/Doonbeg		16.14*	18.77					18.82		16.81	4
134/Skivaleen	11.70	14.54*							2.97	9.95	4
135/Annageeragh						0.84			1.75	3.41	4
142/Inagh	3.59					7.23				5.47	3
143/Aughyvackeen			1.70					2.56		1.75	3
144/Aille								0.00		0.00	1
Quin										6.47	1

Bold annual figures indicate years included in the calculation of the current CWF index.

Underlined index figures indicate those exceeding the 17 salmon fry threshold.

* Incomplete surveys not included in the calculation of the current index.

† Sub-catchment surveys.

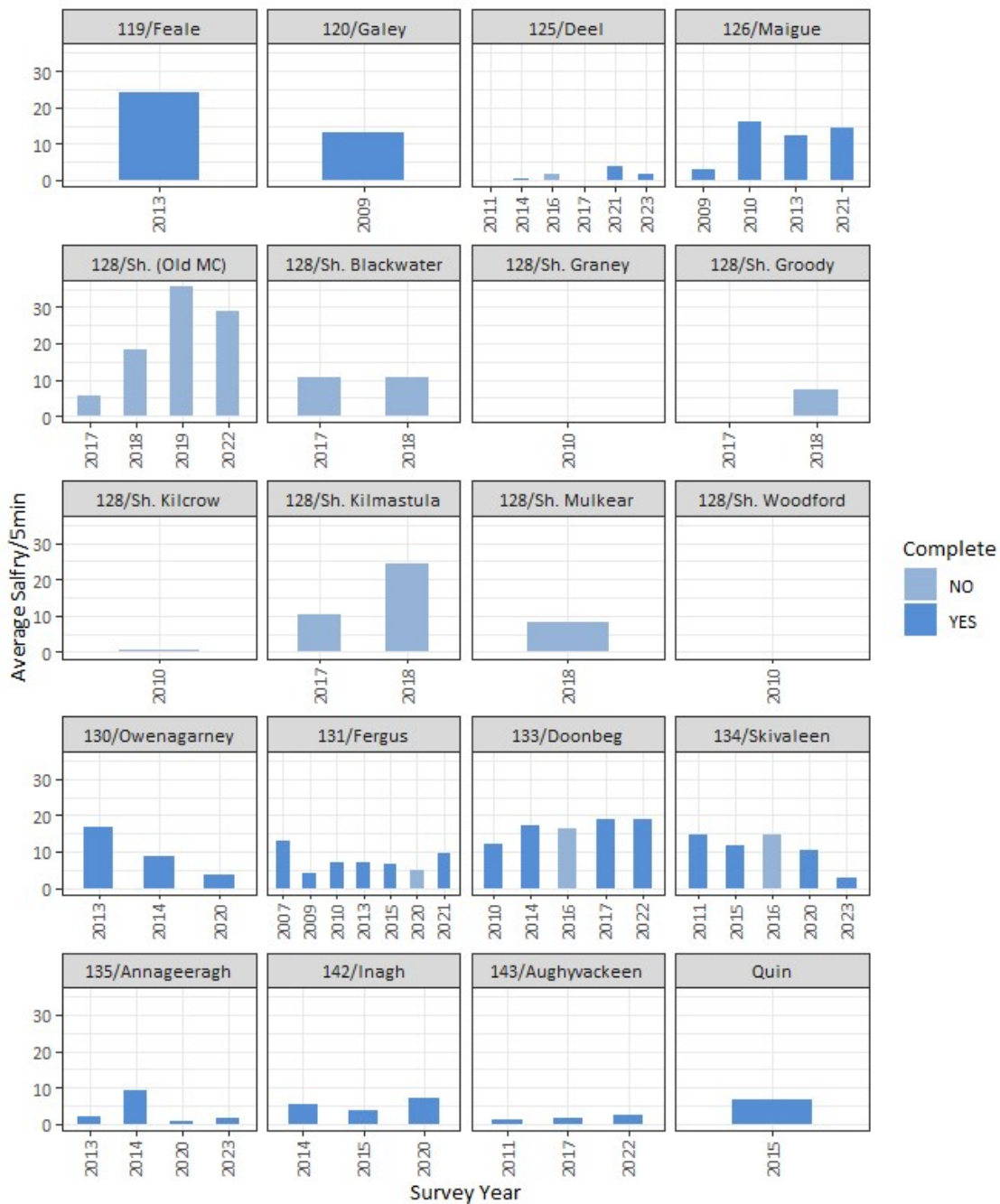


Fig. 42 Summary of results of annual CWF surveys (average salmon fry per 5min) in results in SHRBD 2007-2023.

A.5.1 Deel River

IFI Salmon Catchment #: 125
2023 survey dates: 25/7-21/8/2023
Mean Salmon Fry/5 min (2023): 1.46 fry/5min
CWEF Index: 1.14 fry/5min.

Sampling carried out by:	Fish Species Present:
Shannon Lauchlan	Brown Trout Salmon
Tony Holmes	European Eel Stone Loach
	Minnow 3-spined Stickleback

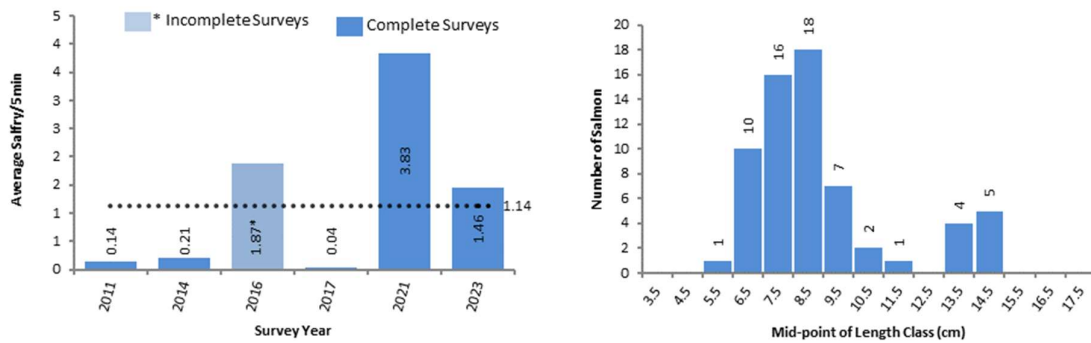


Fig. 43 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Deel river.

In this year’s survey of the Deel river, 49 sites were examined from July 25th to September 21st. Salmon fry (0+) were found at 13 sites, with the highest number recorded at site 45, where 11 salmon fry were observed. The modal length of 0+ salmon was 8.5 cm.

All 41 sites were included in the analysis; the mean catch at these sites was 1.46 salmon fry/5min. Salmon fry were well distributed in low abundance on stretches of stream order 3 and above along the main channel.

Conclusion

The Deel had a low salmon abundance of 1.46 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 1.14 salmon fry/5min which is below the 17 salmon fry threshold.

Table 26 Site specific results of CWF on the Deel River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
002	R 33450 45277	6	3	0	0	Include	0.00	0.00
003	R 33593 43776	6	2	0	0	Include	0.00	0.00
004	R 35396 41314	6	2	0	0	Include	0.00	0.00
008	R 33474 38608	6	0	0	0	Exclude		
009	R 33047 37687	6	0	0	0	Inaccessible- livestock		
011	R 30746 35153	6	1	0	1	Include	0.00	1.00
014	R 31289 31399	5	3	0	4	Include	0.00	4.00
015	R 32489 28617	4	0	0	0	Deep No Riffle.		
017	R 36005 26972	4	0	0	4	Include	0.00	5.00
018	R 37422 25730	4	2	0	2	Eff <60%		
019	R 38315 25134	4	2	0	2	Include	0.00	2.00
020	R 40134 23659	4	2	9	5	Include	9.64	5.36
021	R 40362 22831	4	2	3	0	Include	4.00	0.00
022	R 41578 21353	4	2	17	0	Include	17.00	0.00
030	R 44080 19900	2	2	0	0	Include	0.00	0.00
033	R 40209 18745	2	2	10	0	Include	12.00	0.00
036	R 37898 21114	2	3	8	0	Include	8.00	0.00
044	R 31869 28545	4	1	0	9	Include	0.00	13.00
045	R 31853 26663	4	1	0	11	Include	0.00	13.00
046	R 31666 24339	4	1	4	5	Include	4.89	6.11
049	R 33162 21778	3	2	30	0	Include	30.00	0.00
052	R 31286 22500	3	2	3	0	Include	3.00	0.00
053	R 30953 21693	3	1	55	0	Include	63.00	0.00
054	R 30046 21490	2	2	18	0	Include	18.00	0.00
055	R 30629 24024	3	2	2	0	Include	2.00	0.00
070	R 32652 29068	3	0	0	0	Unsuitable Habitat		
077	R 38547 33562	2	2	0	0	Equipment Issues		
079	R 23898 33087	2	1	1	0	Include	1.00	0.00
083	R 26954 33516	3	2	18	0	Include	20.00	0.00
084	R 25019 33814	2	2	11	0	Include	12.00	0.00
086	R 25843 33292	3	2	8	0	Include	12.00	0.00
087	R 29848 33584	3	0	0	0	Include	0.00	0.00
088	R 29408 34067	3	2	9	1	Include	10.80	1.20
090	R 27579 35906	3	2	9	0	Include	10.00	0.00
091	R 26174 37711	3	1	13	0	Include	16.00	0.00
093	R 27004 34681	3	2	3	0	Include	4.00	0.00
094	R 26425 36108	2	1	8	0	Include	9.00	0.00
095	R 25429 35619	2	1	5	0	Include	5.00	0.00
102	R 30694 38997	3	1	7	0	Include	7.00	0.00
103	R 28746 39476	3	2	10	0	Include	11.00	0.00
1045	R 31559 25967	4	2	0	5	Include	0.00	7.00
1071	R 33440 30491	3	3	3	1	Include	3.75	1.25
108	R 34608 41776	6	0			Not Sampled		
1083	R 27256 33683	3	2	7	0	Include	7.00	0.00
109	R 36840 39998	2	2	1	0	Include	1.00	0.00
110	R 41822 16800	1	2	5	0	Stream Order<2		
111	R 28161 33567	5	2	2	0	Include	2.00	0.00
112	R 28804 33497	5	2	0	1	Include	0.00	1.00
113	R 40802 18385	0	2	14	0	Include	16.00	0.00

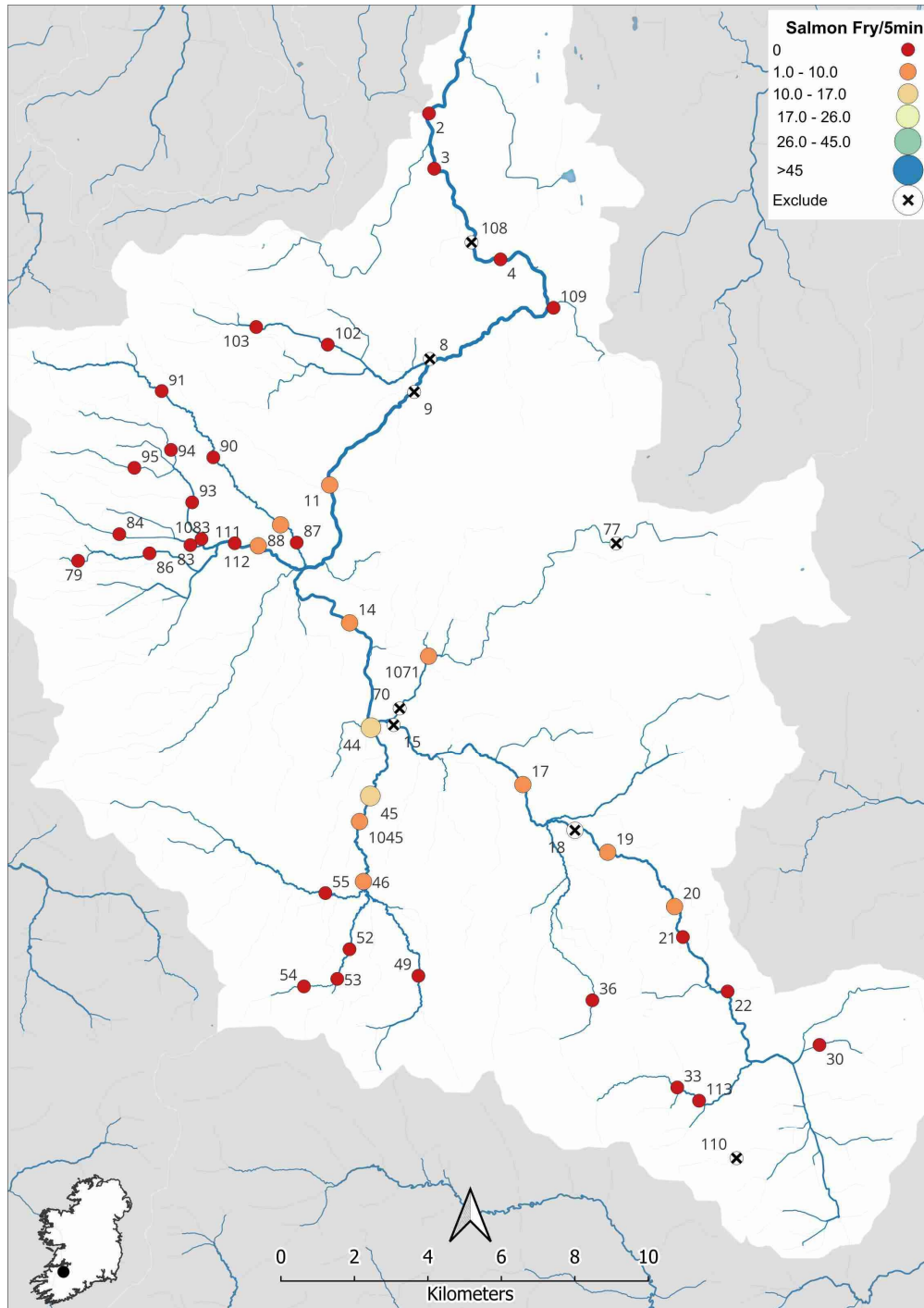


Fig. 44 Showing salmon fry/5min values and locations of surveys on the Deel River in 2023.

A.5.2 Skivaleen River

IFI Salmon Catchment #: 134
2023 survey dates: 14/9/2023
Mean Salmon Fry/5 min (2023): 2.97 fry/5min
CWEF Index: 9.95 fry/5min.

Sampling carried out by: Bill Keane
 Jonathan Coates Farrell

Fish Species Present: Brown Trout 3-spined Stickleback
 Flounder Salmon

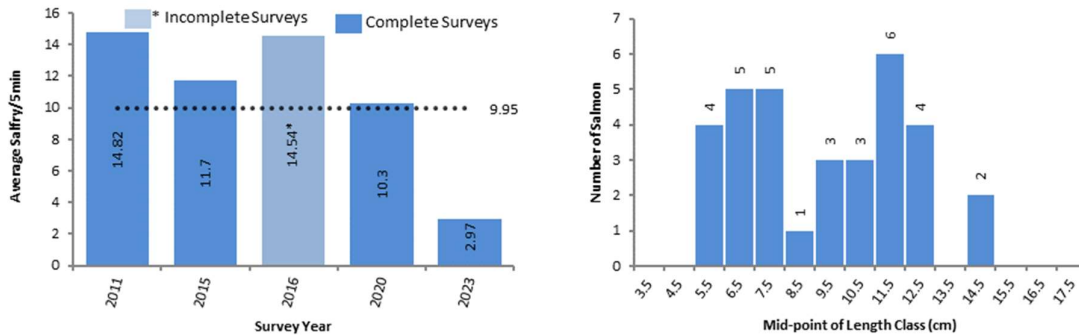


Fig. 45 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Skivaleen river.

In this year's survey of the Skivaleen river, 6 sites were examined on September 14th. Salmon fry (0+) were found at 10 sites, Salmon fry were well distributed throughout the system but abundance was low, with the highest number recorded at site 6, where 4 salmon fry were observed.

Six sites were included in the analysis; the mean catch at these sites was 2.97 salmon fry/5min.

Table 27 Site specific results of CWEF on the Skivaleen River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	Q 99119 66012	3	0	1	0	Include	1.00	0.00
003	R 01307 66298	3	2	2	1	Include	2.00	1.00
005	R 07297 66820	3	1	2	1	Eff <60%		
006	R 08778 66810	3	2	2	4	Include	3.00	6.00
008	R 12335 66591	2	1	4	0	Eff <60%		
009	R 09627 67374	2	2	6	2	Include	8.25	2.75
010	R 05305 67361	2	2	9	2	Include	10.64	2.36
013	R 09226 67082	2	2	3	4	Include	4.29	5.71

Conclusion

The Skivaleen had a salmon abundance of 2.97 salmon fry/5min in 2023. This was the lowest recorded abundance of any CWF survey on this catchment, taking the four previous complete surveys into account this results in a cumulative average of 9.95 salmon fry/5min. which is below the 17 salmon fry threshold.

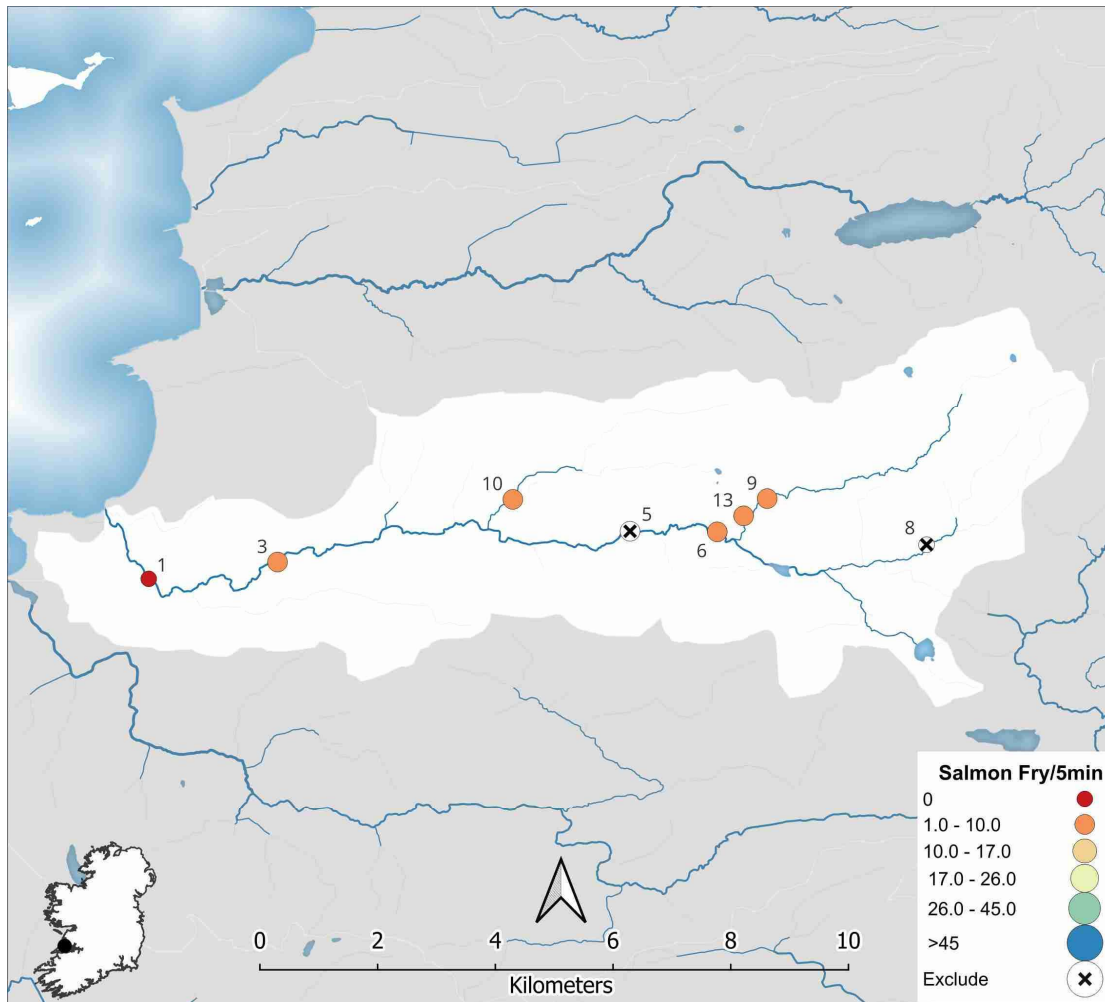


Fig. 46 Showing salmon fry/5min values and locations of surveys on the Skivaleen River in 2023.

A.5.3 Annageeragh River

IFI Salmon Catchment #: 135
2023 survey dates: 14/9/2023
Mean Salmon Fry/5 min (2023): 1.75 fry/5min
CWEF Index: 3.41 fry/5min.

Sampling carried out by: Catherine Hayes
 Jonathan Coates Farrell

Fish Species Present: Brown Trout 3-spined Sickleback
 European Eel Salmon
 Flounder

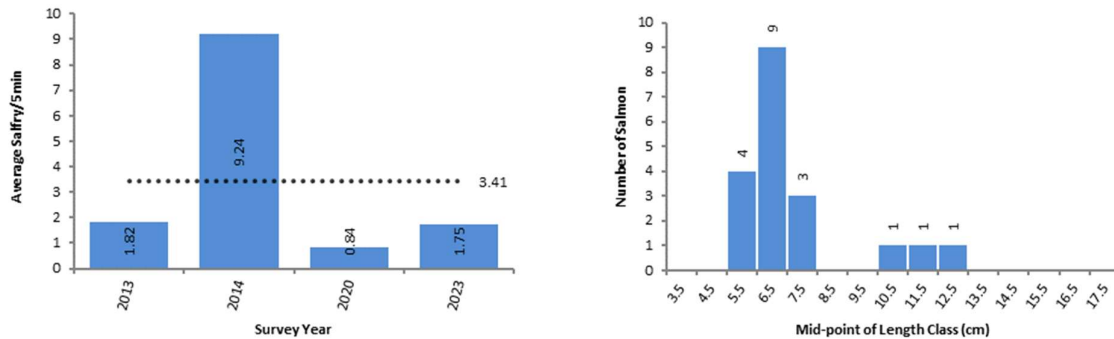


Fig. 47 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Annageeragh river.

In this year’s survey of the Annageeragh river, 12 sites were examined on September 14th. Salmon fry (0+) were found at just one site, site 1, where 16 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

All 12 sites were included in the analysis; the mean catch at these sites was 1.75 salmon fry/5min.

Table 28 Site specific results of CWEF on the Annageeragh River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	R 02669 71045	4	1	0	16	Include	0.00	21.00
003	R 04005 71048	4	2	12	0	Include	17.00	0.00
004	R 05357 71040	4	2	8	0	Include	12.00	0.00
005	R 06661 71345	4	2	18	0	Include	23.00	0.00
006	R 07867 72555	4	1	2	0	Include	3.00	0.00
007	R 08996 73006	4	1	10	0	Include	14.00	0.00
008	R 09548 72668	4	2	8	0	Include	11.00	0.00
009	R 14159 72637	2	2	24	0	Include	30.00	0.00
012	R 14560 72074	2	3	13	0	Include	14.00	0.00
014	R 08175 70636	3	3	9	0	Include	11.00	0.00
015	R 07320 71079	3	3	11	0	Include	15.00	0.00
019	R 10834 72649	4	2	13	0	Include	16.00	0.00

Conclusion

The Annageeragh had a very low salmon fry abundance of 2.97 salmon fry/5min in 2023. Taking the four previous complete surveys into account this results in a cumulative average of 9.95 salmon fry/5min which is below the 17 salmon fry threshold.

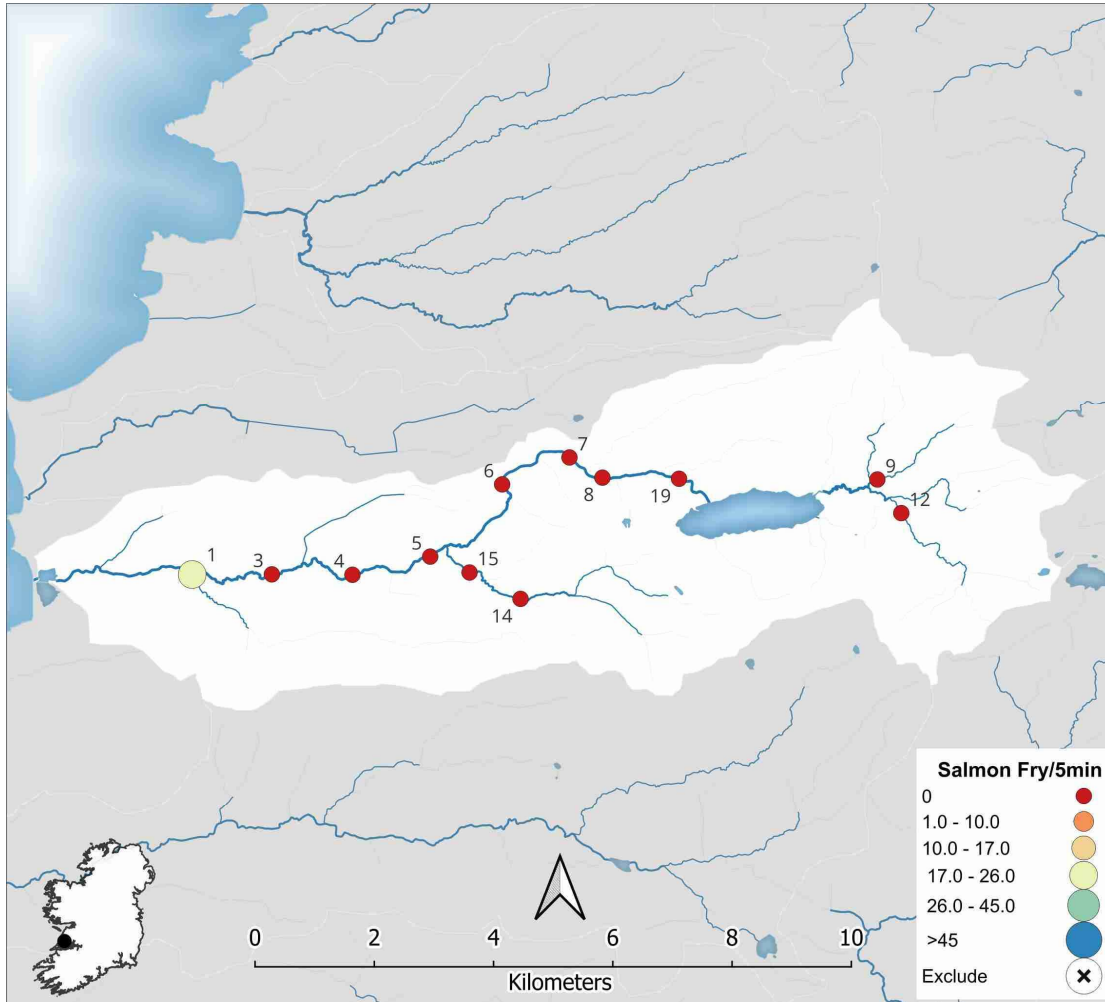


Fig. 48 Showing salmon fry/5min values and locations of surveys on the Annageeragh River in 2023.

A.6 Western River Basin District

Summary

Since 2007, thirty-one rivers have been surveyed in Western River Basin District (WRBD) as part of the ongoing catchment-wide electrofishing surveys. The results of these surveys are presented in Table 29 and Fig. 49. Currently eight of these rivers are meeting the threshold index of 17 salmon fry/5min: the Owenglin, Culfin, Erriff, Carrownisky, Owenmore, Carrowmore, and Drumcliff, as well as the Owenriff sub-catchment in the Corrib. In 2023 surveys were completed on the Erriff, Owengarve, Glenamoy, Ballinglen, Brusna and Garvogue, while two further surveys on the Kilcolgan and the Newport Rivers were weather affected and not extensive enough to be considered complete.

Table 29 Catchment-wide electrofishing data for the WRBD 2015-2023 showing the average salmon fry captured /5min for each year surveyed. Also shown is the current index, surveys prior to 2015 are included in Appendix C

Code/River	Survey Year									Current Index	# Annual Surveys Considered
	2015	2016	2017	2018	2019	2020	2021	2022	2023		
145/Kilcolgan			0.10*	0.79*		11.95			5.74*	7.23	2
146/Clarinbridge						1.77				4.51	2
147/Corrib						10.74*†					
147/Corrib Owenriff				10.35*†			22.30†			<u>19.02</u>	2
148/Knock				1.50*			16.93			<u>14.73</u>	2
149/Owenboliska(Spiddal)				0.76			12.90			5.57	4
152/Cashla										10.83	1
154/L. Na Furnace	0.00									0.00	1
155/Screeb			10.70					12.39		11.54	2
161/Owenmore/Ballinahinch						14.83				14.83	1
163/Owenglin								29.86*	28.56	<u>20.89</u>	2
167/Culfin										<u>30.83</u>	1
168/Erriff	28.52	21.72	13.69	22.81	22.25	31.95	40.49	37.18	19.64	<u>30.30</u>	5
171/Carrownisky			4.25*		15.24			28.41		<u>20.15</u>	5
172/Bunowen										13.62	1
173/Owenwee/Belclare					4.49					9.33	4
178/Newport/L. Beltra									14.43*	13.00	3
179/Srahmore										4.33	1
181/Owengarve	0.90					13.01			3.49	5.98	5
185/Owenduff (Bangor)										6.10	2
186/Owenmore - MC										<u>27.65</u>	1
186/Owenmore- Carrowmore										<u>25.77</u>	1
187/Glenamoy									9.54	14.45	3
188/Muingnabo	1.87*					0.33				0.55	2
193/Ballinglen		4.97						10.73		0.60	5
194/Cloonaghmore			5.07*	14.63				7.52		15.52	5
196/Brusna						6.73*			5.28	9.79	4
198/Leaffony	1.73					0.67*		0.00		3.86	4
203/Garvogue/Bonnet							19.53	16.37	15.46	15.53	5
205/Drumcliff										<u>17.72</u>	1
207/Grange	4.56					4.08				4.42	4

Bold annual figures indicate years included in the calculation of current the CWF index.

Underlined index figures indicate those exceeding the 17 salmon fry threshold.

* Incomplete surveys not included in the calculation of current index.

† Sub-catchment surveys.

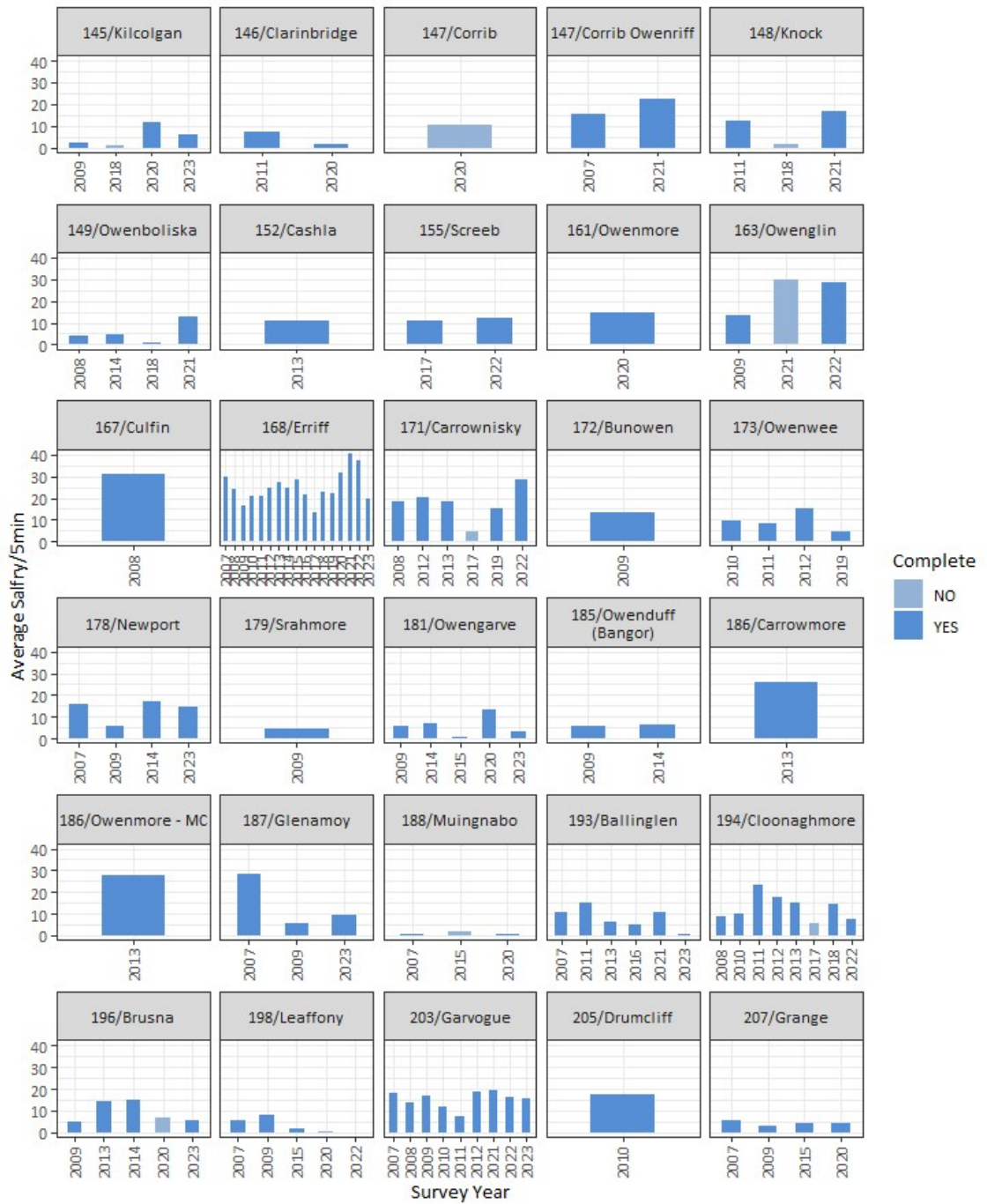


Fig. 49 Summary of results of annual CWFEE surveys (average salmon fry per 5min) in WRBD 2007-2023.

A.6.1 Kilcolgan River

IFI Salmon Catchment #: 145
2023 survey dates: 6/7/9/2023
Mean Salmon Fry/5 min (2023): Incomplete
CWEF Index: 7.32 fry/5min.

Sampling carried out by:	Fish Species Present:
Conor McCormick	Brown Trout Stonelaoch
Shannon Lauchlan	European Eel 3-spined Stickleback
	Minnow Salmon

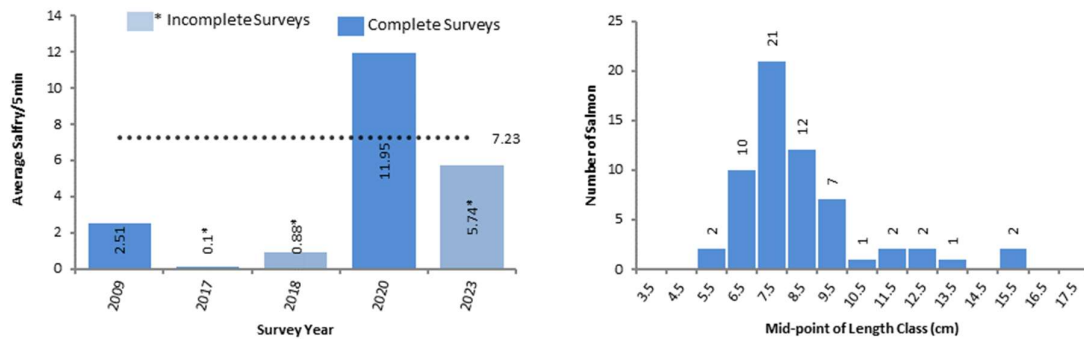


Fig. 50 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Kilcolgan river.

In this year’s survey of the Kilcolgan river, 11 sites were examined from August 8th to 10th. Salmon fry (0+) were found at 7 sites, with the highest number recorded at site 30, where 14 salmon fry were observed. The modal length of 0+ salmon was 7.5 cm.

High water levels prevented the completion of this survey. However, those sites that were surveyed show that salmon had spawned on the Carra stream and on the main channel.

Conclusion

The Kilcolgan survey was not complete, but the limited results (Table 30 & Table 31) do indicate abundance at some sites was high. The index remains unchanged at 7.23 salmon fry/5min which is below the 17 salmon fry threshold.

Table 30 Site specific results of CWF on the Kilcolgan River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	M 44182 18408	5	2	1	2	Eff <60%		
002	M 45493 18399	5	2	0	0	Include	0.00	0.00
003	M 51065 19929	5	2	0	1	Include	0.00	1.00
004	M 54707 23253	4	1	0	3	Include	0.00	3.00
016	M 50535 16739	3	2	2	0	Include	3.00	0.00
017	M 52585 20060	4	2	0	4	Include	0.00	5.00
019	M 58531 21358	4	2	1	2	Include	1.33	2.67
027	M 62233 18544	2	1	0	0	Include	0.00	0.00
028	M 63054 21393	3	2	6	6	Include	7.50	7.50
029	M 62698 22333	3	1	0	13	Include	0.00	20.00
030	M 63298 22801	3	1	6	14	Include	7.80	18.20

Table 31 Comparison of site-specific results (salmon fry/5min) of CWF surveys on the Kilcolgan River catchment in 2023 with previous surveys.

Site #	2009	2017	2018	2020	2023
001	0.00	-	0.00	-	4.67
002	1.00	-	0.00	-	0.00
003	12.00	-	0.00	0.00	1.00
004	0.00	-	0.00	4.00	3.00
016	0.00	-	0.00	0.00	0.00
017	1.00	-	0.00	6.00	5.00
019	7.00	-	1.00	0.00	2.67
027	0.00	-	0.00	0.00	0.00
028	0.00	-	1.00	17.61	7.50
029	1.00	-	1.00	6.43	20.00
030	0.00	-	0.00	17.25	18.20

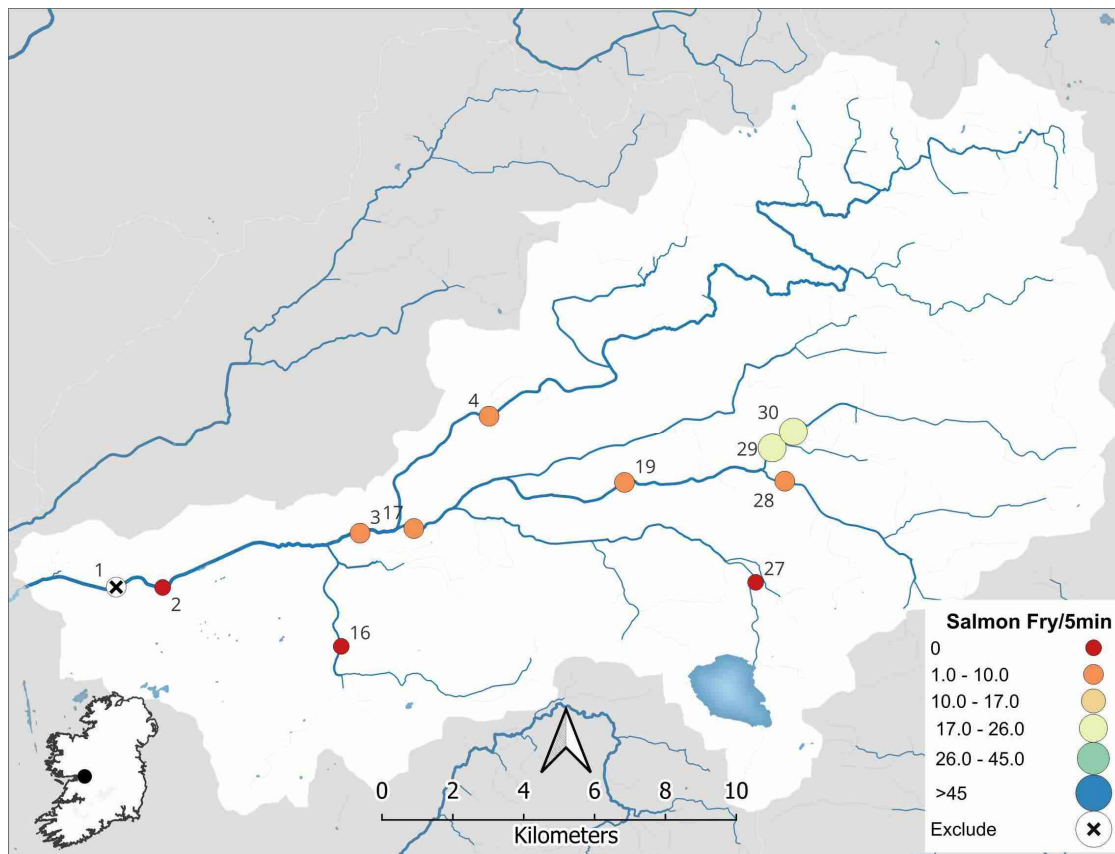


Fig. 51 Showing salmon fry/5min values and locations of surveys on the Kilcolgan River in 2023.

A.6.2 Erriff River

IFI Salmon Catchment #:	168
2023 survey dates:	23-30/8/2023
Mean Salmon Fry/5 min (2023):	19.64 fry/5min
CWEF Index:	30.30 fry/5min.

Sampling carried out by:	Fish Species Present:
Enda O'Brien	Brown Trout
Finbarr McGroarty	Minnow
Mick Millane	Salmon
Shannon Lauchlan	3-spined Sticklenback
Seán Kelly	

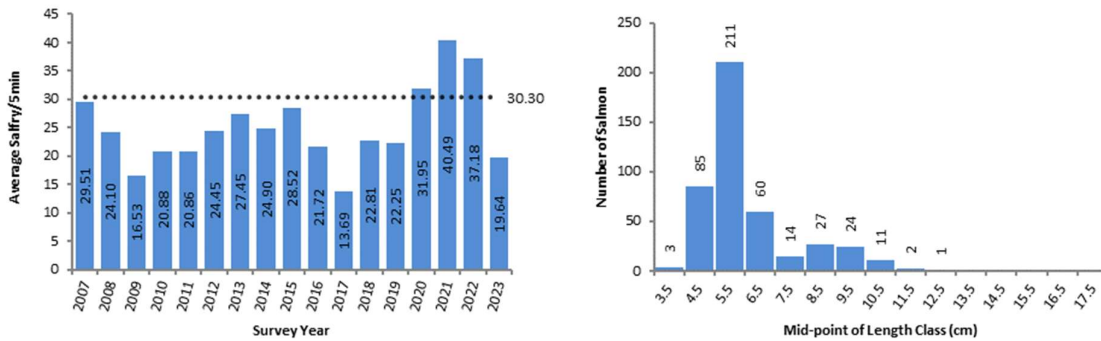


Fig. 52 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Erriff river.

In this year's survey of the Erriff, 23 sites were examined on August 22nd. Salmon fry (0+) were found at all 21 sites, with the highest number recorded at site 34, where 45 salmon fry were observed. The modal length of 0+ salmon was 5.5 cm.

Twenty-two sites were included in the analysis; the mean catch at these sites was 19.64 salmon fry/5min. Salmon fry were well distributed and abundant throughout the system.

Conclusion

The Erriff had a salmon abundance of 19.64 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 30.30 salmon fry/5min which is above the 17 salmon fry threshold.

Table 32 Site specific results of CWF on the Erriff River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
002	L 92702 65721	5	1	0	31	Include	0.00	37.00
003	L 93503 66122	5	1	0	14	Include	0.00	14.00
004	L 93784 66390	5	1	0	11	Include	0.00	17.00
005	L 94352 66589	5	1	0	35	Include	0.00	35.00
007	L 95142 67641	5	1	5	30	Include	5.57	33.43
019	L 92739 73748	4	1	4	27	Include	4.65	31.35
020	L 92438 73774	4	1	1	24	Include	1.08	25.92
021	L 92057 73962	4	1	1	11	Include	1.33	14.67
024	L 90454 74809	3	1	2	11	Include	2.77	15.23
025	L 89216 74612	3	1	0	7	Include	0.00	9.00
027	L 93408 66092	4	1	4	30	Include	5.29	39.71
030	L 95039 67705	3	2	0	13	Include	0.00	18.00
031	L 90058 67605	3	1	10	0	Include	12.00	0.00
032	L 89506 67128	2	0	4	1	Include	6.40	1.60
034	L 99926 72098	4	1	1	45	Include	1.15	51.85
035	M 00301 72204	4	1	1	8	Include	1.56	12.44
036	M 00529 72263	4	3	1	1	Include	1.50	1.50
039	M 01401 73456	3	2	2	13	Include	2.27	14.73
040	M 01753 73717	3	1	7	17	Include	9.04	21.96
041	M 02046 73578	2	1	1	11	Include	1.25	13.75
051	L 88924 74002	2	1	1	0	Include	1.00	0.00
057	L 89337 66953	2	1	0	4	Eff <60%		
061	L 93793 73129	4	1	0	19	Include	0.00	24.00

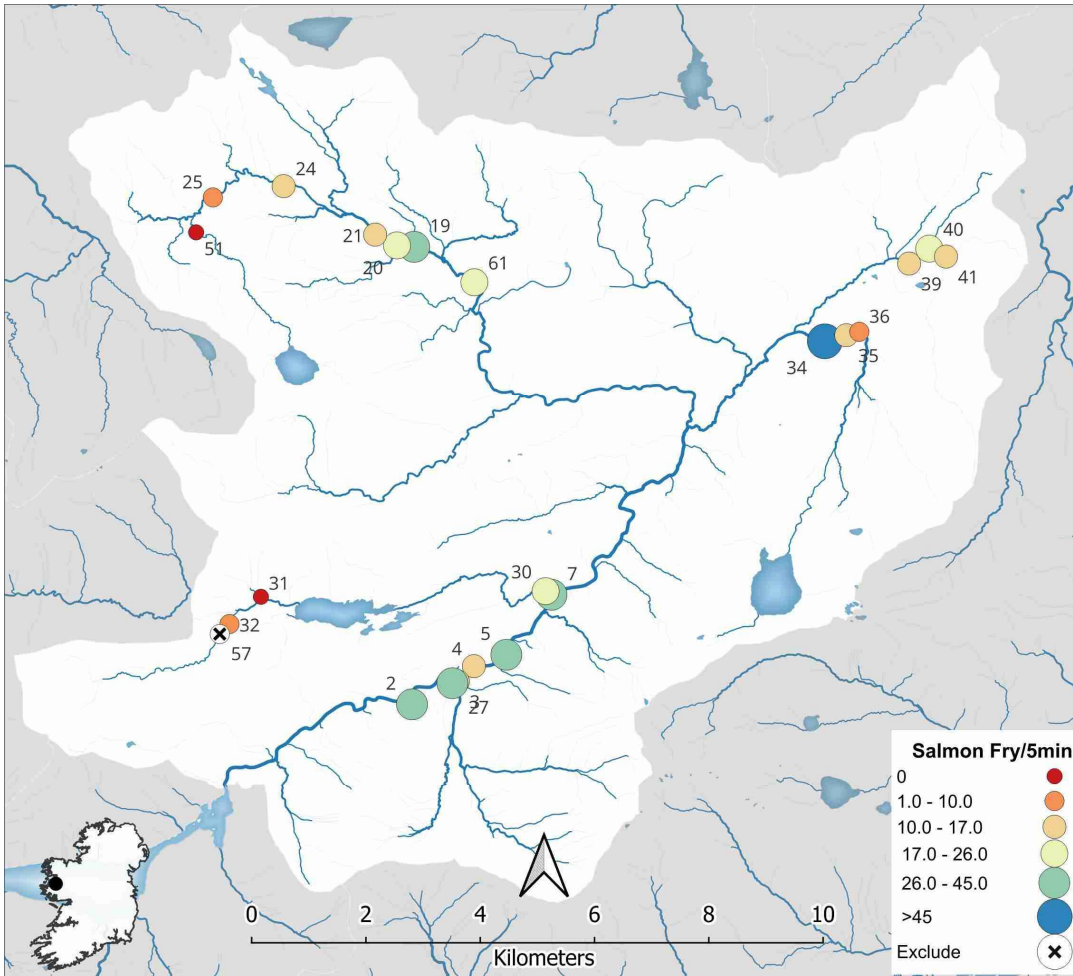


Fig. 53 Showing salmon fry/5min values and locations of surveys on the Erriff River in 2023.

A.6.3 Newport (Lough Beltra) River

IFI Salmon Catchment #: 178
2023 survey dates: 15-18/9/2023
Mean Salmon Fry/5 min (2023): Incomplete
CWEF Index: 13.00 fry/5min.

Sampling carried out by: Shannon Lauchlan
 Tommy Ginnelly

Fish Species Present: Brown Trout
 European Eel
 3-Spined Stickleback
 Salmon

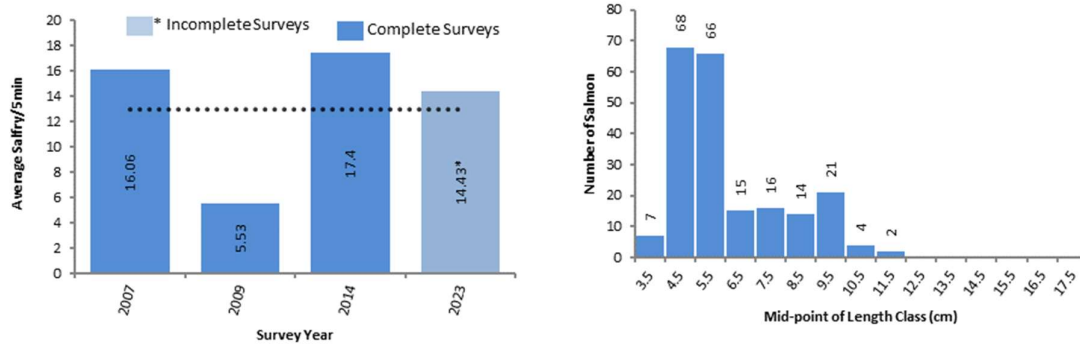


Fig. 54 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Newport river.

In this year's survey of the Newport, 14 sites were examined from September 15th to 18th. Salmon fry (0+) were found at 12 sites, with the highest number recorded at site 4, where 36 salmon fry were observed. The modal length of 0+ salmon was 4.5 cm.

High water levels prevented the completion of this survey. However, those sites that were surveyed show that salmon had spawned on the multiple tributaries in the catchment.

Table 33 Site specific results of CWEF on the Newport River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
003	M 04309 97285	4	3	0	0	Include	0.00	0.00
004	M 02690 97592	4	1	0	36	Include	0.00	42.00
005	M 02072 98017	4	2	3	26	Include	3.52	30.48
006	M 07331 96586	3	1	5	15	Include	5.50	16.50
007	G 08982 01385	4	2	0	18	Include	0.00	23.00
008	G 06840 06712	3	1	5	16	Include	5.71	18.29
009	G 06124 07127	3	1	1	18	Include	1.21	21.79
010	G 05896 07549	2	1	4	9	Include	5.54	12.46
011	G 05541 07609	2	1	4	2	Include	6.00	3.00
015	M 05021 96099	3	2	8	0	Include	13.00	0.00
018	G 08913 03876	3	2	0	3	Include	0.00	4.00
024	M 05387 99869	2	2	10	2	Include	11.67	2.33
027	G 08747 00023	3	1	15	13	Include	18.21	15.79
028	M 08428 99948	3	1	10	9	Include	13.68	12.32

Conclusion

The Newport survey was not complete, but the limited results (Table 33 & Table 34) do indicate that abundance at sites was comparable to that seen in previous surveys. The index remains unchanged at 13.00 salmon fry/5min which is below the 17 salmon fry threshold.

Table 34 Comparison of site-specific results (salmon fry/5min) of CWFEF surveys on the Newport River catchment in 2023 with previous surveys.

Site #	2007	2009	2014	2023
003	3.00		3.00	0.00
004	9.00		25.71	42.00
005	4.00		25.22	30.48
006	16.00	11.00	14.24	16.50
007	26.00	11.00	26.40	23.00
008	27.00	12.00	32.00	18.29
009	27.00	6.00	11.37	21.79
010	7.00		9.33	12.46
011	16.00		4.00	3.00
015		0.00	2.20	0.00
018			12.00	4.00
024			2.00	2.33
027			0.00	15.79
028			0.00	12.32

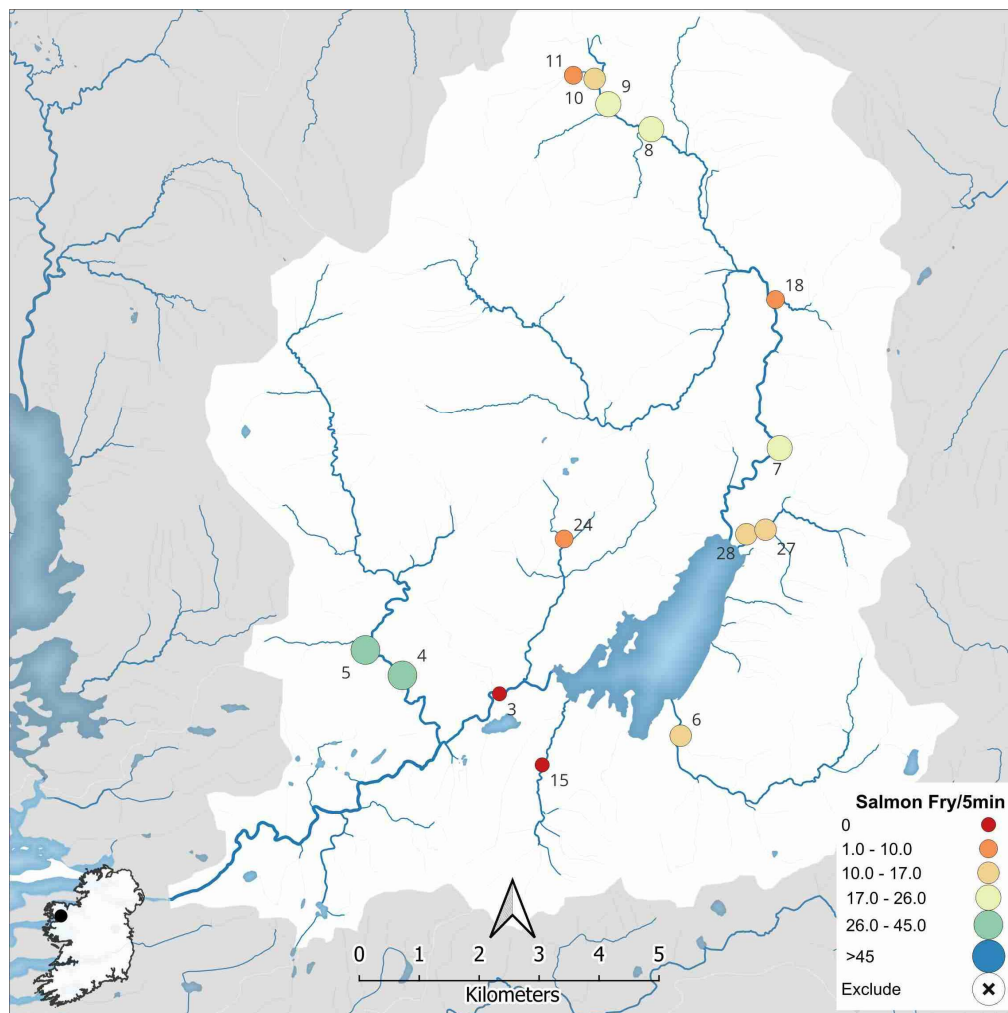


Fig. 55 Showing salmon fry/5min values and locations of surveys on the Newport River in 2023.

A.6.4 Owengarve River

IFI Salmon Catchment #: 181
2023 survey dates: 14/9/2023
Mean Salmon Fry/5 min (2023): 3.49 fry/5min
CWEF Index: 5.98 fry/5min.

Sampling carried out by: Shannon Lauchlan
 Tommy Ginnelly
Fish Species Present: Brown Trout
 European Eel
 Salmon

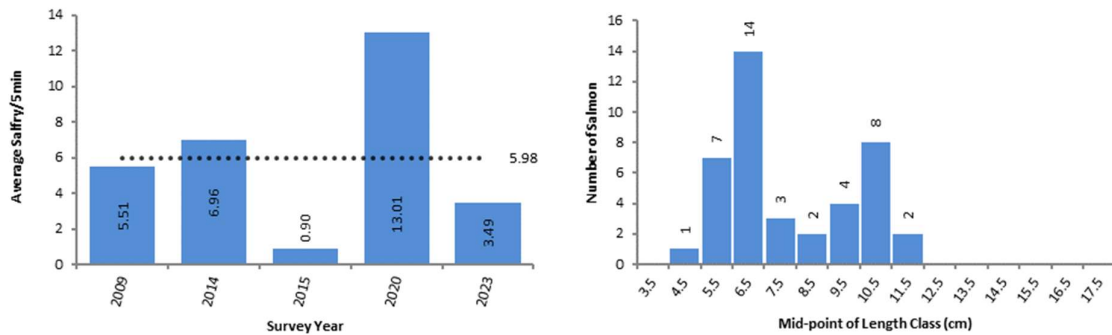


Fig. 56 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Owengarve river.

In this year's survey of the Owengarve river, 9 sites were examined on September 14th. Salmon fry (0+) were found at 5 sites, Salmon fry were absent from the top portion of the main channel and abundance was low, with the highest number recorded at site 9, where 6 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

Seven sites were included in the analysis; the mean catch at these sites was 3.49 salmon fry/5min.

Table 35 Site specific results of CWEF on the Owengarve River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	L 90428 97020	3	2	4	2	Include	5.33	2.67
002	F 91264 00789	2	2	16	0	Include	20.00	0.00
003	L 89421 97570	3	2	1	3	Include	1.25	3.75
004	L 89226 97897	3	2	2	5	Include	2.29	5.71
006	L 91345 98297	3	2	2	4	Include	2.67	5.33
007	L 89185 96803	3	2	0	4	Eff <60%		
008	L 89394 96681	3	2	0	2	Eff <60%		
009	L 89669 97009	3	2	0	6	Include	0.00	7.00
010	L 91325 99494	2	3	0	0	Include	0.00	0.00

Conclusion

The Owengarve had a relatively low salmon abundance of 3.49 salmon fry/5min in 2023. Taking the five complete surveys into account this results in a cumulative average of 5.98 salmon fry/5min which is below the 17 salmon fry threshold.

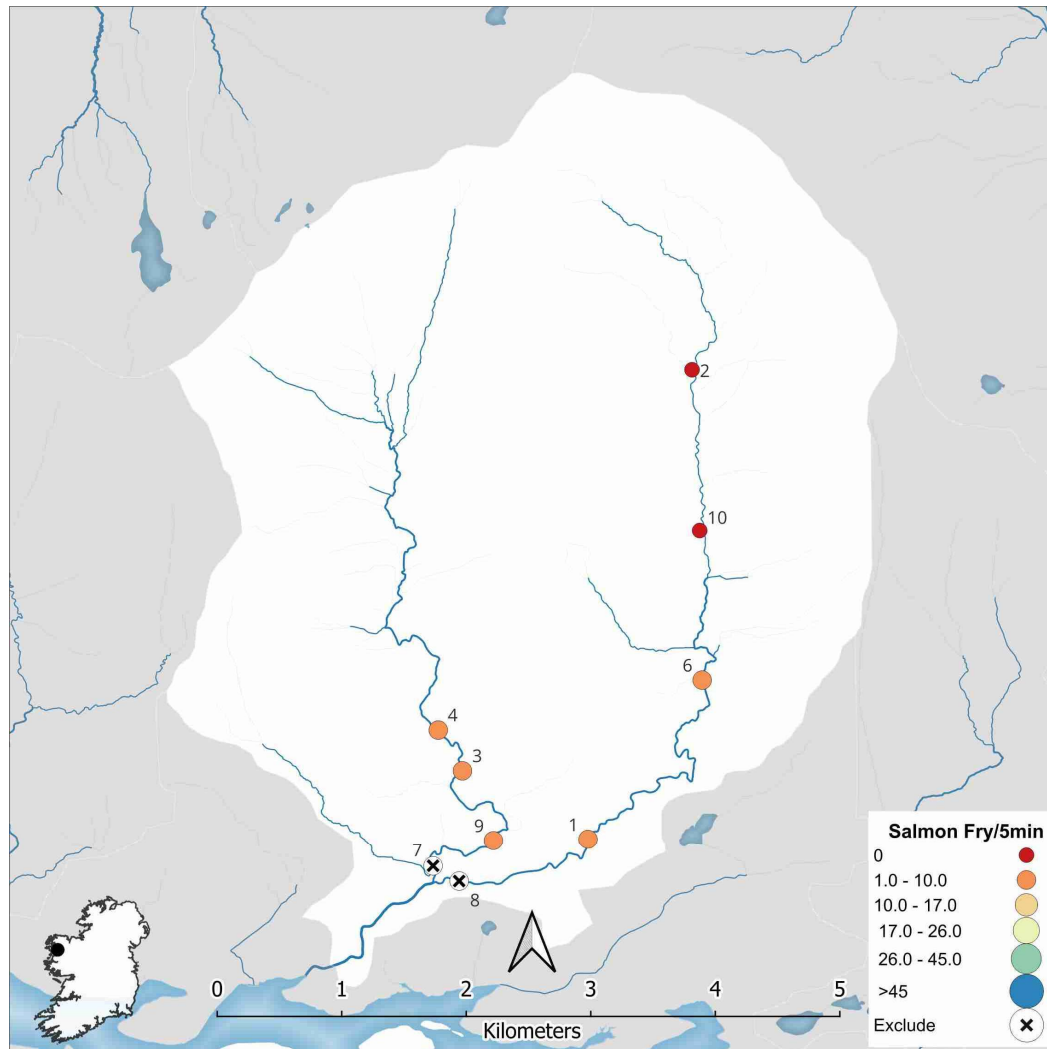


Fig. 57 Showing salmon fry/5min values and locations of surveys on the Owengarve River in 2023.

A.6.5 Glenamoy River

IFI Salmon Catchment #: 187
2023 survey dates: 11-12/9/2023
Mean Salmon Fry/5 min (2023): 9.54 fry/5min
CWEF Index: 14.45 fry/5min.

Sampling carried out by: Shannon Lauchlan
 Tommy Ginnelly

Fish Species Present: Brown Trout Salmon
 European Eel 3_spined Stickleback

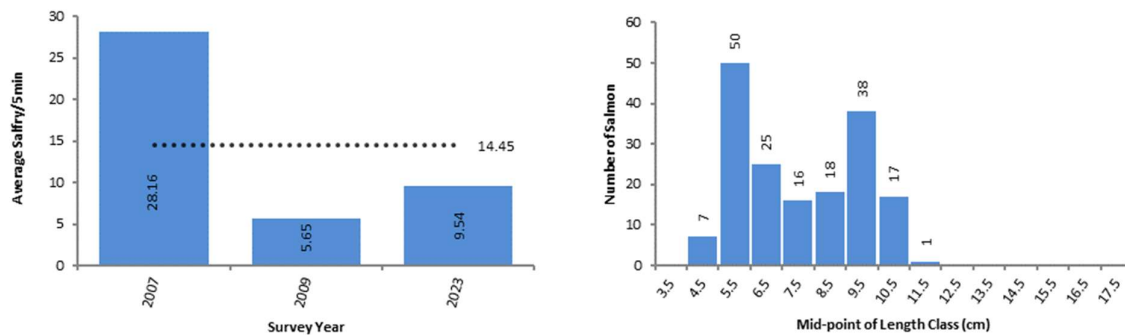


Fig. 58 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Glenamoy river.

In this year's survey of the Glenamoy river, 15 sites were examined from September 11th to 12th. Salmon fry (0+) were found at 13 sites, Salmon fry were well distributed throughout the catchment with moderate abundance, the highest number recorded was at site 3, where 18 salmon fry were observed. The modal length of 0+ salmon was 5.5 cm.

Twelve sites were included in the analysis; the mean catch at these sites was 9.54 salmon fry/5min.

Conclusion

The Glenamoy had a salmon abundance of 9.54 salmon fry/5min in 2023. Taking the three complete surveys into account this results in a cumulative average of 14.45 salmon fry/5min which is below the 17 salmon fry threshold.

Table 36 Site specific results of CWF on the Glenamoy River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	F 91184 33499	5	2	0	4	Eff <60%		
002	F 93030 33518	4	2	0	8	Include	0.00	10.00
003	F 93560 33936	4	2	1	18	Include	1.00	18.00
004	F 94550 34319	4	2	0	8	Include	0.00	9.00
005	F 95669 34506	4	1	1	14	Include	1.00	14.00
006	F 96568 34806	3	1	6	4	Include	7.20	4.80
007	F 96921 34495	3	1	4	8	Include	5.00	10.00
008	F 96928 34043	3	2	2	1	Include	2.67	1.33
009	F 92902 33358	4	2	1	9	Include	1.40	12.60
010	F 93093 33218	4	2	3	4	Include	4.29	5.71
012	F 93710 31761	3	3	2	0	Eff <60%		
014	F 93875 30134	3	2	0	10	Include	0.00	12.00
015	F 92010 33570	5	1	0	5	Include	0.00	6.00
016	F 93812 29062	3	3	2	0	Eff <60%		
017	F 93334 32983	3	2	0	9	Include	0.00	11.00

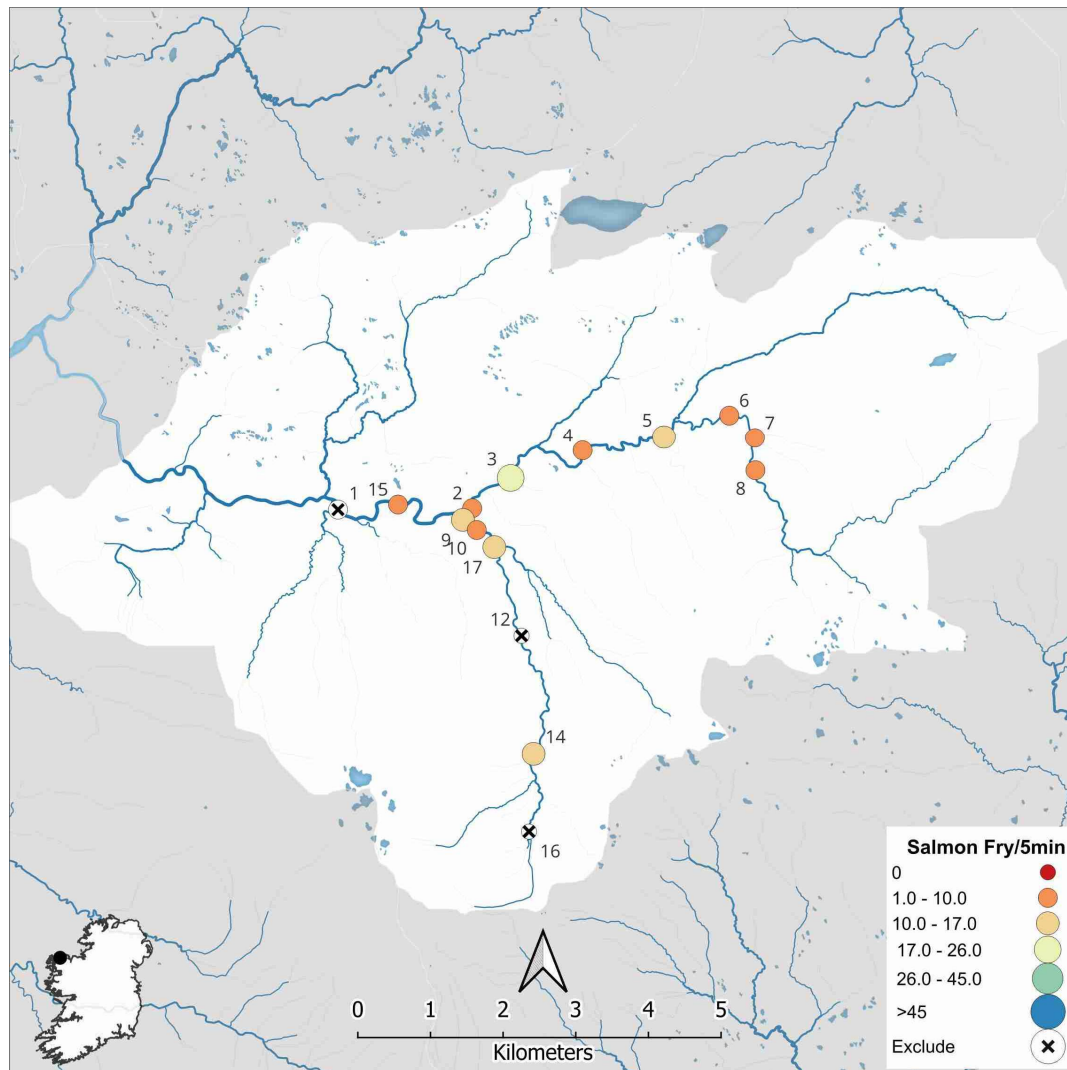


Fig. 59 Showing salmon fry/5min values and locations of surveys on the Glenamoy River in 2023.

A.6.6 Ballinglen River

IFI Salmon Catchment #: 193
2023 survey dates: 2-14/9/2023
Mean Salmon Fry/5 min (2023): 0.6 fry/5min
CWEF Index: 7.55 fry/5min.

Sampling carried out by:	Fish Species Present:
Brian Flannery	Brown Trout Salmon
Eddie Doherty	European Eel 3_spined Stickleback
Eugene O'Flaherty	
John-luc Flanagan	
Michael Wilson	

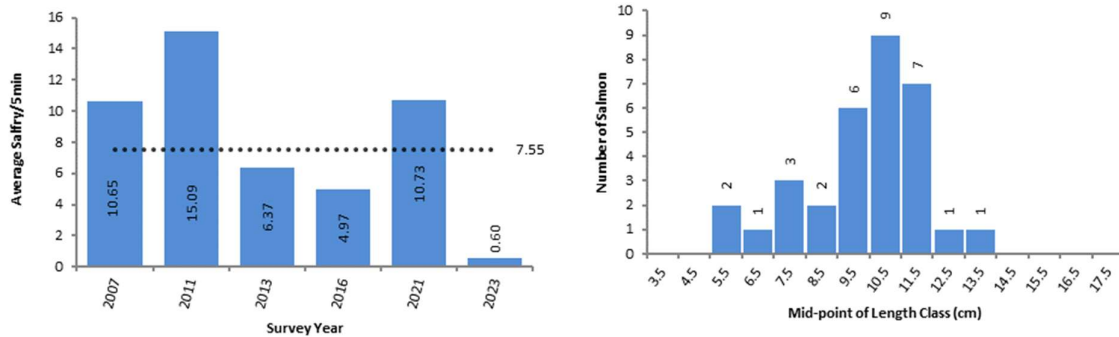


Fig. 60 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Ballinglen river.

In this year's survey of the Ballinglen river, 10 sites were examined from September 2nd to 14th. Salmon fry (0+) were found at 4 sites. Salmon fry abundance was very low - only 6 salmon fry were observed, the highest number recorded at sites 8 and 12, where 2 salmon fry were recorded.

All 10 sites were included in the analysis; the mean catch at these sites was 0.6 salmon fry/5min.

Conclusion

The Ballinglen River had a very low salmon fry abundance of 0.6 salmon fry per 5 minutes in 2023. This is the lowest recorded in any CWEF survey on this catchment and represents only a fraction of the highest annual average of 15.09 observed in 2011. Considering the five most recent complete surveys, there is a cumulative average of 7.55 salmon fry/5 minutes, which is below the 17 salmon fry threshold.

Table 37 Site specific results of CWF on the Ballinglen River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
003	G 10119 38066	4	1	1	0	Include	1.00	0.00
004	G 10319 33557	3	1	3	0	Include	3.00	0.00
005	G 10378 36972	4	1	1	1	Include	1.00	1.00
007	G 10335 36044	4	1	2	1	Include	2.00	1.00
008	G 10254 34688	4	1	1	2	Include	1.00	2.00
010	G 09927 30824	3	1	13	0	Include	13.00	0.00
012	G 10219 34145	4	1	0	2	Include	0.00	2.00
013	G 08875 32955	3	2	4	0	Include	4.00	0.00
014	G 10333 33510	3	1	11	0	Include	11.00	0.00
015	G 10447 31923	3	1	14	0	Include	14.00	0.00

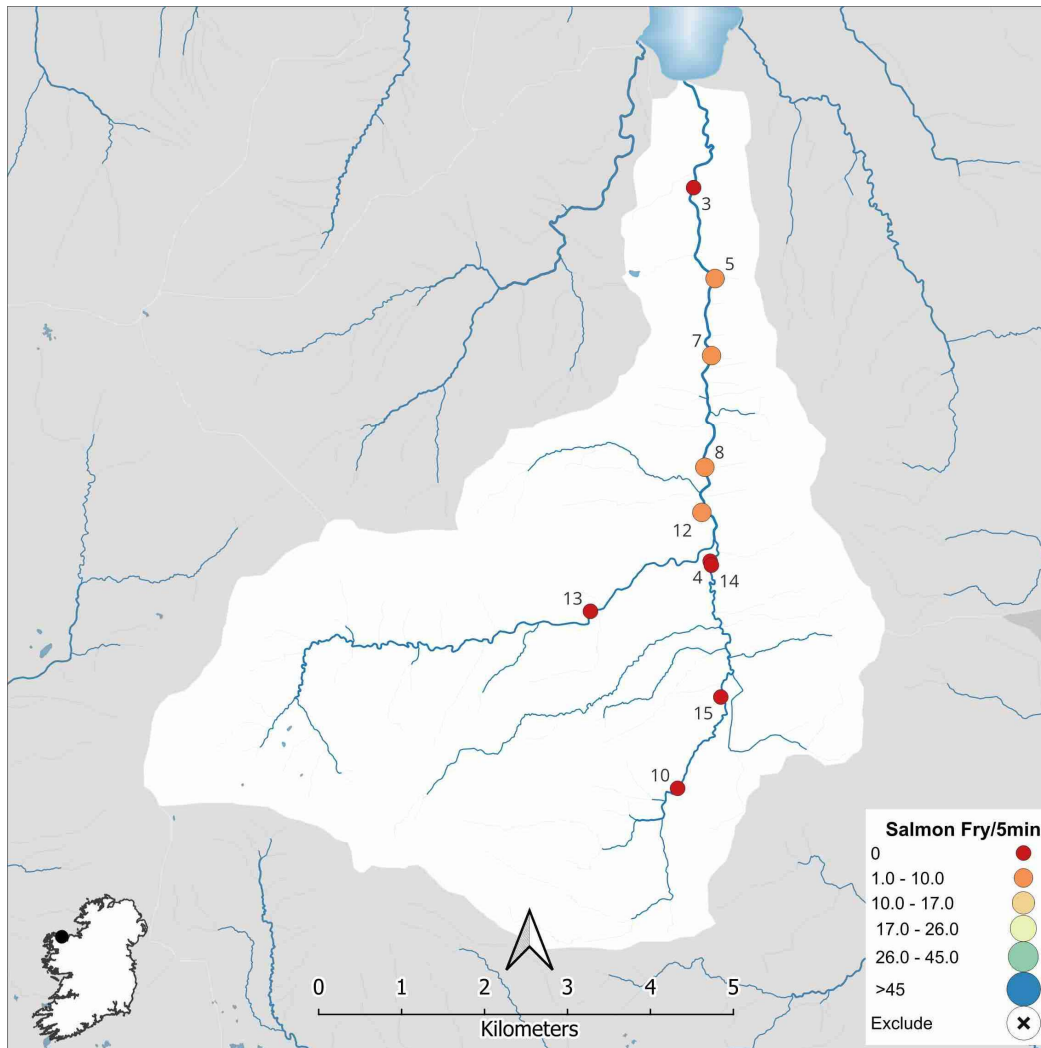


Fig. 61 Showing salmon fry/5min values and locations of surveys on the Ballinglen River in 2023.

A.6.7 Brusna River

IFI Salmon Catchment #: 196
2023 survey dates: 21/9/2023
Mean Salmon Fry/5 min (2023): 5.58 fry/5min
CWEF Index: 9.32 fry/5min.

Sampling carried out by: Brian Flannery Colin Jinks Eddie Doherty Eugene O'Flaherty Michael Wilson Philip Thornton	Fish Species Present: Brown Trout European Eel Salmon
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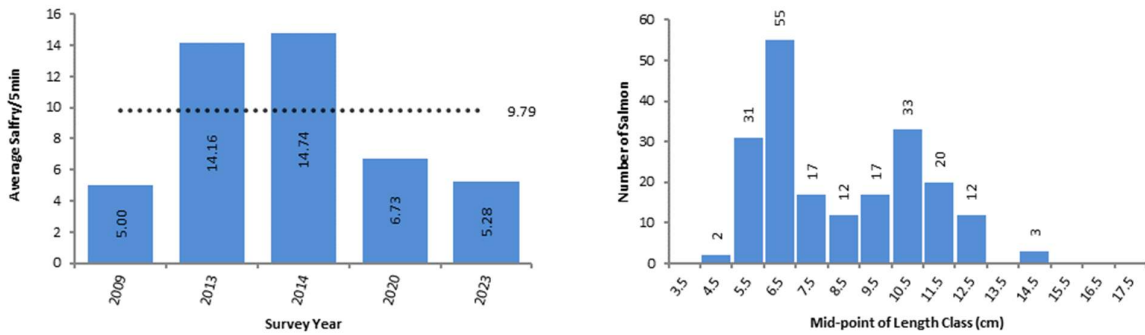


Fig. 62 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Brusna river.

In this year's survey of the Brusna river, 23 sites were examined from September 7th to 18th. Salmon fry (0+) were found at 18 sites. Salmon fry were notably absent from all 5 sites on the Srafaungal and Creegganalar tributaries, but present at all other sites, the highest number recorded was at site 22 where 18 salmon fry were recorded. The modal length of 0+ salmon was 6.5 cm.

All 23 sites were included in the analysis; the mean catch at these sites was 5.28 salmon fry/5min.

Conclusion

The Brusna had a salmon abundance of 5.28 salmon fry/5min in 2023. Taking the five complete surveys into account this results in a cumulative average of 9.79 salmon fry/5min which is below the 17 salmon fry threshold.

Table 38 Site specific results of CWF on the Brusna River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 26850 18059	6	2	0	4	Include	0.00	6.00
002	G 29514 20080	4	1	5	2	Include	5.00	2.00
003	G 30197 20963	4	2	1	7	Include	1.00	7.00
005	G 31600 23938	3	1	3	4	Include	3.00	4.00
008	G 28311 17946	5	2	1	2	Include	1.00	2.00
010	G 30774 16223	3	0	5	0	Include	5.00	0.00
012	G 31178 17077	3	1	4	0	Include	4.00	0.00
016	G 33784 17513	3	2	12	0	Include	12.00	0.00
018	G 33068 18383	3	2	24	0	Include	24.00	0.00
022	G 29030 19318	4	1	2	18	Include	2.60	23.40
023	G 30041 19785	4	1	9	14	Include	12.13	18.87
024	G 31575 20508	3	2	10	5	Include	12.00	6.00
025	G 32464 20862	3	1	17	14	Include	17.00	14.00
026	G 34836 20233	3	1	0	6	Include	0.00	7.00
028	G 36594 18885	3	2	12	3	Include	12.80	3.20
030	G 30986 20678	3	1	6	6	Include	6.00	6.00
031	G 31467 22978	3	2	8	1	Include	8.00	1.00
032	G 32042 23050	3	2	7	4	Include	7.00	4.00
037	G 26507 18420	6	2	0	4	Include	0.00	5.00
038	G 28749 18140	5	2	2	1	Include	2.00	1.00
041	G 29915 18210	4	1	4	0	Include	4.00	0.00
044	G 31003 22463	4	0	5	4	Include	5.00	4.00
045	G 33262 20567	3	1	7	6	Include	8.08	6.92

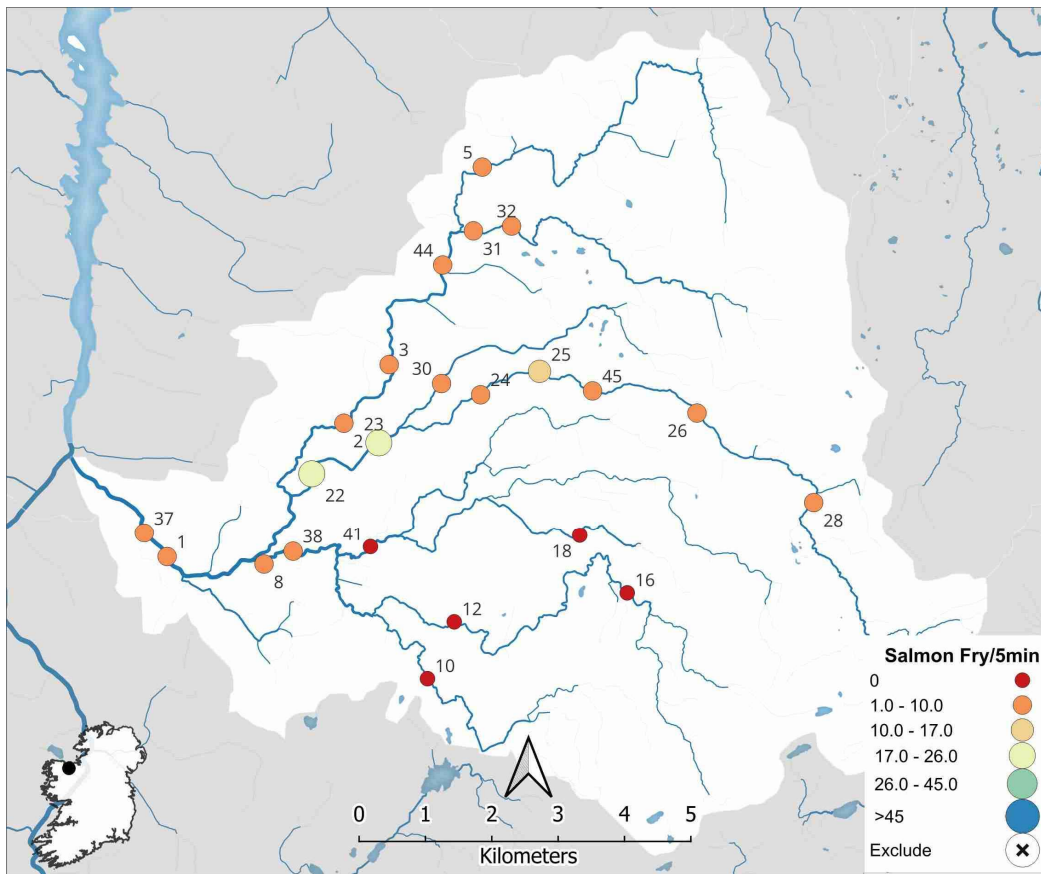


Fig. 63 Showing salmon fry/5min values and locations of surveys on the Brusna River in 2023.

A.6.8 Garvogue (Bonnet) River

IFI Salmon Catchment #: 203
2023 survey dates: 22/8-28/9/2023
Mean Salmon Fry/5 min (2023): 15.46 fry/5min
CWEF Index: 15.53 fry/5min.

Sampling carried out by:	Fish Species Present:
Ciaran Jennings	Brown Trout Perch
Jimmy Frazer	Crayfish Roach
	European Eel Salmon
	Gudgeon Stone Loach
	Minnow 3-Spined Stickleback

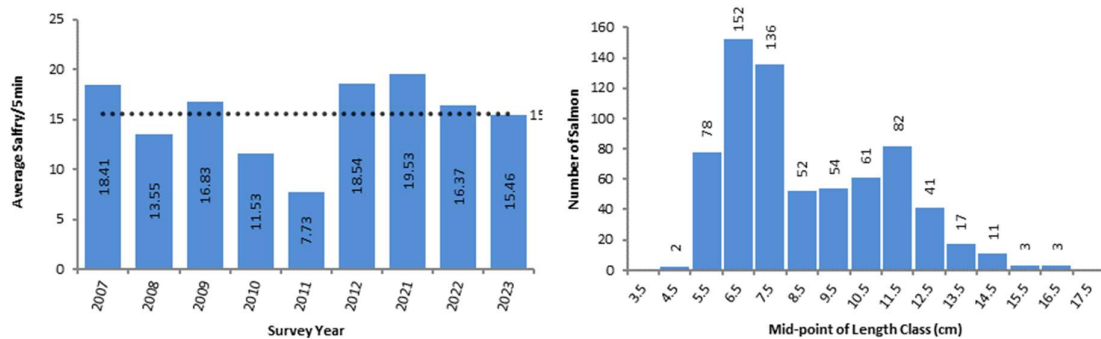


Fig. 64 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Garvogue River.

In this year's survey of the Garvogue River 56 sites were examined from August 22nd to September 28th. Salmon fry (0+) were found at 33 sites, with highest abundances mainly observed along the main channel of the Bonnet river and on the Shanvaus. However, the highest number recorded was at site 1, in the Garvogue River below lough Gill, where 44 salmon fry were found. The modal length of 0+ salmon was 6.5 cm.

Thirty-three sites were included in the analysis; the mean catch at these sites was 15.46 salmon fry/5min. Water levels were quite high throughout the season, making fishing some sites difficult and rendering a number of sites unfishable.

Conclusion

The Garvogue had a salmon abundance of 15.46 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 15.53 salmon fry/5min which is below the 17 salmon fry threshold.

Table 39 Site specific results of CWFEP on the Garvogue River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 69484 35976	5	1	0	44	Include	0.00	69.00
002	G 79243 31785	5	1	0	7	Eff <60%		
003	G 79900 31620	5	2	2	5	Eff <60%		
004	G 81837 30218	5	2	1	2	Eff <60%		
005	G 82822 31179	5	2	0	14	Eff <60%		
006	G 83615 31803	5	1	2	19	Include	2.95	28.05
007	G 84862 33795	5	3	4	25	Include	5.79	36.21
008	G 85675 35335	5	1	1	18	Include	1.53	27.47
009	G 86651 35560	5	1	4	26	Include	4.00	26.00
010	G 86672 37377	5	3	1	4	Eff <60%		
011	G 86996 38273	5	0	0	0	Flooded		
012	G 87472 40251	4	0	0	0	Flooded		
013	G 87243 40569	4	0	0	0	Flooded		
014	G 86972 41273	4	1	1	22	Include	1.57	34.43
015	G 85826 43303	4	0	0	0	Flooded		
016	G 85050 44168	4	0	0	0	Flooded		
017	G 84508 44513	3	0	0	0	Flooded		
018	G 83907 44723	3	0	0	0	Flooded		
019	G 83403 45551	3	1	0	7	Include	0.00	11.00
020	G 80611 30279	4	3	5	8	Include	5.77	9.23
021	G 79050 29136	3	2	5	0	Include	7.00	0.00
022	G 79561 28636	1	2	21	0	Stream Order<2		
023	G 85075 33184	2	0	0	0	Flooded		
024	G 85741 33329	2	2	3	6	Include	4.00	8.00
025	G 85599 32817	2	0	0	0	Flooded		
026	G 86440 37803	4	1	16	13	Include	21.52	17.48
027	G 86317 38212	4	1	3	23	Include	4.15	31.85
028	G 86220 38509	4	1	4	24	Include	5.43	32.57
029	G 86148 39125	4	1	0	30	Include	0.00	38.00
030	G 86044 39329	4	1	8	36	Include	9.45	42.55
031	G 85269 39993	4	2	1	1	Eff <60%		
032	G 84092 40760	4	1	4	0	Include	5.00	0.00
033	G 83276 40618	4	2	10	0	Include	12.00	0.00
034	G 85543 39516	2	2	3	10	Eff <60%		
035	G 84917 39094	2	2	5	7	Include	7.92	11.08
036	G 84577 38906	2	2	6	4	Include	7.20	4.80
037	G 84028 38624	2	2	2	0	Include	2.00	0.00
038	G 88034 39274	4	0	0	0	Flooded		
039	G 88593 39296	4	0	0	0	Flooded		
040	G 90353 39858	4	1	3	13	Include	3.94	17.06
041	G 91221 39642	4	2	0	2	Eff <60%		
042	G 91965 39652	3	1	3	7	Include	4.50	10.50
043	G 92268 38973	2	0	0	0	Flooded		
044	G 92033 38314	2	0	0	0	Flooded		
045	G 92123 37533	2	3	2	6	Include	3.00	9.00
046	G 92260 36946	2	2	5	9	Include	6.43	11.57
047	G 92140 36592	2	3	3	3	Include	4.00	4.00
048	G 88660 39783	2	2	12	0	Include	16.00	0.00
049	G 88455 39866	3	2	9	2	Include	11.45	2.55
050	G 88439 40543	3	2	9	0	Include	12.00	0.00
051	G 88889 41280	3	3	2	0	Eff <60%		
052	G 85356 44137	3	2	2	4	Include	2.67	5.33
053	G 85294 44326	2	2	6	4	Include	8.40	5.60
054	G 82811 29525	4	1	0	12	Include	0.00	17.00
055	G 84272 29289	4	2	6	0	Include	8.00	0.00
056	G 83371 40544	2	3	0	0	Include	0.00	0.00

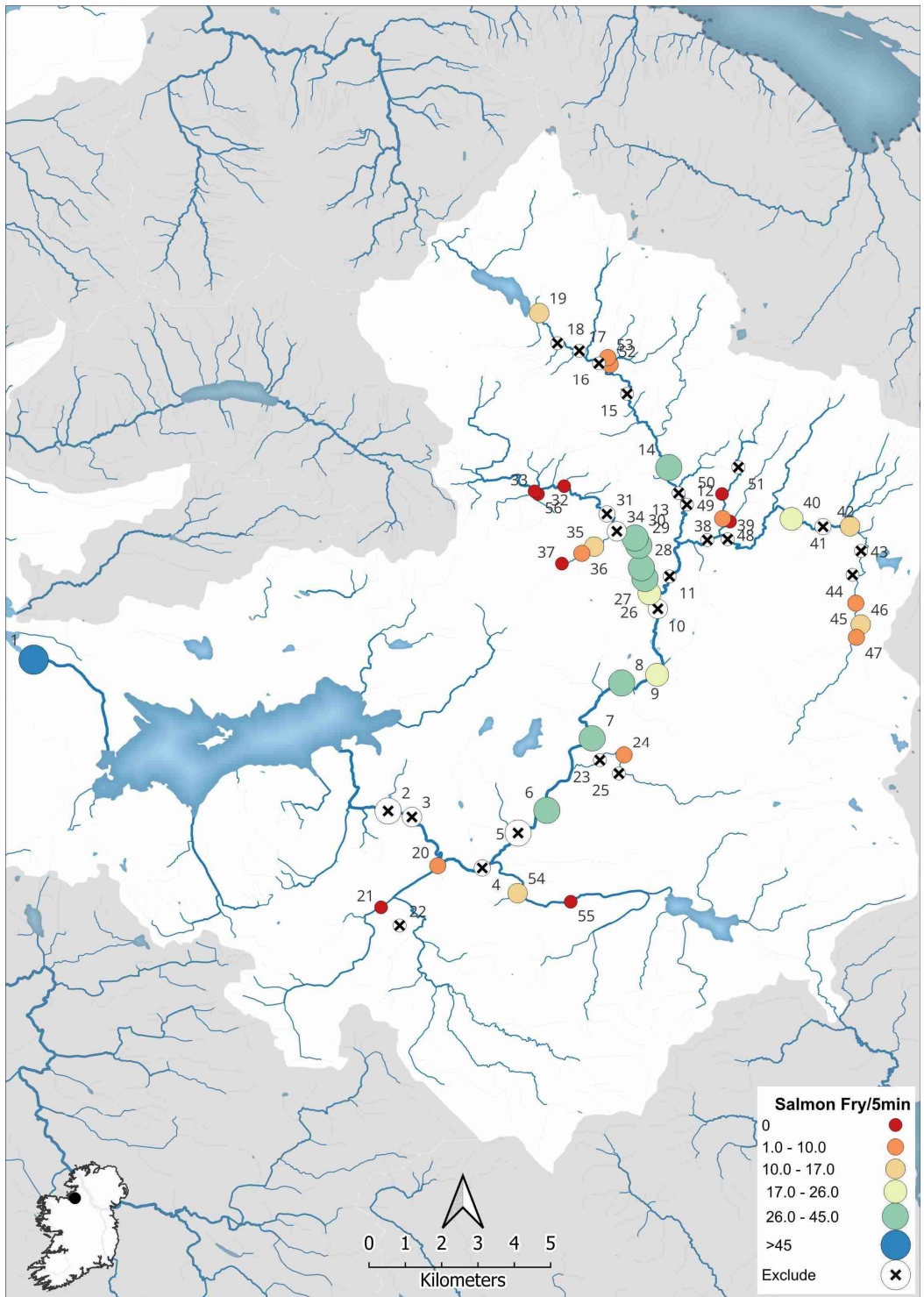


Fig. 65 Showing salmon fry/5min values and locations of surveys on the Garvogue River in 2023.

A.7 Noth Western River Basin District

Summary

Since 2007, thirty-three rivers have been surveyed in the North Western River Basin District (NWRBD) as part of the ongoing catchment-wide electrofishing surveys. The results of these surveys are presented in Table 40 and Fig. 66. Currently, ten of these rivers are meeting the threshold index of 17 salmon fry per 5 minutes: the Duff, Abbey, Eany, Oily, Owentocker, Owenea, Gweebarra, Clady, Lackagh, and Crana. In 2023, surveys were completed on the Eske, Oily, Glen, Owenamarve, Clady, Glenna, and Leannan rivers.

Table 40 Catchment-wide electrofishing data for the NWRBD 2015-2023 showing the average salmon fry captured /5min for each year surveyed. Also shown is the current index, surveys prior to 2015 are included in Appendix C.

Code/River	Survey Year									Current Index	# Annual Surveys Considered
	2015	2016	2017	2018	2019	2020	2021	2022	2023		
208/Duff			18.05	20.34				8.57		18.14	5
210/Erne	1.16	1.25	0.00	0.65	0.00	0.00	1.20	0.00		0.37	5
211/Abbey										28.14	1
212/Ballintra					13.31			2.29		12.20	4
213/Laghy					8.56			5.71		9.77	5
214/Eske	14.07			10.94					11.92	14.04	5
215/Eany	12.89									19.61	3
216/Oily			21.26			18.64			15.14	21.07	5
217/Bungosteen			13.17		13.41			3.46		15.44	5
219/Glen	18.37			18.56		11.71			15.67	16.75	5
220/Owenwee (Yellow R)							14.20			6.24	
221/Bracky						5.31			6.27	11.24	5
222/Owentocker								27.13		23.59	2
223/Owenea				33.94				43.19		38.57	2
225/Gweebarra								19.28		19.28	1
226/Owenamarve							10.67		13.30	6.67	5
228/Gweedore (Crolly)										13.65	2
229/Clady									20.23	24.52	3
234/Glenna		4.00					11.43		1.02	5.60	5
235/Tullaghobegly		b						6.24		7.87	3
236/Ray		3.71*				6.65		10.39		11.62	5
240/Lackagh		17.50*	24.75							21.07	5
248/Leannan	15.27	15.05*	19.47	20.11	21.33	20.50	18.23	13.83	8.11	16.40	5
249/Swilly							14.36				11.63
250/Isle (Burn)							0.00			1.06	2
251/Burnfoot							0.00			3.56	3
252/Mill	0.00						0.00	0.00		0.00	4
253/Crana		6.00*	6.93*	16.38				33.01		21.71	3
256/Clonmany	5.89						9.55			9.81	4
257/Straid	0.00						0.00	0.00		0.05	4
258/Donagh	0.68						6.79	0.82		3.13	4
259/Glennagannon								1.26		7.27	4
261/Culoort	0.00*						11.41			7.72	2

Bold annual figures indicate years included in the calculation of current the CWF index.

Underlined index figures indicate those exceeding the 17 salmon fry threshold.

* Incomplete surveys not included in the calculation of current index.

† Sub-catchment surveys.

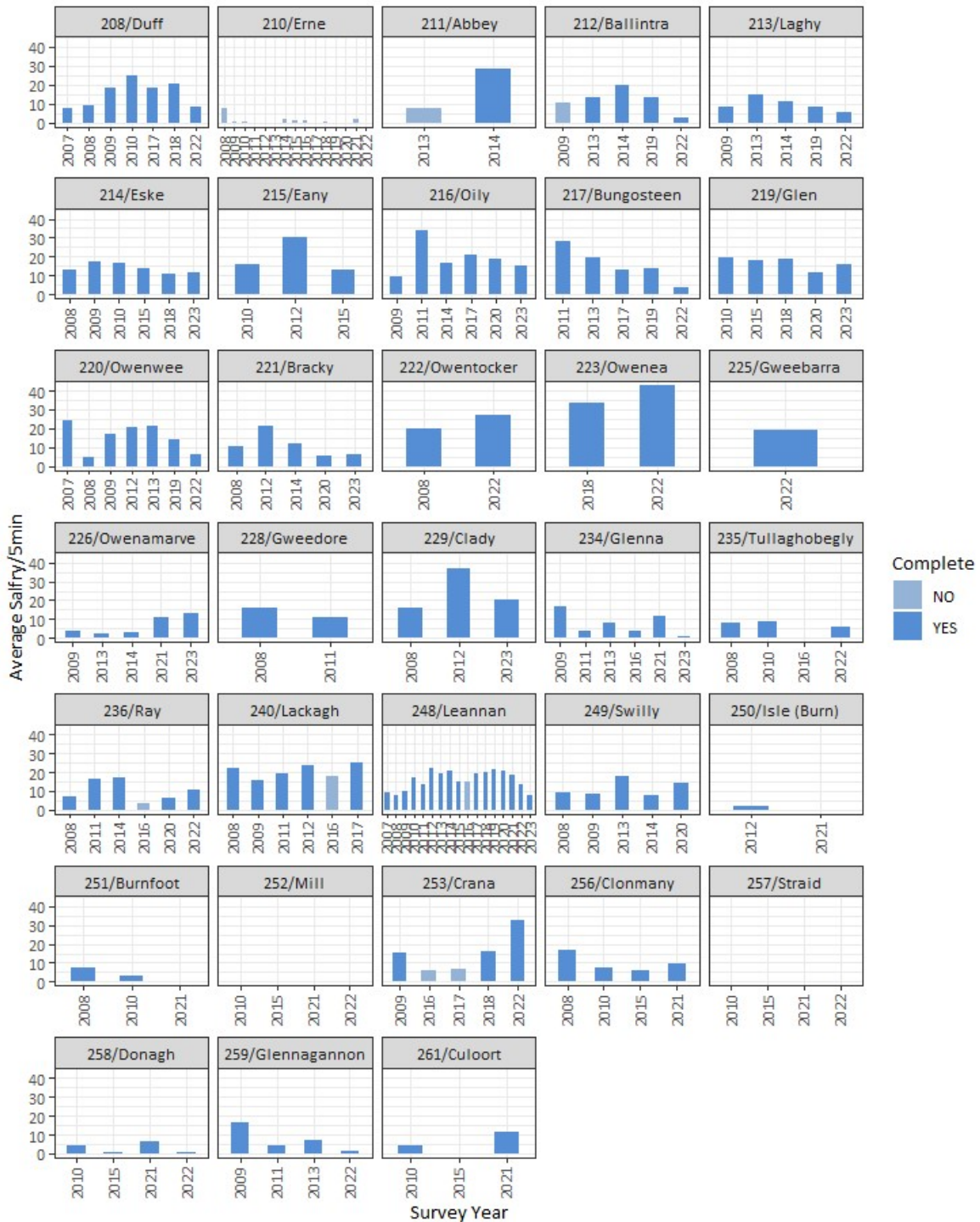


Fig. 66 Summary of results of annual CWF surveys (average salmon fry per 5min) in NWRBD 2007-2023.

A.7.1 Eske River

IFI Salmon Catchment #: 214
2023 survey dates: 20/7-8/9/2023
Mean Salmon Fry/5 min (2023): 11.92 fry/5min
CWEF Index: 14.04 fry/5min.

Sampling carried out by:	Fish Species Present:
Dereck Hemphill	Brown Trout
Lindsey Clarke	European Eel
Paul Gallagher	Flounder
Paul O'Grady	Salmon
	3-spined Stickleback

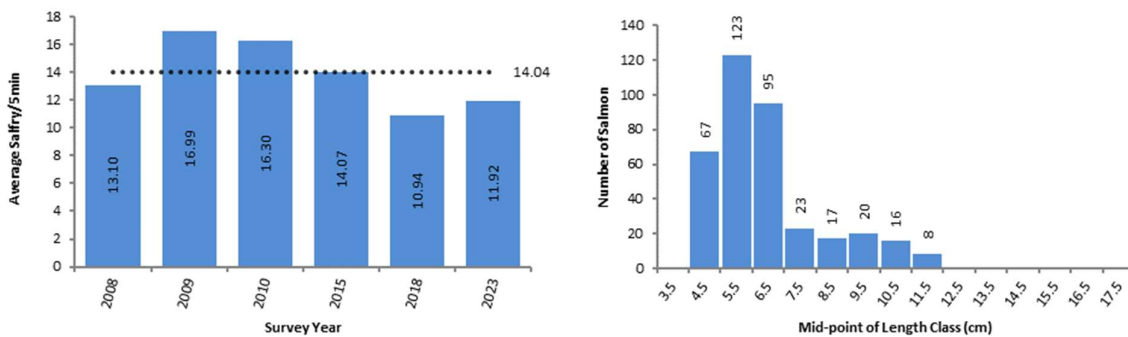


Fig. 67 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Eske river.

In this year's survey of the Eske river, 32 sites were examined from August 20th to September 8th. Salmon fry (0+) were found at 25 sites, with high abundances observed along the main Lowerymore River and on the Drummenny River. The highest number recorded was at site 37, where 39 salmon fry were found. The modal length of 0+ salmon was 5.5 cm.

Twenty-nine sites were included in the analysis; the mean catch at these sites was 11.92 salmon fry/5min.

Conclusion

The Eske had a salmon abundance of 11.92 salmon fry/5min in 2023. Taking the five most recent complete surveys into account this results in a cumulative average of 14.04 salmon fry/5min which is below the 17 salmon fry threshold.

Table 41 Site specific results of CWF on the Eske River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 93997 79498	5	3	0	13	Include	0.00	16.00
002	G 95524 80871	5	1	0	20	Include	0.00	22.00
003	G 96914 82029	5	1	0	9	Include	0.00	10.00
004	G 96369 84373	3	3	0	0	Include	0.00	0.00
005	G 97506 86179	4	2	3	0	Include	4.00	0.00
006	G 97806 81686	4	2	0	10	Include	0.00	11.00
007	G 99260 81193	4	2	2	0	Include	2.00	0.00
008	G 98217 82058	5	2	0	7	Include	0.00	7.00
010	H 01956 84534	3	1	0	32	Include	0.00	37.00
012	H 03286 85950	3	3	0	4	Include	0.00	4.00
013	H 03957 87079	3	3	0	1	Eff <60%		
015	G 94326 79755	5	2	0	9	Include	0.00	12.00
016	G 96563 81559	5	3	0	14	Include	0.00	16.00
017	G 96727 84389	3	3	2	1	Include	3.33	1.67
018	G 97827 84924	2	2	0	6	Include	0.00	6.00
020	H 02836 85570	3	1	0	15	Include	0.00	16.00
021	G 93742 79006	5	2	0	5	Include	0.00	5.00
022	G 93761 78577	4	3	1	1	Include	1.00	1.00
023	G 94275 78103	4	2	7	26	Include	7.42	27.58
024	G 94599 78249	4	2	4	14	Include	4.44	15.56
026	G 99766 83035	4	1	0	13	Include	0.00	15.00
027	H 00283 83513	4	2	0	24	Include	0.00	27.00
028	H 00342 82951	4	2	0	0	Include	0.00	0.00
029	H 03519 86248	3	1	1	18	Include	1.05	18.95
031	G 99486 82800	5	1	0	19	Include	0.00	20.00
032	H 00120 83267	4	2	0	4	Include	0.00	5.00
033	H 00348 82772	4	2	1	0	Eff <60%		
034	G 96831 78986	4	2	13	0	Include	14.00	0.00
035	G 94991 78483	4	2	0	7	Include	0.00	8.00
036	G 97525 86293	3	3	2	0	Include	2.00	0.00
037	H 01367 84028	4	1	0	39	Include	0.00	44.00
038	H 03659 86433	3	3	0	3	Eff <60%		

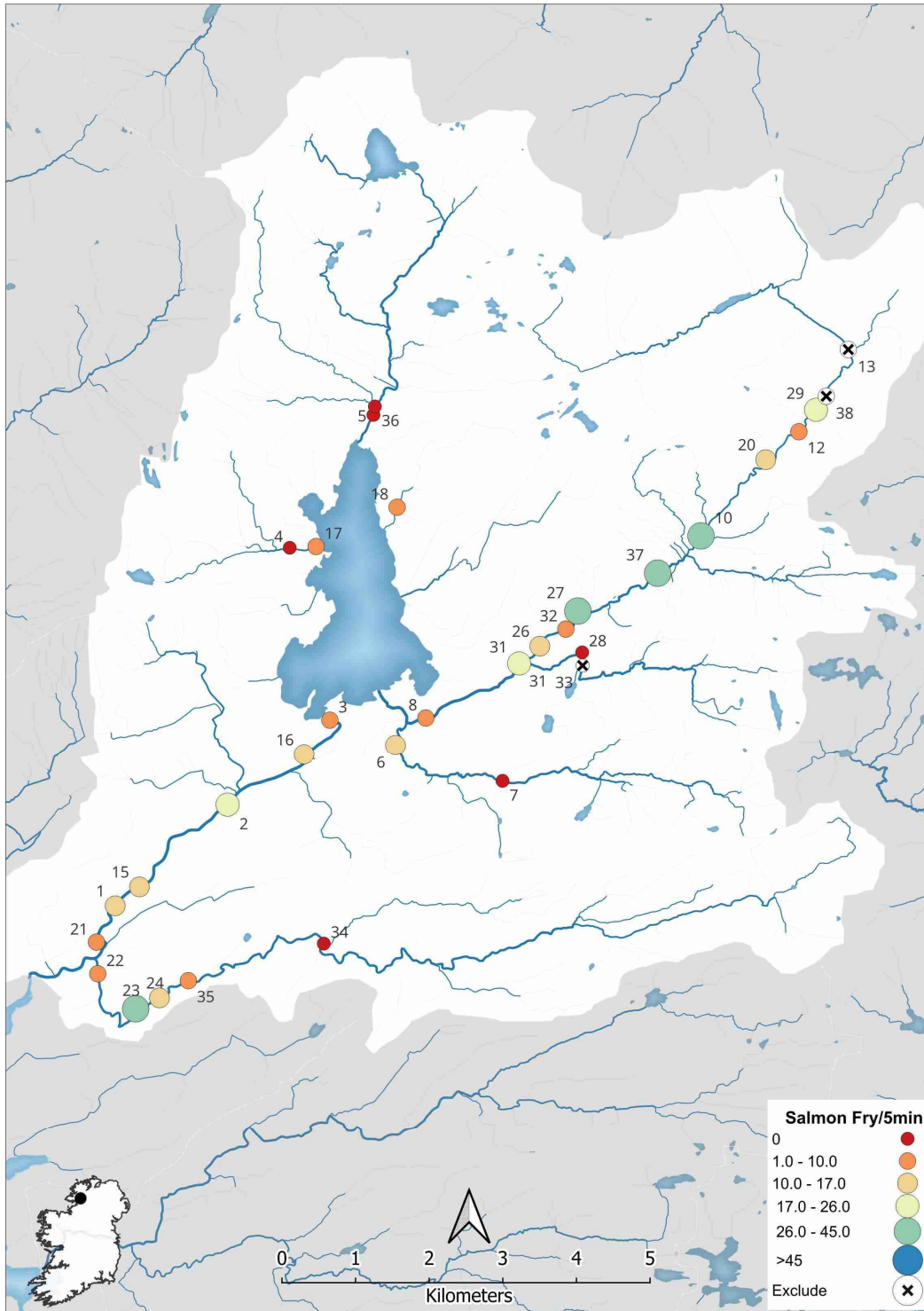


Fig. 68 Showing salmon fry/5min values and locations of surveys on the Eske River in 2023.

A.7.2 Oily River

IFI Salmon Catchment #: 216
2023 survey dates: 7/8/2023 & 6/9/2023
Mean Salmon Fry/5 min (2023): 15.14 fry/5min
CWEF Index: 21.07 fry/5min.

Sampling carried out by: Dereck Hemphill
 Lindsey Clarke
 Paul O'Grady

Fish Species Present: Brown Trout
 European Eel
 Salmon

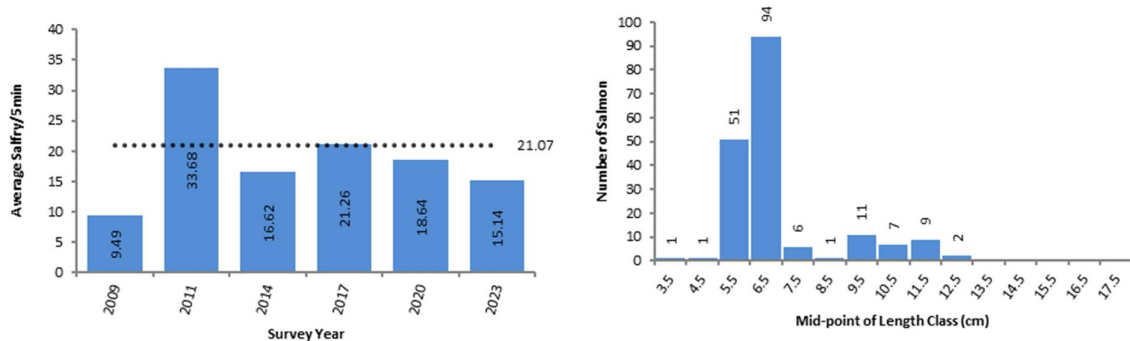


Fig. 69 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Oily river.

In this year's survey of the Oily River, 11 sites were examined on August 7th and September 9th. Salmon fry (0+) were found at all 11 sites, Salmon fry were well distributed throughout the catchment with moderate abundance, the highest number recorded was at site 5 & 6, where 24 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

All 11 sites were included in the analysis; the mean catch at these sites was 15.14 salmon fry/5min.

Conclusion

The Glenamoy had a salmon abundance of 15.14 salmon fry/5min in 2023. Taking the three complete surveys into account this results in a cumulative average of 21.07 salmon fry/5min which is above the 17 salmon fry threshold.

Table 42 Site specific results of CWF on the Oily River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 74639 77008	4	2	1	5	Include	1.00	5.00
003	G 74597 79073	4	3	0	12	Include	0.00	12.00
004	G 75018 80116	4	3	0	14	Include	0.00	15.00
005	G 75389 81639	4	2	0	24	Include	0.00	26.00
006	G 75605 82450	4	1	0	24	Include	0.00	26.00
008	G 76226 82784	3	2	0	8	Include	0.00	9.00
009	G 76323 82730	4	3	0	7	Include	0.00	8.00
010	G 77708 84137	4	2	0	15	Include	0.00	17.00
011	G 79035 85635	3	2	1	16	Include	1.12	17.88
012	G 74758 79902	4	3	0	18	Include	0.00	20.00
013	G 80047 85087	3	2	6	10	Include	6.38	10.63

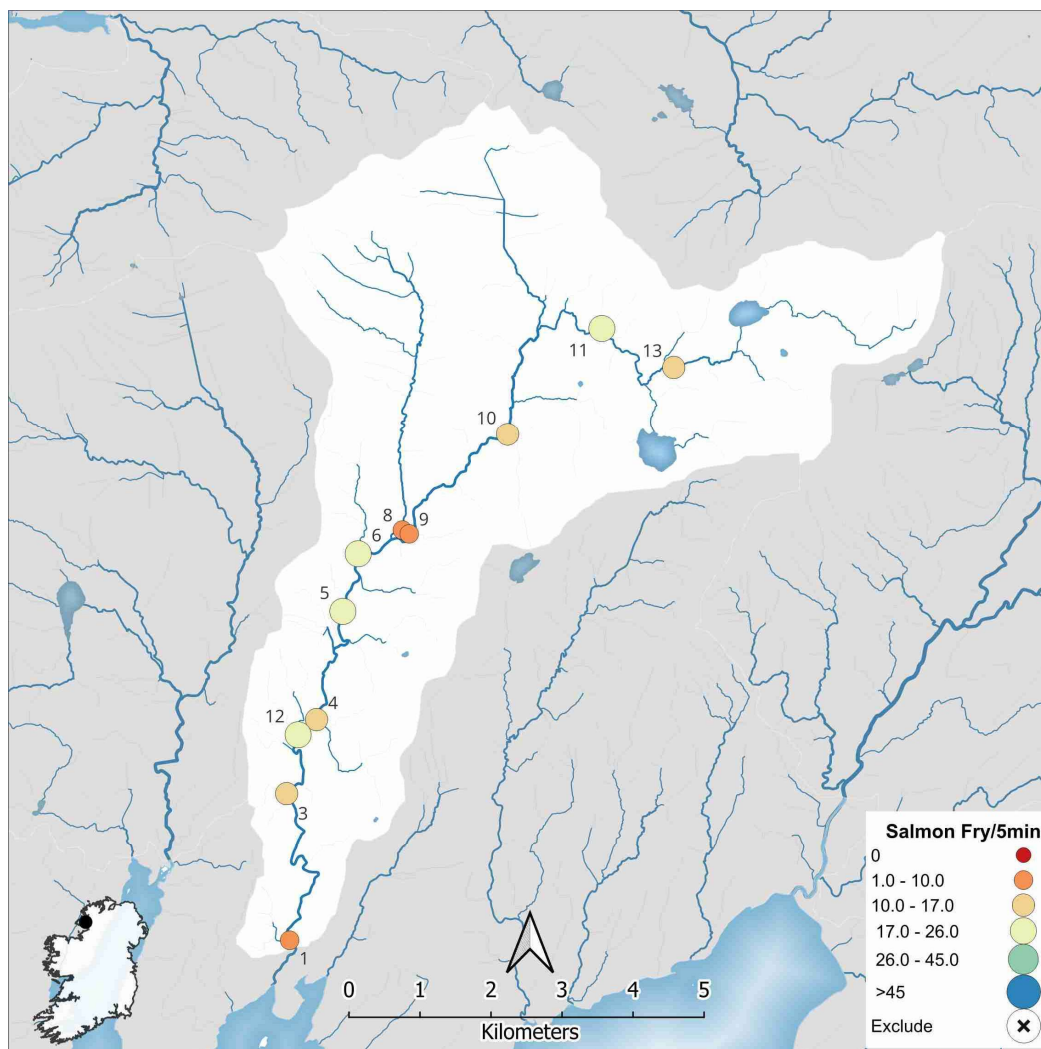


Fig. 70 Showing salmon fry/5min values and locations of surveys on the Oily River in 2023.

A.7.3 Glen (Ballyshannon) River

IFI Salmon Catchment #: 219
2023 survey dates: 14/8-18/9/2023
Mean Salmon Fry/5 min (2023): 15.67 fry/5min
CWEF Index: 16.75 fry/5min.

Sampling carried out by: Alan Mahon
 Dereck Hemphill
 Lindsey Clarke
 Paul O'Grady

Fish Species Present:
 Brown Trout
 Salmon

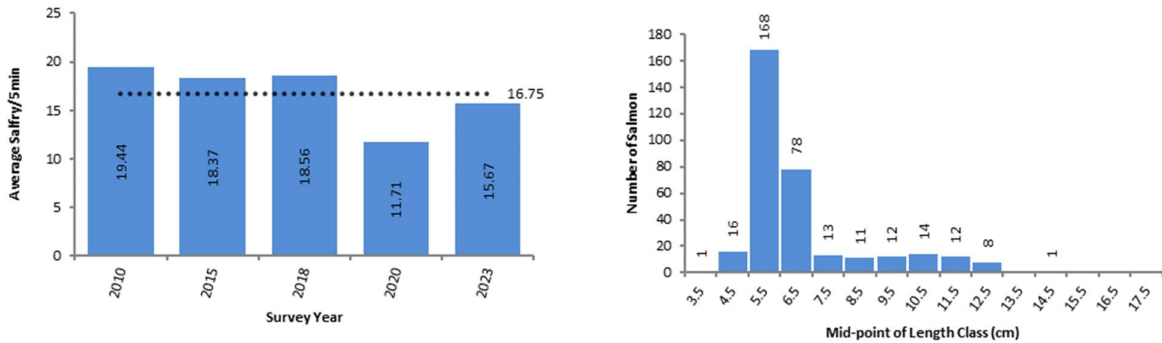


Fig. 71 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Glen river.

In this year's survey of the Glen river, 19 sites were examined from August 14th to September 18th. Salmon fry (0+) were found at all 19 sites, Salmon fry were well distributed throughout the catchment with moderate abundance, the highest number recorded was at site 18, where 34 salmon fry were observed. The modal length of 0+ salmon was 5.5 cm.

Twelve sites were included in the analysis; the mean catch at these sites was 15.67 salmon fry/5min.

Conclusion

The Glenamoy had a salmon abundance of 15.67 salmon fry/5min in 2023. Taking the five complete surveys into account this results in a cumulative average of 16.75 salmon fry/5min which is below the 17 salmon fry threshold.

Table 43 Site specific results of CWF on the Glen River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
002	G 59996 79982	5	3	0	8	Include	0.00	9.00
003	G 59781 80749	5	1	1	18	Include	1.11	19.89
004	G 60197 81821	5	2	0	22	Include	0.00	22.00
006	G 61005 83761	5	2	0	12	Include	0.00	14.00
007	G 61659 84257	4	2	0	13	Include	0.00	15.00
008	G 63095 84260	4	2	0	13	Include	0.00	14.00
009	G 63749 84349	4	2	0	31	Include	0.00	33.00
010	G 64465 84322	4	2	0	18	Include	0.00	20.00
011	G 66006 84287	4	2	0	12	Include	0.00	12.00
012	G 61115 85162	4	3	0	2	Include	0.00	2.00
013	G 61449 85028	3	2	0	20	Include	0.00	22.00
014	G 62672 85529	3	1	0	23	Include	0.00	23.00
015	G 63490 85598	3	2	0	16	Include	0.00	17.00
016	G 64136 86494	3	3	0	5	Include	0.00	5.00
017	G 65019 86963	3	2	1	4	Include	1.20	4.80
018	G 64683 86923	0	1	0	34	Include	0.00	37.00
020	G 64979 84168	0	2	0	7	Include	0.00	9.00
021	G 59683 79316	0	3	0	6	Include	0.00	6.00
022	G 60498 82488	5	1	0	13	Include	0.00	13.00

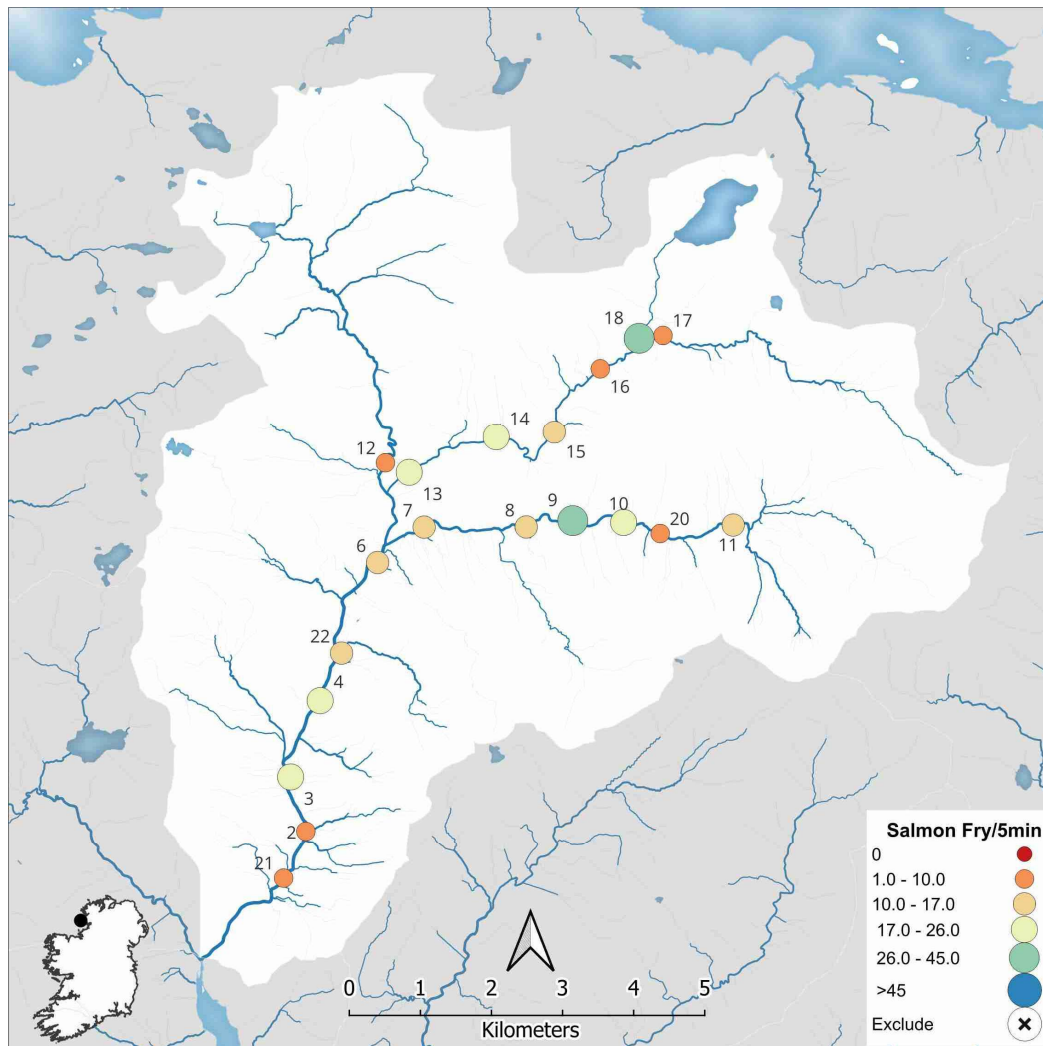


Fig. 72 Showing salmon fry/5min values and locations of surveys on the Glen River in 2023.

A.7.4 Bracky River

IFI Salmon Catchment #: 221
2023 survey dates: 16-18/8/2023
Mean Salmon Fry/5 min (2023): 6.27 fry/5min
CWEF Index: 11.24 fry/5min.

Sampling carried out by: Michael Douglas
 Tommy Mooney

Fish Species Present:
 Brown Trout
 European Eel
 Flounder
 Salmon

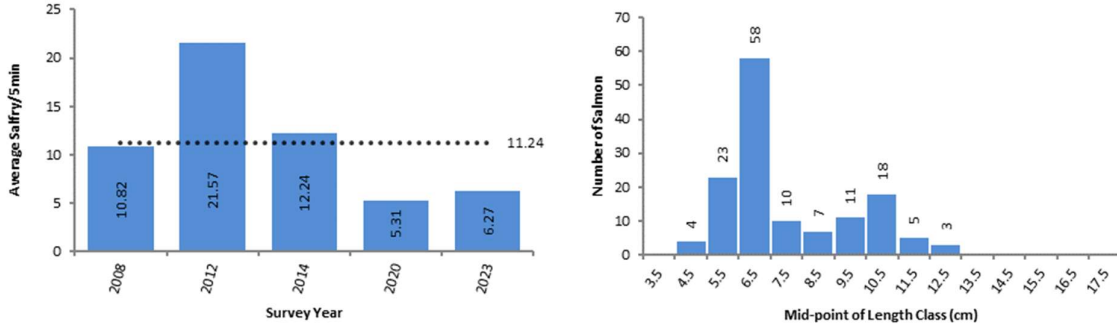


Fig. 73 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Bracky river.

In this year's survey of the Bracky river, 16 sites were examined from August 16th to 18th. Salmon fry (0+) were found at 12 sites, Salmon fry were well distributed throughout the catchment with moderate abundance, the highest number recorded was at site 7, where 24 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

All 16 sites were included in the analysis; the mean catch at these sites was 6.27 salmon fry/5min.

Conclusion

The Bracky had a salmon abundance of 6.27 salmon fry/5min in 2023. Taking the five complete surveys into account this results in a cumulative average of 11.24 salmon fry/5min which is below the 17 salmon fry threshold.

Table 44 Site specific results of CWF on the Bracky River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 72796 89479	4	2	5	7	Include	5.83	8.17
002	G 72817 88322	4	3	10	2	Include	13.33	2.67
003	G 72767 87851	4	2	17	4	Include	20.24	4.76
004	G 72457 87500	4	3	10	0	Include	13.00	0.00
005	G 71956 88634	3	1	17	11	Include	18.82	12.18
006	G 72901 87719	2	3	10	0	Include	14.00	0.00
007	G 72906 89845	3	1	11	24	Include	12.89	28.11
008	G 74070 89843	3	1	11	3	Include	13.36	3.64
009	G 71128 87902	3	2	15	6	Include	17.14	6.86
010	G 69844 87145	3	2	22	5	Include	25.26	5.74
011	G 72845 87723	2	2	21	2	Include	23.74	2.26
012	G 72956 87796	2	2	23	0	Include	27.00	0.00
013	G 72916 88619	4	2	11	11	Include	12.00	12.00
016	G 72722 88904	3	2	7	1	Include	10.50	1.50
017	G 72068 88804	3	2	2	10	Include	2.50	12.50
018	G 75058 89711	3	2	6	0	Include	9.00	0.00

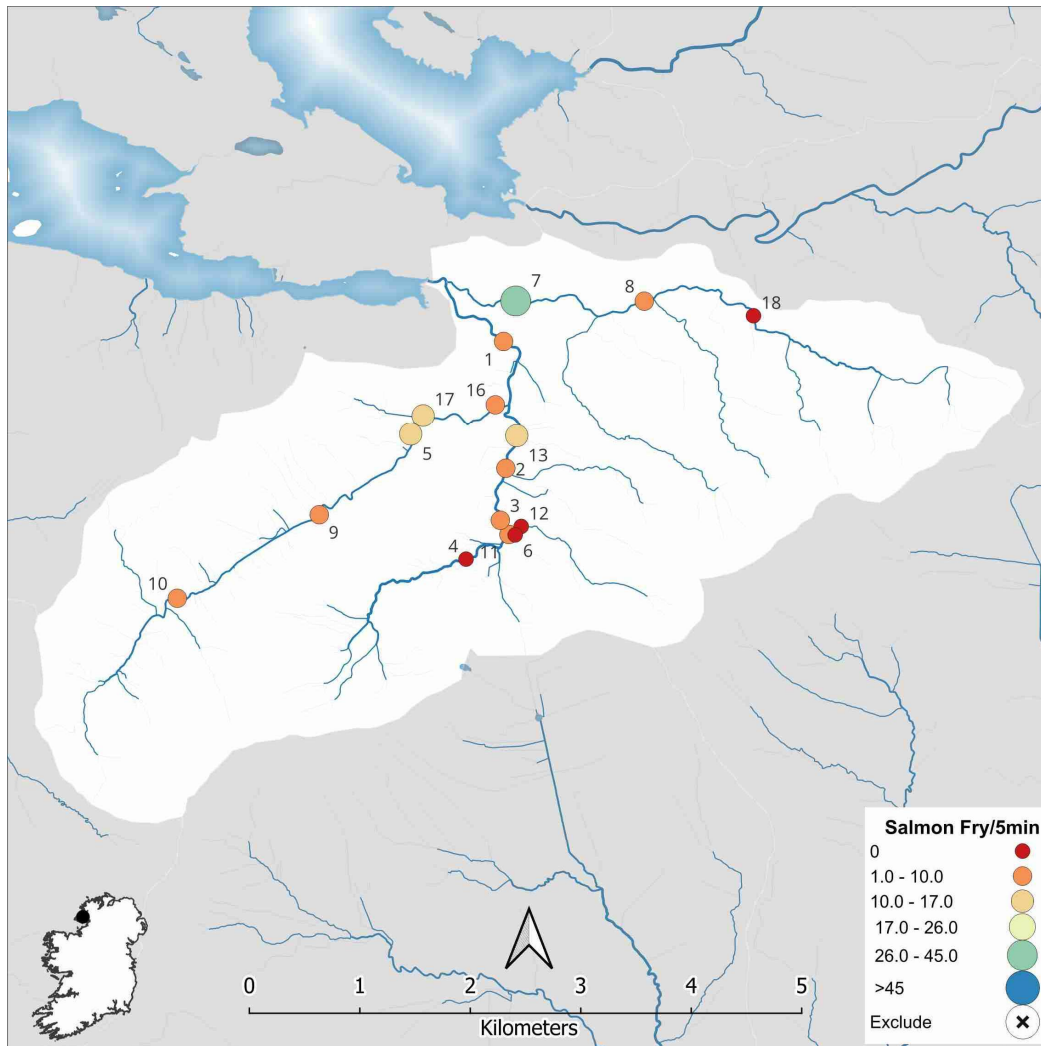


Fig. 74 Showing salmon fry/5min values and locations of surveys on the Bracky River in 2023.

A.7.5 Owenamarve River

IFI Salmon Catchment #: 226
2023 survey dates: 6/9/2023
Mean Salmon Fry/5 min (2023): 13.30 fry/5min
CWEF Index: 6.67 fry/5min.

Sampling carried out by: Eddie Mulgrew
 Michael Douglas
 Tommy Mooney
Fish Species Present: Brown Trout
 European Eel
 Minnow
 Salmon

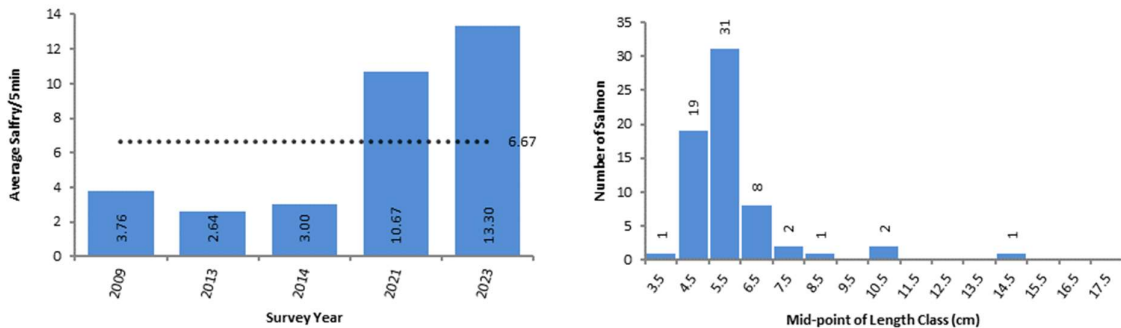


Fig. 75 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Owenamarve river.

In this year's survey of the Owenamarve river, 7 sites were examined on September 6th. Salmon fry (0+) were found at 4 sites, Salmon fry were well distributed throughout the catchment with moderate abundance, the highest number recorded was at site 4, where 23 salmon fry were observed. The modal length of 0+ salmon was 5.5 cm.

Five sites were included in the analysis; the mean catch at these sites was 13.30 salmon fry/5min.

Conclusion

The Owenamarve had a salmon abundance of 13.30 salmon fry/5min in 2023. Taking the five complete surveys into account this results in a cumulative average of 6.67 salmon fry/5min which is below the 17 salmon fry threshold.

Table 45 Site specific results of CWF on the Owenamarve River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	B 78363 06596	3	3	7	0	Include	9.00	0.00
002	B 80219 07364	3	3	1	0	Eff <60%		
003	B 83568 07954	3	2	3	10	Include	3.46	11.54
004	B 85055 09641	3	1	9	23	Include	9.56	24.44
005	B 85714 10699	2	2	7	20	Include	7.52	21.48
006	B 85659 10704	2	3	7	8	Include	7.93	9.07
007	B 81622 07690	3	3	2	0	Eff <60%		

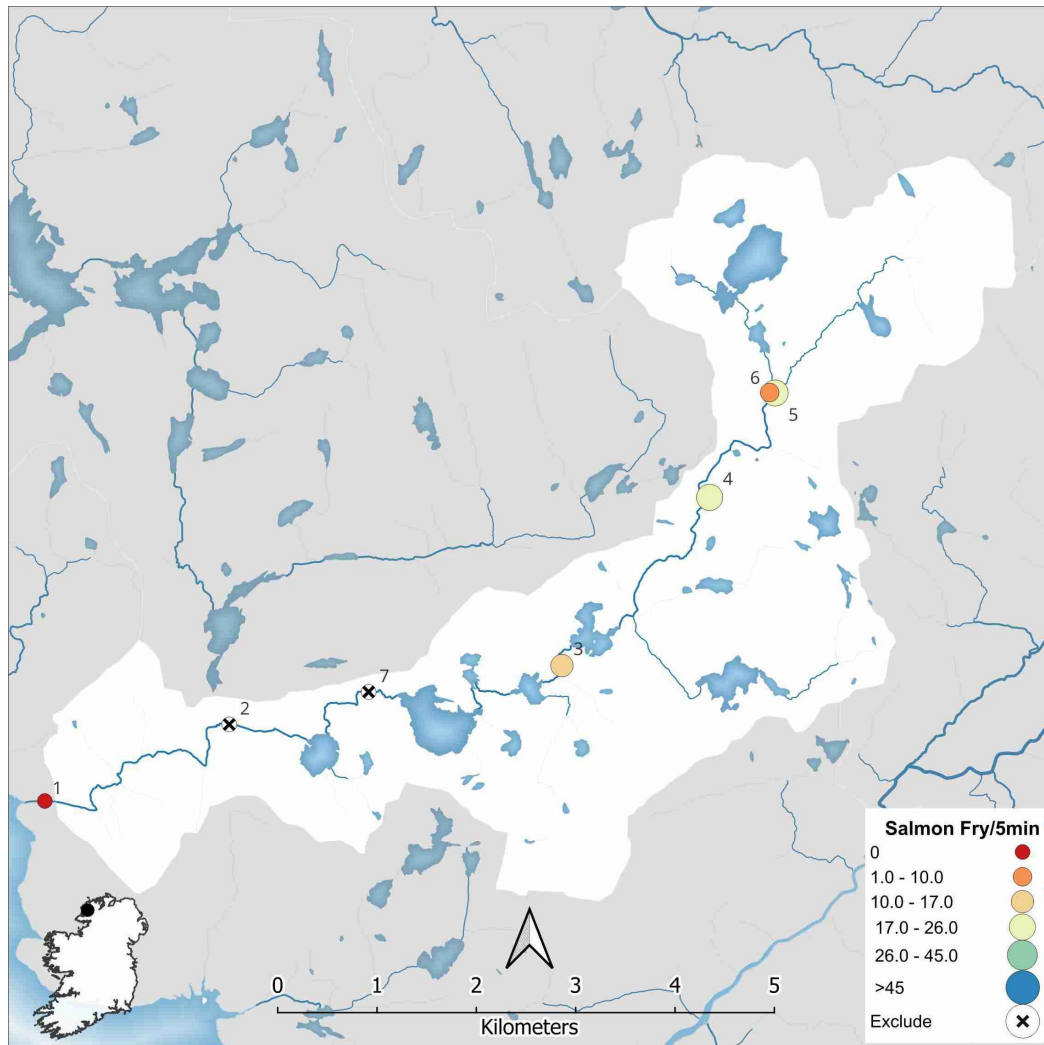


Fig. 76 Showing salmon fry/5min values and locations of surveys on the Owenamarve River in 2023.

A.7.6 Clady River

IFI Salmon Catchment #: 229
2023 survey dates: 21-28/8/2023
Mean Salmon Fry/5 min (2023): 20.23 fry/5min
CWEF Index: 24.52 fry/5min.

Sampling carried out by: Michael Douglas
 Terry Frize
 Tommy Mooney

Fish Species Present: Brown Trout
 Margaritiferal
 Salmon

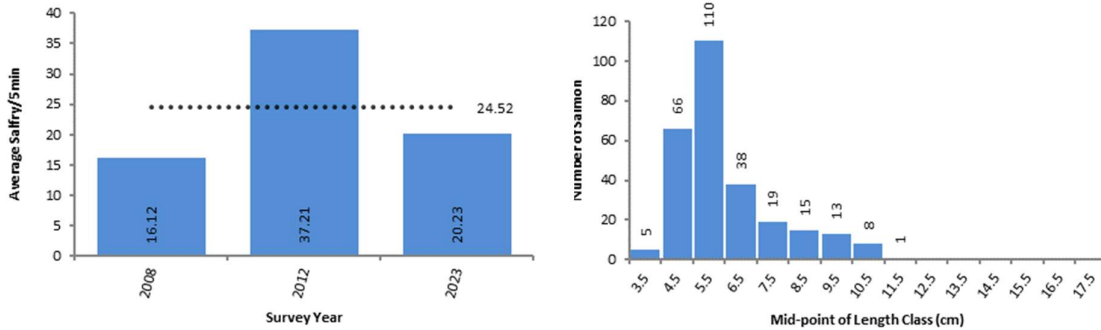


Fig. 77 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Clady river.

In this year's survey of the Clady River, 12 sites were examined from August 21st and 28th. Salmon fry (0+) were found at 11 sites, Salmon fry were well distributed throughout the catchment with moderate abundance, the highest number recorded was at site 1, where 51 salmon fry were observed. The modal length of 0+ salmon was 5.5 cm.

All 12 sites were included in the analysis; the mean catch at these sites was 9.54 salmon fry/5min.

Conclusion

The Clady had a salmon abundance of 20.23 salmon fry/5min in 2023. Taking the three complete surveys into account this results in a cumulative average of 24.52 salmon fry/5min which is above the 17 salmon fry threshold.

Table 46 Site specific results of CWF on the Clady River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	B 81675 23661	4	1	6	51	Include	6.21	52.79
002	B 83712 22861	4	2	1	33	Include	1.00	33.00
003	B 86241 22070	2	2	4	0	Include	4.00	0.00
004	B 87902 22032	3	2	9	10	Include	10.42	11.58
005	B 89551 19137	2	1	2	21	Include	2.09	21.91
006	B 93006 18759	3	2	4	15	Include	4.84	18.16
007	B 89588 20815	3	1	7	13	Include	8.05	14.95
008	B 89816 19072	2	2	1	26	Include	1.04	26.96
009	B 80649 23674	4	1	12	38	Include	12.96	41.04
010	B 90165 18907	2	2	11	3	Include	14.14	3.86
011	B 90997 19821	2	1	11	12	Include	12.43	13.57
012	B 85156 22529	4	2	6	5	Include	6.00	5.00

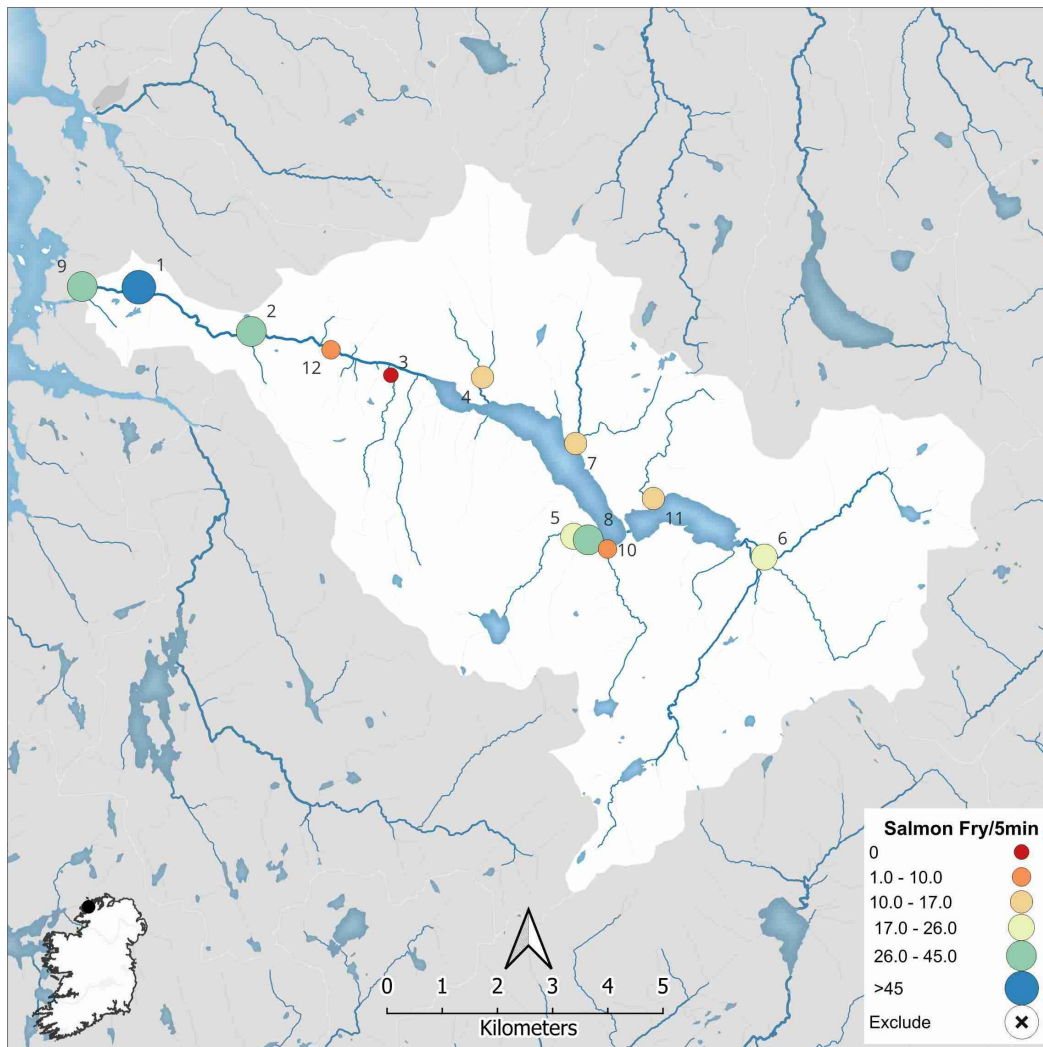


Fig. 78 Showing salmon fry/5min values and locations of surveys on the Clady River in 2023.

A.7.7 Glenna River

IFI Salmon Catchment #: 234
2023 survey dates: 4/9/2023
Mean Salmon Fry/5 min (2023): 1.02 fry/5min
CWEF Index: 5.60 fry/5min.

Sampling carried out by: Michael Douglas
 Tommy Mooney
Fish Species Present: Brown Trout
 European Eel
 Salmon

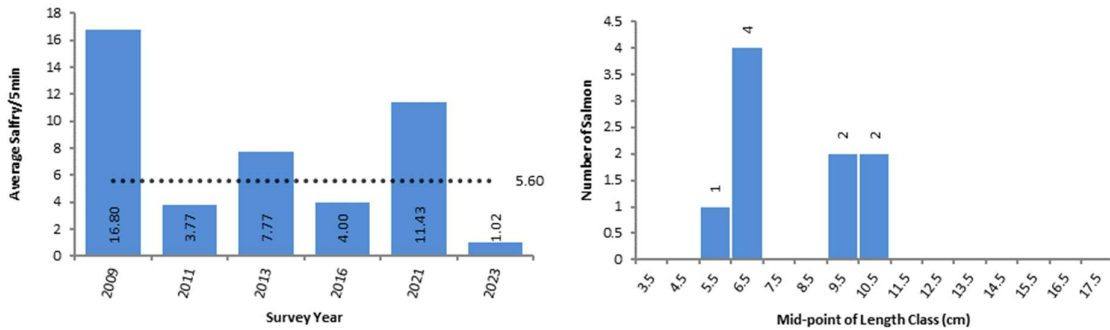


Fig. 79 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Glenna river.

In this year's survey of the Glenamoy river, 6 sites were examined on September 4th. Salmon fry (0+) were found at just 1 site, site 2, where 5 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

All 6 sites were included in the analysis; the mean catch at these sites was 1.02 salmon fry/5min.

Conclusion

The Glenamoy had a very low salmon abundance of 1.02 salmon fry/5min in 2023. This is the lowest recorded in any CWEF survey on this catchment and represents only a fraction of the highest annual average of 15.09 observed in 2009. Taking the five most recent complete surveys into account this results in a cumulative average of 5.60 salmon fry/5min which is below the 17 salmon fry threshold.

Table 47 Site specific results of CWF on the Glenna River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	B 91061 29628	4	2	4	0	Include	4.00	0.00
002	B 90905 28916	4	1	4	5	Include	4.89	6.11
003	B 91631 26775	3	2	6	0	Include	6.00	0.00
004	B 91523 26335	3	2	10	0	Include	12.00	0.00
005	B 91580 24093	3	3	4	0	Include	4.00	0.00
006	B 90990 26768	3	3	13	0	Include	13.00	0.00

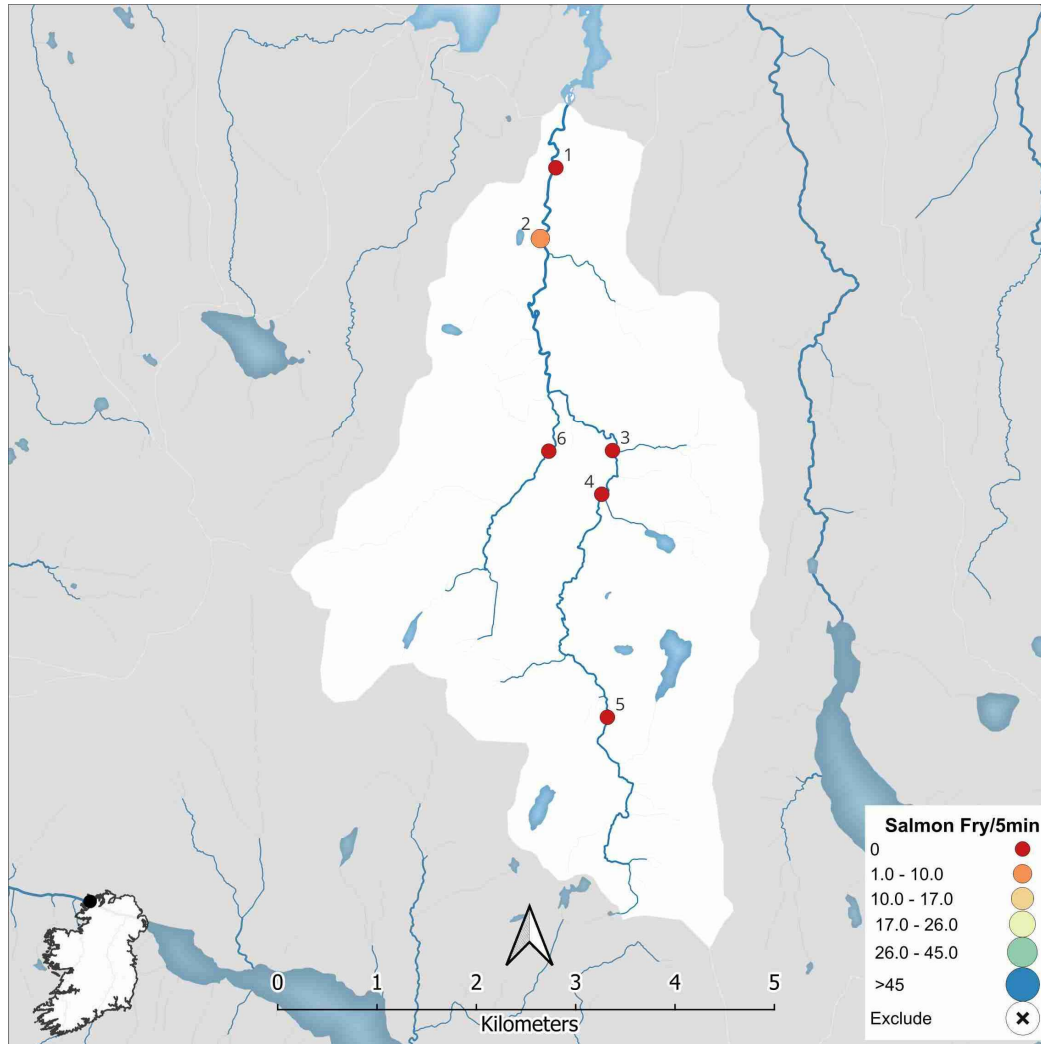


Fig. 80 Showing salmon fry/5min values and locations of surveys on the Glenna River in 2023.

A.7.8 Leannan River

IFI Salmon Catchment #: 248
2023 survey dates: 7-11/9/2023
Mean Salmon Fry/5 min (2023): 8.11 fry/5min
CWEF Index: 16.40 fry/5min.

Sampling carried out by: Eddie Mulgrew
 James Gallagher
 Michael Douglas
 Tommy Mooney

Fish Species Present: Brown Trout
 European Eel
 Perch
 Salmon

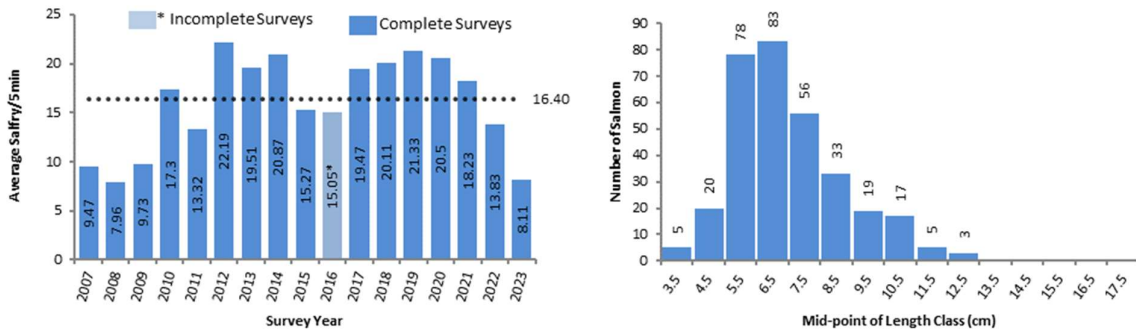


Fig. 81 Comparison of mean salmon fry/5min for all surveys along with current index (left) and Length distribution of salmon captured in 2023 (right) on the Leannan river.

In this year's survey of the Leannan river, 37 sites were examined from September 6th to 11th. Salmon fry (0+) were found at 29 sites, Salmon fry were well distributed throughout the catchment with moderate abundance, the highest number recorded was at site 29, where 22 salmon fry were observed. The modal length of 0+ salmon was 6.5 cm.

Thirty-seven sites were included in the analysis; the mean catch at these sites was 8.11 salmon fry/5min.

Conclusion

The Leannan had a relatively low salmon abundance of 8.11 salmon fry/5min in 2023. This is the second lowest recorded in any of the 17 CWEF surveys on this catchment. Taking the five most recent complete surveys into account this results in a cumulative average of 16.40 salmon fry/5min which is below the 17 salmon fry threshold.

Table 48 Site specific results of CWF on the Leannan River catchment in 2023.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	C 19032 21832	5	2	0	6	Include	0.00	6.00
002	C 18110 21555	5	2	3	13	Include	3.38	14.63
003	C 15115 20910	5	1	3	19	Include	3.00	19.00
004	C 14722 20597	5	3	6	0	Include	6.00	0.00
005	C 13349 19129	5	2	0	12	Include	0.00	15.00
006	C 10470 15850	5	1	3	8	Include	3.00	8.00
007	C 06817 16987	5	2	0	0	Include	0.00	0.00
008	C 12588 21655	4	2	26	7	Include	31.52	8.48
009	C 02422 14028	4	1	1	2	Include	1.67	3.33
010	C 22234 21028	5	3	0	12	Include	0.00	13.00
011	C 21677 20999	5	0	2	19	Include	2.10	19.90
012	C 19710 21001	5	2	9	21	Include	9.30	21.70
013	C 09540 15957	5	2	0	14	Include	0.00	17.00
014	C 07206 16991	5	2	4	1	Include	5.60	1.40
015	C 00385 13956	4	3	3	0	Include	3.00	0.00
016	C 19019 19448	4	1	2	2	Include	3.00	3.00
017	C 11925 22178	2	1	15	1	Include	16.88	1.13
018	C 17013 17222	4	1	9	0	Include	12.00	0.00
019	C 15696 16505	3	1	10	1	Include	11.82	1.18
020	C 14938 21045	4	1	0	4	Eff <60%		
021	C 14125 20475	4	2	4	14	Include	4.89	17.11
022	C 12199 22907	4	2	15	2	Include	18.53	2.47
023	C 10793 23117	4	2	16	0	Include	20.00	0.00
024	C 09643 15275	4	2	4	4	Include	5.50	5.50
025	B 99853 14070	4	3	14	0	Include	14.00	0.00
027	C 05160 17417	4	2	9	1	Include	9.90	1.10
028	C 02269 13466	3	2	19	15	Include	20.68	16.32
029	C 01542 13558	3	1	15	22	Include	15.00	22.00
031	C 01544 13637	4	1	24	18	Include	24.00	18.00
034	C 09680 14776	4	1	1	8	Include	1.44	11.56
036	B 98773 14828	3	3	7	0	Include	7.00	0.00
037	C 18382 18934	4	1	0	2	Include	0.00	3.00
038	C 09004 13462	4	2	5	11	Include	5.63	12.38
039	C 18760 19189	4	1	0	7	Include	0.00	8.00
040	C 12972 21411	4	2	8	1	Include	10.67	1.33
041	B 99203 14674	3	3	6	0	Include	6.00	0.00
042	C 02211 12907	3	2	35	19	Include	37.59	20.41

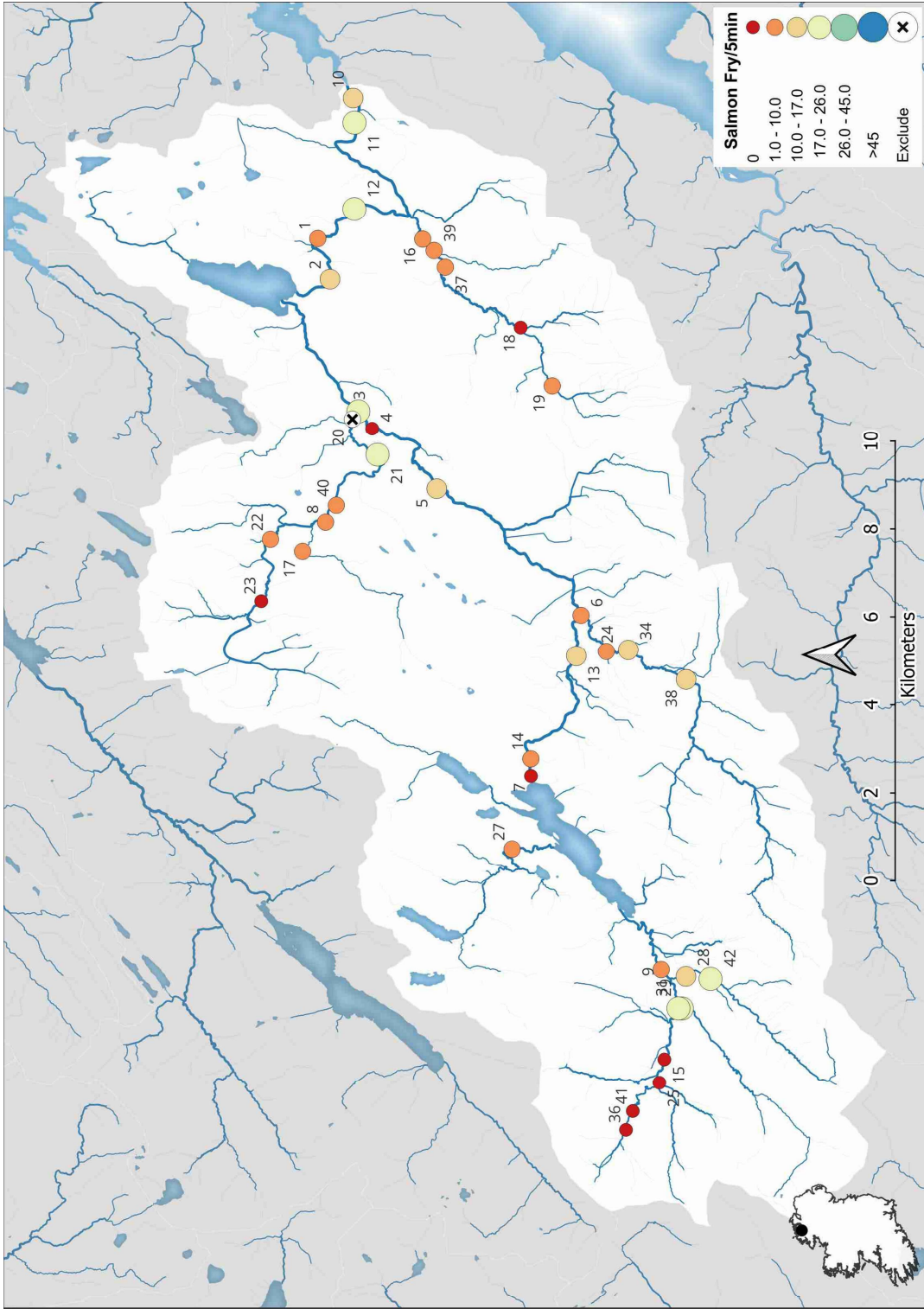


Fig. 82 Showing salmon fry/5min values and locations of surveys on the Leannan River in 2023.

B Other Species

B.1 Dace.

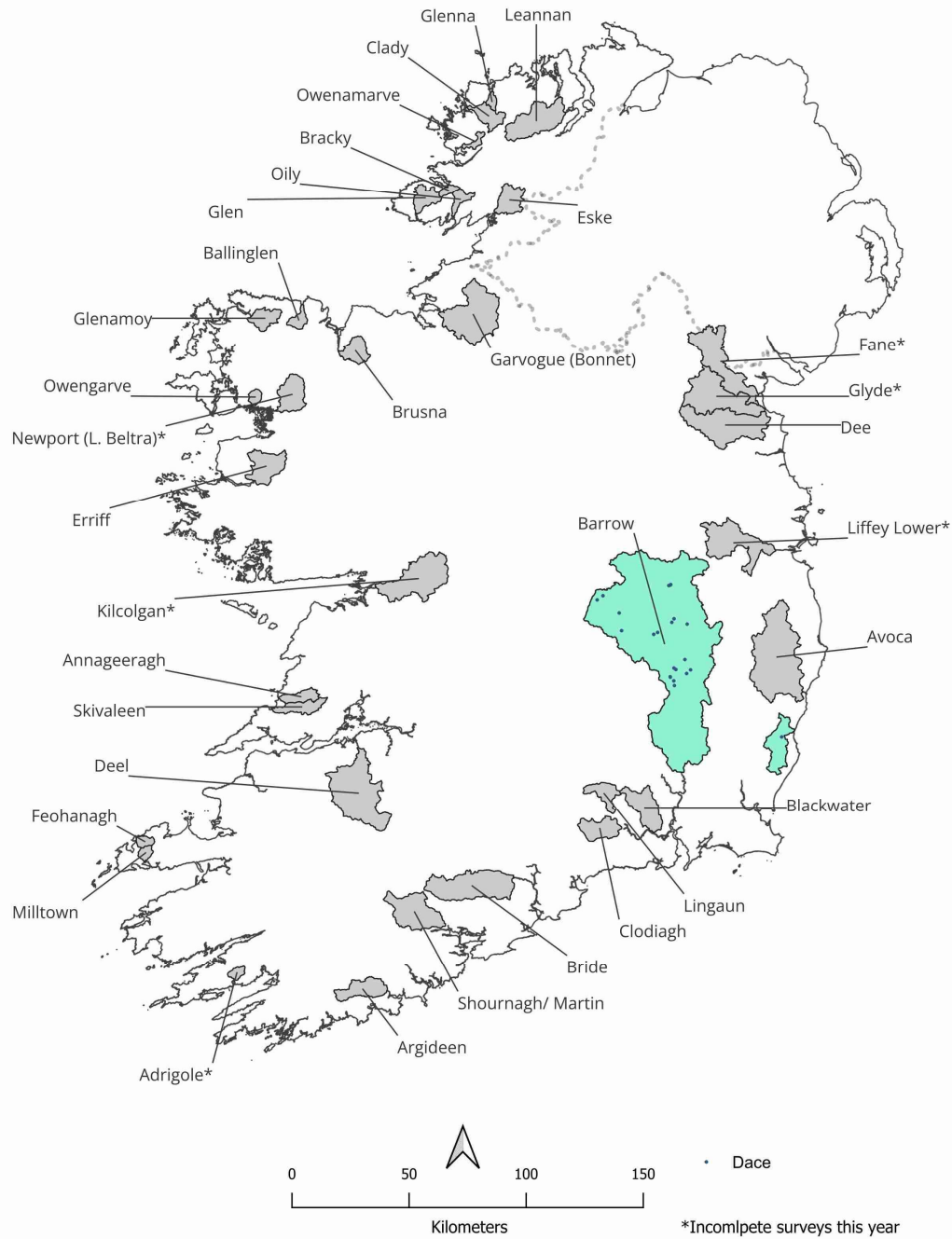


Figure 83 Locations at which Dace were observed during CWF surveys 2023.

B.2 European Eel.

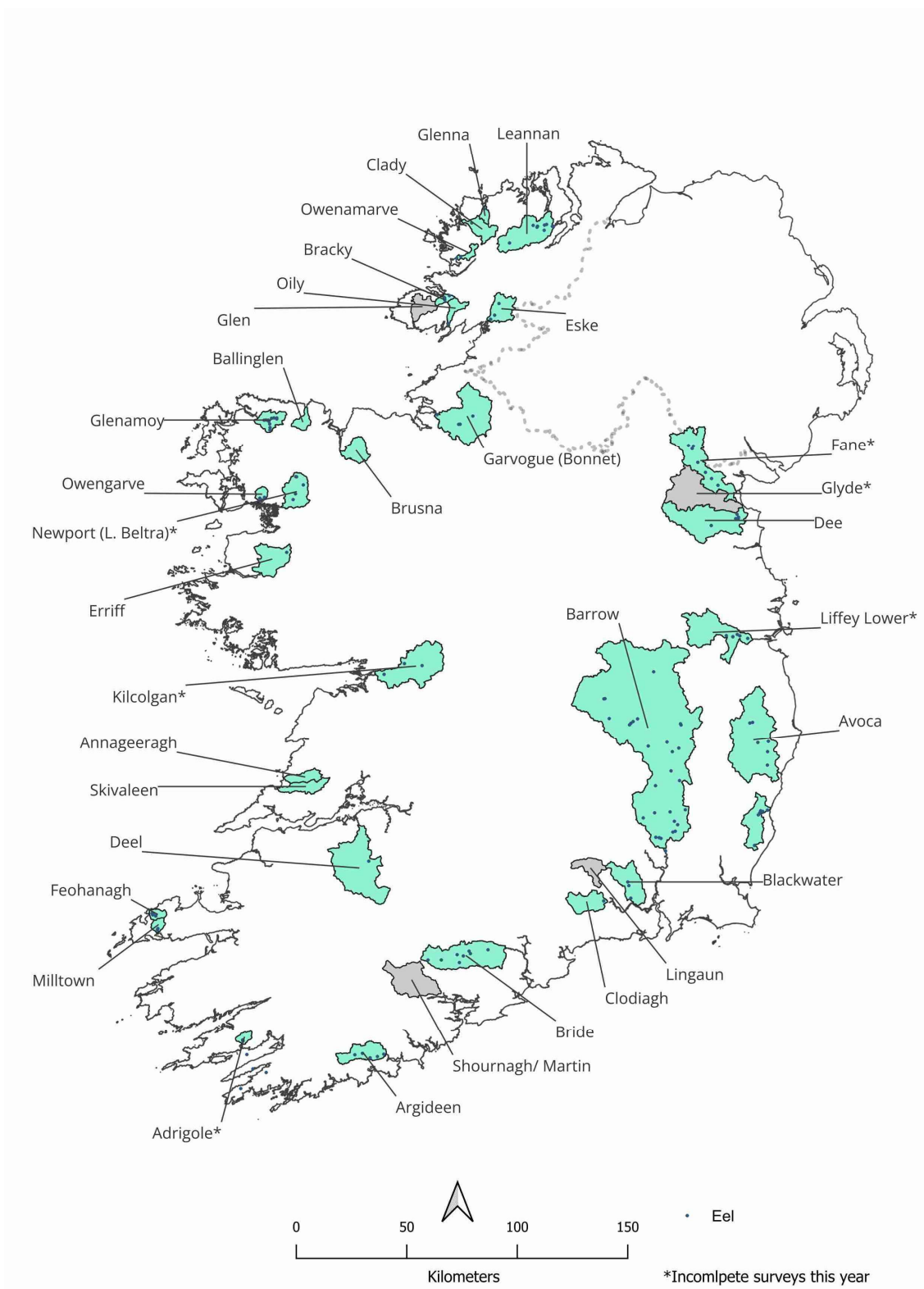


Figure 84 Locations at which European Eel were observed during CWF surveys 2023.

B.3 Flounder



Figure 85 Locations at which flounder were observed during CWF surveys 2023.

B.4 Gudgeon

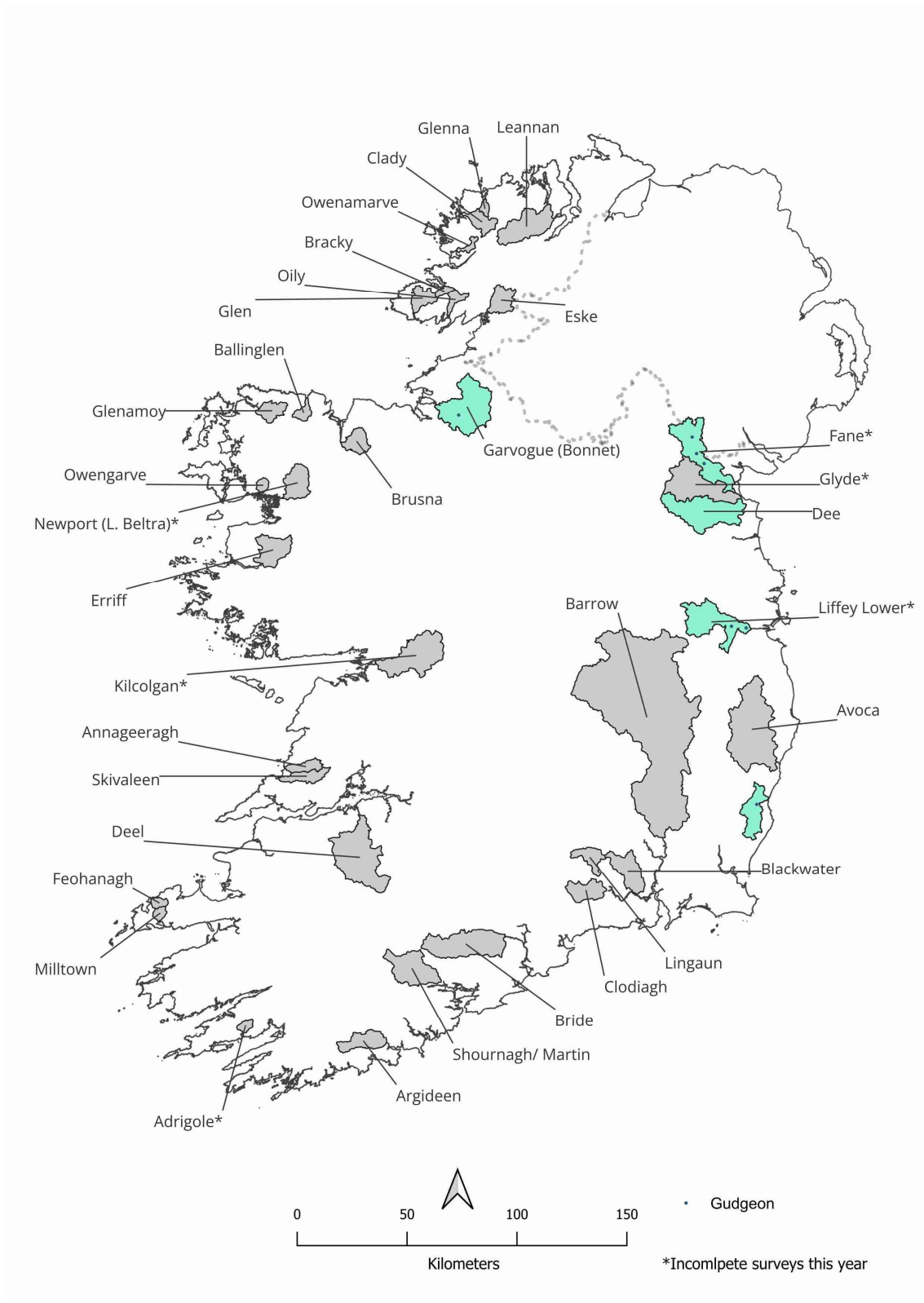


Figure 86 Locations at which Gudgeon were observed during CWEF surveys 2023.

B.5 Lamprey sp.

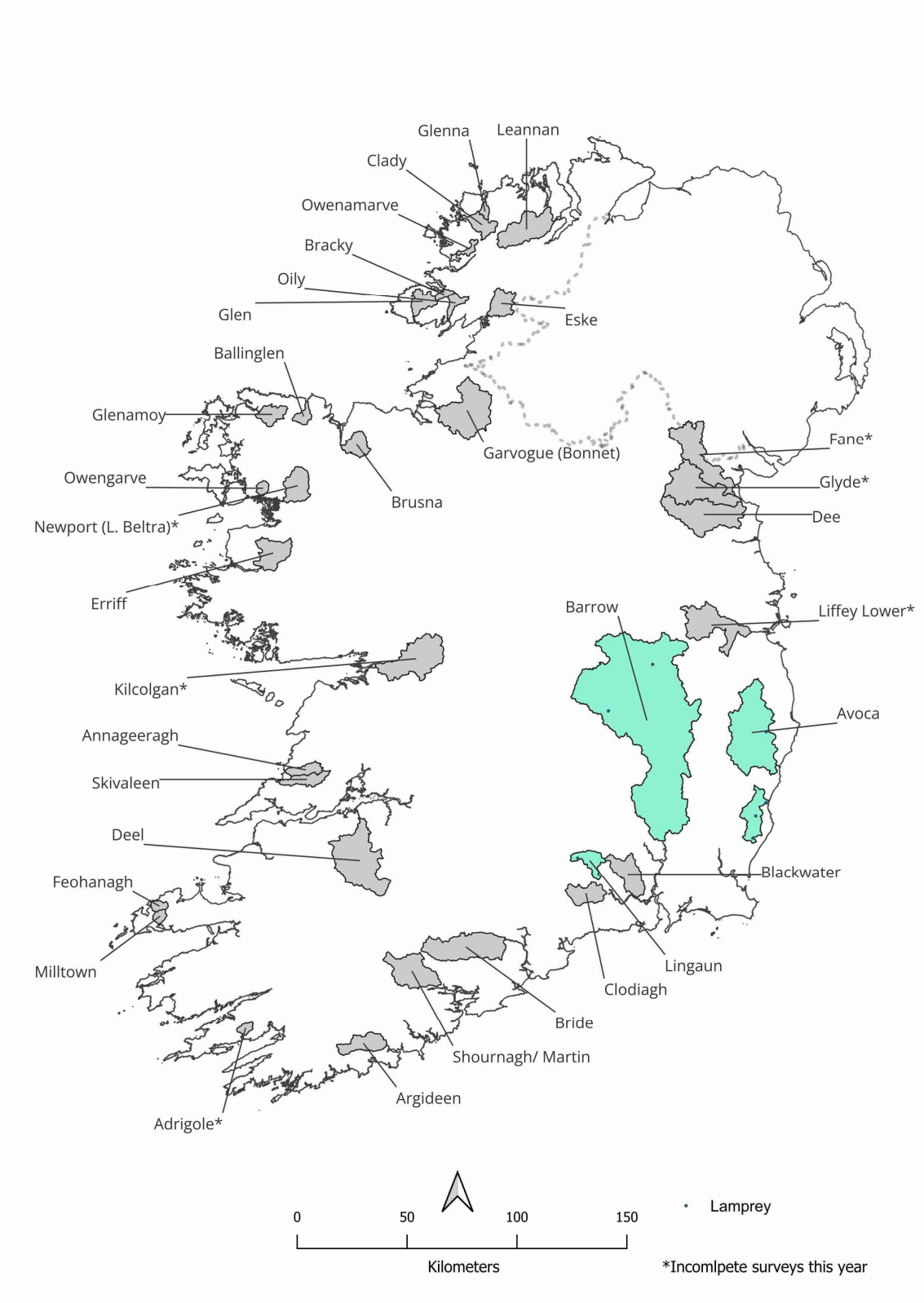


Figure 87 Locations at which Lamprey sp. were observed during CWF surveys 2023.

B.6 Minnow

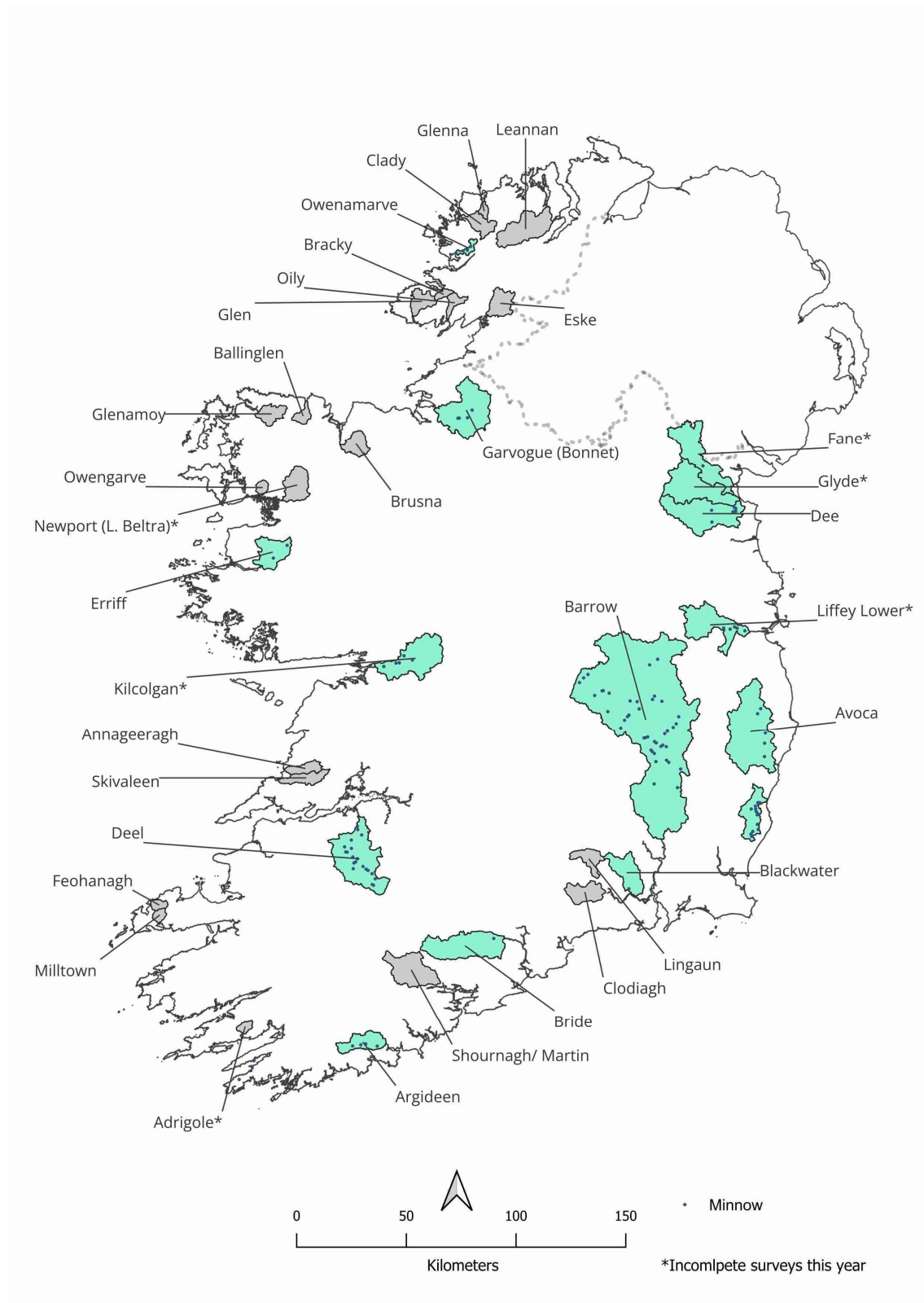


Figure 88 Locations at which Minnow were observed during CWF surveys 2023.

B.7 Pike

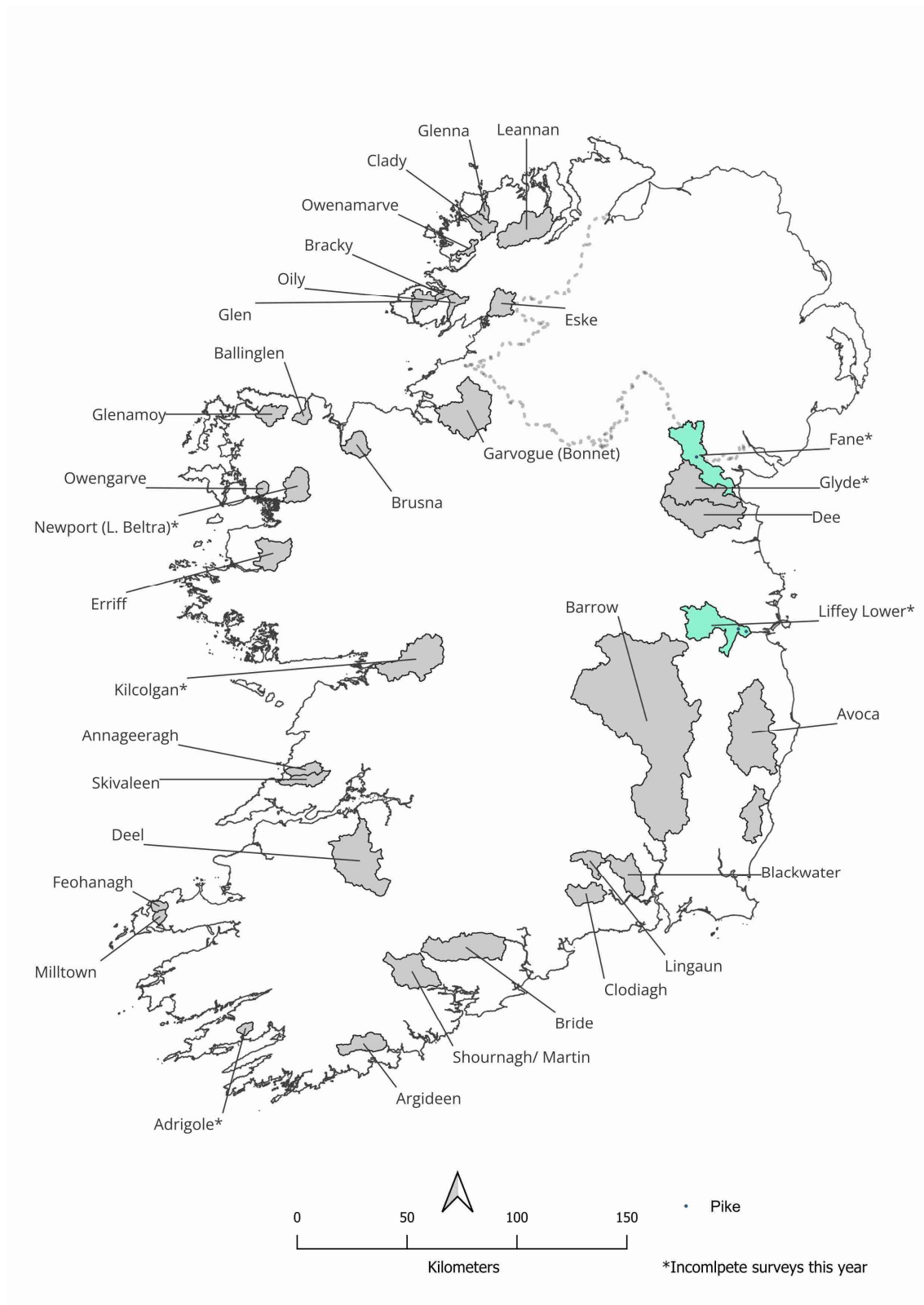


Figure 89 Locations at which Pike were observed during CWF surveys 2023.

B.8 Roach



Figure 90 Locations at which Roach were observed during CWF surveys 2023.

B.9 Three Spined Stickleback

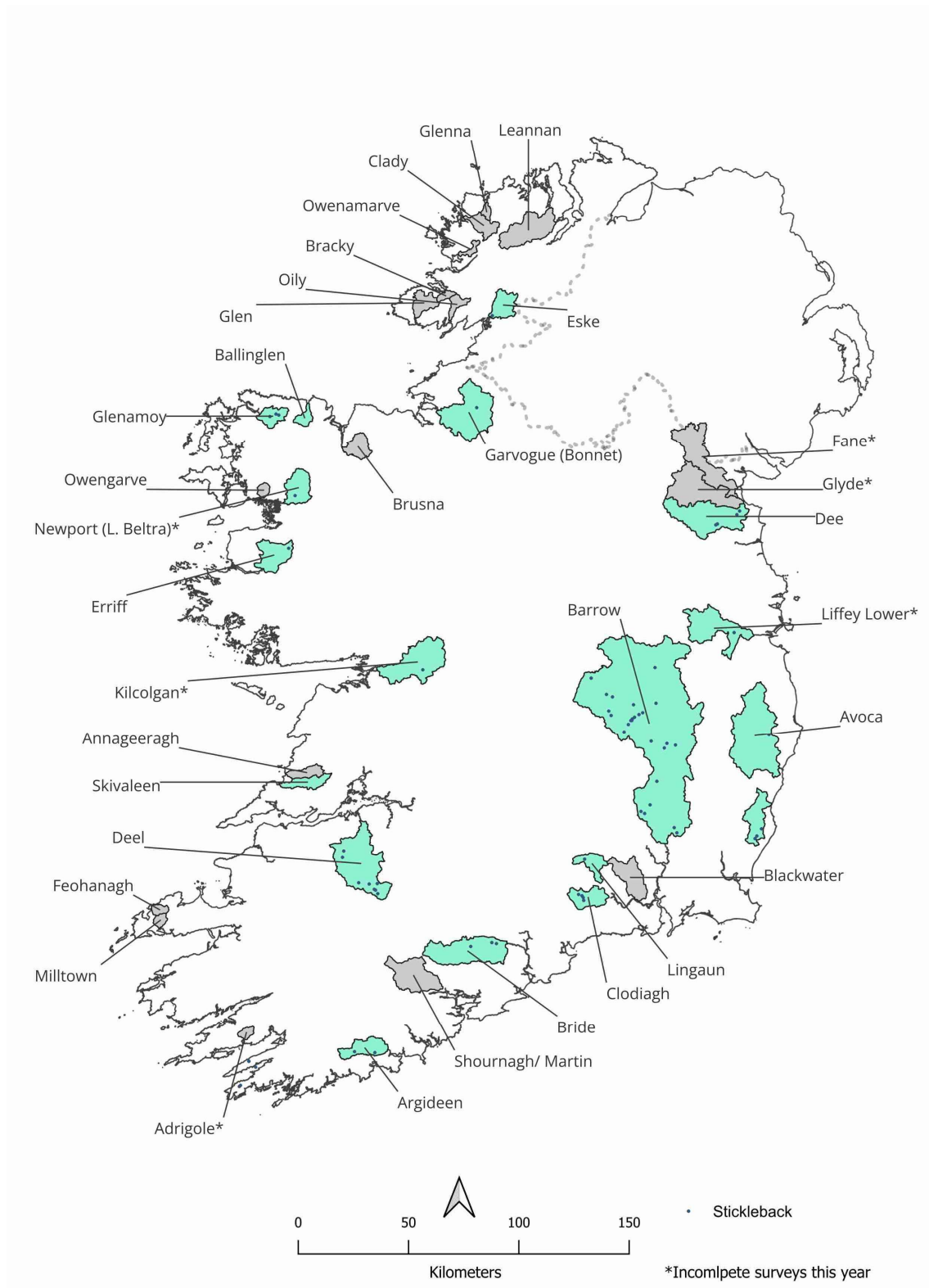


Figure 91 Locations at which Three-Spined Stickleback were observed during CWF surveys 2023.

B.10 Stone loach

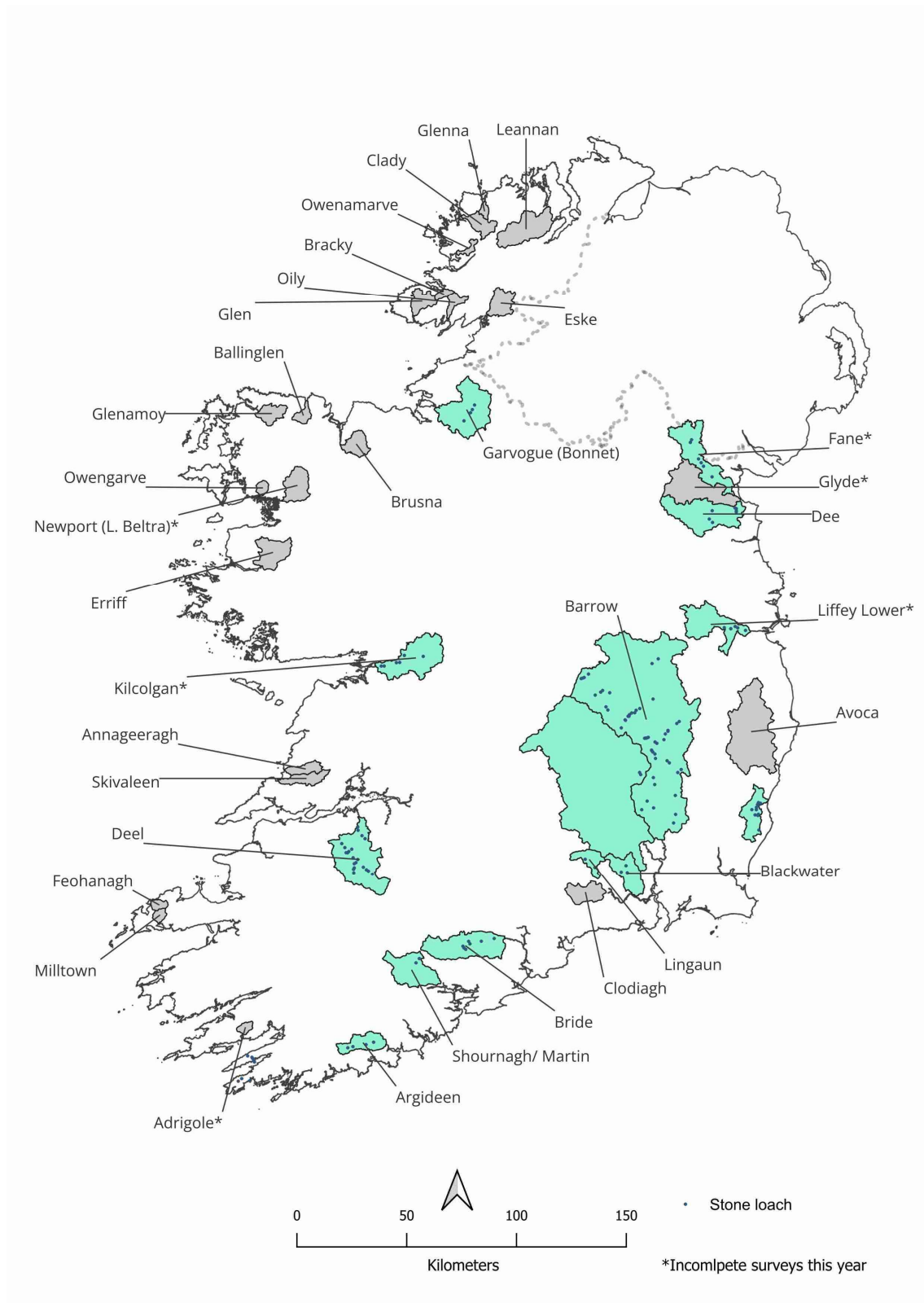


Figure 92 Locations at which Stone loach were observed during CWF surveys 2023.

B.11 White Clawed Crayfish

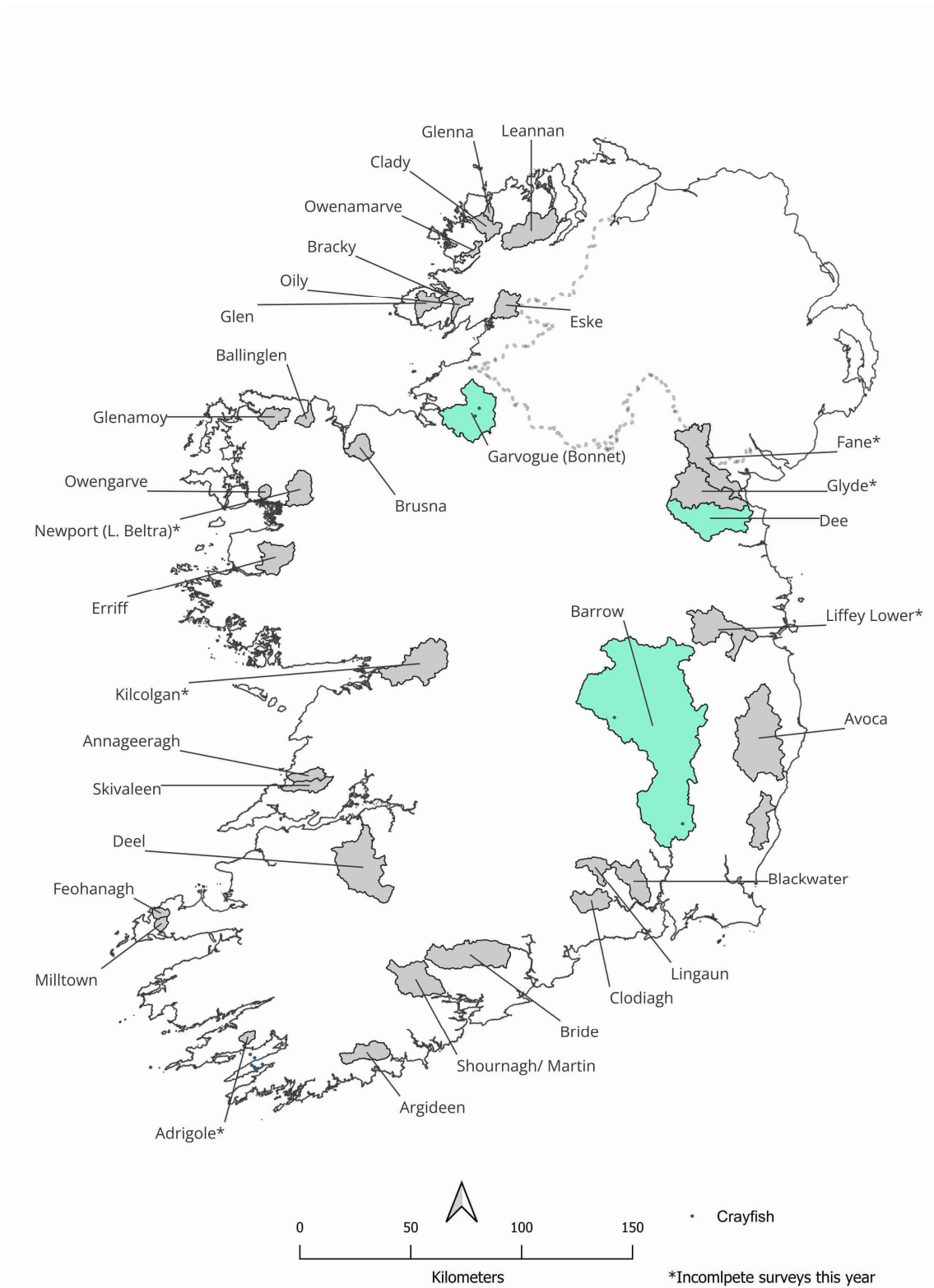


Figure 93 Locations at which White-Clawed Crayfish were observed during CWF surveys 2023.

C Annual CWEF Results and Averages to date

Table 49

Code/River	Fry Year																Index	# Surveys Included		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022			2023	
002/Flurry				5.24					17.15					37.55*	1.35*	5.58		9.32	3	
003/Castletown			26.41				22.96	13.59						1.87				14.08	5	
004/Fane			20.21			22.09			8.94*		0.5*	3.65						10.39	14.09	4
005/Glyde		2.49	17.08	31.61					5.19				4.02		6.58			10.73*	12.90	5
006/Dee		8.85	16.92	21.72	20.13				10.51				4.18*	7.59				2.59*	15.37	5
008/Boyne		21.91	17.92	19.52			13.21			14.47						14.94			16.01	5
013/Broadmeadow				0.00															0.00	1
014/Tolka					1.08	0.00						0.00							0.36	3
015/Liffey Lower		21.33	40.12	25.16	17.47	12.12				6.75		19.18				9*	14.33*	16.14	5	5
015/Liffey Upper		12.93	5.54	8.15	16.20	10.13				2.63*		1.00*			1.50*	2.24			8.45	5
016/Dodder					13.93											1.25			7.59	2
018/Dargle			1.40	2.69	7.52				4.74				1.03						3.48	5
020/Newcastle												0.00							0.00	1
021/Vartry		10.00	20.15	2.75	15.07				6.31	1.75				9.63		2.88			7.13	5
026/Avoca		3.79	5.56	5.20	18.88	5.15				1.89		8.37*	3.95					4.65	6.90	5
028/Owenavorrhagh				19.76			0.33		4.61			6.20			2.40			4.58	3.62	5
030/Sow								11.53†											0.00	0
031/Slaney	19.05		16.47	18.42				18.23		8.77	14.52		3.61*			28.39			17.67	5
033/Corock					37.11					5.47	1.23					0.26			11.02	4
034/Owenduff (Wexford)				4.97	10.65	15.91				4.33	0.40		16.0*			1.56			6.57	5
037/Barrow	17.72		12.65	8.71	22.39	27.11				8.93*	11.65		16.64					35.95	22.75	5
038/Nore				19.03						12.44			12.70*		16.79				16.09	3
039/Blackwater (Waterford)														26.54				1.82	14.18	2
041/Lingaun										14.52				47.60				7.14	23.09	3
042/Glen (Waterford)										0.00									0.00	1
043/Suir										9.81						17.09			13.45	2
044/Clodiagh										11.77							7.88		23.55	3
050/Mahon		3.17						10.72	4.57				8.60						6.76	4
051/Tay					8.75				6.14	1.75				9.91					6.64	4
053/Colligan					29.32			9.50		3.62			4.84						11.82	4
055/Lickey		12.37								14.14						12.00			12.84	3
057/Finisk		10.55								3.31									6.93	2
058/Glenshelane	22.72	10.96								2.87						2.44			9.75	4
059/Blackwater (Munster)		10.67*								14.87		22.76*				26.76†			14.87	1
060/Bride		10.40		24.70				19.85			7.65		18.93					26.08	19.44	5
061/Tourig					9.40						0.73*				11.19				10.29	2
062/Womanagh		15.45						2.39			1.54					3.68			5.77	4
064/Owennacurra	15.76										1.77*			9.47		21.58			15.61	3
065/Glashaboy																11.63			11.63	1

Code/River	Fry Year																	Index	# Surveys Included	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023			
066/Lee (Cork)			0.46†															-	0	
066/Lee (Shournagh/Martin)												18.34†						13.26†	15.80	2
069/Bandon										11.71									11.71	1
070/Argideen	17.15														28.92			14.47	20.18	3
077/Mealagh						12.82													12.82	1
080/Glengarriff			7.91																7.91	1
081/Adrigole							4.68	1.33				17.20						3.04*	7.74	3
082/Kealincha	0.00								0.00						0.00			0.00	0.00	3
083/Lough Fada	3.23								1.68						0.00				1.63	3
084/Croanshagh										23.38									23.38	1
085/Owenshagh							4.75		6.73			19.27		17.33					12.02	4
086/Cloonee						16.18	33.06				24.09		26.48						24.95	4
088/Roughy					19.78														19.78	1
089/Finnihy						8.61	0.00				0.70		1.01						2.58	4
090/Blackwater (Kerry)	30.54	15.52	13.35					19.70											19.78	4
093/Owreagh	8.94						2.07	2.81					8.51						5.58	4
097/Currane								24.51											24.51	1
098/Inny	24.63		21.75									17.67					22.67		21.68	4
099/Emlaghmore	2.07								1.45					7.70					3.74	3
101/Carhan	15.76						6.05	8.61					7.55				17.03		11.00	5
102/Ferta	19.42							12.88				6.88	12.06						12.81	4
103/Behy	15.41	6.14	4.03	9.96	7.17					2.89			6.60				7.18		6.76	5
106/Laune		17.42†										21.63							21.63	1
107/Maine	31.88	32.81	34.23*									22.05†	19.61†			37.62			34.10	3
108/Emlagh	10.37	3.66	13.38	6.39	2.59					2.10						1.02			5.10	5
109/Owenascaul	20.41		22.27				16.08	16.28				9.51		11.52					15.13	5
110/Owenalondrig			21.90														19.23		20.57	2
111/Milltown (Kerry)		15.33		26.44			13.02		8.76					11.25				11.36	14.17	5
112/Feohanagh			18.46				3.56	11.93						13.75				9.62	11.46	5
114/Owenmore (Kerry)	25.07														28.62				26.85	2
115/Scorid										1.86							5.62		3.74	2
115/Glenahoo										1.87							15.52		8.70	2
116/Aghacashla										4.89							15.18		10.04	2
116/Owenamallagh										0.00									0.00	1
116/Meennascarty										0.00									0.00	1
116/Finglas (Camp)																0.00			0.00	1
117/Lee (Kerry)		0.72							0.68			0.69				0.00			0.52	4
118/Brick	0.00																		0.00	1
119/Feale							24.15												24.15	1
120/Galey			12.99																12.99	1
125/Deel					0.14			0.21		1.87*	0.04				3.83			1.46	1.14	5
126/Maigue			2.88	16.05			12.25								14.23				11.35	4
128/Shannon Kilcrow				0.69†															0.69	1
128/Shan. Graney				0.19†															0.19	1
128/Shan. Woodford				0.00†															0.00	1
128/Shan. Mulkear												8.00*							0.00	0

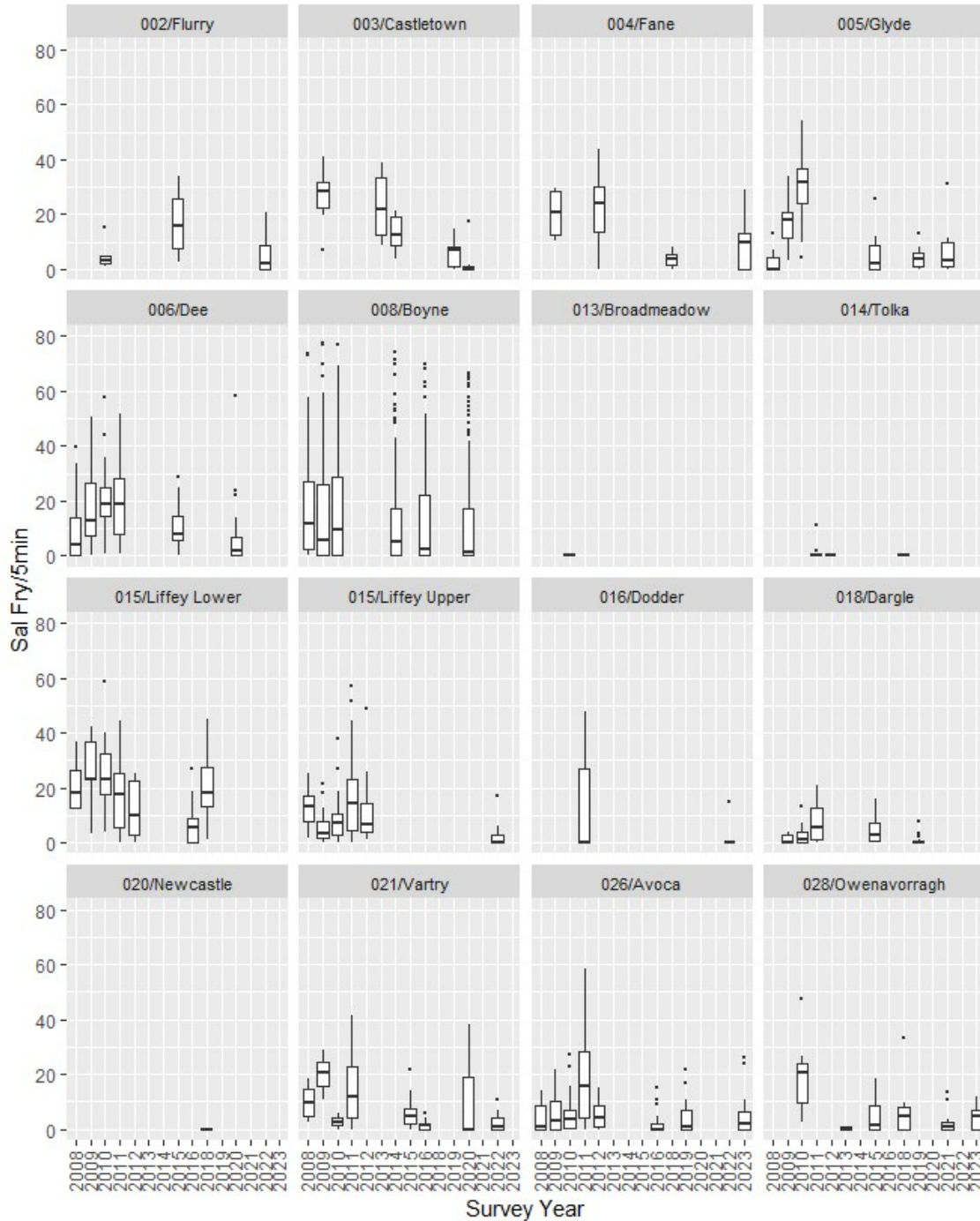
Code/River	Fry Year																	Index	# Surveys Included
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023		
128/Shan. Blackwater											10.74†	10.74†						10.74	2
128/Shan. Groody											0.00†	7.45†						3.73	2
128/Shan. Kilmastula											10.35†	24.45†						17.40	2
128/Shan. Old Main Channel											5.50*†	18.25*†	35.68†			28.82†		32.25	2
130/Owenagarney (Ratty)							16.97	8.87						3.82				9.88	3
131/Fergus	12.96		4.25	7.06			6.84		6.66					5.12*	9.68			6.90	5
133/Doonbeg				12.28				17.39			16.14*	18.77				18.82		16.81	4
134/Skivaleen					14.82				11.70		14.54*			10.30			2.97	9.95	4
135/Annageeragh							1.82	9.24						0.84			1.75	3.41	4
142/Inagh								5.60	3.59					7.23				5.47	3
143/Aughyvackeen					1.00						1.70					2.56		1.75	3
144/Aille															0.00			0.00	1
145/Kilcolgan			2.51								0.10*	0.79*		11.95			5.74*	7.23	2
146/Clarinbridge					7.26									1.77				4.51	2
147/Corrib														10.74†				0.00	0
147/Corrib Owenriff	15.75†												10.35*†		22.30†			19.02	2
148/Knock					12.53								1.50*		16.93			14.73	2
149/Owenboliska (Spiddal)		3.88						4.75					0.76		12.90			5.57	4
152/Cashla							10.83											10.83	1
154/L. Na Furnace stream									0.00									0.00	1
155/Screeb											10.70					12.39		11.54	2
161/Owenmore - Ballinahinch														14.83				14.83	1
163/Owenglin			13.23												29.86*	28.56		20.89	2
167/Culfin		30.83																30.83	1
168/Erriff	29.51	24.10	16.03	20.43	20.86	24.45	27.45	24.90	28.52	21.72	13.69	22.81	22.25	31.95	40.49	37.18	19.64	30.30	5
171/Carrownisky		18.25					20.60	18.22			4.25*		15.24			28.41		20.15	5
172/Bunowen			13.62															13.62	1
173/Owenwee (Belclare)				9.41	8.16	15.27							4.49					9.33	4
178/Newport (L. Beltra)	16.06		5.53					17.40									14.43*	13.00	3
179/Srahmore			4.33															4.33	1
181/Owengarve			5.51					6.96	0.90					13.01			3.49	5.98	5
185/Owenduff (Bangor)			6*					6.20										6.20	1
186/Owenmore - MC							27.65											27.65	1
186/Owenmore- Carrowmore							25.77											25.77	1
187/Glenamoy	28.16		5.65														9.54	14.45	3
188/Muingnabo	0.78								1.87*					0.33				0.55	2
193/Ballinglen	10.65				15.09		6.37			4.97				10.73		0.60		7.55	5
194/Cloonaghmore		8.96		10.02	23.12	17.32	15.02				5.07*	14.63			7.52			15.52	5
196/Brusna			5.00				14.16	14.74						6.73*			5.28	9.79	4
198/Leaffony	5.76		7.95						1.73					0.67*		0.00		3.86	4
203/Garvogue (Bonnet)	18.41	13.55	16.83	11.53	7.73	18.54								19.53	16.37	15.46		15.53	5
205/Drumcliff				17.72														17.72	1
207/Grange	5.75		3.29						4.56					4.08				4.42	4
208/Duff	7.84		18.59	25.16							18.05	20.34				8.57		18.14	5
210/Erne		7.37†	0.17†	0.08†	0.00†	0.00†	0.00†	1.60†	1.16†	1.25†	0.00†	0.65†	0.00†	0.00†	1.20†	0.00†		0.37	5
211/Abbey							7.2*	28.14										28.14	1

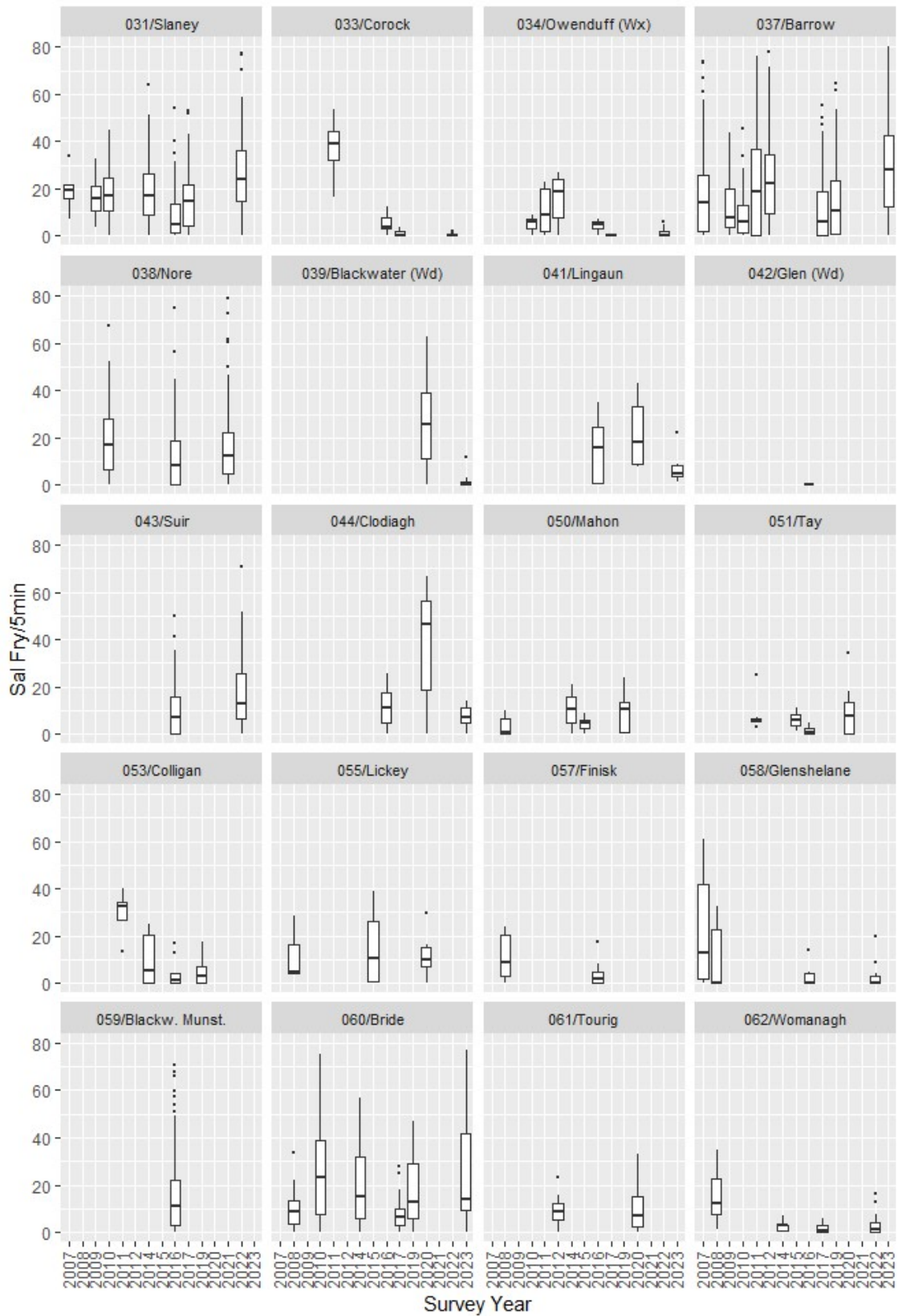
Code/River	Fry Year																	Index	# Surveys Included	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023			
212/Ballintra			10.27*				13.40	19.82					13.31			2.29		12.20	4	
213/Laghy			8.58				14.97	11.02					8.56			5.71		9.77	5	
214/Eske		13.10	16.99	16.30					14.07			10.94						14.04	5	
215/Eany				15.86		30.08			12.89									19.61	3	
216/Oily			9.49		33.68			16.62			21.26			18.64				21.07	5	
217/Bungosteen				27.91			19.23			13.17			13.41			3.46		15.44	5	
219/Glen (Ballyshannon)				19.44					18.37			18.56		11.71				16.75	5	
220/Owenwee (Yellow R)	24.13	5.00	16.93			20.31	21.05						14.20			6.24		15.75	5	
221/Bracky		10.82				21.57		12.24						5.31			6.27	11.24	5	
222/Owentocker		20.06															27.13	23.59	2	
223/Owenea												33.94					43.19	38.57	2	
225/Gweebarra																	19.28	19.28	1	
226/Owenamarve			3.76				2.64	3.00						10.67				6.67	5	
228/Gweedore (Crolly R.)		15.99			11.32													13.65	2	
229/Clady		16.12				37.21												20.23	24.52	3
234/Glenna			16.80		3.77		7.77			4.00					11.43			5.60	5	
235/Tullaghobegly		8.33		9.05						0.00*						6.24		7.87	3	
236/Ray		7.35			16.38			17.31		3.71*				6.65		10.39		11.62	5	
240/Lackagh		22.01	15.82		19.20	23.57				17.50*	24.75							21.07	5	
248/Leannan	9.47	7.96	9.73	17.30	13.32	22.19	19.51	20.87	15.27	15.05*	19.47	20.11	21.33	20.50	18.23	13.83	8.11	16.40	5	
249/Swilly		9.33	8.35				18.08	8.05						14.36				11.63	5	
250/Isle (Burn)						2.12									0.00			1.06	2	
251/Burnfoot		7.77		2.90											0.00			3.56	3	
252/Mill (Letterkenny)				0.00					0.00						0.00	0.00		0.00	4	
253/Crana			15.74							6.00*	6.93*	16.38					33.01	21.71	3	
256/Clonmany		16.61		7.19						5.89					9.55			9.81	4	
257/Straid				0.20						0.00					0.00	0.00		0.05	4	
258/Donagh				4.25						0.68					6.79	0.82		3.13	4	
259/Glennagannon			16.65	4.05		7.13										1.26		7.27	4	
261/Culoort				4.03						0.00*					11.41			7.72	2	
Quin										6.47†								6.47	1	

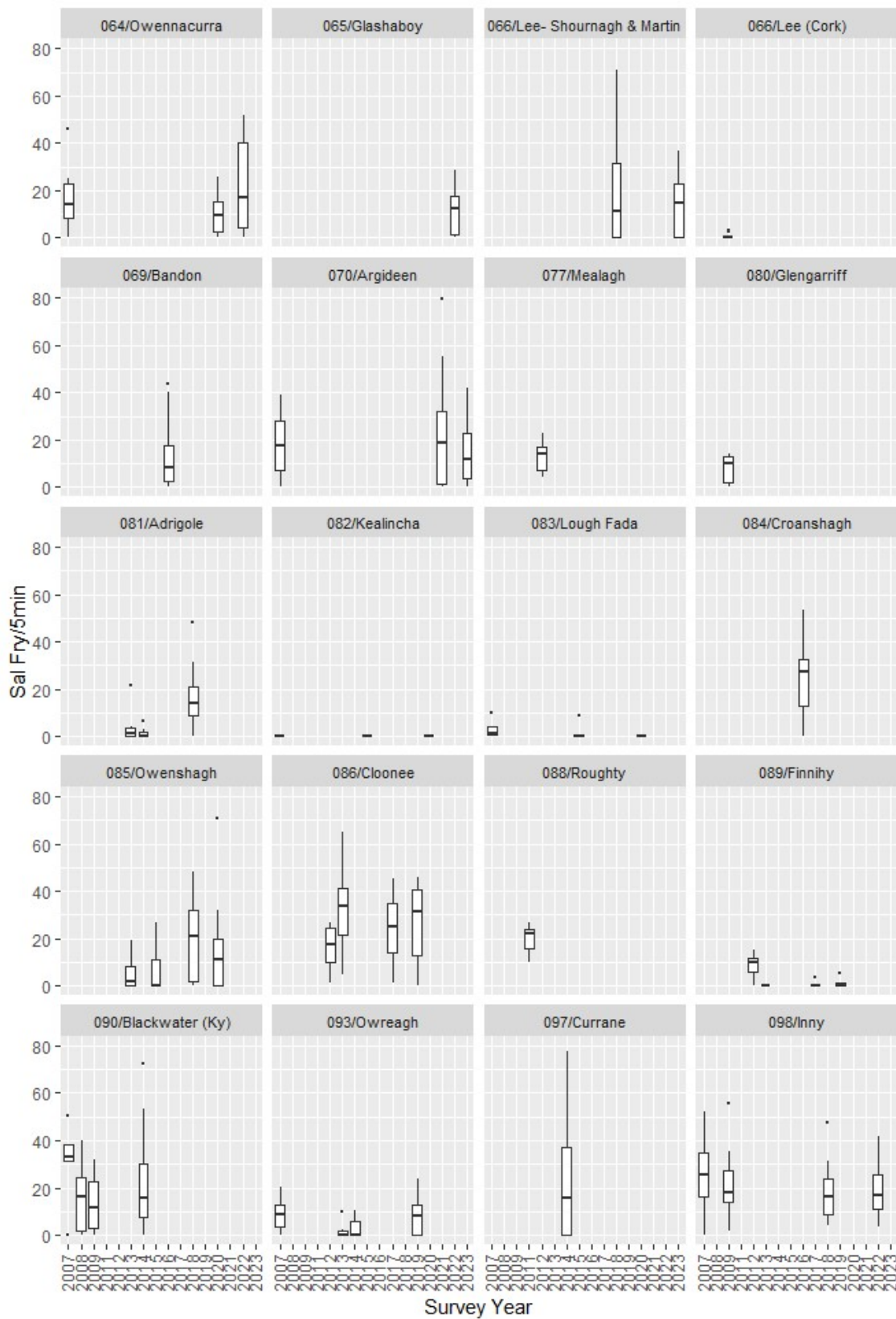
0.00* - Incomplete annual Surveys
6.47† - Sub-catchment Surveys
15.22 - BOLD indicates annual survey results used in CWF calculations
21.71 - Index figures exceeding 17 salmon fry threshold
16.40 - Index figures exceeding 15 salmon fry

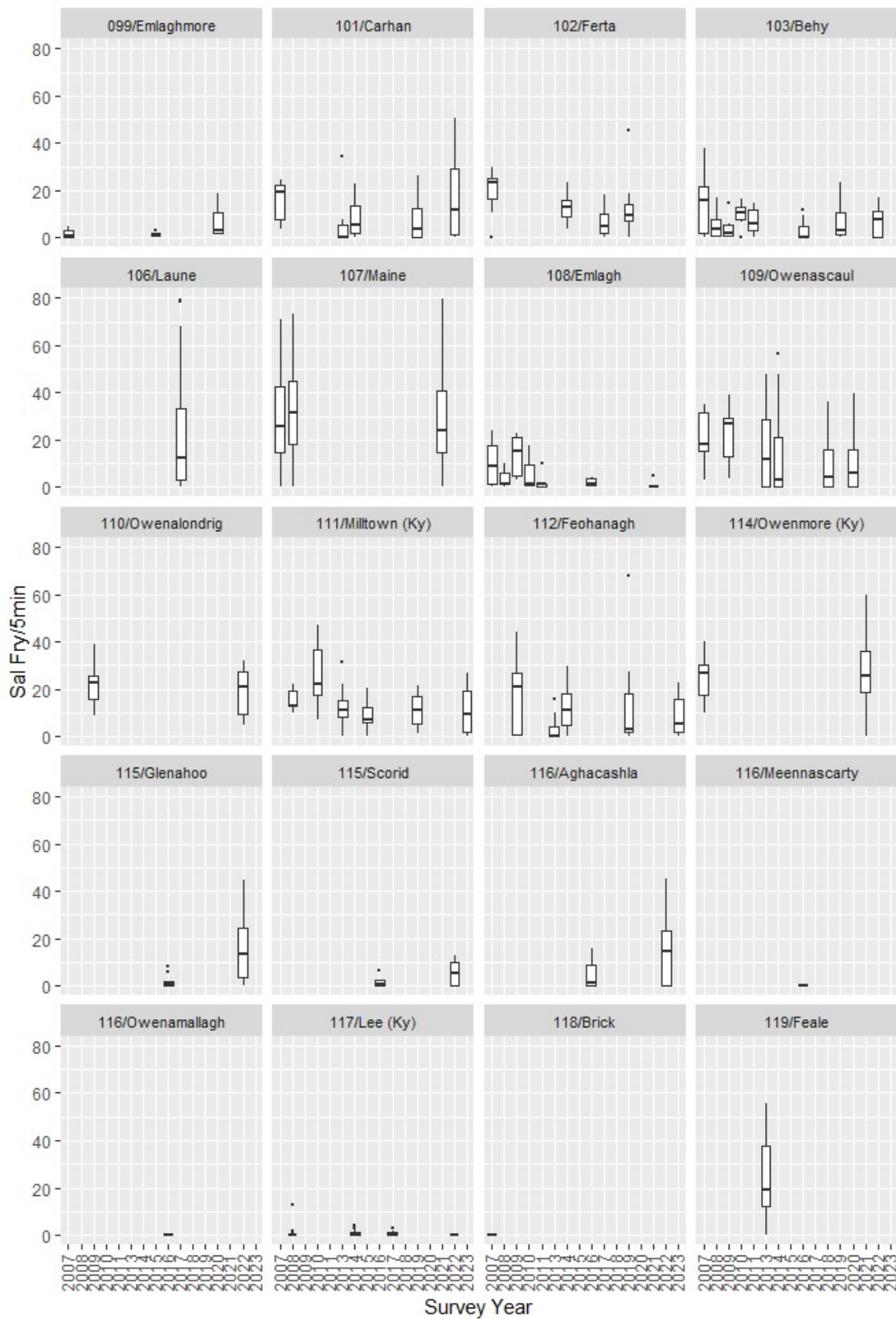
D Boxplots: CWF site results per catchment >2 surveys (2007-2023)

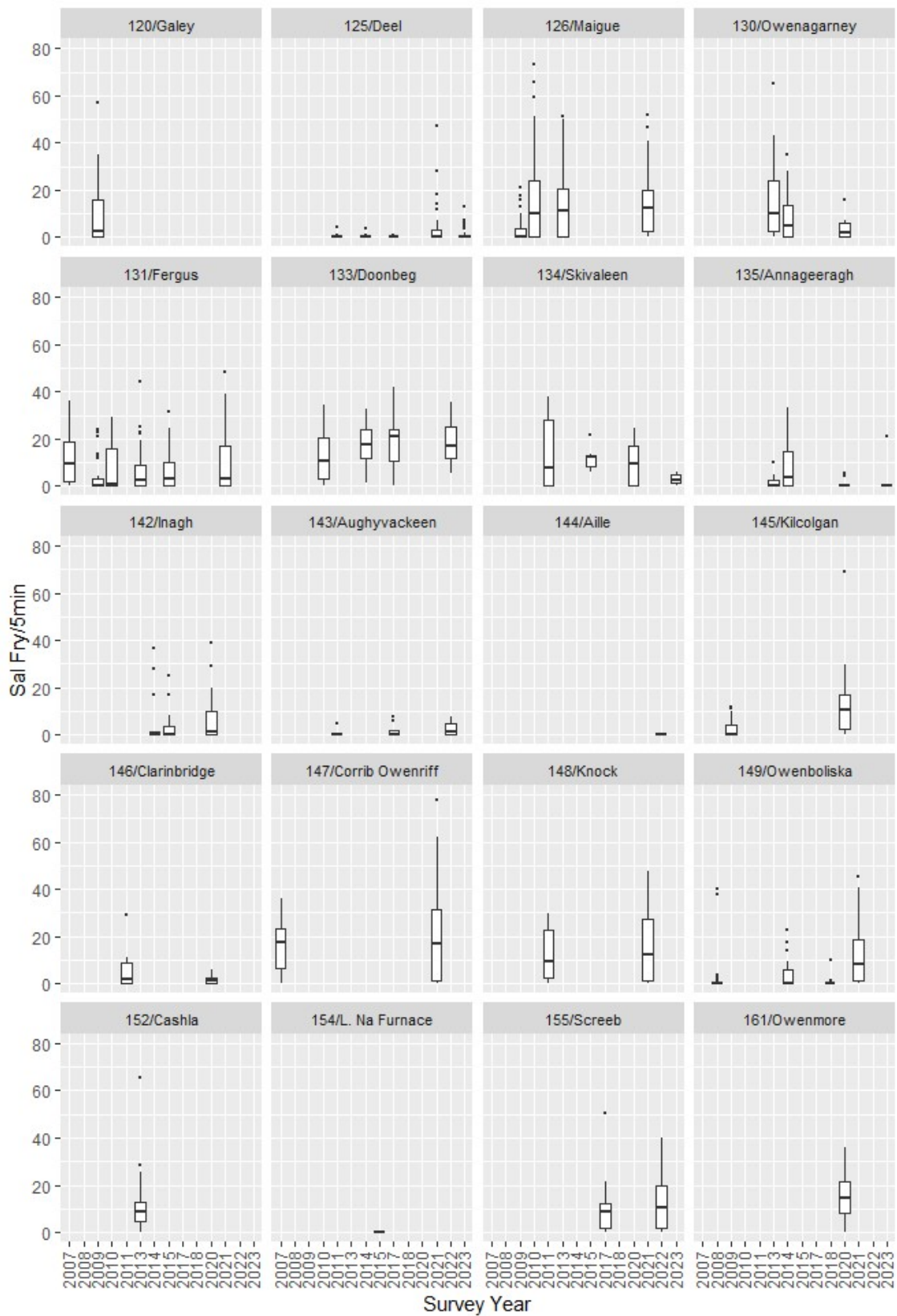
NB: Only site results used in CWF average calculations in completed catchment surveys are represented (n=10,701). Y-axes limited to 80 salmon fry/5min, the 88 surveys which achieved > 80 salmon fry/5min are not represented.

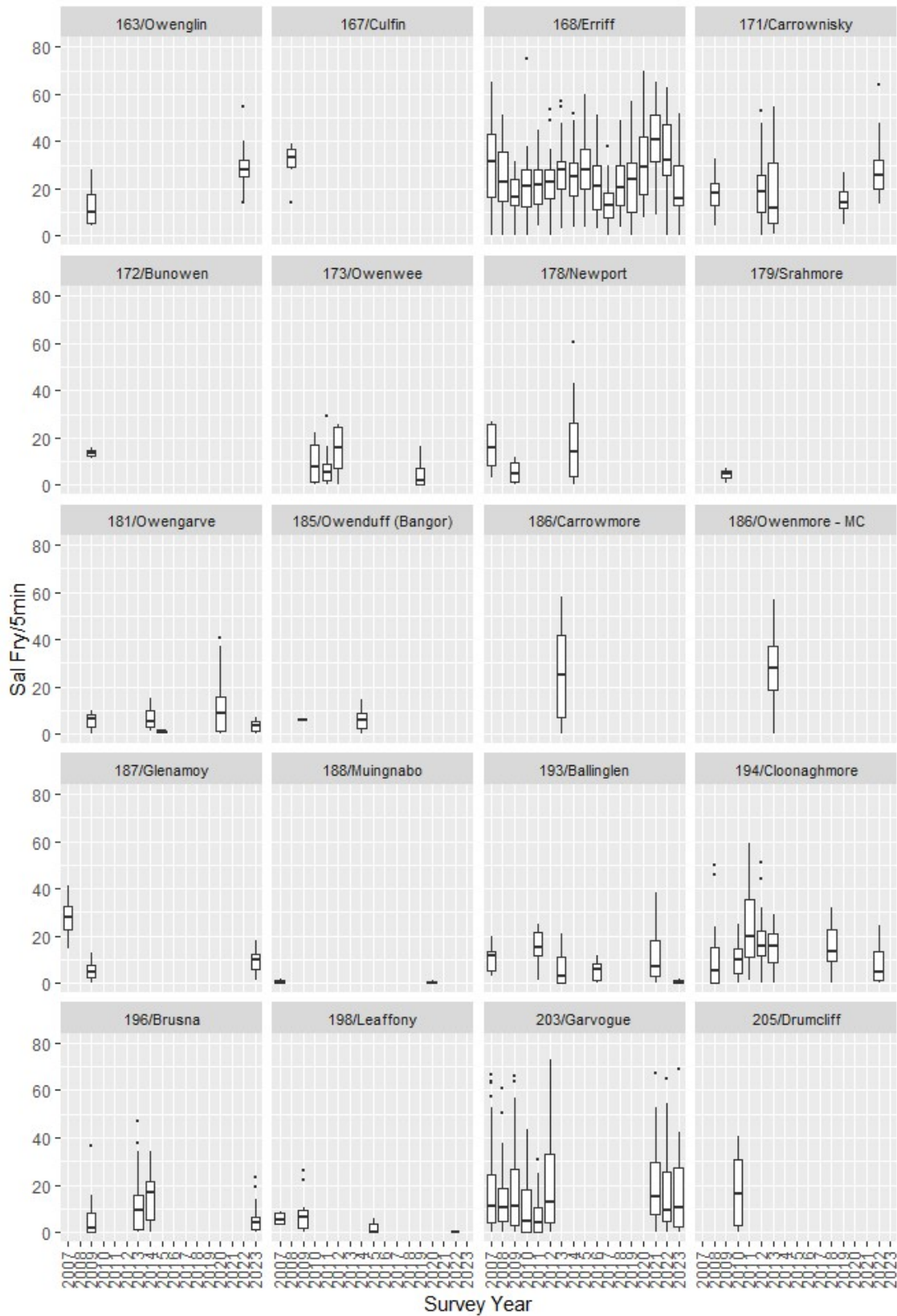


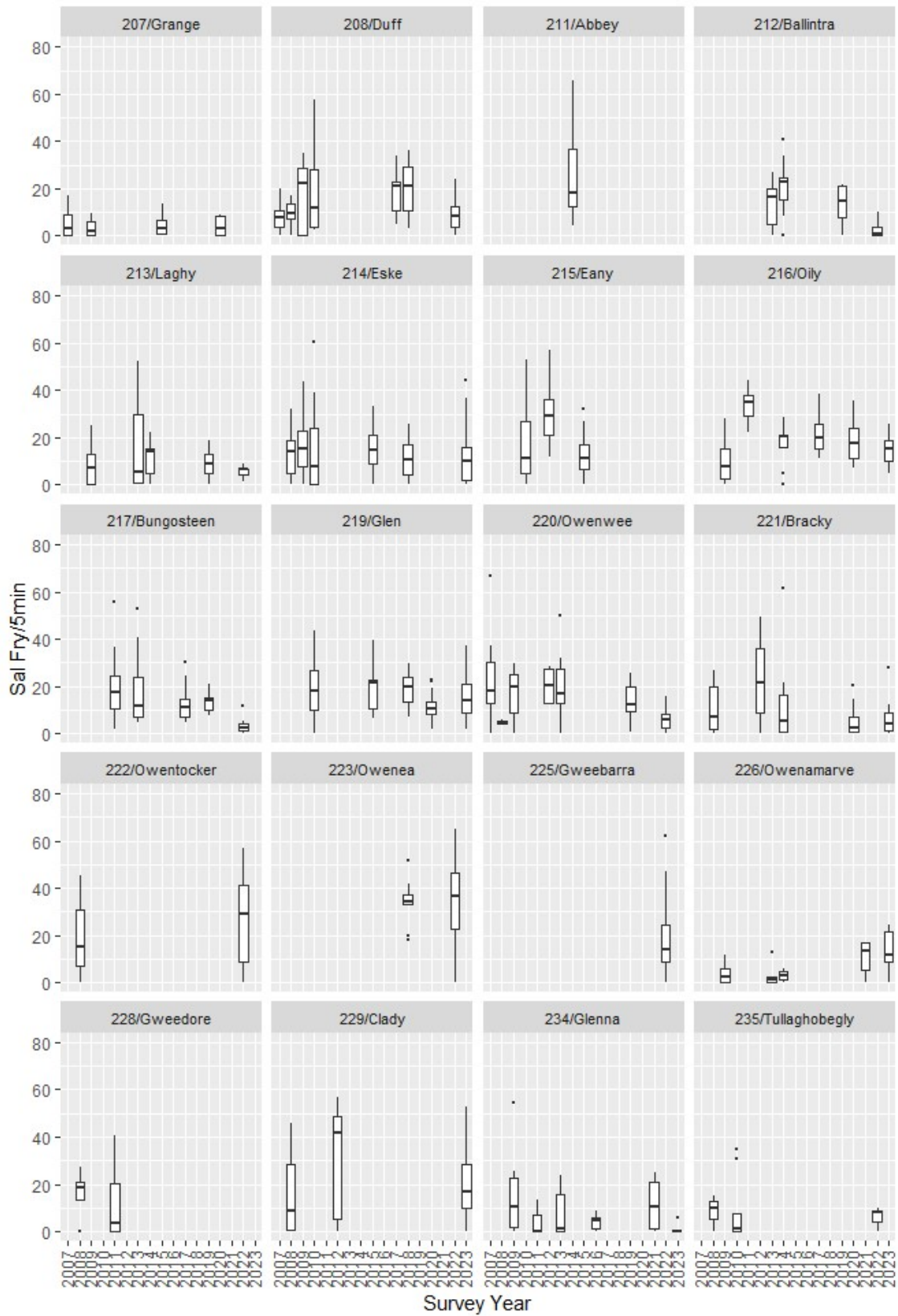


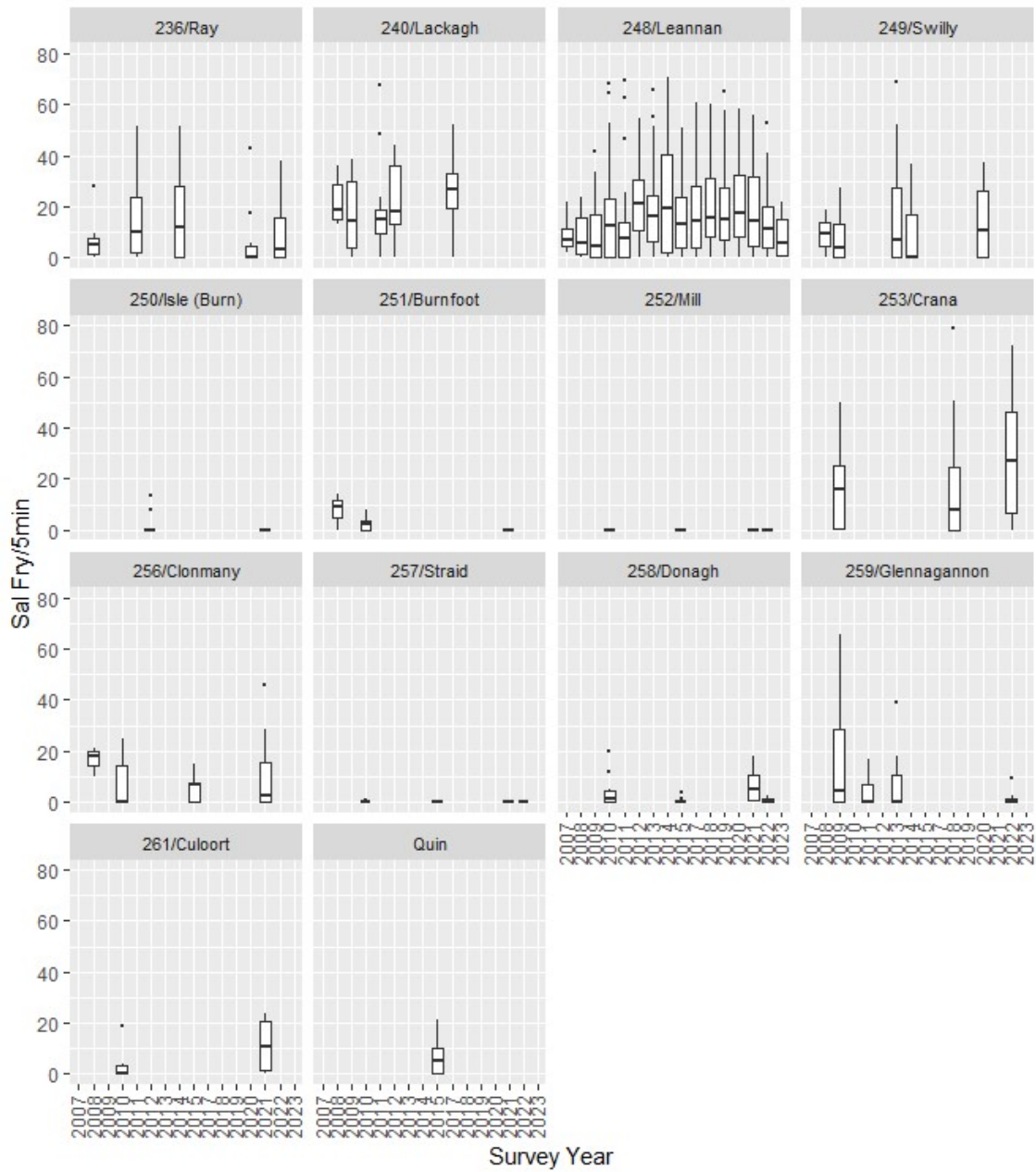












E Survey Density

Table 50. Annual survey density (km per site) per catchment. No. of km of channel > stream order (SO) 1 is provide. Only surveys that are used in calculation of annual CWF averages are considered.

IFI Code/ River	Length of Channel >SO1 (from GIS)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Min
2/Flurry	15				2					4							2		2
3/Castletown	25			2				2	2					3	2				2
4/Fane	101			14			7						8					9	7
5/Glyde	165		10	11	12					11				17		13			10
6/Dee	201		7	11	10	10				10					9				7
8/Boyne	1110		8	8	8				8		8				7				7
13/Broadmeadow	116				39														39
14/Tolka	82					7	41						17						7
15.1/Liffey Lower	122		20	20	11	7	17				7		6						6
15.2/Liffey Upper	412		24	13	11	8	16										21		8
16/Dodder	93					16											8		8
18/Dargle	77			13	4	5				5				6					4
20/Newcastle	9												3						3
21/Vartry	44		11	11	3	4				3	4				4		6		3
26/Avoca	345		16	11	13	4	12				8			9				15	4
28/Owenavorrhagh	95				14			16		5			6			5		5	5
31/Slaney	866	108		18	11				7		6	6					6		6
33/Corock	95					16					19	16					5		5
34/Owenduff (Wexford)	33				11	6	6				7	7					3		3
37/Barrow	1061	11		13	13	13	10					8		9				9	8
38/Nore	1110				11						9					7			7
39/Blackwater (Waterford)	66														6			6	6
41/Lingaun	49									6					6			6	6
42/Glen (Waterford)	16									4									4
43/Suir	1501										13						13		13
44/Clodiagh	82										6				6			6	6
50/Mahon	64		6						8	8				4					4
51/Tay	41					7				8	6				5				5
53/Colligan	55					11			5		4			4					4
55/Lickey	20			5						2					3				2
57/Finisk	59			5							3								3
58/Glenshelane	26	4	4								3						2		2
59/Blackwater (Munster)	1192										4								4
60/Bride	166		8		6				5			4		5				4	4
61/Tourig	17						2								2				2
62/Womanagh	53		5						4			4					4		4
64/Owennacurra	19	1													1		1		1
65/Glashaboy	64																4		4
66.1/Lee (Cork)	436			19															19
066/Lee- Shournagh & Martin	122												4					6	4
69/Bandon	309										3								3
70/Argideen	60	3														3		3	3
77/Mealagh	49						5												5
80/Glengarriff	45			5															5
81/Adrigole	35							4	3				3						3
82/Kealincha	24	8								5					5				5
83/Lough Fada	26	5								4					5				4
84/Croanshagh	55										4								4
85/Owenshagh	53							3		5			4		4				3
86/Cloonee	18						3	3				3		3					3
88/Roughy	199					15													15

IFI Code/ River	Length of Channel >SO1 (from GIS)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Min
		89/Finnihy	22						4	4				4		3			
90/Blackwater (Kerry)	81	16	6	5					2										2
93/Owreagh	17	3						3	2					2					2
97/Currane	78								1										1
98/Inny	85	4		4									4				3		3
99/Emlaghmore	15	3								4					4				3
101/Carhan	18	3						2	2					2			2		2
102/Ferta	34	4							3					3					2
103/Behy	28	4	3	3	3	3					3			3			3		3
106/Laune	29											0							0
107/Maine	187	3	4														2		2
108/Emlagh	20	5	4	4	4	4					4					4			4
109/Owenascaul	35	6		4				4	3				3		3				3
110/Owenalondrig	16			2													2		2
111/Milltown (Kerry)	16		3		2			2		2				2				2	2
112/Feohanagh	29			3				3	2					2				2	2
114/Owenmore (Kerry)	19	2														1			1
115.1/Scorid	11										2						2		2
115.2/Glenahoo	12										1						1		1
116/Aghacashla	14										2						2		2
116.1/Owenamallagh	5										2								2
116.2/Meennascarty	8										2								2
117/Lee (Kerry)	88		3						5			7					7		3
118/Brick	108	18																	18
119/Feale	336							6											6
120/Galey	122			4															4
125/Deel	251					3			2			9				5		5	2
126/Maigue	418			7	5			3								4			3
130/Owenagarney (Ratty)	89							3	4					4					3
131/Fergus	233	12		7	6			3		4						4			3
133/Doonbeg	69				3				3			4						3	3
134/Skivaleen	30					3				3				4				4	3
135/Annageeragh	36							2	2					2				3	2
142/Inagh	121								4	5					4				4
143/Aughyvackeen	35					2						2						3	2
144/Aille	51																10		10
145/Kilcolgan	163			5											7				5
146/Clarinbridge	42					6									5				5
147.1/Corrib Owenriff	53	2															2		2
148/Knock	20					3											3		3
149/Owenboliska (Spiddal)	58		2						3				3				2		2
152/Cashla	47						1												1
154/L. Na Furnace stream	12									3									3
155/Screeb	19											1						1	1
161/Owenmore - Ballinahinch	150														3				3
163/Owenglin	40			2													2		2
167/Culfin	21		3																3
168/Erriff	142	3	3	3	3	4	4	4	4	4	4	4	4	4	4	4	4	6	3
171/Carrownisky	42		2				2	3							3			3	2
172/Bunowen	70			23															23
173/Owenwee (Belclare)	41				4	5	4							4					4
178/Newport (L. Beltra)	108	9		13					4										4
179/Srahmore	69			23															23
181/Owengarve	25			6					3	5					3			3	3

IFI Code/ River	Length of Channel >SO1 (from GIS)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Min
		185/Owenduff (Bangor)	127								9								
186/Owenmore - MC	201							5											5
186.1/Owenmore-Carrowmore (Muinhin)	64							3											3
187/Glenamoy	65	5		9														4	4
188/Muingnabo	34	8												8					8
193/Ballinglen	39	7				3		4			3					3		4	3
194/Cloonaghmore (Palmerstown)	121		3		4	3	4	4					5				4		3
196/Brusna	103			3				3	4									5	3
198/Leaffony	25	4		2						2							2		2
203/Garvogue (Bonnet)	257	5	5	5	5	10	6									5	5	5	5
205/Drumcliff	62				4														4
207/Grange	42	8		7						6					6				6
208/Duff	96	9	10	11	9							9	9				5		5
211/Abbey	27								1										1
212/Ballintra	83							5	6						10		5		5
213/Laghy	47			5				4	4					5			3		3
214/Eske	115		8	7	7					5			6					4	4
215/Eany	144				5		7			6									5
216/Oily	46			4		7			4						4			4	4
217/Bungosteen	44					4		4				4			6		5		4
219/Glen (Ballyshannon)	82				5					6			6		6			4	4
220/Owenwee (Yellow R)	17	2	6	2			4	1						2			1		1
221/Bracky	35		4				3		3									2	2
222/Owentocker	43		4														3		3
223/Owenea	124												11				7		7
225/Gweebarra	71																2		2
226/Owenamarve	16			2				2	2							3		2	2
228/Gweedore (Crolly R.)	29		6			2													2
229/Clady	58		10				5											5	5
234/Glenna	19			3		3		3			3					3		3	3
235/Tullaghobegly	17		6		2												2		2
236/Ray	45		6			4			4					4			4		4
240/Lackagh	91		9	8		7	7						8						7
248/Leannan	219	24	8	8	8	8	8	8	8	8			8	6	6	6	6	6	6
249/Swilly	91		30	5				7	6						5				5
250/Isle (Burn)	49						5									5			5
251/Burnfoot	24		6		5											2			2
252/Mill (Letterkenny)	29				10					10						10	10		10
253/Crana	87			4									2				3		2
256/Clonmany	35		9		3					4						3			3
257/Straid	23				5					5						5	5		5
258/Donagh	31				3					3						4	3		3
259/Glennagannon	27			3		2		2									2		2
261/Culoort	18				2											3			
Quin	78									4									

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