

Report on Salmon Monitoring Programmes 2022 funded under Salmon Conservation Fund

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Executive summary

The Salmon and Sea Trout Rehabilitation, Conservation and Protection Fund (SSTRCPF) provided funding for the Salmon Monitoring Programmes in 2022. 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 a threshold value in the provision of catch advice which allows fishery managers to open rivers for catch and release-only angling which otherwise would be closed to fishing.

During 2022, catchment-wide electrofishing was undertaken in 50 catchments or sub-catchments to assess abundance and distribution of salmon fry. 47 catchments were surveyed completely, as were planned surveys of the old River Shannon main channel below the Parteen weir, the Owentaraglin, Farahy and Owenaskirtaun rivers in the Munster Blackwater; and the Aghacashlaun, Yellow, Termon and Ominey sub-catchments on the Erne. A total of 1095 sites were visited. The salmon fry abundance for this year alone ranged from an average of zero fry/5min on the Finglas (Camp), Lee (Kerry), Aille, Leaffony, Erne, Mill (Letterkenny) and Straid rivers to a catchment average of 43.19 fry/5 min on the Owenea river. The Owenea, Erriff, Crana, Shannon Old Main Channel, Owenglin, Carrownisky, Slaney, Owentocker, Inny, Owennacurra, Gweebarra, Owenalondrig, Doonbeg and Carhan all recorded an annual catchment-wide average of >17 fry in 2022.

In general, rivers where the CWEF threshold value was ≥ 17 over the 2007-2022 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 produced for stock assessments. Overall good agreement was observed between rod catch or counter data (from index or well monitored catchments) and the results of the catchment-wide electrofishing surveys.

The long-term objective of the CWEF programme is to develop a robust index of juvenile salmon abundance (0+ salmon fry) to support assessment of attainment of a salmon CL on an individual river. Fry abundance is assumed to be an appropriate proxy for adult salmon abundance in the previous spawning period. Results to date suggest that the CWEF technique has good potential for initial or ongoing salmon stock assessment. Where sufficient data can be accumulated in catchments with an independent adult stock monitoring system it is intended to analyse 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.

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 migration barriers. A wider benefit of the programme is the recording of the distribution of other fish species encountered including those of conservation importance.

In order to enhance smolt to adult marine survival data for wild salmon in Irish rivers, a PIT 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.

In 2022, a total of 19 PIT tagged adult salmon returned to the Erriff representing a provisional marine survival of 1.5% for the cohort tagged in 2021. Any multi-sea-winter fish which will return in 2023 will have to be considered when finalising this estimate. For salmon PIT tagged in 2017, 2018, 2019 and 2020 marine survival was 2%, 3.8%, 3.2% 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. In addition, any multi-sea-winter fish which will return in 2023 have to be considered. 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.

1. Introduction

In spring 2009, scientists from the Standing Scientific Committee of the National Salmon Commission identified appropriate methods for assessment of attainment of salmon conservation limits (CL) on an individual river basis nationally. They also proposed a strategy for prioritisation of rivers for assessment of attainment of CLs. This assessment was based on the feasibility of inserting new counters, undertaking redd counts, use of electrofishing as an index of spawning, obtaining full counts from partial counters by tagging etc. on catchments and was linked to the current status of salmon stocks in each river (Anon 2009). Other data such as salmon rod catch, commercial catch by river, micro-tagging data, marine survival and fishery exploitation data are used annually by the Technical Expert Group on Salmon (TEGOS) to assess salmon stock status.

As such, a successful application was made by Inland Fisheries Ireland to the Salmon and Sea Trout Rehabilitation, Conservation and Protection Fund (SSTRCPF) for funding for 2021/2022 to assess attainment of salmon conservation limits nationally. This report presents the results of assessment activities undertaken between June and December 2022. The project comprised the following three elements:

1.1. Catchment-wide electrofishing programme

Catchment-wide electrofishing (CWEF) in selected catchments to assess abundance and distribution of salmon fry and to further develop an index of juvenile salmon abundance which can be used to assess attainment of salmon CL. Resources and training in the CWEF technique were also provided to IFI staff nationally.

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

The salmon smolt to adult return rate is widely used for scientific assessments of salmon status (e.g. ICES, NASCO etc) to support species management. Reduced survival in this phase is the major pointer towards likely reduced population size and understanding the reason for these losses is driving several marine phase research programmes. In order to enhance these data for wild salmon in Irish rivers a PIT tag recording system was installed in the River Erriff (National Salmonid Index Catchment) 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. Up to 1,000 wild smolts per annum are PIT tagged (depending on smolt output) and the proportion of returning tagged fish provides a direct

estimate of survival. It is envisaged that this installation will subsequently be supported by a medium-term tagging programme (at least 5 years) to develop a meaningful dataset.

1.3. 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, which can be collected from any killed fish, the often complex make up of a population can be established and the models can be adjusted accordingly. Scales were received from a range of rod fisheries in 2022.

2. Catchment-wide electrofishing programme 2022

The principal objective of the CWF 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 a threshold value in the provision of catch advice which allows fishery managers to open rivers for catch and release-only angling which otherwise would be closed to fishing. The generation of such angling catches enables TEGOS to then better assess stock status using angling catches and associated exploitation rates. Previous analysis has shown that the majority of rivers known to be meeting and exceeding their CL have a salmon fry index of 17 or higher. 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 migration barriers. 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 with information on rod catches or counters over a number of years. The scientific advice is that assessments should preferentially be based on a recent five-year average of available annual data, ideally with at least two data points within that period.

2.1. Sampling methodology

The 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. Number of salmon and trout fry and parr encountered are recorded and the fork lengths of fry captured are measured in 1 cm increments. The mean catchment-wide numbers of salmon fry encountered are calculated by averaging all the individual sites sampled. Other species encountered are also recorded as well as specific

2.2. Results 2022

During 2022, CWEF was undertaken in 50 catchments or sub-catchments to assess abundance and distribution of salmon fry. 47 catchments were surveyed completely, as were planned surveys of the old River Shannon main channel below the Parteen weir, the Owentaraglin, Farahy and Owenaskirtaun rivers in the Munster Blackwater; and the Aghacashlaun, Yellow, Termon and Ominey sub-catchments on the Erne. A total of 1095 sites were visited.

The draft results for catchments surveyed in 2022 are presented in Figure 1, Figure 2 and Table 1. The salmon fry abundance for this year alone ranged from an average of zero fry/5min on the Finglas (Camp), Lee (Kerry), Aille, Leaffony, Erne, Mill (Letterkenny) and Straid to a catchment average of 43.19 fry/5 min on the Owenea river. The Owenea, Erriff, Crana, Shannon Old Main Channel, Owenglin, Carrownisky, Slaney, Owentocker, Inny, Owennacurra, Gweebarra, Owenalondrig, Doonbeg and Carhan all recorded an annual catchment-wide average of >17 fry in 2022.

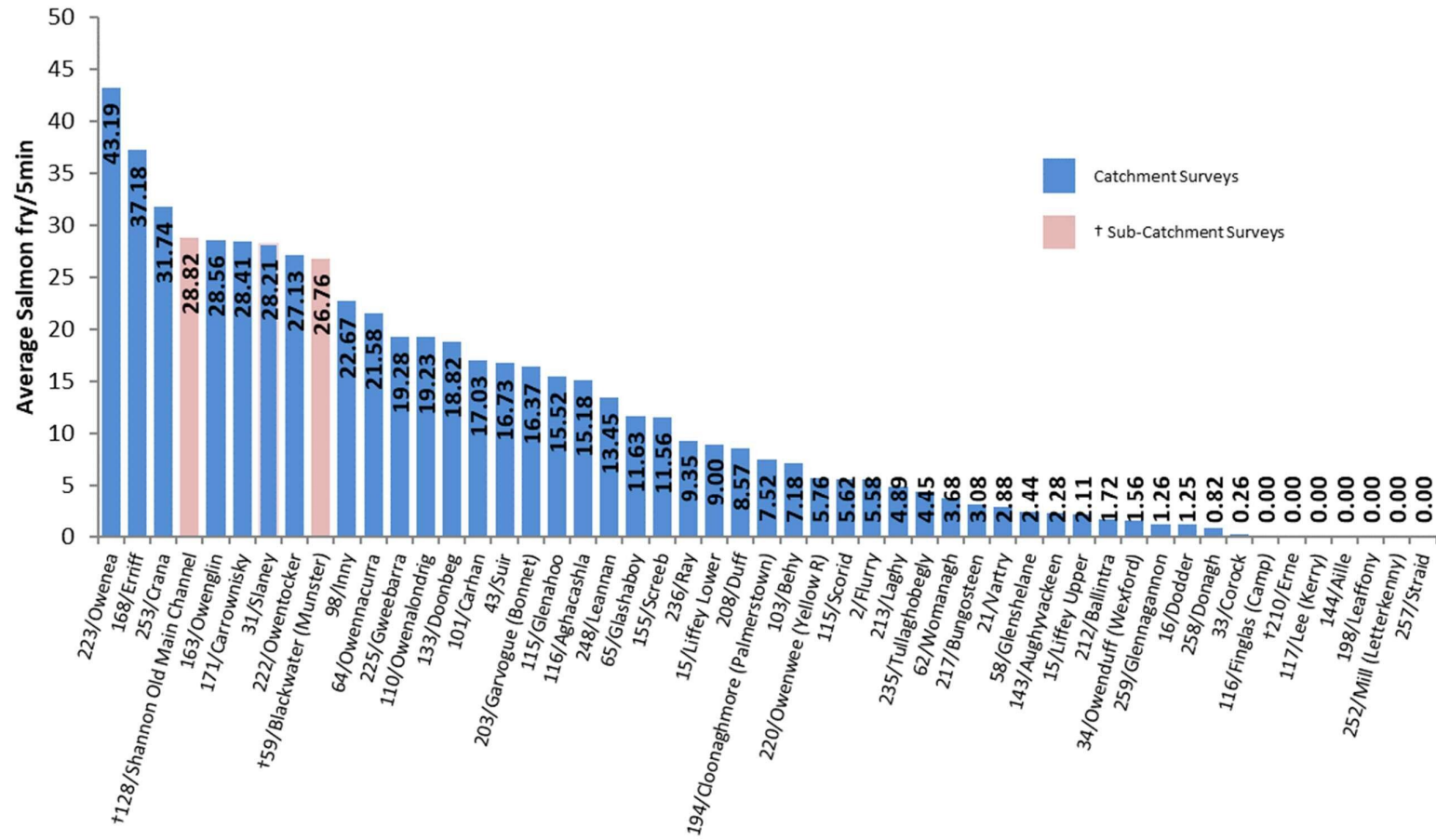


Figure 1 Summary of CWF results for the catchments surveyed in 2022.

Table 1 Summary of annual results (2011-2022) and current CWF indices for catchments surveyed in 2022.

Code/River	Fry Year												Most recent 5 surveys	
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Index	# Surveys Inc.
002/Flurry					17.15					37.55*	1.35*	5.58	9.32	3
015/Liffey Upper	16.20	10.13				2.63*		1.00*			1.50*	2.11	8.34	5
016/Dodder	13.93											1.25	7.59	2
021/Vartry	15.07				5.34	1.75				9.63		2.88	6.93	5
031/Slaney				17.68		8.70	14.30		3.45*			28.21	17.46	5
033/Corock	37.11					5.47	1.23		6.47†			0.26	11.02	4
034/Owenduff (Wexford)	10.65	15.91				3.47	0.40		16.0*			1.56	6.40	5
043/Suir						9.81						16.73	13.27	2
058/Glenshelane						2.87						2.44	9.75	4
059/Blackwater (Munst.)						13.53		22.76*				26.76†	12.10	2
062/Womanagh				2.39			1.43					3.68	5.74	4
064/Owennacurra							1.77*			9.47		21.58	15.61	3
065/Glashaboy												11.63	11.63	1
098/Inny								17.67				22.67	21.19	4
101/Carhan			6.05	8.61					7.55			17.03	11.00	5
103/Behy	7.17					2.89			6.60			7.18	6.51	5
110/Owenalondrig												19.23	20.57	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/Finglas (Camp)												0.00	0.00	1
117/Lee (Kerry)				0.68			0.69					0.00	0.51	4
128/Shan. Old M.Ch.							5.50*†	18.25*†	35.68			28.82	32.25	2
133/Doonbeg				17.39		16.14*	18.77					18.82	16.81	4
143/Aughyvackeen	1.00						1.70					2.28	1.66	3
144/Aille												0.00	0.00	1
155/Screeb							10.70					11.56	11.13	2
163/Owenglin											29.86*	28.56	20.06	2
168/Erriff	20.86	24.45	27.45	24.90	28.52	21.72	13.69	22.81	22.25	31.95	40.49	37.18	30.93	5
171/Carrownisky		20.60	18.22				4.25*		15.24			28.41	20.15	5
194/Cloonaghmore	22.27	17.32	15.02				5.07*	14.63				7.52	15.35	5
198/Leafony					1.73					0.67*		0.00	3.86	4
203/Garvogue (Bonnet)	7.08	18.54									19.53	16.37	14.57	5
208/Duff							18.05	20.34				8.57	18.14	5
210/Erne	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
212/Ballintra			13.40	19.82					13.31			1.72	11.70	5
213/Laghy			14.97	11.02					8.56			4.89	9.60	5

Code/River	Fry Year												Most recent 5 surveys	
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Index	# Surveys Inc.
217/Bungosteen	27.91		19.23				13.17		13.41			3.08	15.36	5
220/Owenwee (Yellow)		20.31	21.05						14.20			5.76	15.65	5
222/Owentocker												27.13	23.59	2
223/Owenea								33.94				43.19	38.57	2
225/Gweebarra												19.28	19.28	1
235/Tullaghobegly						0.00*						4.45	7.28	3
236/Ray	14.89			17.31		3.71*				6.65		9.35	11.11	5
248/Leannan	12.82	22.19	19.51	20.87	15.27	15.05*	18.66	20.11	21.33	20.50	17.72	13.45	18.62	5
252/Mill (Letterkenny)					0.00						0.00	0.00	0.00	4
253/Crana						6.00*	6.93*	16.38				31.74	21.28	3
257/Straid					0.00						0.00	0.00	0.05	4
258/Donagh					0.68						6.79	0.82	3.13	4
259/Glennagannon	4.05		7.13									1.26	7.27	4

* surveys not completed, † sub-catchment surveys.

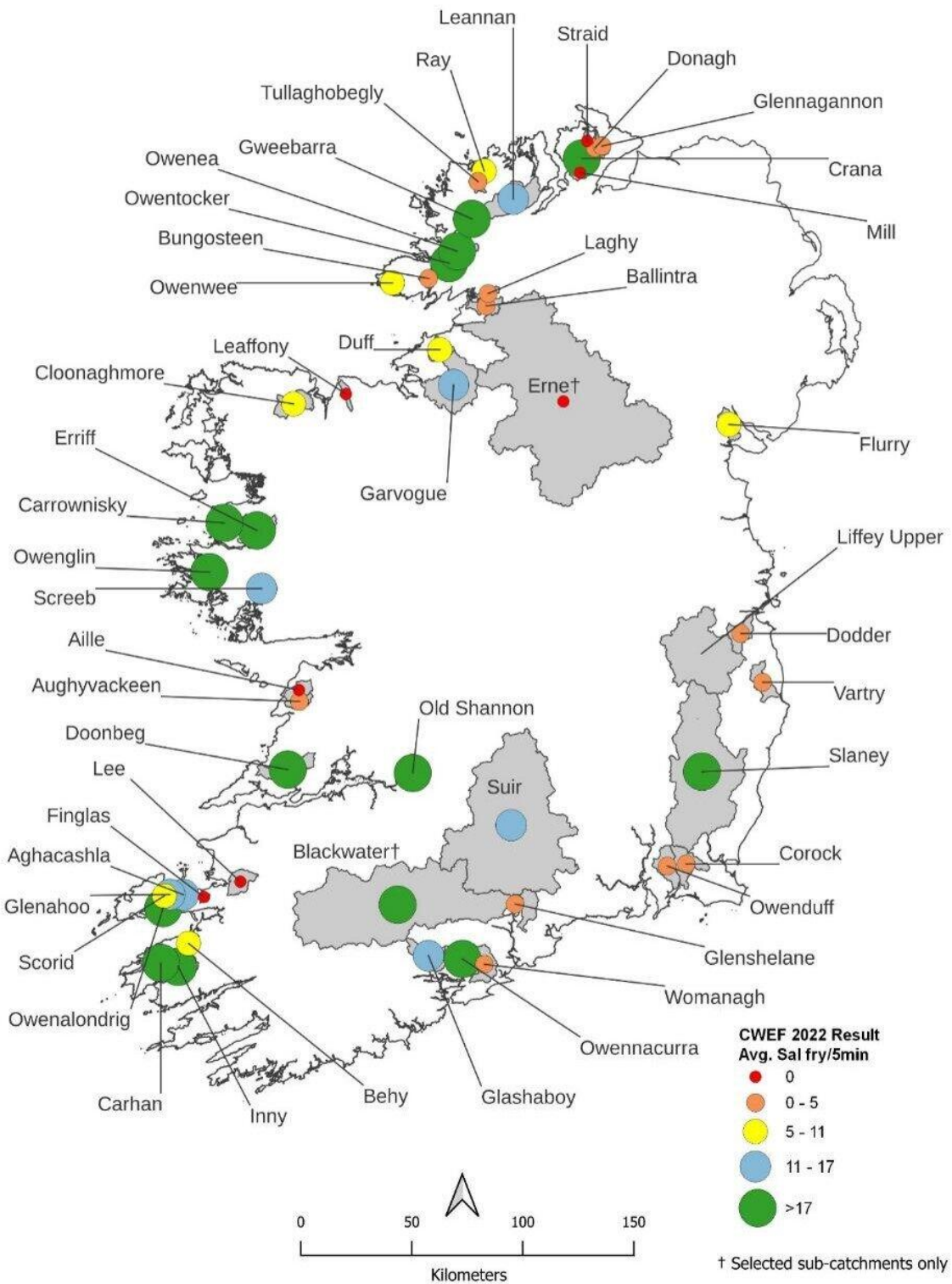


Figure 2 Mean salmon fry per five-minutes timed electrofishing for rivers sampled in 2022.

2.3. Results 2007 to 2022

From 2007 to 2022 a total of 164 separate catchments or sub-catchments have been sampled. Repeat surveys have been carried out in multiple catchments to monitor fry levels for management and to fulfil other obligations (e.g. Article 17 reporting under the EU Habitats Directive). Over this period a total of 583 full or partial catchment surveys amounting to 13359 individual site surveys have been conducted nationally. 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 datasets and reduces the potential of an extreme 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 2022 for all catchment surveyed are presented in Appendix C.

Data in Figure 3 presents the CWF annual mean abundances of salmon fry in 149 discrete catchments where electrofishing results are available. Thirty-one 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.

A catchment-wide salmon fry average for rivers electrofished from 2007 to 2022 are presented in Figure 3 and Figure 4.

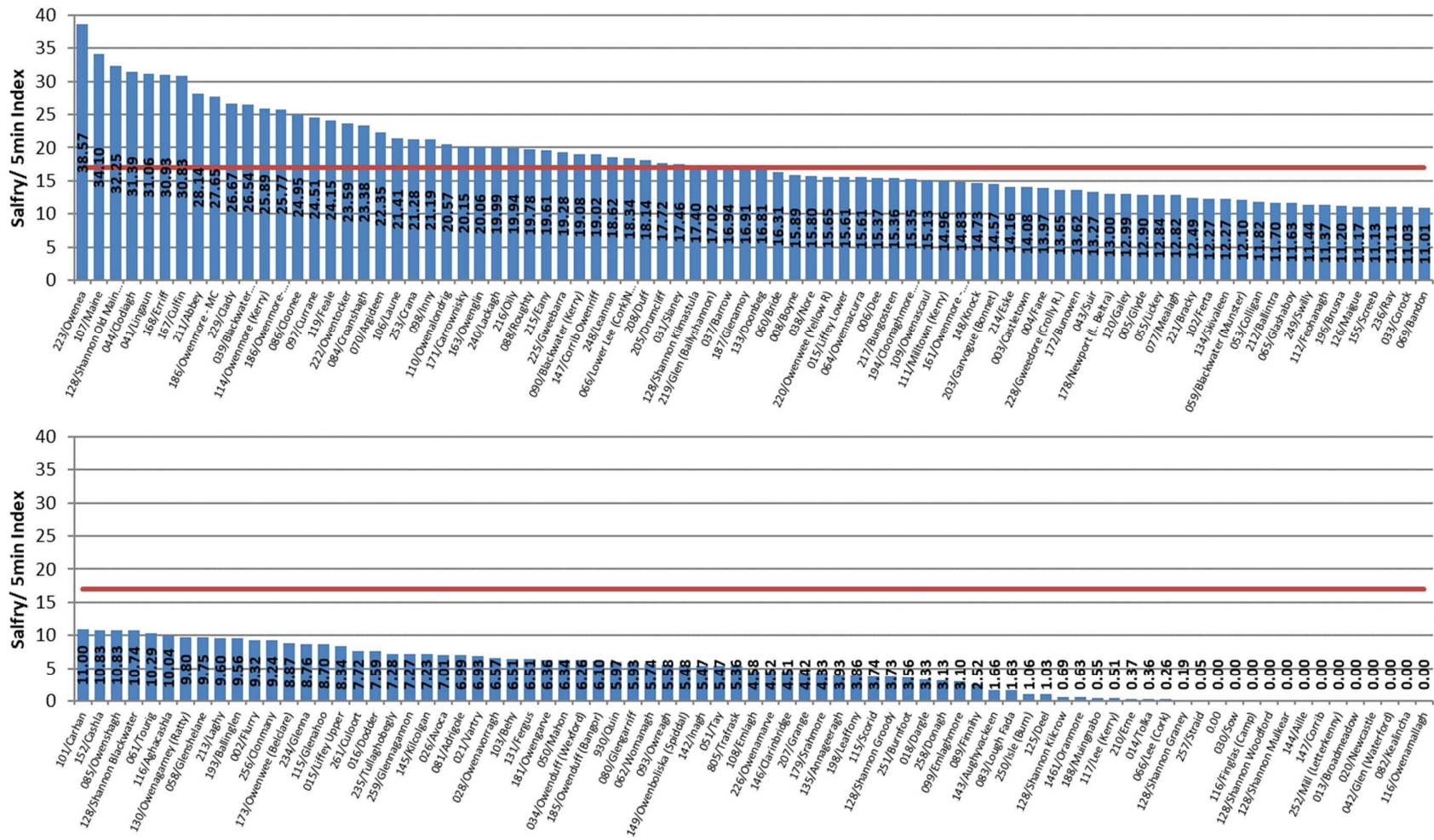


Figure 3 Current CWF index (mean salmon fry per 5 minutes) for all discrete catchments surveyed to date (red line indicates CWF threshold value to advise catch and release-only angling in systems below conservation limit).

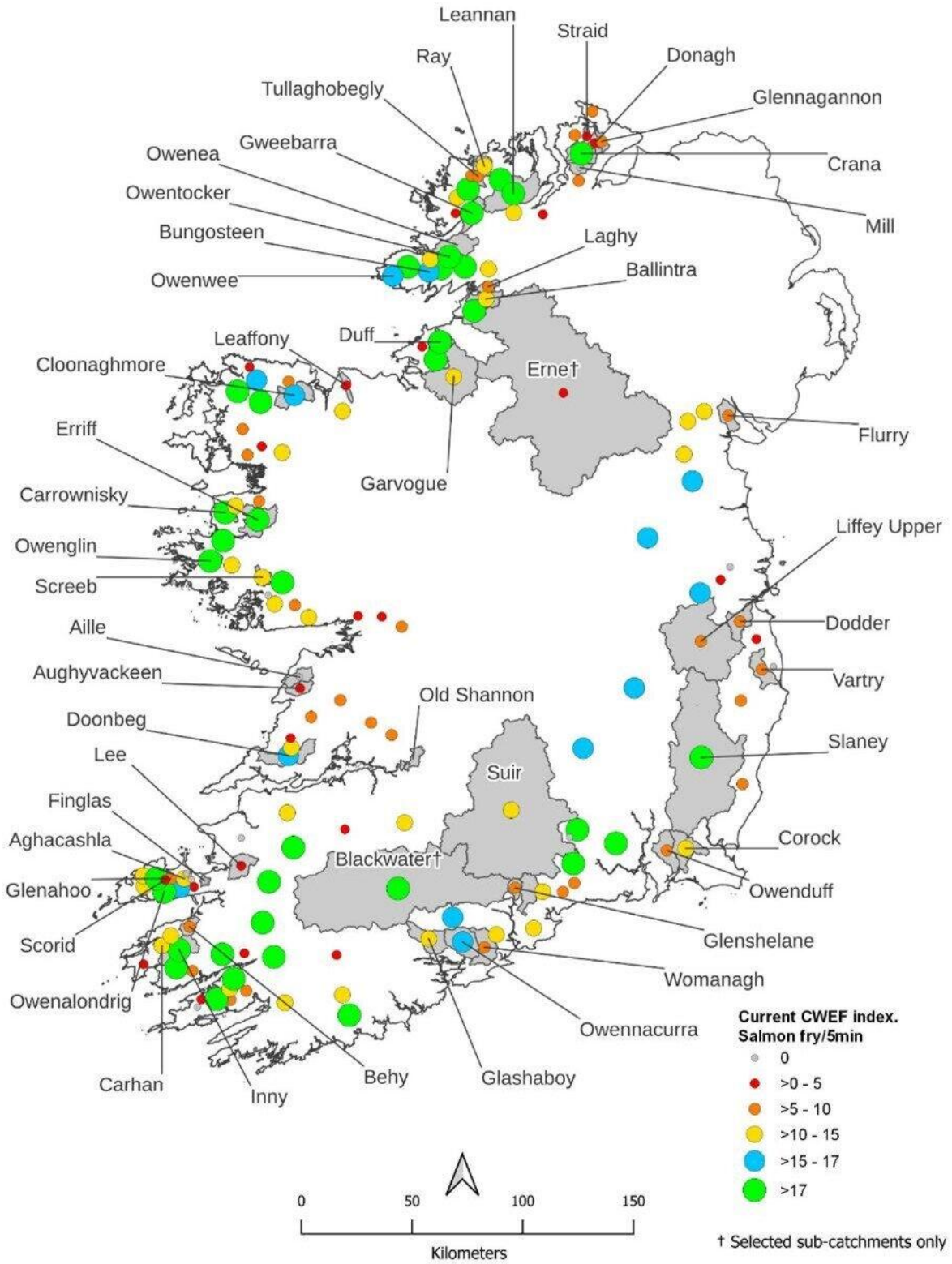


Figure 4 Current CWF index values for all discrete catchments surveyed to date.

3. Use of telemetry (PIT tagging) to inform the development of salmon stock assessment metrics

Telemetry is a technology that can be used to track fish in the aquatic environment. Many different options exist to tag fish which is dependent on the species management requirements and the habitat type in which the species occurs. For salmon, the marine phase is often the focus of recent research and management studies given that considerable losses occur at sea resulting in a notable decline in smolt to adult survival rates in recent decades. The salmon smolt to adult return rate is widely used for many scientific assessments of salmon (e.g. ICES) to inform fisheries management. Reduced survival in this phase is recognised as a major factor in reduced population size and understanding the reason for these losses is driving several marine phase research programmes. In Ireland, traditionally, such monitoring programmes have employed coded wire tagging. These survival figures rely on retrieving tags from rod caught or a limited number of commercially caught fish and also recovery of tags from any broodstock captured in traps. Given that adult returns are low, reliance on retrieving tags from returning fish, where capture rates are also low (10-20% of the population for rod caught fish), may compromise survival assessments particularly in years where rod catch is low.

Salmon typically spend one to two years at sea. Tags which require a battery to power its function tend to be large due to the battery life required to operate such a tag for this length of time. PIT (Passive Integrated Transponder) tags, which are miniature encased microchips, offer an ideal solution to the technological limitation imposed by large battery size in other electronic tags. Providing a lifetime barcode for the tagged animal, a PIT tag can be easily inserted into the body cavity of a small fish (or mounted in an external floy tag to affix to a larger fish).

A PIT tag is a uniquely coded microchip (typically about 10 mm in length and 2 mm in diameter). This tag type is available in different sizes and can be used to tag fish of all sizes. For fish studies a PIT tag scanner (antenna) is permanently positioned in or close to a bottleneck in a river system (often a fish counter location) and the scanner will read the tag code of any tagged fish passing within its range. A decoder linked to the antenna stores the tag number and the date and time of this event.

In order to enhance smolt to adult survival data for wild salmon in Irish rivers a PIT tag recording system was installed in the River Erriff (National Salmonid Index Catchment) 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.

In its simplest application, by determining the number of PIT-tagged adult salmon passing upstream through the counter relative to the total number of smolt PIT tagged initially, a smolt to adult survival index can be calculated. The basis for these types of studies is a variation of a mark-recapture application. IFI has developed a salmon smolt tagging programme based on this principle and funding from the SSTRCPF was used to install the infrastructure in February 2016. Results aim to inform understanding of salmon life history and complement ongoing short-term research work in the system based on acoustic tagging of outgoing salmon smolts.

Ultimately these data may contribute to refining adult salmon modelling at TEGOS and ICES because it is based on wild salmon which are returning to a research station with high quality trapping and monitoring infrastructure. Further understanding of potential pressures/threats/losses from various factors (e.g. sea lice emanating from an aquaculture facility in Killary Harbour, predators etc) aim to be further elucidated from this work. It is envisaged that this study will necessitate a long-term tagging programme to build up a meaningful marine survival index.

3.1. PIT tagging projects to monitor marine survival

Following installation of the Biomark customised thin-walled shielded antenna and associated data logger in February 2016 (Figure 5) at the upstream fish trap in the River Erriff, a salmon smolt tagging project was initiated. Wild salmon smolts were captured and PIT tagged (Biomark HPT/APT 12 Pre-loaded) annually in spring since 2016 at two main sites on the system: 1) at Tawnyard trap located on the Black River tributary; and 2) on the main channel of the Erriff using a screw trap. A corresponding programme also commenced in the Corrib system in 2017, with smolts tagged at the Galway weir in advance of the installation of a similar PIT tag reader there in the Denil fish pass and associated submersible PIT tag antennae. The number of salmon smolts tagged in both systems and associated lengths data are presented in Table 2.

3.2. Smolt to adult salmon returns to the Erriff and Corrib systems

In 2022, a total of 19 PIT tagged adult salmon returned to the Erriff representing a provisional marine survival of 1.5% for the cohort tagged in 2021. Any multi-sea-winter fish which will return in 2023 will have to be considered when finalising this estimate. For salmon PIT tagged in 2017, 2018, 2019 and 2020 marine survival was 2%, 3.8%, 3.2% 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. In addition, any multi-sea-winter fish which will return in 2023 have to be considered. 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.

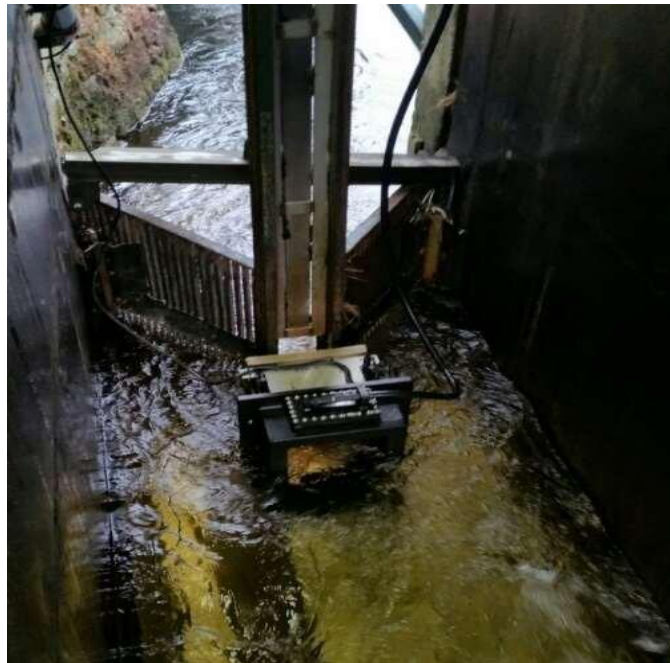


Figure 5 Erriff upstream trap with VAKI Riverwatcher counter and Biomark antenna (dark rectangular unit).

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
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

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	19	1.5
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. 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 populations 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 readings. Combined with data on time of entry into the system, sex ratio and fecundity, which can be collected from any killed fish, the often complex make up 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.

In order to enhance the quality of the existing models and to improve the quality of the scientific advice, particularly for rivers where the stock structure is complicated (e.g. a river has significant spring salmon and a grilse component or other stock components) or has changed, it is important to obtain data on the stock. Run-timing of the different components may influence harvesting options. Sex ratio and fecundity may change in response to the composition of the total population. These data are required for the on-going scientific assessment of salmon fisheries in which IFI supports via the TEGOS.s.

Since 2019 IFI has undertaken a citizen science project whereby anglers are encouraged to collect scales of salmon captured and return them for analysis, including details of length, weight, sex, capture location and details of predation and net marks and lice presence.

4.1. Salmon life history

Salmon scales have been collected from the commercial draft net fisheries, anglers and from research projects building up a scale collection for analysis. To date the collection consists of scales of 21,363 fish from 68 fisheries around the country. A sample of scales of these fish has been read.

Of the 3,421 fish for which age has been determined, 1,126 of fish were MSW fish, 2,176 were grilse; 119 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 4.85 kg, PSG had an average

weight of 4.66kg and grilse an average weight of 2.35 kg (Table 4). Most of the grilse were below 4kg and all MSW and PSG were 4kg or above (Figure 6). The relative occurrence of fish life history types in samples received from different catchments 1982-2022 is presented in Figure 7. MSW fish numbers peak earlier in the year than grilse and PSG (Figure 8).

Table 4 Summary of weights (kg) of fish for which age has been determined by scale reading 1982-2022.

Fish Type	Mean (kg)	SD	n
Grilse	2.35	0.81	1775
MSW	4.85	1.51	1035
PSG	4.66	1.90	89
Total			2899

4.2. Size and age profile of 2022 samples

Scale samples received in 2022 came from 11 different catchments and were from fish captured from 2019 to 2022. Overall, 29 samples were received (Table 5). All scales were read to determine life history. Of those read 12 (41%) were grilse, 16 (55%) MSW and 1 (3%) was a kelt. The size of fish ranged from a 1kg grilse to a 5.6 kg (12.3 lbs) MSW both caught on the Bandon river in June 2022.

Table 5 Summary of scales received 2022 from the citizen science project.

Catchment	Grilse	MSW	Kelt	Total
Bandon	1	1		2
Blackwater (Munster)	2			2
Clady	2			2
Corrib	1	1		2
Currane			1	1
Drowes		8		8
Ilen	1			1
Laune		2		2
Leannan	1			1
Moy	2	4		6
Maine	2			2
Total	12	16	1	29

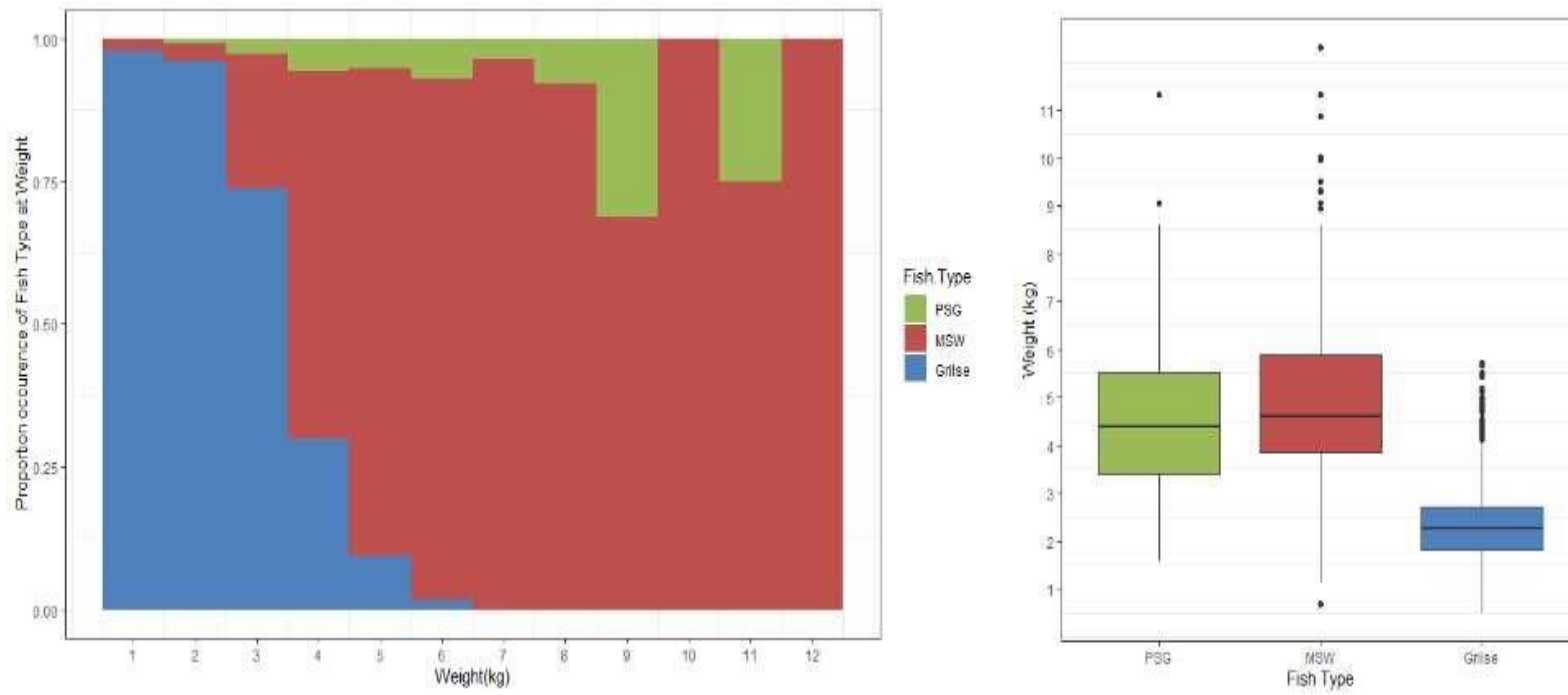


Figure 6 Left panel: Occurrence of fish life history by weight (kg) to end 2021. Right panel: Boxplots of weights (kg) of individual fish of different types (n: grilse-1775, MSW-1035, PSG-89).

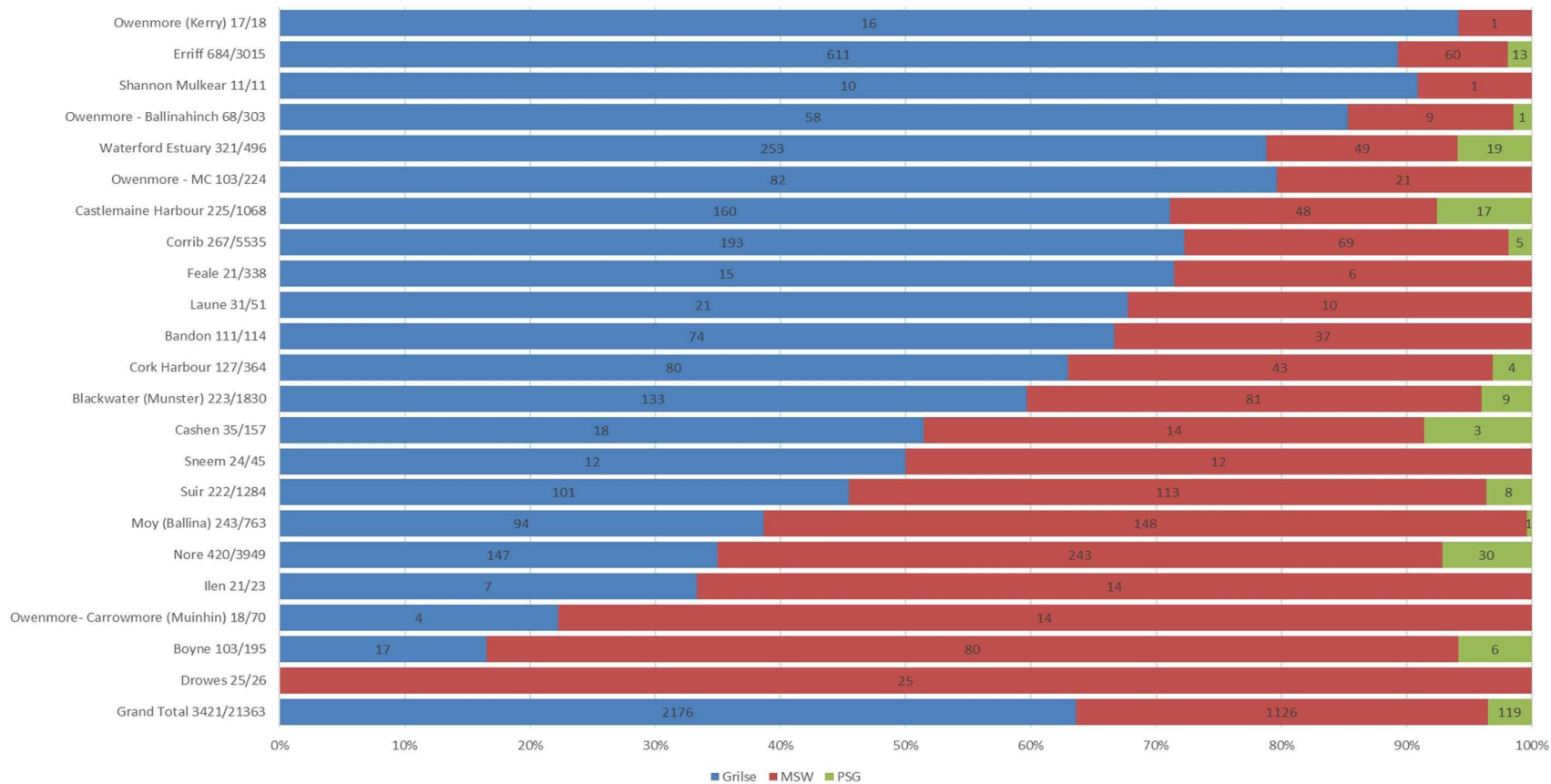


Figure 7 Relative occurrence of fish life history in samples received from different catchments 1982-2022 (Only rivers with >10 fish read are displayed) (Number of scales read/number of scales in database).

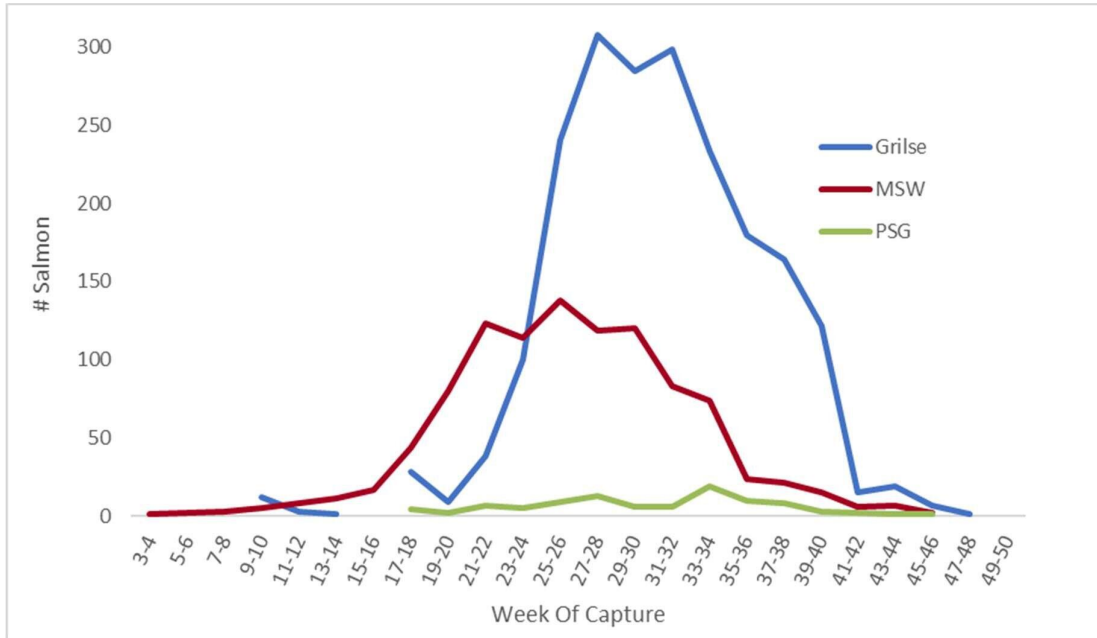


Figure 8 Life history of fish by week of capture. MSW fish are more abundant earlier in the year, grilse and PSG are more abundant later in the year (all years, all rivers, grouped into 2 week periods) (n = 2067 grilse, 1019 MSW & 96 PSG).



Figure 9 Left panel: 5.6kg (12.3lb) multi sea-winter salmon from the Currane system caught 24/6/22. Right panel: 2.3 kg (5lb) grilse caught on the River Maine on 16/6/2022.

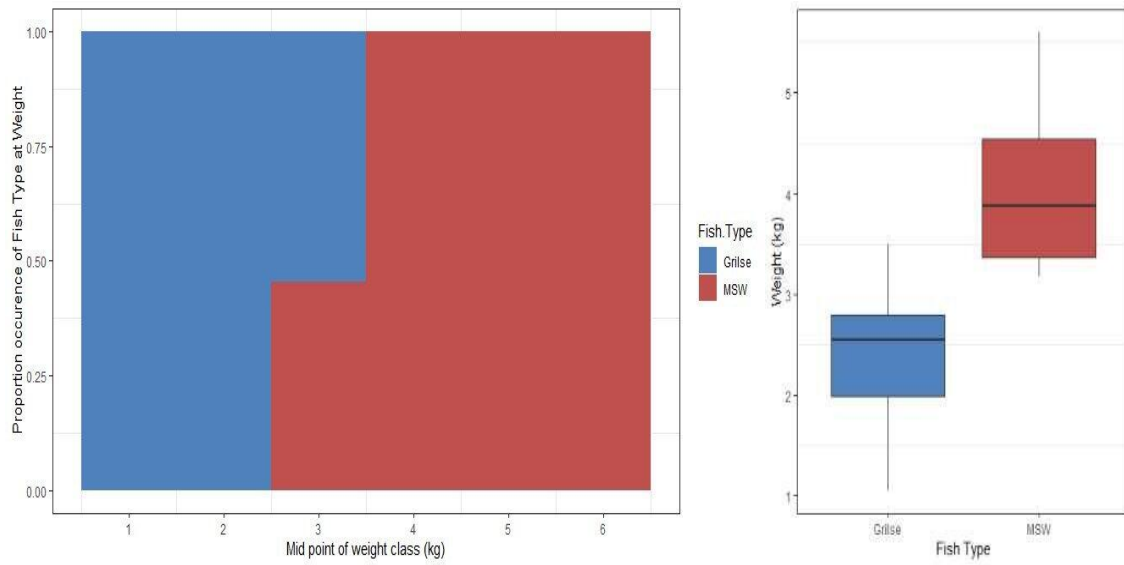


Figure 10 Left panel: Occurrence of fish life history by weight (kg) from samples returned in 2022. Right panel: Boxplots of weights (kg) of individual fish of different types from samples returned in 2022 (n= 12 grilse, 16 MSW).

5. References

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6. Appendices

A Catchment-wide electrofishing

Data are presented for rivers electrofished in each River Basin District in 2022. Results of any previous catchment-wide electrofishing surveys undertaken over the 2014-2022 period are also shown (data from 2007-2022 is presented in Appendix B). Data is presented on the current CWF index and the number of surveys considered in the index calculation.

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 on-going catchment-wide electrofishing surveys. These are presented in Table A.1. At present no rivers are meeting the threshold index of 17 salmon fry/5min. A survey on the Flurry was completed in 2022.

Table A.1: Catchment-wide electrofishing data for the Neagh Bann International River Basin District 2014-2022 showing the average salmon fry captured /5min for each year surveyed. Also shown is the surveys' mean capture rate, surveys prior to 2014 are included in Appendix C.

Code/River	Survey Year										Current Index	# Annual Surveys Considered
	2014	2015	2016	2017	2018	2019	2020	2021	2022			
002/Flurry		17.15					37.5*	1.35*	5.58		9.32	3
003/Castletown	13.59					5.58	1.87				14.08	5
004/Fane		8.94*		0.5*	3.65						13.97	3
005/Glyde		5.19				4.02		6.58			12.90	5
006/Dee		10.51				4.18*	7.59				15.37	5

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

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

* Incomplete surveys not included in calculation of current index.

† Sub-catchment surveys.

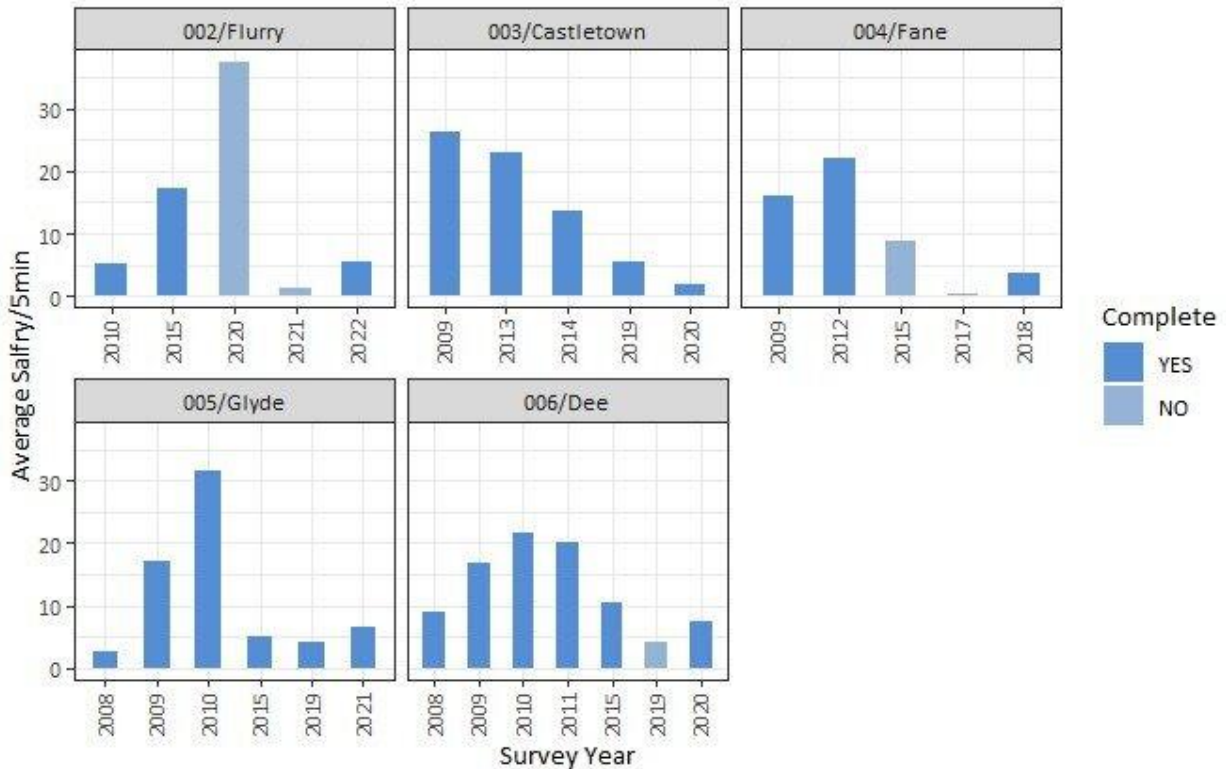


Figure A.1: Summary of CWF results in Neagh Bann international River basin district 2007-2022

A.1.1 Flurry River

IFI Salmon Catchment #: 2
2022 survey dates: 21/9/2022
Mean Salmon Fry/5 min (2022): 5.58 fry/5min
CWEF Index: 9.32 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout
 European Eel
 Salmon

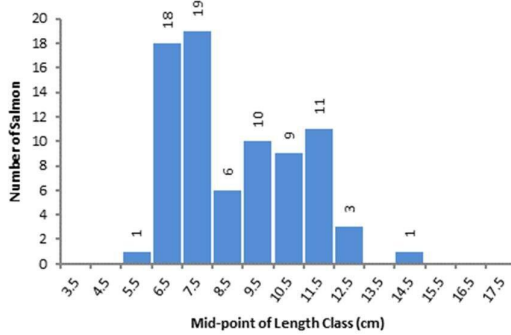


Figure A.1.1.1: Length distribution of salmon captured in 2022 CWEF survey on the Flurry.

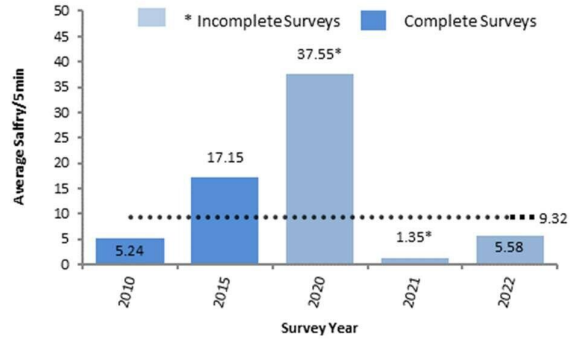


Figure A.1.1.2: Comparison of mean salmon fry/5min for all surveys on the Flurry to 2022.

The survey this year consisted of 9 sites fished on the 21st of September. Salmon fry (0+) were found at 5 sites, the highest numbers were at site 1 where 18 fry were observed. The modal length of 0+ salmon was 7.5 cm. All 9 sites were included in the analysis; the mean catch at these sites was 5.58 salmon fry/5min. Highest abundance was observed in the lower stretches.

Table A.1.1: Site specific results of CWEF on the Flurry catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	J 08150 09867	3	1	2	18	Include	2.30	20.70
002	J 08449 10548	3	1	10	12	Include	10.91	13.09
003	J 08619 11277	3	2	6	0	Include	8.00	0.00
004	J 08699 12448	3	2	4	0	Include	5.00	0.00
005	J 08197 14360	3	2	2	7	Include	2.44	8.56
006	J 08038 15411	3	1	6	2	Include	6.00	2.00
007	J 07805 16020	3	3	0	0	Include	0.00	0.00
008	J 07496 17002	3	2	2	0	Include	2.00	0.00
010	J 08406 10853	3	1	12	5	Include	14.12	5.88

Conclusion

The Flurry had a salmon abundance of 5.58 salfry/5min in 2022. 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 17 salmon fry threshold.



Map A.1.1: Showing salmon fry/5min values and locations of surveys on the Flurry River in 2022.

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. These are presented in Table A.2. At present no rivers are meeting the threshold index of 17 salmon fry per 5min. Surveys of the Upper Liffey, Dodder and the Vartry rivers were undertaken in 2022.

Table A.2: Catchment-wide electrofishing data for the Eastern River Basin District 2014-2022 showing the average salmon fry captured /5min for each year surveyed. Also shown is the surveys' mean capture rate, surveys prior to 2014 are included in Appendix C.

Code/River	Survey Year										Current Index	# Annual Surveys Considered
	2014	2015	2016	2017	2018	2019	2020	2021	2022			
008/Boyne	13.21		14.37				14.94				15.89	5
013/Brdmeadw.											0.00	1
014/Tolka					0.00						0.36	3
015/Liffey Lwr.			6.75		16.56						15.61	5
015/Liffey Uppr.			2.63*		1.00*			1.50*		2.11	8.34	5
016/Dodder										1.25	7.59	2
018/Dargle		4.19					1.03				3.33	5
020/Newcastle					0.00						0.00	1
021/Vartry		5.34	1.75				9.63			2.88	6.93	5
026/Avoca			1.89		8.37*	3.95					7.01	5

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

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

* Incomplete surveys not included in calculation of current index.

† Sub-catchment surveys.

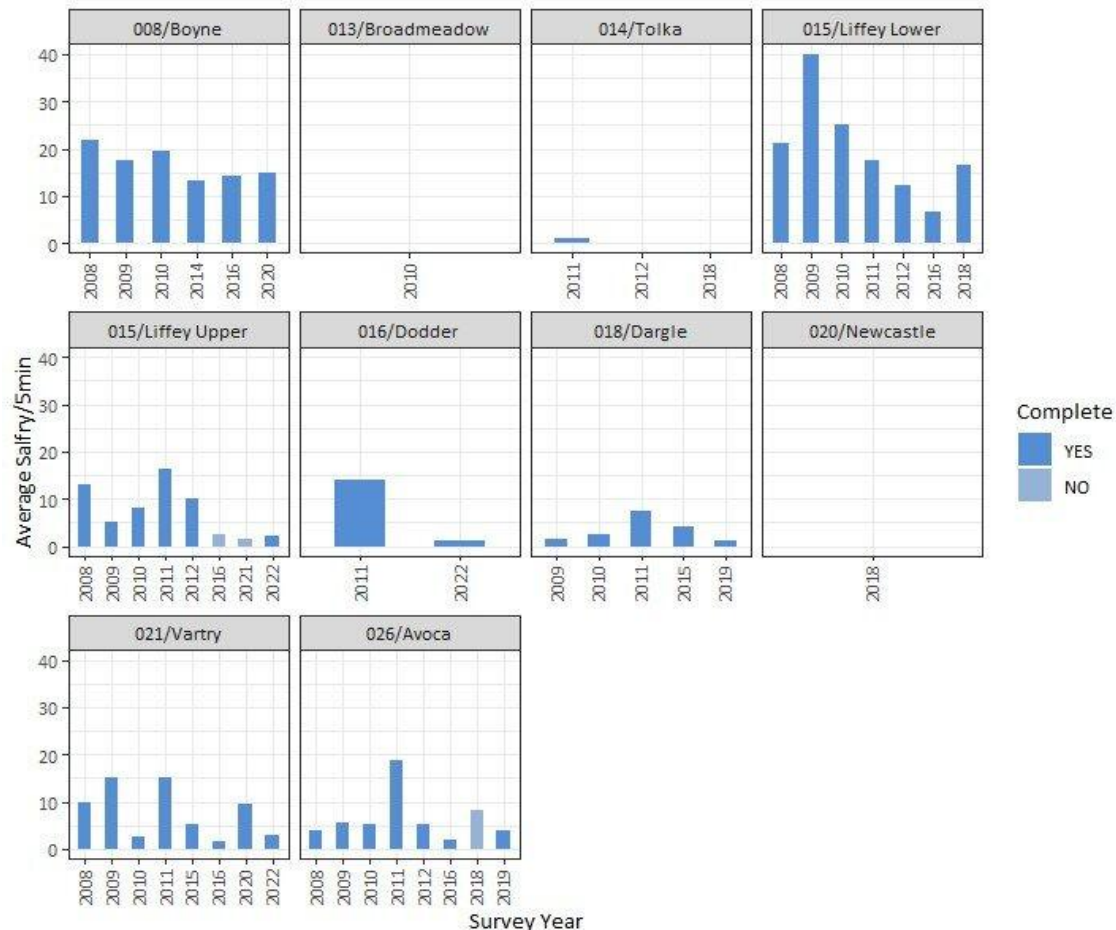


Figure A.2: Summary of CWF results in Eastern River Basin District River basin district 2007-2022.

A.2.1 Upper Liffey Catchment

IFI Salmon Catchment #: 15
2022 survey dates: 10-24/8/2022
Mean Salmon Fry/5 min (2022): 2.11 fry/5min.
CWEF Index: 8.34 fry/5min.

Sampling carried out by:
 Fergal Caffery
 Sean Dempsey
 Jarlath Gallagher
 Sean Muldoon
 Carl Owens

Fish Species Present:
 Brown Trout Salmon
 Crayfish Stoneloach
 European Eel Three-Spined Stickleback
 Minnow

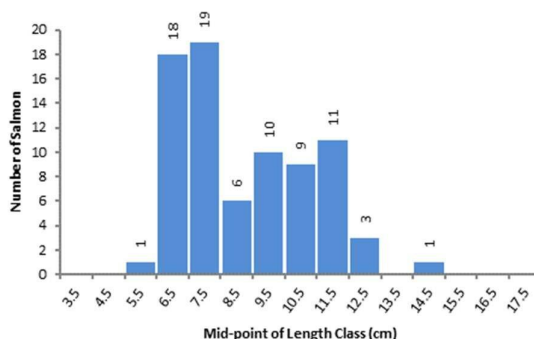


Figure A.2.1.1: Length distribution of salmon captured in 2022 CWEF survey on the Upper Liffey.

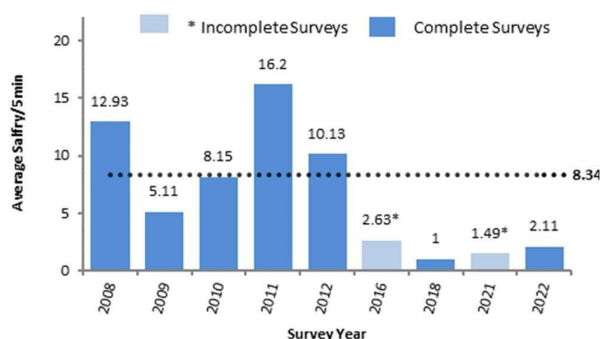


Figure A.2.1.2: Comparison of mean salmon fry/5min for all surveys on the Upper Liffey to 2022.

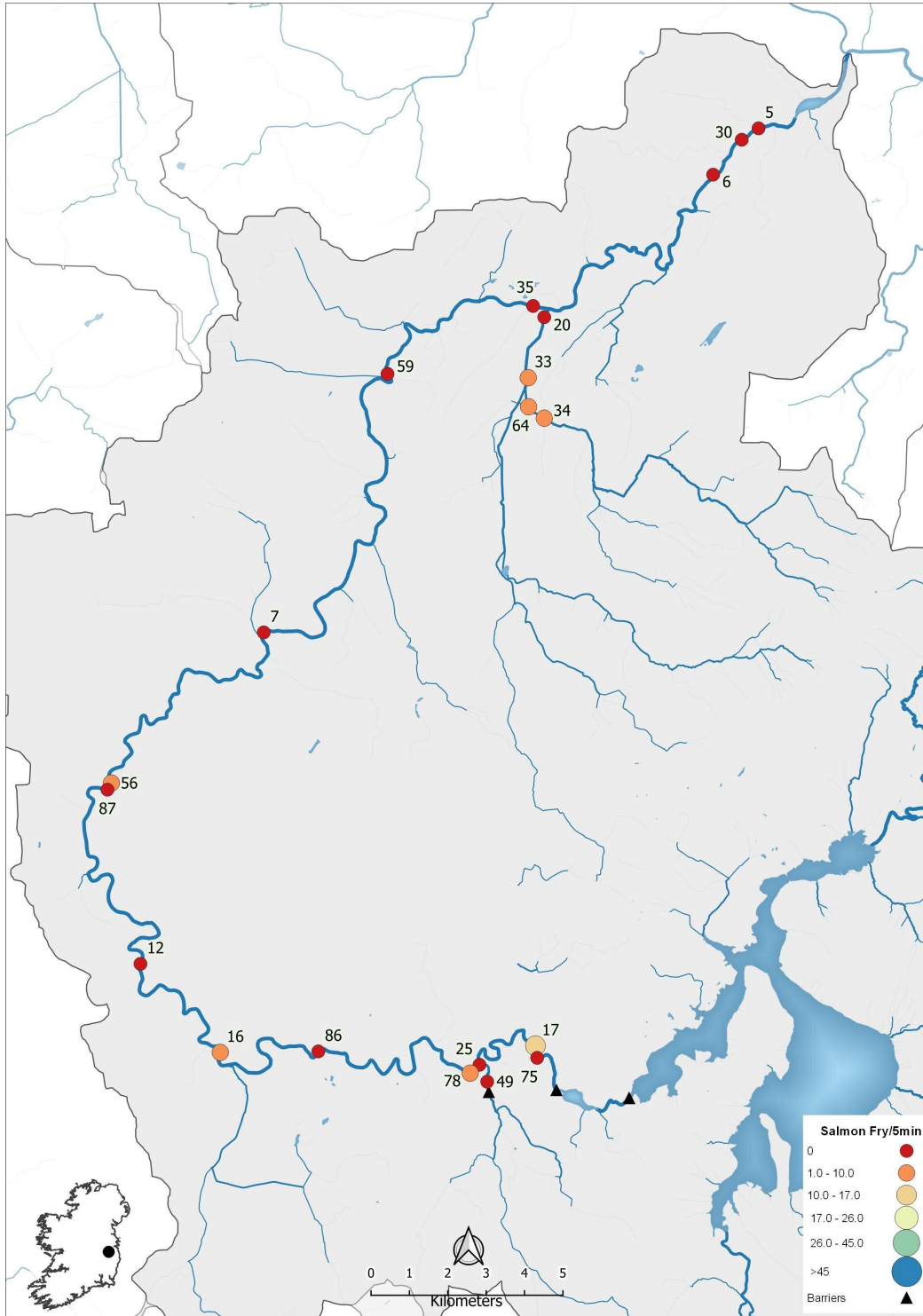
This is the seventh complete CWEF survey of this catchment. The survey took place from the 10th to the 24th of August and consisted of 20 sites. Salmon were found at seven sites; the highest numbers were at site 17 where 17 fry were observed. The modal length of 0+ salmon was 7.5 cm. Eighteen sites were included in the analysis. The mean catch at these sites was 2.11 salmon fry/5min.

Table A.2.1: Site specific results of CWEF on the Upper Liffey in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
005	N 98268 33807	6	3	13	0	Unsuitable Site		
006	N 97084 32606	6	3	3	0	Include	3.00	0.00
007	N 85371 20722	6	2	8	0	Include	10.00	0.00
012	N 82155 12117	6	2	14	0	Include	14.00	0.00
016	N 84236 09820	6	2	2	1	Include	2.00	1.00
017	N 92452 09991	6	1	3	17	Include	3.00	17.00
020	N 92682 28906	5	1	4	0	Include	4.00	0.00
025	N 90993 09497	4	1	3	0	Include	5.00	0.00
030	N 97830 33512	6	3	1	0	Include	1.00	0.00
033	N 92264 27335	5	1	4	6	Include	4.00	6.00
034	N 92683 26283	4	1	9	4	Include	9.00	4.00
035	N 92392 29197	6	3	2	0	Include	2.00	0.00
049	N 91194 09059	4	2	13	0	Include	13.00	0.00
056	N 81398 16813	6	2	8	3	Include	8.00	3.00
059	N 88596 27434	6	3	0	0	Include	0.00	0.00
064	N 92274 26580	4	1	4	1	Include	4.00	1.00
075	N 92497 09677	6	0	0	0	Discontinue Site		
078	N 90753 09281	6	1	9	6	Include	9.00	6.00
086	N 86792 09846	6	2	5	0	Include	10.00	0.00
087	N 81295 16640	6	2	11	0	Include	16.00	0.00

Conclusion

The Upper Liffey had a low salmon abundance of 2.11 sal fry/5min in 2022. Taking the five most recent complete surveys into account this results in a cumulative average of 8.34 salmon fry/5min which is below the 17 salmon fry threshold.



Map A.2.1: Showing salmon fry/5min values and locations of surveys on Upper Liffey in 2022.

A.2.2 Dodder Catchment

IFI Salmon Catchment #: 16
2022 survey dates: 16/8/2022
Mean Salmon Fry/5 min (2022): 1.25 fry/5min.
CWEF Index: 7.59 fry/5min.

Sampling carried out by:
 Fergal Caffery
 Jarlath Gallagher
 Sean Muldoon

Fish Species Present:
 Brown Trout Minnow
 Crayfish Salmon
 European Eel Stoneloach

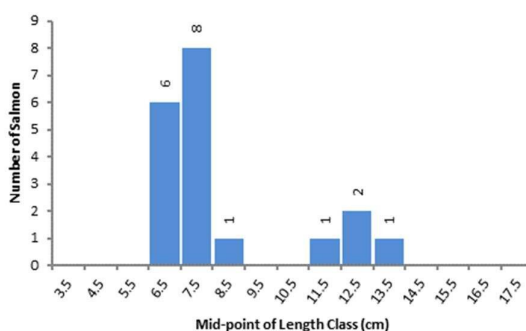


Figure A.2.2.1: Length distribution of salmon captured in 2022 CWEF survey on the Dodder River.

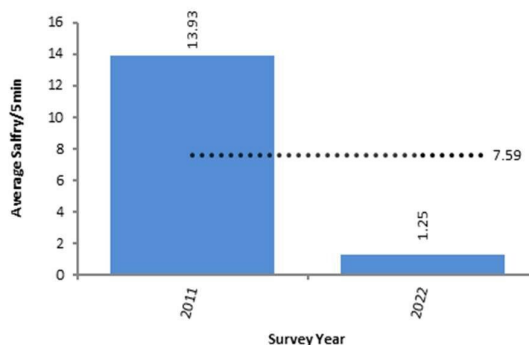


Figure A.2.2.2: Comparison of mean salmon fry/5min for all surveys on the Dodder River to 2022.

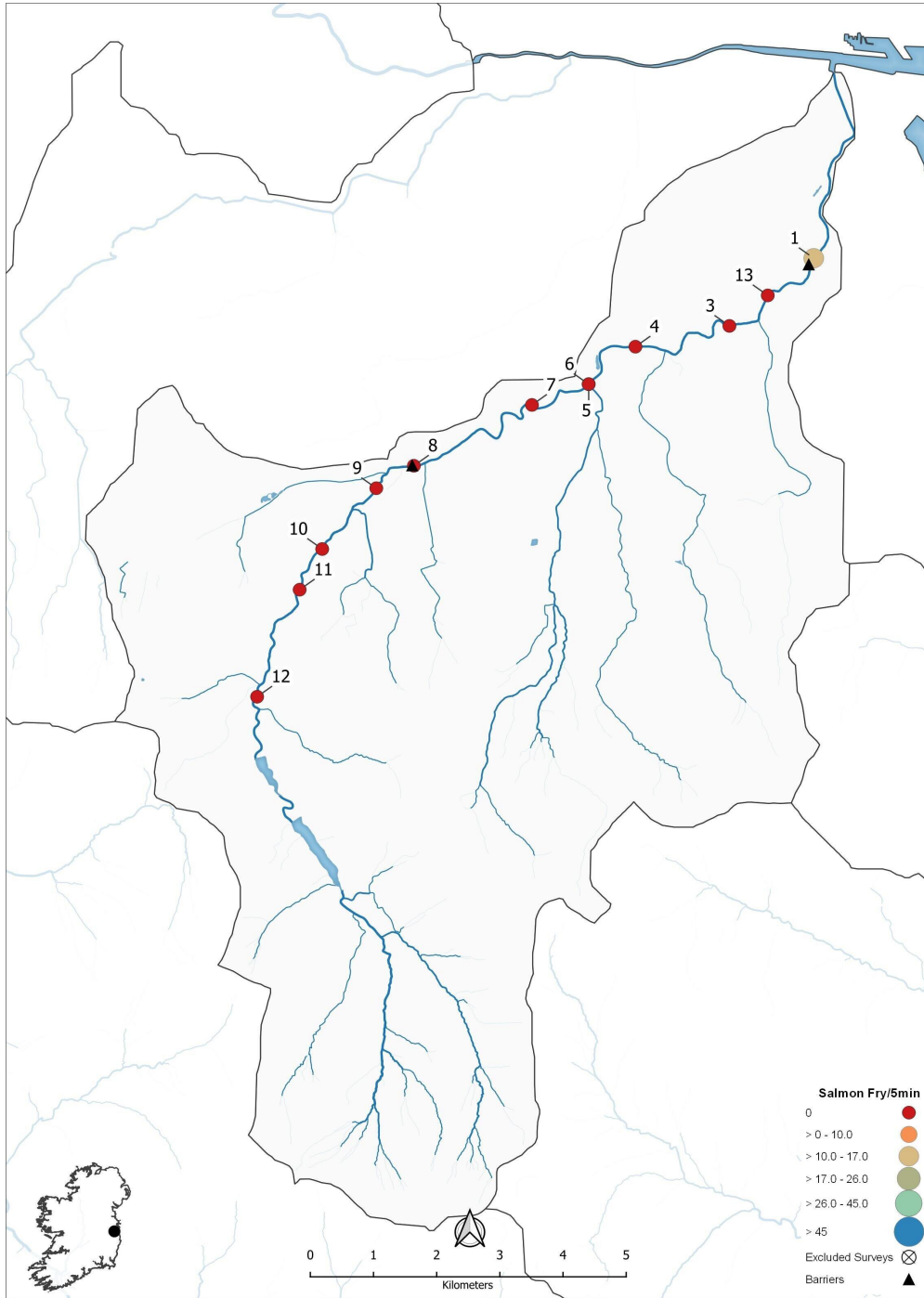
This is the second complete CWEF survey of this catchment, it took place on the 16th of August and consisted of 12 sites, all of which were included in the analysis. Salmon were found at just one site where 15 fry were observed. The modal length of 0+ salmon was 7.5 cm. All sites were included in the analysis. The mean catch at these sites was 1.25 salmon fry/5min. As in the previous survey no salmon were observed above the falls in Clonskeagh.

Table A.2.2: Site specific results of CWEF on the Dodder River in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	O 17649 31072	4	1	10	15	Include	10.00	15.00
003	O 16313 29986	4	2	10	0	Include	10.00	0.00
004	O 14825 29654	4	2	15	0	Include	15.00	0.00
005	O 14086 29054	4	1	15	0	Include	15.00	0.00
006	O 14085 29052	4	1	18	0	Include	18.00	0.00
007	O 13188 28719	4	3	11	0	Include	11.00	0.00
008	O 11318 27745	4	3	19	0	Include	19.00	0.00
009	O 10723 27384	4	3	11	0	Include	11.00	0.00
010	O 09867 26410	4	2	19	0	Include	19.00	0.00
011	O 09509 25757	4	1	11	0	Include	11.00	0.00
012	O 08836 24041	4	2	6	0	Include	6.00	0.00
013	O 16920 30476	4	3	7	0	Include	7.00	0.00

Conclusion

The Dodder had a low salmon abundance of 1.25 sal fry/5min in 2022. Taking the two complete CWEF surveys into account this results in a cumulative average of 7.59 salmon fry/5min which is below the 17 salmon fry threshold.



Map A.2.2: Showing salmon fry/5min values and locations of surveys on Dodder in 2022.

A.2.3 Vartry Catchment

IFI Salmon Catchment #: 21
2022 survey dates: 8-9/8/2022
Mean Salmon Fry/5 min (2022): 2.88 fry/5min.
CWEF Index: 6.93 fry/5min.

Sampling carried out by:
 Sean Dempsey
 Jarlatih Gallagher
 Sean Muldoon
 Carl Owens

Fish Species Present:
 Brown Trout Salmon
 European Eel Stoneloach
 Lamprey sp Three-Spined Stickleback
 Minnow

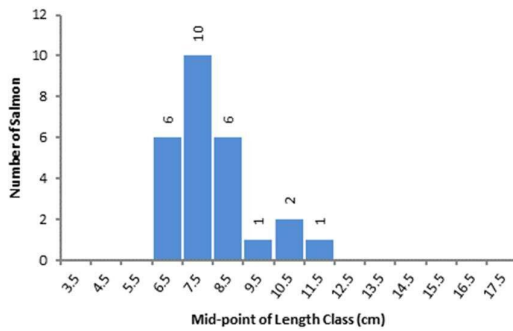


Figure A.2.3.1: Length distribution of salmon captured in 2022 CWEF survey on the Vartry.

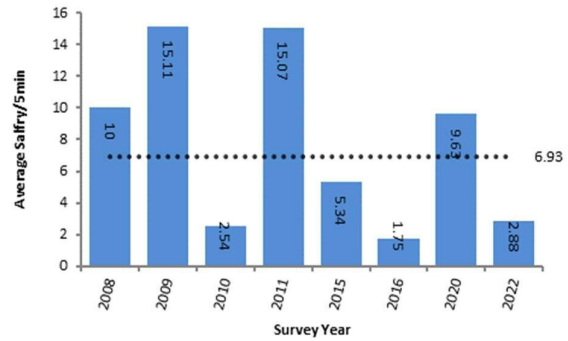


Figure A.2.3.2: Comparison of mean salmon fry/5min for all surveys on the Vartry to 2022.

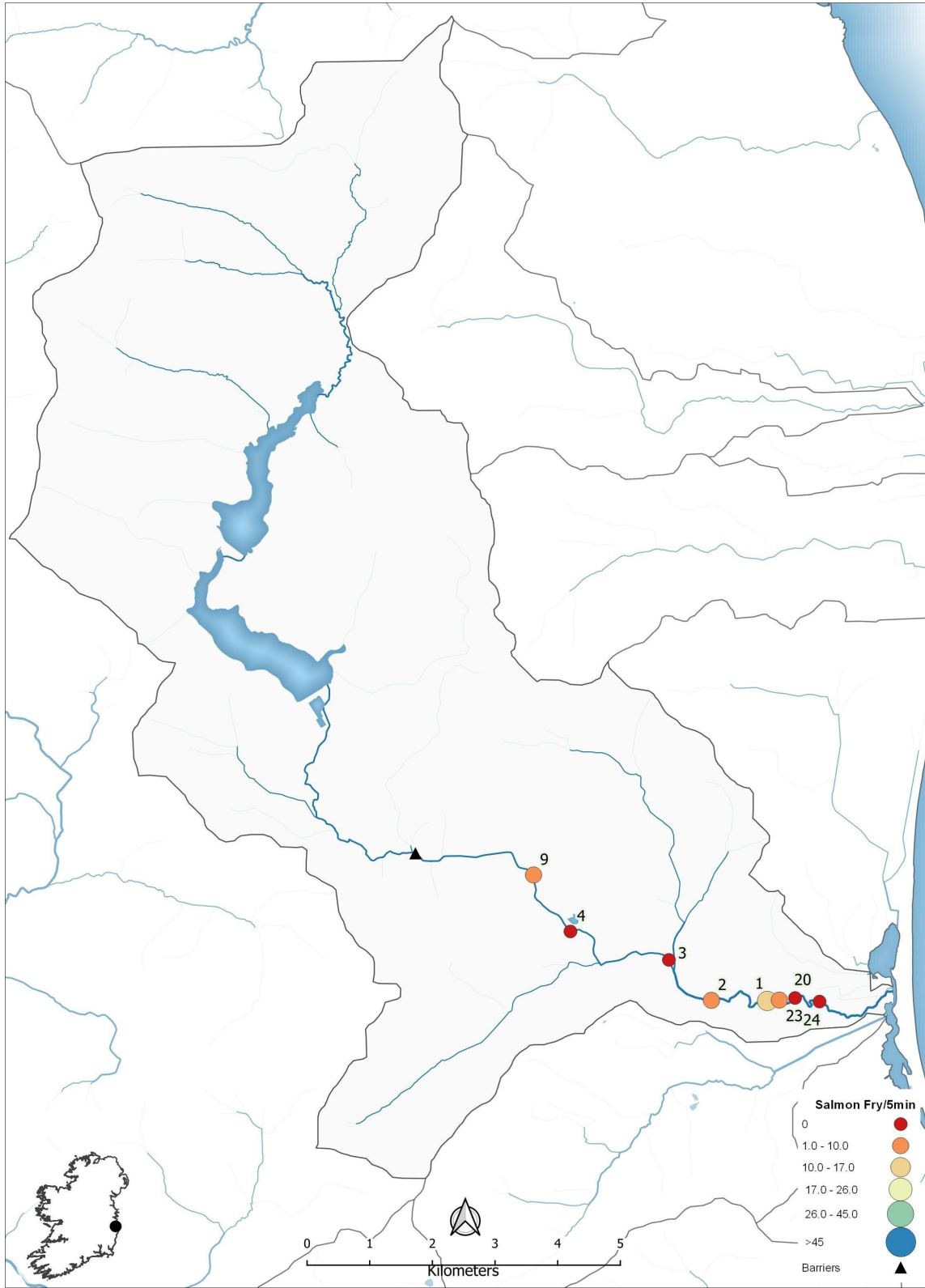
This is the eighth complete CWEF survey of this catchment. The survey took place between the 9th and 10th of August and consisted of 8 sites. Salmon were found at four sites; the highest numbers were at site 1 where 11 fry were observed. The modal length of 0+ salmon was 7.5 cm. All sites were included in the analysis; the mean catch at these sites was 2.88 salmon fry/5min.

Conclusion

The Vartry had a low salmon abundance of 2.88 salfry/5min in 2022. Taking the five most recent complete surveys into account this results in a cumulative average of 6.93 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.2.3: Site specific results of CWEF on the Vartry in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	T 28643 96698	4	1	6	11	Include	6.00	11.00
002	T 27751 96708	4	1	11	7	Include	11.00	7.00
003	T 27073 97363	3	2	17	0	Include	17.00	0.00
004	T 25500 97823	3	3	3	0	Include	3.00	0.00
009	T 24911 98736	3	3	0	2	Include	0.00	2.00
020	T 29086 96746	4	1	11	0	Include	11.00	0.00
023	T 28836 96713	0	1	15	3	Include	15.00	3.00
024	T 29478 96689	0	1	13	0	Include	13.00	0.00



Map A.2.3: Showing salmon fry/5min values and locations of surveys on Vартry in 2022.

A.3 South-Eastern River Basin District

Summary

Since 2007 fourteen rivers have been surveyed in the South-Eastern River Basin District (SERBD). (Table A.3). At present the Slaney, Blackwater, Lingaun and Clodiagh rivers are meeting the threshold of 17 salmon fry/5min. Surveys of the Slaney, Corock, Owenduff and Suir were undertaken in 2022.

Table A.3: Catchment-wide electrofishing data for the South-Eastern River Basin District 2014-2022 showing the average salmon fry captured /5min for each year surveyed. Also surveyed. Also shown is the surveys' mean capture rate, surveys prior to 2014 are included in Appendix C

Code/River	Survey Year										Current Index	# Annual Surveys Considered
	2014	2015	2016	2017	2018	2019	2020	2021	2022			
028/Owenavorrigh		4.61	8.70	14.30	5.75			2.40			6.57	5
031/Slaney	17.68		8.70	14.30		3.45*				28.21	<u>17.46</u>	5
033/Corock			5.47	1.23		6.47†				0.26	11.02	4
034/Owenduff (Wex.)			3.47	0.40		16.0*				1.56	6.40	5
037/Barrow			8.93*	11.54		16.50					16.94	5
038/Nore			11.77			12.7*		16.79			15.80	3
039/Blackwater (Wd.)							26.54				<u>26.54</u>	1
041/Lingaun			14.52				47.60				<u>31.06</u>	2
042/Glen (Wd.)			0.00								0.00	1
043/Suir			9.81						16.73		13.27	2
044/Clodiagh			11.77				51.00				<u>31.39</u>	2
050/Mahon	10.72	3.92				8.60					6.34	4
051/Tay		3.07	1.40					8.67			5.47	4
053/Colligan	9.50		3.62			4.84					11.82	4

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

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

* Incomplete surveys not included in calculation of current index.

† Sub-catchment surveys.

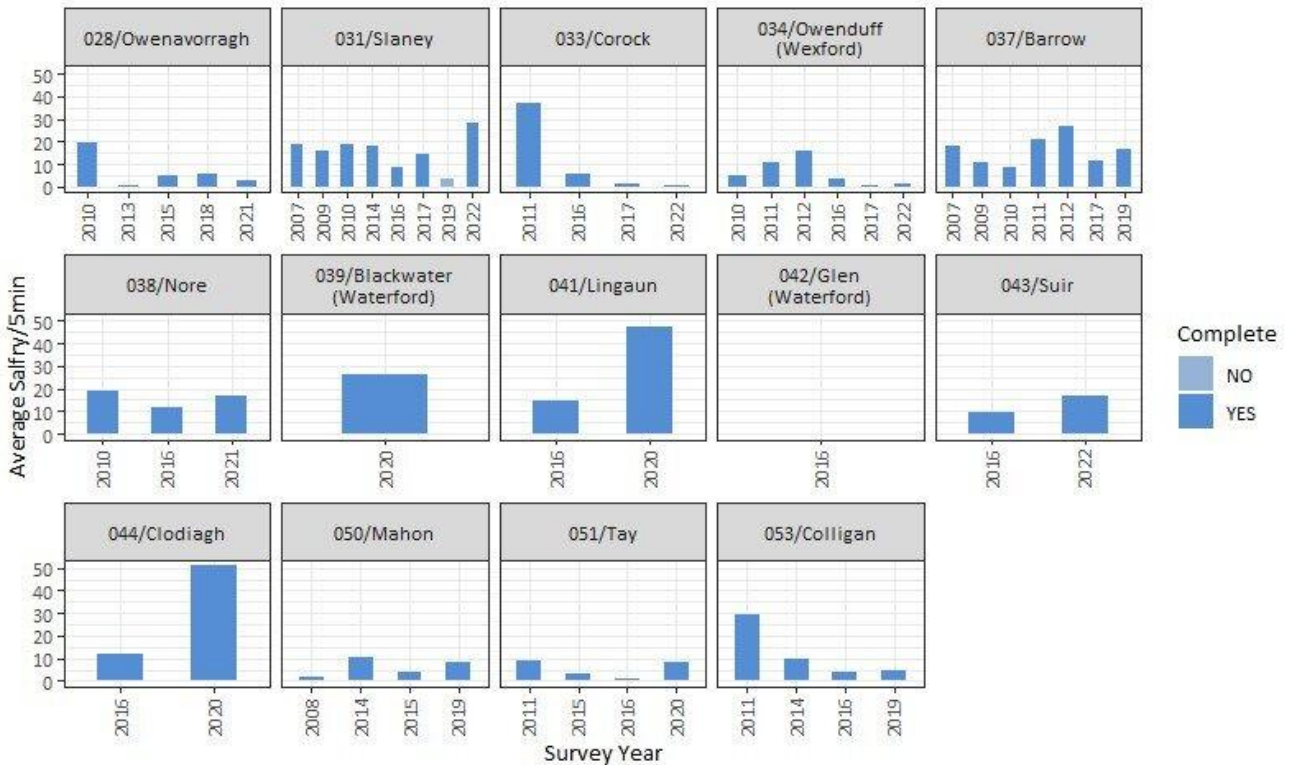


Figure A.3: Summary of CWF results in South-Eastern River Basin District River basin district 2007-2022.

A.3.1 Slaney River

IFI Salmon Catchment #: 31
2022 survey dates: 11-28/7/2022
Mean Salmon Fry/5 min (2022): 28.21 fry/5min.
CWEF Index: 17.46 fry/5min.

Sampling carried out by:
 Dawn Purcell Myles Roban
 Des Murphy Sam Farnan
 John Paul Simpson Stephen Byrne
 Micheal Farnan

Fish Species Present:
 Brown Trout Roach
 European Eel Salmon
 Gudgeon Sea Trout
 Lamprey sp. Stone Loach
 Minnow 3-Spined Stickleback

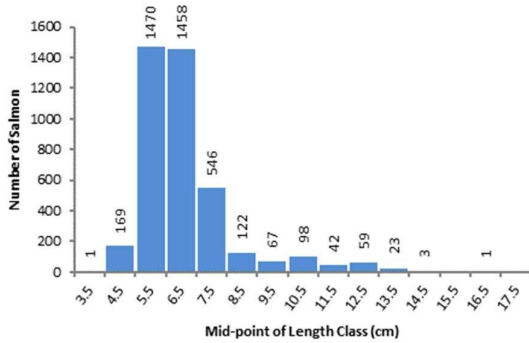


Figure A.3.1.1: Length distribution of salmon captured in 2022 CWEF survey on the Slaney.

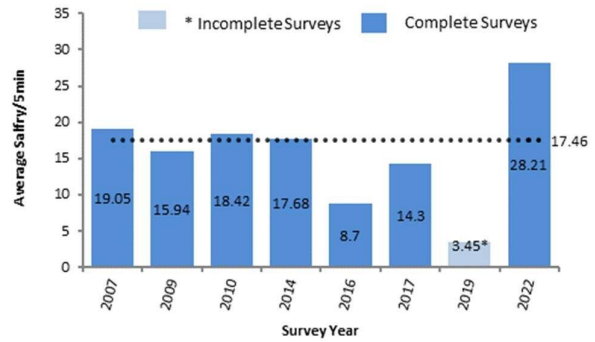


Figure A.3.1.2: Comparison of mean salmon fry/5min for all surveys on the Slaney catchment to 2022.

This is the seventh complete CWEF survey of this catchment it took place from the 11th to 28th of July and consisted of 156 sites. Salmon were found at 151 sites; the highest numbers were at site 126 where 108 fry were observed. The modal length of 0+ salmon was 5.5 cm. 153 sites were included in the analysis; the mean catch at these sites was 28.21 salmon fry/5min.

Table A.3.1: Site specific results of CWEF on the Slaney catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	S 94290 52607	2	3	3	36	Include	3.18	38.20
002	S 87441 90777	4	1	0	17	Include	0.00	24.16
003	S 93646 93769	4	2	1	37	Include	1.15	42.41
004	S 97670 93867	4	1	0	51	Include	0.00	55.64
005	T 06529 52250	4	0	0	12	Include	0.00	15.00
007	S 89647 54844	3	3	2	29	Include	2.14	31.02
008	S 95050 92400	3	2	3	30	Include	3.33	33.26
009	S 98790 95029	3	1	0	37	Include	0.00	42.76
010	S 99475 86456	3	1	0	26	Include	0.00	30.00
011	S 99763 84455	4	1	0	22	Include	0.00	30.00
012	S 99828 83556	4	1	0	9	Include	0.00	12.00
013	S 97754 81403	4	1	0	14	Include	0.00	18.00
014	S 95409 80761	4	1	0	23	Include	0.00	27.00
015	S 94417 80422	4	1	1	22	Include	1.00	22.00
016	S 99608 85859	4	1	0	29	Include	0.00	41.00
017	S 96096 94786	4	1	0	70	Include	0.00	76.62
018	S 94156 94384	4	1	3	70	Include	3.30	77.09
019	S 93369 93120	4	2	0	45	Include	0.00	52.50
020	S 91635 93905	4	1	0	65	Include	0.00	70.34
021	S 91077 57406	6	3	1	28	Include	1.13	31.50
022	S 88928 59755	2	1	6	14	Include	6.90	16.10
023	S 88110 60347	2	1	6	14	Include	6.60	15.40
024	S 89211 59376	2	1	5	12	Include	5.88	14.12

Table A.3.1: Site specific results of CWF on the Slaney catchment in 2022.

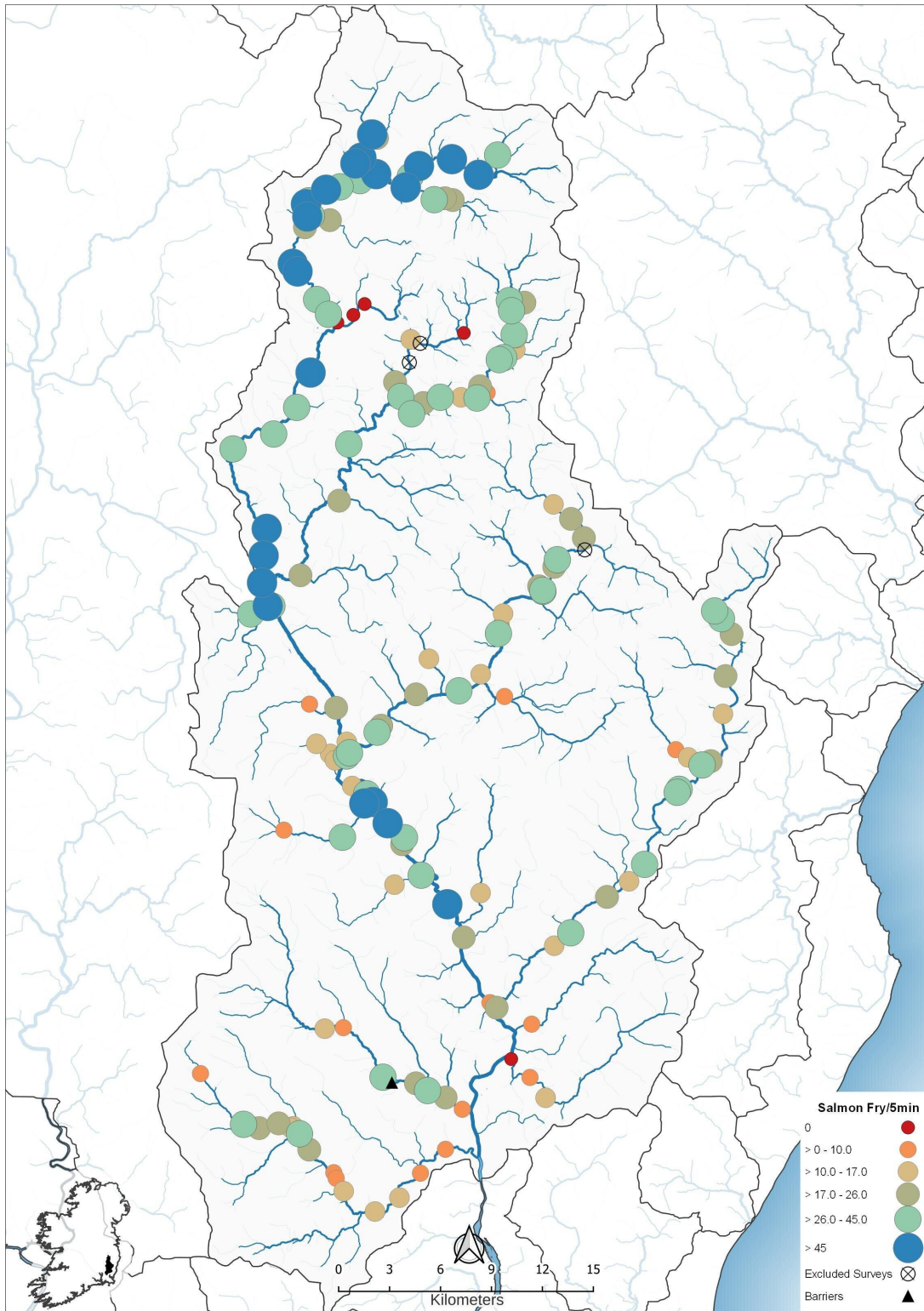
Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
025	S 96144 92379	3	2	1	17	Include	1.24	21.08
026	S 95683 92485	3	2	0	15	Include	0.00	20.00
027	S 93582 93103	3	3	0	17	Include	0.00	20.70
028	T 11567 68172	3	1	0	28	Include	0.00	35.00
029	T 12564 66811	3	1	0	23	Include	0.00	23.00
030	T 12207 64339	3	1	0	21	Include	0.00	26.00
031	T 09279 60004	3	0	0	7	Include	0.00	7.00
032	T 03092 49217	4	0	3	29	Include	3.47	33.53
033	S 90820 94898	3	2	0	26	Include	0.00	29.42
034	S 91251 96522	3	2	5	11	Include	5.71	12.57
035	S 91681 96040	2	3	8	19	Include	9.93	23.59
036	S 90763 94873	3	2	2	54	Include	2.18	58.91
037	S 90413 94533	3	2	6	47	Include	6.76	52.97
038	S 84251 37840	3	3	1	14	Include	1.18	16.55
039	S 84742 37710	3	3	1	19	Include	1.11	21.04
040	S 85887 37990	3	3	2	24	Include	2.13	25.60
041	S 87119 37379	3	3	2	30	Include	2.32	34.77
042	S 87693 36443	4	3	0	23	Include	0.00	25.00
043	S 89723 33996	4	3	1	10	Include	1.18	11.76
044	S 95717 36463	4	3	3	2	Include	3.50	2.33
045	S 89904 60463	6	3	2	12	Include	2.42	14.53
046	S 91936 61416	5	1	2	18	Include	2.40	21.60
047	S 97792 64445	5	1	0	11	Include	0.00	15.00
048	S 98993 67358	5	2	0	8	Include	0.00	8.00
049	T 01389 69267	5	1	0	24	Include	0.00	24.00
050	T 02305 71193	4	1	0	34	Include	0.00	41.00
051	T 03870 72471	3	1	0	19	Include	0.00	25.00
052	T 02119 48454	4	1	0	12	Include	0.00	15.00
053	S 99923 84249	4	1	0	14	Include	0.00	14.00
054	S 94741 65356	3	2	0	11	Include	0.00	11.00
055	S 85247 68469	4	3	3	39	Include	3.63	47.16
056	S 87709 62686	3	3	4	5	Include	4.57	5.71
057	S 93983 63260	5	2	1	15	Include	1.19	17.81
058	T 09362 57490	4	1	3	25	Include	3.54	29.46
059	T 12057 62107	4	1	4	14	Include	4.00	14.00
060	T 10829 59100	3	1	5	31	Include	5.69	35.31
061	T 11342 59329	4	1	0	20	Include	0.00	25.00
062	S 93669 84172	4	2	0	11	Include	0.00	15.00
063	T 00793 43835	3	3	6	4	Include	6.60	4.40
064	S 88129 86523	4	2	1	37	Include	1.20	44.22
065	S 87003 88171	4	1	1	43	Include	1.15	49.27
066	T 05229 51330	4	0	3	16	Include	3.63	19.37
067	S 88827 85649	4	2	1	33	Include	1.10	36.30
068	S 83204 77720	5	3	1	35	Include	1.15	40.25
069	S 85598 78597	5	2	0	38	Include	0.00	42.13
070	S 87771 82215	5	1	3	89	Include	3.24	96.27
071	S 85187 73011	5	3	0	38	Include	0.00	47.72
072	S 85006 71434	5	2	0	69	Include	0.00	76.67
073	S 84912 69835	5	2	5	84	Include	5.39	90.61
074	S 90221 57861	6	3	0	13	Include	0.00	13.00
075	S 92312 55672	6	2	2	47	Include	2.27	53.33
076	S 93301 54818	6	2	2	29	Include	2.18	31.64
077	S 96791 48944	6	3	0	18	Include	0.00	23.00
078	S 92749 81652	4	0	3	18	Include	3.57	21.43
079	S 96799 84548	3	3	9	0	Include	15.00	0.00
080	S 93588 82810	4	2	1	7	Eff <60%		
081	S 86598 37735	3	3	2	9	Include	2.52	11.35
082	S 89283 34754	4	3	2	8	Include	2.00	8.00
083	S 95723 39513	4	1	0	15	Include	0.00	18.00
084	S 94661 39925	4	0	1	26	Include	1.22	31.78
085	S 93979 40349	4	1	0	17	Include	0.00	21.00
086	S 92038 40710	4	1	3	23	Include	3.58	27.42
087	S 96709 38823	4	1	0	7	Include	0.00	9.00
088	S 87500 92138	4	1	0	42	Include	0.00	51.83
089	S 88687 92985	4	2	1	43	Include	1.14	48.83
090	S 91400 96244	3	1	6	44	Include	6.41	47.03
091	S 87578 91406	4	1	0	54	Include	0.00	58.29
092	T 07444 53247	4	1	5	23	Include	6.07	27.93

Table A.3.1: Site specific results of CWF on the Slaney catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
094	T 01614 39499	3	0	5	10	Include	5.67	11.33
095	T 00694 40695	3	2	5	2	Include	5.71	2.29
096	S 93166 54433	6	3	0	21	Include	0.00	24.82
097	S 99588 41779	3	2	2	0	Include	4.00	0.00
098	S 89704 43626	4	2	9	8	Include	10.59	9.41
099	S 98729 44805	4	1	1	22	Include	1.00	22.00
100	S 89353 85159	4	3	4	0	Include	4.57	0.00
101	S 90292 85612	4	3	7	0	Include	8.40	0.00
102	S 90955 86254	4	3	6	0	Include	6.55	0.00
104	S 99108 68019	5	1	0	12	Include	0.00	17.00
105	T 01229 69624	4	1	0	15	Include	0.00	19.00
106	S 96508 63471	5	1	1	22	Include	1.22	26.78
107	S 88910 91195	2	3	11	19	Include	13.33	23.02
108	S 87818 91463	2	3	1	36	Include	1.16	41.76
109	S 98169 81034	4	1	0	1	Include	0.00	1.00
110	T 02079 74451	3	1	0	11	Include	0.00	15.00
111	T 03110 73597	3	1	0	14	Include	0.00	20.00
112	S 91565 32797	4	3	1	11	Include	1.09	12.00
113	S 93007 33617	4	3	0	12	Include	0.00	13.60
114	S 94244 35056	4	3	1	6	Include	1.11	6.63
115	S 97784 51562	3	3	9	11	Include	10.13	12.38
116	S 92712 52052	2	3	7	10	Include	8.17	11.67
117	S 89237 62441	6	3	1	7	Include	1.24	8.65
118	T 00363 86335	2	1	0	20	Include	0.00	20.00
119	S 84581 68128	4	3	14	14	Include	16.40	16.40
120	S 87174 70277	3	1	0	18	Include	0.00	18.00
121	S 86949 80163	5	0	3	27	Include	3.39	30.55
122	S 89276 62469	6	3	0	20	Include	0.00	25.00
123	S 91431 56920	6	2	0	81	Include	0.00	91.01
124	S 89892 59633	6	3	0	26	Include	0.00	32.93
125	S 85496 68466	4	2	2	28	Include	2.41	33.74
126	S 95826 50898	6	2	0	108	Include	0.00	118.90
127	S 86724 88621	4	2	2	41	Include	2.38	48.85
128	S 87659 92334	4	1	0	37	Include	0.00	40.79
129	S 90678 93521	4	3	0	23	Include	0.00	27.74
130	T 10010 59548	3	1	6	14	Include	7.20	16.80
131	T 11969 67721	3	1	5	33	Include	5.92	39.08
132	S 94227 83939	4	3	2	3	Eff <60%		
134	S 93084 80806	4	1	9	30	Include	9.00	30.00
135	S 90063 59820	5	1	0	34	Include	0.00	40.00
136	S 89448 74669	5	2	0	20	Include	0.00	24.00
137	S 90020 78006	5	1	0	32	Include	0.00	36.00
138	S 93718 79786	4	1	0	22	Include	0.00	27.00
139	T 02126 70776	4	1	0	19	Include	0.00	23.00
140	T 03919 71775	4	2	1	3	Eff <60%		
141	S 99147 83095	4	1	1	20	Include	1.52	30.48
142	S 96629 80759	4	1	0	17	Include	0.00	17.00
143	S 98836 66846	5	1	6	33	Include	7.08	38.92
144	S 90936 56835	3	3	3	47	Include	3.18	49.82
145	S 98335 45102	6	3	0	9	Include	0.00	9.90
146	S 91688 61034	5	1	0	34	Include	0.00	34.00
147	S 84244 67997	4	2	6	30	Include	7.26	36.32
148	S 89510 93156	4	2	0	33	Include	0.00	35.48
149	S 88605 43569	4	2	7	11	Include	8.56	13.44
150	S 83821 37933	3	3	5	37	Include	5.18	38.35
151	S 81288 40922	3	3	3	1	Include	3.00	1.00
152	T 09477 57670	4	1	5	23	Include	6.07	27.93
153	S 97574 80717	4	1	0	30	Include	0.00	44.00
154	S 99196 63135	4	3	0	6	Include	0.00	6.00
155	S 86200 55263	3	3	4	5	Include	4.36	5.45
156	S 86760 37814	2	3	6	14	Include	6.62	15.44
157	T 01452 69323	5	2	0	32	Include	0.00	40.00
158	T 01446 69387	4	1	0	31	Include	0.00	37.00
159	S 89140 35086	4	3	1	7	Include	1.00	7.00
160	S 98882 82978	4	1	2	36	Include	2.47	44.53

Conclusion

The Slaney had a salmon abundance of 28.21 sal fry/5min in 2022. Taking the five previous surveys into account this results in a cumulative average of 17.46 salmon fry/5min which is above the 17 salmon fry threshold.



A.3.2 Corock River

IFI Salmon Catchment #: 33
2022 survey dates: 1-8/8/2022
Mean Salmon Fry/5 min (2022): 0.26 fry/5min.
CWEF Index: 11.02 fry/5min.

Sampling carried out by:
 Ken Whelan
 Robert Denby
 Sean Cushen
 Stephen McKenna
 Tony Byrne

Fish Species Present:
 Brown Trout Roach
 European Eel Salmon
 Flounder Stone Loach
 Lamprey 3-Spined Stickleback

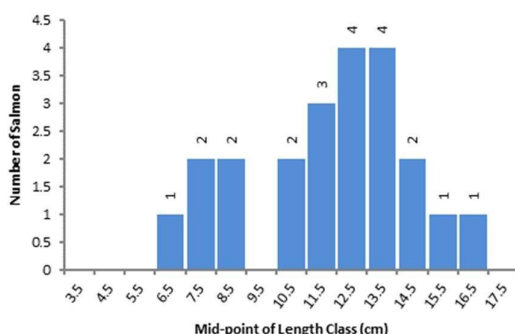


Figure A.3.2.1: Length distribution of salmon captured in 2022 CWEF survey on the Corock.

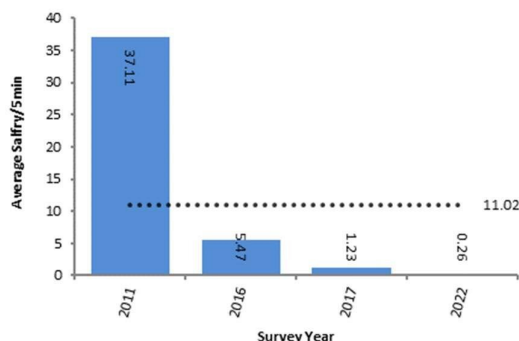


Figure A.3.2.2: Comparison of mean salmon fry/5min for all surveys on the Corock catchment to 2022.

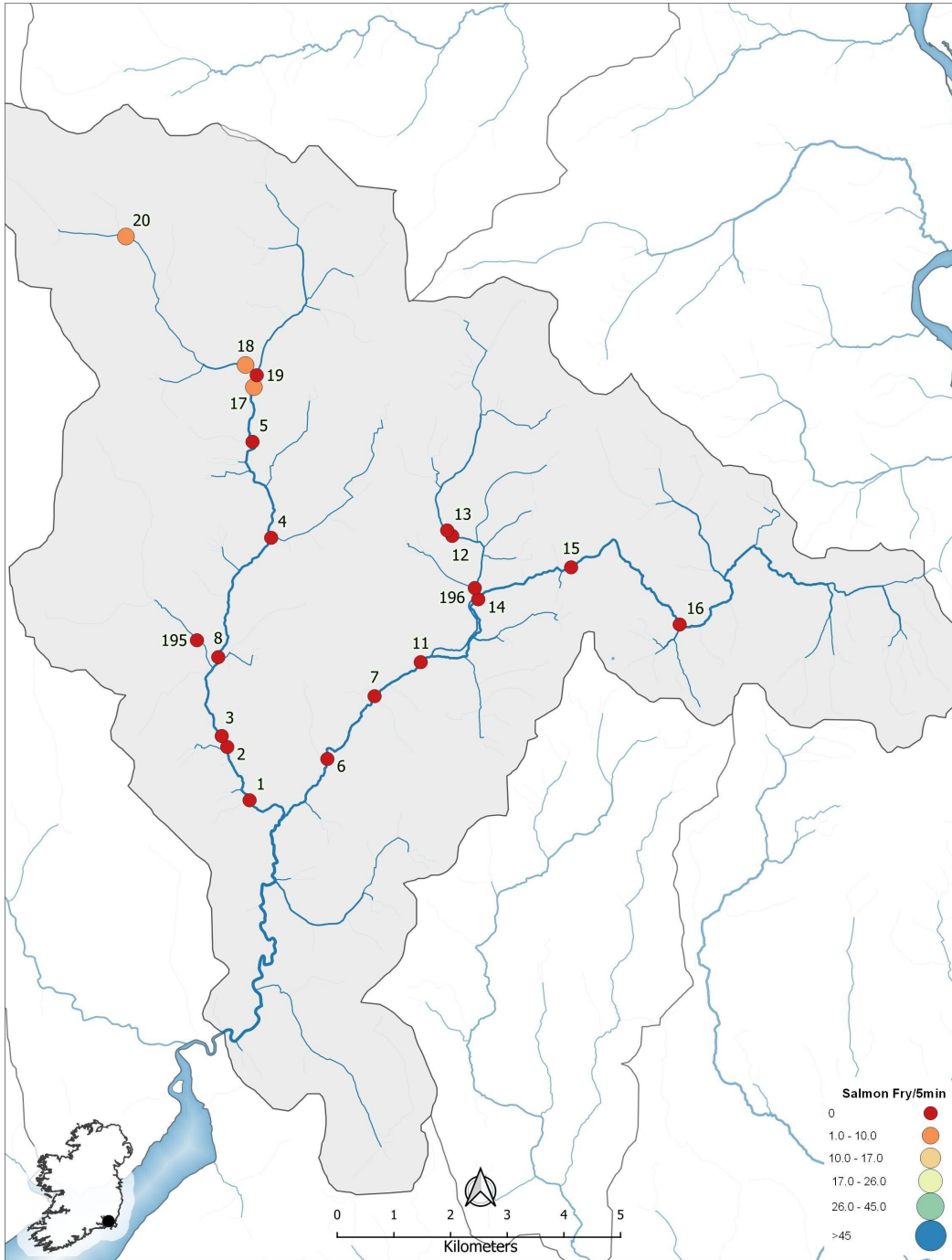
This is the fourth CWEF survey of this catchment it took place from 1st to 8th August and consisted of 20 sites. Salmon were found at 3 sites; at no site were more than 2 fry observed. All sites were included in the analysis; the mean catch at these sites was 0.26 salmon fry/5min.

Table A.3.2: Site specific results of CWEF on the Corock catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	S 85781 17723	4	2	2	0	Include	2.00	0.00
002	S 85388 18672	4	0	1	0	Include	1.50	0.00
003	S 85291 18867	4	3	0	0	Include	0.00	0.00
004	S 86163 22397	2	2	4	0	Include	4.00	0.00
005	S 85834 24106	4	2	0	0	Include	0.00	0.00
006	S 87155 18458	4	2	0	0	Include	0.00	0.00
007	S 87987 19576	4	2	2	0	Include	2.00	0.00
008	S 85229 20272	4	3	0	0	Include	0.00	0.00
011	S 88803 20183	4	3	0	0	Include	0.00	0.00
012	S 89359 22430	3	2	8	0	Include	8.00	0.00
013	S 89270 22529	3	2	5	0	Include	5.00	0.00
014	S 89818 21303	4	3	3	0	Include	3.00	0.00
015	S 91457 21872	4	3	8	0	Include	8.00	0.00
016	S 93372 20852	4	1	2	0	Include	2.00	0.00
017	S 85857 25080	4	1	1	2	Include	1.00	2.00
018	S 85711 25475	3	3	2	1	Include	2.00	1.00
019	S 85908 25291	4	1	17	0	Include	19.00	0.00
020	S 83599 27762	2	1	25	2	Include	27.78	2.22
195	S 84852 20573	2	2	0	0	Include	0.00	0.00
196	S 89757 21502	3	2	18	0	Include	18.00	0.00

Conclusion

The Corock had a salmon abundance of 0.26 sal fry/5min in 2022 a significantly lower result than that in 2011 when an average of 37.11 salmon fry/5 minutes (at 4 sites) was observed. Taking the four previous complete surveys into account this results in a cumulative average of 11.02 salmon fry/5min which is below the 17 salmon fry threshold.



Map A.3.2: Showing salmon fry/5min values and locations of surveys on the Corock River 2022.

A.3.3 Owenduff River

IFI Salmon Catchment #: 34
2022 survey dates: 3-4/8/2022
Mean Salmon Fry/5 min (2022): 0.89 fry/5min.
CWEF Index: 6.26 fry/5min.

Sampling carried out by: R. Denby
 Sean Cushen
 Tony Byrne

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

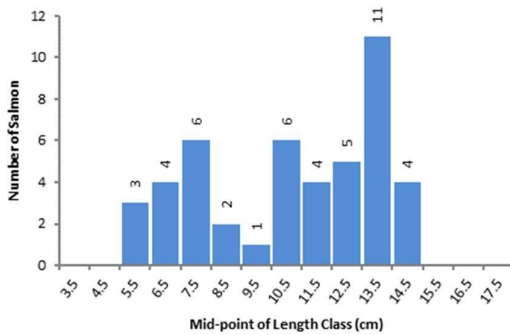


Figure A.3.3.1: Length distribution of salmon captured in 2022 CWEF survey on the Owenduff.

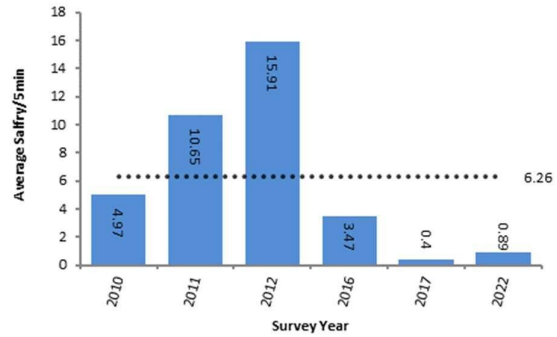


Figure A.3.3.2: Comparison of mean salmon fry/5min for all surveys on the Owenduff catchment to 2022.

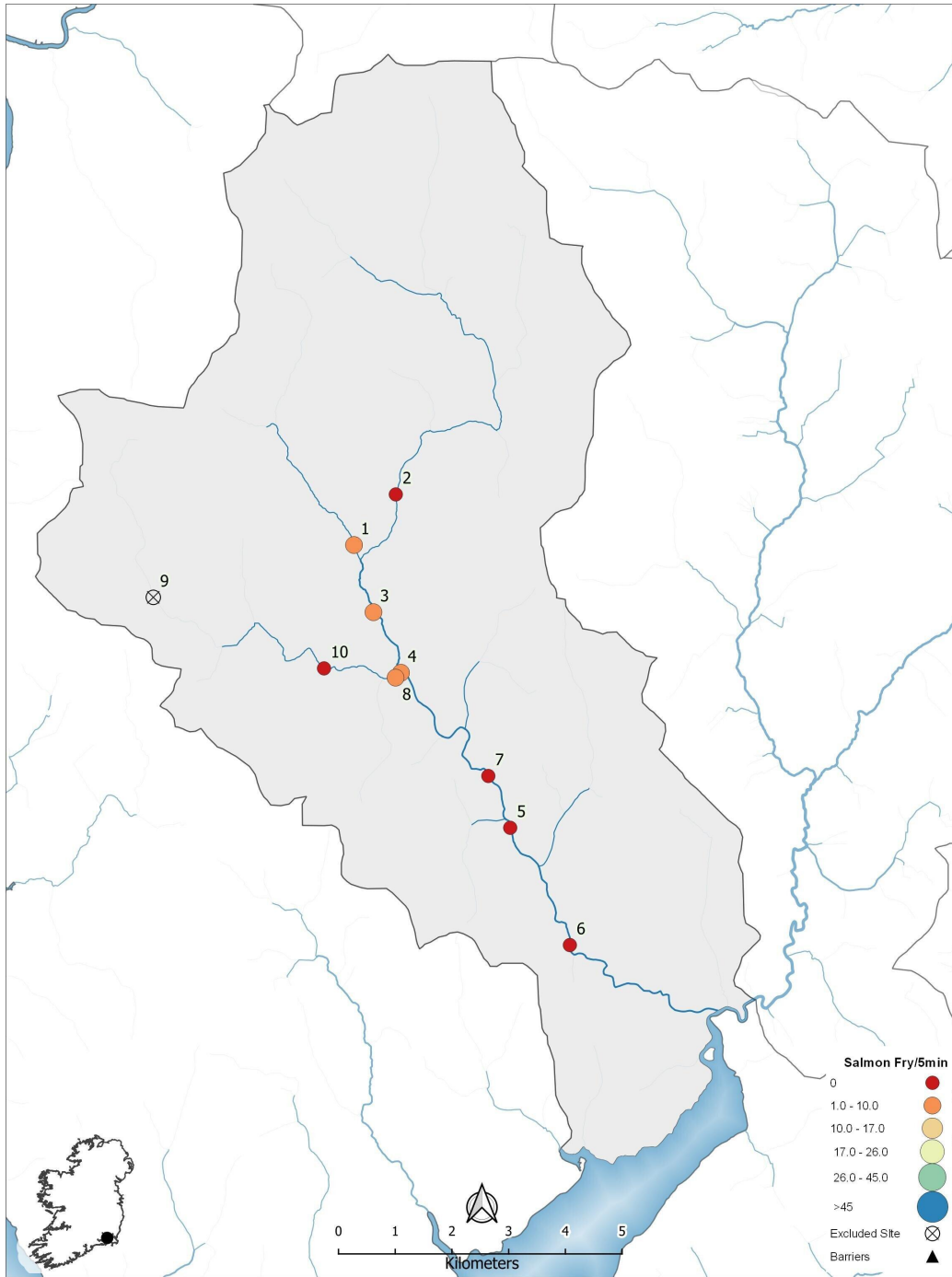
This is the sixth CWEF survey of this catchment it took place from 3rd and 4th of September and consisted of 10 sites. Salmon were found at 4 sites; the highest numbers were at site 982 where 6 fry were observed. The modal length of 0+ salmon was 7.5 cm. 9 sites were included in the analysis; the mean catch at these sites was 0.89 salmon fry/5min.

Table A.3.3: Site specific results of CWEF on the Owenduff catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	S 78254 21574	2	3	10	1	Include	10.00	1.00
002	S 78991 22464	2	3	21	0	Include	21.00	0.00
003	S 78597 20394	3	3	5	2	Include	5.00	2.00
004	S 79082 19328	3	1	2	6	Include	2.00	6.00
005	S 81008 16602	3	2	0	0	Include	0.00	0.00
006	S 82060 14540	3	2	1	0	Include	1.00	0.00
007	S 80621 17514	3	1	7	0	Include	7.00	0.00
008	S 78987 19242	2	1	4	5	Include	4.00	5.00
009	S 74714 20654	1	3	4	0		Stream Order<2	
010	S 77724 19406	2	3	11	0	Include	11.00	0.00

Conclusion

The Owenduff had a salmon abundance of 0.89 salfry/5min in 2022, a significantly lower result than that in 2012 when an average of 15.9 salmon fry/5 minutes (at 6 sites) was observed. Taking the 5 most recent surveys into account this results in a cumulative average of 6.26 salmon fry/5min which is below the 17 salmon fry threshold.



Map A.3.3: Showing salmon fry/5min values and locations of surveys on the Owenduff River 2022.

A.3.4 Suir River

IFI Salmon Catchment #: 43
2022 survey dates: 8/7/2021 -17/9/21
Mean Salmon Fry/5 min (2022): 16.73 fry/5min.
CWEF Index: 13.27 fry/5min.

Sampling carried out by:
 Noel C. Power
 Declan Cullagh
 Greg Roche
 Nahuel Snow Aguilera

Fish Species Present:
 Brown Trout Minnow
 White Clawed Crayfish Salmon
 European Eel Stone Loach
 Lamprey 3-Spined Stickleback

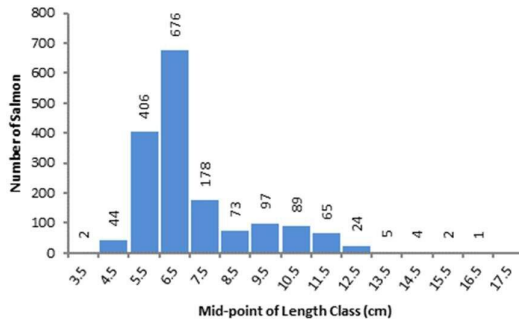


Figure A.3.4.1: Length distribution of salmon captured in 2022 CWEF survey on the Suir.

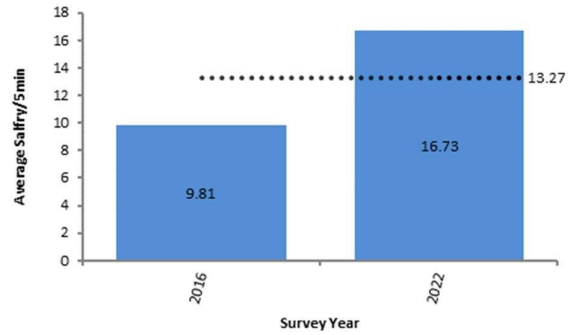


Figure A.3.4.2: Comparison of mean salmon fry/5min for all surveys on the Suir catchment to 2022.

This is the second CWEF survey of this catchment, it took place from 8th July to 17th of September and consisted of 111 sites. Salmon were found at 90 sites; the highest numbers were at site 46 where 54 fry were observed. The modal length of 0+ salmon was 6.5 cm. 95 sites were included in the analysis; the mean catch at these sites was 16.73 salmon fry/5min.

Table A.3.4.1: Site specific results of CWEF on the Suir catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
005	S 36809 20669	3	2	3	5	Eff <60%		
006	S 36793 21323	3	2	5	7	Include	5.83	8.17
007	S 32957 22733	2	1	10	3	Include	10.00	3.00
008	S 30306 22679	3	1	1	28	Include	1.10	30.90
009	S 29350 20092	3	1	4	12	Include	4.00	12.00
010	R 90063 12385	2	2	0	0	Too Narrow		
012	R 90231 12494	3	1	9	2	Include	13.91	3.09
013	R 91928 12647	3	2	8	1	Eff <60%		
014	R 92981 11843	3	1	13	12	Include	19.24	17.76
015	R 95209 13035	4	2	2	4	Include	3.33	6.67
016	R 98003 13182	4	1	3	39	Include	4.00	52.00
017	R 95132 16961	3	1	5	8	Include	7.31	11.69
018	R 95408 18023	4	1	13	4	Include	18.35	5.65
019	R 97083 19566	3	1	0	21	Include	0.00	30.00
020	R 96376 20368	3	1	3	2	Include	4.80	3.20
021	R 98638 17482	4	1	5	28	Include	6.67	37.33
022	R 94246 18170	4	1	22	11	Include	26.67	13.33
023	R 93115 18773	4	1	10	6	Include	13.75	8.25
024	R 91091 17837	3	1	17	0	Include	25.00	0.00
025	R 98504 15626	4	1	5	22	Include	6.48	28.52
026	S 00419 14047	4	1	1	12	Eff <60%		
027	S 00435 13622	4	1	1	35	Include	1.33	46.67
028	S 03286 14326	5	2	2	6	Include	3.25	9.75
029	S 03568 14074	3	1	4	3	Include	6.29	4.71
031	S 03640 13338	2	1	7	37	Include	9.55	50.45

Table A.3.4.1: Site specific results of CWF on the Suir catchment in 2022.

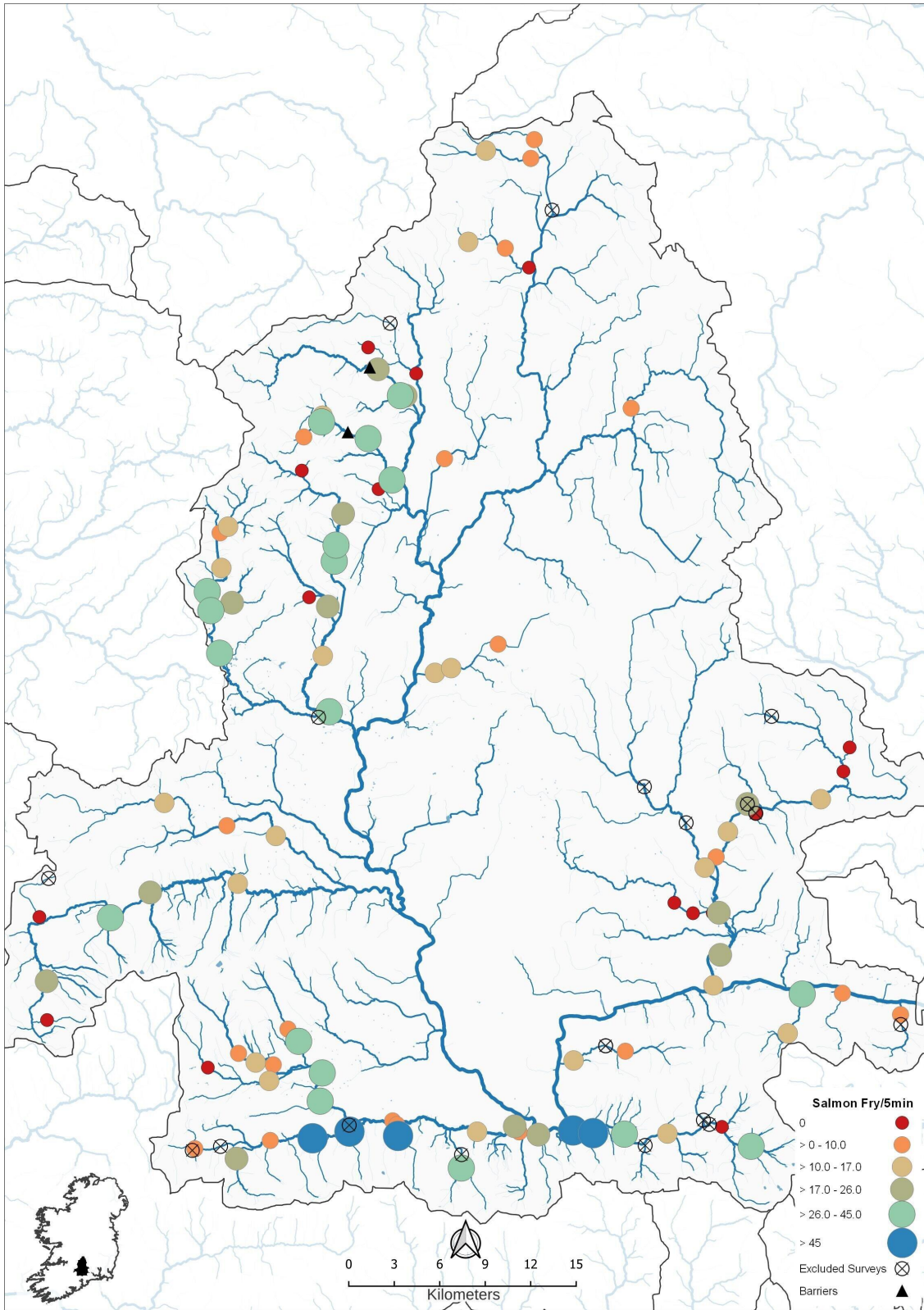
Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
032	S 07829 12107	3	1	2	26	Eff <60%		
033	S 07814 11223	3	1	4	31	Include	5.71	44.29
034	S 08855 13612	5	2	0	7	Include	0.00	11.00
035	S 11637 13600	3	1	19	6	Include	22.80	7.20
036	S 11341 13971	5	1	1	17	Include	1.33	22.67
037	S 12897 13421	3	1	3	13	Include	3.94	17.06
038	S 15187 13697	4	1	8	38	Include	10.43	49.57
039	S 25009 13933	4	2	0	0	Include	0.00	0.00
040	S 24177 14096	4	2	1	11	Eff <60%		
041	S 23789 14374	3	2	0	3	Eff <60%		
042	S 26937 12655	4	2	1	22	Include	1.26	27.74
043	S 21413 13495	4	2	0	11	Include	0.00	16.00
044	S 19943 12712	3	2	1	7	Eff <60%		
045	S 18574 13456	4	1	2	33	Include	2.57	42.43
046	S 16513 13518	4	1	1	54	Include	1.31	70.69
047	S 15225 18303	3	1	17	12	Include	19.34	13.66
048	S 17337 19271	3	1	5	1	Eff <60%		
049	S 18638 18914	3	2	2	4	Include	3.33	6.67
050	S 03794 62079	3	2	5	29	Include	6.76	39.24
051	S 04142 62077	4	1	2	22	Include	2.33	25.67
052	S 02304 63813	4	1	4	16	Include	5.40	21.60
053	S 31533 35511	4	2	1	11	Include	1.42	15.58
054	S 26692 35192	4	2	4	14	Include	5.33	18.67
055	S 25407 33367	4	1	2	12	Include	2.29	13.71
056	S 27246 34579	2	1	12	0	Include	14.00	0.00
057	S 24628 31701	4	1	0	10	Include	0.00	10.00
058	S 24898 25260	5	1	0	17	Include	0.00	23.00
059	S 24805 28032	5	1	3	14	Include	3.88	18.12
060	S 24446 23253	5	1	0	12	Include	0.00	15.00
061	S 33022 37335	3	3	0	0	Include	0.00	0.00
062	S 28286 40965	3	0	0	0	No Water		
063	S 33435 38915	2	3	0	0	Include	0.00	0.00
064	S 13806 74292	3	2	0	1	Eff <60%		
065	S 12400 77703	3	2	10	3	Include	13.08	3.92
066	S 12629 78940	2	3	1	2	Include	1.33	2.67
067	S 09439 78220	3	1	12	9	Include	16.57	12.43
068	S 23875 31007	4	1	0	10	Include	0.00	13.00
069	S 22648 33954	4	0	0	0	Overgrown		
070	S 19890 36330	4	0	0	0	No Water		
071	S 21870 28686	3	1	1	0	Include	1.00	0.00
072	S 23101 28001	3	1	3	0	Include	6.00	0.00
073	S 24403 28017	3	3	0	0	Include	0.00	0.00
074	S 03242 56527	4	1	3	29	Include	3.84	37.16
075	S 01665 59255	4	1	2	29	Include	2.84	41.16
076	R 98598 60351	3	1	6	20	Include	7.85	26.15
077	R 97422 59363	3	1	4	4	Include	6.50	6.50
078	R 98662 60764	3	1	9	8	Include	13.24	11.76
079	S 19021 61254	3	2	13	5	Include	18.06	6.94
080	S 10247 45718	2	2	10	5	Include	14.67	7.33
081	S 06074 43829	3	2	4	8	Include	5.33	10.67
082	S 07143 44143	3	2	1	8	Include	1.44	11.56
083	R 88210 35266	0	2	3	8	Include	4.36	11.64
084	R 95577 33090	4	1	0	11	Include	0.00	15.00
085	R 92347 33763	4	1	2	2	Include	2.50	2.50
086	S 12282 70513	3	3	0	0	Include	0.00	0.00
087	S 08270 72209	2	1	5	10	Include	6.00	12.00
088	S 10715 71790	3	1	3	9	Include	3.00	9.00
089	R 80459 23527	3	1	5	14	Include	6.84	19.16
090	R 80586 30291	2	0	0	0	Insufficient Water		
091	R 79976 27753	2	2	3	0	Include	5.00	0.00
092	R 84664 27702	3	1	4	24	Include	5.57	33.43
093	R 87288 29365	4	1	1	15	Include	1.50	22.50
094	R 93065 29950	3	1	10	8	Include	16.67	13.33
095	R 80461 23387	3	1	11	8	Include	13.32	9.68
096	R 80483 20967	2	2	9	0	Include	12.00	0.00
097	R 99105 41271	5	1	0	22	Include	0.00	30.00
098	R 98673 44951	5	2	0	11	Include	0.00	16.00
099	R 98392 40901	4	1	1	6	Eff <60%		

Table A.3.4.1: Site specific results of CWF on the Suir catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
100	R 92692 48445	3	1	27	16	Include	32.65	19.35
101	R 99432 51177	4	1	2	33	Include	2.57	42.43
102	R 97775 48801	3	1	49	0	Include	64.00	0.00
103	R 99008 48195	4	1	6	16	Include	8.45	22.55
104	R 99548 52242	2	1	2	33	Include	2.63	43.37
105	S 00017 54308	4	1	1	13	Include	1.57	20.43
106	R 91870 45119	4	1	3	33	Include	3.83	42.17
107	R 91055 49183	2	1	5	25	Include	6.33	31.67
108	R 91982 50734	4	1	7	14	Include	7.00	14.00
109	R 91286 47924	4	1	3	27	Include	3.60	32.40
110	R 91899 53049	4	2	8	5	Include	10.46	6.54
111	R 92425 53457	4	1	14	8	Include	17.82	10.18
112	R 97290 57147	2	2	10	0	Include	13.00	0.00
113	S 02356 55926	2	3	6	0	Include	8.00	0.00
114	S 03117 66849	2	2	0	1	Eff <60%		
115	S 04838 63539	4	3	0	0	Include	0.00	0.00
116	S 01669 65254	2	2	3	0	Include	3.00	0.00
117	S 06707 57930	3	2	3	4	Include	4.71	6.29

Conclusion

The Suir had a salmon abundance of 16.73 sal fry/5min in 2022. Taking the two surveys into account this results in a cumulative average of 13.27 salmon fry/5min which is below the 17 salmon fry threshold.



Map A.3.4.1: Showing salmon fry/5min values and locations of surveys on the Suir River.

A.4 South-Western River Basin District

Summary

Since 2007, CWF sruveys have been conducted at forty-seven rivers in the South-Western River Basin District (SWRBD). These are presented in Table A.4. At present twelve rivers are meeting the threshold index of 17 salmon fry/5min. Surveys of the Glenshelane, Womanagh, Owenacurra, Glashaboy, Inny, Carhan, Behy, Owenalondrig, Scorid, Glenahoo, Aghacashla, Finglas and Lee Rivers were undertaken in 2022, along with surveys on the Owentaraglin, Farahy, Owenaskirtaun and Awbeg rivers which are tributary rivers in the Munster Blackwater Catchment.

Table A.4: Catchment-wide electrofishing data for the South-Western River Basin District 2014-2022 showing the average salmon fry captured /5min for each year surveyed. Also shown is the surveys' mean capture rate, surveys prior to 2014 are included in Appendix C

Code/River	Survey Year										Current Index	# Annual Surveys Considered
	2014	2015	2016	2017	2018	2019	2020	2021	2022			
055/Lickey		14.14					12.00				12.84	3
057/Finisk											0.00	0
058/Glenshelane			2.87						2.44		9.75	4
059/Blackwater (Mun)			13.53		22.7*				26.7†		12.10	2
060/Bride	19.85			7.65		18.93					16.31	5
061/Tourig				0.73*			11.19				10.29	2
062/Womanagh	2.39			1.43						3.68	5.74	4
064/Owennacurra				1.77*			9.47			21.58	15.61	3
065/Glashaboy										11.63	11.63	1
066/Lee (Cork)										0.26	0.26	1
066/Lower Lee (Cork)					18.34					18.34	18.34	1
069/Bandon			11.01								11.01	1
070/Argideen								27.55			22.35	2
077/Mealagh											12.82	1
080/Glengarriff											5.93	1
081/Adrigole	1.33				15.64						6.99	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		13.00				10.83	4
086/Cloonee				24.09		26.48					24.95	4
088/Roughy											19.78	1
089/Finnihy				0.58		0.89					2.52	4
090/Blackwater (Ky)	18.01										19.08	4
093/Owreagh	2.81					8.51					5.58	4
097/Currane	24.51										24.51	1
098/Inny					17.67					22.67	21.19	4
099/Emlaghmore		1.45					5.78				3.10	3
101/Carhan	8.61					7.55				17.03	11.00	5
102/Ferta	10.74			6.88		12.06					12.27	4
103/Behy			2.89			6.60				7.18	6.51	5
106/Laune				21.41							21.41	1
107/Maine				22.1†	19.6†				37.62		34.10	3
108/Emlagh			2.10					1.02			4.58	5
109/Owenascaul	16.28				9.51		11.52				15.13	5
110/Owenalondrig									19.23		20.57	2
111/Milltown (Ky)		8.76				11.25					14.96	5
112/Feohanagh	11.93					13.75					11.37	4
114/Owenmore (Ky)								26.72			25.89	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 (Ky)		0.68			0.69					0.00	0.51	4
Trafask								5.36			5.36	1

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

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

* Incomplete surveys not included in calculation of current index.

† Sub-catchment surveys.

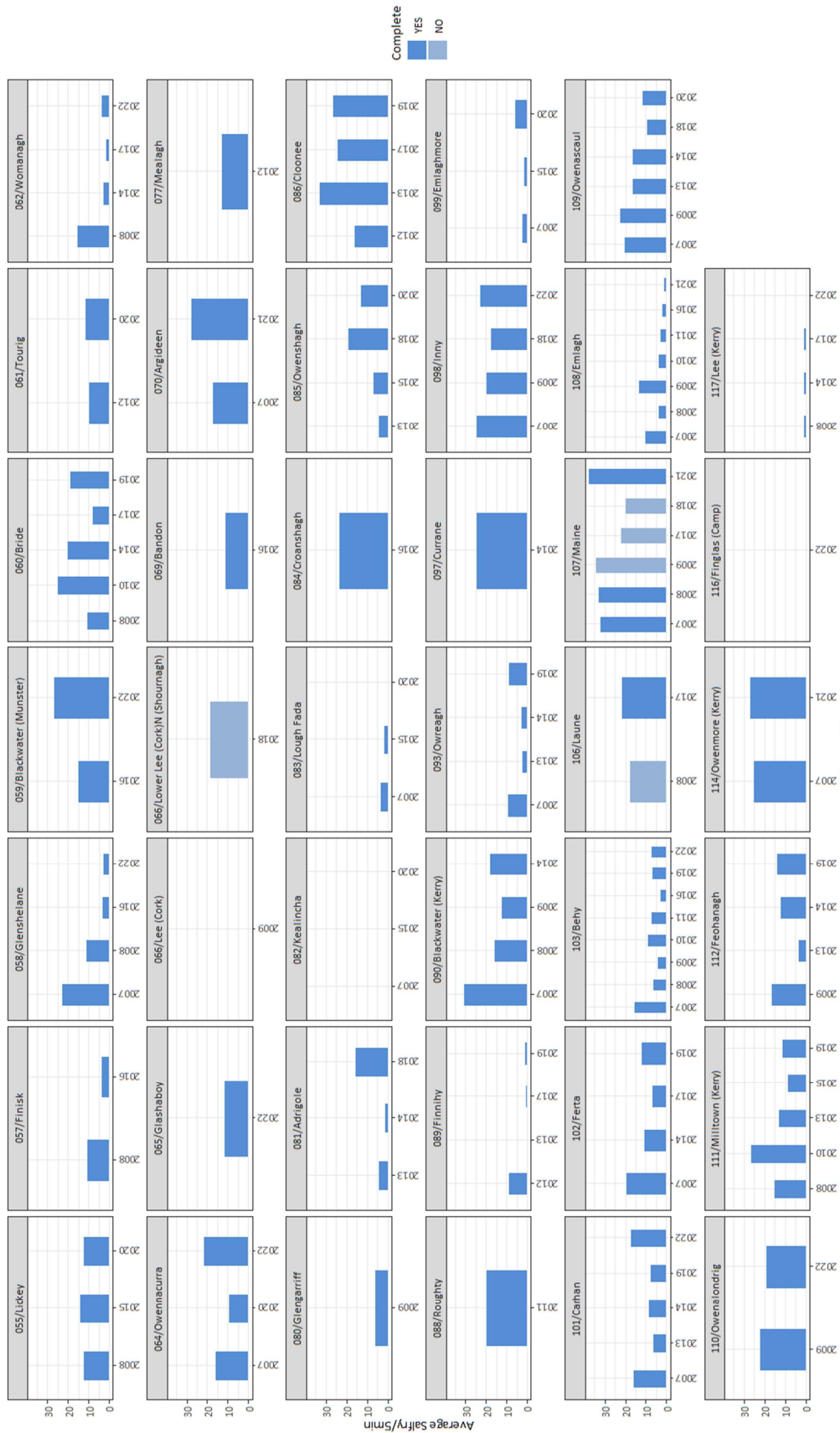


Figure A.3: Summary of CWF results in the South-Western River Basin District River basins in district 2007-2022.

A.4.1 Glenshelane River

IFI Salmon Catchment #: 58
2022 survey dates: 15-16/7/2021
Mean Salmon Fry/5 min (2022): 2.88 fry/5min.
CWEF Index: 9.75 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout
 European Eel
 Salmon

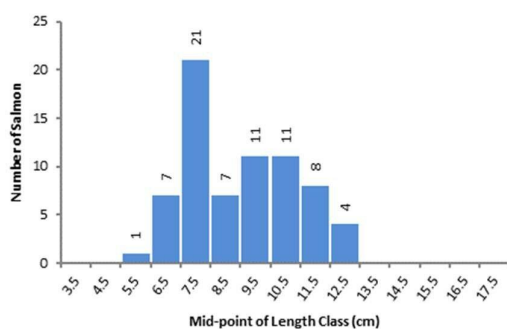


Figure A.4.1.1: Length distribution of salmon captured in 2022 survey on the Glenshelane.

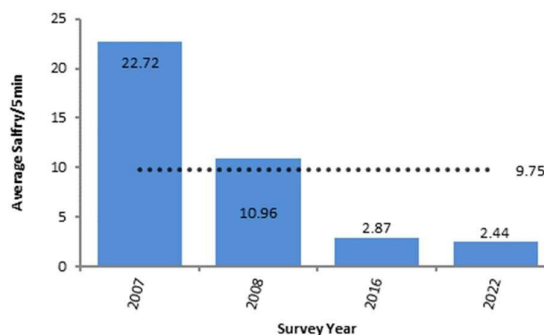


Figure A.4.1.2: Comparison of mean salmon fry/5min for all surveys on the Glenshelane catchment.

The comprehensive survey this year consisted of 17 sites fished on the 15th and 16th of July. Salmon fry (0+) were found at six sites, with the highest numbers recorded at site 1 where 16 fry were observed. The modal length of 0+ was 7.5cm. All 17 sites were included in the analysis with a the mean catch 2.44 salmon fry/5min recorded. As in previous surveys salmon were confined to the lower 4-5km of the Glenshelane. Where salmon were present, abundance was low.

Conclusion

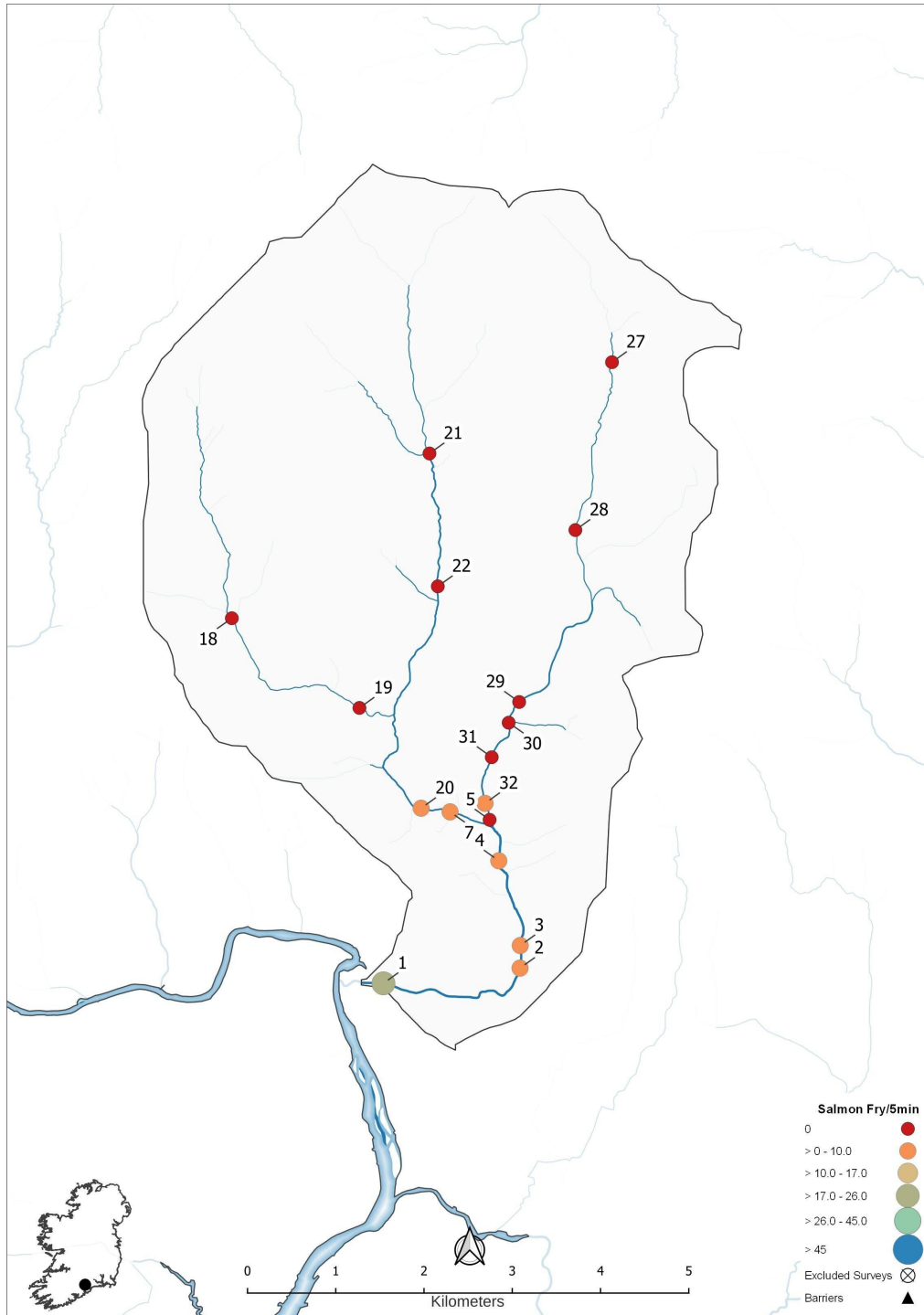
The Glenshelane had a salmon abundance of 2.44 sal fry/5min in 2022. Taking the four complete surveys into account, this results in a cumulative average of 9.75 salmon fry/5min which is below the 17 salmon fry threshold. There has been a marked decrease in the abundance of salmon observed in CWEF surveys in this catchment since 2007.

Table A.4.1: Site specific results of CWEF on the Glenshelane catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	X 10351 99159	4	1	1	16	Include	1.24	19.76
002	X 11898 99330	4	1	10	3	Include	10.00	3.00
003	X 11901 99585	4	1	1	7	Include	1.25	8.75
004	S 11658 00542	4	2	4	1	Include	4.00	1.00
005	S 11554 01006	3	2	11	0	Include	13.00	0.00
007	S 11106 01095	3	2	14	4	Include	15.56	4.44
018	S 08633 03283	2	2	12	0	Include	14.00	0.00
019	S 10078 02270	2	2	15	0	Include	17.00	0.00
020	S 10778 01137	3	1	5	3	Include	5.63	3.38
021	S 10873 05144	2	2	7	0	Include	7.00	0.00
022	S 10967 03643	3	2	3	0	Include	3.00	0.00
027	S 12941 06174	2	2	6	0	Include	8.00	0.00

Table A.4.1: Site specific results of CWF on the Glenshelane catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
028	S 12525 04278	2	2	3	0	Include	4.00	0.00
029	S 11888 02337	3	2	10	0	Include	12.00	0.00
030	S 11769 02102	3	2	8	0	Include	10.00	0.00
031	S 11578 01713	3	3	5	0	Include	7.00	0.00
032	S 11502 01192	3	2	10	1	Include	11.82	1.18



Map A.4.1: Showing salmon fry/5min values and locations of surveys on the Glenshelane River 2022

A.4.2 The Owentaraglin, Owenaskirtaun, Awbeg and Farahy sub-catchments of the Blackwater River

IFI Salmon Catchment #: 59
2022 survey dates: 25-27/7/2022 and 8-9/8/2022

Sampling carried out by:	Fish Species Present:
Tony Holmes	Brown Trout Minnow
Cesare Monciano	White Clawed Crayfish Salmon
	European Eel Stoneloach
	Lamprey 3-Spined Stickleback
	Margaritifera

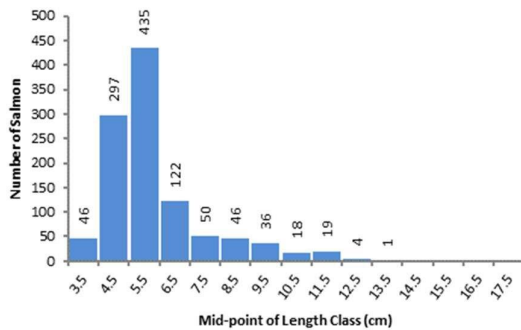


Figure A.4.2: Length distribution of salmon captured in 2022 CWF survey on the Blackwater.

Surveys of several sub-catchments of the Munster Blackwater were undertaken in 2022, to investigate possible barriers and to assess the local abundance of salmon. Four catchments were targeted: the Owentaraglin, Owenaskirtaun, Awbeg and Farahy. A total of 47 sites were visited, with salmon fry (0+) present at 32 sites. The modal length of 0+ salmon was 5.5 cm.

- Owentaraglin: 12 sites were sampled. Salmon were present at all sites and abundance was very high: mean 61.65 salmon fry/5min (min 35.77, max 87.73).
- Owenaskirtaun: 4 sites were sampled. Salmon were present at all sites and abundance was very high: mean 65.25 salmon fry/5min (min 46.58, max 110.43).
- Awbeg: 21 sites were sampled. Salmon were present at 14 sites, overall abundance was low: mean 4.01 salmon fry/5min (min presence 1, max 25.30).
- Farahy: 5 sites were sampled. Salmon was present at 1 just site (12.43 salmon fry/5min).

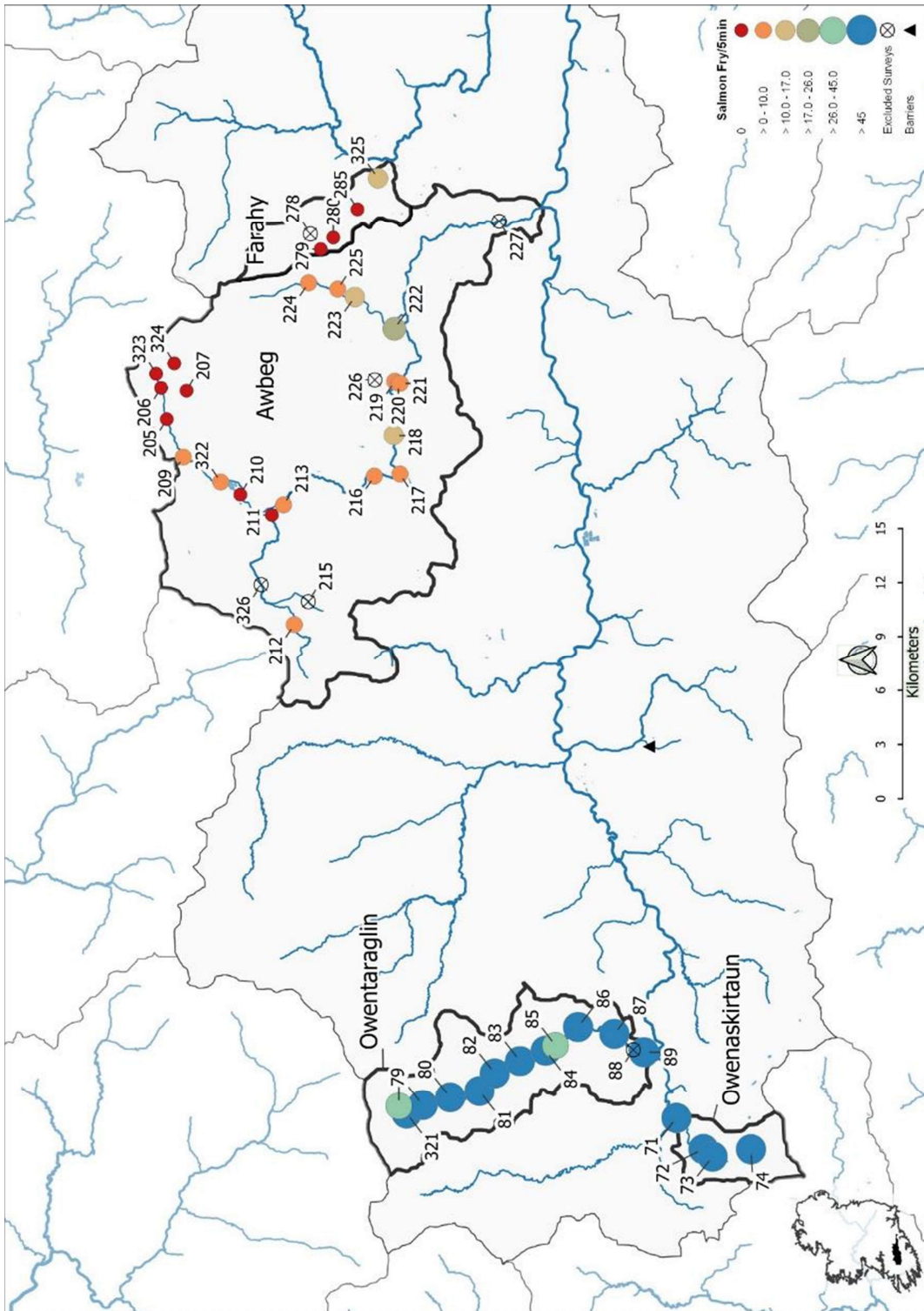
Conclusion

There are stark differences in salmon fry abundance between sub-catchments surveyed this year; the Owentaraglin and Owenaskirtaun had a wide distribution and excellent abundances whilst the Awbeg and Farahy had restricted distribution and lower abundance. In general, the physical habitat on the two western rivers was much better than those further east. The Awbeg, particularly the main channel, is low gradient for much of its course and in places, heavily vegetated with habitat not particularly suited for salmon spawning. Water quality surveys by the EPA also indicate poorer water quality (lower Q values) in the Awbeg and

Farahy than the two western catchments. These factors may in some way account for the differences in fry abundance.

Table A.4.2: Site specific results of CWF on Blackwater sub-catchments n 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
Awbeg								
205	R 57610 20825	3	2	11	0	Include	13.00	0.00
206	R 59344 21144	3	1	25	0	Include	27.00	0.00
207	R 59189 19729	2	2	7	0	Include	8.00	0.00
209	R 55466 19913	3	3	4	5	Include	4.89	6.11
210	R 53382 16741	3	3	1	0	Include	1.00	0.00
211	R 52251 14991	4	2	0	0	Include	0.00	0.00
212	R 46169 13746	3	3	2	1	Include	2.00	1.00
213	R 52813 14347	4	2	0	8	Include	0.00	8.00
215	R 47443 12965	3				Not Sampled		
216	R 54412 09298	4	3	5	1	Include	5.00	1.00
217	R 54528 07878	4	3	0	1	Include	0.00	1.00
218	R 56705 08225	4	3	4	8	Include	5.33	10.67
219	R 59703 08171	2	1	3	3	Include	3.00	3.00
220	R 59612 07969	2	3	1	4	Include	1.00	4.00
221	R 59592 07874	4	2	1	3	Include	1.00	3.00
222	R 62603 08192	3	2	13	24	Include	13.70	25.30
223	R 64363 10382	3	2	18	9	Include	21.33	10.67
224	R 65147 12954	3	2	10	1	Include	11.82	1.18
225	R 64798 11335	3	1	10	7	Include	11.76	8.24
226	R 59781 09276	2				Not Sampled		
227	R 68568 02375	4	3	0	5	Eff <60%		
322	R 54083 17836	3	2	0	1	Include	0.00	1.00
323	R 60121 21418	2	1	62	0	Include	72.00	0.00
324	R 60693 20410	2	1	12	0	Include	15.00	0.00
326	R 48385 15587	4	3	0	0	Poor Site		
Farahy								
278	R 67857 12854	1	2	13	0	Stream Order<2		
279	R 67015 12282	2	2	30	0	Include	34.00	0.00
280	R 67659 11581	2	2	32	0	Include	36.00	0.00
285	R 69238 10239	2	2	13	0	Include	13.00	0.00
325	R 70962 09096	2	2	12	11	Include	13.57	12.43
Owenaskirtaun								
071	W 18725 92529	3	3	0	55	Include	0.00	55.00
072	W 16997 91030	3	1	5	84	Include	6.57	110.43
073	W 16586 90521	3	2	0	46	Include	0.00	49.00
074	W 16988 88392	2	2	4	29	Include	6.42	46.58
Owentaraglin								
078	R 19391 07940	3	1	8	31	Include	9.23	35.77
079	R 19449 06619	4	1	0	59	Include	0.00	66.00
080	R 19878 05089	4	1	2	68	Include	2.57	87.43
081	R 20229 03468	4	1	0	57	Include	0.00	57.00
082	R 21219 02620	4	1	0	72	Include	0.00	87.00
083	R 21903 01213	4	1	0	57	Include	0.00	67.00
084	W 22486 99788	4	1	0	50	Include	0.00	58.00
085	W 22775 99246	4	2	0	37	Include	0.00	44.00
086	W 23801 97993	4	1	0	55	Include	0.00	69.00
087	W 23422 95973	4	1	0	48	Include	0.00	54.00
088	W 22537 94924	4				Not Sampled		
089	W 22401 94333	4	3	1	32	Include	1.45	46.55
321	R 18970 07506	0	1	0	58	Include	0.00	68.00



Map A.4.2 Showing salmon fry/5min values and locations of surveys sites on Blackwater sub-catchments.

A.4.3 Womanagh River

IFI Salmon Catchment #:	62	
2022 survey dates:	11-12/8/2022	
Mean Salmon Fry/5 min (2022):	3.68 fry/5min.	
CWEF Index:	5.74 fry/5min.	
Sampling carried out by:	Fish Species Present:	
Tony Holmes	Brown Trout	Salmon
Cesare Monciano	European Eel	Stone Laoch

Figure A.4.3: Length distribution of salmon captured in 2022 CWEF survey on the Womanagh.

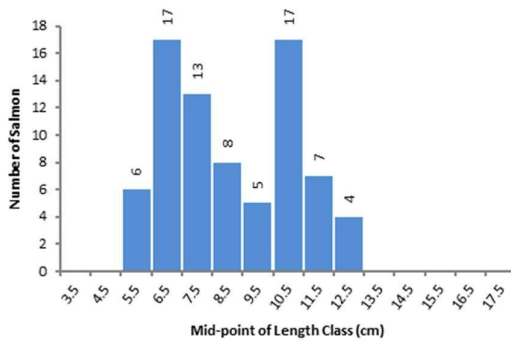
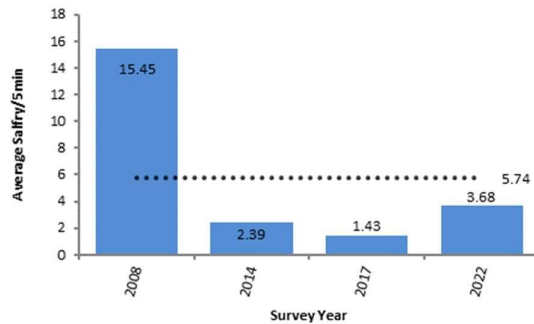


Figure A.4.3: Comparison of mean salmon fry/5min for all surveys on the Womanagh catchment to 2022.



The survey this year consisted of 13 sites fished on the 11 & 12th of August. Salmon fry (0+) were found at 7 sites. Water levels were generally low and one previously surveyed site (number 14) low down the catchment was dry with the available water instead flowing down a separate channel through an ornamental lake and re-entering the main channel lower down. The highest numbers were at site 11 where 13 fry were observed. The modal length of 0+ salmon was 4.5 cm. All 13 surveyed sites were included in the analysis and the mean catch at these sites was 3.68 salmon fry/5min.

Conclusion

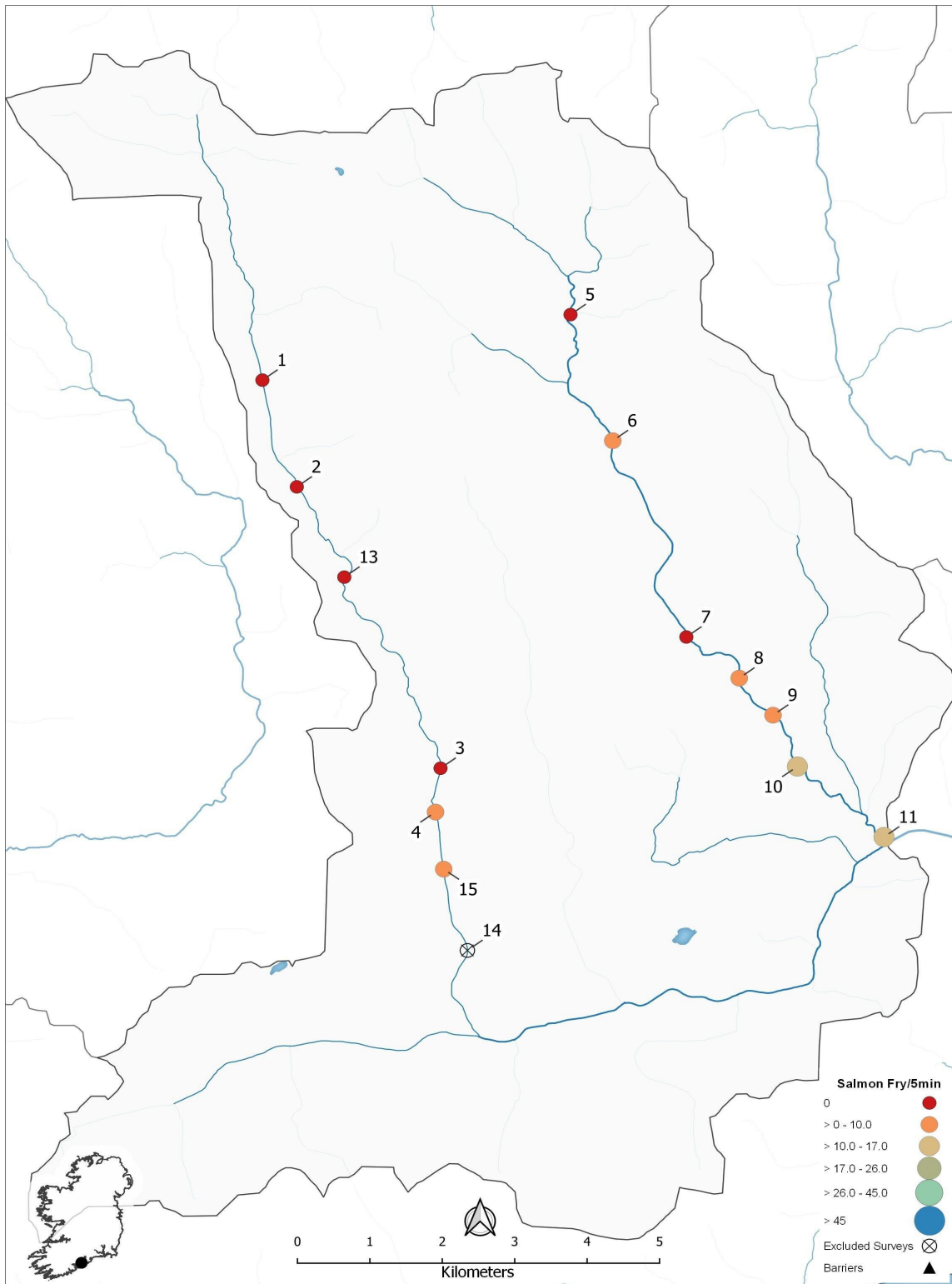
The Womanagh River had a low mean salmon abundance of 3.68 sal fry/5min in 2022. In contrast, trout fry abundance was good. Taking the four most recent complete surveys into account, this results in a cumulative average of 5.74 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.4.3: Site specific results of CWEF on the Womanagh catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	W 93539 81445	2	2	21	0	Include	22.00	0.00
002	W 94014 79902	2	2	18	0	Include	20.00	0.00
003	W 95999 75831	2	1	1	0	Include	1.00	0.00
004	W 95930 75197	2	1	10	4	Include	10.71	4.29
005	W 97795 82393	3	2	42	0	Include	44.00	0.00
006	W 98378 80570	3	2	46	1	Include	51.87	1.13
007	W 99394 77730	3	1	10	0	Include	10.00	0.00
008	X 00124 77135	3	1	3	7	Include	3.30	7.70
009	X 00592 76598	3	2	14	2	Include	14.00	2.00
010	X 00928 75856	3	1	3	13	Include	3.00	13.00
011	X 02124 74835	3	1	0	12	Include	0.00	16.00
013	W 94671 78596	2	1	4	0	Include	4.00	0.00

Table A.4.3: Site specific results of CWF on the Womanagh catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
014	W 96371 73194	2				No Water		
015	W 96043 74370	2	1	18	3	Include	22.29	3.71



Map A.4.3: Showing salmon fry/5min values and locations of surveys on the Womanagh River.

A.4.4 Owennacurra River

IFI Salmon Catchment #: 64
2022 survey dates: 10-11/8/2022
Mean Salmon Fry/5 min (2022): 21.58 fry/5min.
CWEF Index: 15.61 fry/5min.

Sampling carried out by:
 Tony Holmes
 Cesare Monciano

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

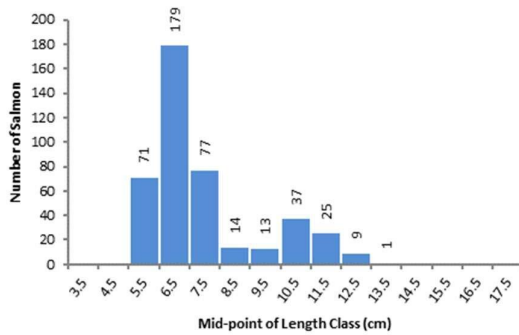


Figure A.4.3: Length distribution of salmon captured in 2022 CWEF survey on the Owennacurra.

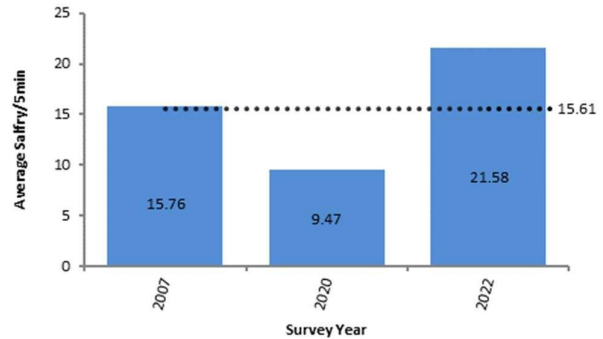


Figure A.4.3: Comparison of mean salmon fry/5min for all surveys on the Owennacurra catchment to 2022.

The survey this year consisted of 19 sites fished on the 10th and 11th of August. Salmon fry (0+) were found at 15 sites, with the highest numbers recorded at site 4 where 42 fry were observed. The modal length of 0+ salmon was 6.5 cm. All 19 sites were included in the analysis and the mean catch was 21.58 salmon fry/5min.

Conclusion

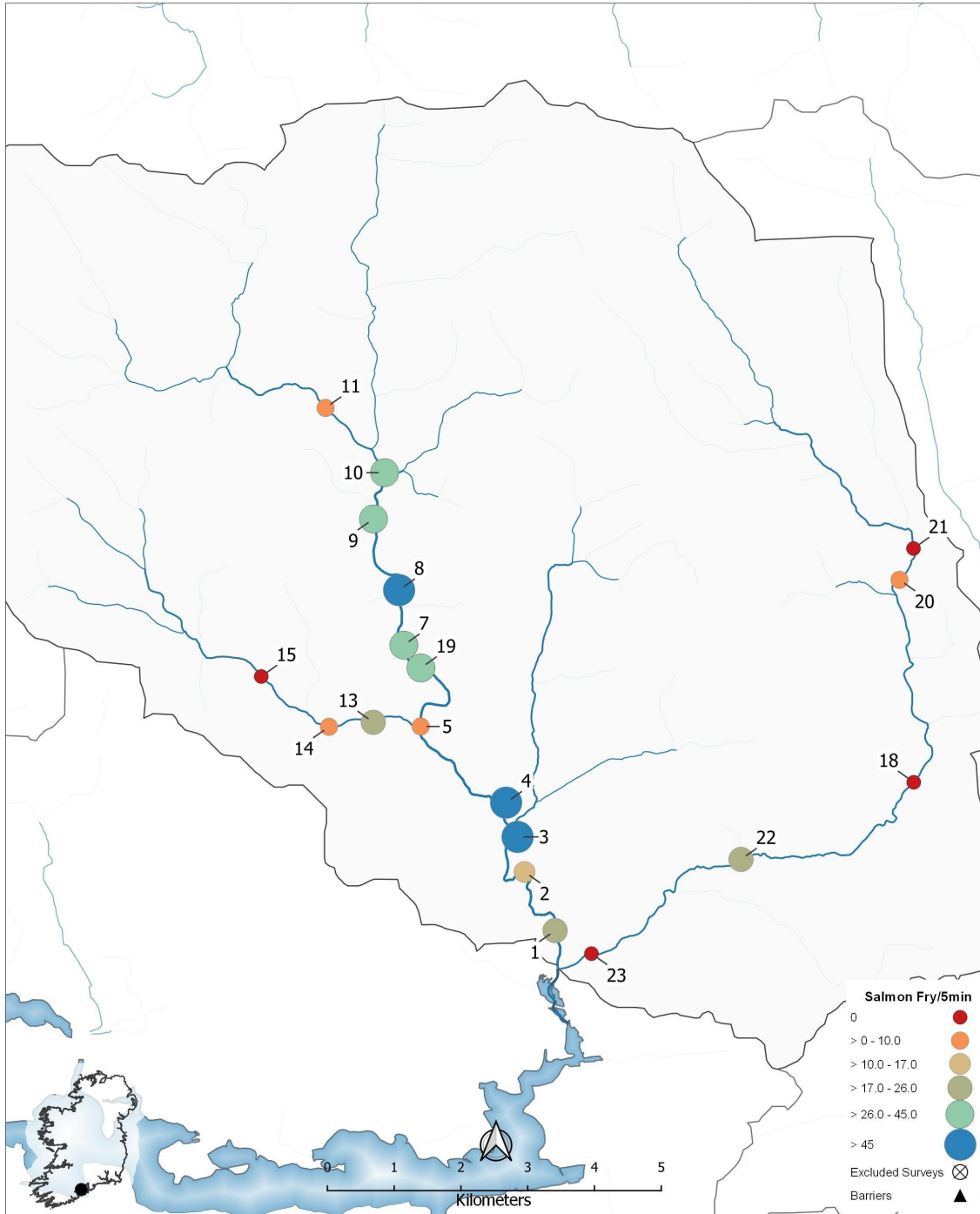
The Owennacurra had a salmon abundance of 21.58 sal fry/5min in 2022. Taking the three complete surveys into account, this results in a cumulative average of 15.61 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.4.3: Site specific results of CWEF on the Owennacurra catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	W 87924 73720	4	1	1	13	Include	1.57	20.43
002	W 87466 74598	4	1	0	13	Include	0.00	13.00
003	W 87362 75124	4	1	3	39	Include	3.57	46.43
004	W 87189 75637	4	1	0	42	Include	0.00	52.00
005	W 85911 76778	4	2	2	7	Include	2.67	9.33
007	W 85659 77997	4	1	9	37	Include	10.76	44.24
008	W 85588 78821	4	1	4	39	Include	4.74	46.26
009	W 85203 79887	4	1	2	33	Include	2.46	40.54
010	W 85371 80581	3	2	8	36	Include	8.91	40.09
011	W 84486 81550	3	1	15	6	Include	15.71	6.29
013	W 85201 76840	3	1	8	20	Include	10.29	25.71
014	W 84537 76772	3	2	6	5	Include	8.18	6.82
015	W 83524 77526	3	0	15	0	Include	17.00	0.00
018	W 93294 75941	3	1	0	0	Include	0.00	0.00
019	W 85914 77655	4	1	3	31	Include	3.79	39.21
020	W 93080 78975	3	1	9	2	Include	10.64	2.36

Table A.4.3: Site specific results of CWF on the Owennacurra catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
021	W 93289 79443	3	2	12	0	Include	12.00	0.00
022	W 90707 74786	3	1	19	16	Include	20.63	17.37
023	W 88468 73374	3	2	0	0	Include	0.00	0.00



Map A.4.3: Showing salmon fry/5min values and locations of CWF surveys undertaken on the Owennacurra River 2022

A.4.5 Glashaboy River

IFI Salmon Catchment #: 65
2022 survey dates: 19-20/9/2022
Mean Salmon Fry/5 min (2022): 11.63 fry/5min.
CWEF Index: 11.63 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

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

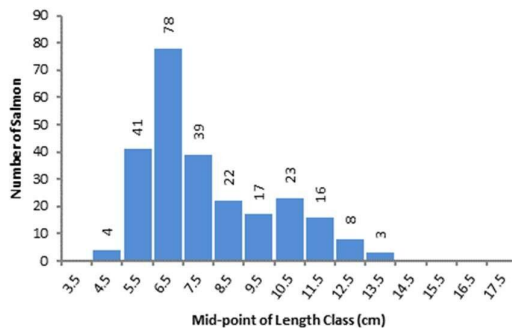


Figure A.4.5: Length distribution of salmon captured in 2022 CWEF survey on the Glashaboy.

The survey this year consisted of 18 sites fished on the 19th and 20th August, Salmon fry (0+) were found at 15 sites, the highest numbers were at site 9 where 24 fry were observed. The modal length of 0+ salmon was 6.5 cm. All 18 sites were included in the analysis; the mean catch at these sites was 11.63 salmon fry/5min.

Conclusion

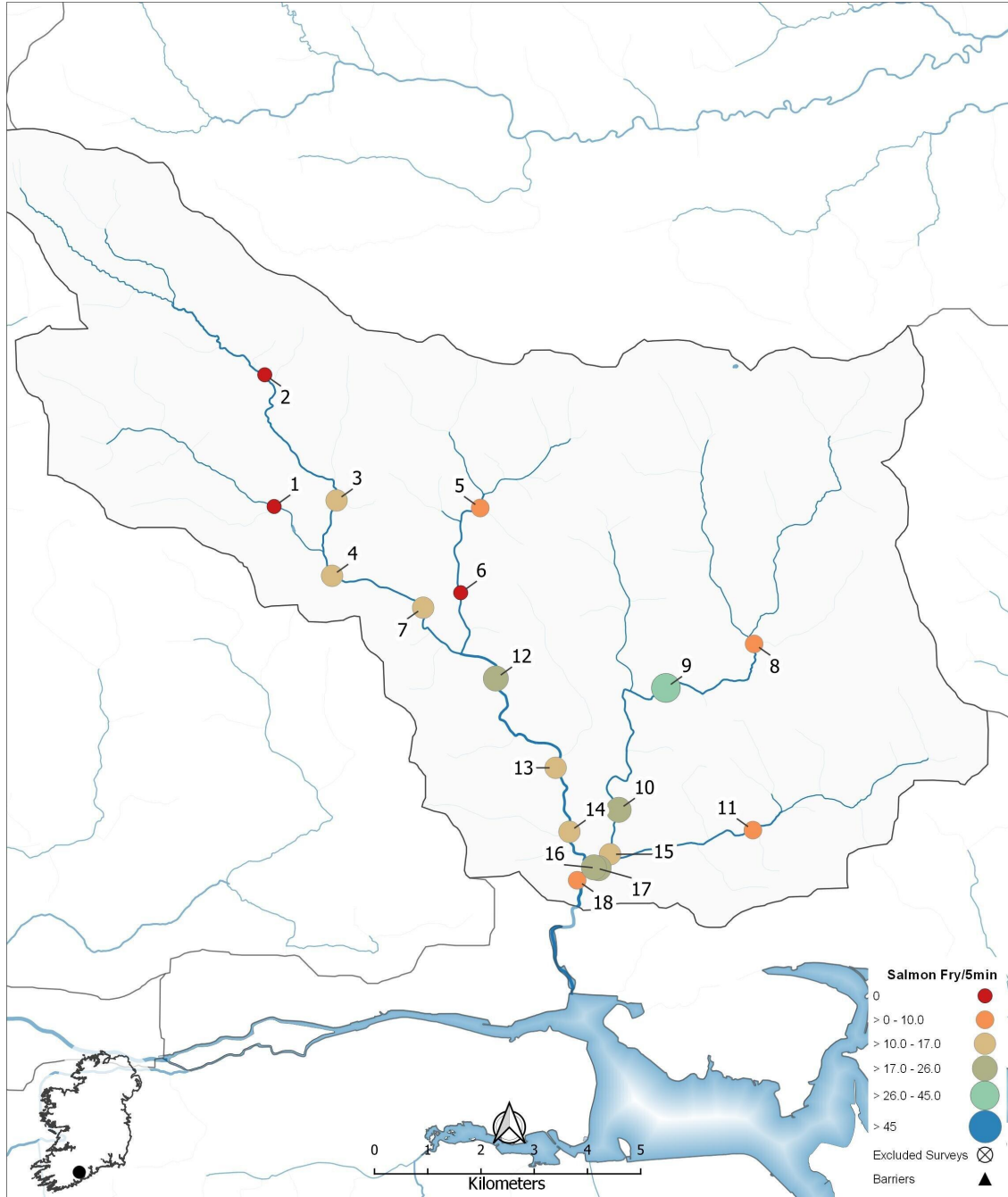
The Glashaboy had a salmon abundance of 11.63 sal fry/5min in 2022 as this is the only CWEF survey to date the CWEF average is also 11.63 Salmon fry/5min which is below the 17 salmon fry threshold.

Table A.4.5: Site specific results of CWEF on the Glashaboy catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	W 67177 81783	2	2	16	0	Include	16.00	0.00
002	W 67001 84253	3	2	18	0	Include	21.00	0.00
003	W 68351 81897	3	2	5	10	Include	6.33	12.67
004	W 68266 80483	3	3	5	15	Include	5.00	15.00
005	W 71048 81756	3	2	17	3	Include	19.55	3.45
006	W 70682 80166	3	1	40	0	Include	43.00	0.00
007	W 69976 79886	3	1	9	13	Include	11.05	15.95
008	W 76191 79206	3	2	9	1	Include	9.00	1.00
009	W 74536 78382	3	2	3	24	Include	3.56	28.44
010	W 73649 76096	3	1	0	14	Include	0.00	19.00
011	W 76169 75715	3	2	6	1	Include	6.86	1.14
012	W 71342 78558	4	1	0	20	Include	0.00	24.00
013	W 72465 76884	4	1	4	9	Include	5.23	11.77
014	W 72723 75683	4	1	2	14	Include	2.25	15.75
015	W 73487 75263	3	1	5	10	Include	6.00	12.00
016	W 73271 75000	4	2	3	16	Include	3.47	18.53

Table A.4.5: Site specific results of CWF on the Glashaboy catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
017	W 73183 75016	4	1	0	22	Include	0.00	24.00
018	W 72868 74775	5	2	1	5	Include	1.33	6.67



Map A.4.5: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Glashaboy River.

A.4.6 Inny River

IFI Salmon Catchment #: 98
2022 survey dates: 13-29 /7/2022
Mean Salmon Fry/5 min (2022): 22.67 fry/5min.
CWEF Index: 21.19 fry/5min.

Sampling carried out by:
 Tony Holmes
 Cesare Monciano

Fish Species Present:
 Brown Trout Lamprey Sp.
 European Eel Salmon

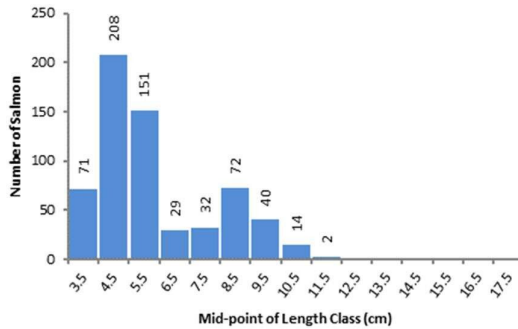


Figure A.4.6.1: Length distribution of salmon captured in 2022 CWEF survey on the Inny.

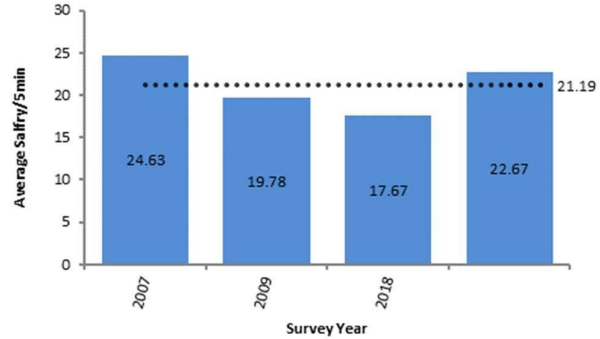


Figure A.4.6.2: Comparison of mean salmon fry/5min for all surveys on the Inny catchment to 2022.

The survey this year consisted of 25 sites fished on the 13th to 29th of July, Salmon fry (0+) were found at all sites, the highest numbers were at site 21 where 78 fry were observed. The modal length of 0+ salmon was 4.5 cm. All 25 sites were included in the analysis; the mean catch at these sites was 22.67 salmon fry/5min.

Conclusion

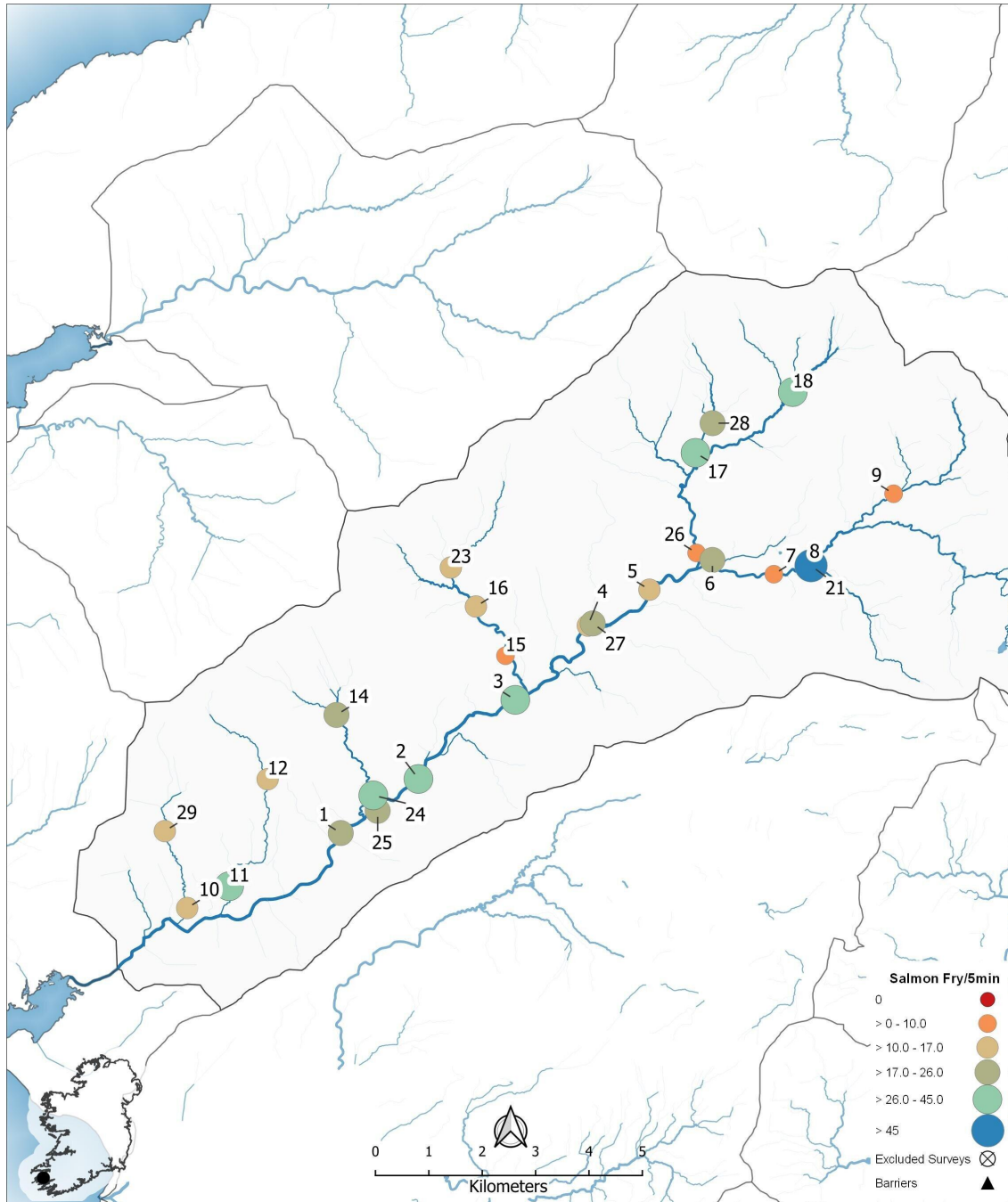
The Inny had a salmon abundance of 22.67 sal fry/5min in 2022. Taking the four complete surveys into account this results in a cumulative average of 21.19 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.4.6: Site specific results of CWEF on the Inny catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	V 54549 72040	5	2	0	16	Include	0.00	20.00
002	V 56003 73052	5	3	0	28	Include	0.00	33.00
003	V 57817 74533	5	1	0	30	Include	0.00	38.00
004	V 59175 75922	5	3	0	13	Include	0.00	16.00
005	V 60330 76595	5	2	0	13	Include	0.00	16.00
006	V 61510 77152	4	2	1	14	Include	1.33	18.67
007	V 62661 76885	4	2	0	7	Include	0.00	9.00
008	V 63330 77106	4	2	1	7	Include	1.25	8.75
009	V 64904 78391	3	3	0	3	Include	0.00	4.00
010	V 51671 70636	2	1	6	9	Include	7.60	11.40
011	V 52458 71044	2	1	8	28	Include	11.33	39.67
012	V 53178 73047	2	1	14	14	Include	17.00	17.00
014	V 54468 74250	3	2	0	19	Include	0.00	25.00
015	V 57633 75358	4	2	5	5	Include	6.50	6.50
016	V 57079 76281	4	2	3	8	Include	3.82	10.18
017	V 61193 79155	3	1	1	38	Include	1.10	41.90
018	V 63014 80293	4	1	2	34	Include	2.33	39.67

Table A.4.6: Site specific results of CWF on the Inny catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
021	V 63357 77044	3	1	6	78	Include	7.43	96.57
023	V 56611 77009	2	2	13	13	Include	16.00	16.00
024	V 55158 72746	3	2	11	20	Include	14.55	26.45
025	V 55239 72456	5	2	0	17	Include	0.00	22.00
026	V 61214 77283	4	3	1	2	Include	1.67	3.33
027	V 59268 75964	2	2	1	14	Include	1.27	17.73
028	V 61512 79712	3	2	6	15	Include	6.86	17.14
029	V 51252 72077	2	2	12	11	Include	14.09	12.91



Map A.4.6: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Inny River

A.4.7 Carhan River

IFI Salmon Catchment #: 101
2022 survey dates: 28/7/2021
Mean Salmon Fry/5 min (2022): 17.03 fry/5min.
CWEF Index: 11.00 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout Salmon
 European Eel

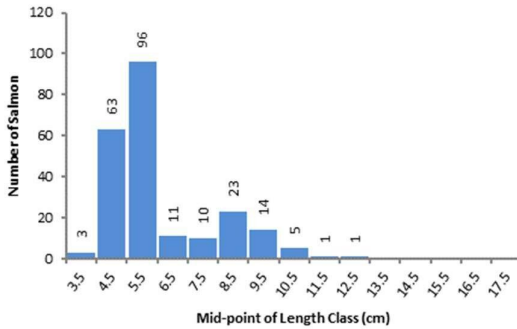


Figure A.4.3.1: Length distribution of salmon captured in 2022 CWEF survey on the Carhan.

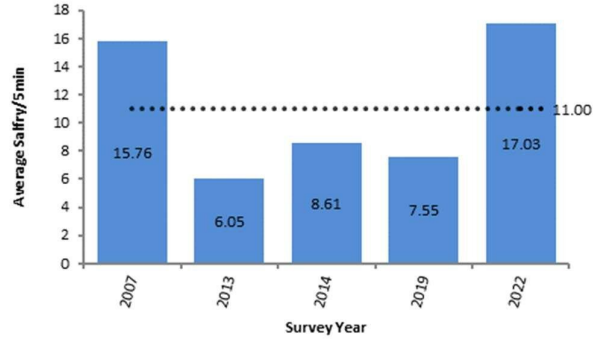


Figure A.4.3.2: Comparison of mean salmon fry/5min for all surveys on the Carhan catchment to 2022.

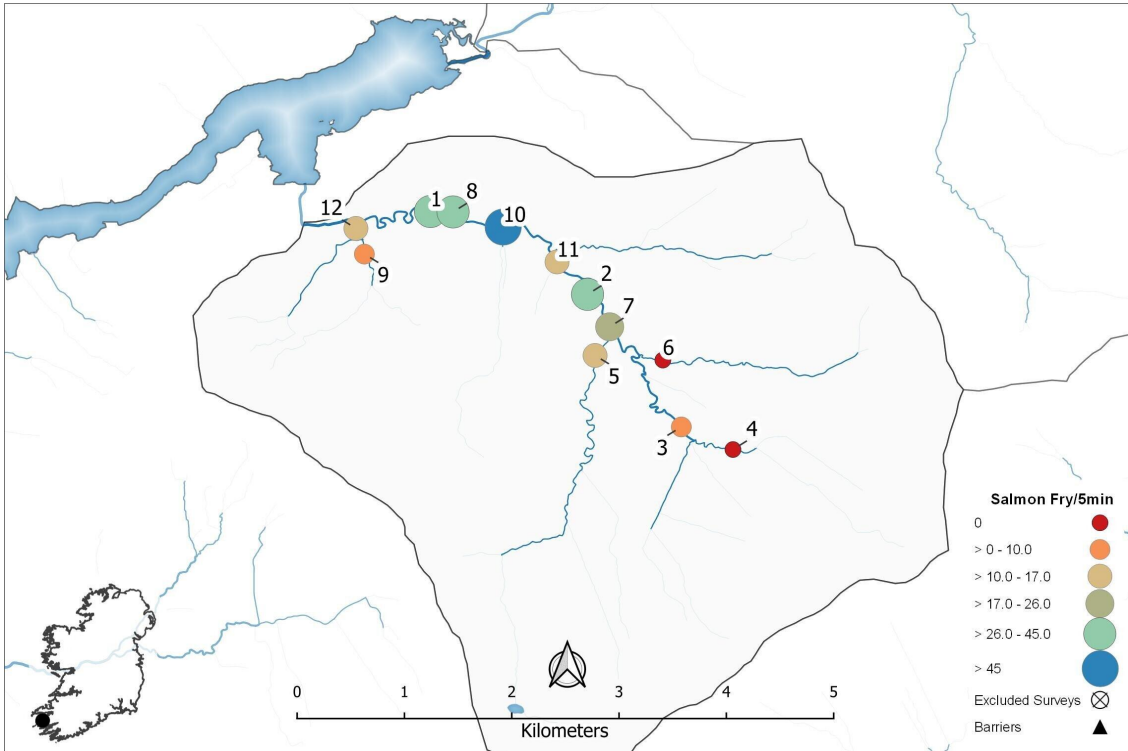
The survey this year consisted of 14 sites fished on the 26th of July, Salmon fry (0+) were found at ten sites, the highest numbers were at site 10 where 47 fry were observed. The modal length of 0+ salmon was 5.5 cm. All 14 sites were included in the analysis; the mean catch at these sites was 17.03 salmon fry/5min.

Conclusion

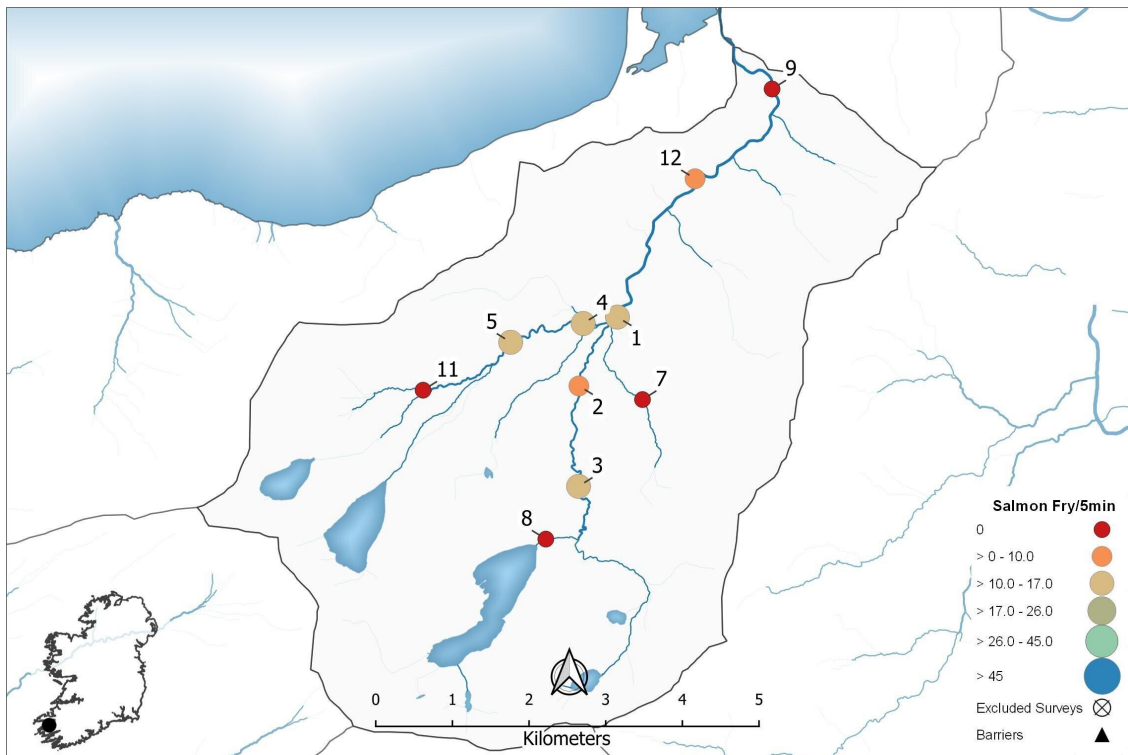
The Carhan had a salmon abundance of 17.03 sal fry/5min in 2022, Taking the five most recent complete surveys into account this results in a cumulative average of 11 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.4.7: Site specific results of CWEF on the Carhan catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	V 49710 79746	3	1	7	24	Include	8.13	27.87
002	V 51172 78971	3	1	3	29	Include	3.56	34.44
003	V 52046 77733	3	1	18	1	Include	21.79	1.21
004	V 52527 77522	2	3	30	0	Include	40.00	0.00
005	V 51243 78401	2	3	19	12	Include	20.84	13.16
006	V 51874 78357	2	2	34	0	Include	38.00	0.00
007	V 51379 78668	3	2	5	14	Include	7.37	20.63
008	V 49919 79742	3	1	4	29	Include	4.73	34.27
009	V 49093 79348	0	0	8	1	Include	8.00	1.00
010	V 50387 79601	0	1	4	47	Include	4.31	50.69
011	V 50888 79275	3	3	1	8	Include	1.33	10.67
012	V 49014 79587	4	1	2	8	Include	2.60	10.40



Map A.4.7: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Carhan River.



Map A.4.8: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Behy River.

A.4.8 Behy River

IFI Salmon Catchment #: 103
2022 survey dates: 13/7/2022
Mean Salmon Fry/5 min (2022): 7.18 fry/5min.
CWEF Index: 6.51 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout Salmon
 European Eel

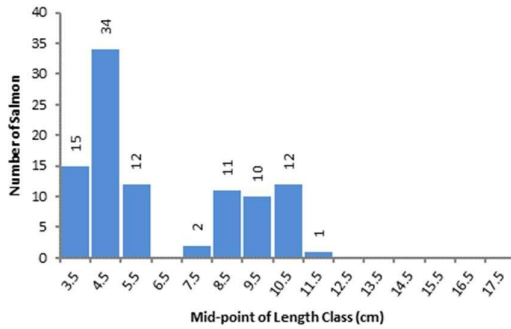


Figure A.4.8.1: Length distribution of salmon captured in 2022 CWEF survey on the Behy.

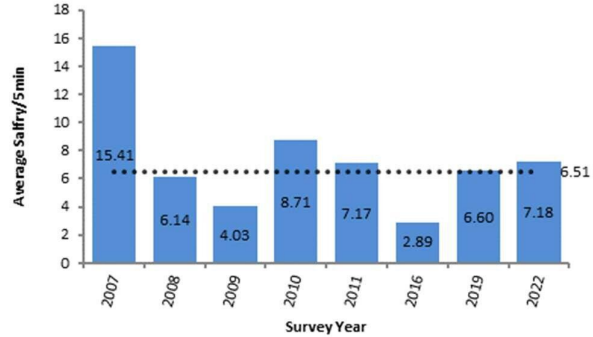


Figure A.4.8.2: Comparison of mean salmon fry/5min for all surveys on the Behy catchment to 2022.

The survey this year consisted of 10 sites fished on the 13th of July, Salmon fry (0+) were found at 6 sites, the highest numbers were at site 4 where 17 fry were observed. The modal length of 0+ salmon was 4.5 cm. All 10 sites were included in the analysis; the mean catch at these sites was 7.18 salmon fry/5min.

Conclusion

The Behy had a salmon abundance of 7.18 sal fry/5min in 2022. Taking the five most recent complete surveys into account this results in a cumulative average of 6.51 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.4.8: Site specific results of CWEF on the Behy catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	V 64467 87888	4	2	2	14	Include	2.38	16.63
002	V 63965 86992	3	2	2	5	Include	3.14	7.86
003	V 63961 85686	3	2	1	9	Include	1.30	11.70
004	V 64021 87805	3	0	8	17	Include	8.00	17.00
005	V 63076 87560	3	2	4	9	Include	4.62	10.38
007	V 64795 86815	2	3	13	0	Include	13.00	0.00
008	V 63533 85000	2	3	3	0	Include	4.00	0.00
009	V 66485 90856	4	2	3	0	Include	4.00	0.00
011	V 61932 86938	2	2	9	0	Include	9.00	0.00
012	V 65480 89688	4	0	4	7	Include	4.73	8.27

A.4.9 Owenalondrig River

IFI Salmon Catchment #: 110
2022 survey dates: 11/7/2022
Mean Salmon Fry/5 min (2022): 19.23 fry/5min.
CWEF Index: 20.57 fry/5min.

Sampling carried out by:
 Tony Holmes
 Cesare Monciano

Fish Species Present:
 Brown Trout Salmon
 European Eel

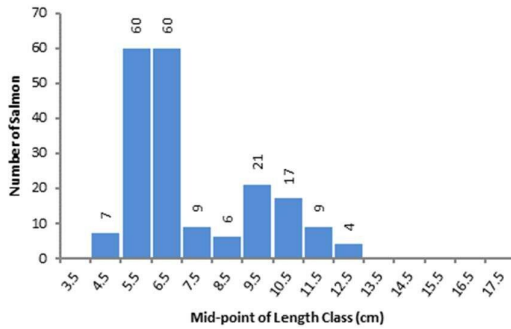


Figure A.4.9.1: Length distribution of salmon captured in 2022 CWEF survey on the Owenalondrig.

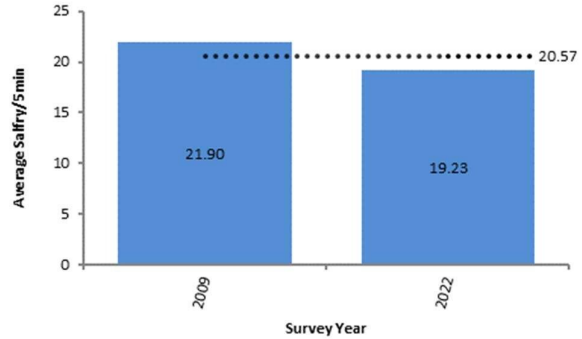


Figure A.4.9.2: Comparison of mean salmon fry/5min for all surveys on the Owenalondrig catchment to 2022.

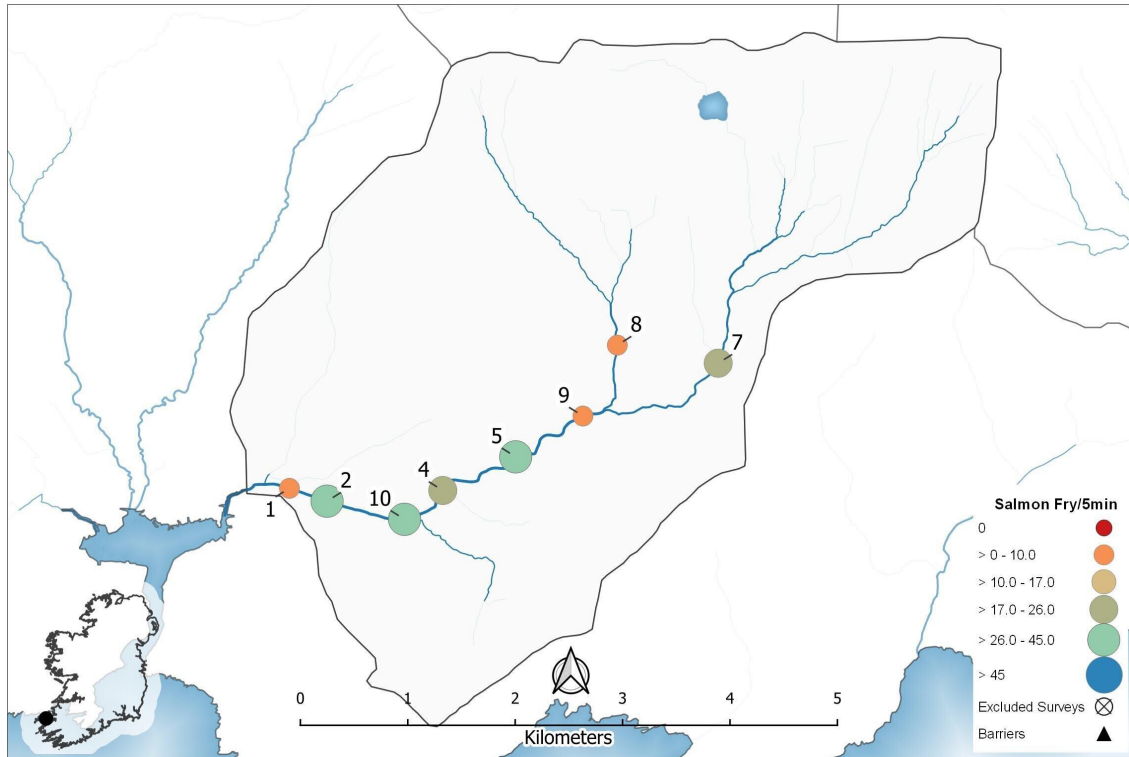
The survey this year consisted of 8 sites fished on the 11th of July, Salmon fry (0+) were found at all 8 sites, the highest numbers were at site 10 where 28 fry were observed. All 8 sites were included in the analysis; the mean catch at these sites was 19.23 salmon fry/5min.

Conclusion

The Owenalondrig had a salmon abundance of 19.23 sal fry/5min in 2022, Trout fry abundance was good. Taking the two complete surveys into account this results in a cumulative average of 20.57 salmon fry/5min which is above the 17 salmon fry threshold.

Table A.4.9: Site specific results of CWEF on the Owenalondrig catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	Q 49697 00709	4	2	1	8	Include	1.11	8.89
002	Q 50046 00589	4	1	2	27	Include	2.00	27.00
004	Q 51124 00688	4	1	12	18	Include	13.20	19.80
005	Q 51803 01000	4	1	1	23	Include	1.29	29.71
007	Q 53688 01868	3	2	3	20	Include	3.26	21.74
008	Q 52749 02035	3	2	0	4	Include	0.00	5.00
009	Q 52428 01378	4	2	2	8	Include	2.40	9.60
010	Q 50767 00422	4	1	6	28	Include	6.88	32.12



Map A.4.9: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Owenalondrig River

A.4.10 Scorid River

IFI Salmon Catchment #: 115
2022 survey dates: 7-8/7/2022
Mean Salmon Fry/5 min (2022): 5.62 fry/5min.
CWEF Index: 3.74 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout Salmon
 European Eel

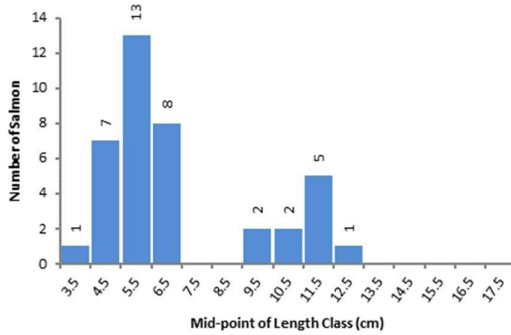


Figure A.4.10.1: Length distribution of salmon captured in 2022 CWEF survey on the Scorid.

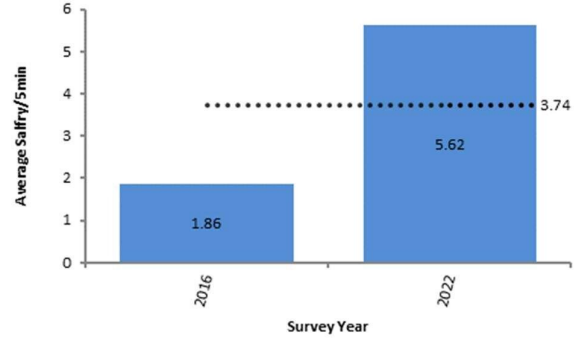


Figure A.4.10.2: Comparison of mean salmon fry/5min for all surveys on the Scorid catchment to 2022.

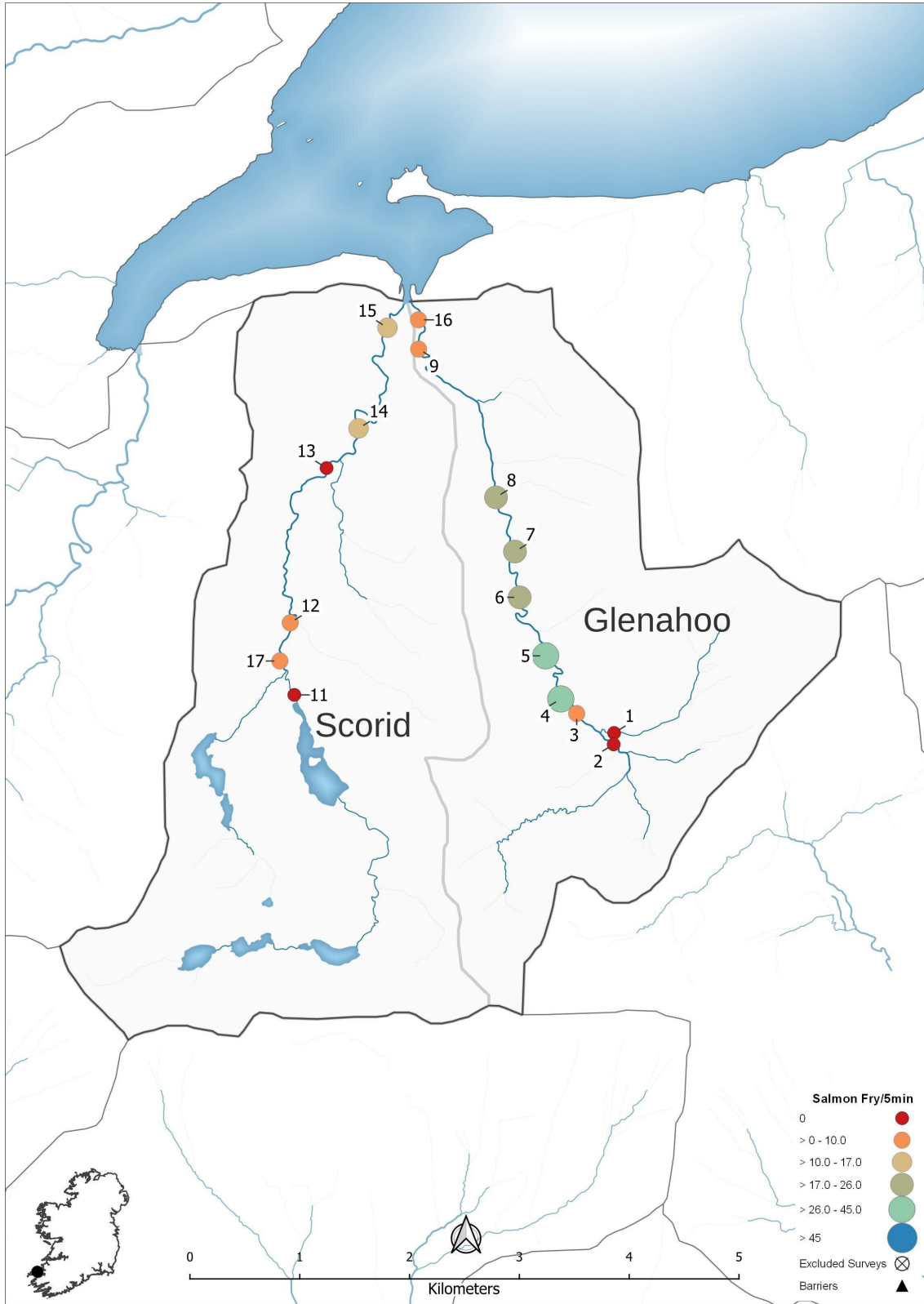
The survey this year consisted of 6 sites fished on the 7th and 8th of July, Salmon fry (0+) were found at four sites site, the highest numbers were at site 11 where 6 fry were observed. The modal length of 0+ salmon was 5.5 cm. All 6 sites were included in the analysis; the mean catch at these sites was 5.62 salmon fry/5min.

Conclusion

The Scorid is not considered a significant producer of Salmon, a small number of salmon do spawn in the river. A salmon abundance of 5.62 sal fry/5min was observed in 2022, which is a slight increase on the abundance on 2016. Taking the two complete surveys into account results in a cumulative average of 3.74 salmon fry/5min.

Table A.4.3.4: Site specific results of CWEF on the Scorid catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
011	Q 52715 07762	2	3	2	6	Include	3.00	0.00
012	Q 52677 08419	3	2	0	0	Include	0.00	1.00
013	Q 53008 09830	3	3	8	3	Include	10.00	0.00
014	Q 53300 10191	3	2	5	1	Include	5.71	10.29
015	Q 53563 11108	3	1	1	0	Include	1.17	12.83
017	Q 52584 08071	0	2	2	1	Include	2.40	9.60



Map A.4.10: Showing salmon fry/5min values and locations of surveys on the Scorid and Glenahoo in 2022.

A.4.11 Glenahoo River

IFI Salmon Catchment #: 115
2022 survey dates: 7-8/7/2022
Mean Salmon Fry/5 min (2022): 15.52 fry/5min.
CWEF Index: 8.70 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout Salmon
 European Eel

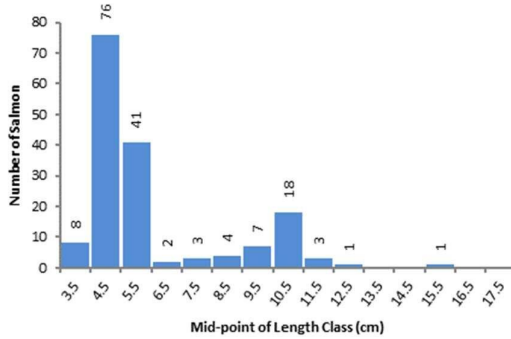


Figure A.4.11.1: Length distribution of salmon captured in 2022 CWEF survey on the Glenahoo.

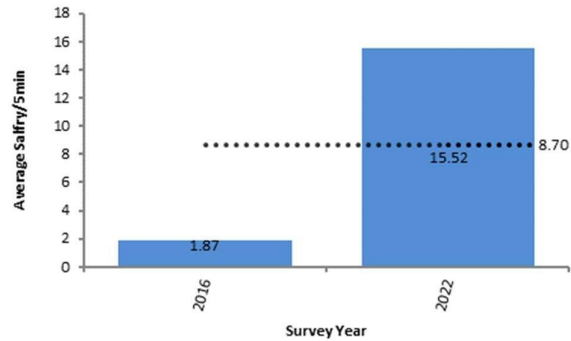


Figure A.4.11.2: Comparison of mean salmon fry/5min for all surveys on the Glenahoo catchment to 2022.

The survey this year consisted of 7 sites fished on the 7th and 8th of July, Salmon fry (0+) were found at 5 sites, the highest numbers were at site 7 where 21 fry were observed. The modal length of 0+ salmon was 4.5 cm. All sites were included in the analysis; the mean catch at these sites was 15.52 salmon fry/5min.

Conclusion

Whilst the Glenahoo is not considered a significant producer of salmon it had a salmon abundance of 15.52 salfry/5min in 2022. This was considerably higher than the 1.87 salfry/5min observed in 2016. Taking the two complete surveys into account results in a cumulative average of 8.70 salmon fry/5min.

Table A.4.11: Site specific results of CWEF on the Glenahoo catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	Q 55628 07416	2	2	18	0	Include	20.00	0.00
002	Q 55623 07312	3	3	4	0	Include	6.00	0.00
003	Q 55287 07593	3	1	15	7	Include	18.41	8.59
006	Q 54767 08652	3	1	1	15	Include	1.19	17.81
007	Q 54725 09068	3	1	1	21	Include	1.14	23.86
009	Q 53846 10914	3	3	3	5	Include	3.38	5.63
016	Q 53845 11181	3	2	0	2	Include	0.00	3.00

A.4.12 Aghacashla / Owencashla River

2022 survey dates: 6/7/2022
Mean Salmon Fry/5 min (2022): 15.18 fry/5min.
CWEF Index: 10.04 fry/5min.

Sampling carried out by:
 Tony Holmes
 Cesare Monciano

Fish Species Present:
 Brown Trout Salmon
 European Eel

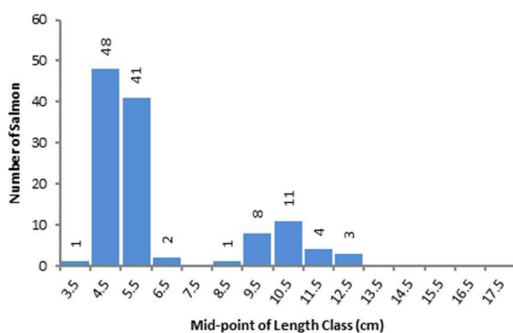


Figure A.4.12.1: Length distribution of salmon captured in 2022 CWEF survey on the Aghacashla.

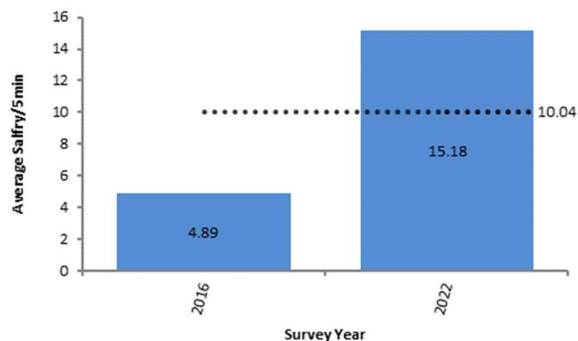


Figure A.4.12.2: Comparison of mean salmon fry/5min for all surveys on the Aghacashla catchment to 2022.

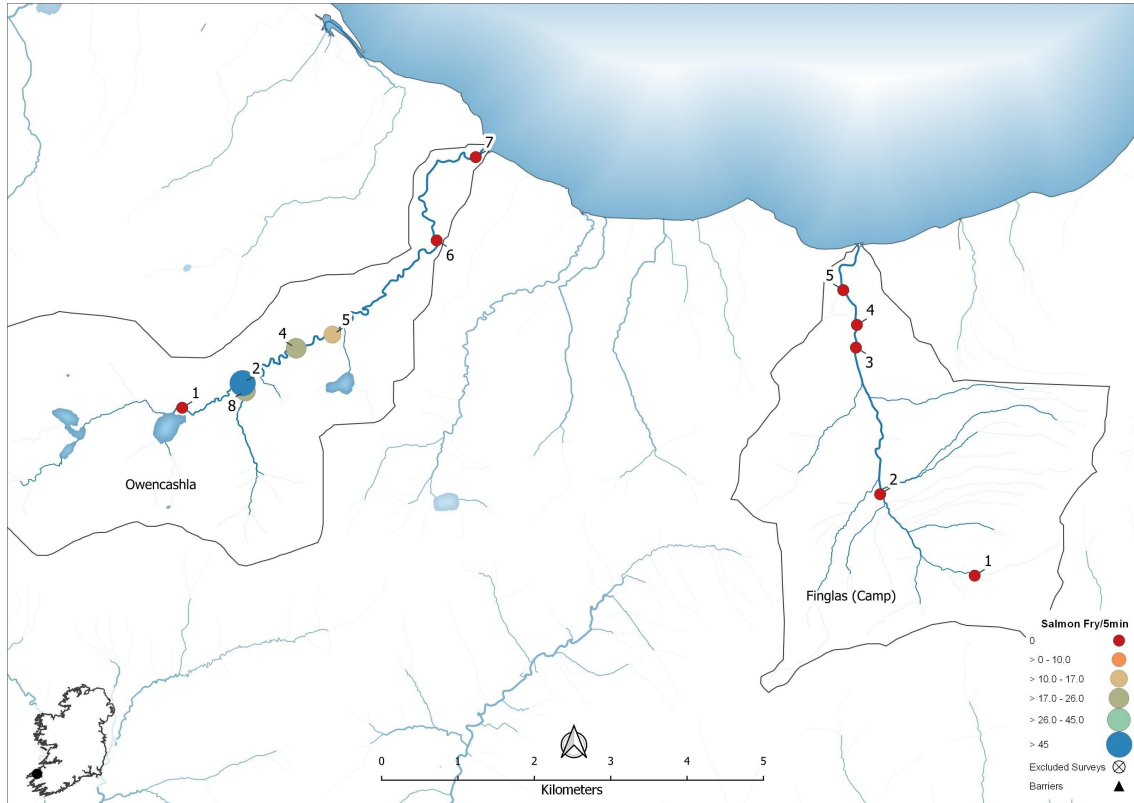
The survey this year consisted of 7 sites fished on the 6th of July, Salmon fry (0+) were found at 4 sites, the highest numbers were at site 2 where 41 fry were observed. The modal length of 0+ salmon was 4.5 cm. All 7 sites were included in the analysis; the mean catch at these sites was 15.18 salmon fry/5min.

Conclusion

Whilst the Owencashla is not considered a significant producer of salmon it had a salmon abundance of 15.18 sal fry/5min in 2022. This was considerably higher than the 4.89 sal fry/5min observed in 2016. Taking the two complete surveys into account results in a cumulative average of 10.04 salmon fry/5min.

Table A.4.12: Site specific results of CWEF on the Owencashla catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	Q 61222 08124	3	2	16	0	Include	18.00	0.00
002	Q 62014 08446	4	2	5	41	Include	5.54	45.46
004	Q 62716 08905	4	2	11	20	Include	13.48	24.52
005	Q 63190 09084	4	1	9	12	Include	11.14	14.86
006	Q 64555 10319	4	2	2	0	Include	3.00	0.00
007	Q 65067 11411	4	3	2	0	Include	3.00	0.00
008	Q 62051 08344	3	2	12	19	Include	13.55	21.45



Map A.4.12: Showing salmon fry/5min values and locations of surveys on the Owencashla and Finglas Rivers in 2022.

A.4.13 Finglas River

IFI Salmon Catchment #: 108
2022 survey dates: 8/7/2021
Mean Salmon Fry/5 min (2022): 0 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout Flounder
 European Eel

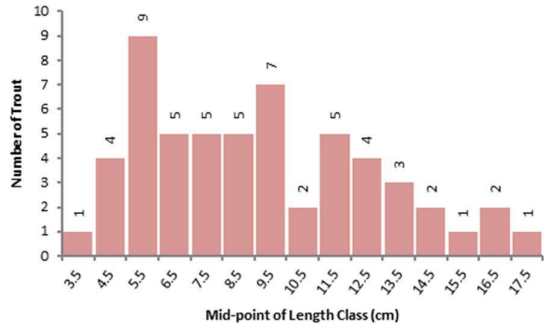


Figure A.4.13: Length distribution of Brown Trout captured in 2022 CWF survey on the Finglas.

This river is not considered a significant producer of salmon, an exploratory survey was undertaken in 2022. The catchment has an area of just under 16 km² and the river has just over 18km of river > stream order 1. The main channel is just under 6km in length, it rises on the slopes of Caherconree, flows generally north, passes through Camp village before entering Tralee Bay. The survey consisted of 5 sites fished on the 8th of July, Salmon fry (0+) were not observed anywhere on this catchment. Brown trout were found throughout the catchment.

Conclusion

The Finglas had a salmon abundance of 0 sal fry/5min in 2022, Trout fry were present throughout.

Table A.4.13: Site specific results of CWF on the Finglas catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	Q 71603 05924	2	3	8	0	Include	10.00	0.00
002	Q 70364 06990	3	2	6	0	Include	7.00	0.00
003	Q 70048 08914	4	2	3	0	Include	4.00	0.00
004	Q 70061 09210	4	2	2	0	Include	2.00	0.00
005	Q 69882 09667	4	3	3	0	Include	3.00	0.00

A.4.14 Lee River (Kerry)

IFI Salmon Catchment #: 117
2022 survey dates: 12/7/2022
Mean Salmon Fry/5 min (2022): 0 fry/5min.
CWEF Index: 0.51 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

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

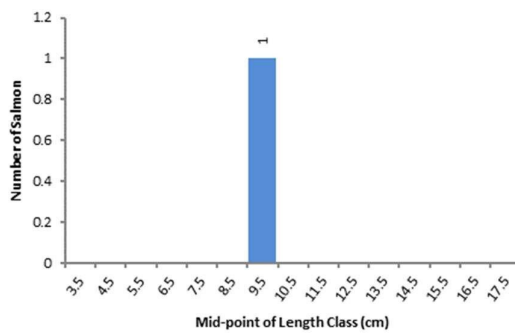


Figure A.4.14.1: Length distribution of salmon captured in 2022 CWEF survey on the Lee (Kerry).

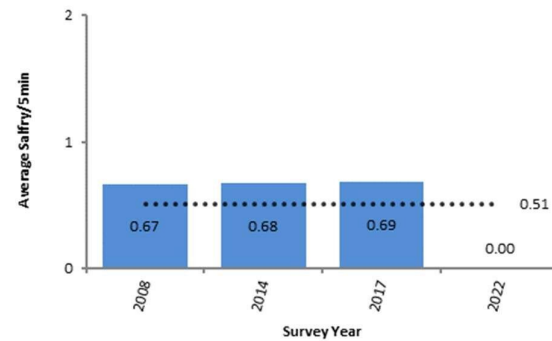


Figure A.4.14.2: Comparison of mean salmon fry/5min for all surveys on the Lee (Kerry) catchment to 2022.

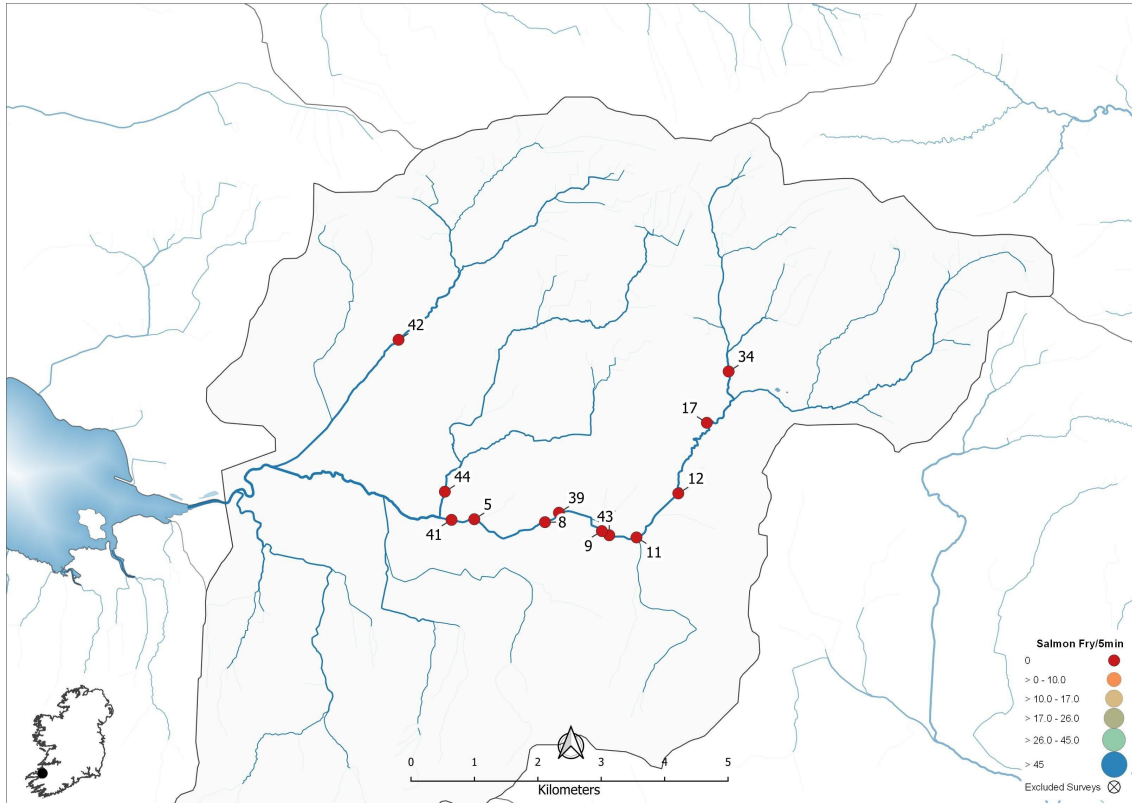
The survey this year consisted of 12 sites fished on the 12th of July, A single 9cm salmon most likely a fry from a spawning in winter 2019/20 was observed during the survey at site #12. All 12 sites were included in the analysis; the mean catch at these sites was 0 salmon fry/5min.

Conclusion

No salmon fry (0+) were found on the Lee in 2022, Trout fry abundance was good. Taking the four previous complete surveys into account this results in a cumulative average of 0.51 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.4.14: Site specific results of CWEF on the Lee (Kerry) catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
005	Q 86026 12954	4	0	1	0	Include	2.00	0.00
008	Q 87142 12908	4	2	5	0	Include	6.00	0.00
009	Q 88039 12769	4	2	15	0	Include	15.00	0.00
011	Q 88584 12668	4	2	9	0	Include	9.00	0.00
012	Q 89244 13361	4	1	13	0	Include	14.00	0.00
017	Q 89694 14469	4	2	12	0	Include	12.00	0.00
034	Q 90038 15277	4	2	37	0	Include	39.00	0.00
039	Q 87362 13057	4	2	7	0	Include	7.00	0.00
041	Q 85667 12944	4	2	3	0	Include	4.00	0.00
042	Q 84831 15775	4	2	6	0	Include	6.00	0.00
043	Q 88156 12702	4	1	25	0	Include	26.00	0.00
044	Q 85562 13388	4	2	0	0	Include	0.00	0.00



Map A.4.14: Showing salmon fry/5min values and locations of surveys on the Lee River in 2022. A single salmon of 9cm (>0+) was observed at site 12.

A.5 Shannon River Basin District

Summary

Since 2007 twenty-two rivers have been surveyed in the Shannon River Basin District (SHRBD) as part of the on-going catchment-wide electrofishing surveys. These are presented in Table A.5. At present three rivers - the Feale, Kilmastula and Old Shannon main channel are meeting the threshold of 17 salmon fry/5min. Surveys of the Old Shannon main channel, the Doonbeg, Aughyvackeen and Aille Rivers were undertaken in 2022.

Table A.5: Catchment-wide electrofishing data for the Shannon River Basin District 2013-2021 showing the average salmon fry captured /5min for each year surveyed. Also shown is the Surveys Mean capture rate, surveys prior to 2013 are included in appendix C.

Code/River	Survey Year								Current Index	# Annual Surveys Considered
	2015	2016	2017	2018	2019	2020	2021	2022		
118/Brick									0.00	1
119/Feale									<u>24.15</u>	1
120/Galey									12.99	1
125/Deel		1.87*	0.04					3.74	1.03	4
126/Maigue								13.75	11.17	4
128/Shannon Kilcrow									0.69	1
128/Sh. Graney									0.19	1
128/Sh. Woodford									0.00	1
128/Sh. Mulkear				8.00*						
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 Main Ch.			5.50*†	18.2*†	35.68			28.82	<u>32.25</u>	1
130/Owenagarney						3.55			9.80	3
131/Fergus	6.66					5.12*	8.99		6.50	5
133/Doonbeg		16.14*	18.77					18.82	16.81	4
134/Skivaleen	11.7	14.54*				10.30			12.27	3
135/Annageeragh						0.72			3.93	3
142/Inagh	3.59					7.23			5.47	3
143/Aughyvackeen			1.70					2.28	1.66	3
144/Aille								0.00	0.00	1
Quin	5.97								5.97	1

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

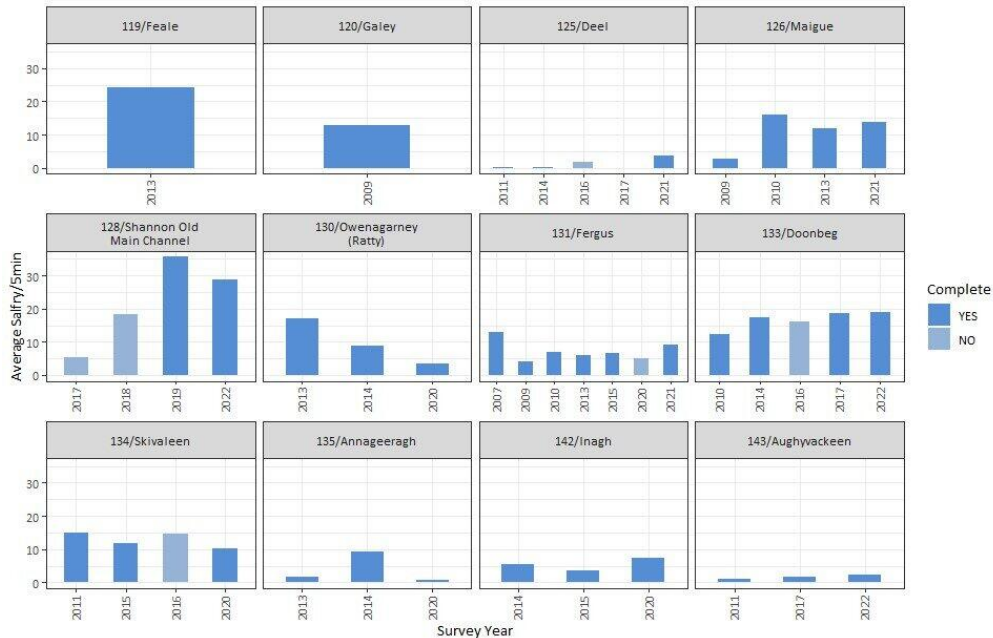


Figure A.5: Summary of CWF results in Shannon River basin district 2008-2022.

A.5.1 Shannon Old Main Channel

IFI Salmon Catchment #: 128
2022 survey dates: 29 -31/8/2022
Mean Salmon Fry/5 min (2022): 28.28 fry/5min.
CWEF Index: 32.25 fry/5min.

Sampling carried out by:
 Tony Holmes
 Cesare Monciano

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

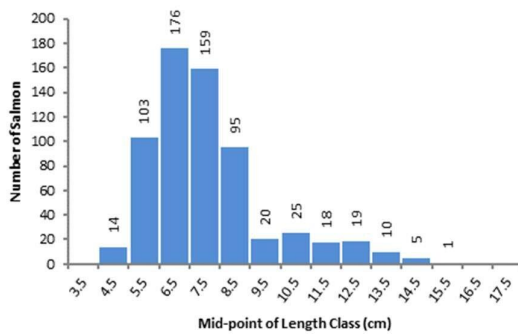


Figure A.5.1.1: Length distribution of salmon captured 2022 on the Shannon.

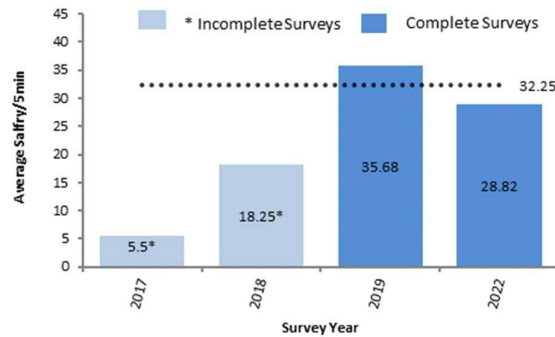


Figure A.5.1.2: Comparison of mean salmon fry/5min for all surveys on the Shannon to 2022.

The survey this year consisted of 24 sites fished from the 29th to the 31st of August on the Old Shannon main channel in the vicinity of Castleconnell and Limerick University, Salmon fry (0+) were found at all sites, the highest numbers were at site 512 where 71 fry were observed. The modal length of 0+ salmon was 6.5 cm. 23 sites were included in the analysis; the mean catch at these sites was 28.28 salmon fry/5min.

Conclusion

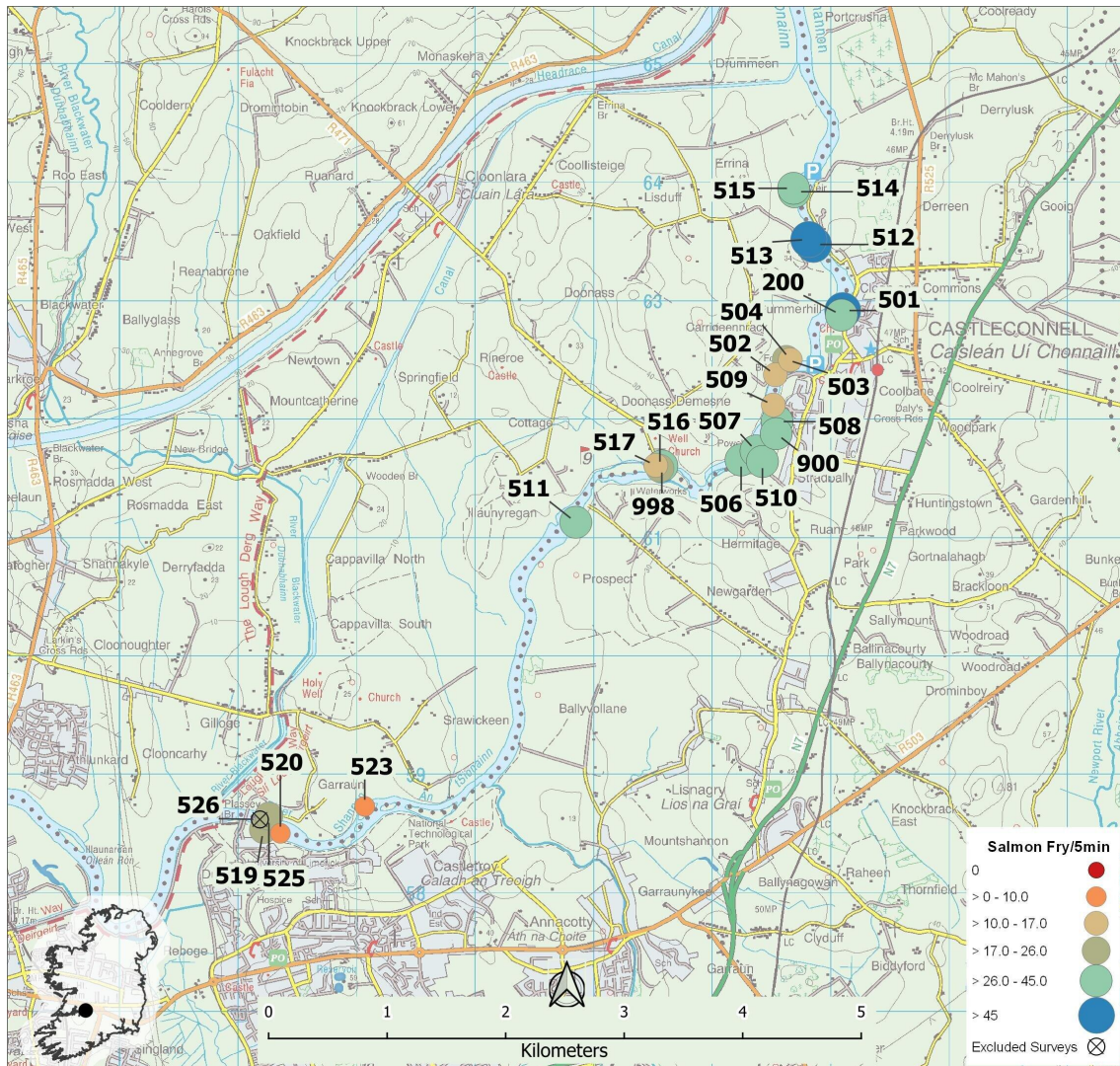
The Shannon had a salmon abundance of 28.28 salfry/5min in 2022. Taking the two completed surveys into account this results in a cumulative average of 32.25 salmon fry/5min which is above the 17 salmon fry threshold.

Table A.5.1: Site specific results of CWEF on the Shannon catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
200	R 66065 62919	7	1	0	23	Include	0.00	27.00
501	R 66078 62932	0	2	0	36	Include	0.00	47.00
502	R 65562 62343	0	3	0	13	Include	0.00	17.00
503	R 65660 62434	0	2	6	22	Include	6.86	25.14
504	R 65668 62435	0	1	0	11	Include	0.00	11.00
506	R 65250 61615	0	2	0	27	Include	0.00	34.00
507	R 65421 61710	0	3	1	23	Include	1.29	29.71
508	R 65450 61867	0	3	0	32	Include	0.00	45.00
509	R 65467 61952	0	1	0	8	Include	0.00	13.00
510	R 65405 61679	0	1	0	24	Include	0.00	31.00
511	R 63798 61182	0	1	0	26	Include	0.00	27.00
512	R 65880 63481	0	1	0	71	Include	0.00	79.00

Table A.5.1: Site specific results of CWF on the Shannon catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
513	R 65847 63542	0	1	0	43	Include	0.00	49.00
514	R 65759 63919	0	1	0	31	Include	0.00	31.00
515	R 65770 63962	0	1	0	30	Include	0.00	37.00
516	R 64592 61568	0	2	0	14	Include	0.00	19.00
517	R 64579 61555	0	3	0	10	Include	0.00	14.00
519	R 61245 58584	0	1	0	20	Include	0.00	23.00
520	R 61357 58530	0	0	0	10	Include	0.00	10.00
523	R 62056 58577	0	2	0	1	Include	0.00	1.00
525	R 61223 58599	0	2	0	18	Include	0.00	23.00
526	R 61179 58621	0	0	0	0	Exclude (too fast)		
900	R 65540 61877	0	1	0	31	Include	0.00	41.00
998	R 64575 61605	0	2	0	25	Include	0.00	29.00



Map A.5.1: Showing salmon fry/5min values and locations of surveys on the Shannon in 2022..

A.5.2 Doonbeg River

IFI Salmon Catchment #: 133
2022 survey dates: 14/9/22 – 19/9/2022
Mean Salmon Fry/5 min (2022): 18.82 fry/5min.
CWEF Index: 16.81 fry/5min.

Sampling carried out by:
 Bill Keane
 Catherine Hayes
 Colm Walsh
 Jonathon Coates Farrell

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

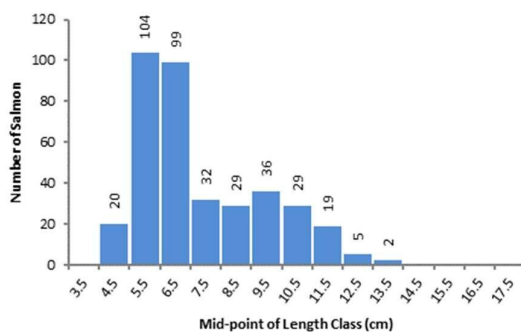


Figure A.5.2.1: Length distribution of salmon captured in 2022 CWEF survey on the Doonbeg.

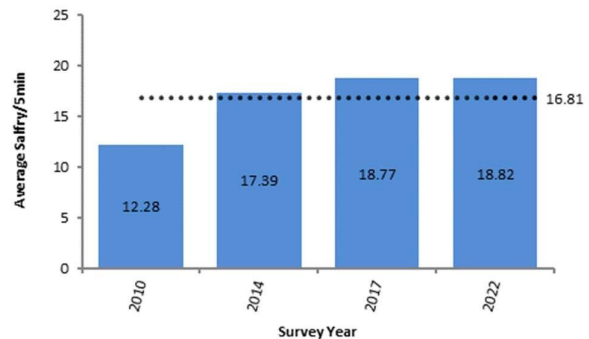


Figure A.5.2.2: Comparison of mean salmon fry/5min for all surveys on the Doonbeg catchment to 2022.

The survey this year consisted of 20 sites fished from the 14th to 19th August. Salmon fry (0+) were found at 18 sites, the highest numbers were at site 7 where 26 fry were observed. The modal length of 0+ salmon was 8.5 cm. 18 sites were included in the analysis; the mean catch at these sites was 18.82 salmon fry/5min.

Conclusion

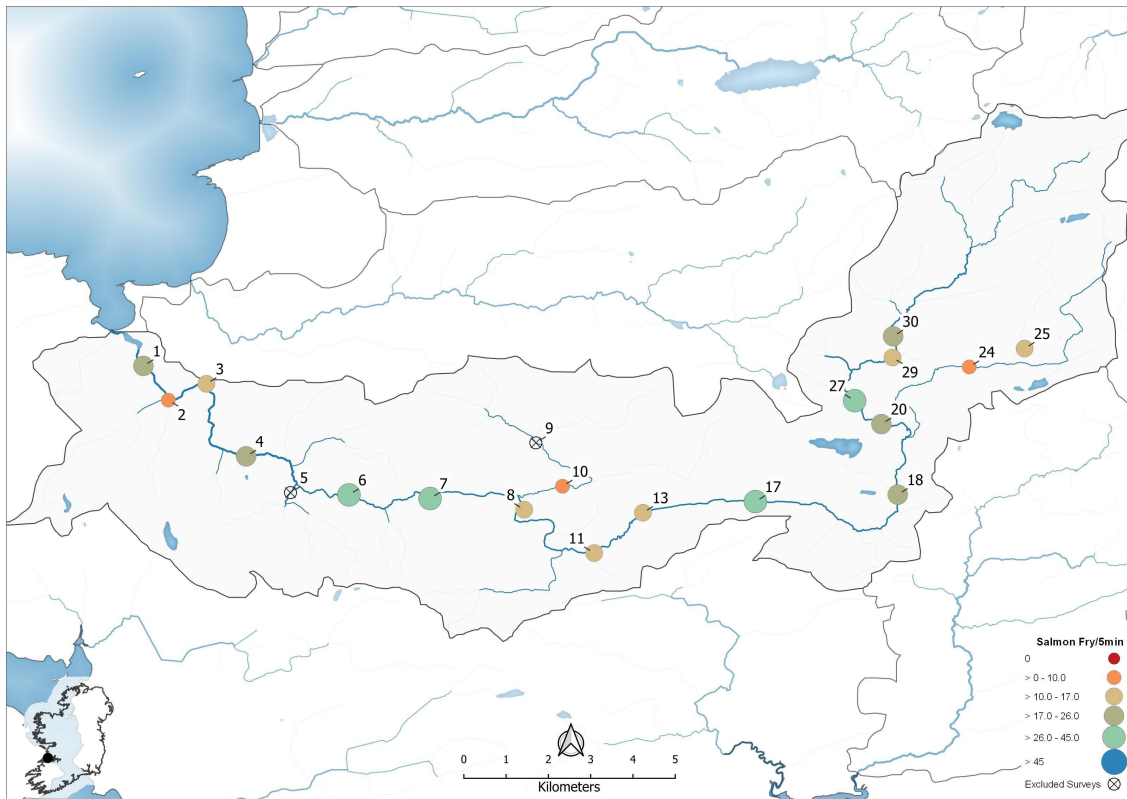
The Doonbeg had a salmon abundance of 18.82 sal fry/5min in 2022. Taking the four previous complete surveys into account this results in a cumulative average of 16.81 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.5.2: Site specific results of CWEF on the Doonbeg catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	Q 97250 65177	4	2	4	17	Include	5.52	23.48
002	Q 97839 64365	4	2	2	7	Include	2.67	9.33
003	Q 98742 64752	4	3	0	8	Include	0.00	12.00
004	Q 99681 63030	4	2	3	20	Include	3.78	25.22
005	R 00730 62170	3				Not Sampled		
006	R 02114 62116	3	2	2	24	Include	2.46	29.54
007	R 04033 62029	3	1	1	26	Include	1.22	31.78
008	R 06261 61763	3	2	0	8	Include	0.00	12.00
009	R 06535 63351	2				Not Sampled		
010	R 07168 62320	2	2	3	6	Include	3.00	6.00
011	R 07917 60734	3	2	1	13	Include	1.29	16.71
013	R 09069 61692	3	2	0	15	Include	0.00	15.00

Table A.5.2: Site specific results of CWF on the Doonbeg catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
017	R 11732 61955	3	2	5	20	Include	6.60	26.40
018	R 15098 62120	3	2	2	17	Include	2.63	22.37
020	R 14712 63797	3	2	1	12	Include	1.46	17.54
024	R 16791 65153	2	2	2	4	Include	2.67	5.33
025	R 18099 65591	2	2	8	11	Include	8.84	12.16
027	R 14079 64352	3	1	2	29	Include	2.45	35.55
029	R 14974 65376	3	2	3	10	Include	4.15	13.85
030	R 14989 65881	3	2	2	19	Include	2.57	24.43



Map A.5.2: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Doonbeg River.

A.5.3 Aughyvackeen River

IFI Salmon Catchment #: 143
2022 survey dates: 26/8/2022
Mean Salmon Fry/5 min (2022): 2.28 fry/5min.
CWEF Index: 1.66 fry/5min.

Sampling carried out by:
 Bill Keane
 Conor Kirby
 David McInerney
 Jonathan Coates Farrell
 Niamh Lynch

Fish Species Present:
 Brown Trout Lamprey sp.
 European Eel Salmon
 Flounder 3-Spined Stickleback

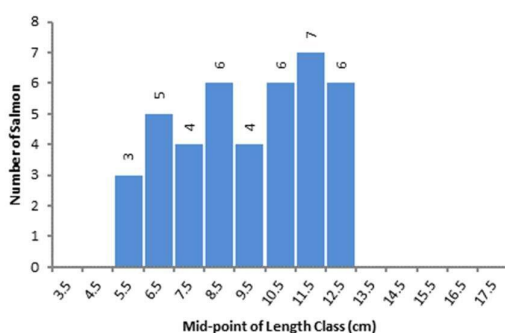


Figure A.5.3.1: Length distribution of salmon captured in 2022 CWEF survey on the Aughyvackeen.

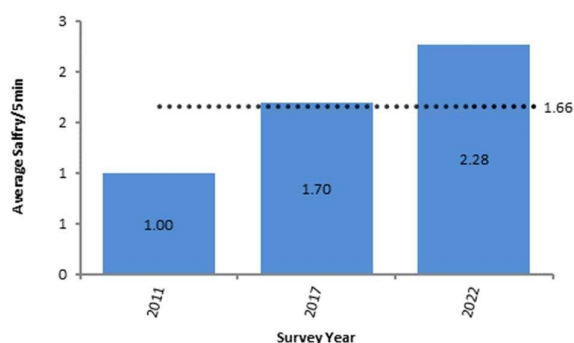


Figure A.5.3.2: Comparison of mean salmon fry/5min for all surveys on the Aughyvackeen catchment to 2022.

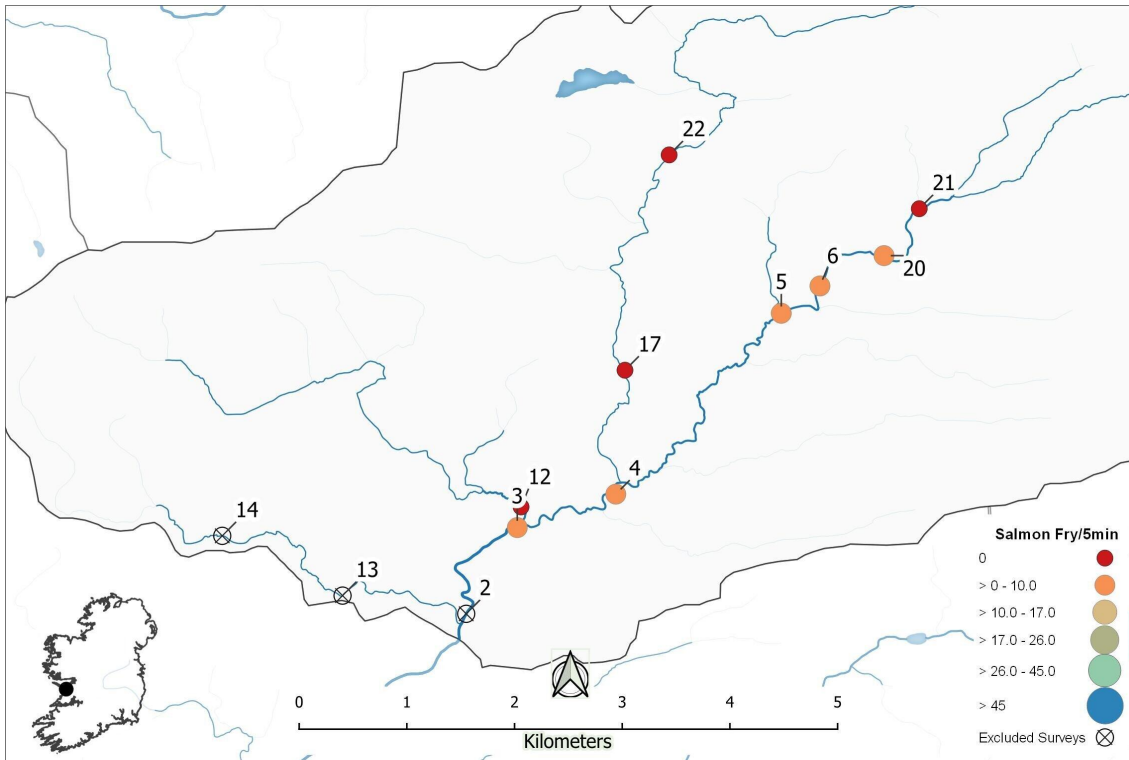
The survey this year consisted of 12 sites fished between the 26th of August. Salmon fry (0+) were found at 5 sites, the highest numbers were at site 4 where 5 fry were observed. The modal length of 0+ salmon was 6.5 cm. 9 sites were included in the analysis; the mean catch at these sites was 2.28 salmon fry/5min.

Conclusion

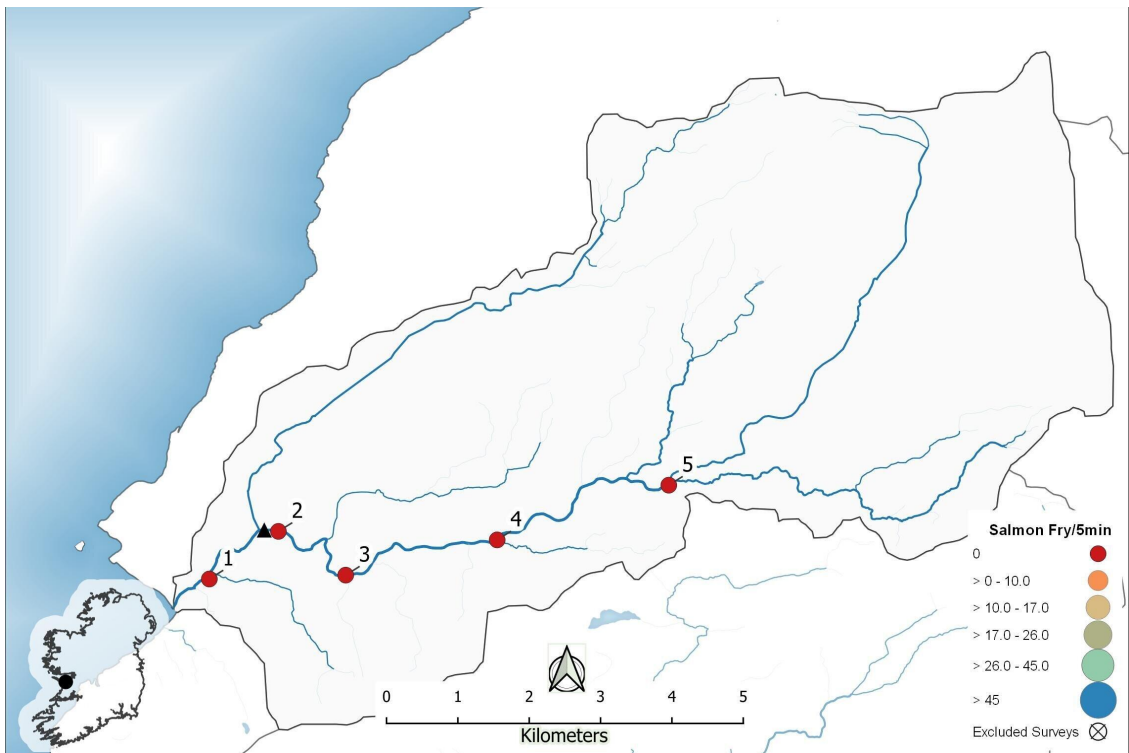
The Aughyvackeen had a salmon abundance of 2.28 salfry/5min in 2022. Taking the three complete surveys into account results in a cumulative average of 1.66 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.5.3: Site specific results of CWEF on the Aughyvackeen catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
002	R 11555 91146	4	3	4	4	Eff <60%		
003	R 12029 91942	4	2	8	4	Include	10.67	5.33
004	R 12943 92251	3	2	1	5	Include	1.50	7.50
005	R 14479 93921	3	3	3	1	Include	4.50	1.50
006	R 14838 94174	3	3	5	1	Include	7.50	1.50
012	R 12064 92134	3	3	2	0	Include	2.00	0.00
013	R 10406 91314	2	3	3	0	Unsuitable Site		
014	R 09290 91866	2	3	6	0	Unsuitable Site		
017	R 13029 93395	2	3	13	0	Include	16.00	0.00
020	R 15433 94453	3	3	6	3	Include	9.33	4.67
021	R 15760 94887	3	3	2	0	Include	4.00	0.00
022	R 13438 95384	2	3	5	0	Include	7.00	0.00



Map A.5.3 Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Aughyvackeen River.



Map A.5.4 Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Aille River.

A.5.4 Aille River

IFI Salmon Catchment #: 144
 2022 survey dates: 26/9/2022
 Mean Salmon Fry/5 min (2022): 0 fry/5min.

Sampling carried out by: Bill Keane
 Niamh Lynch

Fish Species Present:
 Brown Trout

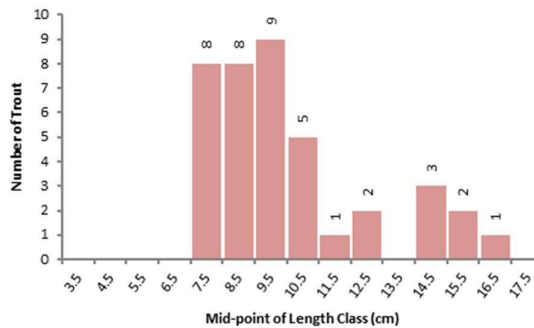


Figure A.5.4: Length distribution of brown trout captured in 2022 CWF survey on the Aille.

The Aille is a small catchment with an area of around 64 km², it has around 50km of channel >stream order 1, the longest channel is around 17km long and passes through Lisdoonvarna and Doolin before entering the Atlantic. There is a significant waterfall low down in the catchment which is probably a barrier to salmon migration. The river is not considered a significant producer of Salmon. An exploratory survey was carried out in 2022 it consisted of 5 sites fished on the 26th of September. Salmon were absent from all sites; trout fry abundance was low.

Conclusion

No evidence of salmon was observed in the 2022 survey.

Table A.5.4: Site specific results of CWF on the Fergus catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	R 07070 96608	4	3	0	0	Include	0.00	0.00
002	R 08039 97273	4	2	4	0	Include	6.00	0.00
003	R 08982 96661	4	2	5	0	Include	7.00	0.00
004	R 11104 97153	4	3	6	0	Include	9.00	0.00
005	R 13508 97918	4	2	1	0	Include	1.00	0.00

A.6 Western River Basin District

Summary

Since 2007 thirty rivers have been surveyed in the Western River Basin District (WRBD) as part of the on-going catchment-wide electrofishing surveys. These are presented in Table A.6. At present seven rivers are meeting the threshold of 17 salmon fry/5min. Surveys of the Screeb, Owenglin, Erriff, Carrownisky, Clooghnamore, Leaffony and Garvogue were undertaken in 2022.

Table A.6: Catchment-wide electrofishing data for the Western River Basin District 2014-2022 showing the average salmon fry captured /5min for each year surveyed. Also shown is the surveys' mean capture rate, surveys prior to 2014 are included in Appendix C

Code/River	Survey Year										Current Index	# Annual Surveys Considered
	2014	2015	2016	2017	2018	2019	2020	2021	2022			
145/Kilcolgan				0.10*	0.79*		11.95				7.23	2
146/Clarinbridge							1.77				4.51	2
147/Corrib Owenriff					10.3*†			22.30				
148/Knock					1.50*			16.93			14.73	2
149/Owenboliska	4.52				0.60			12.81			5.50	4
152/Cashla											10.83	1
154/L.Na Furnace		0.00									0.00	1
155/Screeb				10.70					11.56		11.13	2
161/Ballinahinch							14.83				14.83	1
163/Owenglin									28.56		20.06	2
167/Culfin											30.83	1
168/Erriff	24.90	28.52	21.72	13.69	22.81	22.25	31.95	40.49	37.18		30.93	5
171/Carrownisky				4.25*		15.24					20.15	5
172/Bunowen											13.62	1
173/Owenwee						4.49					8.87	4
178/Newport (Beltra)	17.40										13.00	3
179/Srahmore											4.33	1
181/Owengarve	6.19	0.72					13.01				6.36	4
185/Owenduff	6.20										6.10	2
186/Owenmore-MC											27.65	1
186 Carrowmore											25.77	1
187/Glenamoy											16.91	2
188/Muingnabo		1.87*					0.33				0.55	2
193/Ballinglen			4.97					10.73			9.56	5
194/Cloonaghmore				5.07*	14.63				7.52		15.35	5
196/Brusna	14.74						6.73*				11.20	3
198/Leaffony		1.73					0.67*		0.00		3.86	4
203/Garvogue								19.53	16.37		14.57	5
205/Drumcliff											17.72	1
207/Grange		4.56					4.08				4.42	2

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

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

* Incomplete surveys not included in calculation of current index.

† Sub-catchment surveys.

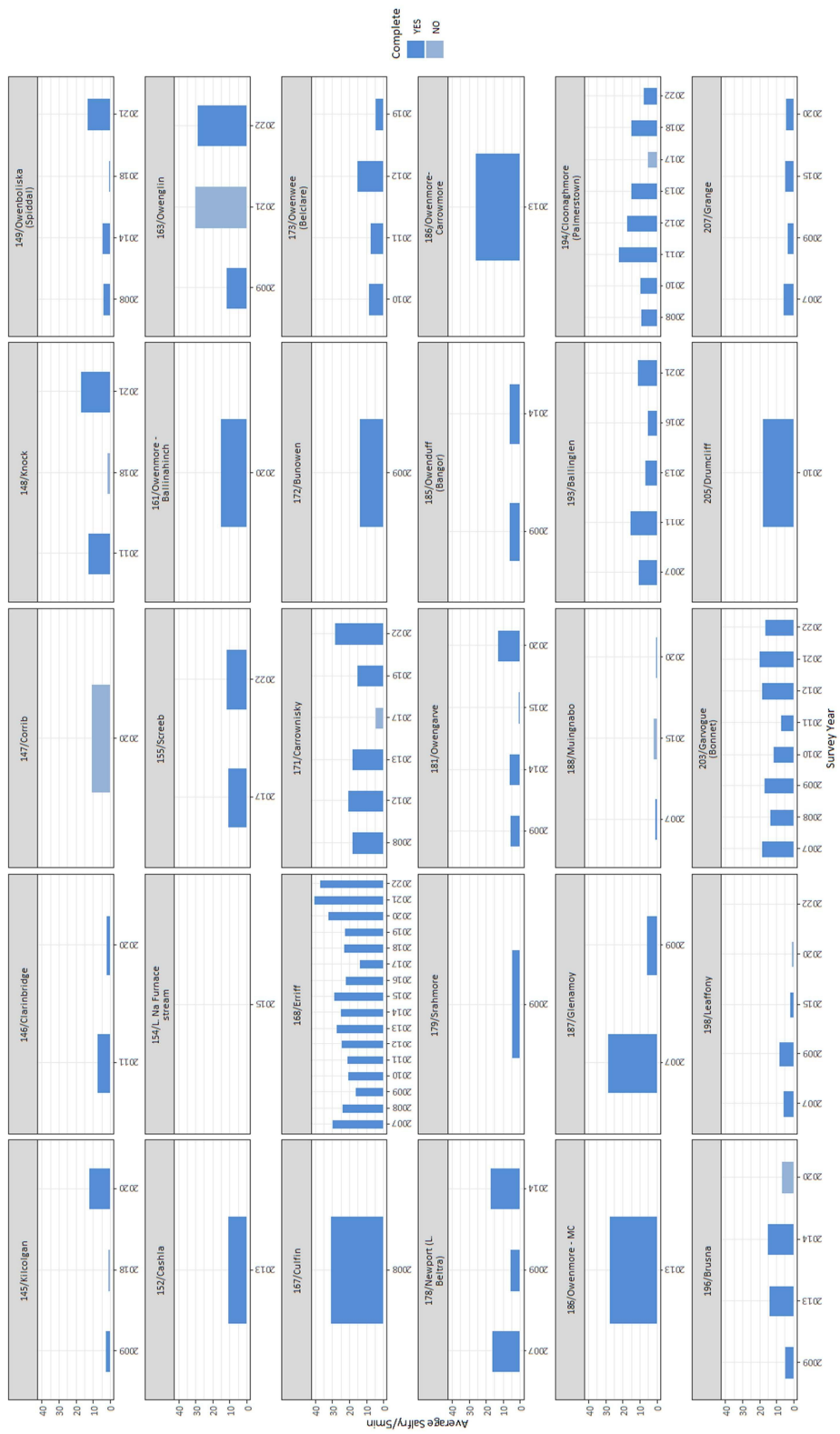


Figure A.6: Summary of CWF results in Western River basin district 2007-2022.

A.6.1 Screeb River

IFI Salmon Catchment #: 155
2022 survey dates: 13 & 20/9/2022
Mean Salmon Fry/5 min (2022): 11.56 fry/5min.
CWEF Index: 11.13 fry/5min.

Sampling carried out by:
 Claire Kelly Kevin Kerrigan
 John Kelly Mick Millane

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

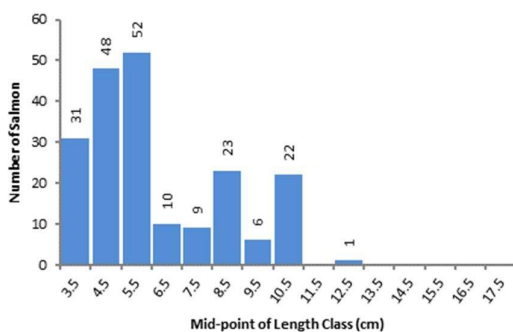


Figure A.6.1.1: Length distribution of salmon captured in 2022 CWEF survey on the Screeb.

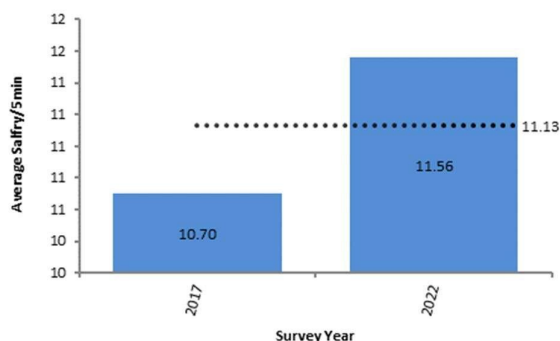


Figure A.6.1.2: Comparison of mean salmon fry/5min for all surveys on the Screeb catchment to 2022.

The survey this year consisted of 17 sites fished on the 13th and 20th September, a further three sites were visited but we unsuitable for surveying. Salmon fry (0+) were found at 10 sites, the highest numbers were at site 2 where 34 fry were observed. The modal length of 0+ salmon was 5.5 cm. 15 sites were included in the analysis; the mean catch at these sites was 11.56 salmon fry/5min.

Conclusion

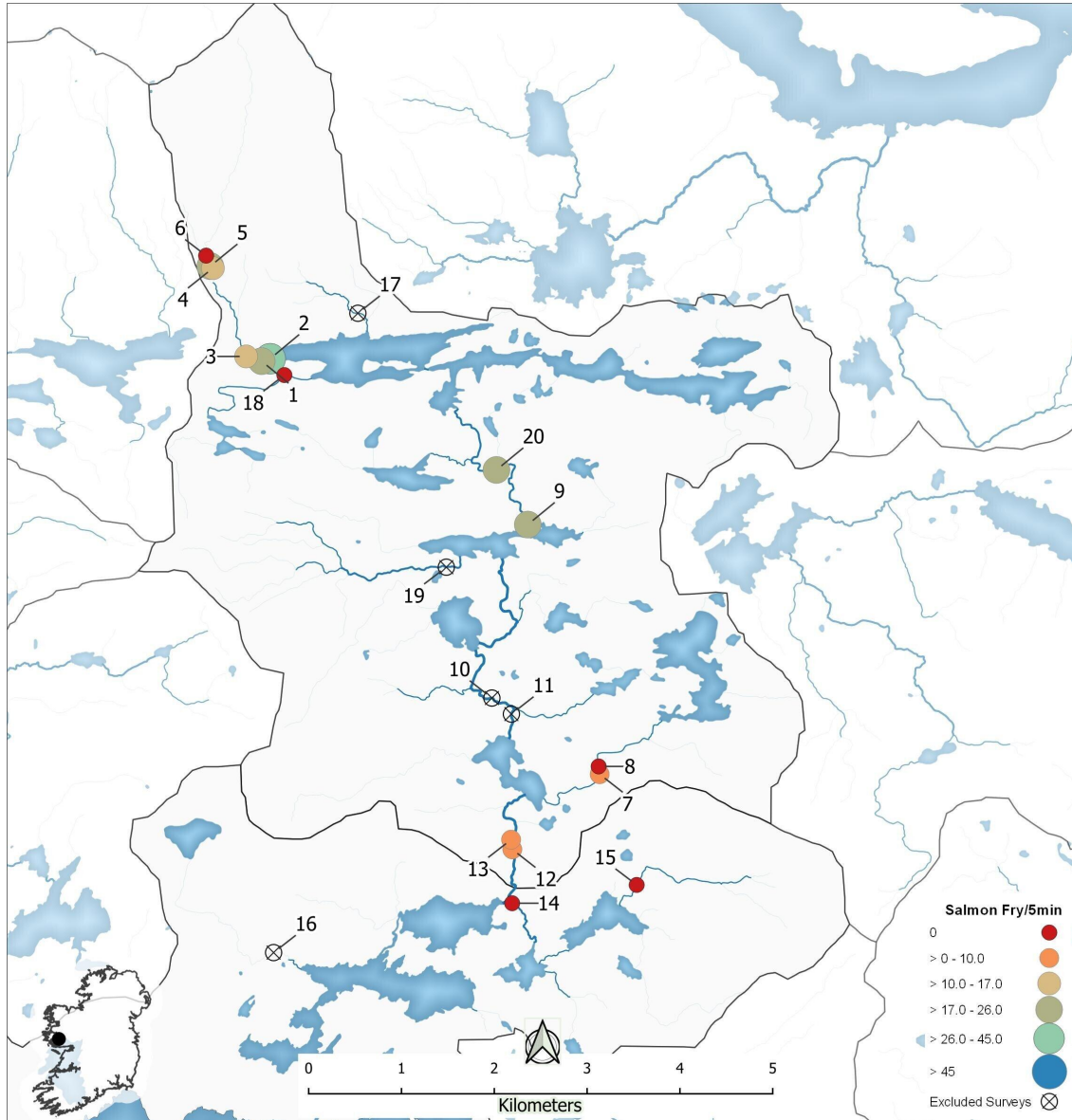
The Screeb had a salmon abundance of 11.56 sal fry/5min in 2022. Taking the two complete surveys into account this results in a cumulative average of 11.13 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.6.1: Site specific results of CWEF on the Screeb catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	L 94626 46000	2	1	13	24	Include	13.00	24.00
002	L 94718 46025	2	1	10	34	Include	11.82	40.18
003	L 94458 46051	2	2	1	8	Include	1.33	10.67
004	L 94100 47001	2	3	10	11	Include	11.90	13.10
005	L 94072 47023	2	1	8	16	Include	9.67	19.33
006	L 94028 47136	2	1	12	0	Include	17.00	0.00
007	L 98267 41548	2	1	9	4	Include	13.85	6.15
008	L 98256 41632	2	3	0	0	Include	0.00	0.00
009	L 97494 44238	3	1	11	17	Include	12.96	20.04
010	L 97106 42369	4	3	2	1	Unsuitable Habitat		
011	L 97317 42197	4				Not Sampled		
012	L 97327 40738	4	2	1	10	Include	1.00	10.00
013	L 97314 40844	4	2	2	6	Include	2.00	6.00
014	L 97325 40159	3	1	0	0	Include	0.00	0.00

Table A.6.1: Site specific results of CWF on the Screeb catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
015	L 98666 40355	2	2	6	0	Include	12.00	0.00
016	L 94754 39626	1				Not Sampled		
017	L 95663 46516	2	3	2	0	Unsuitable Habitat		
018	L 94871 45850	2	2	15	0	Include	17.00	0.00
019	L 96615 43780	3				Not Sampled		
020	L 97156 44827	3	1	8	19	Include	10.07	23.93
001	L 94626 46000	2	1	13	24	Include	13.00	24.00



Map A.6.1: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Screeb River

A.6.2 Owenglin River

IFI Salmon Catchment #: 163
2022 survey dates: 8-29/8/2022
Mean Salmon Fry/5 min (2022): 28.56 fry/5min.
CWEF Index: 20.06 fry/5min.

Sampling carried out by:
 Michael John Madden
 Mick Millane

Fish Species Present:
 Brown Trout Salmon
 European Eel

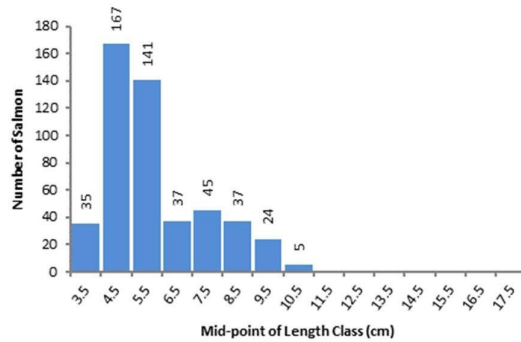


Figure A.6.2.1: Length distribution of salmon captured in 2022 CWEF survey on the Owenglin.

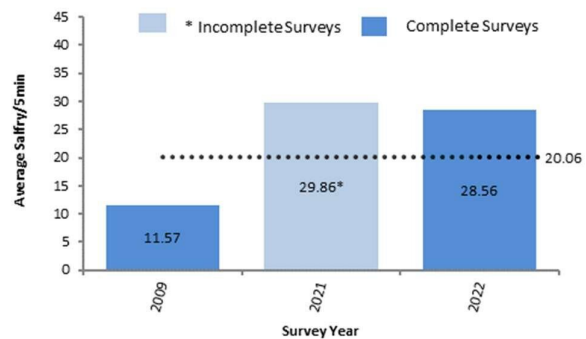


Figure A.6.2.2: Comparison of mean salmon fry/5min for all surveys on the Owenglin catchment to 2022.

The survey this year consisted of 18 sites fished from the 30th September, Salmon fry (0+) were found at all sites, the highest numbers were at site 20 where 49 fry were observed. The modal length of 0+ salmon was 4.5 cm. 17 sites were included in the analysis; the mean catch at these sites was 28.56 salmon fry/5min.

Conclusion

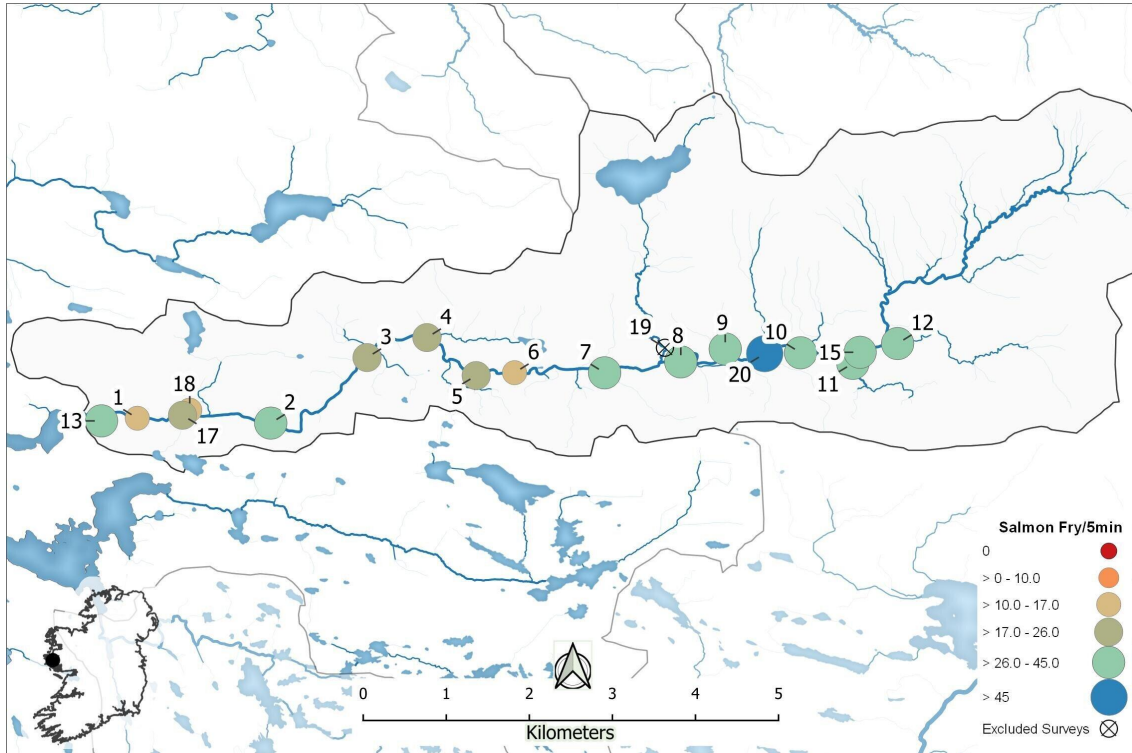
The Owenglin had a salmon abundance of 28.56 sal fry/5min in 2022. Taking the two complete surveys into account this results in a cumulative average of 20.06 salmon fry/5min which is above the 17 salmon fry threshold.

Table A.6.2: Site specific results of CWEF on the Owenglin catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	L 66458 50409	4	1	0	13	Include	0.00	14.00
002	L 68064 50349	4	1	0	26	Include	0.00	28.00
003	L 69224 51143	4	2	0	22	Include	0.00	25.00
004	L 69944 51385	4	1	0	22	Include	0.00	25.00
005	L 70538 50926	4	1	0	21	Include	0.00	25.00
006	L 70999 50960	4	1	0	11	Include	0.00	14.00
007	L 72084 50959	4	1	0	36	Include	0.00	40.00
008	L 73001 51092	4	1	0	28	Include	0.00	36.00
009	L 73536 51247	4	1	0	24	Include	0.00	29.00
010	L 74443 51201	4	1	0	26	Include	0.00	28.00
011	L 75071 51073	3	1	1	22	Include	1.35	29.65
012	L 75611 51314	2	1	0	37	Include	0.00	39.00
013	L 66027 50377	4	2	1	30	Include	1.06	31.94
015	L 75159 51208	4	1	0	25	Include	0.00	28.00
017	L 67003 50445	4	1	0	18	Include	0.00	23.00
018	L 67090 50506	4	1	1	13	Include	1.14	14.86

Table A.6.2: Site specific results of CWF on the Owenglin catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
019	L 72809 51263	3	2	0	2	Eff <60%		
020	L 74010 51190	4	1	0	49	Include	0.00	55.00



Map A.6.2: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Owenglin River.

A.6.3 Erriff River

IFI Salmon Catchment #: 168
2022 survey dates: 30/8-17/9/2022
Mean Salmon Fry/5 min (2022): 37.18 fry/5min.
CWEF Index: 30.93 fry/5min.

Sampling carried out by: Claire Kelly
 Mick Millane

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

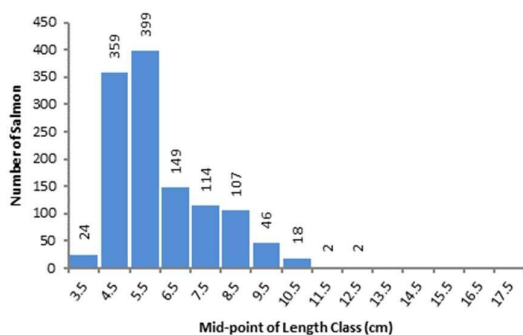


Figure A.6.3.1: Length distribution of salmon captured in 2022 CWEF survey on the Erriff.

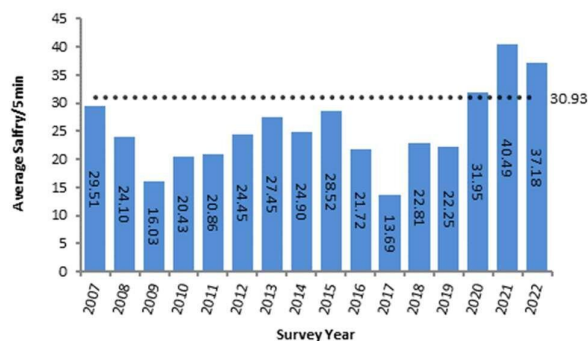


Figure A.6.3.2: Comparison of mean salmon fry/5min for all surveys on the Erriff catchment to 2022.

The survey this year consisted of 33 sites fished from the 30th of August to the 17rd of September. Salmon fry (0+) were found at 32 sites, the highest numbers were at site 34 where 73 fry were observed. The modal length of 0+ salmon was 5.5 cm. All sites were included in the analysis; the mean catch at these sites was 37.18 salmon fry/5min.

Conclusion

The Erriff had a salmon abundance of 37.18 sal fry/5min in 2022. Taking the five most recent complete surveys into account this results in a cumulative average of 30.93 salmon fry/5min which is above the 17 salmon fry threshold.

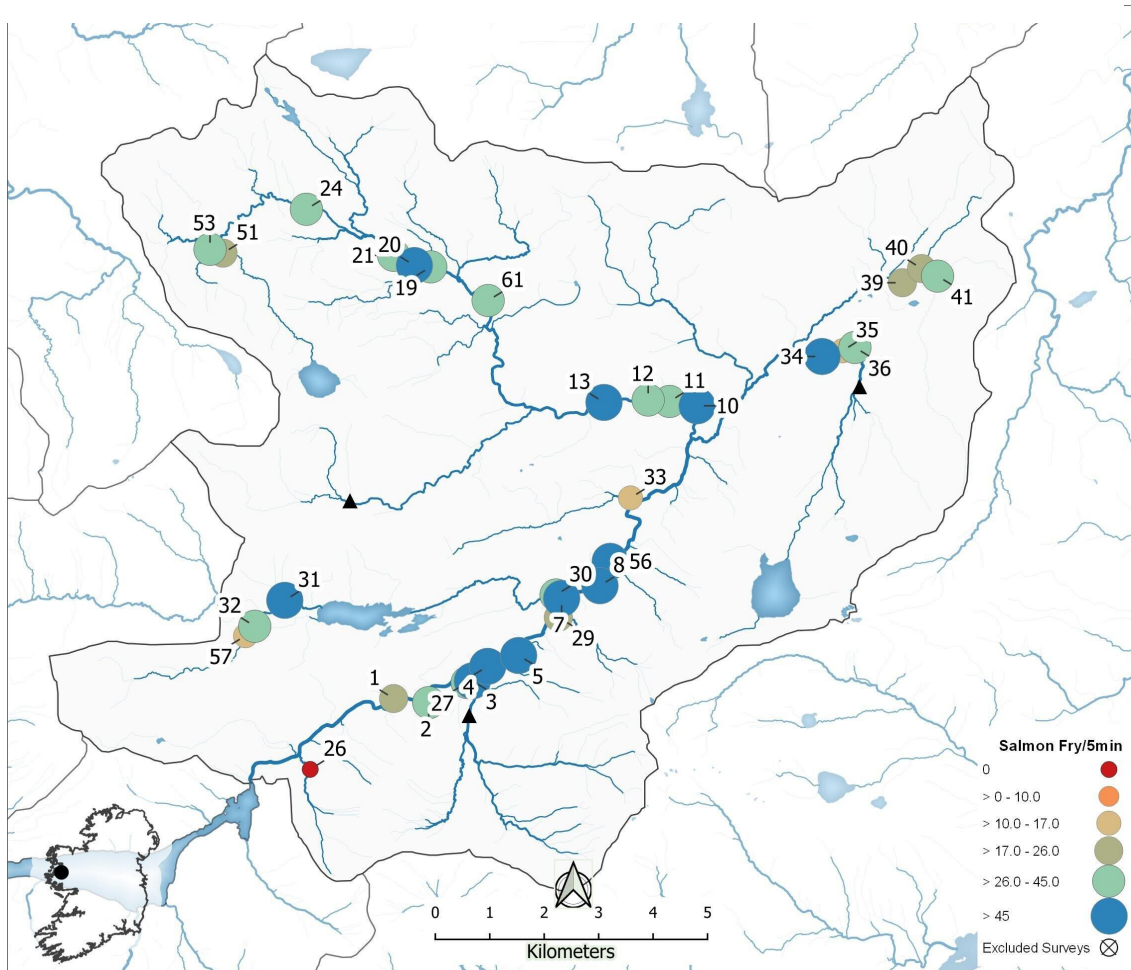
Table A.6.3: Site specific results of CWEF on the Erriff catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	L 92056 65797	5	1	0	24	Include	0.00	26.00
002	L 92702 65721	5	1	0	31	Include	0.00	35.00
003	L 93503 66122	5	1	0	54	Include	0.00	61.00
004	L 93784 66390	5	1	0	50	Include	0.00	58.00
005	L 94352 66589	5	1	0	59	Include	0.00	63.00
007	L 95142 67641	5	1	0	52	Include	0.00	56.00
008	L 95846 67875	5	1	0	40	Include	0.00	46.00
010	L 97630 71190	4	1	0	40	Include	0.00	49.00
011	L 97125 71269	4	1	0	35	Include	0.00	38.00
012	L 96732 71295	4	1	0	32	Include	0.00	36.00
013	L 95919 71252	4	1	10	55	Include	10.62	58.38
019	L 92739 73748	4	1	4	24	Include	5.00	30.00
020	L 92438 73774	4	1	1	46	Include	1.02	46.98
021	L 92057 73962	4	1	0	24	Include	0.00	28.00
024	L 90454 74809	3	1	1	27	Include	1.14	30.86

Table A.6.3: Site specific results of CWF on the Erriff catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
026	L 90525 64492	3	2	19	0	Include	21.00	0.00
027	L 93408 66092	4	1	0	22	Include	0.00	32.00
029	L 95081 67292	3	1	0	17	Include	0.00	23.00
030	L 95039 67705	3	1	0	21	Include	0.00	29.00
031	L 90058 67605	3	1	1	52	Include	1.21	62.79
032	L 89506 67128	2	1	5	21	Include	6.35	26.65
033	L 96407 69493	3	2	0	11	Include	0.00	12.00
034	L 99926 72098	4	1	0	73	Include	0.00	84.00
035	M 00301 72204	4	2	0	11	Include	0.00	16.00
036	M 00529 72263	4	1	0	34	Include	0.00	45.00
039	M 01401 73456	3	2	1	17	Include	1.33	22.67
040	M 01753 73717	3	1	0	19	Include	0.00	25.00
041	M 02046 73578	2	1	0	26	Include	0.00	37.00
051	L 88924 74002	2	1	0	18	Include	0.00	22.00
053	L 88685 74071	2	1	0	24	Include	0.00	27.00
056	L 96034 68324	5	1	0	50	Include	0.00	55.00
057	L 89337 66953	2	1	5	9	Include	7.50	13.50
061	L 93793 73129	4	1	0	28	Include	0.00	32.00

Map A.6.3 Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Erriff River.



A.6.4 Carrownisky River

IFI Salmon Catchment #: 171
2022 survey dates: 28 – 29/9/2022
Mean Salmon Fry/5 min (2022): 28.41 fry/5min.
CWEF Index: 20.15 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout
 European Eel
 Salmon

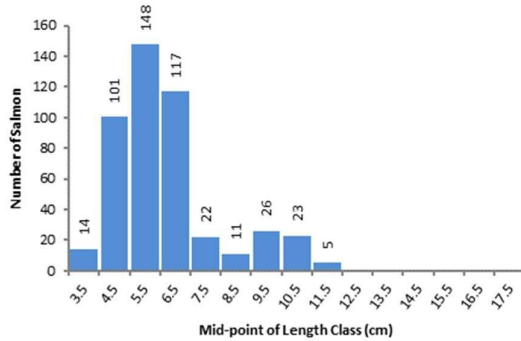


Figure A.6.4.1: Length distribution of salmon captured in 2022 CWEF survey on the Carrownisky.

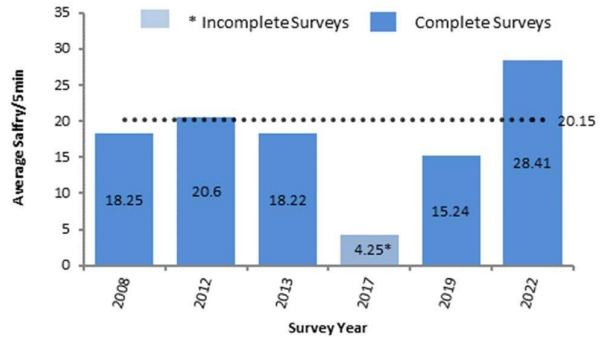


Figure A.6.4.2: Comparison of mean salmon fry/5min for all surveys on the Carrownisky catchment to 2022.

The survey this year consisted of 17 sites fished from the 26th to the 30 of August, Salmon fry (0+) were found at all sites, the highest numbers were at site 10 where 54 fry were observed. The modal length of 0+ salmon was 5.5 cm. All sites were included in the analysis; the mean catch at these sites was 28.41 salmon fry/5min

Conclusion

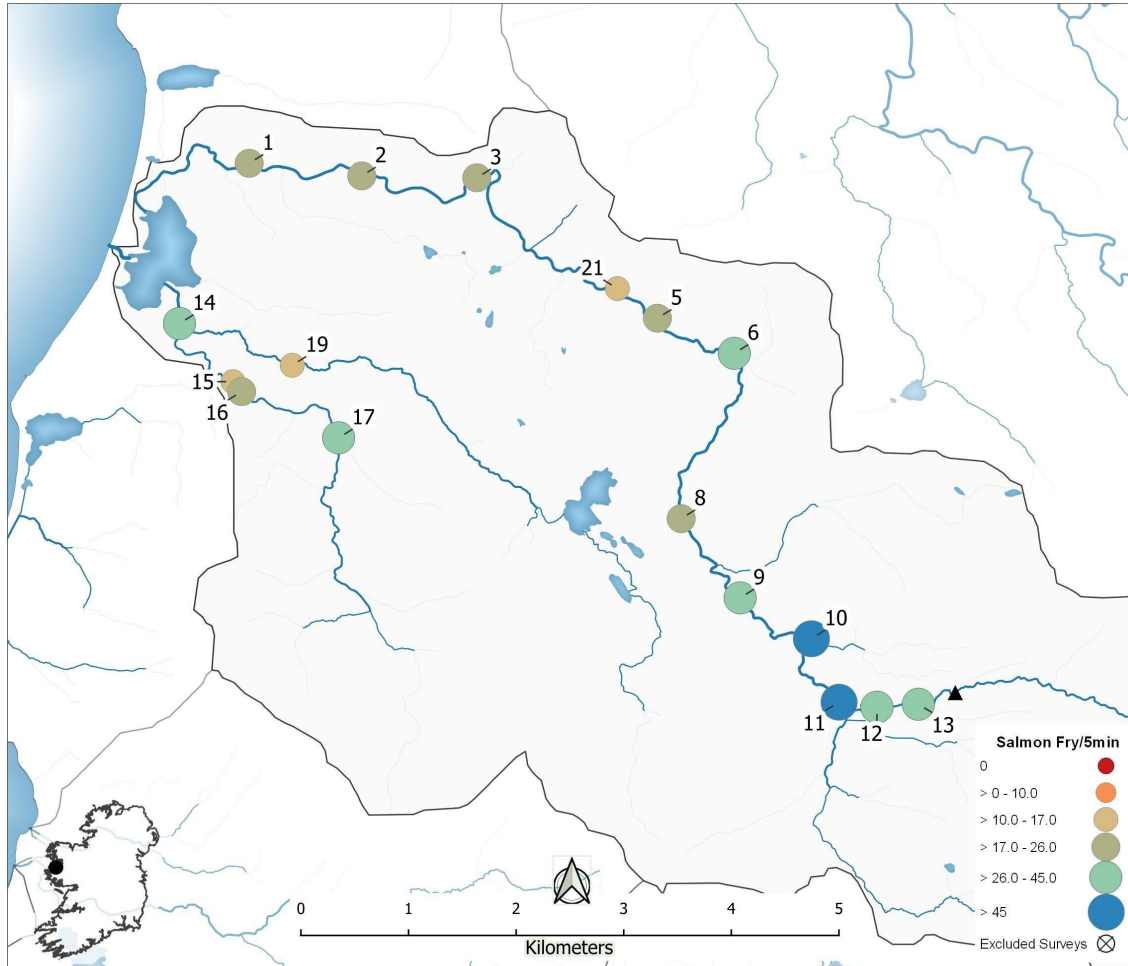
The Carrownisky had a salmon abundance of 28.41 salfry/5min in 2022. Taking the two most complete surveys into account this results in a cumulative average of 20.15 salmon fry/5min which is above the 17 salmon fry threshold.

Table A.6.4: Site specific results of CWEF on the Carrownisky catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	L 76033 77436	4	0	0	21	Include	0.00	25.00
002	L 77078 77319	4	0	0	14	Include	0.00	20.00
003	L 78148 77301	4	0	0	22	Include	0.00	26.00
005	L 79825 75993	4	0	1	21	Include	1.23	25.77
006	L 80541 75666	4	0	0	22	Include	0.00	32.00
008	L 80047 74125	4	1	0	17	Include	0.00	22.00
009	L 80594 73387	4	1	1	28	Include	1.00	28.00
010	L 81256 73007	4	1	1	54	Include	1.18	63.82
011	L 81513 72416	4	1	0	40	Include	0.00	48.00
012	L 81866 72368	3	2	1	31	Include	1.31	40.69
013	L 82251 72397	3	2	1	21	Include	1.32	27.68
014	L 75384 75943	3	1	1	25	Include	1.27	31.73
015	L 75881 75401	3	1	2	11	Include	2.62	14.38
016	L 75962 75308	3	2	5	18	Include	5.00	18.00

Table A.6.4: Site specific results of CWF on the Carrownisky catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
017	L 76864 74879	3	1	3	30	Include	3.27	32.73
019	L 76433 75554	3	2	3	12	Include	3.40	13.60
021	L 79454 76268	4	0	2	11	Include	2.46	13.54



Map A.6.4: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Carrownisky River.

A.6.5 Cloonaghmore River

IFI Salmon Catchment #: 194
2022 survey dates: 12-15/9/2022
Mean Salmon Fry/5 min (2022): 7.52 fry/5min.
CWEF Index: 15.35 fry/5min.

Sampling carried out by:
 Brian Flannery Padraic Traynor
 Eddie Doherty Tom O'Connor
 Kevin Kiely

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

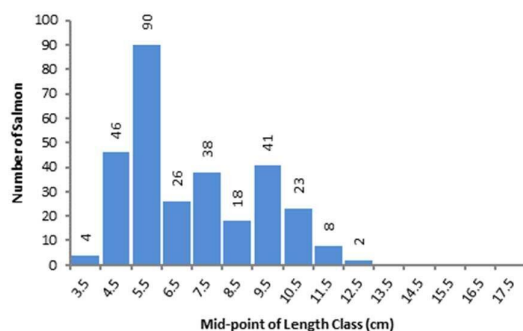


Figure A.6.5.1: Length distribution of salmon captured in 2022 CWEF survey on the Cloonaghmore.

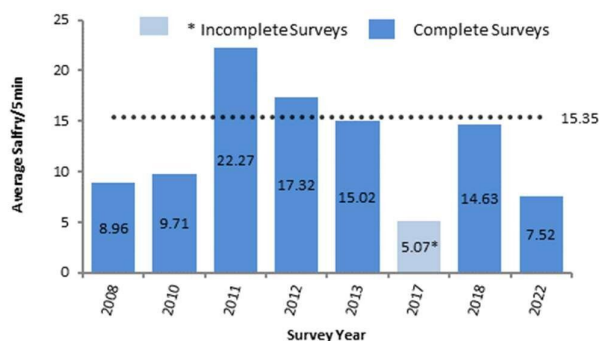


Figure A.6.5.2: Comparison of mean salmon fry/5min for all surveys on the Cloonaghmore catchment to 2022.

The survey this year consisted of 30 sites fished from the 12th to 15th September, Salmon fry (0+) were found at 14 sites, the highest numbers were at site 24 where 22 fry were observed. The modal length of 0+ salmon was 5.5 cm. All sites were included in the analysis; the mean catch at these sites was 7.52 salmon fry/5min.

Conclusion

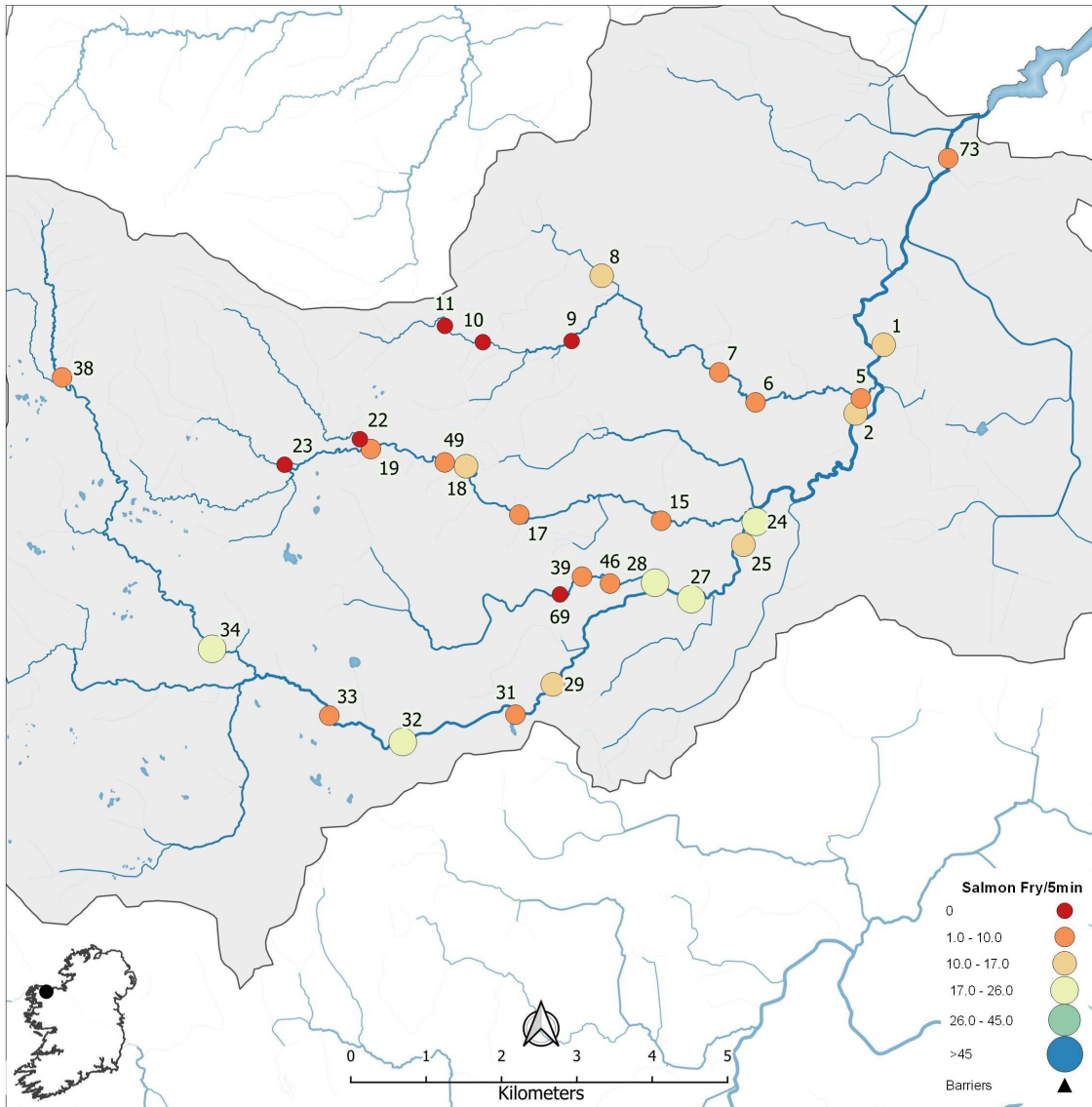
The Cloonaghmore had a salmon abundance of 7.52 sal fry/5min in 2022 this is the lowest result of any of the seven surveys that have been completed in this catchment. Taking the five most recent complete surveys into account this results in a cumulative average of 15.35 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.6.5: Site specific results of CWEF on the Cloonaghmore catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 16050 28403	5	2	2	11	Include	2.46	13.54
002	G 15680 27490	5	1	9	11	Include	10.35	12.65
005	G 15747 27691	3	1	8	2	Include	8.00	2.00
006	G 14351 27638	3	2	3	1	Include	3.00	1.00
007	G 13868 28036	3	2	7	1	Include	7.00	1.00
008	G 12309 29323	2	2	0	12	Include	0.00	14.00
009	G 11910 28454	3	3	6	0	Include	6.00	0.00
010	G 10732 28438	2	2	15	0	Include	16.00	0.00
011	G 10228 28655	2	3	1	0	Include	1.00	0.00
015	G 13098 26063	3	2	5	1	Include	5.00	1.00
017	G 11216 26144	3	2	2	4	Include	2.67	5.33
018	G 10509 26788	3	2	8	11	Include	9.26	12.74
019	G 09245 27017	3	2	10	4	Include	10.00	4.00
022	G 09100 27149	2	3	0	0	Include	0.00	0.00
023	G 08100 26808	2	2	10	0	Include	10.00	0.00

Table A.6.5: Site specific results of CWF on the Cloonaghmore catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
024	G 14353 26050	4	1	3	22	Include	3.36	24.64
025	G 14189 25745	4	2	2	14	Include	2.13	14.88
027	G 13497 25020	4	1	4	18	Include	4.00	18.00
028	G 13016 25239	3	1	8	14	Include	10.18	17.82
029	G 11659 23888	4	2	1	11	Include	1.08	11.92
031	G 11165 23485	4	2	0	8	Include	0.00	10.00
032	G 09669 23122	4	1	1	18	Include	1.11	19.89
033	G 08693 23472	4	1	4	9	Include	4.00	9.00
034	G 07140 24360	3	2	9	18	Include	9.00	18.00
038	G 05148 27971	3	2	12	5	Include	12.00	5.00
039	G 12047 25320	3	2	8	2	Include	9.60	2.40
046	G 12420 25229	3	2	8	1	Include	8.00	1.00
049	G 10226 26840	3	2	9	3	Include	11.25	3.75
069	G 11755 25083	3	2	13	0	Include	13.00	0.00
073		0	2	0	2	Include	0.00	2.00
001	G 16050 28403	5	2	2	11	Include	2.46	13.54
002	G 15680 27490	5	1	9	11	Include	10.35	12.65
005	G 15747 27691	3	1	8	2	Include	8.00	2.00
006	G 14351 27638	3	2	3	1	Include	3.00	1.00
007	G 13868 28036	3	2	7	1	Include	7.00	1.00
008	G 12309 29323	2	2	0	12	Include	0.00	14.00
009	G 11910 28454	3	3	6	0	Include	6.00	0.00
010	G 10732 28438	2	2	15	0	Include	16.00	0.00
011	G 10228 28655	2	3	1	0	Include	1.00	0.00
015	G 13098 26063	3	2	5	1	Include	5.00	1.00



Map A.6.5: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Clooghamore River.

A.6.6 Leaffony River

IFI Salmon Catchment #: 198
2022 survey dates: 22-26/9/2022
Mean Salmon Fry/5 min (2022): 0 fry/5min.
CWEF Index: 3.86 fry/5min.

Sampling carried out by:
 Tony Holmes
 Cesare Monciano

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

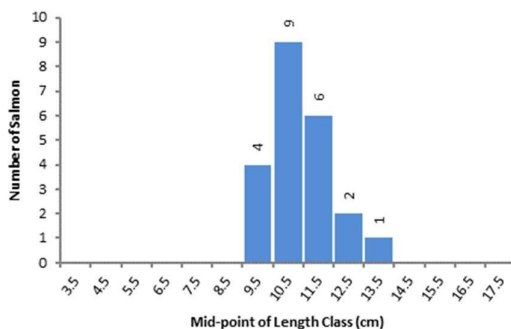


Figure A.6.6.1: Length distribution of salmon captured in 2022 CWEF survey on the Leaffony.

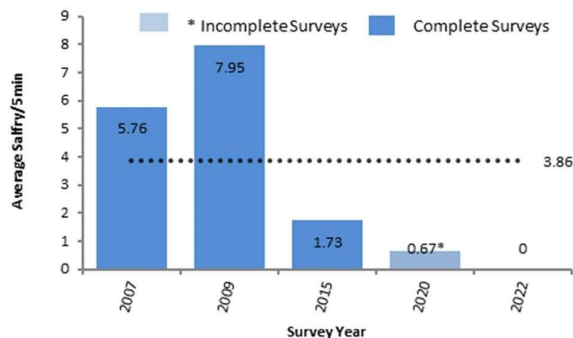


Figure A.6.6.2: Comparison of mean salmon fry/5min for all surveys on the Leaffony catchment to 2022.

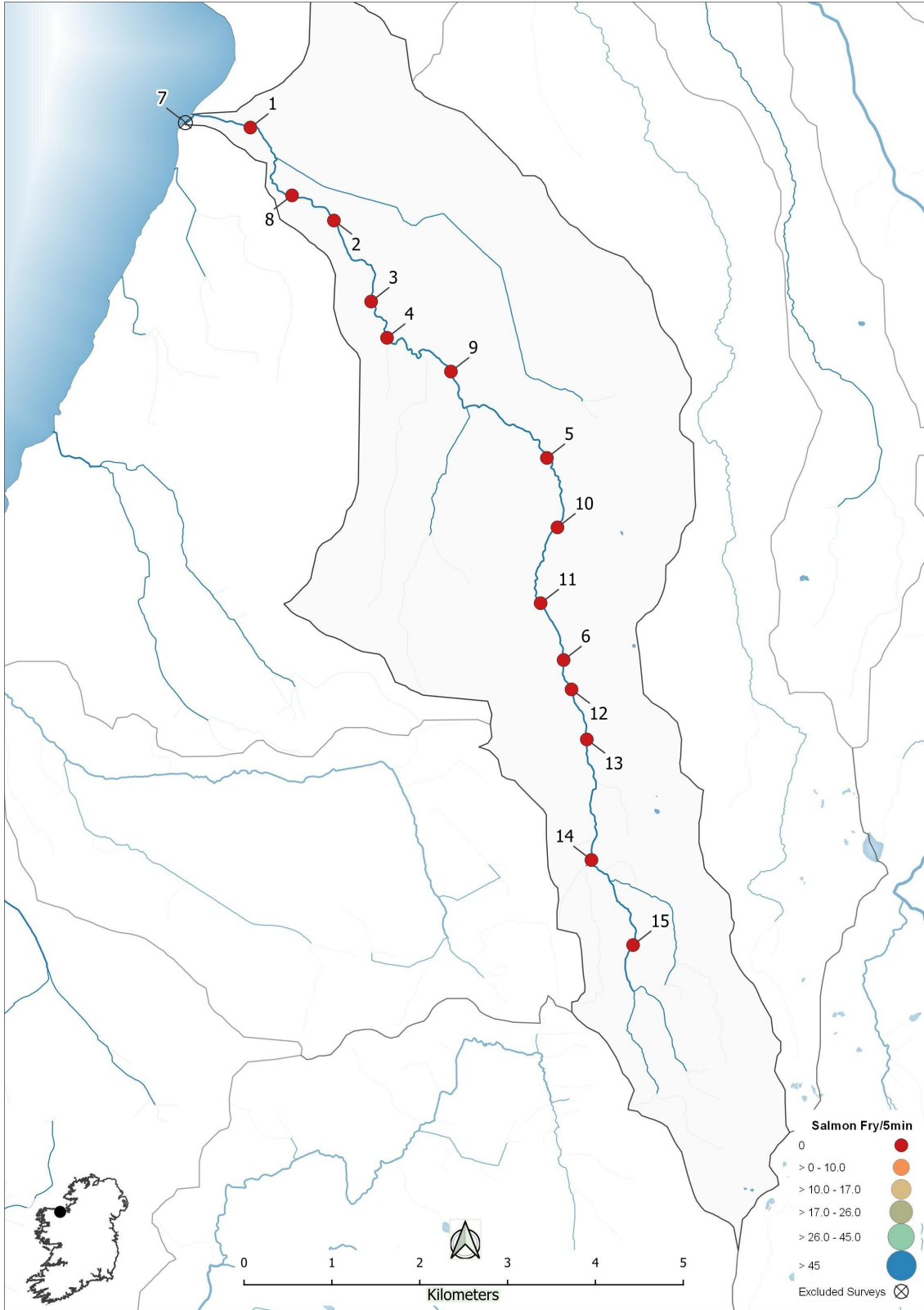
The survey this year consisted of 15 sites fished from the 22nd to the 26th of September, Salmon fry (0+) were absent from all sites, trout fry were observed at 11 sites and salmon parr (salmon >0+) were observed at 7 sites. The modal length of salmon was 10.5 cm. 14 sites were included in the analysis; the mean catch at these sites was 0 salmon fry/5min.

Conclusion

The Leaffony had a salmon abundance of 0 salfry/5min in 2022, trout fry were observed, this indicates very low level of salmon spawning in the 2021/2022 spawning season. Taking the four complete surveys into account this results in a cumulative average of 3.86 salmon fry/5min which is below the 17 salmon fry threshold. The result is the lowest of any complete CWEF survey.

Table A.6.6: Site specific results of CWEF on the Leaffony catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 31581 35848	3	3	1	0	Include	1.00	0.00
002	G 32531 34795	3	2	0	0	Include	0.00	0.00
003	G 32956 33876	3	2	12	0	Include	12.00	0.00
004	G 33137 33465	3	2	10	0	Include	10.00	0.00
005	G 34957 32104	3	2	1	0	Include	1.00	0.00
006	G 35147 29815	3	2	13	0	Include	15.00	0.00
007	G 30840 35904	3	0	0	0	Unsuitable Site		
008	G 32055 35079	3	2	0	0	Include	0.00	0.00
009	G 33863 33083	3	2	0	0	Include	0.00	0.00
010	G 35076 31318	3	2	4	0	Include	4.00	0.00
011	G 34885 30459	3	2	11	0	Include	12.00	0.00
012	G 35237 29481	3	2	9	0	Include	11.00	0.00
013	G 35411 28915	3	2	16	0	Include	18.00	0.00
014	G 35464 27549	3	2	8	0	Include	10.00	0.00
015	G 35937 26585	3	1	13	0	Include	16.00	0.00



Map A.6.6: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Leaffony River

A.6.7 Garvogue River

IFI Salmon Catchment #: 203
2022 survey dates: 14/8-23/9/2022
Mean Salmon Fry/5 min (2022): 16.37 fry/5min.
CWEF Index: 14.57 fry/5min.

Sampling carried out by:
 Ciaran Jennings
 Jimmy Frazer

Fish Species Present:
 Brown Trout Minnow
 Crayfish Salmon
 Gudgeon Stoneloach
 European Eel 3-Spined Stickleback

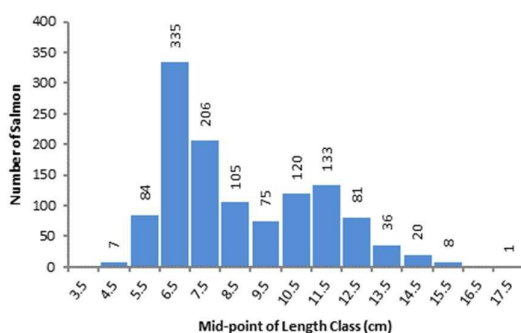


Figure A.6.7.1: Length distribution of salmon captured in 2022 CWEF survey on the Garvogue.

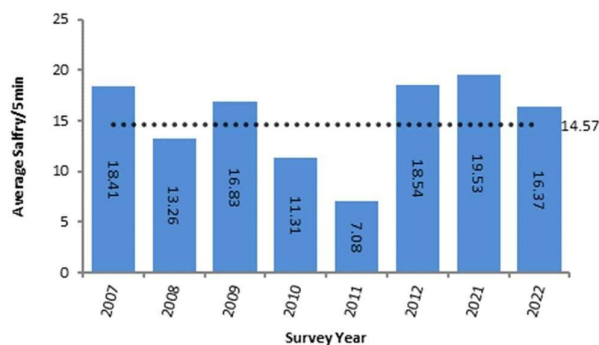


Figure A.6.7.2: Comparison of mean salmon fry/5min for all surveys on the Garvogue catchment to 2022.

The survey this year consisted of 56 sites fished from the 14th of August to the 23rd of September, Salmon fry (0+) were found at 48 sites, the highest numbers were at site 1 where 47 fry were observed, fry were well distributed indicating widespread spawning in the 2021/22 spawning season and good abundances were observed on the Bonet, Owenmore and Shanvaus rivers. The modal length of 0+ salmon was 6.5 cm. 54 sites were included in the analysis; the mean catch at these sites was 16.37 salmon fry/5min.

Conclusion

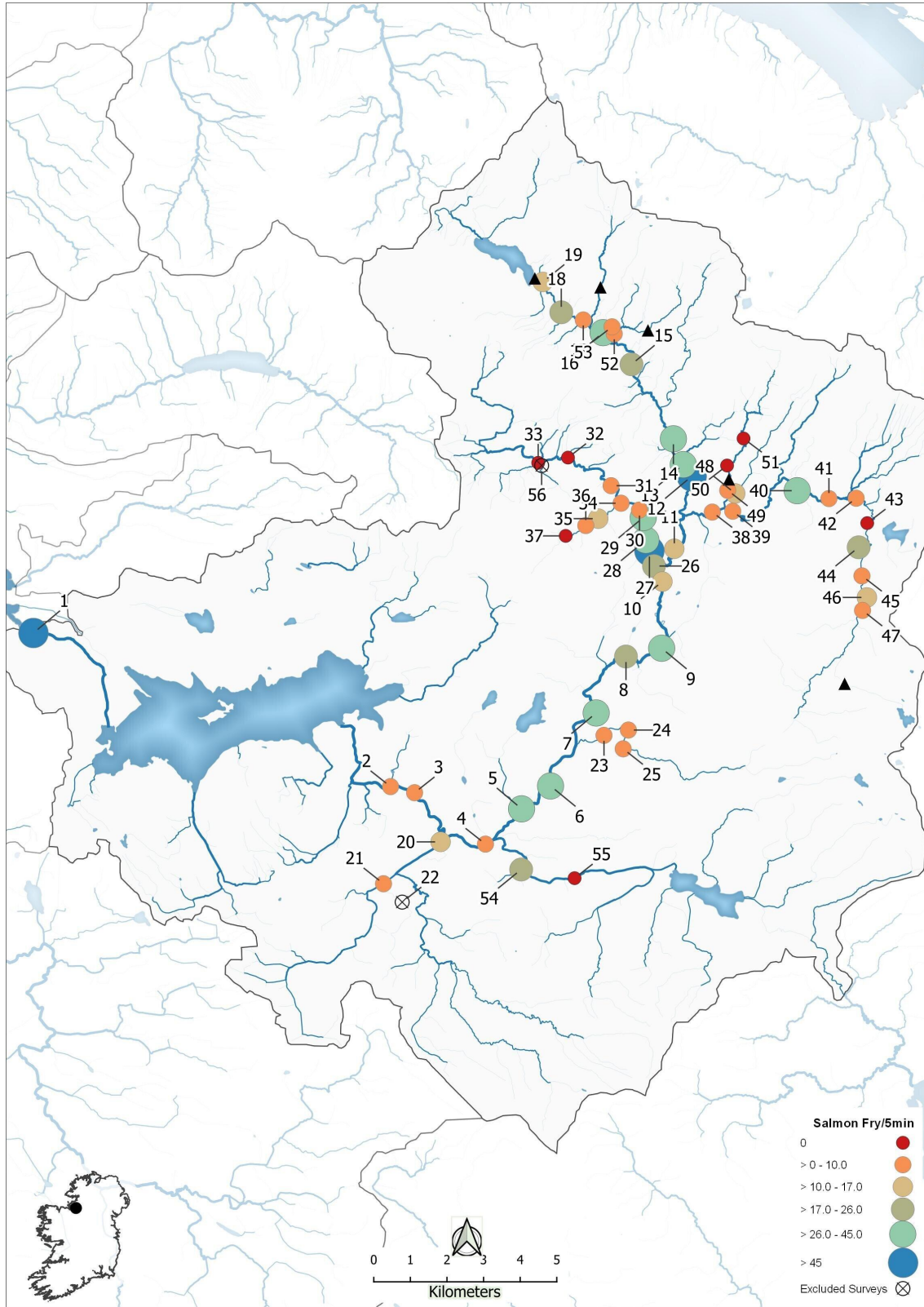
The Garvogue had a salmon abundance of 16.37 sal fry/5min in 2022. Taking the five most recent complete surveys into account this results in a cumulative average of 14.57 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.6.7: Site specific results of CWEF on the Garvogue catchment in 2022.

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	47	Include	0.00	64.74
002	G 79243 31785	5	1	1	5	Include	1.43	7.14
003	G 79900 31620	5	2	2	6	Include	2.97	8.92
004	G 81837 30218	5	2	1	3	Include	1.26	3.78
005	G 82822 31179	5	2	0	25	Include	0.00	31.82
006	G 83615 31803	5	1	0	29	Include	0.00	41.08
007	G 84862 33795	5	3	5	35	Include	6.00	42.00
008	G 85675 35335	5	1	2	21	Include	2.43	25.50
009	G 86651 35560	5	1	3	30	Include	3.77	37.66
010	G 86672 37377	5	3	4	12	Include	4.83	14.50
011	G 86996 38273	5	3	2	8	Include	2.53	10.13
012	G 87472 40251	4	1	3	36	Include	4.55	54.62
013	G 87243 40569	4	1	3	21	Include	3.88	27.18
014	G 86972 41273	4	1	5	17	Include	8.27	28.12

Table A.6.7: Site specific results of CWF on the Garvogue catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
015	G 85826 43303	4	2	0	22	Include	0.00	23.89
016	G 85050 44168	4	1	7	30	Include	8.47	36.32
017	G 84508 44513	3	2	0	1	Include	0.00	1.47
018	G 83907 44723	3	1	9	22	Include	10.07	24.62
019	G 83403 45551	3	1	6	10	Include	6.67	11.11
020	G 80611 30279	4	3	0	12	Include	0.00	13.29
021	G 79050 29136	3	2	9	1	Include	9.96	1.11
022	G 79561 28636	1	2	28	0	Stream Order<2		
023	G 85075 33184	2	3	1	5	Include	1.09	5.43
024	G 85741 33329	2	2	12	6	Include	13.62	6.81
025	G 85599 32817	2	1	3	4	Include	3.30	4.40
026	G 86440 37803	4	1	9	24	Include	9.33	24.87
027	G 86317 38212	4	1	5	39	Include	6.28	48.96
028	G 86220 38509	4	1	1	32	Include	1.29	41.14
029	G 86148 39125	4	1	0	33	Include	0.00	36.54
030	G 86044 39329	4	1	1	7	Include	1.15	8.03
031	G 85269 39993	4	1	7	5	Include	7.82	5.59
032	G 84092 40760	4	1	5	0	Include	5.50	0.00
033	G 83276 40618	4	2	7	0	Include	7.47	0.00
034	G 85543 39516	2	2	2	8	Include	2.17	8.69
035	G 84917 39094	2	2	3	12	Include	3.19	12.77
036	G 84577 38906	2	2	7	8	Include	7.00	8.00
037	G 84028 38624	2	3	3	0	Include	3.00	0.00
038	G 88034 39274	4	1	0	7	Include	0.00	7.00
039	G 88593 39296	4	1	1	6	Include	1.00	6.00
040	G 90353 39858	4	1	11	34	Include	11.59	35.82
041	G 91221 39642	4	2	0	8	Include	0.00	9.60
042	G 91965 39652	3	1	3	7	Include	3.36	7.84
043	G 92268 38973	2	3	2	0	Include	2.08	0.00
044	G 92033 38314	2	1	3	23	Include	3.37	25.82
045	G 92123 37533	2	3	0	4	Include	0.00	4.41
046	G 92260 36946	2	2	3	15	Include	3.22	16.10
047	G 92140 36592	2	3	1	5	Include	1.11	5.53
048	G 88660 39783	2	2	21	10	Include	24.68	11.75
049	G 88455 39866	3	2	21	4	Include	24.75	4.71
050	G 88439 40543	3	2	11	0	Include	11.00	0.00
051	G 88889 41280	3	3	7	0	Include	8.40	0.00
052	G 85356 44137	3	2	2	4	Include	2.17	4.35
053	G 85294 44326	2	2	7	5	Include	7.88	5.63
054	G 82811 29525	4	1	0	17	Include	0.00	19.36
055	G 84272 29289	4	2	10	0	Include	10.00	0.00
056	G 83371 40544	2	3	0	0	Unsuitable Site		



Map A.6.7: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Garvogue River.

A.7 North-Western River Basin District

Summary

Since 2007 thirty-three salmon rivers have been surveyed in the North-Western River Basin District (NWRBD) as part of the on-going catchment-wide electrofishing surveys. These are presented in Table A.7. At present twelve rivers are meeting the threshold index of 17 salmon fry/5min. Surveys of the Duff, Ballintra, Laghy, Bungosteen, Owenwee (Yellow R), Owentocker, Owenea, Gweebarra, Tullaghobegly, Ray, Leannan, Mill (Letterkenny), Crana, Straid, Donagh and Glennagannon were undertaken in 2022 as were the Aghacashlaun, Yellow, Termon and Ominey sub-catchments on the Erne.

Table A.7: Catchment-wide electrofishing data for the North-Western River Basin District 2014-2022 showing the average salmon fry captured /5min for each year surveyed. Also shown is the surveys' mean capture rate, surveys prior to 2014 are included in Appendix C

Code/River	Survey Year										Current Index	# Annual Surveys Considered
	2014	2015	2016	2017	2018	2019	2020	2021	2022			
208/Duff				18.05	20.34					8.57	<u>18.14</u>	5
210/Erne	1.60†	1.16†	1.25†	0.00†	0.65†	0.00†	0.00†	1.20†	0.00†			
211/Abbey	28.14										<u>28.14</u>	1
212/Ballintra	19.82					13.31				1.72	11.70	5
213/Laghy	11.02					8.56				4.89	9.60	5
214/Eske		13.45			10.94						14.16	5
215/Eany		12.89									<u>19.61</u>	3
216/Oily	16.62			21.26			18.64				<u>19.94</u>	5
217/Bungosteen				13.17		13.41				3.08	15.36	5
219/Glen		18.37			18.56	11.71					<u>17.02</u>	4
220/Owenwee/Ylw.						14.20				5.76	15.65	5
221/Bracky	12.24						5.31				12.49	4
222/Owentocker										27.13	<u>23.59</u>	2
223/Owenea					33.94					43.19	<u>38.57</u>	2
225/Gweebarra										19.28	<u>19.28</u>	1
226/Owenamarve	1.00							10.67			4.52	4
228/Gweedore/Crollly											13.65	2
229/Clady											<u>26.67</u>	2
234/Glenna			4.00					11.43			8.76	5
235/Tullaghobegly			0.00*							4.45	7.28	3
236/Ray	17.31		3.71*				6.65			9.35	11.11	5
240/Lackagh			17.50*	22.50							<u>19.99</u>	5
248/Leannan	20.87	15.27	15.05*	18.66	20.11	21.33	20.50	17.72	13.45		<u>18.62</u>	5
249/Swilly	8.05						14.36				11.44	5
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					31.74	<u>21.28</u>	3
256/Clonmany		4.21							9.55		9.24	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 calculation of current CWF index.

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

* Incomplete surveys not included in calculation of current index.

† Sub-catchment surveys.

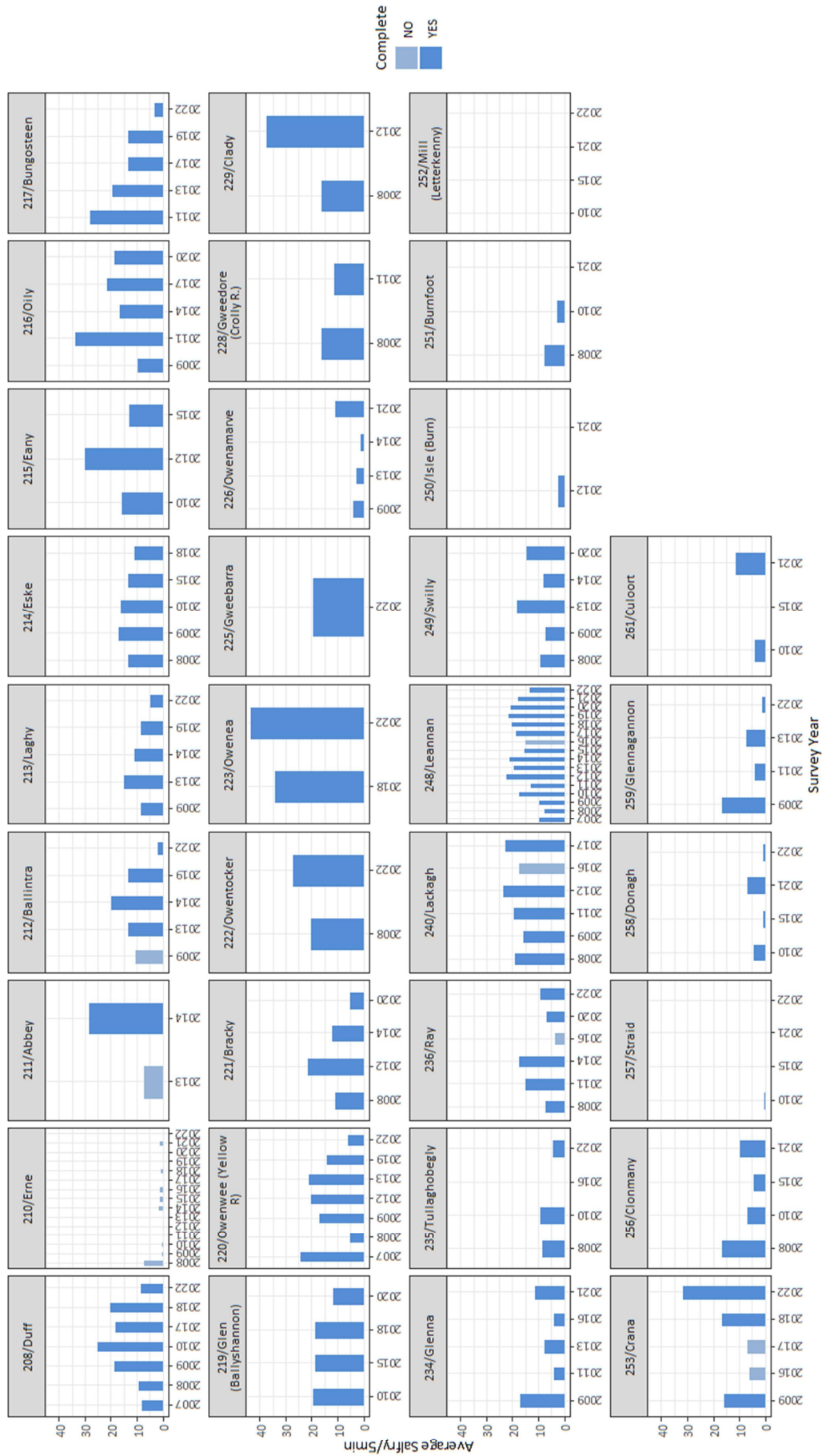


Figure A.7: Summary of CWF results in North Western River basin district 2007-2021.

A.7.1 Duff River

IFI Salmon Catchment #: 208
2022 survey dates: 18/8-1/9/2022
Mean Salmon Fry/5 min (2022): 8.57 fry/5min.
CWEF Index: 18.14 fry/5min.

Sampling carried out by: Alan Mahon
 Dereck Hemphill
 Paul Gallagher
 Linddsay Clarke
 Michael Kane
 Paul O'Doherty

Fish Species Present: Brown Trout
 Crayfish
 European Eel
 Salmon

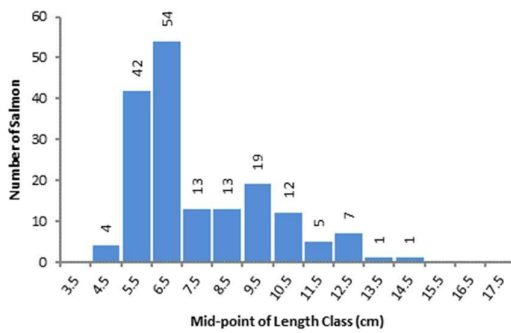


Figure A.7.1.1: Length distribution of salmon captured in 2022 CWEF survey on the Duff.

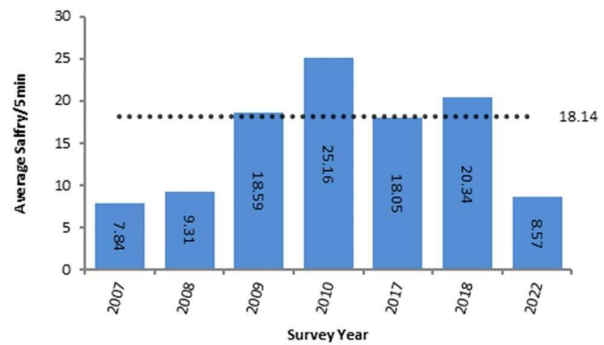


Figure A.7.1.2: Comparison of mean salmon fry/5min for all surveys on the Duff catchment.

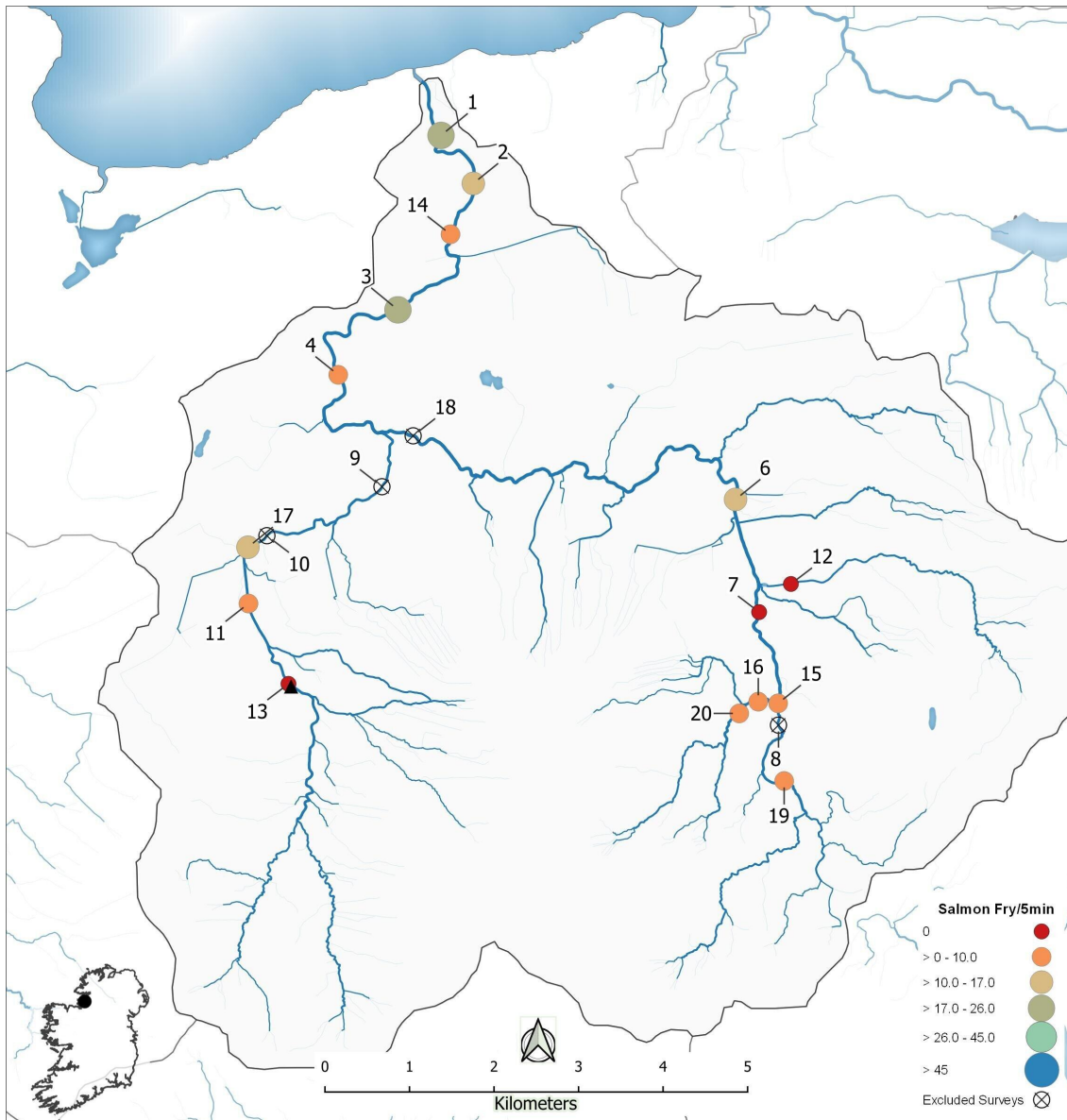
The survey this year consisted of 22 sites fished from the 18th of August to the 1st of September, Salmon fry (0+) were found at 15 sites, the highest numbers were at site 3 where 22 fry were observed. The modal length of 0+ salmon was 6.5 cm. 15 sites were included in the analysis; the mean catch at these sites was 8.57salmon fry/5min.

Conclusion

The Duff had a salmon abundance of 8.57 salfry/5min in 2022 which is poor in comparison to surveys since 2009. Taking the five most recent complete surveys into account this results in a cumulative average of 18.14 salmon fry/5min which is above the 17 salmon fry threshold.

Table A.7.1: Site specific results of CWEF on the Duff catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
003	G 75020 54697	5	2	0	22	Include	0.00	24.00
004	G 74314 53929	5	2	1	6	Include	1.43	8.57
006	G 79014 52458	5	2	3	13	Include	3.38	14.63
008	G 79521 49794	4	2	7	1	Eff <60%		
009	G 74831 52608	4	2	0	2	Eff <60%		
011	G 73251 51229	4	2	3	3	Include	4.50	4.50
012	G 79668 51461	3	2	3	0	Include	5.00	0.00
014	G 75642 55588	5	2	5	8	Include	6.15	9.85
017	G 73246 51894	4	2	1	9	Include	1.30	11.70
018	G 75199 53210	5	2	0	2	Eff <60%		
019	G 79589 49134	4	2	2	3	Include	3.20	4.80
020	G 79057 49932	4	2	4	3	Include	5.14	3.86



Map A.7.1: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Duff River.

A.7.2 Erne River

IFI Salmon Catchment #: 210
2022 survey dates: 29/7– 26/8/2022
Mean Salmon Fry/5 min (2022): 1.20 fry/5min.

Sampling carried out by:		Fish Species Present:	
Aaron Burnett	Tony Holmes	Brown Trout	Salmon
Frank Greene	Cesare Monciano	Crayfish	Stone Loach
Val Fitzpatrick		Lamprey sp.	3-Spined Stickleback
		Minnow	

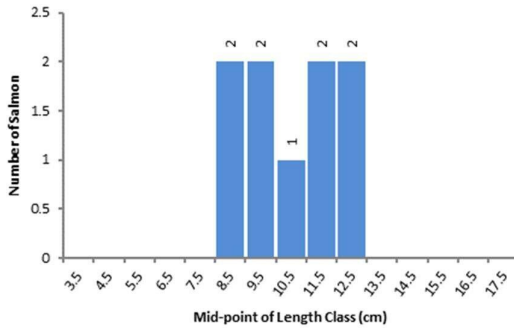


Figure A.7.2.1: Length distribution of Salmon captured in 2022 CWF survey on the Erne.

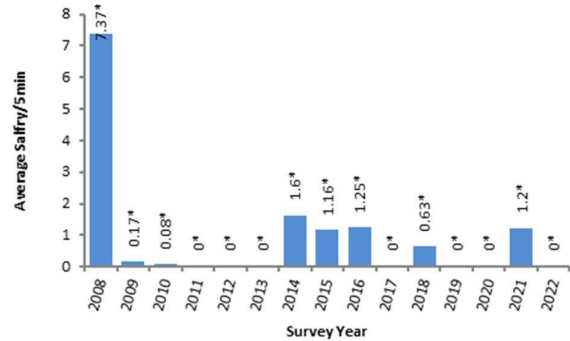
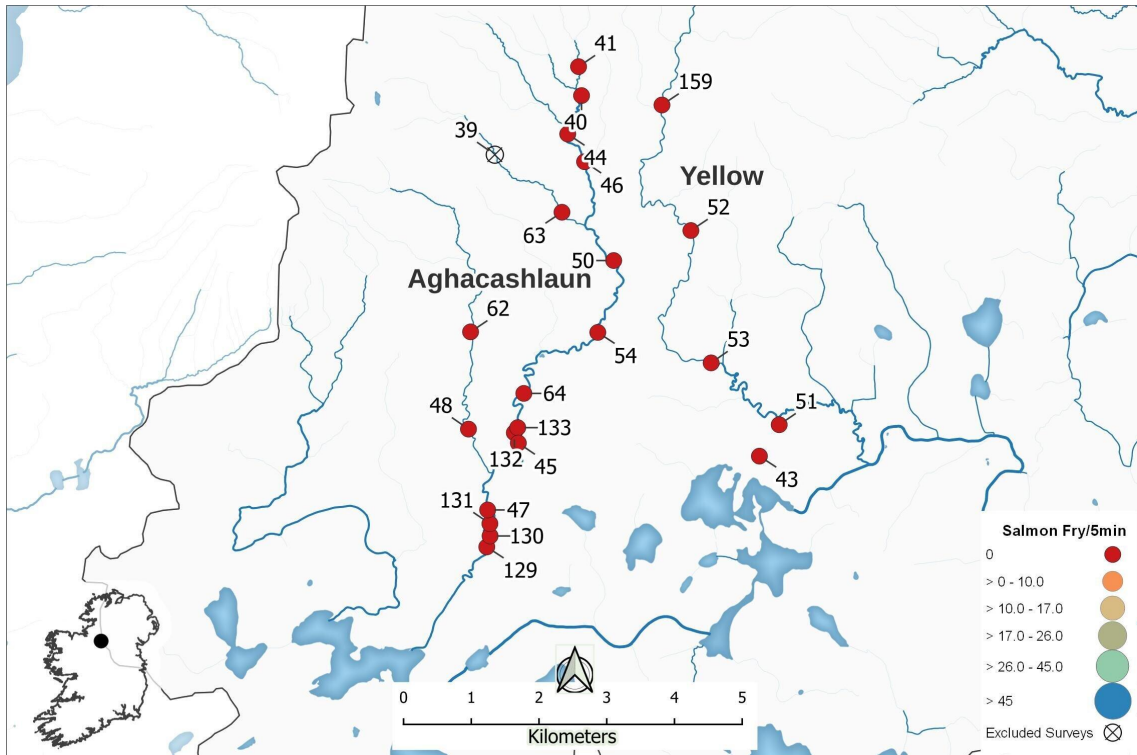


Figure A.7.2.2: Comparison of mean salmon fry/5min for all surveys on the Erne catchment to 2022.

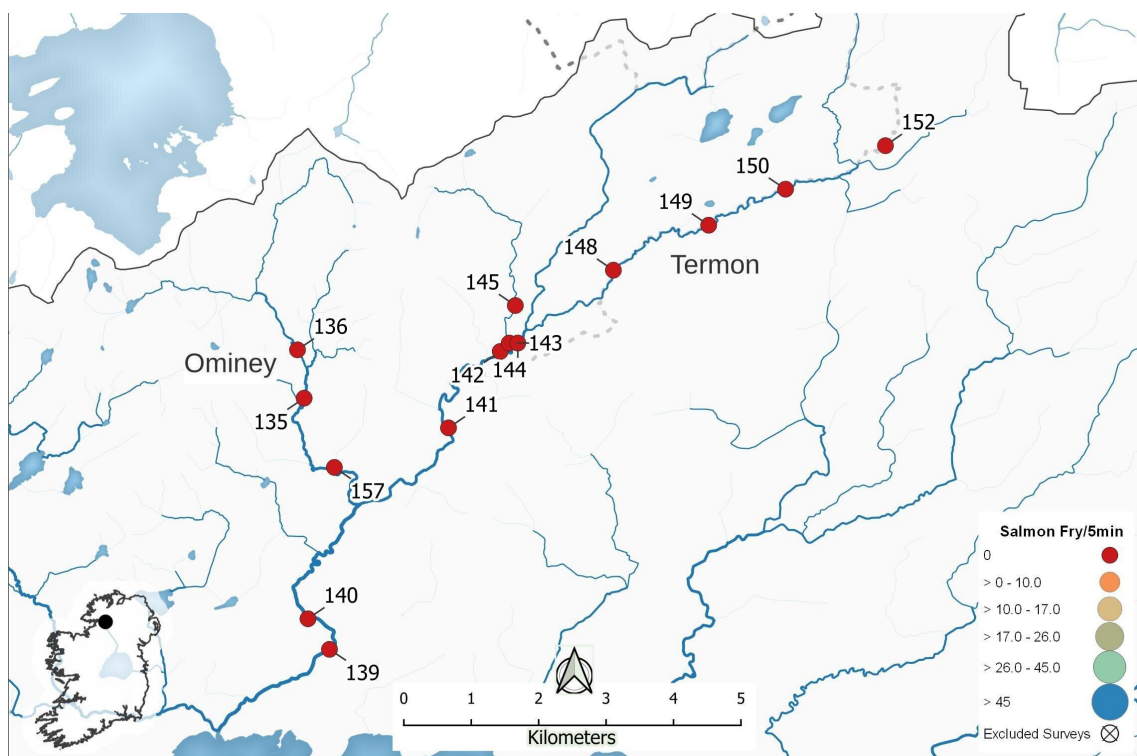
This CWF survey of this catchment was focused on the Termon, Ominey, Aghacashlaun and Yellow River sub-catchments. The surveys were carried out during July and August and comprised 36 sites. Salmon fry were absent from all sites. Salmon parr were however observed on the Lower reaches of the Termon river, indicating possible spawning in the 2020/2021 spawning season.

Conclusion

The absence of salmon fry observed in 2022 suggests very few or no salmon spawned in these areas over the 2021/2022 winter. There may have been some spawning in the Termon during the 2020/2021 winter.



Map A.7.2.1: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Aghacashlaun and Yellow tributaries of the Erne River.



Map A.7.2.2: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Termon and Ominey of the Erne River.

Table A.7.2: Site specific results of CWF on the Erne catchment in 2022.

Site #	Grid Ref.	Riffle Grade	Trout Fry Captured	Trout >0+ Captured	Salmon Fry Captured	Salmon >0+ Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
Ominey									
135	H 10997 69926	1	14	3	0	0	Include	19.00	0.00
136	H 10899 70644	2	7	0	0	0	Include	9.00	0.00
157	H 11446 68898	0	21	2	0	0	Include	24.00	0.00
Termon									
139	H 11374 66196	2	9	0	0	1	Include	13.00	0.00
140	H 11055 66651	2	32	4	0	2	Include	32.00	0.00
141	H 13138 69486	3	30	0	0	0	Include	33.00	0.00
142	H 13906 70620	1	26	1	0	6	Include	26.00	0.00
143	H 14039 70746	1	22	3	0	0	Include	27.00	0.00
144	H 14166 70745	1	17	0	0	0	Include	22.00	0.00
145	H 14129 71302	2	2	5	0	0	Include	3.00	0.00
148	H 15583 71827	2	22	4	0	0	Include	25.00	0.00
149	H 16997 72495	3	11	0	0	0	Include	15.00	0.00
150	H 18137 73031	2	14	2	0	0	Include	17.00	0.00
152	H 19618 73677	2	4	5	0	0	Include	4.00	0.00
Aghacashlaun									
039	H 04995 16097						Not Sampled		
040	H 06276 16976	3	2	5	0	0	Include	2.00	0.00
041	H 06232 17406	3	4	7	0	0	Include	5.00	0.00
044	H 06071 16404	3	2	3	0	0	Include	4.00	0.00
045	H 05343 11810	3	1	3	0	0	Include	2.00	0.00
046	H 06320 15992	3	0	5	0	0	Include	0.00	0.00
047	H 04889 10814	2	8	2	0	0	Include	8.00	0.00
048	H 04607 12017	3	6	2	0	0	Include	9.00	0.00
050	H 06751 14523	3	4	5	0	0	Include	6.00	0.00
054	H 06515 13454	2	1	4	0	0	Include	2.00	0.00
062	H 04638 13462	3	0	9	0	0	Include	0.00	0.00
063	H 05987 15242	3	0	3	0	0	Include	0.00	0.00
064	H 05423 12548	1	0	0	0	0	Include	0.00	0.00
129	H 04876 10265	1	3	0	0	0	Include	3.00	0.00
130	H 04926 10428	1	1	0	0	0	Include	1.00	0.00
131	H 04923 10611	1	0	0	0	0	Include	0.00	0.00
132	H 05283 11963	2	0	3	0	0	Include	0.00	0.00
133	H 05334 12039	3	0	5	0	0	Include	0.00	0.00
Yellow									
043	H 08902 11615	2	0	3	0	0	Include	0.00	0.00
051	H 09194 12082	2	2	1	0	0	Include	3.00	0.00
052	H 07890 14969	3	0	6	0	0	Include	0.00	0.00
053	H 08188 13002	2	0	2	0	0	Include	0.00	0.00
159	H 07462 16836	3	3	4	0	0	Include	5.00	0.00

A.7.3 Ballintra River

IFI Salmon Catchment #: 212
2022 survey dates: 8/7 – 11/8/2022
Mean Salmon Fry/5 min (2022): 1.72 fry/5min.
CWEF Index: 11.70 fry/5min.

Sampling carried out by:
 Alan Mahon
 Dereck Hempail
 Lindsey Clarke

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

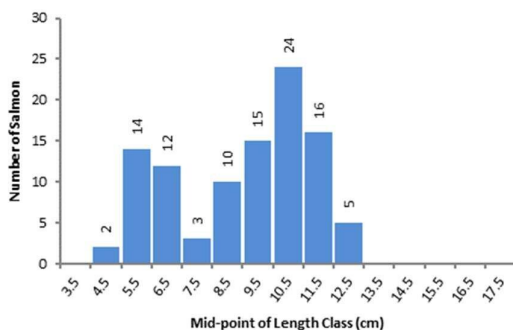


Figure A.7.3.1: Length distribution of Salmon captured in 2022 CWEF survey on the Ballintra.

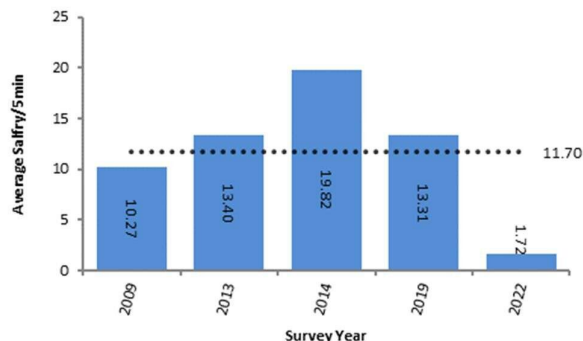


Figure A.7.3.2: Comparison of mean salmon fry/5min for all surveys on the Ballintra catchment to 2022.

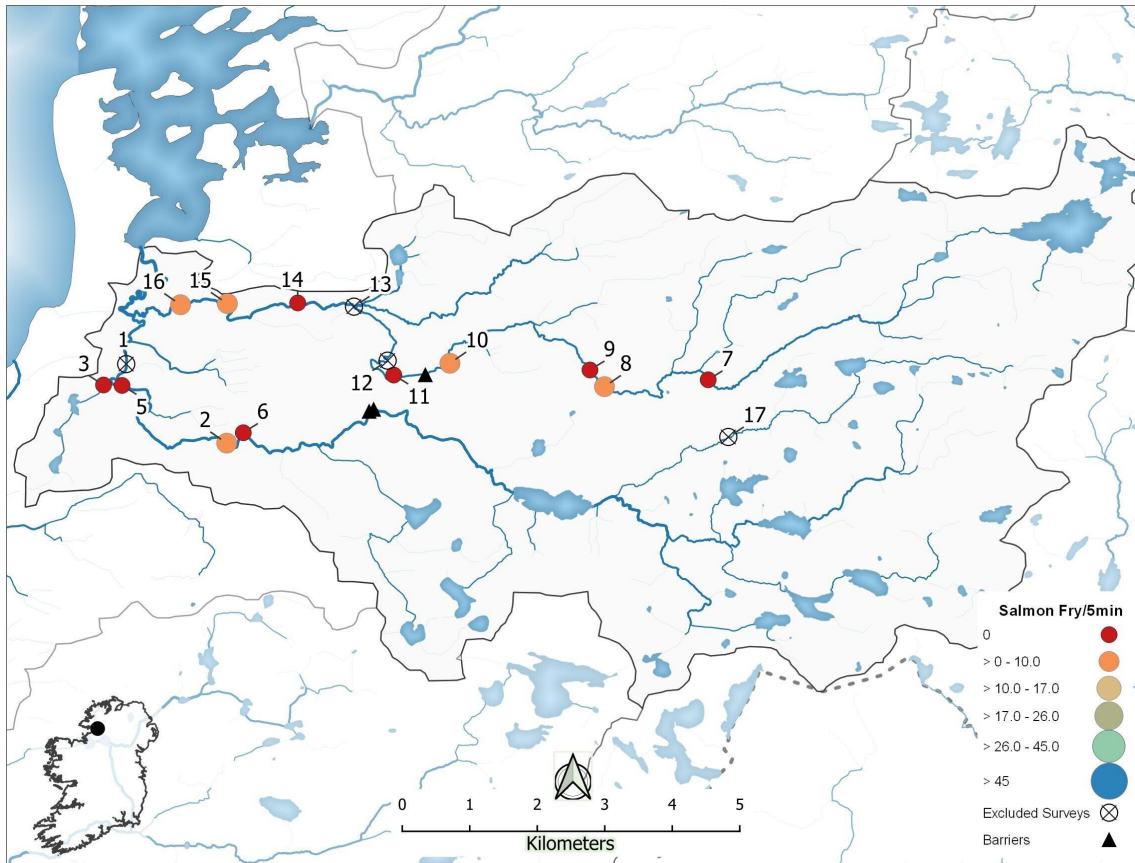
The survey this year consisted of 16 sites fished from the 8th of July to the 11th of August, Salmon fry (0+) were found at 5 sites, the highest numbers were at site 16 where 9 fry were observed. The modal length of 0+ salmon was 5.5 cm. 12 sites were included in the analysis; the mean catch at these sites was just 1.72 salmon fry/5min. The result is much lower than those previously observed in this catchment, the length profile shows relatively large numbers of older salmon juveniles (>0+) salmon indicating relatively better spawning in the 2020/21 winter than in 2021/2022.

Table A.7.3: Site specific results of CWEF on the Ballintra catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 90280 70947	4	1	0	3	Eff <60%		
002	G 91768 69771	4	1	1	4	Include	1.00	4.00
003	G 89943 70636	2	3	0	0	Include	0.00	0.00
005	G 90217 70630	4	1	1	0	Include	2.00	0.00
006	G 92014 69925	4	1	1	0	Include	1.00	0.00
007	G 98903 70713	3	2	6	0	Include	6.00	0.00
008	G 97366 70611	3	2	4	1	Include	4.00	1.00
009	G 97151 70860	3	1	1	0	Include	1.00	0.00
010	G 95075 70959	3	2	4	1	Include	6.40	1.60
011	G 94244 70784	3	2	3	0	Include	6.00	0.00
012	G 94153 70999	3	1	1	5	Eff <60%		
013	G 93654 71802	4	2	0	2	Eff <60%		
014	G 92820 71857	4	2	2	0	Include	5.00	0.00
015	G 91778 71847	4	2	2	4	Include	2.00	4.00
016	G 91084 71830	4	1	0	9	Include	0.00	10.00
017	G 99201 69863	2	3	1	0	Unsuitable Hab (Silt)		

Conclusion

The Ballintra had a salmon abundance of 1.72 sal fry/5min in 2022. Which is considerably lower than any other previous result on this catchment. Taking the five complete surveys into account this results in a cumulative average of 11.70 salmon fry/5min which is below the 17 salmon fry threshold.



Map A.7.3 Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Ballintra River

A.7.4 Laghy River

IFI Salmon Catchment #: 213
2022 survey dates: 11-15/8/22
Mean Salmon Fry/5 min (2022): 4.89 fry/5min.
CWEF Index: 9.60 fry/5min.

Sampling carried out by: Alan Mahon
 Dereck Hempail
 Lindsey Clarke

Fish Species Present: Brown Trout
 European Eel
 Salmon

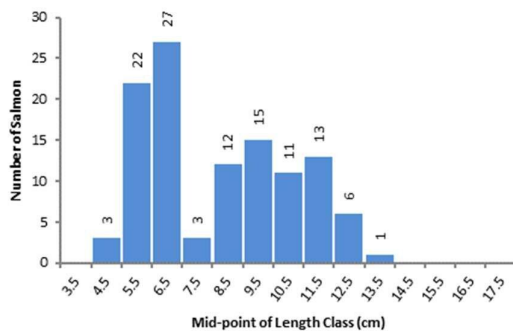


Figure A.7.4.1: Length distribution of salmon captured in 2022 CWEF survey on the Laghy.

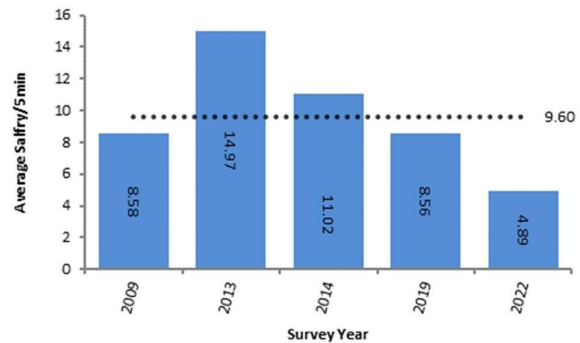


Figure A.7.4.2: Comparison of mean salmon fry/5min for all surveys on the Laghy catchment to 2022.

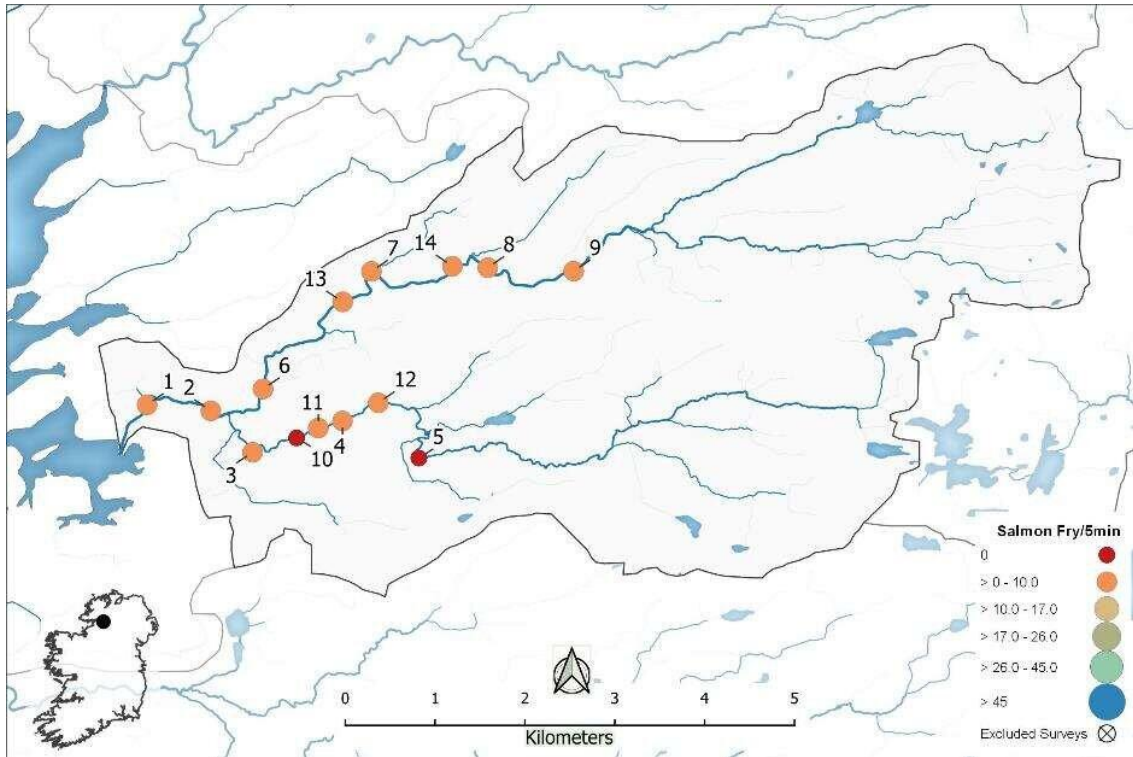
The survey this year consisted of 14 sites fished from the 11th to the 15th September, Salmon fry (0+) were found at 12 sites, the highest numbers were at site 6 where 9 fry were observed. The modal length of 0+ salmon was 6.5 cm. All sites were included in the analysis; the mean catch at these sites was 4.89 salmon fry/5min.

Conclusion

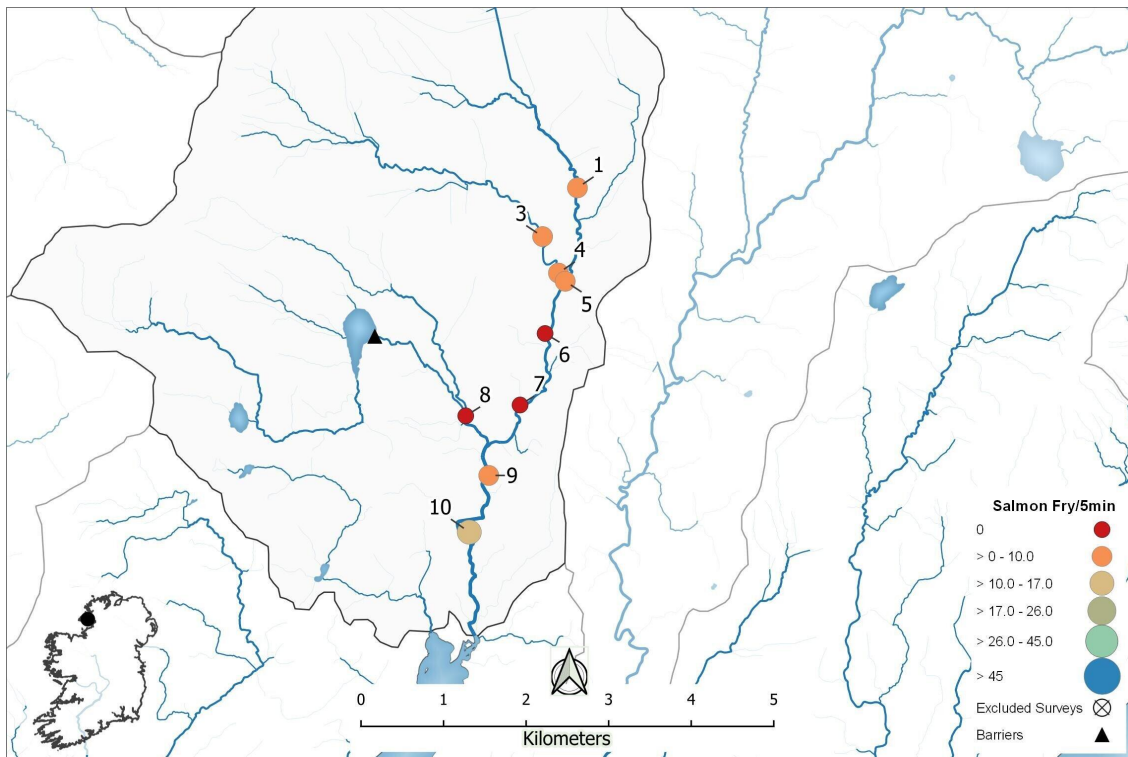
The Laghy had a salmon abundance of 4.89 salfry/5min in 2022. Taking the five complete surveys into account this results in a cumulative average of 9.60 salmon fry/5min which is below the 17 salmon fry threshold. The result is the lowest of any CWEF survey on this catchment.

Table A.7.4: Site specific results of CWEF on the Laghy catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 93309 74996	4	2	2	4	Include	3.33	6.67
002	G 94020 74929	4	2	3	4	Include	3.86	5.14
003	G 94485 74467	3	3	2	5	Include	2.57	6.43
004	G 95484 74816	3	2	11	1	Include	14.67	1.33
005	G 96334 74404	3	2	4	0	Include	8.00	0.00
006	G 94601 75172	4	2	0	9	Include	0.00	9.00
007	G 95808 76479	2	2	5	7	Include	6.25	8.75
008	G 97103 76521	4	2	3	6	Include	3.67	7.33
009	G 98058 76482	4	2	13	2	Include	16.47	2.53
010	G 94974 74627	3	2	3	0	Include	7.00	0.00
011	G 95215 74738	3	2	1	5	Include	1.33	6.67
012	G 95883 75018	3	2	3	2	Include	3.00	2.00
013	G 95487 76140	4	2	0	5	Include	0.00	6.00
014	G 96709 76538	4	2	1	5	Include	1.33	6.67



Map A.7.4 Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Laghy River



Map A.7.5 Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Bungosteen River

A.7.5 Bungosteen River

IFI Salmon Catchment #: 217
2022 survey dates: 31/8-1/9/2022
Mean Salmon Fry/5 min (2022): 3.08 fry/5min.
CWEF Index: 15.36 fry/5min.

Sampling carried out by: Alan Mahon
 Dereck Hempail

Fish Species Present:
 Brown Trout
 European Eel
 Salmon

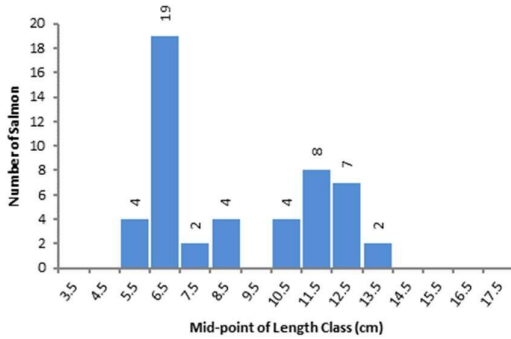


Figure A.7.5.1: Length distribution of salmon captured in 2022 CWEF survey on the Bungosteen.

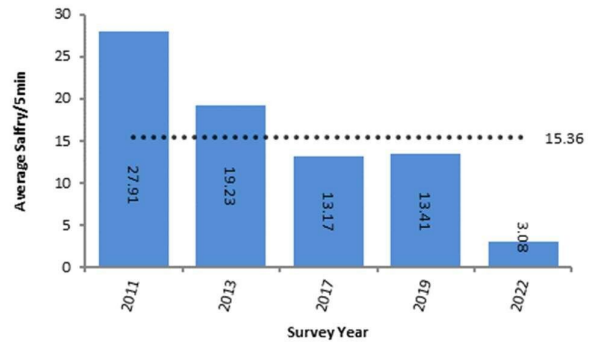


Figure A.7.5.2: Comparison of mean salmon fry/5min for all surveys on the Bungosteen catchment to 2022.

The survey this year consisted of 9 sites fished from the 31st of August to 1st September, Salmon fry (0+) were found at 6 sites, the highest numbers were at site 10 where 11 fry were observed. The modal length of 0+ salmon was 6.5 cm. All sites were included in the analysis; the mean catch at these sites was 3.08 salmon fry/5min.

Conclusion

The Bungosteen had a salmon abundance of 3.08 sal fry/5min in 2022. Taking the five complete surveys into account this results in a cumulative average of 15.36 salmon fry/5min which is below the 17 salmon fry threshold. The result is the lowest of any CWEF survey on this catchment there has been a strong downward trend in results from this river since 2011.

Table A.7.5: Site specific results of CWEF on the Bungosteen catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 74199 83525	4	1	6	2	Include	6.00	2.00
003	G 73778 82937	3	2	1	2	Include	1.00	2.00
004	G 73970 82495	3	1	5	3	Include	5.00	3.00
005	G 74052 82396	4	2	3	3	Include	3.50	3.50
006	G 73808 81766	4	2	1	0	Include	2.00	0.00
007	G 73504 80901	4	2	2	0	Include	2.00	0.00
008	G 72847 80771	3	3	0	0	Include	0.00	0.00
009	G 73126 80051	5	2	9	4	Include	11.77	5.23
010	G 72890 79366	5	2	12	11	Include	13.04	11.96

A.7.6 Owenwee/ Yellow River

IFI Salmon Catchment #: 220
2022 survey dates: 16-30/8/2022
Mean Salmon Fry/5 min (2022): 5.76 fry/5min.
CWEF Index: 15.65 fry/5min.

Sampling carried out by: Alan Mahon
 Dereck Hempail
 Lindsey Clarke
 Paul O'Doherty

Fish Species Present: Brown Trout
 European Eel
 Salmon

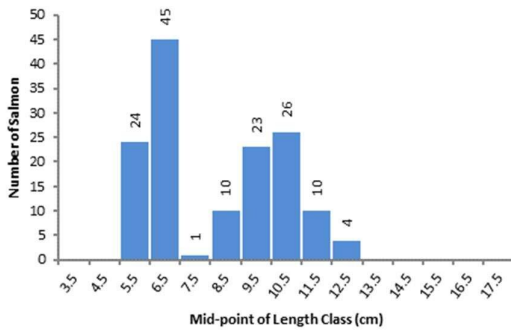


Figure A.7.6.1: Length distribution of salmon captured in 2022 CWEF survey on the Owenwee.

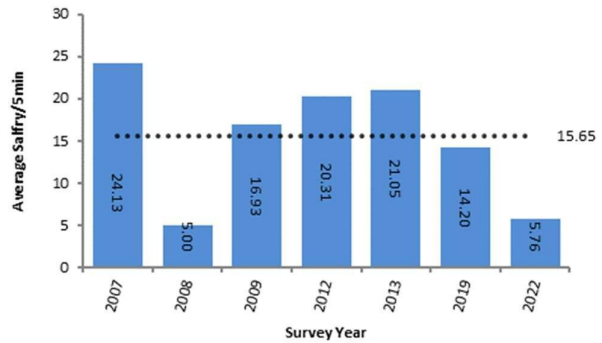


Figure A.7.6.2: Comparison of mean salmon fry/5min for all surveys on the Owenwee catchment to 2022.

The survey this year consisted of 18 sites fished from the 16th to the 30th of August, Salmon fry (0+) were found at 11 sites, the highest numbers were at site 15 where 12 fry were observed. The modal length of 0+ salmon was 6.5 cm. 13 sites were included in the analysis; the mean catch at these sites was 5.76 salmon fry/5min.

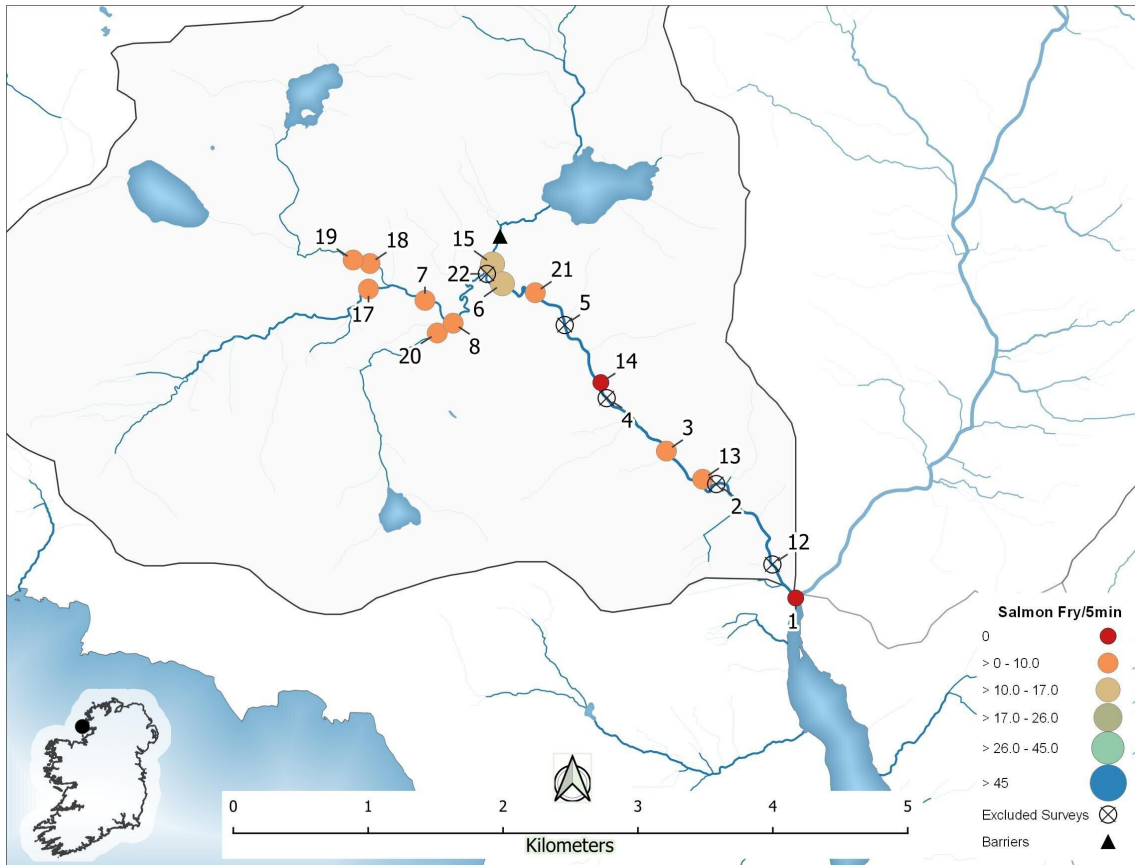
Conclusion

The Owenwee had a salmon abundance of 5.76 salfry/5min in 2022. Which is considerably lower than the best result on this catchment. Taking the five most recent complete surveys into account this results in a cumulative average of 15.65 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.7.6: Site specific results of CWEF on the Yellow River catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 58510 78171	4	3	0	0	Include	0.00	0.00
002	G 57920 79016	4	2	0	3	Eff <60%		
003	G 57551 79262	4	2	0	2	Include	0.00	2.00
004	G 57107 79654	4	2	2	2	Eff <60%		
005	G 56797 80197	4	2	0	5	Eff <60%		
006	G 56334 80505	4	2	2	10	Include	2.67	13.33
007	G 55761 80381	3	1	6	6	Include	7.00	7.00
008	G 55969 80212	2	1	5	4	Include	6.11	4.89
012	G 58337 78419	4	2	0	1	Eff <60%		
013	G 57820 79052	4	2	2	6	Include	2.75	8.25
014	G 57065 79771	4	2	2	0	Include	5.00	0.00
015	G 56261 80651	3	2	0	12	Include	0.00	16.00
017	G 55341 80465	3	2	3	3	Include	4.00	4.00
018	G 55353 80655	2	2	1	6	Include	1.14	6.86

Table A.7.6: Site specific results of CWF on the Yellow River catchment in 2022.								
Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
019	G 55228 80681	2	2	2	2	Include	3.00	3.00
020	G 55851 80138	2	1	7	1	Include	8.75	1.25
021	G 56578 80437	4	2	1	5	Include	1.67	8.33
022	G 56219 80578	3	2	3	2	Eff <60%		



Map A.7.6 Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Owenwee/Yellow River.

A.7.7 Owentocker

IFI Salmon Catchment #: 222
2022 survey dates: 25/8/2022
Mean Salmon Fry/5 min (2022): 27.13 fry/5min.
CWEF Index: 23.59 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout
 European Eel
 Salmon

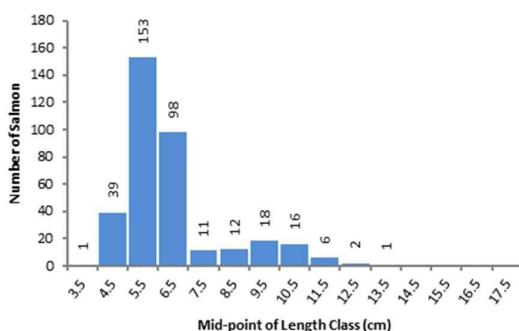


Figure A.7.7.1: Length distribution of salmon captured in 2022 CWEF survey on the Owentocker.

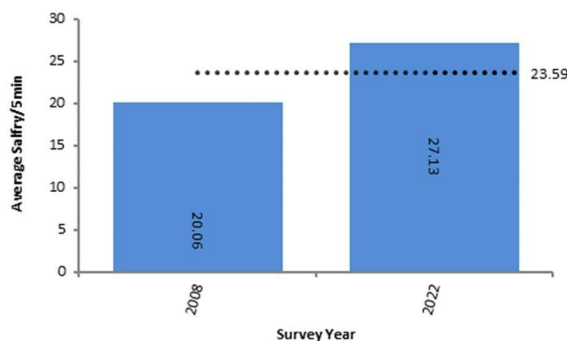


Figure A.7.7.2: Comparison of mean salmon fry/5min for all surveys on the Owentocker catchment to 2022.

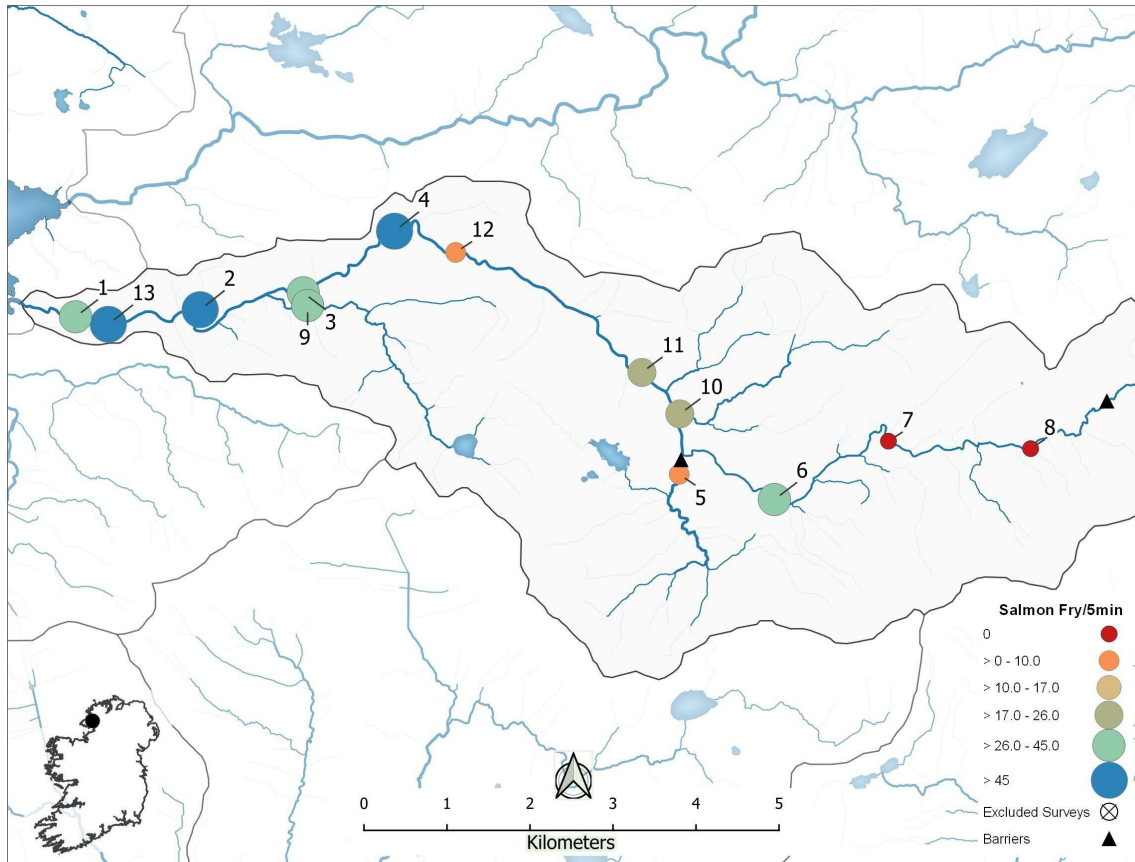
The survey this year consisted of 13 sites fished on the 25th of August, Salmon fry (0+) were found at 11 sites, the highest numbers were at site 13 where 49 fry were observed. The modal length of 0+ salmon was 5.5 cm. 13 sites were included in the analysis; the mean catch at these sites was 27.13 salmon fry/5min.

Conclusion

The Owentocker had a salmon abundance of 27.13 sal fry/5min in 2022. Taking the two complete surveys into account the results in a cumulative average of 23.59 which is above the 17 salmon fry threshold.

Table A.7.7: Site specific results of CWEF on the Yellow River catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 73647 90549	4	1	5	30	Include	5.86	35.14
002	G 75149 90635	4	1	5	46	Include	6.18	56.82
003	G 76390 90839	4	1	0	38	Include	0.00	41.00
004	G 77490 91584	4	1	0	42	Include	0.00	49.00
005	G 80920 88641	4	3	11	6	Include	12.29	6.71
006	G 82067 88336	3	1	5	28	Include	6.52	36.48
007	G 83442 89042	3	2	6	0	Include	7.00	0.00
008	G 85155 88951	3	2	12	0	Include	16.00	0.00
009	G 76443 90684	3	1	17	26	Include	18.98	29.02
010	G 80927 89372	3	3	5	13	Include	7.22	18.78
011	G 80470 89875	4	2	1	17	Include	1.28	21.72
012	G 78227 91327	4	3	0	7	Include	0.00	9.00
013	G 74041 90458	4	1	0	49	Include	0.00	49.00



Map A.7.7: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Owentocker River.

A.7.8 Owenea River

IFI Salmon Catchment #: 223
2022 survey dates: 23-24/8/2022
Mean Salmon Fry/5 min (2022): 43.19 fry/5min.
CWEF Index: 38.57 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout
 European Eel
 Salmon

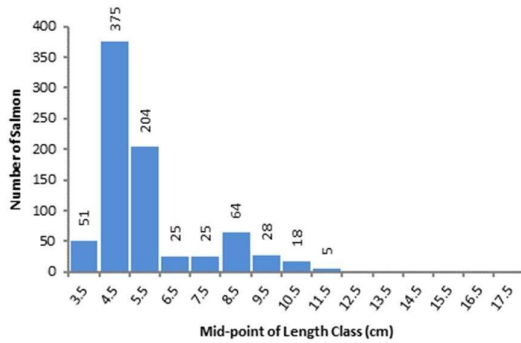


Figure A.7.8.1: Length distribution of salmon captured in 2022 CWEF survey on the Owenea.

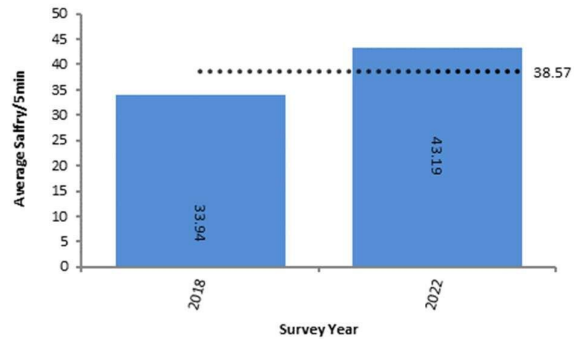


Figure A.7.8.2: Comparison of mean salmon fry/5min for all surveys on the Owenea catchment to 2022.

The survey this year consisted of 19 sites fished on the 23rd and 24th of August, Salmon fry (0+) were found at 17 sites, the highest numbers were at site 18 where 90 fry were observed. The modal length of 0+ salmon was 4.5 cm. 18 sites were included in the analysis; the mean catch at these sites was 43.19 salmon fry/5min.

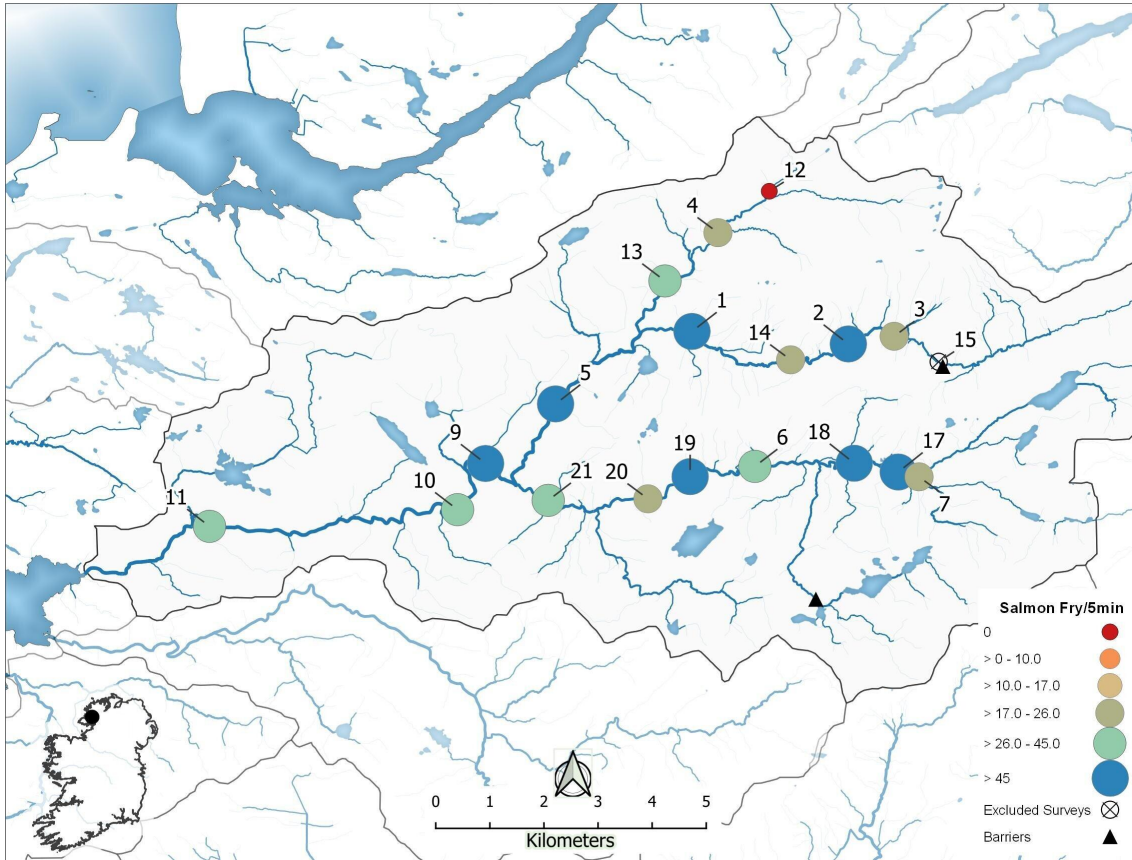
Conclusion

The Owenea had a salmon abundance of 43.19 sal fry/5min in 2022. Taking the two complete surveys into account this results in a cumulative average of 38.57 salmon fry/5min which is above the 17 salmon fry threshold.

Table A.7.8: Site specific results of CWEF on the Yellow River catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	G 84778 96437	4	1	0	46	Include	0.00	58.00
002	G 87669 96203	4	1	5	42	Include	6.49	54.51
003	G 88516 96347	4	2	1	15	Include	1.50	22.50
004	G 85258 98277	3	1	3	18	Include	3.86	23.14
005	G 82256 95087	5	1	0	60	Include	0.00	65.00
006	G 85940 93923	4	1	0	30	Include	0.00	42.00
007	G 88975 93729	3	2	0	20	Include	0.00	26.00
009	G 80962 93976	5	1	0	85	Include	0.00	95.00
010	G 80443 93117	5	0	0	31	Include	0.00	31.00
011	G 75858 92805	5	1	0	34	Include	0.00	44.00
012	G 86207 99048	2	2	6	0	Include	8.00	0.00
013	G 84279 97378	4	1	1	21	Include	1.36	28.64
014	G 86601 95908	4	3	4	18	Include	4.00	18.00
015	G 89338 95872	3	3	2	0	Above Salmon Range.		
017	G 88591 93817	4	2	2	39	Include	2.34	45.66
018	G 87778 93980	4	1	0	90	Include	0.00	110.00

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
019	G 84744 93732	4	3	3	44	Include	3.32	48.68
020	G 83964 93318	4	2	8	20	Include	8.57	21.43
021	G 82119 93290	4	3	1	40	Include	1.10	43.90



Map A.7.8: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Owenea River.

A.7.9 Gweebarra River

IFI Salmon Catchment #: 225
2022 survey dates: 17-19/9/2022
Mean Salmon Fry/5 min (2022): 19.28 fry/5min.
CWEF Index: 19.28 fry/5min.

Sampling carried out by: Tony Holmes
 Cesare Monciano

Fish Species Present: Brown Trout
 European Eel
 Salmon

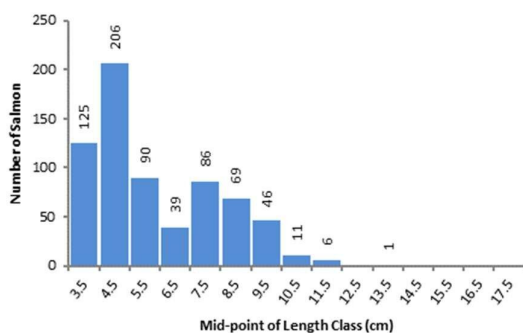


Figure A.7.9.1: Length distribution of salmon captured in 2022 CWEF survey on the Gweebarra.

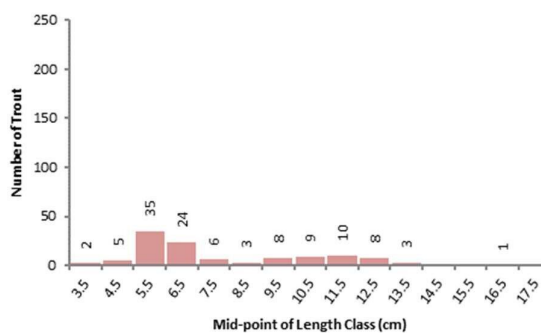


Figure A.7.9.2: Length distribution of brown trout captured in 2022 CWEF survey on the Gweebarra

The survey this year consisted of 32 sites fished from the 17th to the 19th of September, Salmon fry (0+) were found at 27 sites, the highest numbers were at site 26 where 44 fry were observed. The modal length of 0+ salmon was 4.5 cm. 27 sites were included in the analysis; the mean catch at these sites was 19.28 salmon fry/5min. Salmon fry were well distributed and throughout the catchment. Much of the river consisted of large substrate and bedrock, offering poor spawning habitat, but where habitat was suitable fry abundances were high.

Conclusion

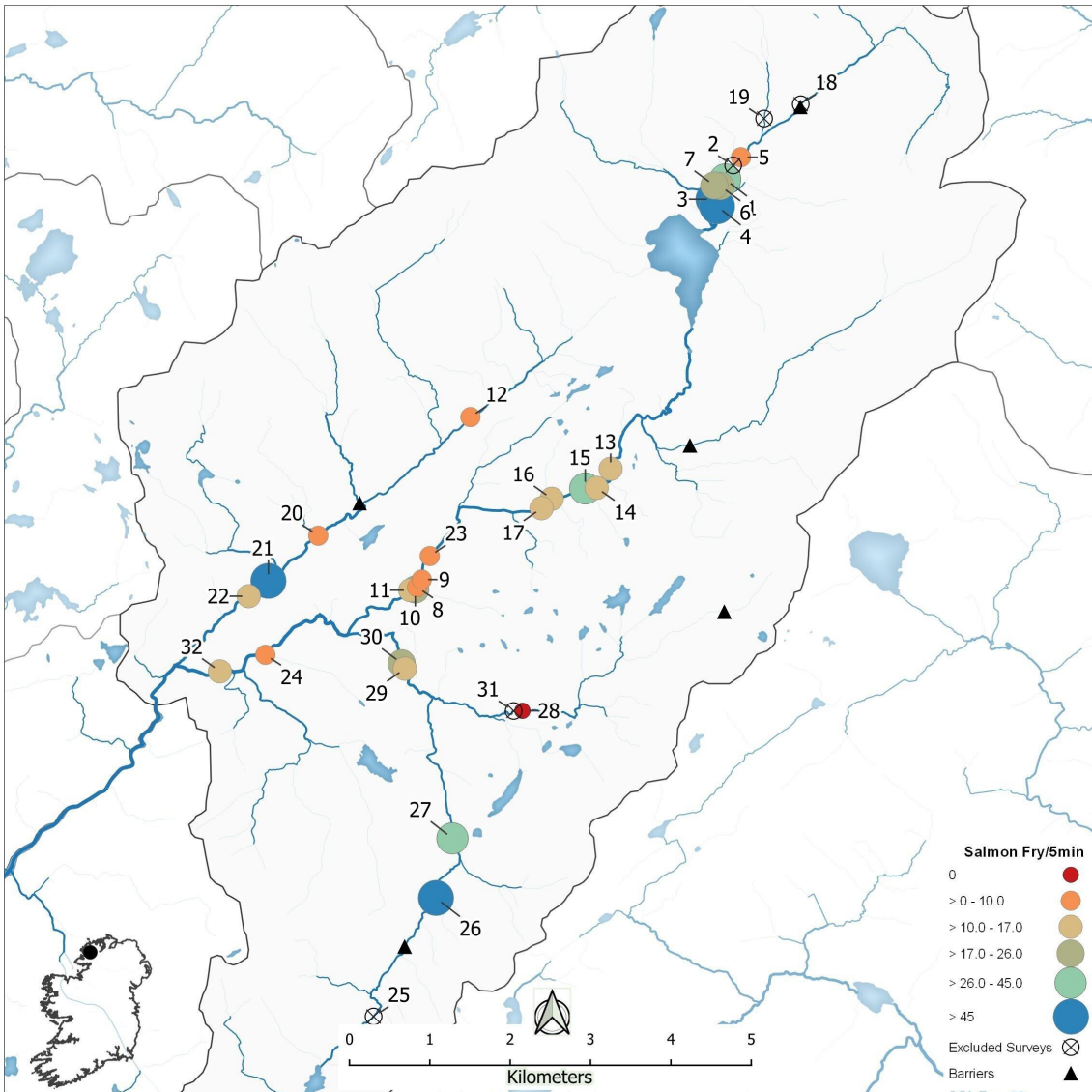
The Gweebarra had a salmon abundance of 19.28 sal fry/5min in 2022. As this is the first CWEF survey on this catchment the cumulative average is also 19.28 salmon fry/5min which is above the 17 salmon fry threshold.

Table A.7.9: Site specific results of CWEF on the Gweebarra catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	B 93900 13017	3	3	0	25	Include	0.00	29.00
002	B 93997 13193	1	3	1	7	Stream Order<2		
003	B 93752 12770	4	1	0	37	Include	0.00	47.00
004	B 93798 12681	4	1	0	41	Include	0.00	46.00
005	B 94094 13294	3	3	0	4	Include	0.00	6.00
006	B 93838 12934	3	2	2	15	Include	2.71	20.29
007	B 93763 12942	3	2	2	18	Include	2.50	22.50
008	B 90065 07925	4	2	1	3	Include	1.00	3.00
009	B 90122 08021	4	3	0	7	Include	0.00	10.00
010	B 90043 07898	4	1	3	16	Include	3.32	17.68
011	B 89980 07889	4	1	4	13	Include	4.24	13.76
012	B 90728 10050	3	3	1	2	Include	1.67	3.33
013	B 92474 09403	4	3	3	9	Include	4.50	13.50
014	B 92300 09166	4	1	7	12	Include	9.21	15.79

Table A.7.9: Site specific results of CWF on the Gweebarra catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
015	B 92158 09158	4	2	5	24	Include	5.52	26.48
016	B 91740 09030	4	3	0	9	Include	0.00	12.00
017	B 91613 08912	4	2	0	11	Include	0.00	14.00
018	B 94839 13956	3	3	1	0	Upstream From Salmon Range.		
019	B 94382 13778	2	3	10	0	Upstream From Salmon Range.		
020	B 88835 08569	4	2	1	6	Include	1.00	6.00
021	B 88215 08005	4	1	2	42	Include	2.23	46.77
022	B 87970 07813	4	1	3	14	Include	3.53	16.47
023	B 90223 08315	4	3	0	7	Include	0.00	8.00
024	B 88178 07081	5	2	1	5	Include	1.50	7.50
025	B 89523 02566	3	2	9	0	Upstream From Salmon Range.		
026	B 90301 04045	3	1	0	44	Include	0.00	62.00
027	B 90505 04790	3	2	2	22	Include	2.42	26.58
028	B 91376 06383	3	3	3	0	Include	3.00	0.00
029	B 89913 06908	4	3	0	11	Include	0.00	14.00
030	B 89873 06977	4	3	1	18	Include	1.21	21.79
031	B 91267 06380	3	2	8	0	Similar To Site #28		
032	B 87612 06875	5	2	0	10	Include	0.00	11.00



Map A.7.9: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Gweebarra River.

A.7.10 Tullaghobegly River

IFI Salmon Catchment #: 235
2022 survey dates: 8-9/8/2021
Mean Salmon Fry/5 min (2022): 4.45 fry/5min.
CWEF Index: 7.28 fry/5min.

Sampling carried out by:
 Jonathon Gallagher
 Tommy Mooney

Fish Species Present:
 Brown Trout
 European Eel
 Salmon

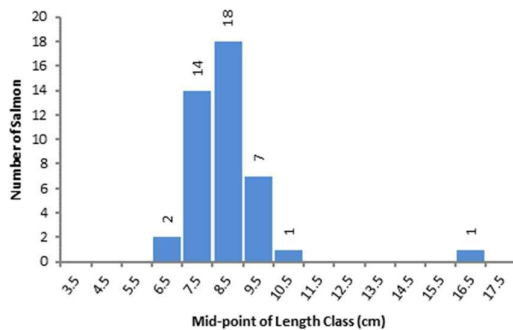


Figure A.7.10.1: Length distribution of salmon captured in 2022 CWEF survey on the Tullaghobegly.

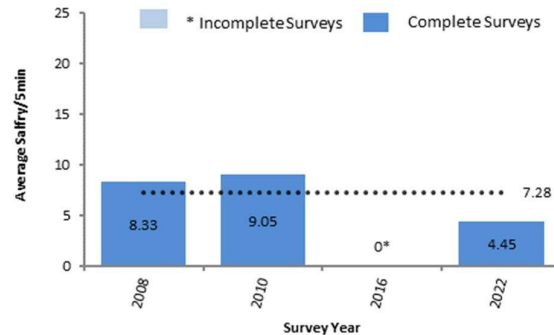


Figure A.7.10.2: Comparison of mean salmon fry/5min for all surveys on the Tullaghobegly catchment to 2022.

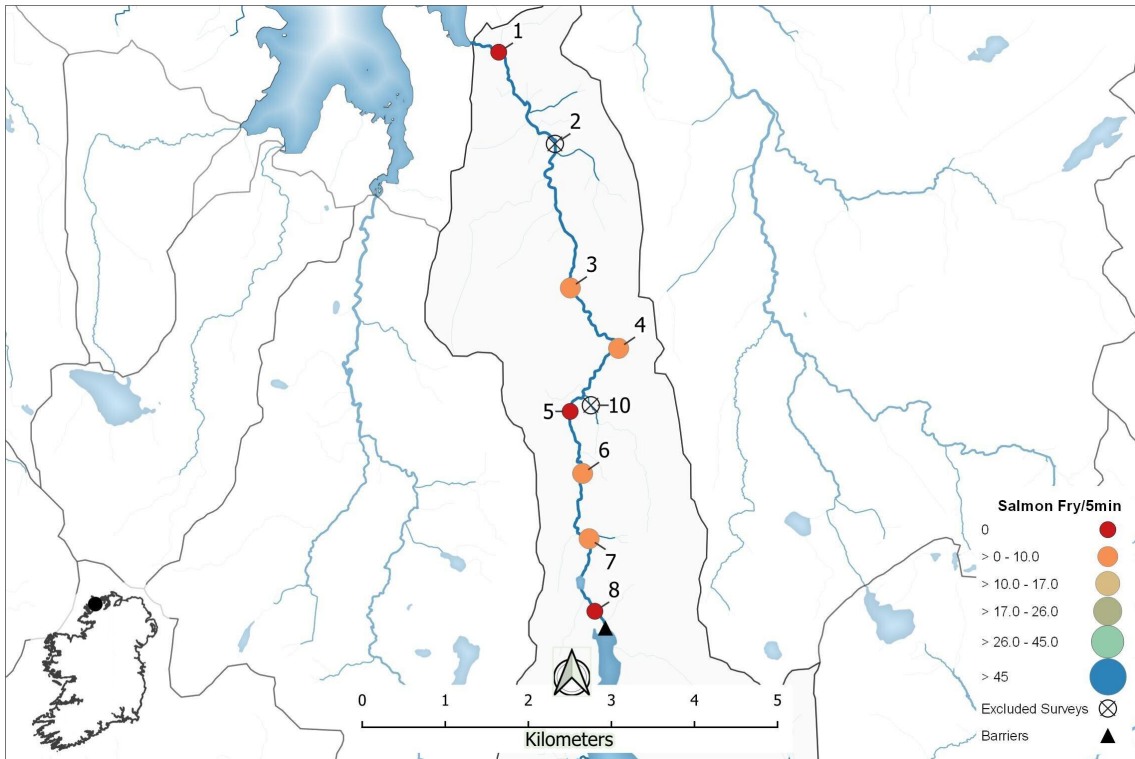
The survey this year consisted of 9 sites fished on 8th and 9th of September, Salmon fry (0+) were found at 4 sites, the highest numbers were at site 2 where 10 fry were observed. 7 sites were included in the analysis; the mean catch at these sites was 4.45 salmon fry/5min.

Conclusion

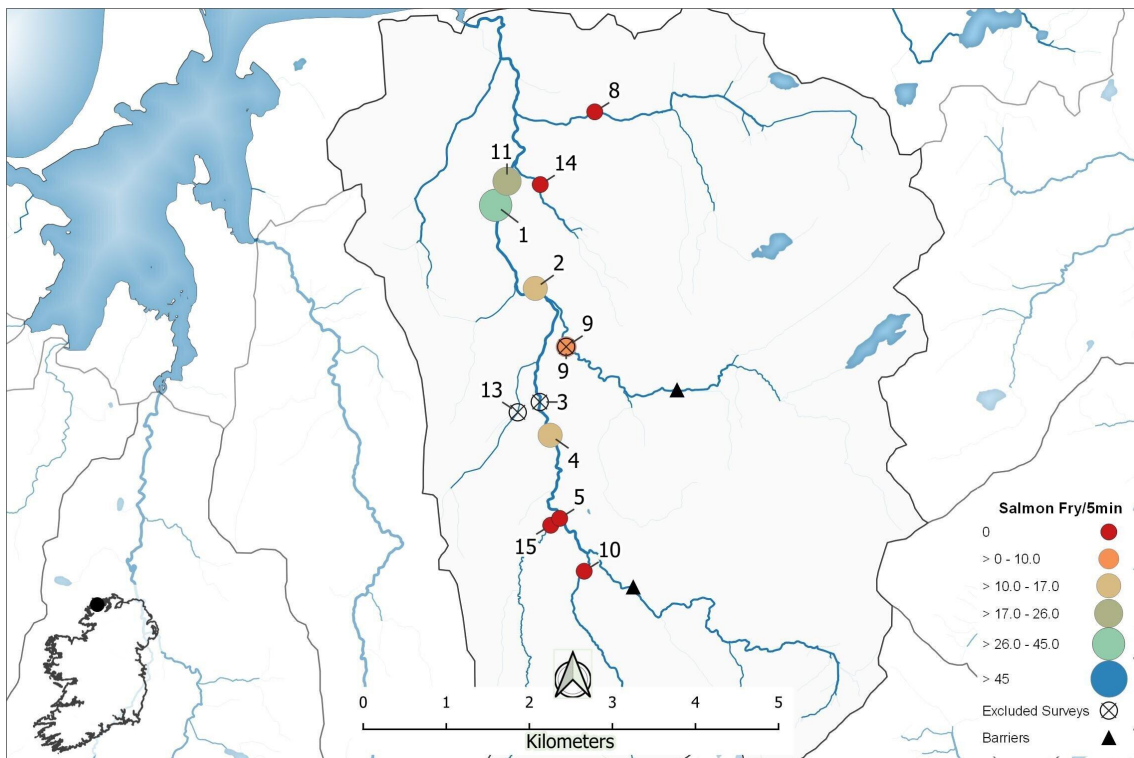
The Tullaghobegly had a salmon abundance of 4.45 sal fry/5min in 2022. Taking the three complete surveys into account this results in a cumulative average of 7.28 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.7.10: Site specific results of CWEF on the Tullaghobegly catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	B 92657 31999	4	2	10	0	Include	16.00	0.00
002	B 93334 30896	4	2	2	10	Eff <60%		
003	B 93520 29162	4	1	7	7	Include	10.00	10.00
004	B 94100 28436	4	1	2	6	Include	3.00	9.00
005	B 93517 27677	4	0	2	0	Include	4.00	0.00
006	B 93667 26929	4	1	1	4	Include	1.00	4.00
007	B 93745 26144	4	1	6	5	Include	9.82	8.18
008	B 93815 25271	4	1	12	0	Include	24.00	0.00
010	B 93767 27751	2	1	3	1	Eff <60%		



Map A.7.10: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Tullaghobegly River.



Map A.7.11: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Ray River.

A.7.11 Ray River

IFI Salmon Catchment #: 236
2022 survey dates: 9-31/8/2022
Mean Salmon Fry/5 min (2022): 9.35 fry/5min.
CWEF Index: 11.11 fry/5min.

Sampling carried out by: Jonathon Gallagher
 Tommy Mooney
 Colm McAnaspie

Fish Species Present: Brown Trout
 European Eel
 Salmon

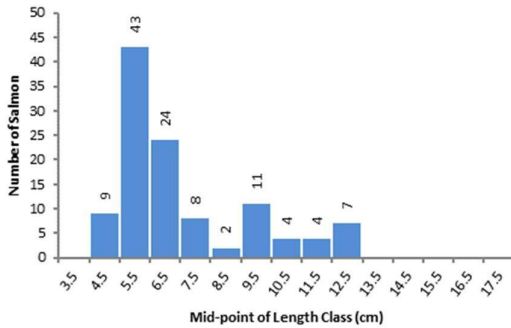


Figure A.7.11.1: Length distribution of salmon captured in 2022 CWEF survey on the Ray.

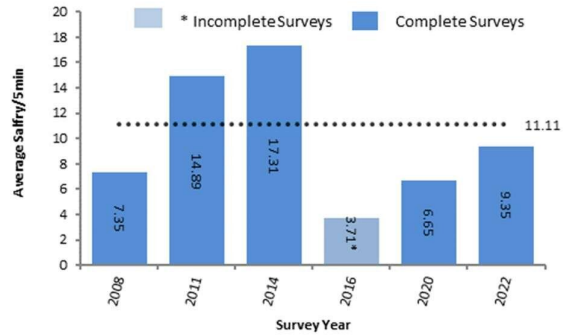


Figure A.7.11.2: Comparison of mean salmon fry/5min for all surveys on the Ray River to 2022.

The survey this year consisted of 12 sites fished on 9,10 and 31 of August, Salmon fry (0+) were found at six sites, the highest numbers were at site 1 where 36 fry were observed. The modal length of 0+ salmon was 5.5 cm. All 14 sites were included in the analysis; the mean catch at these sites was 9.35 salmon fry/5min.

Conclusion

The Ray had a salmon abundance of 9.35 salfry/5min in 2022. Taking the five most recent complete surveys into account this results in a cumulative average of 11.11 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.7.11: Site specific results of CWEF on the Ray catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	B 95222 32531	4	1	2	36	Include	2.11	37.89
002	B 95698 31529	4	1	3	11	Include	4.29	15.71
003	B 95752 30160	4	1	1	3	Eff <60%		
004	B 95878 29760	4	1	1	13	Include	1.21	15.79
005	B 95993 28757	4	2	0	0	Include	0.00	0.00
008	B 96415 33657	3	3	2	0	Include	4.00	0.00
009	B 96070 30826	3	2	3	0	Duplicate		
009	B 96070 30826	3	2	5	2	Include	7.86	3.14
010	B 96287 28121	3	2	0	0	Include	0.00	0.00
011	B 95358 32820	4	1	1	21	Include	1.00	21.00
013	B 95488 30036	2				Not Sampled		
014	B 95758 32781	3	3	0	0	Include	0.00	0.00
015	B 95885 28675	2	3	1	0	Include	1.00	0.00

A.7.12 Leannan River

IFI Salmon Catchment #: 248
2022 survey dates: 18-30/7/2022
Mean Salmon Fry/5 min (2022): 13.45 fry/5min.
CWEF Index: 18.62 fry/5min.

Sampling carried out by:
 Tony Holmes
 Cesare Monciano

Fish Species Present:
 Brown Trout Flounder
 European Eel Salmon
 Margaritifera

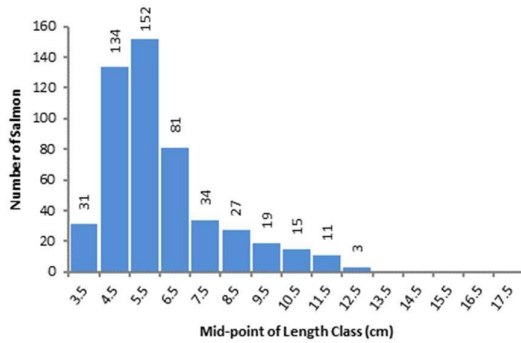


Figure A.7.4.1: Length distribution of salmon captured in 2022 CWEF survey on the Leannan.

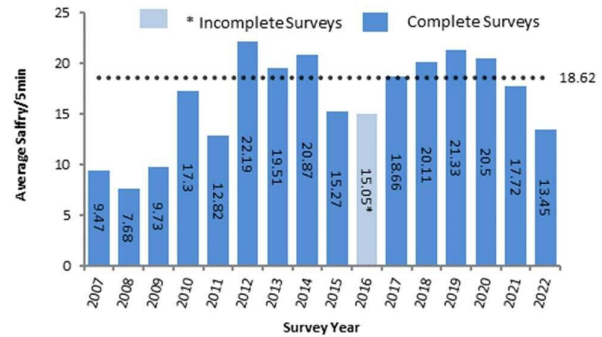


Figure A.7.4.2: Comparison of mean salmon fry/5min for all surveys on the Leannan catchment to 2022.

The survey this year consisted of 37 sites fished from the 18th to the 30th of July, Salmon fry (0+) were found at 31 sites, the highest numbers were at site 12 where 45 fry were observed. The modal length of 0+ salmon was 6.5 cm. All sites were included in the analysis; the mean catch at these sites was 13.45 salmon fry/5min.

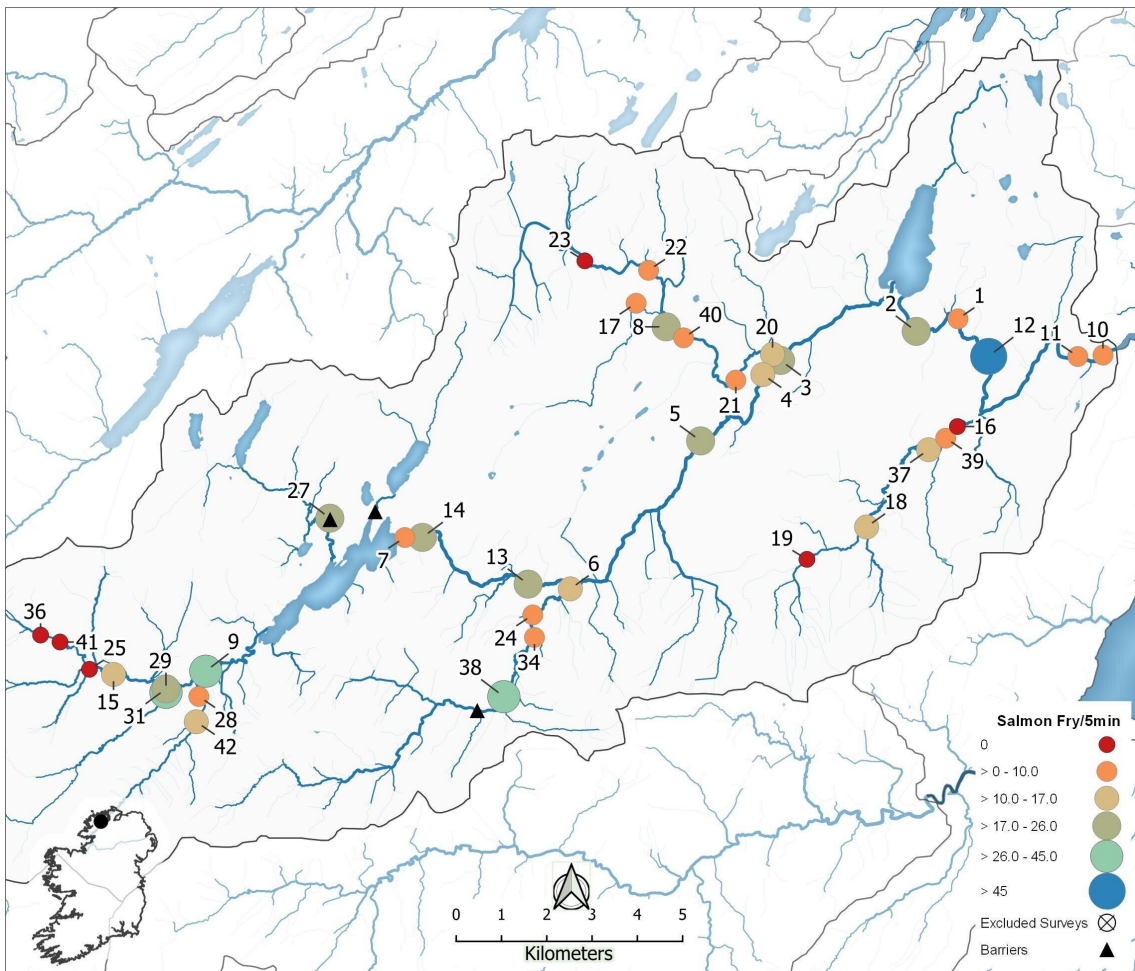
Conclusion

The Leannan had a salmon abundance of 13.45 sal fry/5min in 2022. Taking the five most recent complete surveys into account this results in a cumulative average of 18.62 salmon fry/5min which is above the 17 salmon fry threshold.

Table A.7.4: Site specific results of CWEF on the Leannan catchment in 2022.

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	0	0	2	Include	0.00	3.00
002	C 18110 21555	5	0	0	18	Include	0.00	24.00
003	C 15115 20910	5	0	1	22	Include	1.13	24.87
004	C 14722 20597	5	0	0	11	Include	0.00	14.00
005	C 13349 19129	5	2	0	20	Include	0.00	23.00
006	C 10470 15850	5	2	1	15	Include	1.13	16.88
007	C 06817 16987	5	0	0	2	Include	0.00	2.00
008	C 12588 21655	4	2	7	15	Include	9.55	20.45
009	C 02422 14028	4	1	2	31	Include	2.48	38.52
010	C 22234 21028	5	0	0	4	Include	0.00	4.00
011	C 21677 20999	5	3	0	8	Include	0.00	9.00
012	C 19710 21001	5	1	1	45	Include	1.17	52.83
013	C 09540 15957	5	3	1	13	Include	1.50	19.50
014	C 07206 16991	5	3	0	15	Include	0.00	18.00
015	C 00385 13956	4	2	2	10	Include	2.50	12.50
016	C 19019 19448	4	2	3	0	Include	4.00	0.00

Table A.7.4: Site specific results of CWF on the Leannan catchment in 2022.								
Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
017	C 11925 22178	2	2	15	1	Include	20.63	1.38
018	C 17013 17222	4	2	10	10	Include	11.00	11.00
019	C 15696 16505	3	2	10	0	Include	10.00	0.00
020	C 14938 21045	4	3	4	14	Include	4.44	15.56
021	C 14125 20475	4	2	10	2	Include	13.33	2.67
022	C 12199 22907	4	2	20	5	Include	23.20	5.80
023	C 10793 23117	4	2	7	0	Include	8.00	0.00
024	C 09643 15275	4	2	5	8	Include	5.77	9.23
025	B 99853 14070	4	0	1	0	Include	1.00	0.00
027	C 05160 17430	4	2	0	15	Include	0.00	18.00
028	C 02269 13466	3	0	2	6	Include	2.75	8.25
029	C 01542 13558	3	1	0	24	Include	0.00	32.00
031	C 01544 13637	4	1	6	19	Include	7.20	22.80
034	C 09680 14776	4	2	1	6	Include	1.29	7.71
036	B 98773 14828	3	3	1	0	Include	1.00	0.00
037	C 18382 18934	4	2	2	9	Include	2.73	12.27
038	C 09004 13462	4	2	0	34	Include	0.00	41.00
039	C 18760 19189	4	50	16	4	Include	20.00	5.00
040	C 12972 21411	4	3	1	7	Include	1.38	9.63
041	B 99203 14674	3	0	1	0	Include	2.00	0.00



Map A.7.12: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Leannan River.

A.7.13 Mill River

IFI Salmon Catchment #: 252
 2022 survey dates: 17/8/2022
 Mean Salmon Fry/5 min (2022): 0 fry/5min.
 CWF Index: 0 fry/5min.

Sampling carried out by: James Doherty
 Tommy Mooney

Fish Species Present: Brown Trout

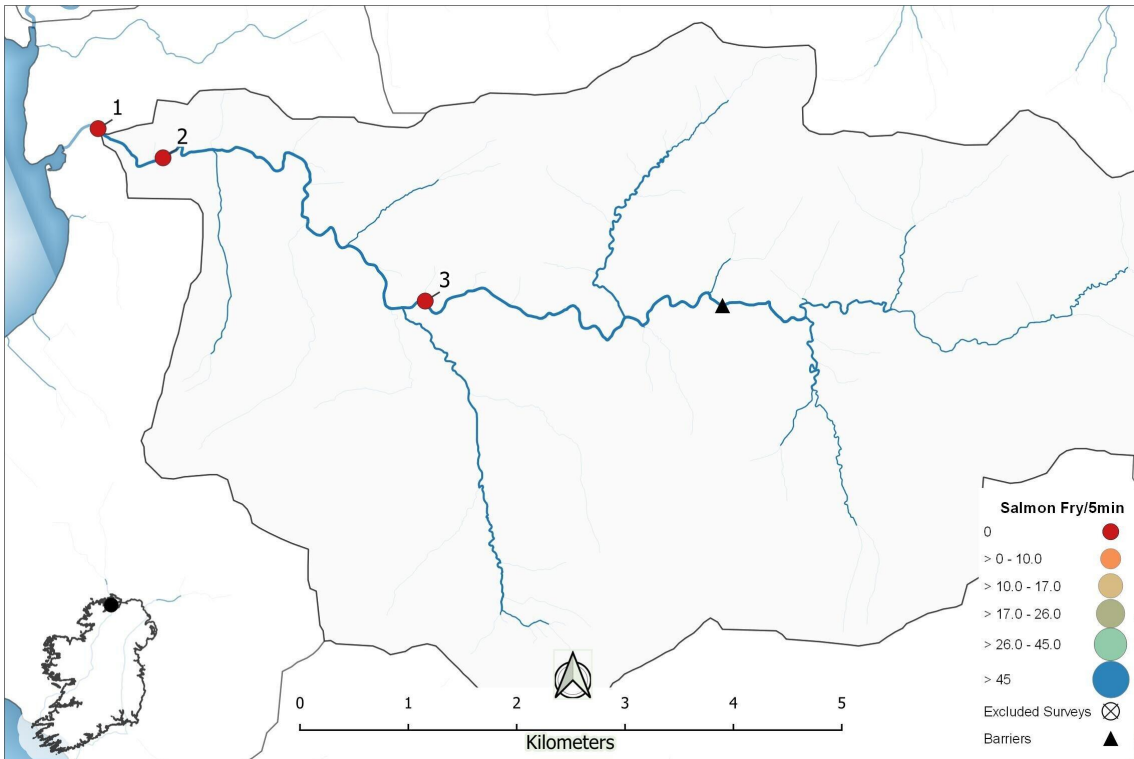
The survey this year consisted of 3 sites fished on the 17th of August. As in all previous surveys (2010,2015 and 2021) Salmon fry (0+) were absent from all sites.

Conclusion

The Mill had a salmon abundance of Zero sal fry/5min in 2022. Taking the four complete surveys into account this results in a cumulative average of Zero salmon fry/5min which is below the 17 salmon fry threshold.

Table A.7.13: Site specific results of CWF on the Culoort catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	C 34943 31660	4	1	11	0	Include	11.00	0.00
002	C 35543 31391	4	1	4	0	Include	4.00	0.00
003	C 37961 30070	4	1	4	0	Include	4.00	0.00



Map A.7.13: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Mill River.

A.7.14 Crana River

IFI Salmon Catchment #: 253
2022 survey dates: 21/7-16-8/2022
Mean Salmon Fry/5 min (2022): 31.74 fry/5min.
CWEF Index: 21.28 fry/5min.

Sampling carried out by: Tony Holmes Jonathon Gallagher
 Cesare Monciano James Doherty
 Tommy Mooney

Fish Species Present: Brown Trout
 European Eel
 Salmon

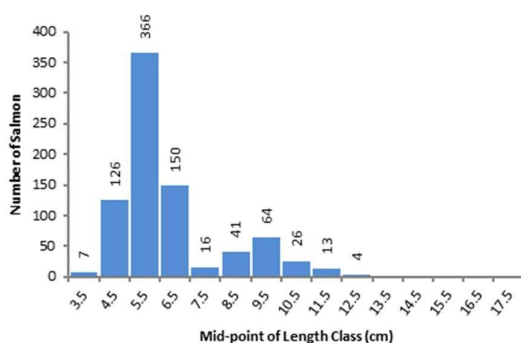


Figure A.7.14.1: Length distribution of salmon captured in 2022 CWEF survey on the Crana.

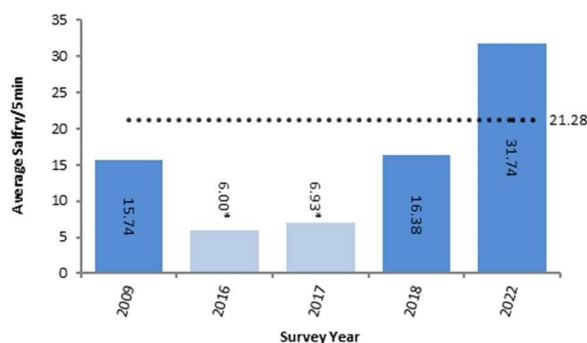


Figure A.7.14.2: Comparison of mean salmon fry/5min for all surveys on the Crana catchment to 2022.

The survey this year consisted of 28 sites fished on the 21st of July to the 16th of August. Salmon fry (0+) were found at 20 sites, the highest numbers were at site 31 where 95 fry were observed. The modal length of 0+ salmon was 5.5 cm. 26 sites were included in the analysis; the mean catch at these sites was 31.74 salmon fry/5min. Some of the sites visited had been rehabilitated in the recent past and had exceptionally high abundances of salmon fry.

Conclusion

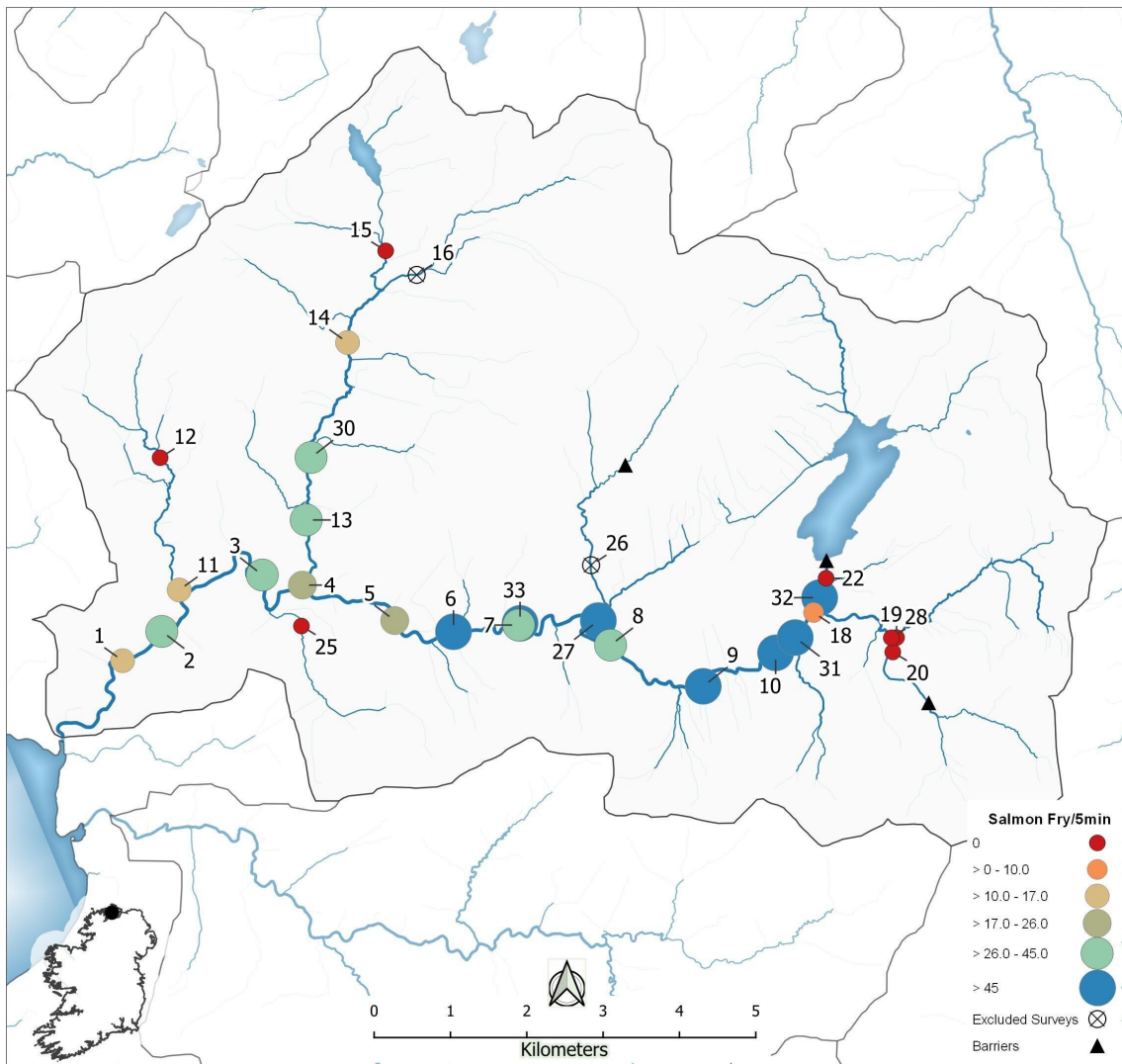
The Crana had a salmon abundance of 31.74 sal fry/5min in 2022. Taking the three complete surveys into account this results in a cumulative average of 21.28 salmon fry/5min which is above the 17 salmon fry threshold.

Table A.7.14: Site specific results of CWEF on the Crana catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	C 35134 33651	5	3	0	12	Include	0.00	16.00
002	C 35649 34035	5	3	0	29	Include	0.00	34.00
003	C 36965 34778	5	0	0	30	Include	0.00	38.00
004	C 37490 34645	5	3	1	16	Include	1.29	20.71
005	C 38701 34178	5	3	0	15	Include	0.00	18.00
006	C 39471 34032	5	2	0	39	Include	0.00	51.00
007	C 40325 34119	5	3	0	35	Include	0.00	42.00
008	C 41529 33856	5	1	2	33	Include	2.69	44.31
009	C 42742 33314	5	1	3	38	Include	4.02	50.98
010	C 43692 33754	5	2	2	47	Include	2.61	61.39
011	C 35876 34582	3	2	0	12	Include	0.00	15.00
012	C 35626 36322	3	2	3	0	Include	6.00	0.00
013	C 37540 35502	4	1	5	36	Include	6.10	43.90
014	C 38082 37837	4	2	4	14	Include	4.67	16.33
015	C 38581 39045	3	1	21	0	Include	28.00	0.00

Table A.7.14: Site specific results of CWF on the Crana catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
016	C 38989 38729	3	2	0	1	Eff <60%		
018	C 44188 34284	4	2	0	8	Include	0.00	9.00
019	C 45276 33955	3	2	4	0	Include	5.00	0.00
020	C 45227 33765	3	1	3	0	Include	3.00	0.00
022	C 44353 34735	2	3	8	0	Include	11.00	0.00
025	C 37478 34107	2	3	8	0	Include	10.00	0.00
026	C 41273 34908	3	3	1	0	Above Sal Range		
027	C 41369 34179	4	2	2	41	Include	2.56	52.44
028	C 45207 33952	4	1	4	0	Include	4.00	0.00
030	C 37604 36325	4	2	2	38	Include	2.25	42.75
031	C 43947 33954	5	1	3	95	Include	4.32	136.68
032	C 44269 34480	4	1	2	55	Include	2.21	60.79
033	C 40343 34143	5	1	1	64	Include	1.12	71.88



Map A.7.13: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Crana River.

A.7.15 Straid River

IFI Salmon Catchment #: 257
2022 survey dates: 17/8/2022
Mean Salmon Fry/5 min (2022): 0.00 fry/5min.
CWEF Index: 0.05 fry/5min.

Sampling carried out by: James Doherty
 Tommy Mooney

Fish Species Present:
 Brown Trout
 European Eel

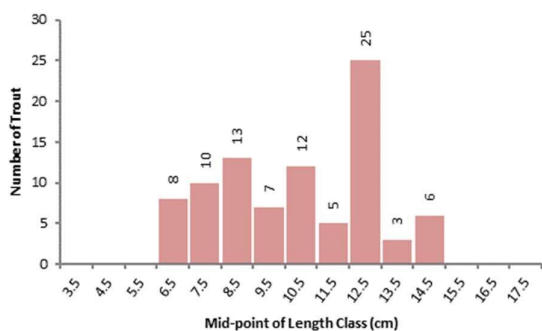


Figure A.7.15.1: Length distribution of brown trout captured in 2022 CWEF survey on the Straid.

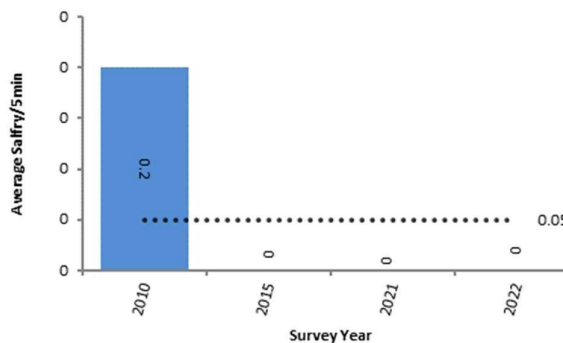


Figure A.7.15.2: Comparison of mean salmon fry/5min for all surveys on the Straid catchment to 2022

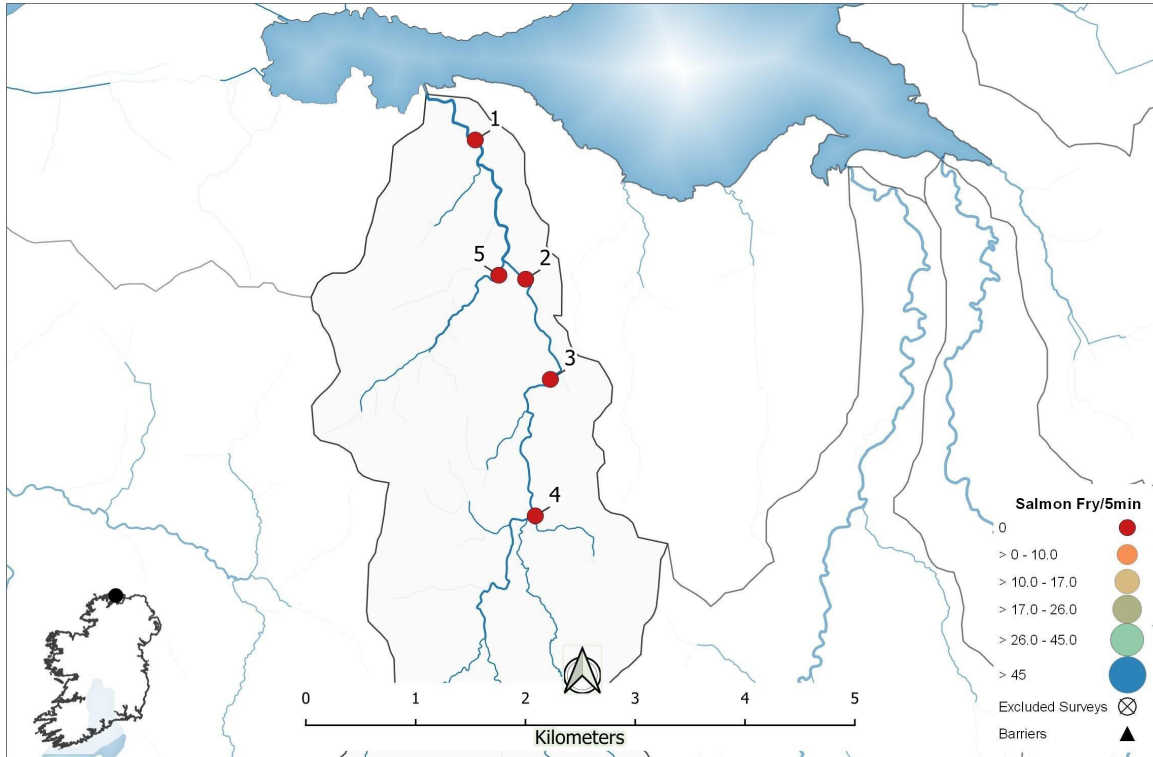
The survey this year consisted of 5 sites fished from the on the 17th of August, Salmon fry (0+) were not observed at any site. Good abundances of trout were observed. All sites were included in the analysis.

Conclusion

In all surveys during 2015, 2021 and 2022 the Straid had a salmon abundance of zero. Only one salmon fry was observed in 2010. Taking the previous four surveys into account results in a cumulative average of 0.05 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.7.15: Site specific results of CWEF on the Straid catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	C 43300 48381	4	2	3	0	Include	3.00	0.00
002	C 43758 47092	3	3	8	0	Include	8.00	0.00
003	C 43984 46166	3	3	5	0	Include	5.00	0.00
004	C 43847 44901	3	3	13	0	Include	13.00	0.00
005	C 43515 47130	3	1	6	0	Include	6.00	0.00



Map A.7.15: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Straid River.

A.7.16 Donagh River

IFI Salmon Catchment #: 258
2022 survey dates: 18-19/8/2022
Mean Salmon Fry/5 min (2022): 0.82 fry/5min.
CWEF Index: 3.13 fry/5min.

Sampling carried out by:
 James Doherty
 Jonathon Gallagher

Fish Species Present:
 Brown Trout Flounder
 European Eel Salmon

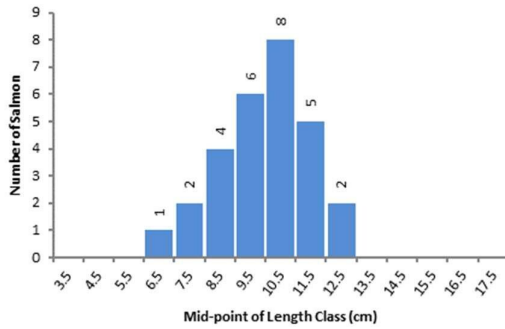


Figure A.7.16.1: Length distribution of salmon captured in 2022 CWEF survey on the Donagh.

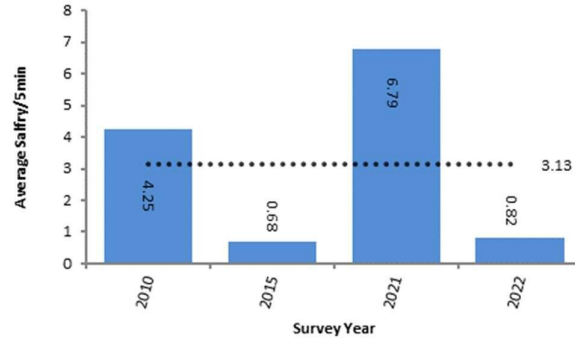


Figure A.7.16.2: Comparison of mean salmon fry/5min for all surveys on the Donagh catchment to 2022.

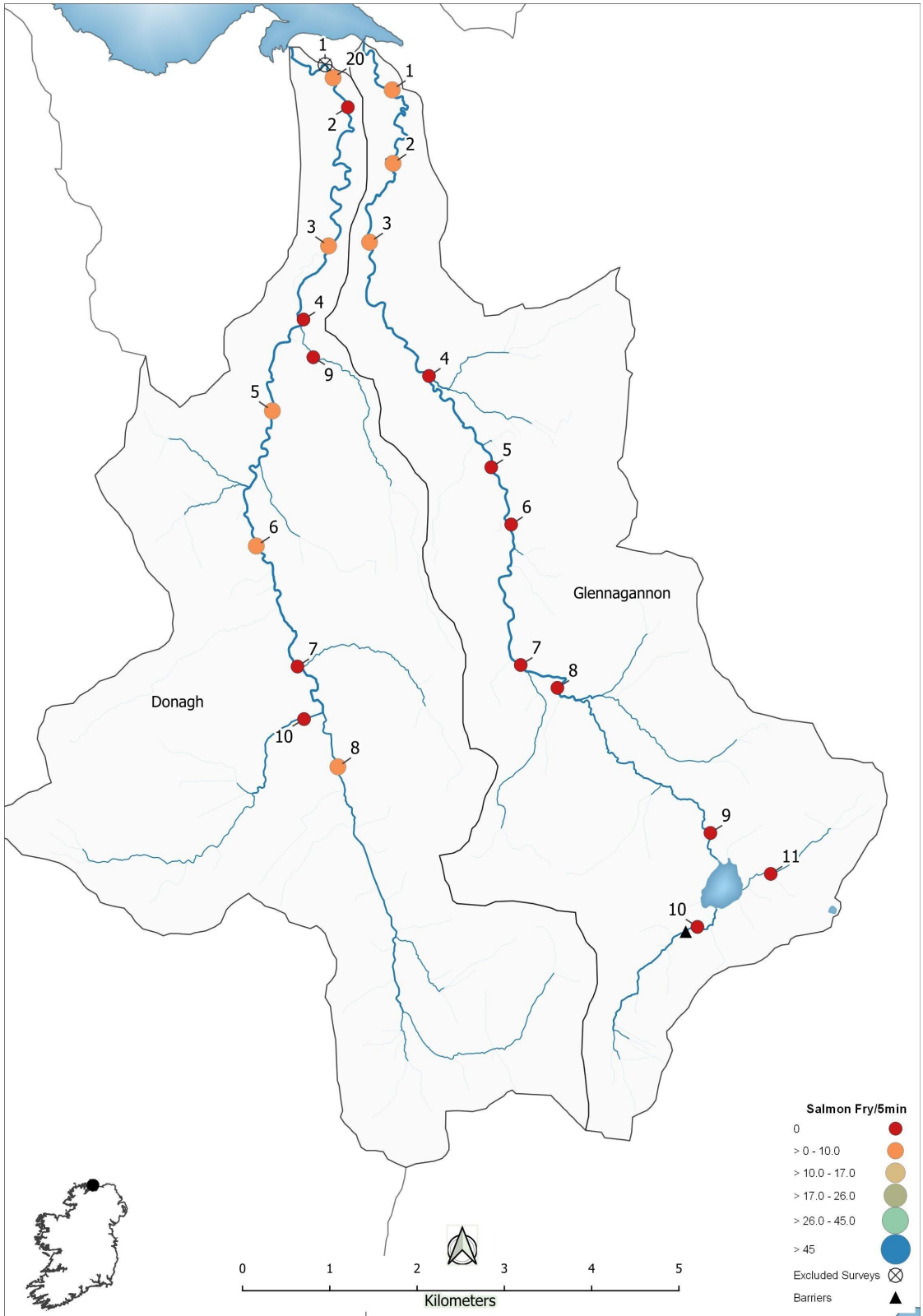
The survey this year consisted of 11 sites fished from the 18th and 19th of August, Salmon fry (0+) were found at 5 sites, the highest numbers were at sites 3 and 6 where 2 fry were observed. 10 sites were included in the analysis; the mean catch at these sites was 0.82 salmon fry/5min.

Conclusion

The Donagh had a salmon abundance of 0.82 sal fry/5min in 2022. Taking the four complete surveys into account this results in a cumulative average of 3.13 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.16: Site specific results of CWEF on the Donagh River catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	C 47108 47933	4	1	0	0	Tidal		
002	C 47369 47452	4	1	3	0	Include	3.00	0.00
003	C 47148 45887	4	2	10	2	Include	12.50	2.50
004	C 46861 45055	4	2	25	0	Include	25.00	0.00
005	C 46504 44023	4	2	7	1	Include	7.00	1.00
006	C 46321 42498	4	2	9	2	Include	9.00	2.00
007	C 46792 41137	4	1	9	0	Include	9.00	0.00
008	C 47255 40004	3	1	9	1	Include	11.70	1.30
009	C 46973 44630	2	2	7	0	Include	7.00	0.00
010	C 46868 40542	3	2	7	0	Include	10.00	0.00
020	C 47200 47785	4	1	12	1	Include	16.62	1.38



Map A.7.16: Showing salmon fry/5min values and locations of CWF surveys undertaken in 2022 on the Donagh and Glennagannon Rivers.

A.7.17 Glennagannon River

IFI Salmon Catchment #: 259
2022 survey dates: 15-16/8/2022
Mean Salmon Fry/5 min (2022): 1.26 fry/5min.
CWEF Index: 7.27 fry/5min.

Sampling carried out by: James Doherty
 Tommy Mooney

Fish Species Present:
 Brown Trout
 European Eel
 Salmon

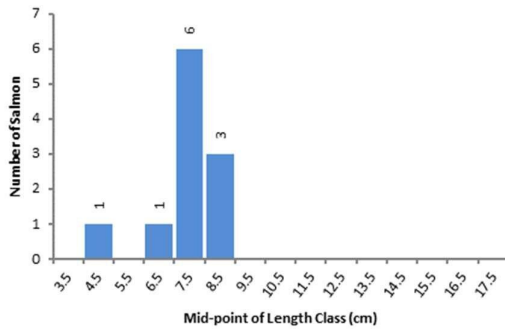


Figure A.7.5.1: Length distribution of salmon captured in 2022 CWEF survey on the Glennagannon.

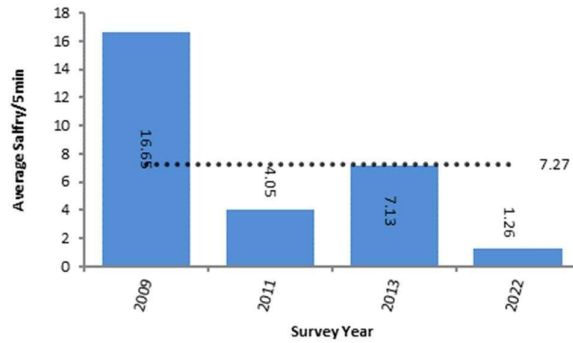


Figure A.7.5.2: Comparison of mean salmon fry/5min for all surveys on the Glennagannon catchment to 2022.

The survey this year consisted of 11 sites fished on the 15th and 16th of August, Salmon fry (0+) were found at 3 sites, the highest numbers were at site 1 where 7 fry were observed. The modal length of 0+ salmon was 7.5 cm. All sites were included in the analysis; the mean catch at these sites was 1.26 salmon fry/5min.

Conclusion

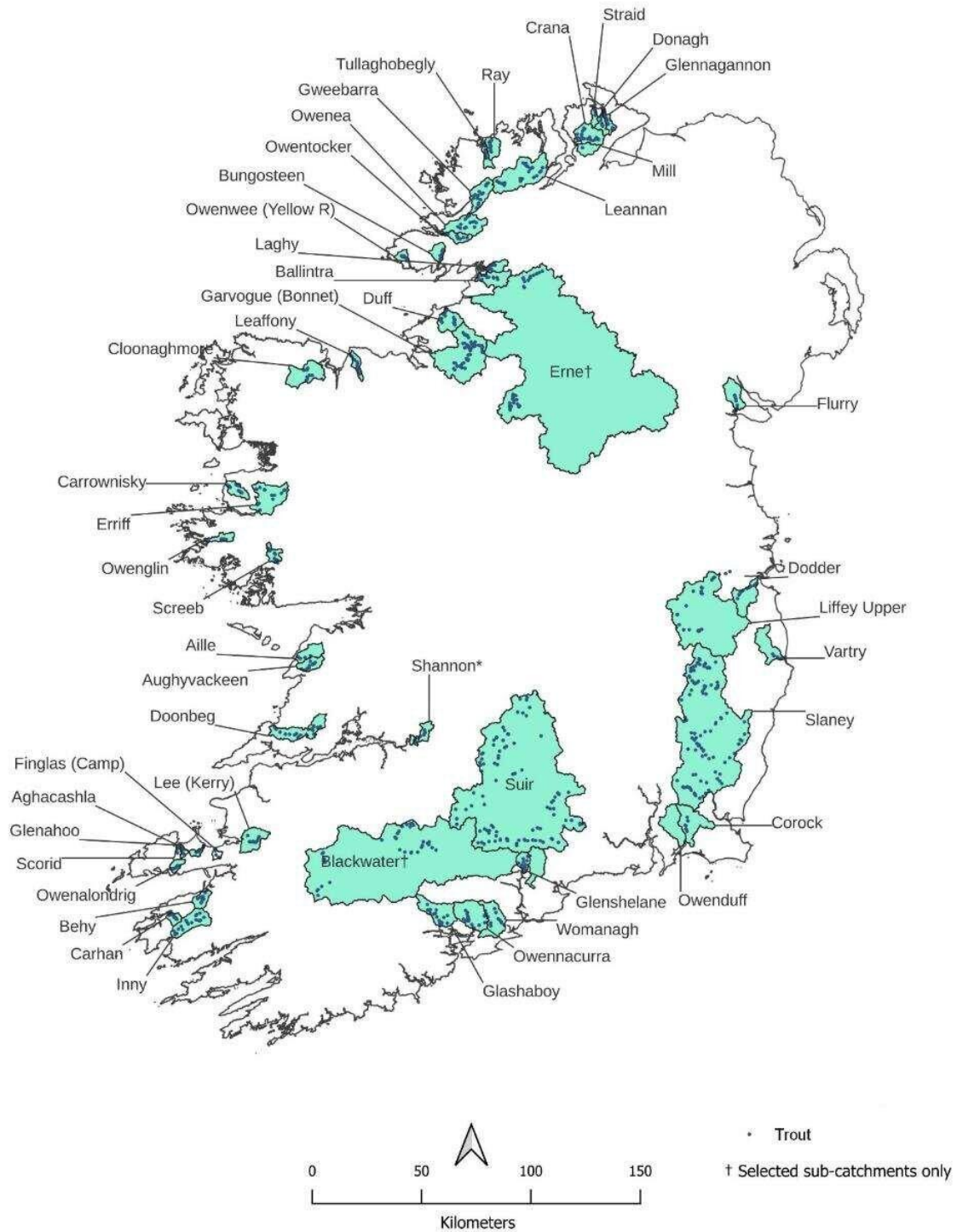
The Glennagannon had a salmon abundance of 1.26 sal fry/5min in 2022. Taking the four complete surveys into account this results in a cumulative average of 7.27 salmon fry/5min which is below the 17 salmon fry threshold.

Table A.7.6: Site specific results of CWEF on the Yellow River catchment in 2022.

Site #	Grid Ref.	Stream Order	Riffle Grade	Trout Fry Captured	Salmon Fry Captured	Site Status	Trout Fry/5min	Salmon Fry/5min
001	C 47877 47648	4	1	2	7	Include	2.67	9.33
002	C 47888 46818	4	1	8	2	Include	8.80	2.20
003	C 47619 45929	4	2	5	2	Include	5.71	2.29
004	C 48299 44418	3	2	4	0	Include	5.00	0.00
005	C 49012 43386	4	3	2	0	Include	3.00	0.00
006	C 49241 42741	4	3	2	0	Include	2.00	0.00
007	C 49351 41153	4	3	2	0	Include	2.00	0.00
008	C 49770 40896	4	2	5	0	Include	5.00	0.00
009	C 51524 39256	3	3	7	0	Include	8.00	0.00
010	C 51376 38196	3	3	4	0	Include	4.00	0.00
011	C 52216 38795	2	3	4	0	Include	4.00	0.00

B Other Species

B.1 Brown trout



B.2 White-clawed crayfish



B.3 European eel



B.4 Flounder



B.5 Gudgeon



B.6 Lamprey



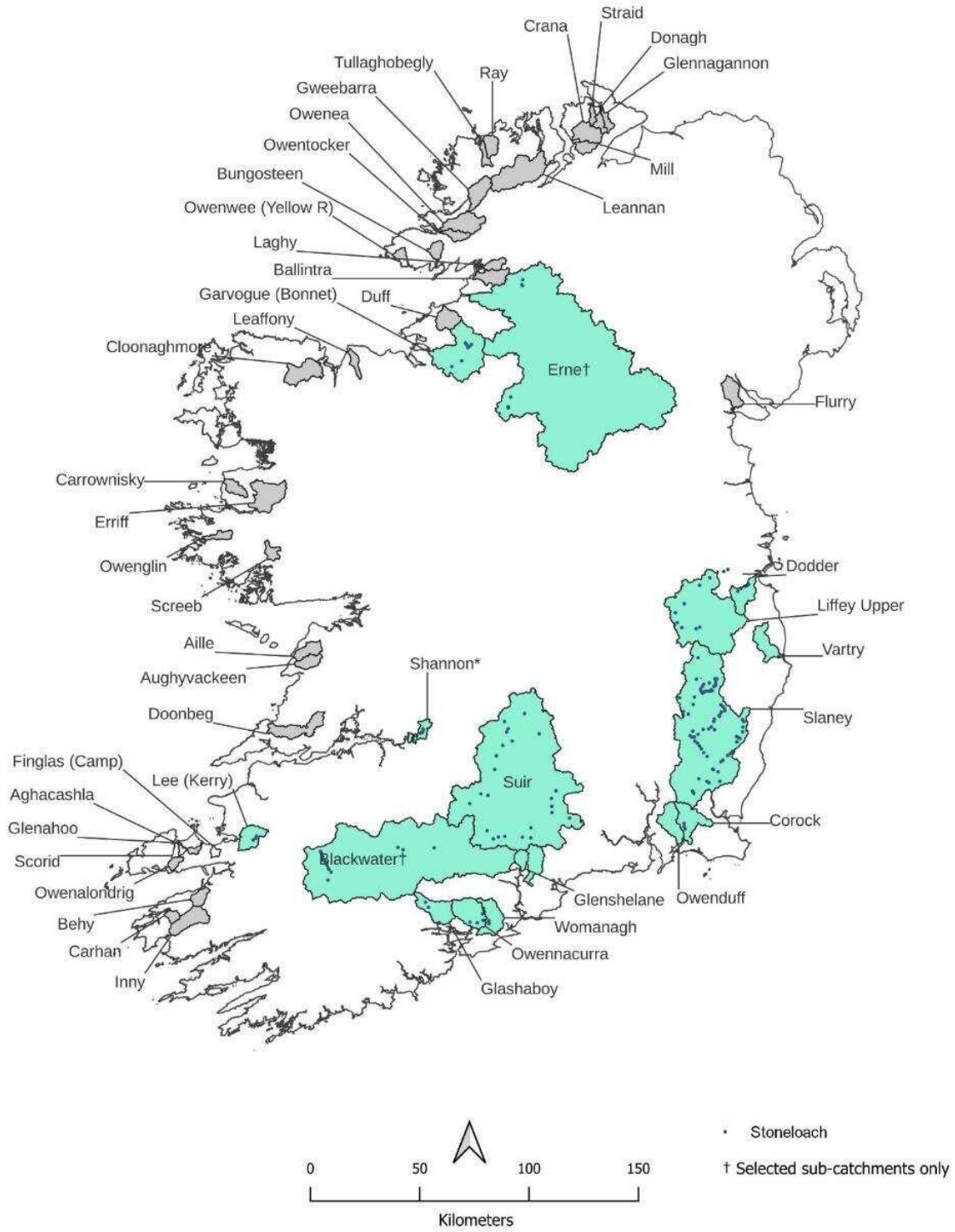
B.7 Minnow



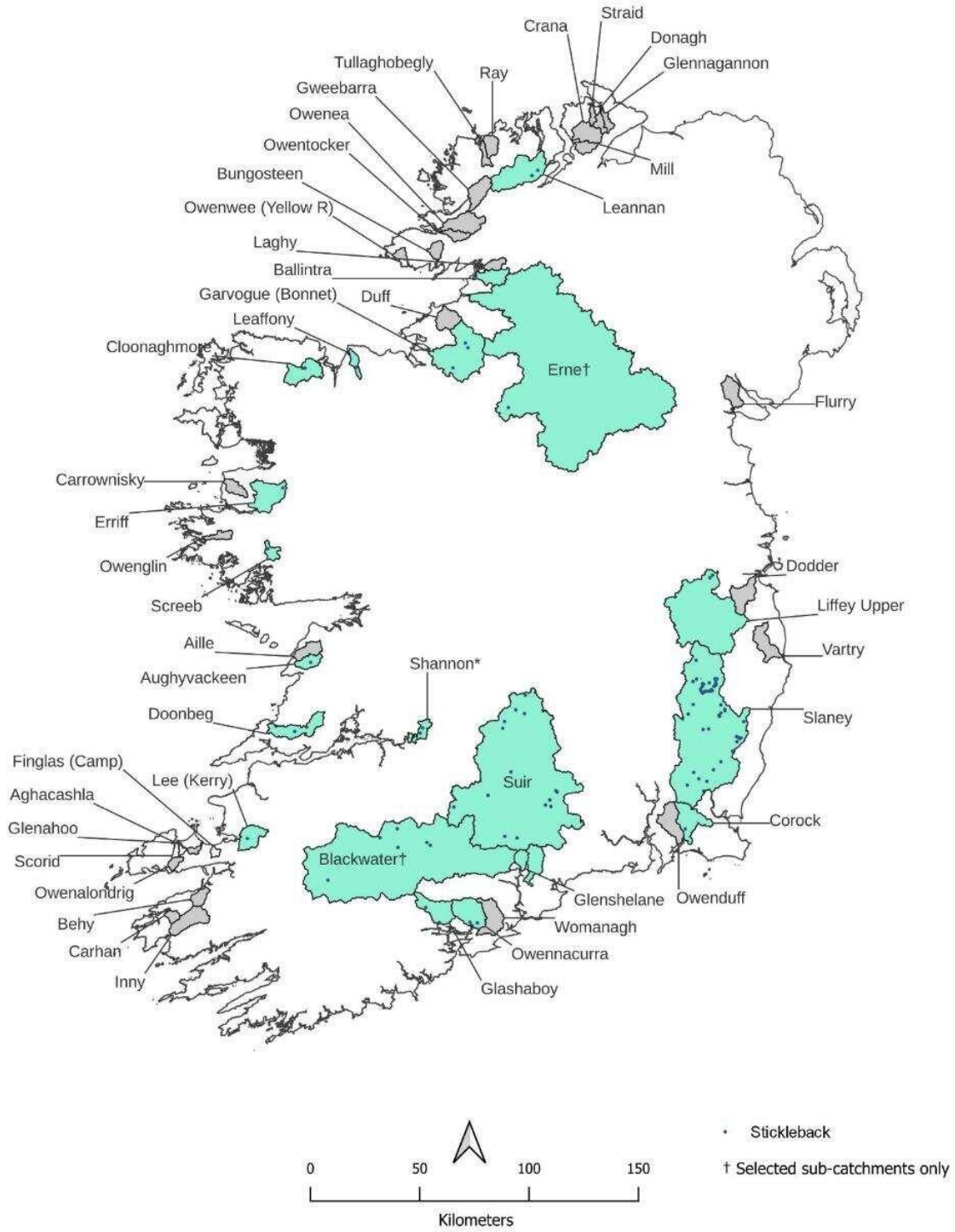
B.8 Pike



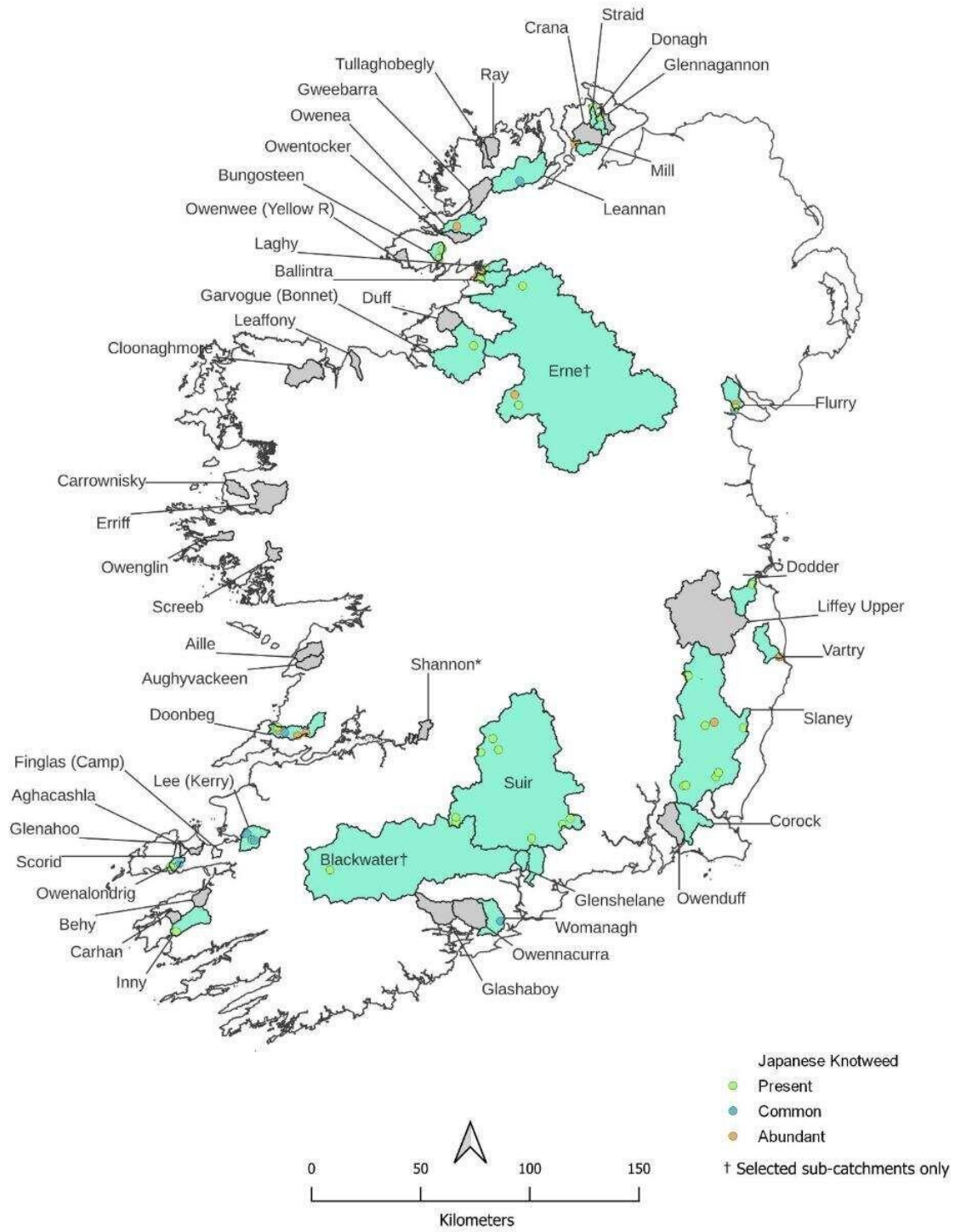
B.9 Stone loach



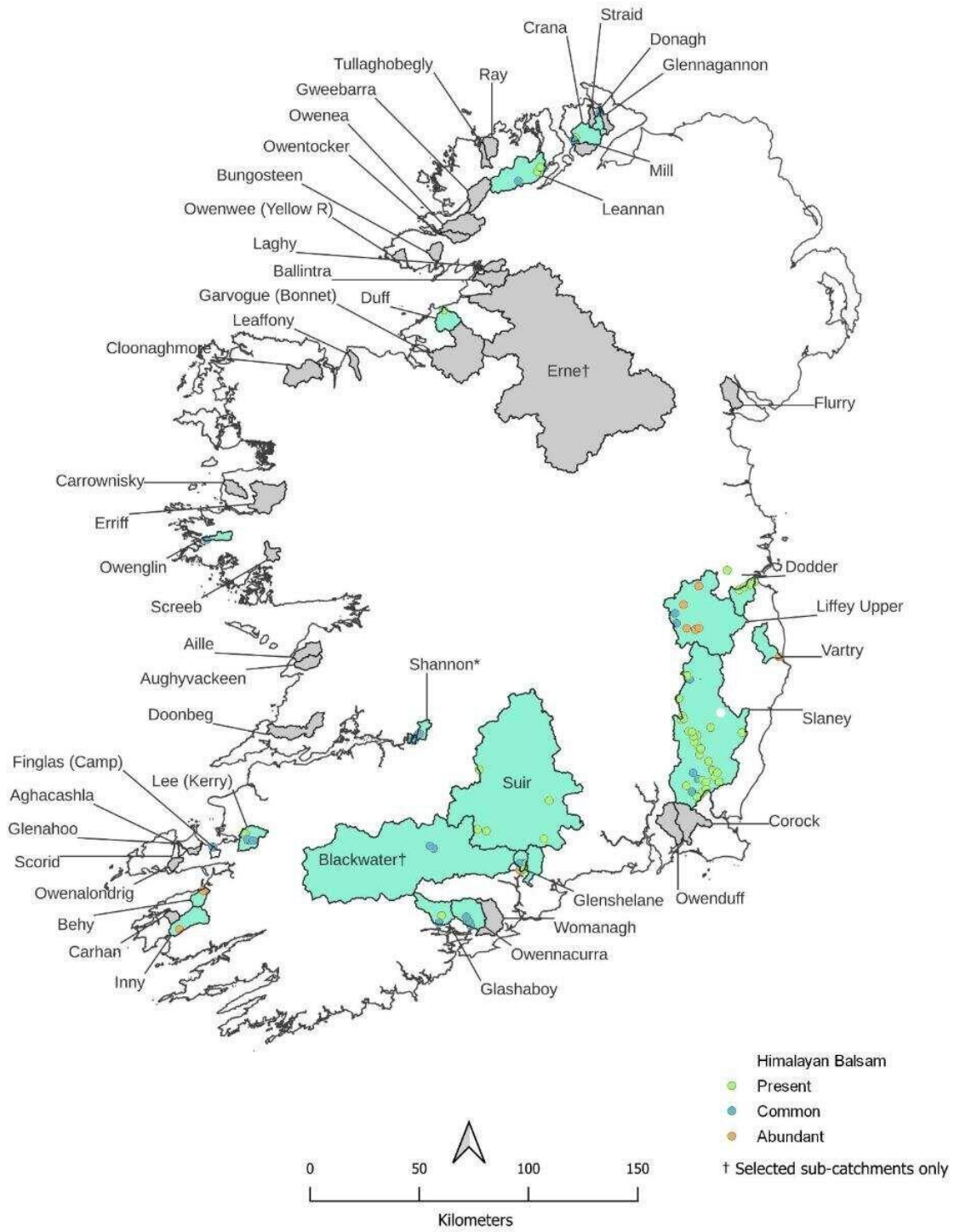
B.10 Three spined-stickleback



B.11 Japanese knotweed



B.12 Himalayan balsam



C Annual CWEF results and averages to date

River	Survey Year															Most recent 5 surveys		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Index	Surveys
002/Flurry				5.24					17.15					37.55*	1.35*	5.58	9.32	3
003/Castletown			26.41				22.96	13.59					5.58	1.87			14.08	5
004/Fane			16.17			22.09			8.94*		0.5*	3.65					13.97	3
005/Glyde		2.49	17.08	31.61					5.19				4.02		6.58		12.90	5
006/Dee		8.85	16.92	21.72	20.13				10.51				4.18*	7.59			15.37	5
008/Boyne		21.91	17.54	19.38				13.21		14.37				14.94			15.89	5
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		16.56					15.61	5
015/Liffey Upper		12.93	5.11	8.15	16.20	10.13			2.63*			1.00*			1.50*	2.11	8.34	5
016/Dodder					13.93											1.25	7.59	2
018/Dargle			1.40	2.53	7.52				4.19				1.03				3.33	5
020/Newcastle												0.00					0.00	1
021/Vartry		10.00	15.11	2.54	15.07				5.34	1.75				9.63		2.88	6.93	5
026/Avoca		3.79	5.56	5.20	18.88	5.15				1.89		8.37*	3.95				7.01	5
028/Owenavorragh				19.76			0.33		4.61			5.75			2.40		6.57	5
031/Slaney	19.05		15.94	18.42				17.68		8.70	14.30		3.45*			28.21	17.46	5
033/Corock					37.11				5.47	1.23		6.47†				0.26	11.02	4
034/Owenduff (Wexford)				4.97	10.65	15.91			3.47	0.40			16.0*			1.56	6.40	5
037/Barrow	17.72		10.93	8.71	21.23	26.72			8.93*	11.54			16.50				16.94	5
038/Nore				18.83					11.77				12.70*		16.79		15.80	3
039/Blackwater (Wfd.)														26.54			26.54	1
041/Lingaun									14.52					47.60			31.06	2
042/Glen (Waterford)									0.00								0.00	1
043/Suir									9.81							16.73	13.27	2
044/Clodiagh									11.77					51.00			31.39	2
050/Mahon		2.11					10.72	3.92					8.60				6.34	4
051/Tay					8.75			3.07	1.40					8.67			5.47	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
058/Glenshelane	22.72	10.96							2.87							2.44	9.75	4
059/Blackwater (Munster)		10.67							13.53			22.76*				26.76†	12.10	2
060/Bride		10.40		24.70				19.85		7.65			18.93				16.31	5
061/Tourig						9.40				0.73*				11.19			10.29	2
062/Womanagh		15.45						2.39		1.43						3.68	5.74	4
064/Owennacurra	15.76									1.77*				9.47		21.58	15.61	3
065/Glashaboy																11.63	11.63	1
066/Lee (Cork)			0.26														0.26	1
066/Shournagh (Lee)												18.34					18.34	1

River	Survey Year																Most recent 5 surveys	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Index	Surveys
069/Bandon										11.01							11.01	1
070/Argideen	17.15														27.55		22.35	2
077/Mealagh						12.82											12.82	1
080/Glengarriff			5.93														5.93	1
081/Adrigole							4.01	1.33				15.64					6.99	3
082/Kealincha	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							4.32	6.73				19.27		13.00			10.83	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				0.58		0.89				2.52	4
090/Blackwater (Kerry)	30.54	15.52	12.24					18.01									19.08	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		19.78														21.19	4
099/Emlaghmore	2.07								1.45				17.67			22.67	3.10	3
101/Carhan	15.76						6.05	8.61					7.55			17.03	11.00	5
102/Ferta	19.42							10.74									12.27	4
103/Behy	15.41	6.14	4.03	8.71	7.17					2.89			6.60			7.18	6.51	5
106/Laune		17.42†									21.41						21.41	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	3.84	2.59					2.10					1.02		4.58	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				14.96	5
112/Feohanagh			16.61				3.20	11.93					13.75				11.37	4
114/Owenmore (Kerry)	25.07														26.72		25.89	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)		0.67						0.68				0.69			0.00		0.51	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				3.74		1.03	4
126/Maigue			2.82	16.05			12.05								13.75		11.17	4
128/Shannon Kilcrow				0.69													0.69	1
128/Shannon Graney				0.19													0.19	1
128/Shannon Woodford				0.00													0.00	1

River	Survey Year																Most recent 5 surveys				
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Index	Surveys			
128/Shannon Mulkear												8.00*									
128/Shannon Blackwater											10.74	10.74						10.74	2		
128/Shannon Groody											0.00	7.45							3.73	2	
128/Shannon Kilmastula											10.35	24.45							17.40	2	
128/Shan. M Channel											5.50*†	18.25*†	35.68				28.82		32.25	2	
130/Owenagarney (Ratty)							16.97	8.87								3.55			9.80	3	
131/Fergus	12.96		4.10	6.84			5.89	6.66							5.12*	9.04			6.51	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			12.27	3	
135/Annageeragh							1.82	9.24								0.72			3.93	3	
142/Inagh								5.60	3.59							7.23			5.47	3	
143/Aughyvackeen					1.00						1.70							2.28	1.66	3	
144/Aille																	0.00		0.00	1	
145/Kilcolgan			2.51								0.10*	0.79*				11.95			7.23	2	
146/Clarinbridge					7.26											1.77			4.51	2	
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						4.52				0.60				12.90			5.48	4	
152/Cashla							10.83												10.83	1	
154/L. Na Furnace stream								0.00											0.00	1	
155/Screeb											10.70						11.56		11.13	2	
161/ Ballinahinch																14.83			14.83	1	
163/Owenglin				11.57												29.86*	28.56		20.06	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			30.93	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)				8.47	7.25	15.27							4.49						8.87	4	
178/Newport (L. Beltra)	16.06		5.53					17.40											13.00	3	
179/Srahmore			4.33																4.33	1	
181/Owengarve			5.51					6.19	0.72						13.01				6.36	4	
185/Owenduff (Bangor)			6.00					6.20											6.10	2	
186/ Owenmore							27.65												27.65	1	
186/ Carrowmore							25.77												25.77	1	
187/Glenamoy	28.16		5.65																16.91	2	
188/Muingnabo	0.78								1.87*						0.33				0.55	2	
193/Ballinglen	10.65				15.09		6.37			4.97					10.73				9.56	5	
194/Cloonaghmore		8.96		9.71	22.27	17.32	15.02				5.07*	14.63				7.52			15.35	5	
196/Brusna			4.70				14.16	14.74							6.73*				11.20	3	
198/Leaffony	5.76		7.95						1.73						0.67*		0.00		3.86	4	
203/Garvogue (Bonnet)	18.41	13.26	16.83	11.31	7.08	18.54									19.53	16.37			14.57	5	
205/Drumcliff				17.72																17.72	1
207/Grange	5.75		3.29						4.56						4.08				4.42	4	

River	Survey Year																Most recent 5 surveys	
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Index	Surveys
208/Duff	7.84	9.31	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
212/Ballintra			10.27				13.40	19.82					13.31		1.72		11.70	5
213/Laghy			8.58				14.97	11.02					8.56		4.89		9.60	5
214/Eske		13.10	16.99	16.30					13.45			10.94					14.16	5
215/Eany				15.86		30.08			12.89								19.61	3
216/Oily			9.49		33.68			16.62			21.26			18.64			19.94	5
217/Bungosteen					27.91		19.23				13.17		13.41		3.08		15.36	5
219/Glen (Ballyshannon)				19.44				18.37				18.56		11.71			17.02	4
220/Owenwee (Yellow R)	24.13	5.00	16.93			20.31	21.05						14.20		5.76		15.65	5
221/Bracky		10.82				21.57		12.24						5.31			12.49	4
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	1.00						10.67			4.52	4
228/Gweedore (Crolly R.)		15.99			11.32												13.65	2
229/Clady		16.12				37.21											26.67	2
234/Glenna			16.80		3.77		7.77			4.00				11.43			8.76	5
235/Tullaghobegly		8.33		9.05						0.00*					4.45		7.28	3
236/Ray		7.35			14.89			17.31		3.71*			6.65		9.35		11.11	5
240/Lackagh		18.86	15.82		19.20	23.57				17.50*	22.50						19.99	5
248/Leannan	9.47	7.68	9.73	17.30	12.82	22.19	19.51	20.87	15.27	15.05*	18.66	20.11	21.33	20.50	17.72	13.45	18.62	5
249/Swilly		9.33	7.36				18.08	8.05						14.36			11.44	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				31.74	21.28	3
256/Clonmany		16.61		6.59					4.21						9.55		9.24	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

† Sub-catchment Surveys,

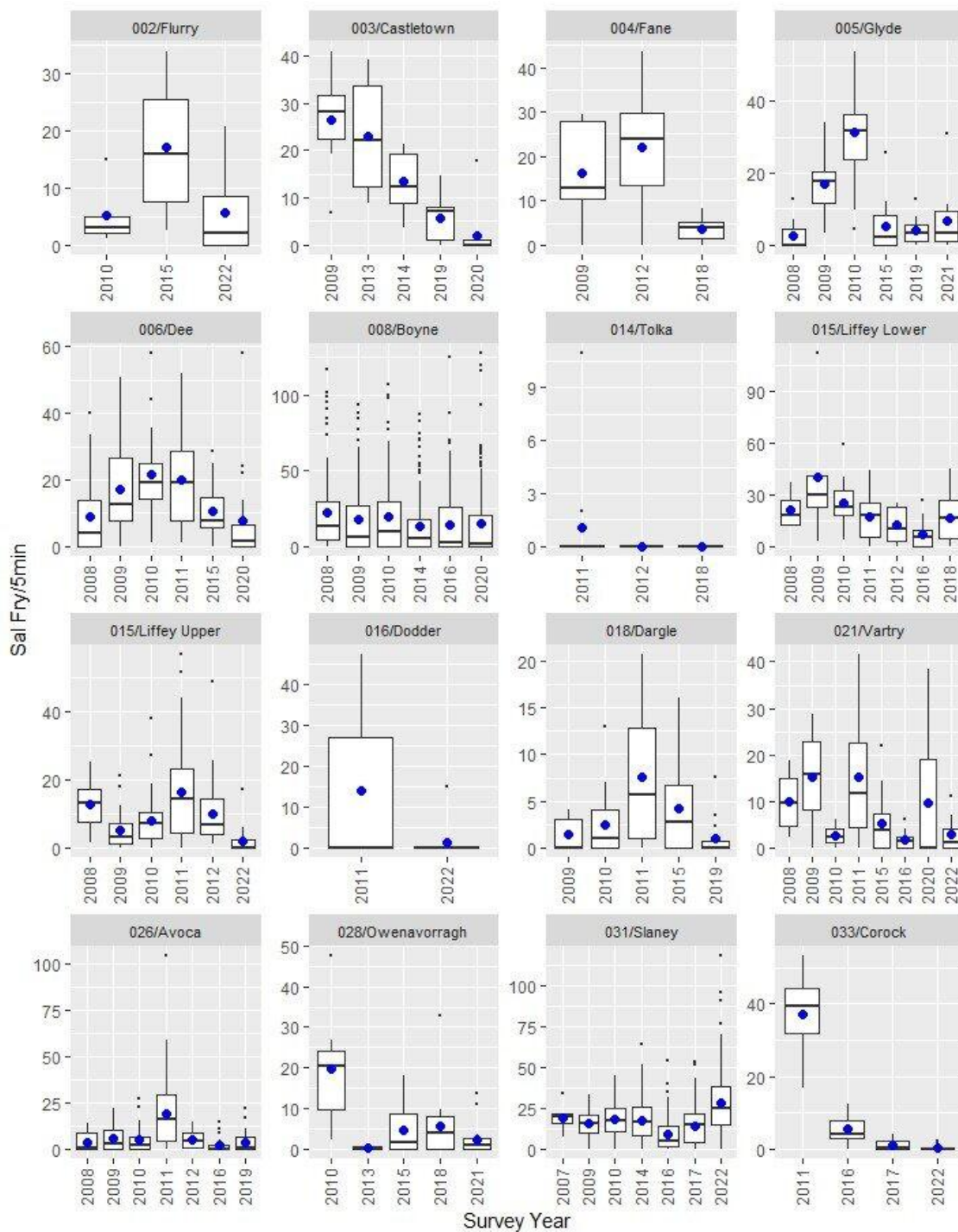
* Incomplete Surveys,

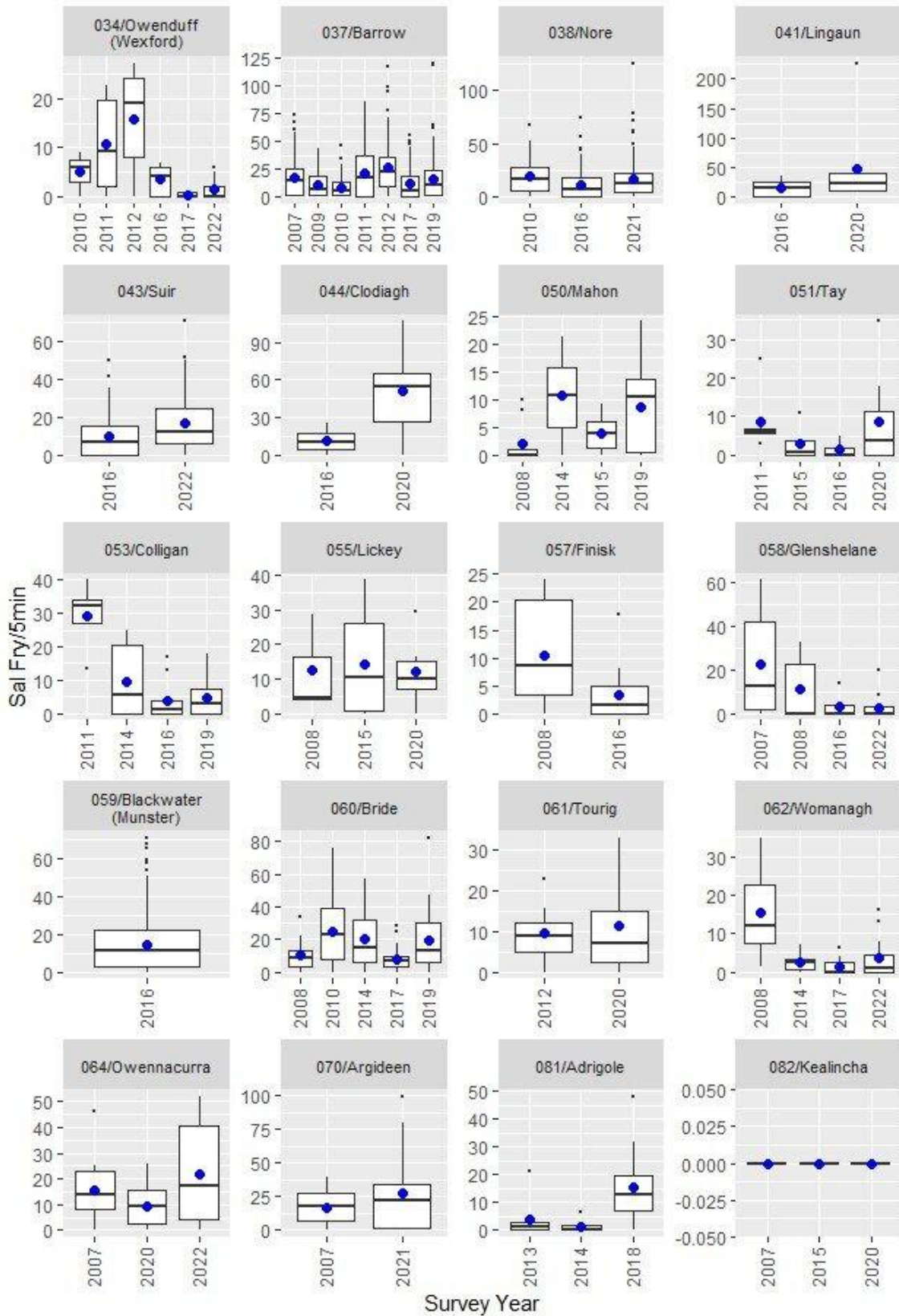
Index values > 17 Sal.fry/5min

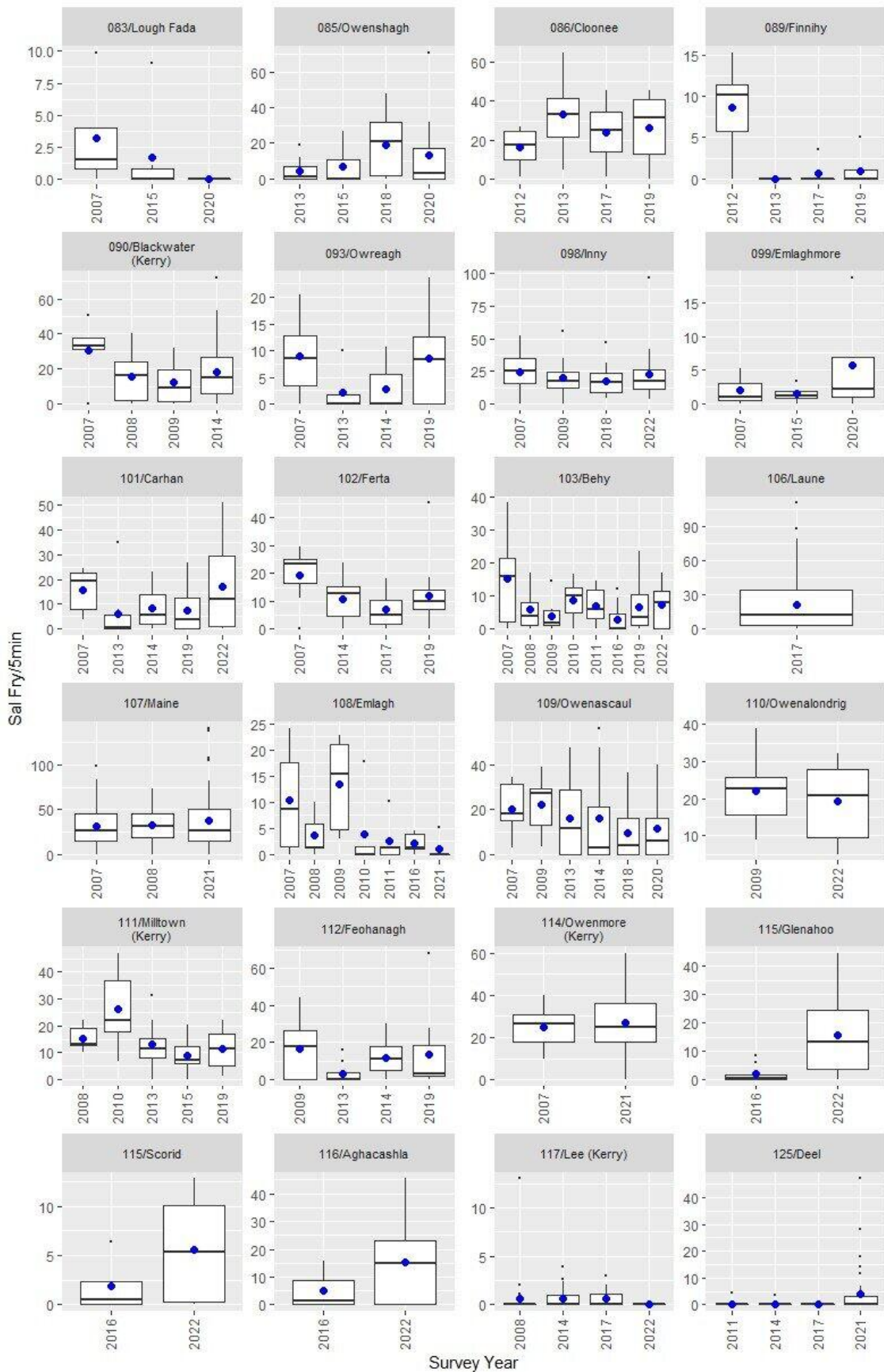
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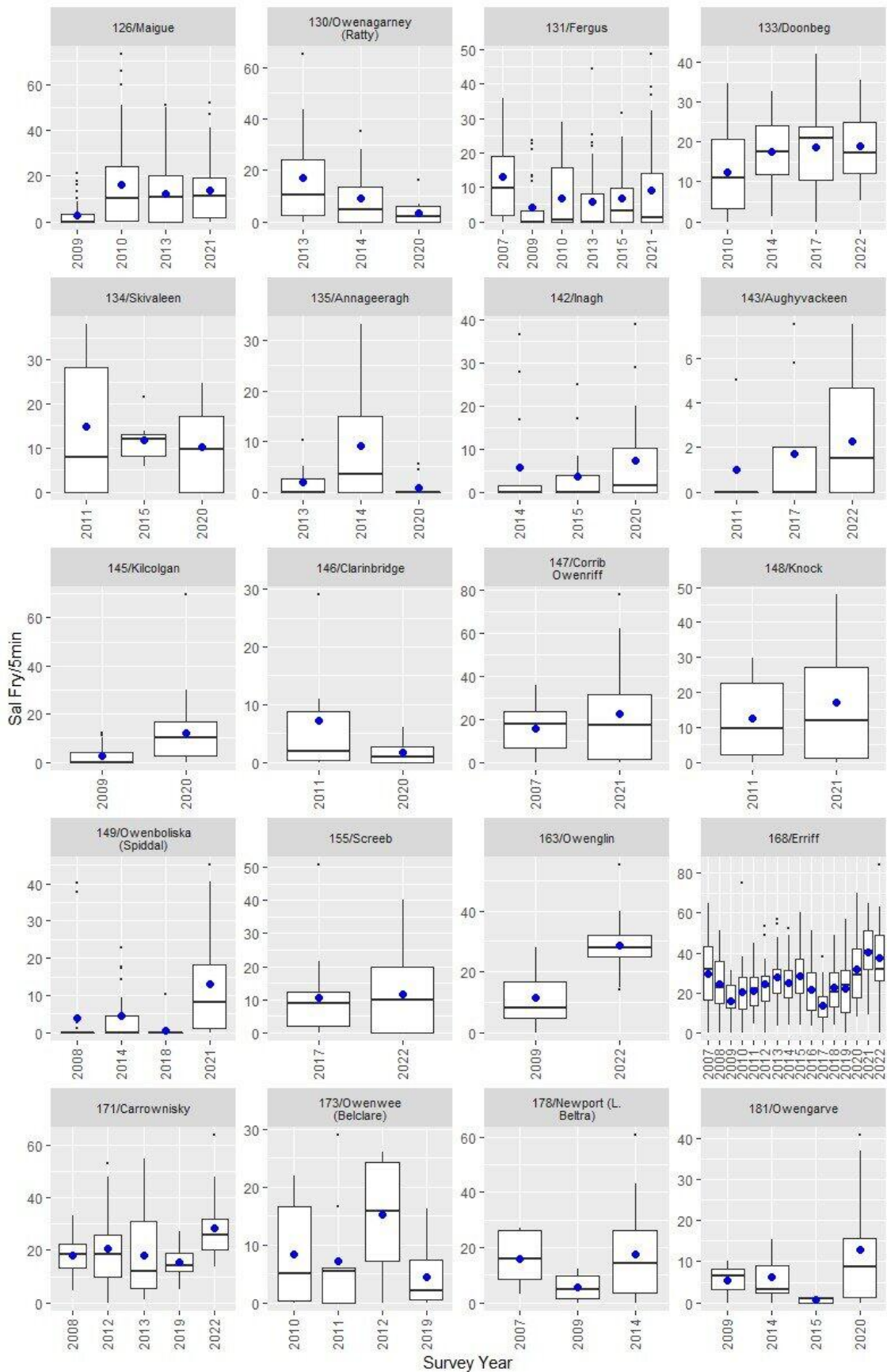
BOLD indicates annual surveys included in CWF index calculation.

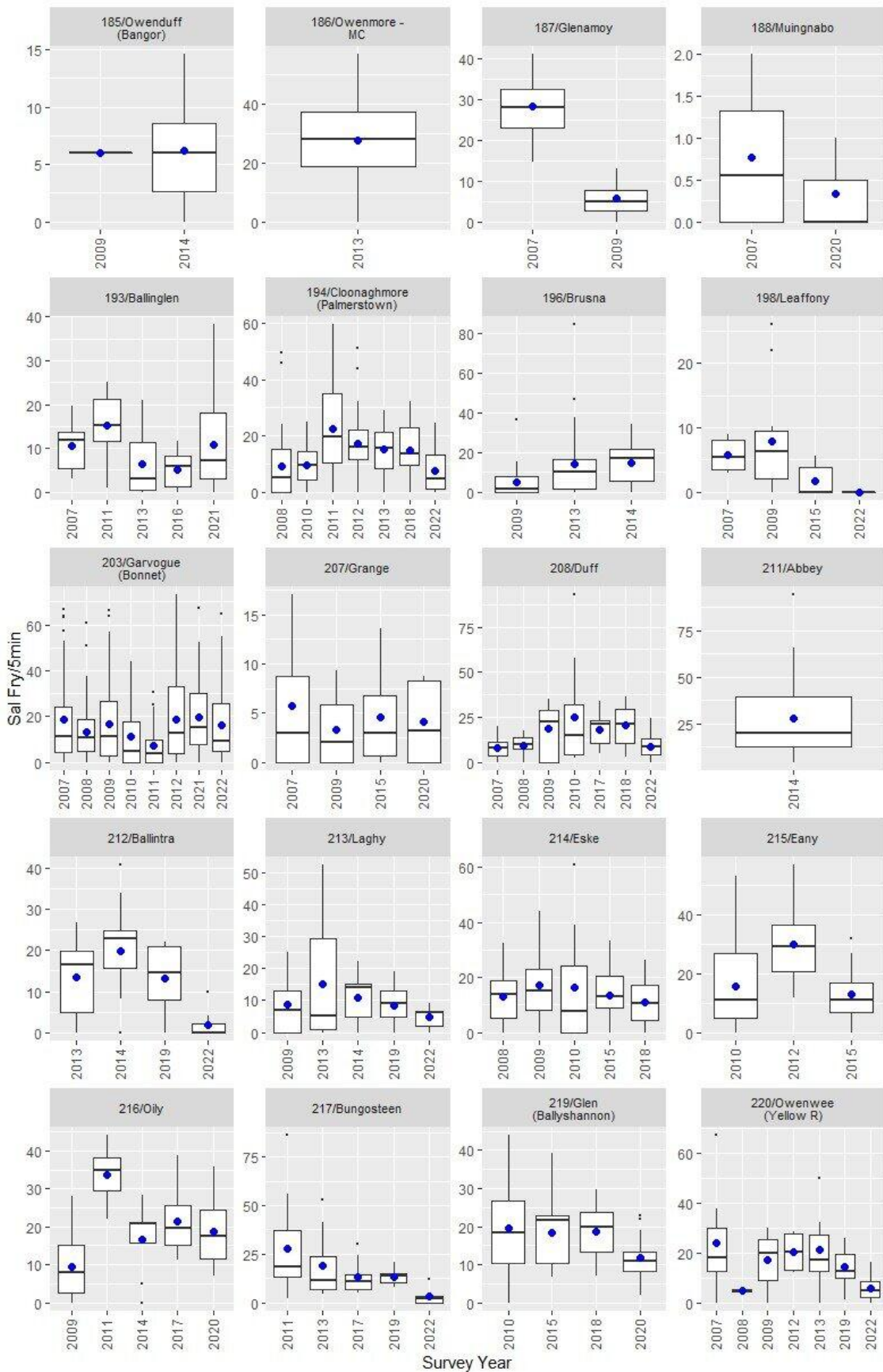
D Boxplots: CWF site results for each catchment >2 surveys from 2007-2022 (complete surveys only)

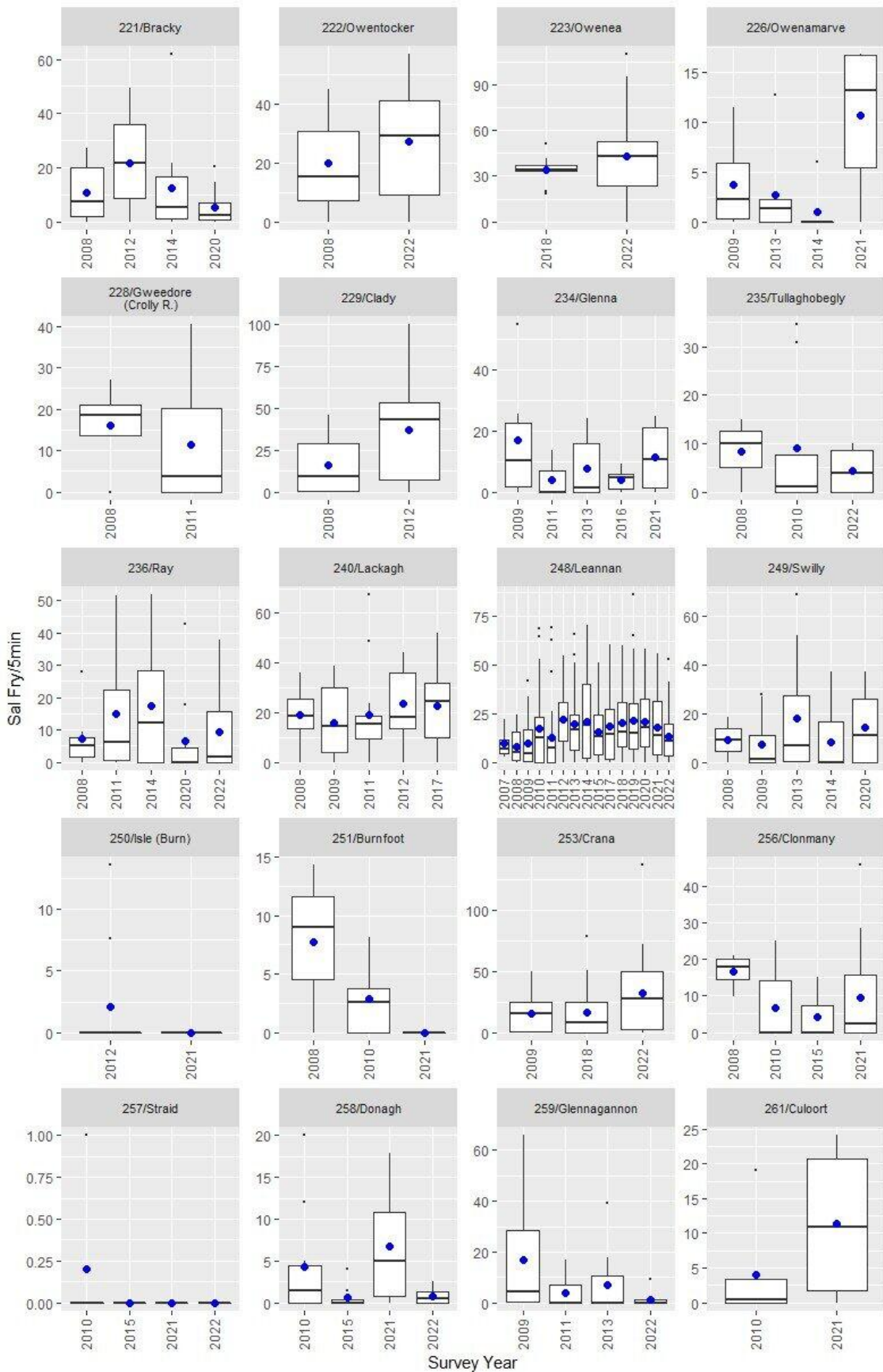












E Survey density

Survey density achieved during CWEF surveys 2007-2022 expressed as number of kilometres of river > stream order 1 per survey in each catchment. The lower the figure, the more intensive the survey.

IFI Code/ River	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Min
002/Flurry				4.0					8.1					10.7	10.7	3.6	3.6
003/Castletown			2.4				2.8	2.8					3.1	2.4			2.4
004/Fane			15.8			7.9			10.1		22.1	8.5					7.9
005/Glyde		10.3	11.0	11.8					11.0				16.5		12.7		11.0
006/Dee		6.9	10.6	10.0	10.0				10.0				15.4	8.7			8.7
008/Boyne		8.4	7.6	7.7				7.5		7.6				7.1			7.1
013/Broadmeadow				38.7													38.7
014/Tolka					6.9	41.2						16.5					6.9
015/Liffey Lower		20.3	20.3	11.1	7.2	17.4				7.2		5.5				60.9	5.5
015/Liffey Upper		24.3	12.9	11.1	7.6	15.9				103.1		137.5			14.7	20.6	7.6
016/Dodder					15.5											7.8	7.8
018/Dargle		38.7	12.9	4.3	4.8				4.6				5.5				4.3
020/Newcastle												3.0					3.0
021/Vartry		11.0	11.0	3.4	4.0				2.9	3.7				3.7		5.5	2.9
026/Avoca		16.4	11.1	13.3	4.3	11.5				7.7		23.0	9.1				4.3
028/Owenavorragh				13.5			15.8		5.3			5.9			5.0		5.0
030/Sow								23.8									23.8
031/Slaney	108.2	865.9	18.0	11.0				7.2		6.3	6.4		36.1			5.6	5.6
033/Corock				31.5	15.8	23.6				18.9	15.8		31.5			4.7	4.7
034/Owenduff (Wexford)				10.9	5.5	5.5				6.5	6.5		32.7			3.3	3.3
037/Barrow	11.4		13.0	13.2	13.0	10.4				273.8	8.5		8.8				8.5
038/Nore				10.8						9.3			555.3		7.0		7.0
039/Blackwater (Waterford)														150.0			150.0
041/Lingaun										183.4				183.4			183.4
042/Glen (Waterford)										4.1							4.1
043/Suir										14.6						14.5	14.5
044/Clodiagh										126.9				126.9			126.9
050/Mahon		6.4						8.0	8.0				4.3				4.3

IFI Code/ River	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Min
051/Tay					6.8			41.1	8.2	5.9				5.1			5.1
053/Colligan					11.1			4.6		4.3			4.0				4.0
055/Lickey		4.9							2.2					2.5			2.2
057/Finisk		98.3								63.9							63.9
058/Glenshelane	213.0	213.0								127.8						75.2	75.2
059/Blackwater (Munster)										4.4	85.2	71.0				27.2	4.4
060/Bride		7.7		6.2				4.3			4.1		4.3				4.1
061/Tourig						2.1					2.1			2.1			2.1
062/Womanagh		4.8						3.5			4.1					3.8	3.5
064/Owennacurra	3.6										4.4			3.9		3.5	3.5
065/Glashaboy																3.6	3.6
066/Lee (Cork)			18.9														18.9
066/Lower Lee (Cork)N (Shournagh)												5.3					5.3
069/Bandon										3.2							3.2
070/Argideen	3.0														2.7		2.7
072/llen						26.5											26.5
077/Mealagh						4.5											4.5
080/Glengarriff			4.9														4.9
081/Adrigole							3.9	3.2				3.2					3.2
082/Kealincha	7.9								4.8					4.8			4.8
083/Lough Fada	5.2								4.3					5.2			4.3
084/Croanshagh										4.2							4.2
085/Owenshagh						3.3		5.3				3.8		4.4			3.3
086/Cloonee						2.6	3.0				2.6		2.6				2.6
088/Roughly					15.3												15.3
089/Finnihy						3.7	3.7				3.7		2.8				2.8
090/Blackwater (Kerry)	16.2	6.2	5.4					1.9									1.9
093/Owreagh	2.9						2.9	2.2					2.2				2.2
097/Currane								1.4									1.4
098/Inny	3.9		4.3									4.3				3.4	3.4
099/Emlaghmore	3.0								3.7					3.7			3.7
101/Carhan	3.0						2.3	1.8					1.8			1.5	1.5
102/Ferta	4.3							2.6			2.2		2.6				2.2
103/Behy	3.5	2.8	2.8	3.1	2.8					2.6			2.8			2.8	2.6
106/Laune		45.0									4.9						4.9

IFI Code/ River	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Min
107/Maine	3.3	3.6	11.0								7.5	7.2			1.9		1.9
108/Emlagh	5.0	4.0	4.0	4.0	4.0					4.0					4.0		4.0
109/Owenascaul	5.8		3.5				3.5	2.7				2.7		2.7			2.7
110/Owenalondrig			2.3													2.0	2.0
111/Milltown (Kerry)		2.7		2.0			1.8		2.0				2.0				1.8
112/Feohanagh			2.9				2.7	2.4					2.4				2.4
114/Owenmore (Kerry)	1.5														1.2		1.2
115/Glenahoo										1.2						1.2	1.2
115/Scorid										2.1						1.8	1.8
116/Aghacashla										2.0						2.0	2.0
116/Finglas (Camp)																	0.0
116/Meennascarty										2.1							2.1
116/Owenamallagh										2.3							2.3
117/Lee (Kerry)		2.6						4.6			6.7					7.3	4.6
118/Brick	56.0																0.0
119/Feale							5.7										5.7
120/Galey			10.5														10.5
125/Deel					2.5			2.4		10.5	8.7				5.1		2.4
126/Maigue			6.5	4.8			3.0								4.4		3.0
128/Shannon Blackwater											1.6	1.6					1.6
128/Shannon Graney				2.5													2.5
128/Shannon Groody											2.6	4.3					2.6
128/Shannon Kilcrow				3.4													3.4
128/Shannon Kilmastula											3.8	2.8					2.8
128/Shannon Mulkear												150.5					150.5
128/Shannon Old Main Channel											4.7	4.7	0.9			0.9	0.9
128/Shannon Woodford				1.9													1.9
130/Owenagarney (Ratty)							3.0	3.9						3.9			3.0
131/Fergus	12.3		6.5	6.0			3.2		4.4					5.0	4.2		3.2
133/Doonbeg				2.6				3.3		5.8	4.3					3.5	2.6
134/Skivaleen					2.5				3.0	7.5				3.7			2.5
135/Annageeragh							2.0	2.0						2.2			2.0
142/Inagh								4.0	5.2					4.3			4.0
143/Aughyvackeen					2.0						1.7					2.5	1.7
144/Aille																10.1	10.1

IFI Code/ River	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Min
145/Kilcolgan			4.6								16.2	4.8		6.5			4.6
146/Clarinbridge					6.0									5.2			5.2
1461/Oranmore												0.0					0.0
147/Corrib														101.4			101.4
147/Corrib Owenriff	1.6											5.9			1.7		1.7
148/Knock					3.3							3.3			3.3		3.3
149/Owenboliska (Spiddal)		2.2						2.8				2.9			2.3		2.3
152/Cashla							1.5										1.5
154/L. Na Furnace stream									2.9								2.9
155/Screeb											0.9					0.9	0.9
1551/Loch An Mhuillín																	0.0
161/Owenmore - Ballinahinch														2.9			2.9
163/Owenglin			2.1												5.6	2.2	2.1
167/Culfin		3.0															0.0
168/Erriff	2.7	2.9	2.7	2.8	4.1	4.1	4.2	4.1	3.8	4.3	4.3	4.2	3.9	4.1	4.1	4.3	2.7
171/Carrownisky		2.1				2.2	2.5				10.4		3.2			2.5	2.2
172/Bunowen			23.2														23.2
173/Owenwee (Belclare)				3.8	4.6	3.8							3.8				3.8
178/Newport (L. Beltra)	9.0		13.4					3.8									3.8
179/Srahmore			23.1														23.1
181/Owengarve			6.2					2.8	5.0					2.5			2.5
185/Owenduff (Bangor)			63.7					9.1									9.1
186/Owenmore - MC			33.5				5.3										5.3
186/Owenmore- Carrowmore (Muinhin)							3.2										3.2
187/Glenamoy	4.7		9.3														9.3
188/Muingnabo	8.4								16.9					8.4			8.4
193/Ballinglen	6.5				2.8		3.6			3.3					2.8		2.8
194/Cloonaghmore (Palmerstown)		2.9		3.5	2.9	3.7	4.2				4.2	4.5				4.0	2.9
196/Brusna			2.9				3.4	3.7						4.9			2.9
198/Leaffony	4.2		1.8						1.8					4.2		1.7	1.7
203/Garvogue (Bonnet)	4.9	4.9	4.7	4.7	9.9	6.1									4.8	4.6	4.6
205/Drumcliff				3.5													3.5
207/Grange	8.4		7.0						6.0					6.0			6.0
208/Duff	8.8	9.6	10.7	8.8							8.8	8.8				5.1	5.1

IFI Code/ River	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Min
210/Erne		17.3	12.0	4.6	13.8	4.5	8.1	5.5	3.8	6.9	18.5	5.4	9.2	11.5	12.0	7.5	3.8
211/Abbey							14.8	1.6									1.6
212/Ballintra			27.7				5.2	6.4					10.4			5.2	5.2
213/Laghy			5.2				4.2	3.9					5.2			3.3	3.3
214/Eske		8.3	7.2	6.8					5.0			5.8					5.0
215/Eany				4.8		6.9			5.8								4.8
216/Oily			4.2		6.6			3.6			4.2			4.2			3.6
217/Bungosteen					4.4		4.4				4.4		5.5			4.9	4.4
219/Glen (Ballyshannon)				4.6					5.9			5.5		5.9			4.6
220/Owenwee (Yellow R)	1.6	5.8	2.2			4.3	1.1						2.2			1.0	1.0
221/Bracky		4.4				2.5		2.9						3.2			2.5
222/Owentocker		4.3														3.3	3.3
223/Owenea												11.3				6.5	6.5
225/Gweebarra																2.2	2.2
226/Owenamarve			2.3				2.3	2.3							2.7		2.3
228/Gweedore (Crolly R.)		5.8			2.4												2.4
229/Clady		9.7				5.3											5.3
234/Glenna			3.2		3.2		3.2			3.2					3.2		3.2
235/Tullaghobegly		5.7		1.7						8.6						1.9	1.7
236/Ray		5.6			4.1			3.8		6.4				3.5		3.5	3.5
240/Lackagh		9.1	7.6		6.5	6.5				15.1	8.2						6.5
248/Leannan	24.3	7.6	7.6	7.6	7.6	7.6	8.4	8.4	8.4	11.0	7.6	6.1	6.4	5.8	6.1	5.9	5.8
249/Swilly		30.3	5.3				6.5	5.7						5.3			5.3
250/Isle (Burn)						4.9									4.9		4.9
251/Burnfoot		6.0		4.8											2.4		2.4
252/Mill (Letterkenny)				9.7					9.7						9.7	9.7	9.7
253/Crana			3.6							43.3	12.4	3.3				3.1	3.1
256/Clonmany		8.8		2.9					3.9						2.5		2.5
257/Straid				4.5					4.5						4.5	4.5	4.5
258/Donagh				3.1					3.4						3.8	2.8	2.8
259/Glennagannon			2.7		2.4		2.4									2.4	2.4
261/Culoort				2.3					6.0						3.0		2.3

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