



Carlingford Area and Tributaries Catchment Status Report 2018

Conservation and assessment of fish
populations and aquatic habitats

Mark McCauley & Mark Crawford

December 2019



Conservation actions and assessments of fish populations and aquatic habitats are presented for 2018. The status reports have been designed to facilitate quick reference to contemporary information. Additional information can be found in associated publications and in previous status reports available on the Loughs Agency website www.loughs-agency.org

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1.0 INTRODUCTION

The Loughs Agency continued to implement the freshwater fisheries monitoring programme throughout 2018 in the Foyle and Carlingford areas. The annual cycle of reporting, survey preparations, logistical arrangements and field surveys continued with the support of the freshwater fisheries monitoring team.

The rare fish monitoring project continued in the spring of 2018 with a targeted European smelt survey in the Mourne catchment which once again identified Smelt as being present at spawning time during mid-March. This also increased the upstream limit of known European smelt distribution within the Mourne Catchment. European smelt play an important role in the biodiversity of the Foyle system and are an important prey item for numerous fish species of commercial and recreational interest. It is important that we develop our understanding of the ecology of this species so that we can protect and conserve the niche habitats that are crucial to the completion of its life cycle.

The annual deployment of the rotary screw trap on the River Faughan to monitor out-migrant Salmon and Sea trout smolts and to collect key information from all fish passing through the trap was conducted during April and May. The 2018 trapping season saw approximately 8500 Salmon smolts and 1800 Sea trout smolts captured during the five week sampling effort.

The annual Water Framework Directive fish monitoring project was also completed in 2018. Nine WFD fish surveillance monitoring stations were surveyed within the Loughs Agency jurisdiction in 2018. All nine sites were within Northern Ireland. Two of the sites surveyed were classified as having 'high' ecological status, three as 'good' status, three as 'moderate' status and one site was classified as having 'poor' ecological status.

Adult migratory fish trapping took place during June and July on the River Mourne at Sion Mills and the River Finn at Killygordon where the trap and fisheries monitoring stations were used to collect key biological data on the fish species encountered. Despite a prolonged settled period that began in May and continued through July, numbers of returning adult fish were still moving up through the system over this period. As part of ongoing studies any Sea trout captured in the traps were tagged with 'T-Bar Anchor Tags' in an effort to gain a

greater understanding of the ecology and migration patterns of this species in the Foyle Catchment, and to inform future management of local populations.

In September a Water Framework Directive compliant lake fish survey was carried out on Lough Mourne, within the Foyle area. The fish stock assessment noted the presence of three fish species including Roach, Pike and European Eel. Although Roach were the most common fish encountered in the survey, Roach stocks have declined significantly since the last survey in 2010. This may be due to the presence of the parasitic tapeworm (*Ligula intestinalis* L). During this most recent survey Brown trout were not recorded in Lough Mourne which may indicate issues with habitat fragmentation due to the 'V' notch weir near the outflow on the Mournebeg River.

Annual Habitat impacts, Invasive species and Barriers to Migration (HIB's) surveys were concluded on the Finn catchment. The data collected by the freshwater fisheries monitoring team from 2013 to 2018 will help to direct a series of instream and riparian habitat improvement works as part of the EU INTERREG VA Catchment CARE (Community Actions for Resilient Eco-systems) project.

The 2018 status reports provide a synopsis of the key information collected by the Loughs Agency during the year. Specific project reports are also available which provide more detail on particular aspects of the freshwater fisheries monitoring programme.

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2.0 ATLANTIC SALMON STOCKS SUMMARY

- There are no net fisheries for Atlantic salmon in the Carlingford area and in addition there were no net fisheries pursued for Atlantic salmon in the Foyle area in 2018. This is due to the continued failure of the River Finn to meet its conservation limits as outlined under the Foyle Area (Control of Fishing) Regulations 2010. Angling is permitted in the River Finn and River Foyle on a catch and release basis only.
- Total declared Atlantic salmon rod catch in 2018 for the Foyle and Carlingford area was 1598. Total declared rod catch for the Carlingford catchments was 8. Voluntary catch and release for the Foyle and Carlingford areas was 66%, and 63% for the Whitewater River.
- Fish counts derived from an electronic fish counter on the Newry River was 2291 fish in 2018.
- Juvenile electrofishing surveys within the Carlingford catchments at 71 sites recorded an average of 2 Salmon fry (Young of Year). Surveys within the Whitewater catchment at 14 sites recorded an average of 4 Salmon fry.

Loughs Agency Management Strategy for Atlantic salmon

The Loughs Agency uses an audit point management system for monitoring the populations of Atlantic salmon within the Foyle and Carlingford areas. Population estimates and indices are derived for various life history stages including adult counts from electronic fish counters situated at key locations, spawning redd counts, juvenile electrofishing indices, rod catch and commercial net catches.

Numbers of Atlantic salmon stocks particularly grilse (1SW fish) from southern populations of north east Atlantic stocks are currently at a low point. International research has highlighted climate change and marine ecosystem change as potential causes for this observed decline. The Loughs Agency is working with colleagues at regional, national and international levels to understand this decline and to implement best practice

2.1 NET FISHERIES

There are no salmon net fisheries within the Carlingford area. Net fisheries have not been operated in the Foyle area since 2009 (Figure 1). The Foyle Area (Control of Fishing) Regulations 2010 provides various mechanisms for regulating both commercial and rod fisheries for salmon including under Section 3. (1) The Commission shall make a declaration.....if it is satisfied that..... (d) the number of salmon which have migrated upstream of the River Finn fish counter during each of any two of the previous five calendar years has not exceeded 5,410. A declaration under this shall..... (d) in the case of sub-paragraph (d), suspend netting in the River Foyle, Lough Foyle and seaward of Lough Foyle and restrict angling in the River Finn to angling on a catch and release basis only from the date and time specified in the declaration....The Commission can make the relevant declaration ending the suspension of netting and restriction on angling if it is satisfied that the number of salmon migrating upstream of the relevant counter during each of any four of the previous five calendar years has exceeded the number of salmon for that river.

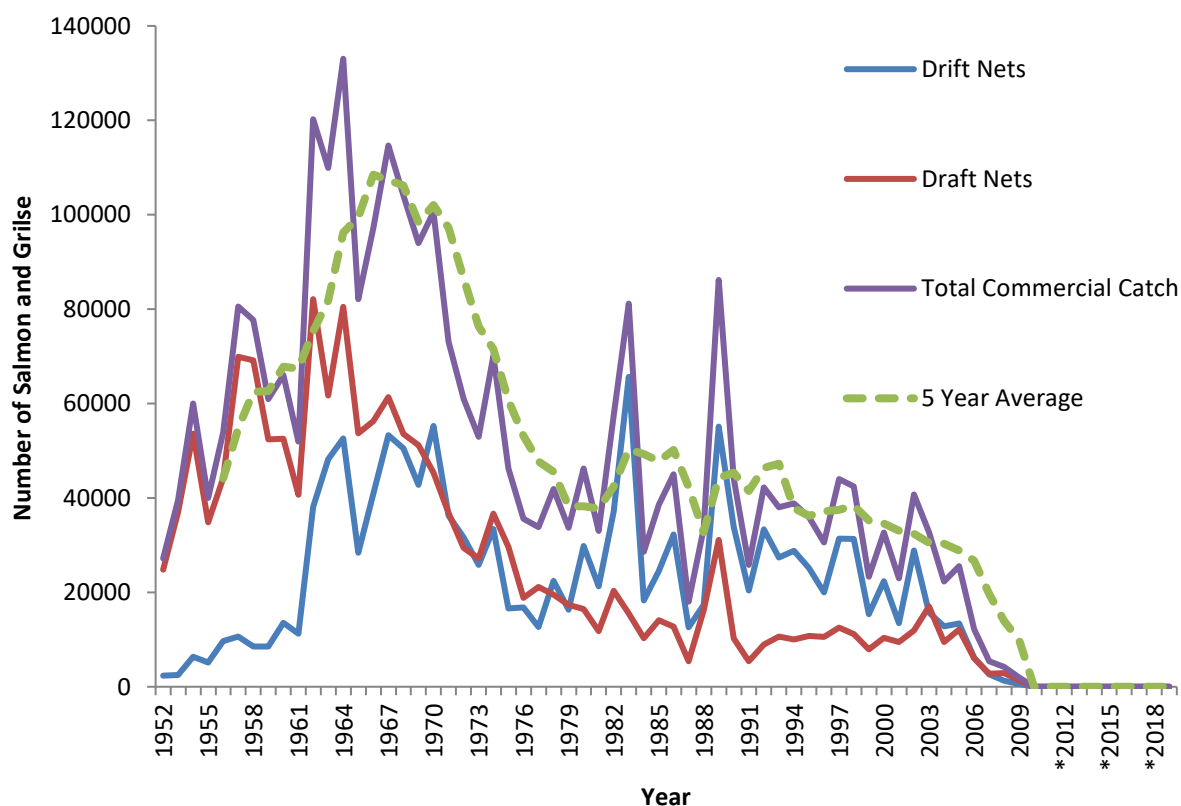


Fig.1 Atlantic salmon total commercial catch 1952-2018 and 5 year average total commercial catch. * Denotes no commercial fisheries conducted since 2009.

2.2 ROD CATCH

Total rod catch returns were 13% in 2018 (Figure 2). A total of 1598 salmon/grilse were caught in the Foyle and Carlingford areas in 2018 (Figure 2 & 3). 8 salmon and grilse were reported caught in the Carlingford catchments (Figure 4). Salmon/Grilse voluntarily caught and released were 66% in the Foyle and Carlingford area and 63% on the Whitewater.

It is your legal obligation to make an accurate and timely rod catch return.

There are a number of important reasons for making rod catch returns.

- How many fish were caught in YOUR RIVER OR LAKE?
- What % of fish were caught and released in YOUR RIVER OR LAKE?
- Is catch and release increasing?
- What species were caught?
- Essential for developing sustainable fishery management policy
- Screening of future developments (roads, hydro etc.) against fishery interests.
- An important tool for assessing strength of runs
- Aids with developing access and infrastructure (stiles etc.)
- It is required by law that all rod licence holders make an accurate catch return
- Facilitates long term trend monitoring
- Participate in the management of your river (doing your bit)
- At a time of reduced marine survival for Atlantic salmon accurate information is essential for sustainable management
- Aids in ensuring good decision making so that future generations can enjoy the sport of fishing
- Ensuring that all species caught are sustainably managed now and in the future

An unreported fish is a wasted opportunity, for economic development, for conservation, for protection of our fishery resources, for education and for future generations.

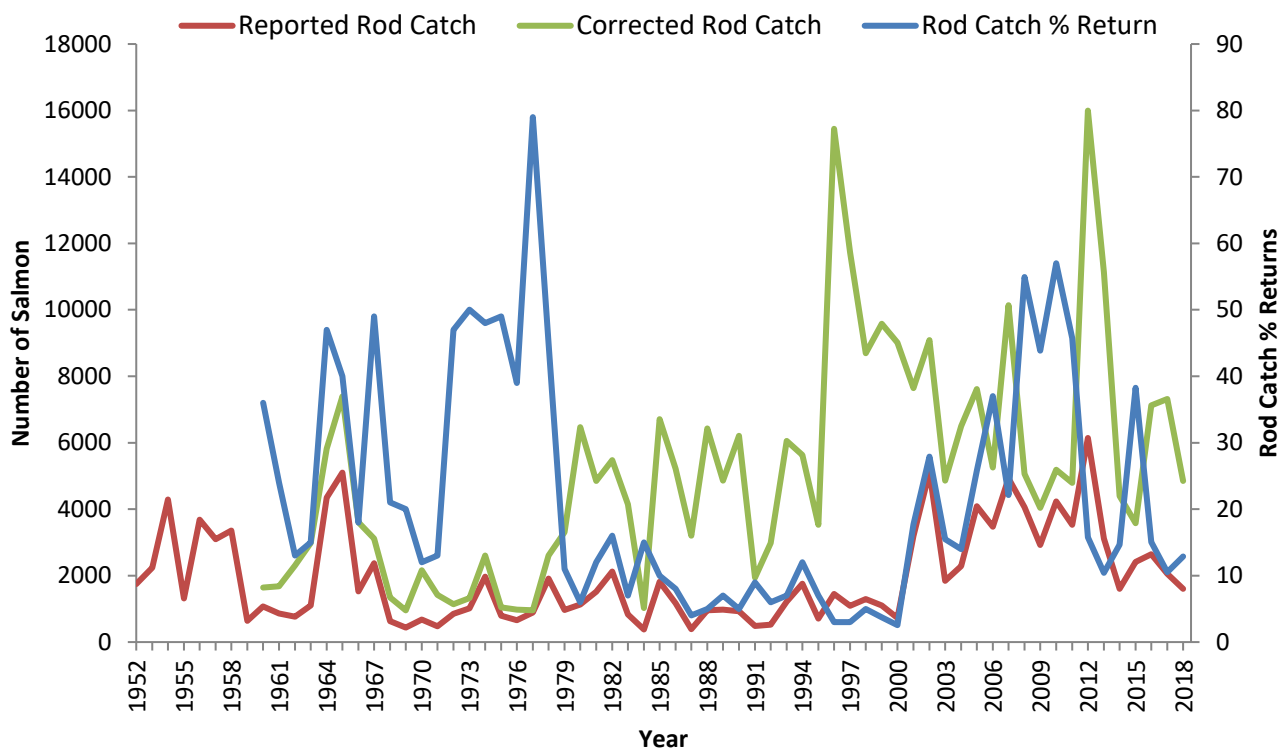


Fig.2 Loughs Agency reported and corrected rod catch with % returns made.

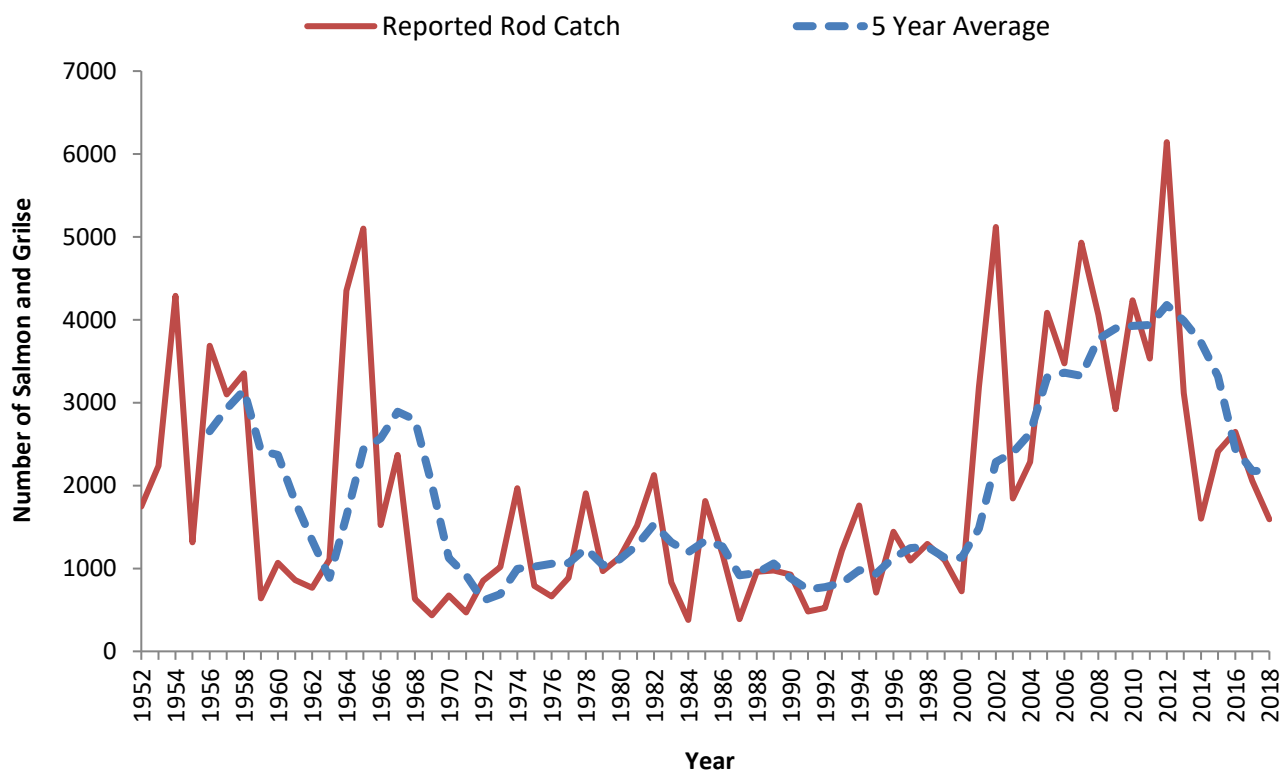


Fig.3 Reported rod catch for salmon/grilse in the Loughs Agency area and 5 year average.

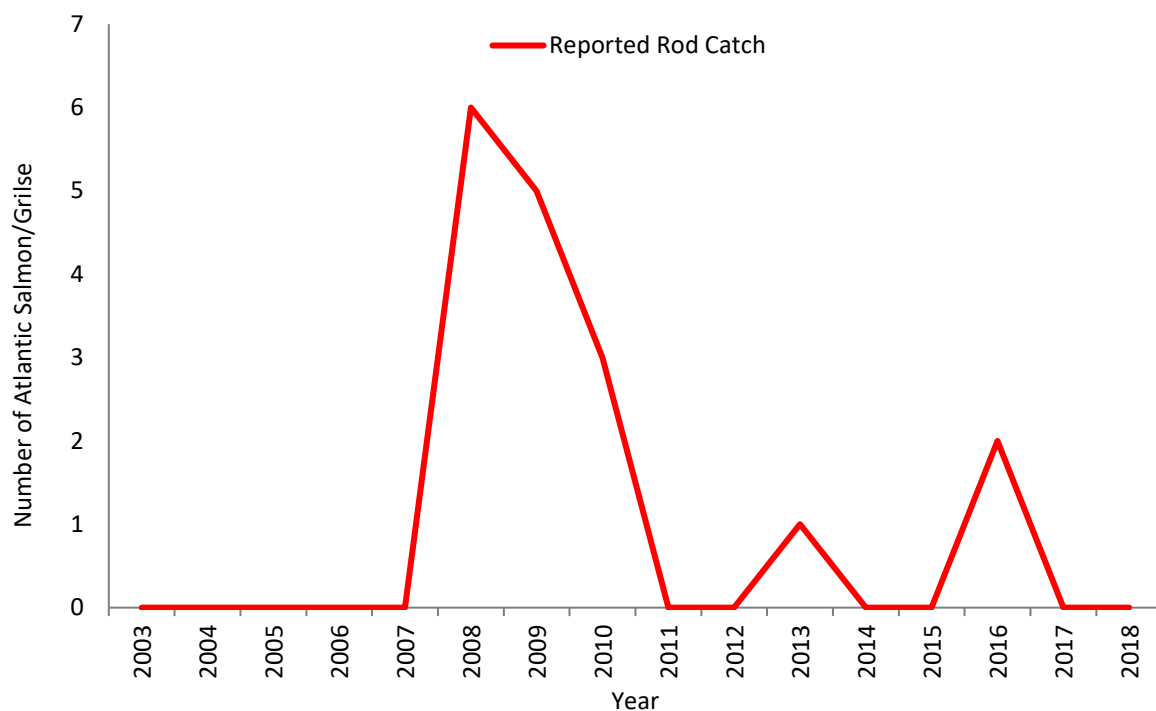


Fig.4 Newry/ Clanrye River reported rod catch 2003 - 2018.

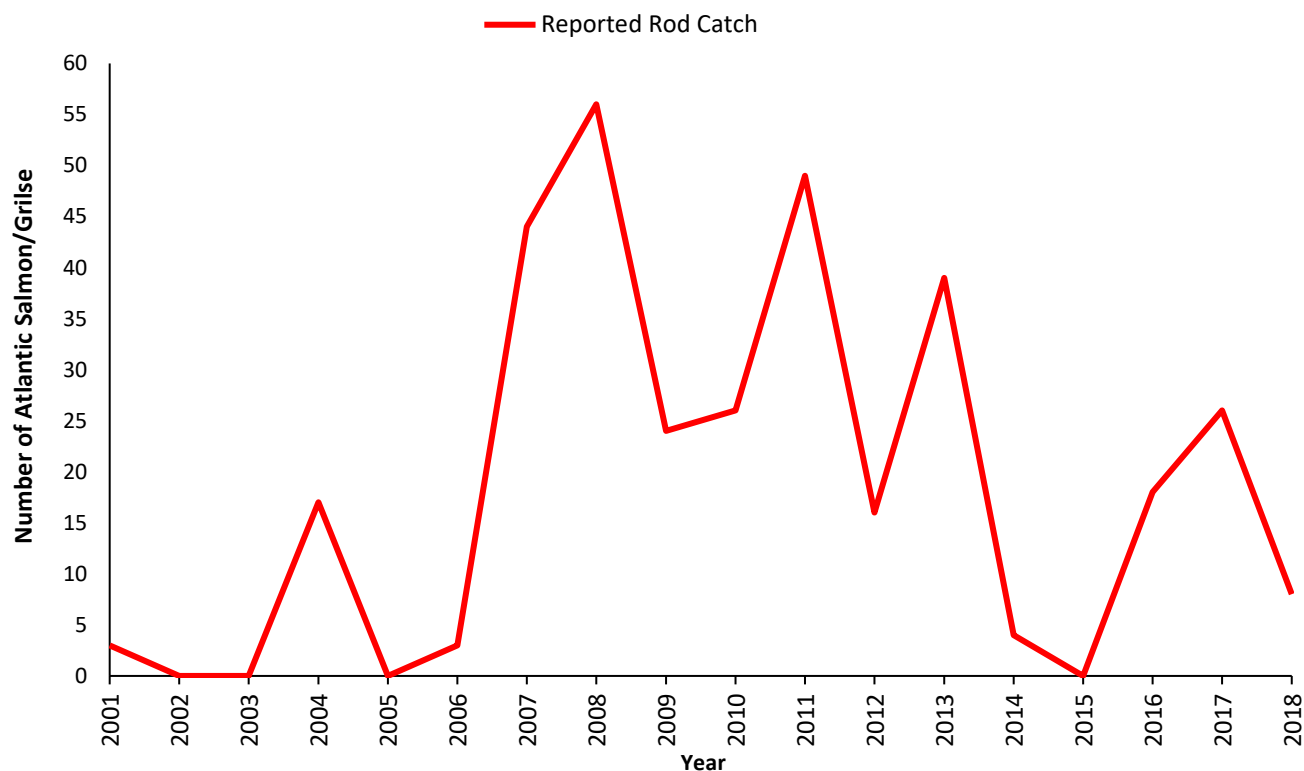


Fig.5 Whitewater River reported rod catch 2001 - 2018.

2.3 FISH COUNTERS

The Loughs Agency operates a network of electronic fish counters throughout the Foyle and Carlingford areas to monitor the migration of Atlantic salmon into our freshwater river systems. The counters are used to assess the attainment of conservation limits and management targets for key catchments.

In 2018 the Newry/ Clanrye fish count was recorded by the electronic fish counter as being 2291.



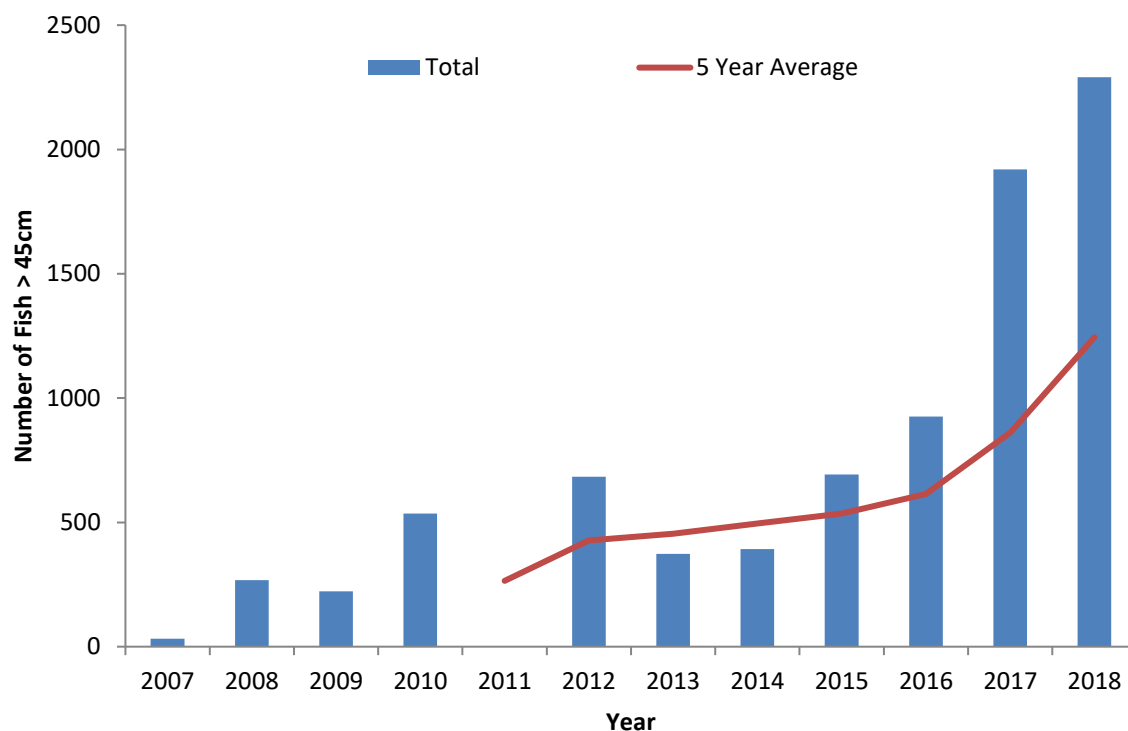


Fig.6 Newry River electronic fish counter figures 2007 to 2018 *Note partial count only recorded for 2007 from September to end of year. Counter was not operational during 2011.

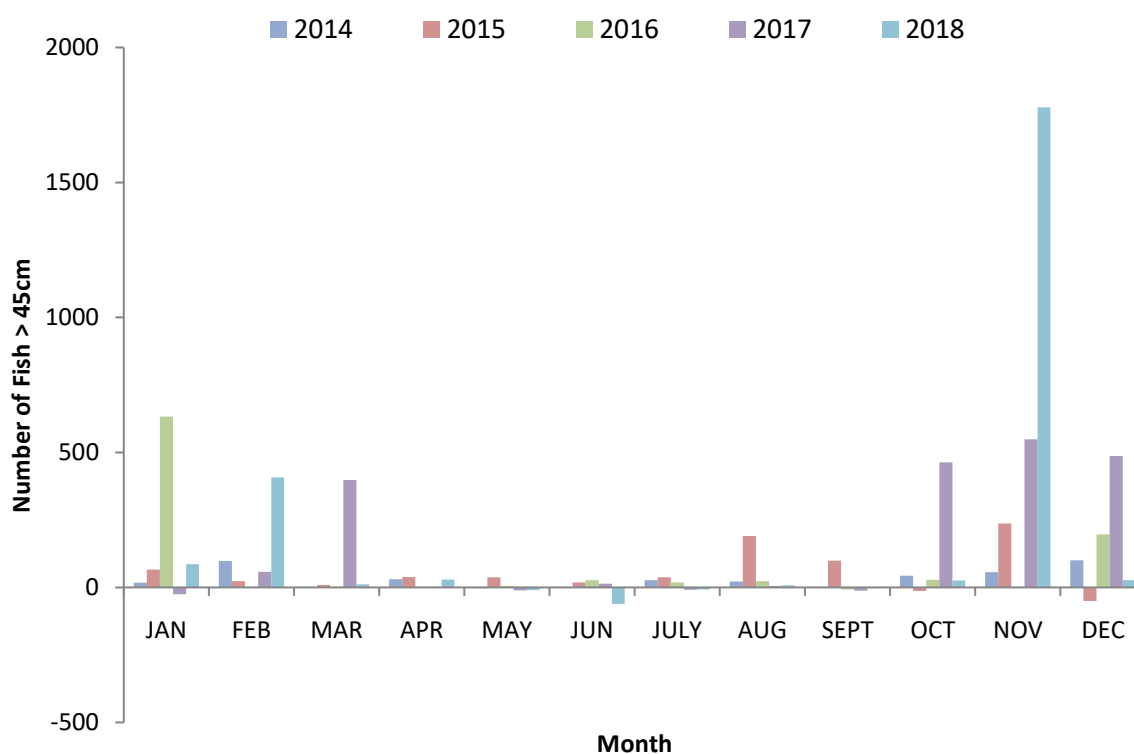


Fig.7 Newry River fish counter figures 2014 - 2018.

2.4 JUVENILE ABUNDANCE/ELECTROFISHING SURVEYS

Juvenile Atlantic salmon abundance is measured on an annual basis by following a standardised procedure (Crozier and Kennedy, 1996). A number of sampling stations are monitored using this semi-quantitative (5 minute timed) electrofishing methodology. Over many years an index has been developed to show trends for individual catchments (Figures 8 & 9). In 2018 the mean number of salmon fry (young of year) recorded at 31 monitoring stations within the Clanrye catchment was 4. The mean number of salmon fry recorded at 14 monitoring stations on the Whitewater River was 4.

Newry River/Clanrye River Salmon Fry Index

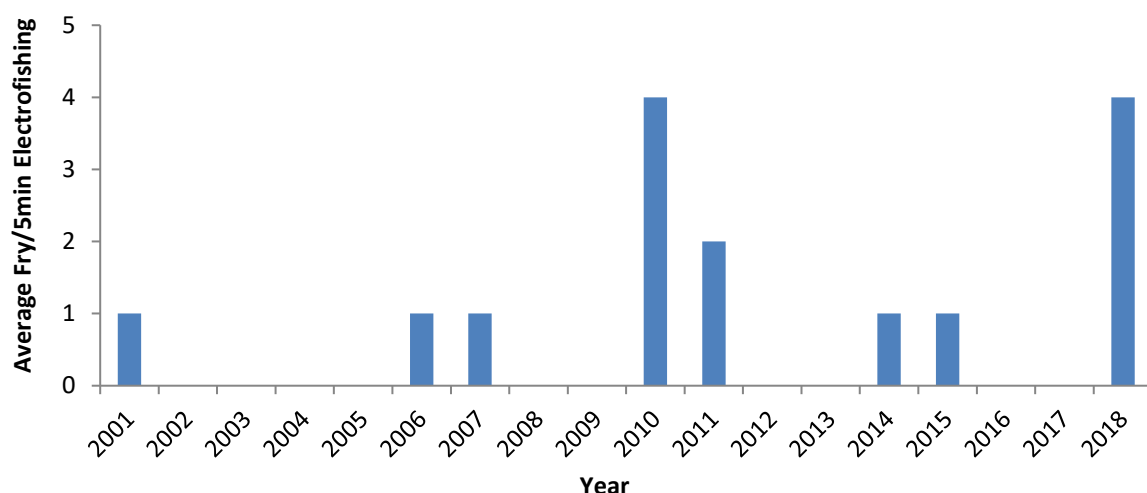


Fig.8 Newry/ Clanrye salmon fry electrofishing index, based on a fluctuating number of sites.

Whitewater Salmon Fry Index

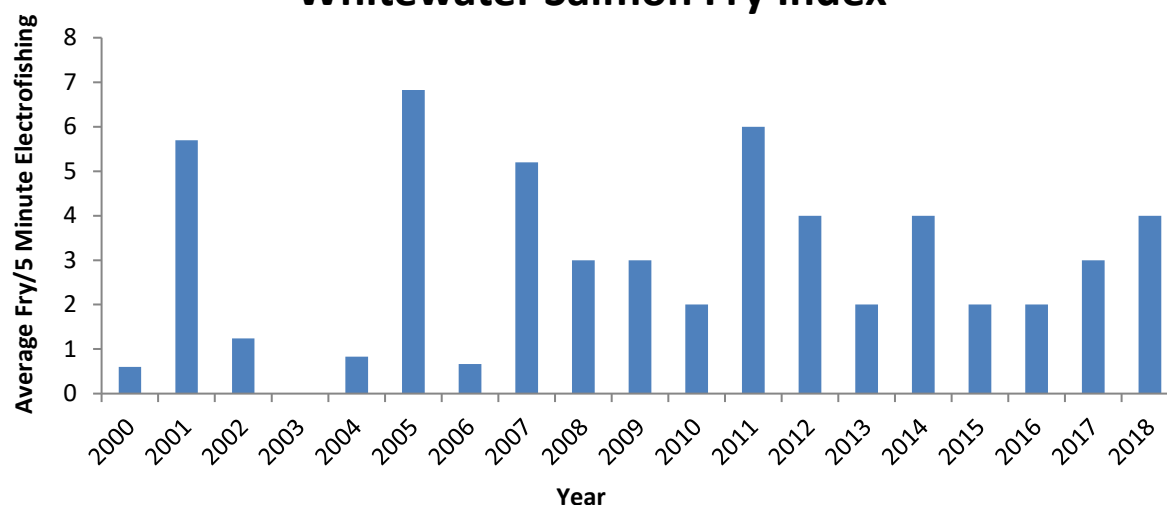


Fig.9 Whitewater salmon fry electrofishing index, based on a fluctuating number of sites.

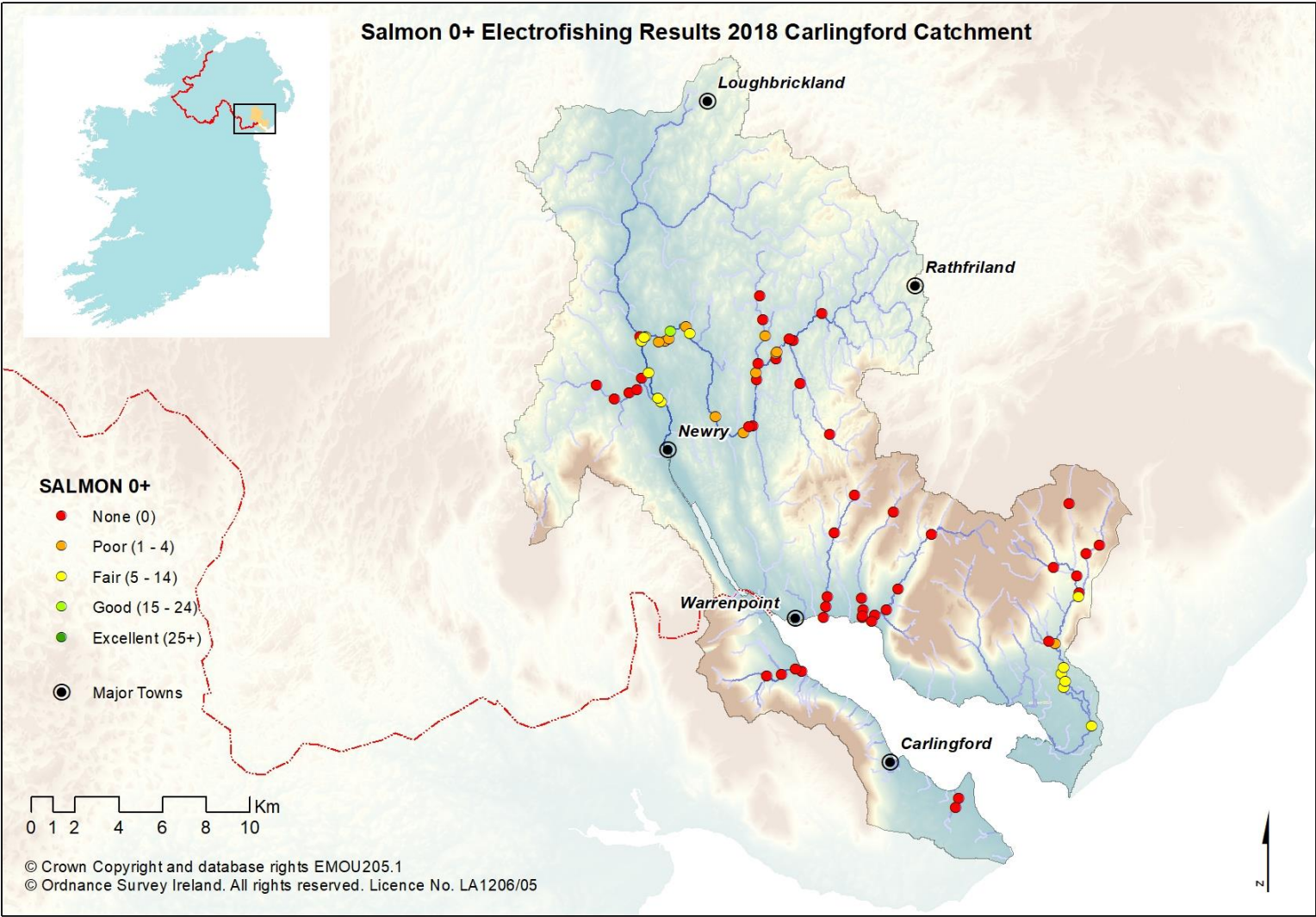


Fig.10 Carlingford salmon fry electrofishing classification 2018.

2.5 MARINE SURVIVAL

Marine survival continues to be of significant concern throughout the southern range of Atlantic salmon in the North East Atlantic. The nearest monitoring station to the Foyle area which provides robust survival data to the International Council for the Exploration of the Seas Working Group on North Atlantic Salmon is the River Bush in Co Antrim. Marine survival rates for One Sea Winter (1SW) grilse pre the mid 1990's was around 30%, in recent years this has fallen as low as 2.4%. A marine survival rate of 3.18% has been calculated for the 2017 cohort returning to the river in 2018. This is a decrease from the 6.66% marine survival rate recorded for the 2015 cohort, and is well below historic highs. A marine survival rate for Multi Sea Winter fish is also calculated a year behind in terms of assessment. The survival rate for 2016 smolt cohort was around 0.66%

The international SALSEA Merge project investigating the marine portion of the Atlantic salmon's life cycle reported in 2011. Further information can be found at http://www.nasco.int/sas/salseamerge_documents.htm this will provide a firm platform on which to develop future salmon management strategy at an international level that takes into consideration the complex lifecycle of Atlantic salmon and its place within both freshwater and marine ecosystems.

2.6 DISCUSSION

As outlined above Atlantic salmon have a complex lifecycle which can be impacted upon by many factors. The impacts cannot always be quantified making it difficult to accurately estimate the number of returning adult salmon/grilse to our rivers each year. An analysis of cohort/age class strength throughout its lifecycle from egg to spawning adult is complicated by numerous factors. These include varying egg survival rates, differing age at smolting, marine survival rates, and time spent at sea/age at spawning and number of spawning migrations made. It is extremely difficult to infer from one life history stage or stages what the strength of any returning cohort will be. This is currently exacerbated by extremely low marine survival rates possibly as a result of altered marine food webs and oceanic prey distribution all in the context of climate change.

3.0 TROUT STOCKS SUMMARY

- In 2018 the total declared Sea trout rod catch for the Foyle and Carlingford areas was 432. Total declared Sea Trout rod catch for the Carlingford catchments was 120. Total declared Brown trout rod catch for the Foyle and Carlingford areas was 378. Total declared Brown Trout rod catch for Carlingford catchments was 17.
- In 2018 juvenile electrofishing surveys within the Clanrye catchment at 31 sites recorded an average of 6 trout fry. Within the Whitewater catchment at 14 sites, an average of 20 trout fry were recorded. Within the Kilbroney catchment at 5 sites, an average of 9 trout fry were recorded. Within the Ryland catchment at 4 sites, an average of 32 trout fry were recorded.
- Declines in Sea trout stocks have been observed in parts of Ireland and the west coast of Scotland. Reasons for the decline in Sea trout populations are varied and diverse, such as habitat loss and fragmentation, barriers to migration, natural population fluctuations, inshore marine ecosystem change, over fishing and pollution of key spawning streams.
- The Loughs Agency will continue to conduct monitoring as part of various research projects and undertake an evidenced based approach to the management of local trout populations.

Development of a Loughs Agency Trout Management Strategy

In 2013 the Loughs Agency published its trout strategy. The strategy contains 19 policies which relate to six main areas:

- **Habitat improvement**
- **Exploitation**
- **Stock management**
- **Barriers to migration**
- **Culverting**
- **Water abstraction and impoundment**

At present Loughs Agency monitor stocks of trout in a number of ways including analysis of rod catch data, and juvenile electrofishing surveys.

During 2018 sea trout monitoring projects were conducted on a tributary of the Burdennet and on the Culdaff River. This is addition to the long term multi species monitoring project on the River Faughan. It is proposed to expand the Sea trout monitoring project into the Muff River and Killbroney River (Carlingford Catchment).

3.1 ROD CATCH

Sea trout are a prized quarry in both the Foyle and Carlingford areas but display very different life history strategies to both the resident brown trout and Atlantic salmon. Rod catch provides one of the key 'audit points' for the management of this species. Declared rod catch has highlighted the significant declines over recent decades. It should be noted that sea trout populations fluctuate greatly and like many wild populations of animals they are prone to boom and bust cycles.

Over the duration of the decline in sea trout populations various reasons for the decline have been suggested including spawning habitat loss, barriers to migration, increased numbers of sea lice due to salmon aquaculture, natural population fluctuations, inshore marine ecosystem change, over fishing, pollution of key spawning streams etc. All of these will have impacted the Sea trout populations to some extent. Within the Foyle area Sea trout average weight tends not to exceed 2-3 lbs with larger specimens being quite rare. In the Carlingford Area Sea trout are considerably larger with average weight somewhere between 5-8lbs with larger double figure specimens encountered from time to time. The difference between west and east may be down to the quality and availability of suitable prey species. Irish Sea populations of Sea trout tend to be much larger and may be indicative of less impacted prey species populations. A parallel could be made between documented north coast of Ireland sea bird populations and Irish Sea populations, with Irish Sea populations doing better because of better availability of prey species. North coast of Ireland sea bird populations have been in decline over recent decades, in parallel with the plight of Sea trout.

In the Foyle and Carlingford area the minimum size for retaining a Brown trout or Sea trout is 25.4cm. All Sea trout over 40cm must be tagged and there is a bag limit of 1 Sea trout per day, up to a maximum of 5 during the period from the start of the season to 31st May. A bag limit of 2 Sea trout over 40cm per day applies from the 1st June to the end of the season up to a maximum of 20. There is also a daily bag limit of 4 Brown trout or Sea trout of 40cm or less in length throughout the season. Stricter club/association rules may apply.

Within the Foyle area there is generally a geographic north south divide with sea trout dominant in the northern catchments and brown trout dominant in the southern catchments. Historically the northern catchments and their associated small streams provided excellent spawning and nursery habitat and when associated with high densities of salmon may have been a major reason for seaward migration of juvenile trout in search of prey and less competition. The southern catchments still hold good populations of resident Brown trout with significant angling development potential. These populations however are more susceptible to pollution events. Figures 11-14 outline Sea trout rod catch for the Foyle and Carlingford areas and for the Clanrye/Newry catchment and Whitewater catchment. This area may be locally significant for Sea trout spawning and as such would merit closer investigation.

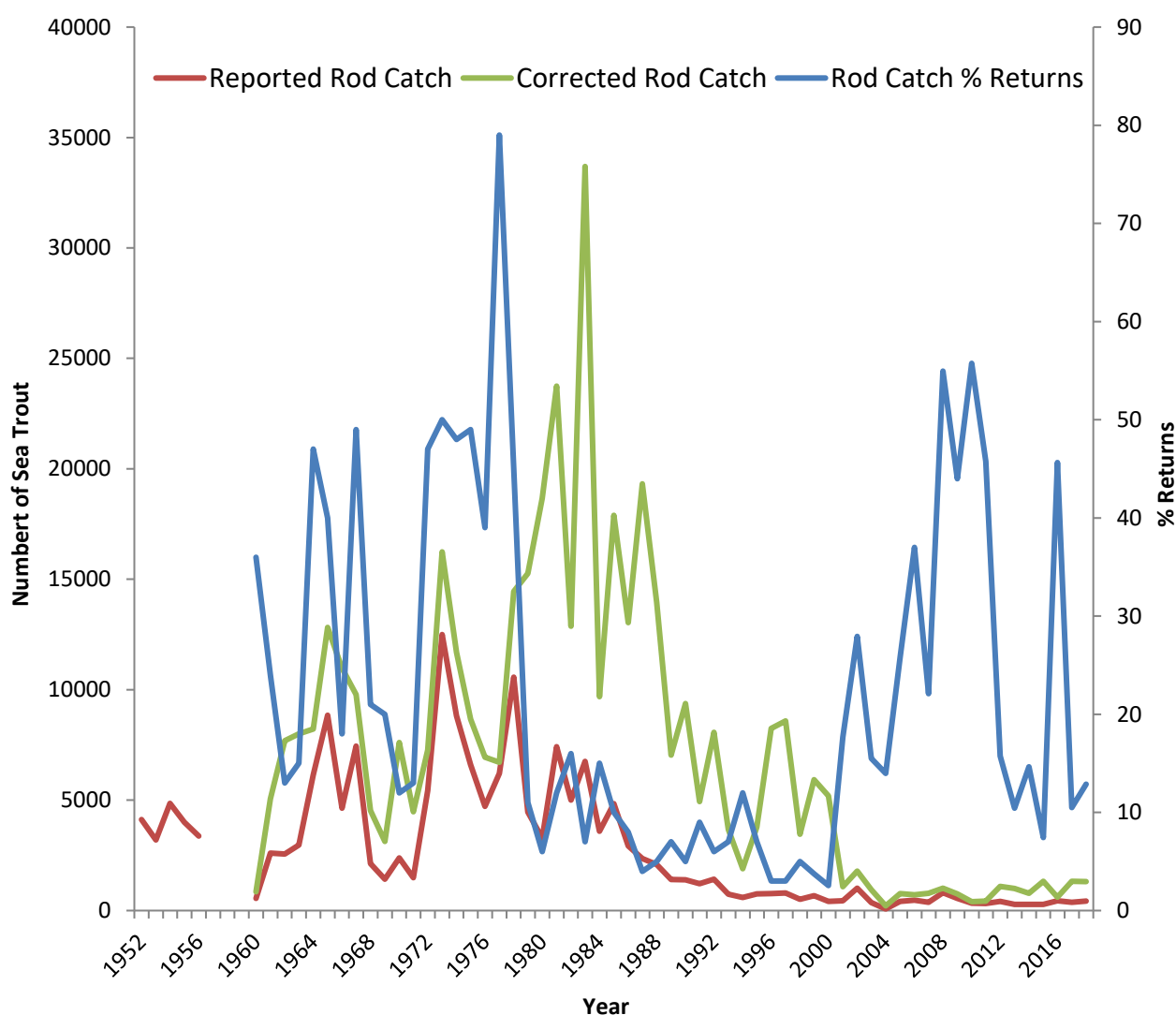


Fig.11 Loughs Agency reported and corrected rod catch (Sea trout) with % returns made.

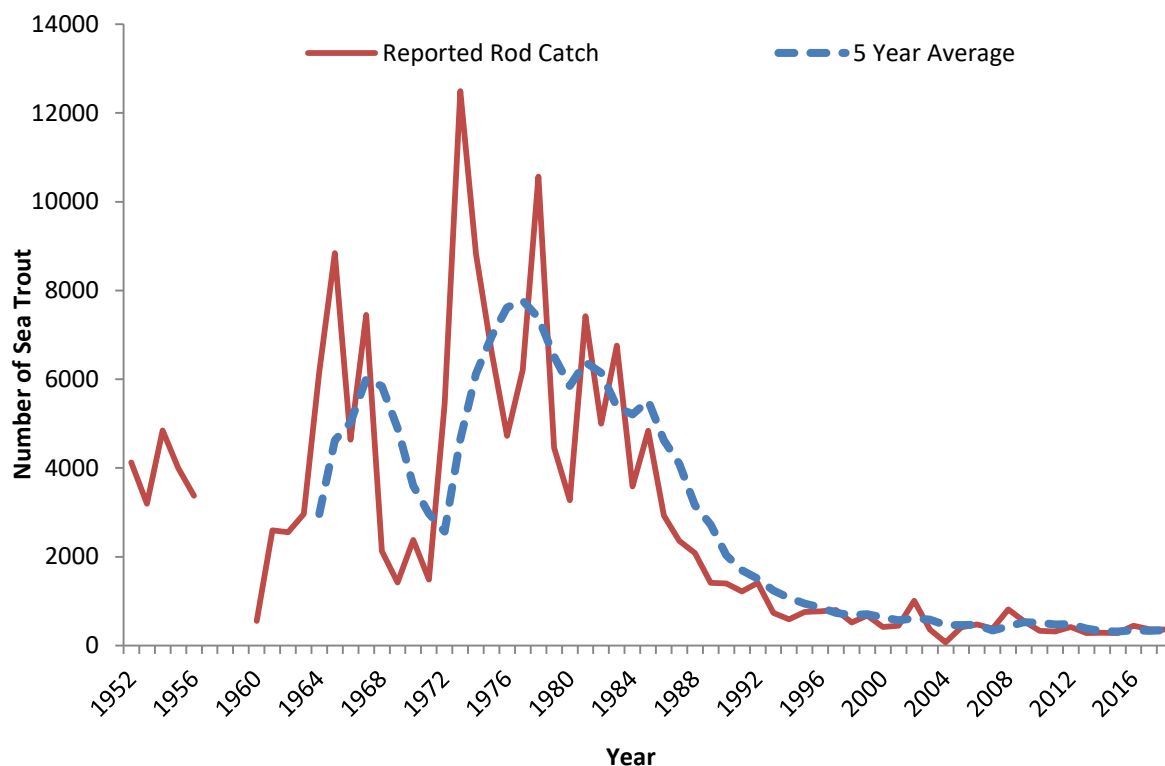


Fig.12 Reported rod catch for Sea Trout in the Loughs Agency area and 5 year average.

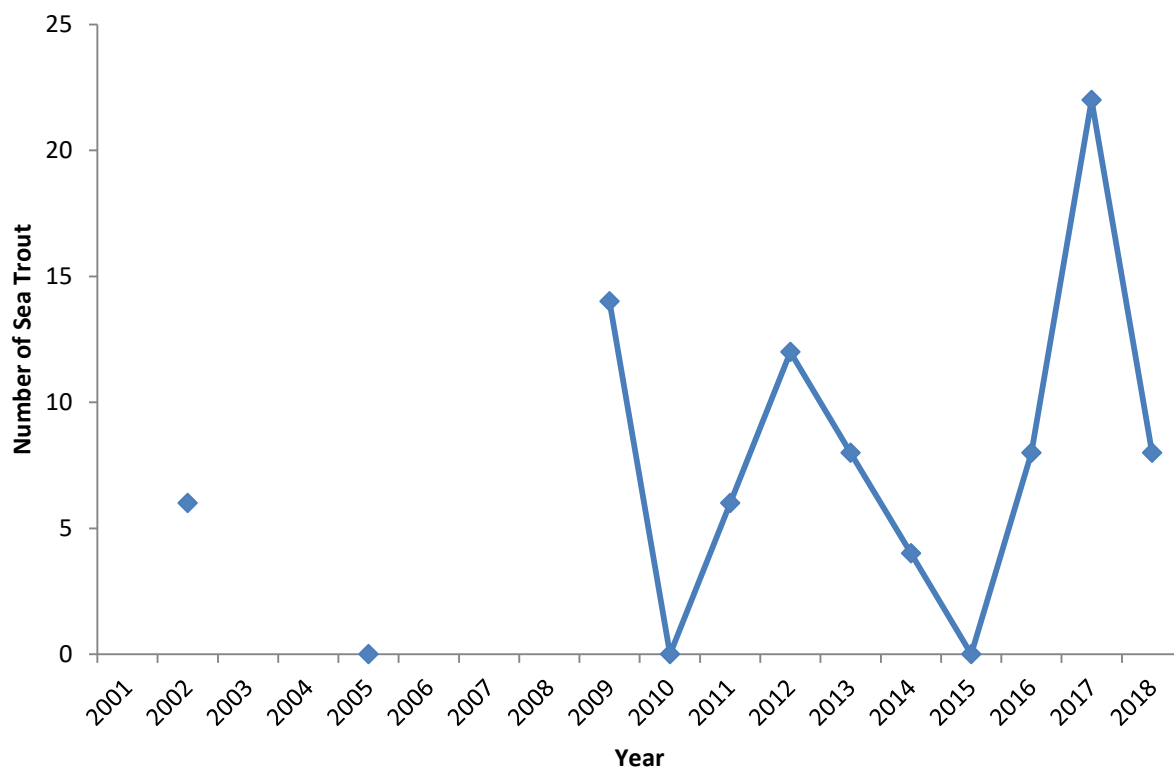


Fig.13 Newry/Clanrye catchment reported Sea trout rod catch.

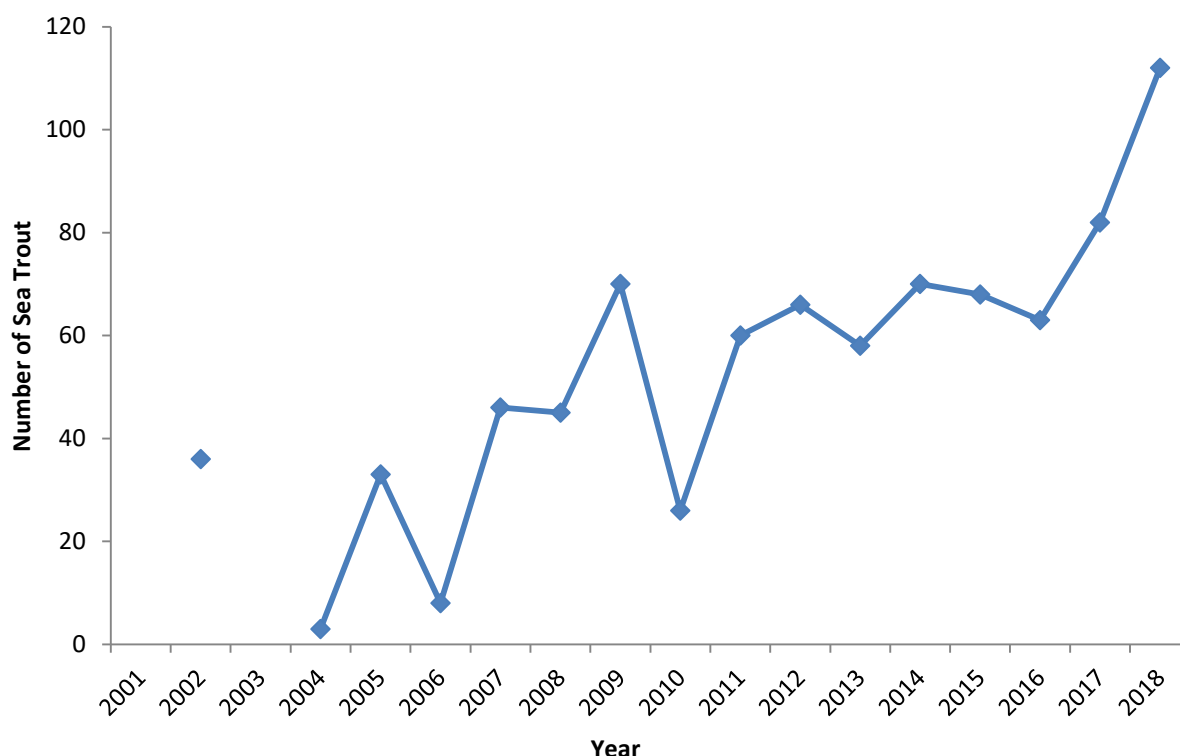


Fig.14 Whitewater catchment reported Sea trout rod catch.

3.2 JUVENILE ABUNDANCE/ELECTROFISHING SURVEYS

As for juvenile Atlantic salmon, Trout abundance is also measured on an annual basis by following the same standardised procedure (Crozier and Kennedy, 1996). A number of sampling stations are monitored using this semi-quantitative (5 minute timed) electrofishing methodology. Over many years an index has been developed to show trends for individual catchments (Figure 15). In 2018 the mean number of trout fry (young of year) recorded at 31 monitoring stations within the Clanrye catchment was 6. The mean number of trout fry recorded at 14 monitoring stations within the Whitewater River was 24.



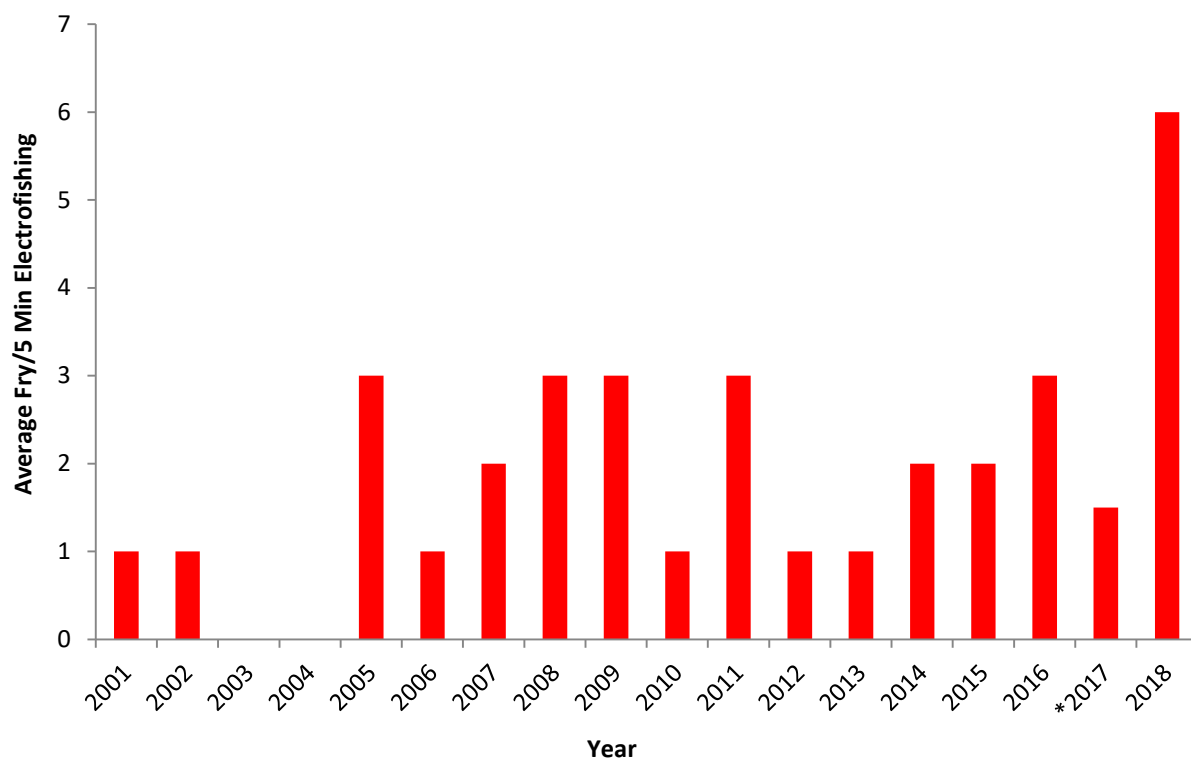


Fig.15 Newry/Clanrye trout fry index 2001 - 2018, based on a fluctuating number of sites.

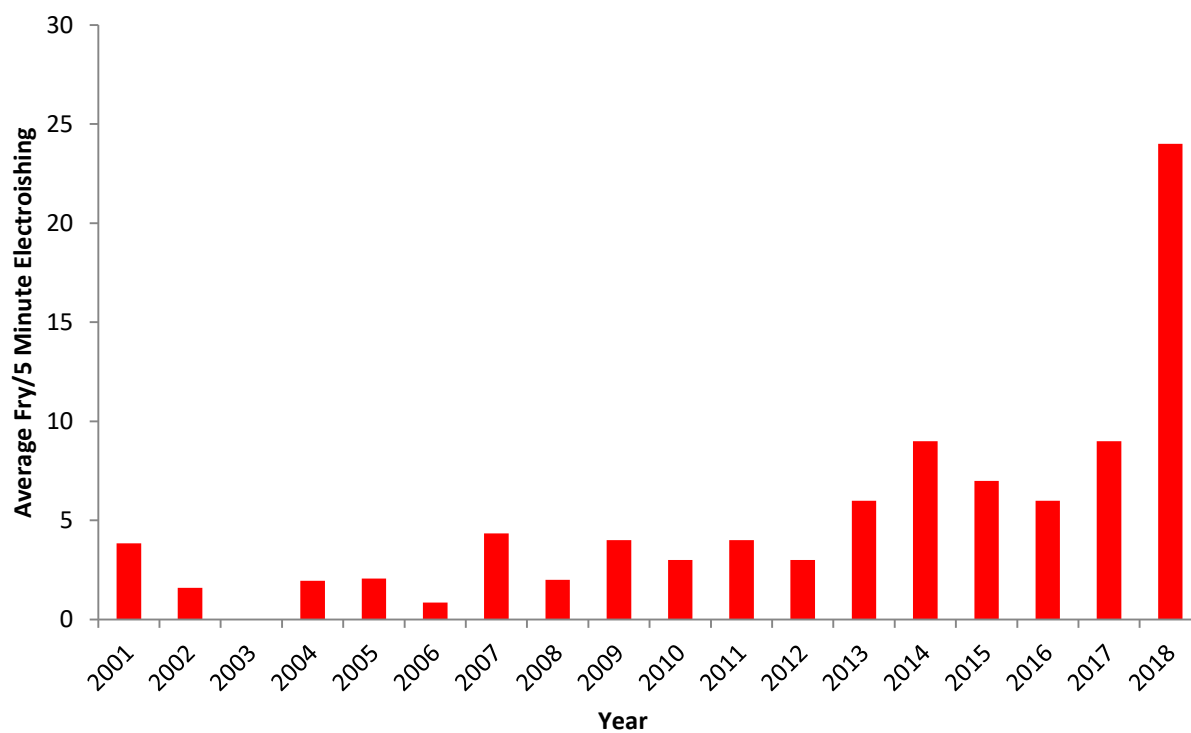


Fig.16 Whitewater trout fry index 2001 - 2018, based on a fluctuating number of sites.

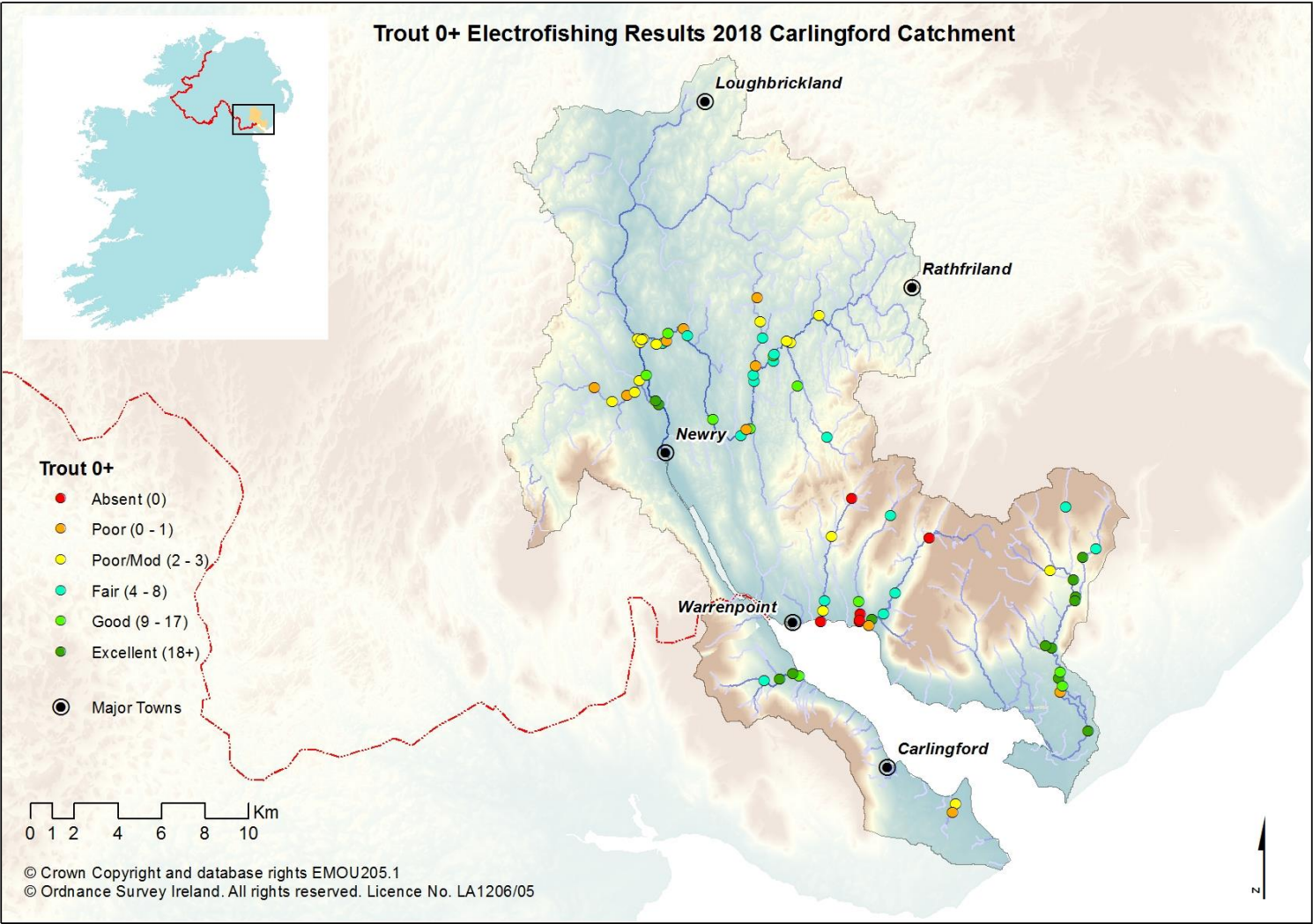


Fig.17 Carlingford area trout fry electrofishing classifications 2018.

3.3 DISCUSSION

At present rod catch and juvenile electrofishing surveys are the two monitoring programmes conducted annually on Trout populations within the Foyle and Carlingford areas. Rod catch returns in 2018 were 13%, a slight improvement from 11% in 2017. It is a legal requirement for an angler to present the Loughs Agency with an accurate and timely rod catch return. Electrofishing surveys are carried out annually at approximately 500 sites across the Foyle and Carlingford areas. Sites are monitored using a semi-quantitative (5 minute timed) electrofishing methodology following the same standardised procedure (Crozier and Kennedy, 1996). It should be noted that electrofishing data for juvenile trout cannot distinguish between what percentage of juveniles will go on to become Brown trout or Sea trout. In order to extend the baseline of available information, future expansion of the monitoring programmes could include the development of a Trout redd index on known trout spawning tributaries. A coordinated approach towards the management of our Trout stocks needs to be taken to ensure existing and future resources are managed in a sustainable manner. The development of collaborative partnerships such as the river enhancement schemes previously delivered in conjunction with the Wild Trout Trust has been shown to provide tangible benefits for improving, conserving and protecting trout stocks in the Foyle and Carlingford areas.



Fig.18 Electrofishing survey being conducted on the Killbroney River, 2018.

4.0 SUMMARY OF OTHER SURVEYS AND FISH STOCK ASSESSMENTS

- Nine Water Framework Directive fish surveillance monitoring stations were surveyed within the Foyle area in 2018. None of the surveillance sites within the Carlingford area were fished in 2018.
- Further details can be found in the 2018 WFD Fish Surveillance Report on the Loughs Agency website under the publications section www.loughs-agency.org
- A full Water Framework Directive compliant lake fish survey was carried out on Lough Mourne in September, 2018. The survey noted the presence of three fish species including Roach, Pike and European Eel. Although Roach were the most common fish encountered in the survey, Roach stocks have declined significantly since the last survey in 2010.
- In 2018 the Loughs Agency continued to meet its obligations under a raft of national and international legislation. In addition to meeting its statutory duties the Loughs Agency plans its monitoring works to best inform current and future policy development.

Additional Surveys and Fish Stock Assessments

Fish stock assessments are an extremely important part of fishery management. They provide the information on which to develop policy and to implement appropriate legislation and regulation to ensure future sustainable management.

During 2018, nine stock assessments were conducted for Water Framework Directive fish monitoring purposes.

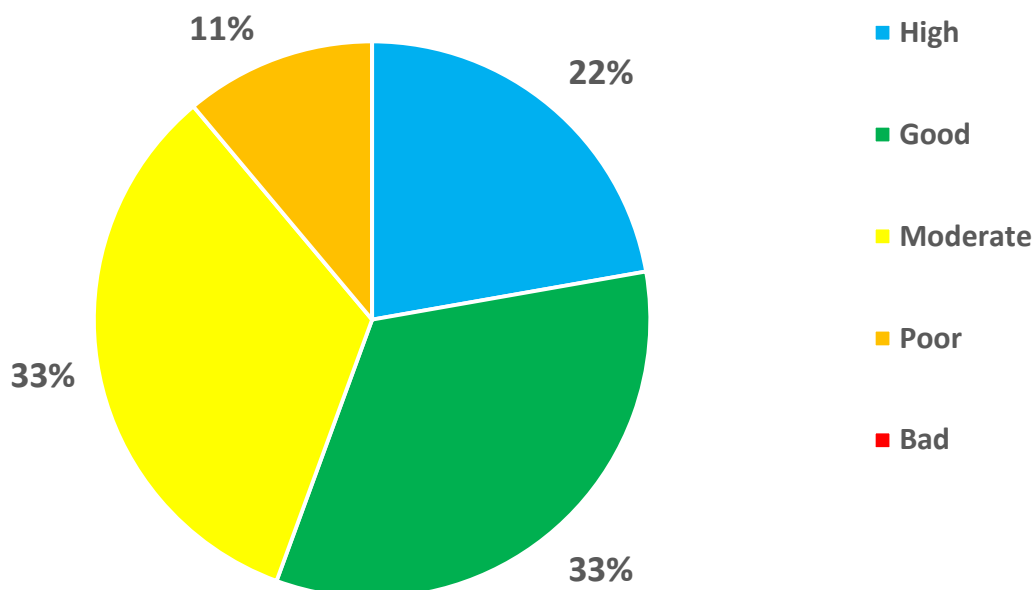
These sites were surveyed by quantitative electrofishing. This method involves stop netting of a section of river and conducting electrofishing removal sampling. The data generated can be used to calculate the densities of different species and age classes present. Other information is collected on site to derive fish classifications for incorporation into overall surface waterbody classification under the Water Framework Directive.

4.1 WATER FRAMEWORK DIRECTIVE FISH MONITORING

The Water Framework Directive is a key piece of European environmental legislation designed to facilitate improvements in our aquatic environments. The Loughs Agency under the guidance of the Northern Ireland WFD Fish Monitoring Group is responsible for fish monitoring within the Foyle and Carlingford areas. This involves the monitoring of 27 surveillance monitoring stations on a rolling three year basis. Quantitative electrofishing is the preferred method where possible and the data collected is used to derive a fish classification which is then combined with the results from other monitored parameters to create an overall surface water body classification. This ranges from High Ecological Status through Good Ecological Status, Moderate Ecological Status, Poor Ecological Status and Bad Ecological Status. The target set by the WFD is that all water bodies must reach Good Ecological Status by 2021. In 2018 the Loughs Agency monitored nine surveillance stations all of which fell within the Foyle area; none of the three WFD sites located in the Carlingford area were monitored in 2018. All nine Water Framework Directive fish surveillance monitoring stations surveyed within the Loughs Agency jurisdictions were within Northern Ireland. 22% of sites surveyed were classified as high status, 33% as good status, 33% as moderate status and 11% as poor status.



Fig.19 Water Framework Directive fish survey on the Dunnyboe Burn, 2018.



Classification in 2018 was completed using the WFD compliant classification tool, Fish Classification Scheme 2 Ireland (FCS2 Ireland) with the option of a professional judgement over ride. No results were over ridden using professional judgement in 2018. Additional indicative classifications have been derived for water bodies within the Foyle and Carlingford areas where certain criteria have been applied to semi quantitative electrofishing data. These criteria have been developed by the Northern Ireland Water Framework Directive Fish Group and are outlined within the annual Water Framework Directive report which is available under the publication section of the Loughs Agency website.



Fig. 20 WFD fish monitoring on the Owenkillew, 2018.

5.0 FISHERIES HABITAT IMPROVEMENT

In 2018 a number of instream and riparian habitat improvement projects were conducted in the Foyle and Carlingford areas. This included a wide variety of works ranging from native riparian tree planting projects, bank protection and the introduction of spawning and nursery substrate into rivers. During December 2017 collaborative surveys and planning was conducted in partnership with the Woodland Trust as part of developing the Burntollet native riparian tree planting project. A mixture of native species were planted during March and April 2018 with further works planned for the Faughan Valley catchment area for 2019 in partnership with the Woodland Trust.

6.0 CATCHMENT INITIATIVES

Integrated catchment management planning can only be delivered through the development of true partnerships between statutory and non-statutory partners. An understanding of desired outcomes and methods of delivery is essential in matching requirements and expectations to actions.

Exemplar catchment management planning is an iterative process developed and refined over time between parties who have fostered and developed productive working relationships.

Environmental legislation in tandem with societal requirements dictates that steps are taken to improve our natural habitats. From an aquatic perspective the Water Framework Directive is the key driver towards integrated management of our aquatic environments. The Loughs Agency acknowledges this and is eager to encourage participatory approaches as a way to effectively and efficiently meet challenging objectives.

In 2018/19 and beyond the Loughs Agency will aim to engage local stakeholders in participating in river corridor litter picks, the development of habitat improvement works and trout monitoring programmes.

If you are a member of an organisation which may be interested in working on collaborative conservation and protection projects within the Carlingford catchments please contact mark.mccauley@loughs-agency.org to discuss potential projects.

7.0 GENERAL ACTIONS FOR 2018/2019

- Continue to communicate the findings of all fisheries monitoring projects to stakeholders through various media platforms.
- Implement and develop proposed actions from the Loughs Agency Trout Strategy.
- Continue to implement and develop the Loughs Agency Freshwater Fisheries Monitoring Programme.
- The development of a Trout redd index on known trout spawning tributaries.
- Review the procedures for reporting of rod caught Trout in the Loughs Agency area.
- Facilitate the implementation of habitat improvement projects including riparian buffer zone creation, fencing, native species planting and in-channel habitat improvements including spawning bed and nursery habitat improvement.
- Continue to work with interested statutory and non-statutory partners to improve water quality and native fish populations.

