

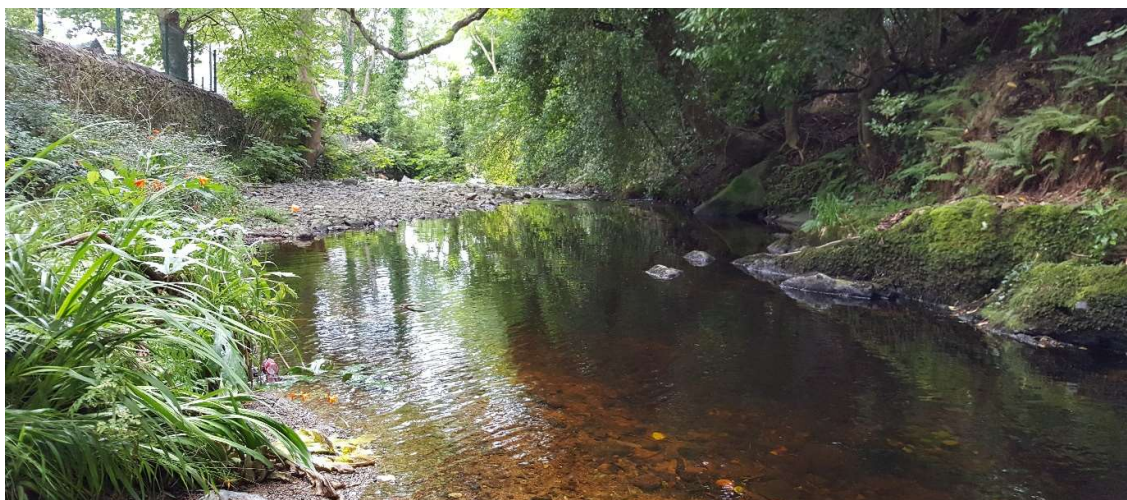


Carlingford Area and Tributaries Catchment Status Report 2017

Conservation and assessment of fish
populations and aquatic habitats

Art Niven & Emmett Clarkin

August 2018



Conservation actions and assessments of fish populations and aquatic habitats are presented for 2016. 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 2017 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 commenced in March with a targeted European smelt survey in the Mourne catchment. The European smelt survey was designed to identify if spawning was taking place within the catchment. The survey recorded the presence of spawning European smelt for the first time within the Mourne catchment with smelt recorded in the vicinity of Strabane. A follow up survey is planned for 2018 and will aim to identify the extent of the spawning in space and time.

Juvenile lamprey surveys were conducted within the Strule and Fairywater catchments. Surveys were conducted as part of a collaborative project involving the Loughs Agency, the Centre for Environmental Data and Recording (CEDaR) at the Ulster Museum and AFBI.

In August and September lake fish surveys were conducted on the two known Arctic char loughs within the Foyle area. Char were recorded in both loughs with good numbers recorded from Lough Finn while extremely low numbers were recorded from Lough Fad East. It is feared that Arctic char may soon become locally extinct from Lough Fad East.

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 peak field season was impacted by the wet summer with high river levels limiting survey opportunities. The annual Water Framework Directive fish monitoring project was completed. Adult migratory fish trapping took place on the River Mourne at Sion Mills and the River Finn at Killygordon where the refurbished trap and fisheries monitoring station were used to collect key biological information on the fish species encountered.

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 2017 will help to direct a series of instream and riparian habitat improvement works as part of the EU INTERREG VA Catchment CARE (Catchment Actions for Resilient Eco-systems) project.

On the 22nd August 2017 many catchments in the North West area encountered the most severe rainfall and flooding events experienced in living memory. Intensive rainfall led to landslides in the uplands which mobilised huge quantities of silt, peat, debris and other materials and deposited them on the floodplains. Numerous bridges were swept away with extensive damage being caused to housing, roads, agricultural land and other parts of important infrastructure.

Such events may become more regular occurrences due to continued climate change. Climate change adaptation is therefore more important than ever. Potentially increasing pressures require appropriate adaptations to be made to minimise future impacts. Giving rivers space, reconnecting rivers to their historic floodplains for flood storage and native tree planting in our uplands and riparian corridors are all essential tools for adapting to future climate change. The partnerships the Loughs Agency has developed over recent years with the Woodland Trust other non-statutory and statutory bodies appear more relevant than ever in light of the widespread devastation caused by the flooding.

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.

The 2017 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.

For more information contact art.niven@loughs-agency.org

2.0 ATLANTIC SALMON STOCKS SUMMARY

- There are no net fisheries for salmon in the Carlingford area in addition there were no net fisheries pursued for Atlantic salmon in the Foyle area in 2017. 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 2017 for the Foyle and Carlingford area was 2056. Total declared rod catch for the Carlingford catchments was 26. Voluntary catch and release for the Foyle and Carlingford areas was 57%, and 38% for the Whitewater River.
- Fish counts derived from an electronic fish counter on the Newry River was 1920 fish in 2017.
- Juvenile electrofishing surveys within the Carlingford catchments at 42 sites recorded an average of 1 salmon fry (Young of Year). Within the Whitewater catchment at 12 sites there was an average of 3 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 conservation actions.

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.

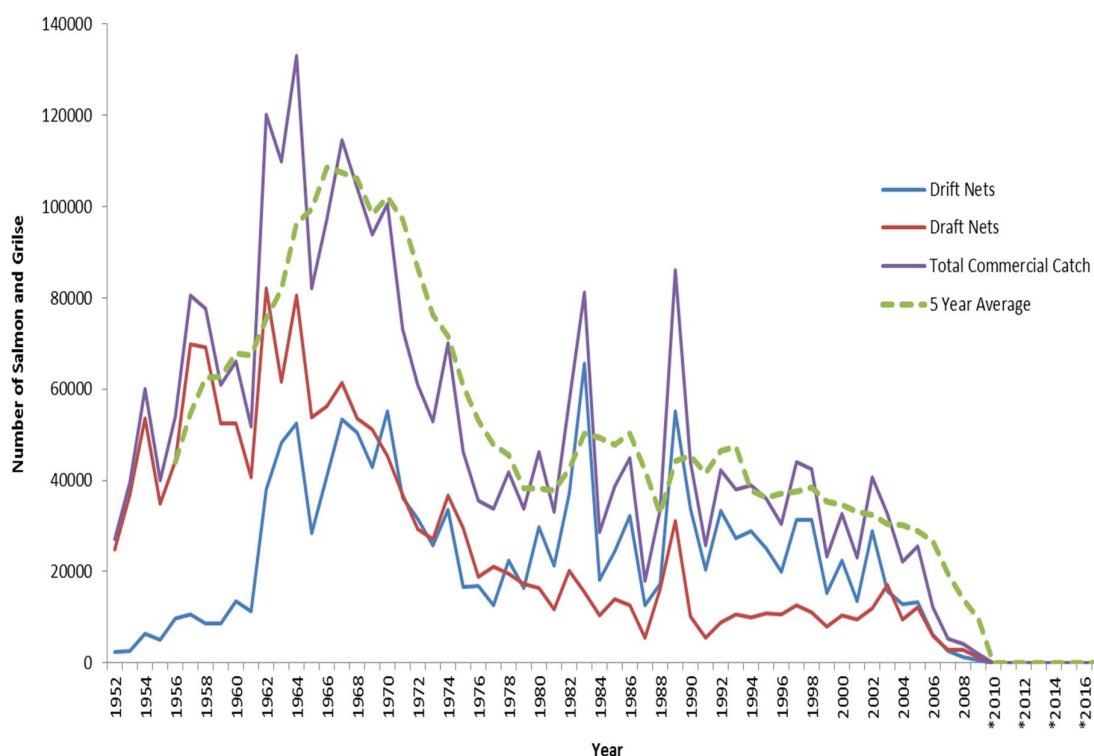


Fig.1 Atlantic Salmon total commercial catch 1952-2017 and 5 year average total commercial catch. * Denotes no commercial fisheries conducted since 2009

2.2 ROD CATCH

Total rod catch returns were 11% in 2017 (Figure 2). A total of 2056 salmon/grilse were caught in the Foyle and Carlingford areas in 2017 (Figure 2 & 3). 26 salmon and grilse were reported caught in the Carlingford catchments (Figure 4). Salmon/Grilse voluntarily caught and released were 57% in the Foyle and Carlingford area and 38% 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.

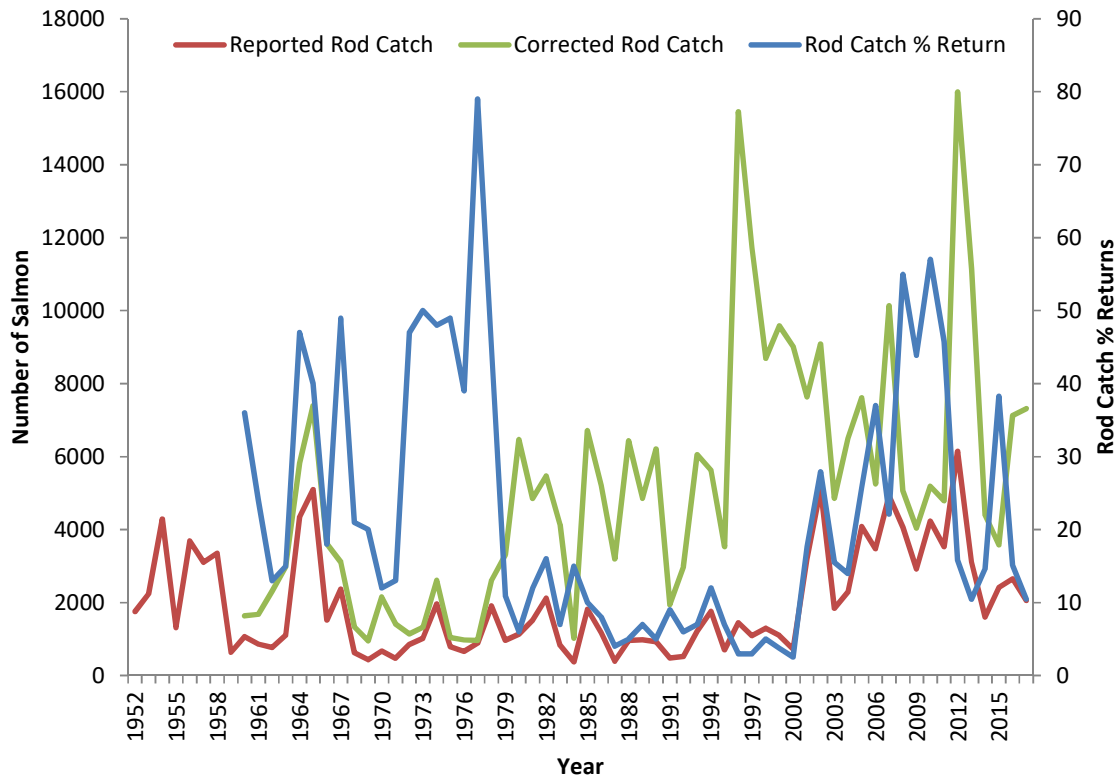


Fig.2 Loughs Agency reported and corrected rod catch with % returns made.

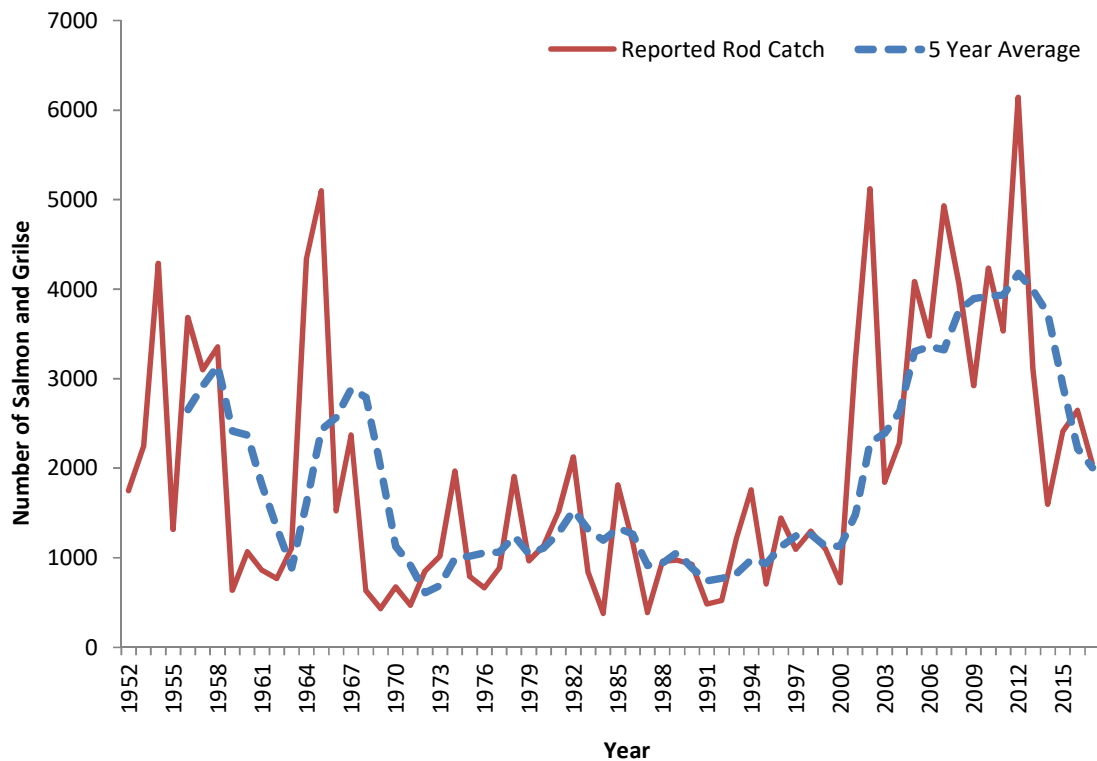


Fig.3 Reported rod catch for salmon/grilse in the Loughs Agency area and 5 year average.

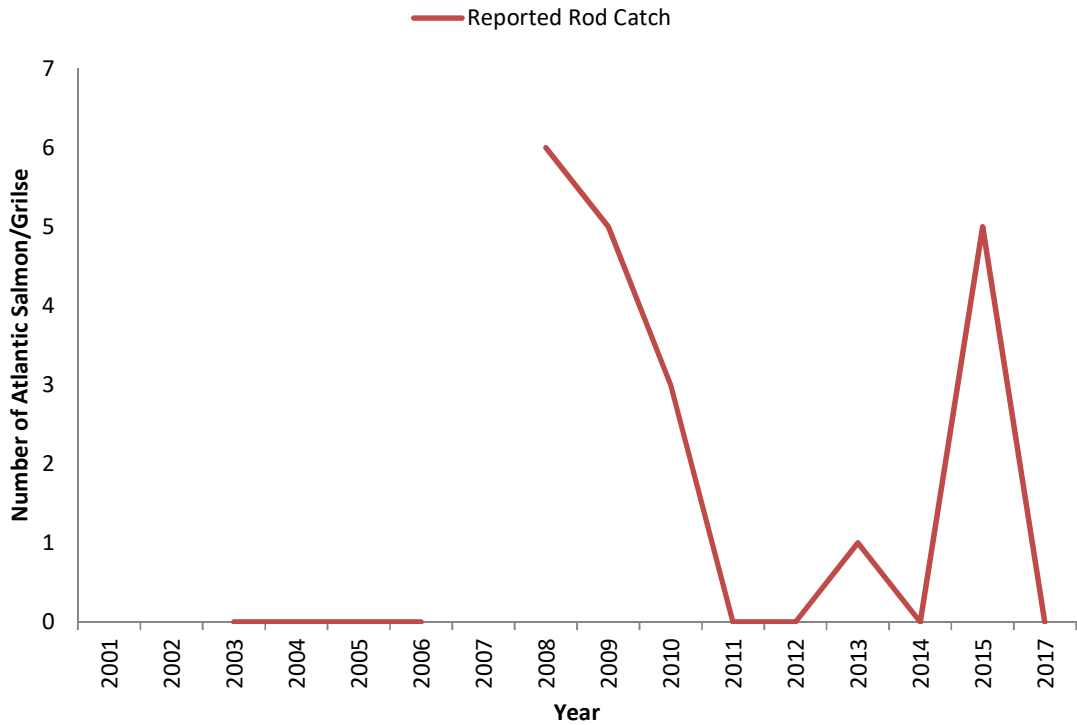


Fig.4 Newry/Clanrye River reported rod catch 2001-2017.

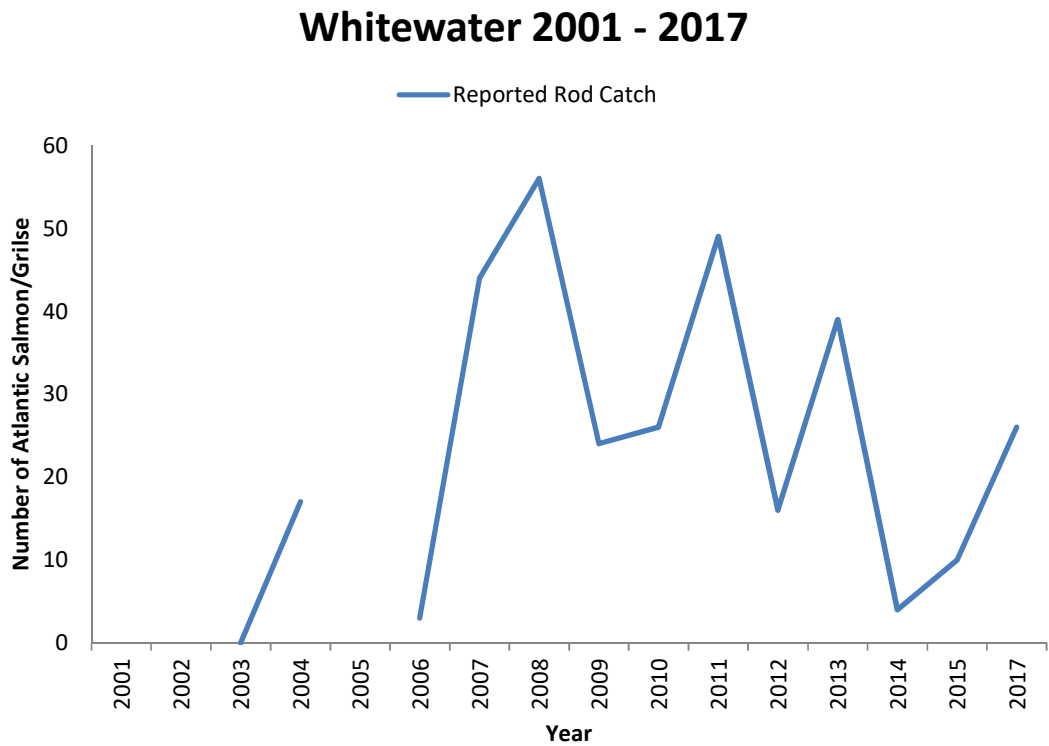


Fig.5 Whitewater River reported rod catch 2001-2017.

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 freshwaters. The counters are used to assess the attainment of conservation limits and management targets for key catchments.

In 2017 the Newry fish count as recorded by the electronic fish counter was 1920.



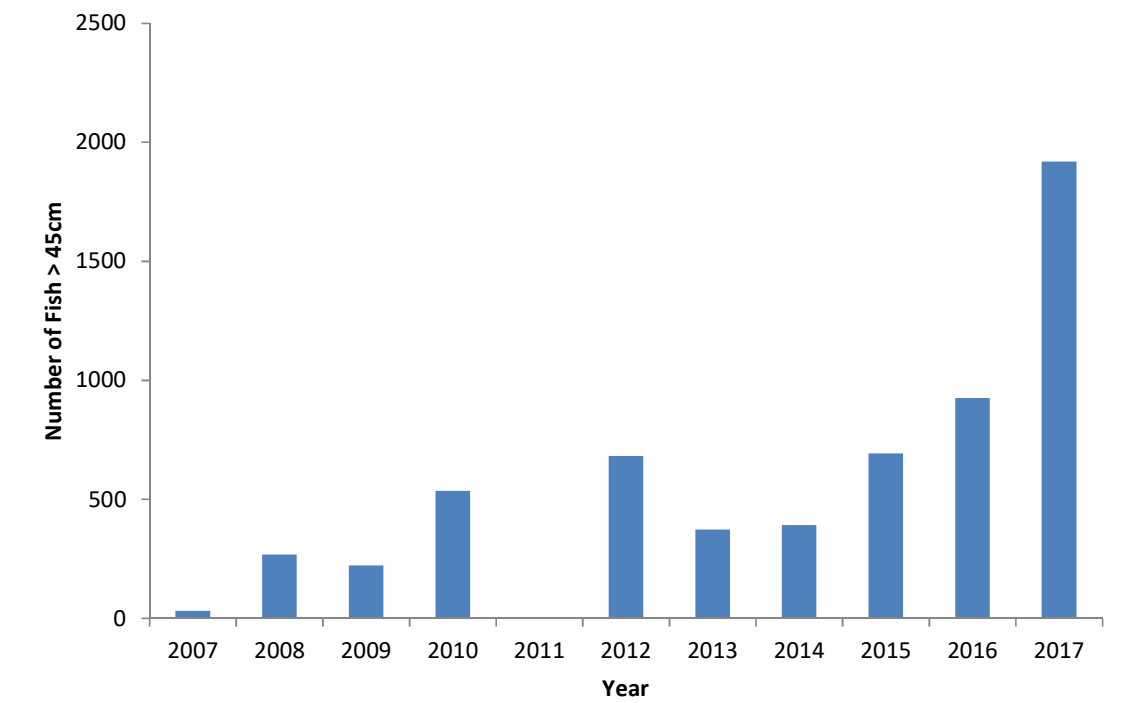


Fig.6 Newry River electronic fish counter figures 2007 to 2017 *Note partial count only recorded for 2007 from September to end of year. Counter was not operational during 2011.

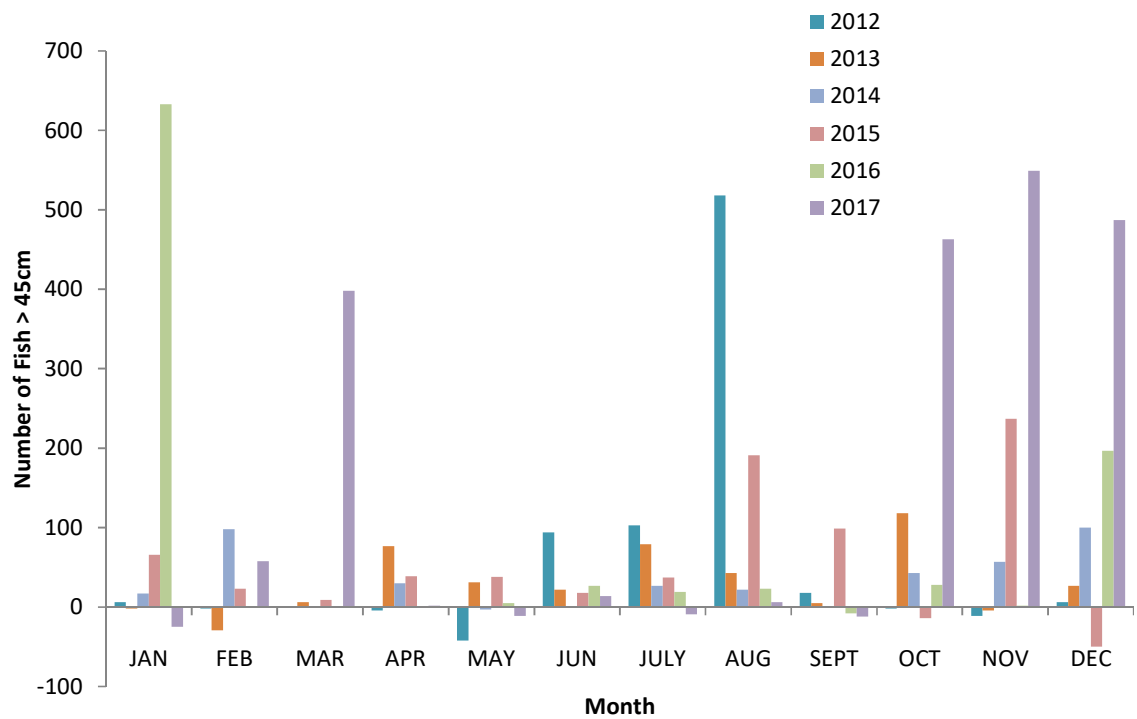


Fig.7 Newry River fish counter figures 2012-2017.

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 2017 the mean number of salmon fry (young of year) recorded at 6 monitoring stations within the Clanrye catchment was 0. The mean number of salmon fry recorded at 11 monitoring stations on the Whitewater River was 3.

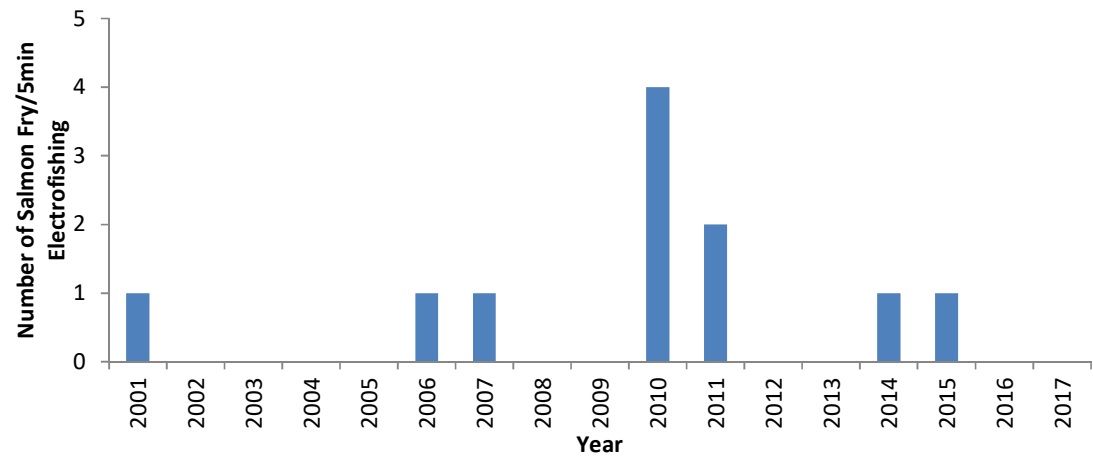


Fig.8 Clanrye salmon fry electrofishing index. Based on a fluctuating number of sites.

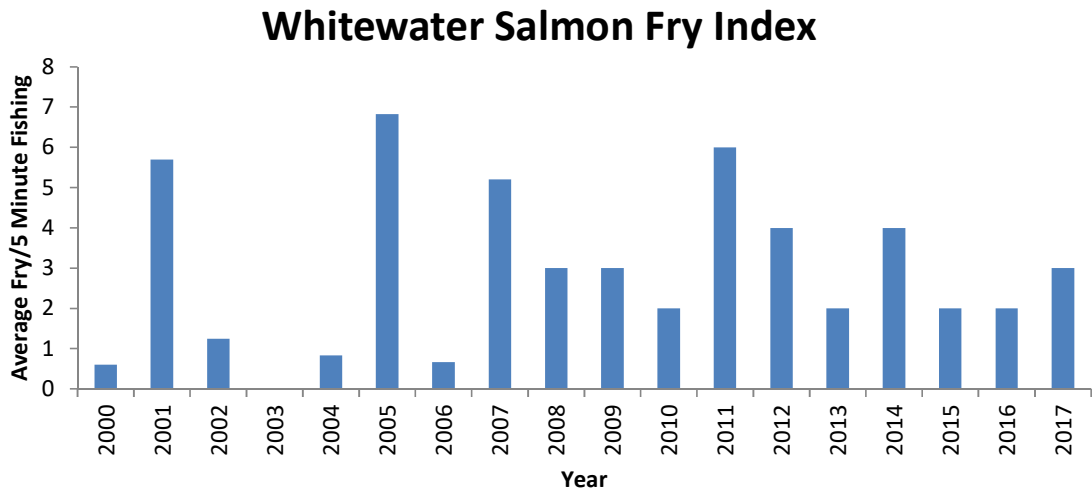


Fig.9 Whitewater River salmon fry electrofishing index. Based on a fluctuating number of sites.

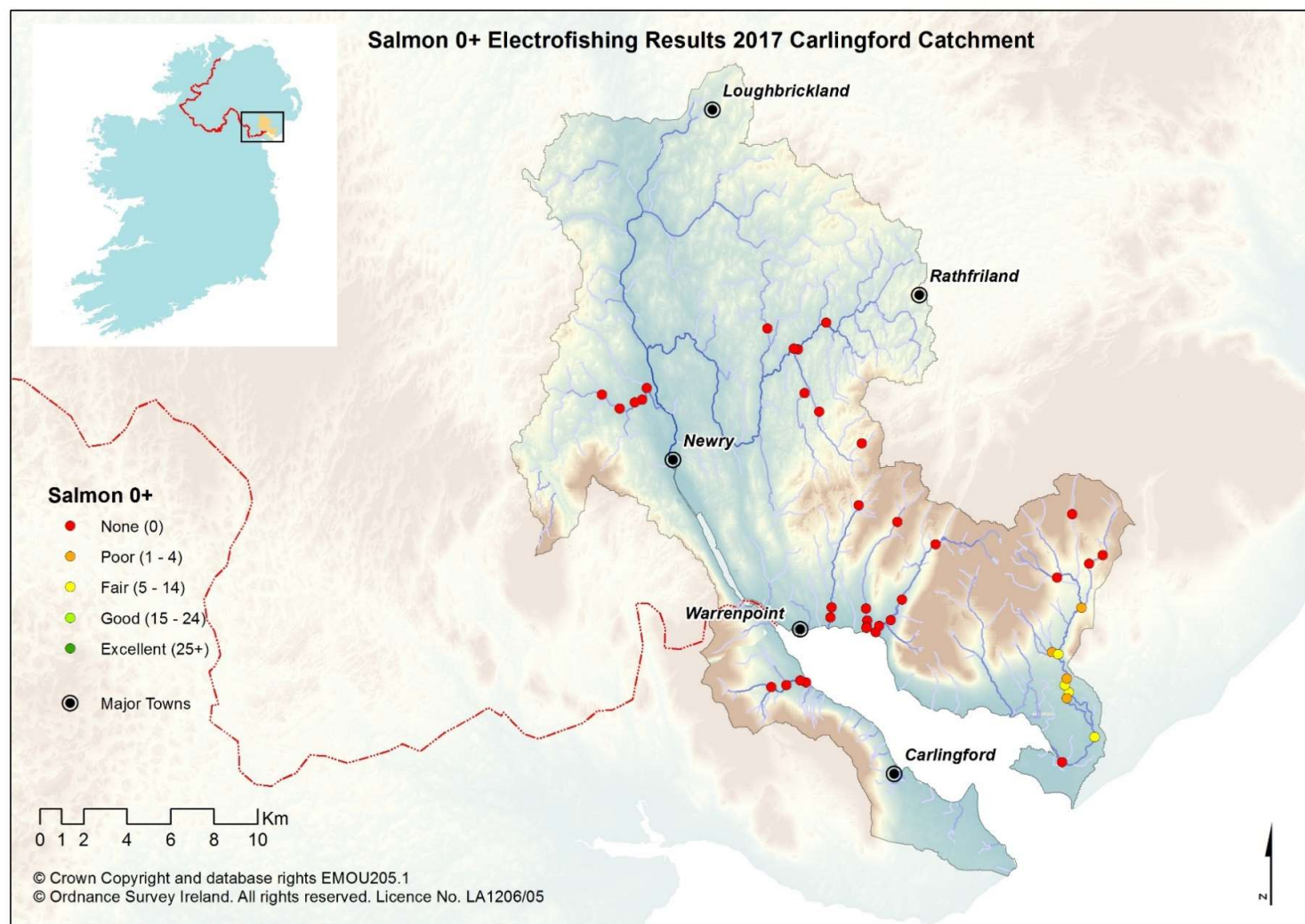


Fig.10 Carlingford salmon fry electrofishing classification 2017.

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 3.76% has been calculated for the 2016 cohort returning to the river in 2017. This is a decrease from the 6.66% marine survival rate recorded for the 2015 cohort, and is well below historic highs. Multi Sea Winter (MSW) Atlantic salmon appear to be doing slightly better.

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, 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 2017 the total declared Sea trout rod catch for the Foyle and Carlingford areas was 371. Total declared rod catch for the Carlingford catchments was 114. Total declared Brown trout rod catch for the Foyle and Carlingford areas was 312.
- In 2017 juvenile electrofishing surveys within the Clanrye catchment at 6 sites recorded an average of 2 trout fry. Within the Whitewater catchment at 12 sites, an average of 8 trout fry were recorded.
- Declines in sea trout stocks have been observed in parts of Ireland and the west coast of Scotland. Diverse reasons for population declines have been proposed and are currently being investigated.
- The Loughs Agency will continue to conduct monitoring as part of various trout research projects in 2018 which will monitor local sea trout.

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 2017 sea trout monitoring projects were conducted on a tributary of the Burdennet the River Mourne and River Finn. 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.

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.

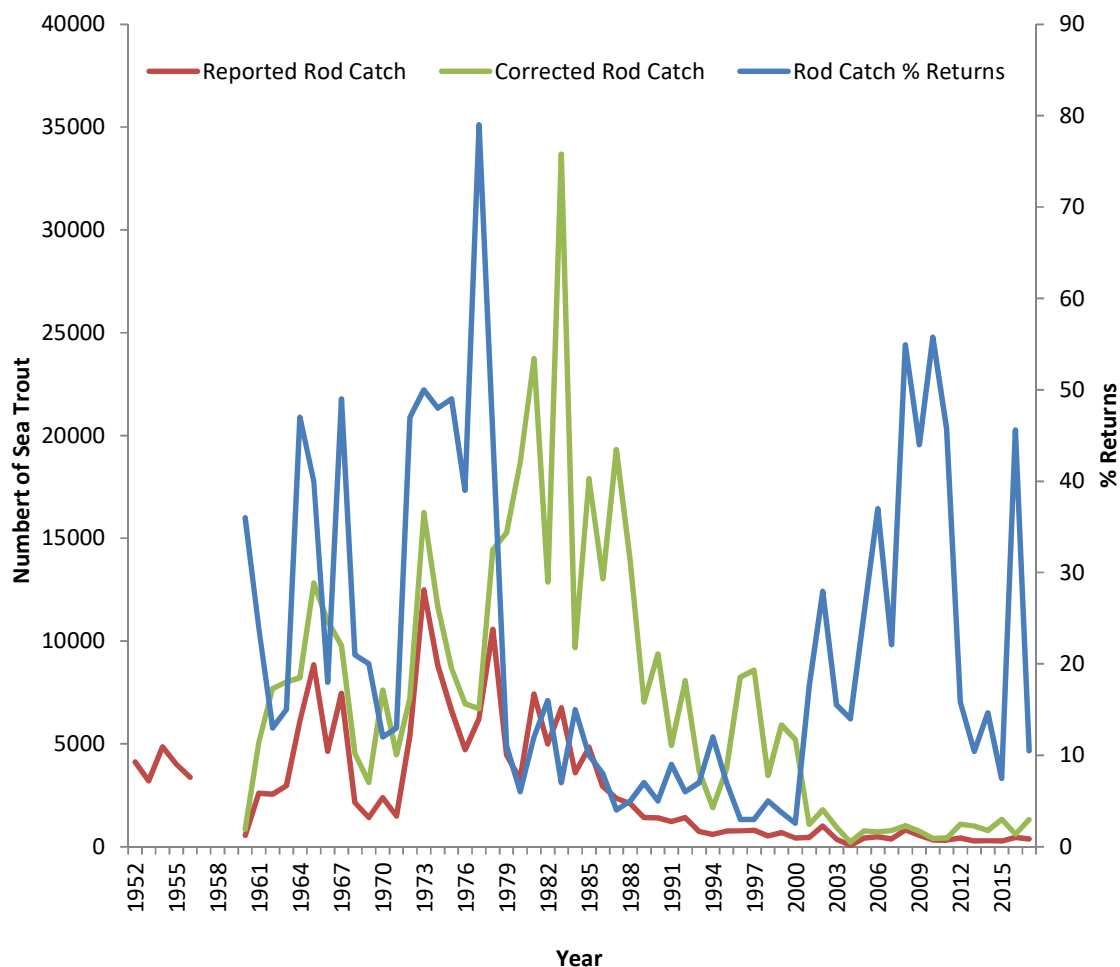


Fig.11 Loughs Agency reported and corrected rod catch (Sea trout) with % returns made.

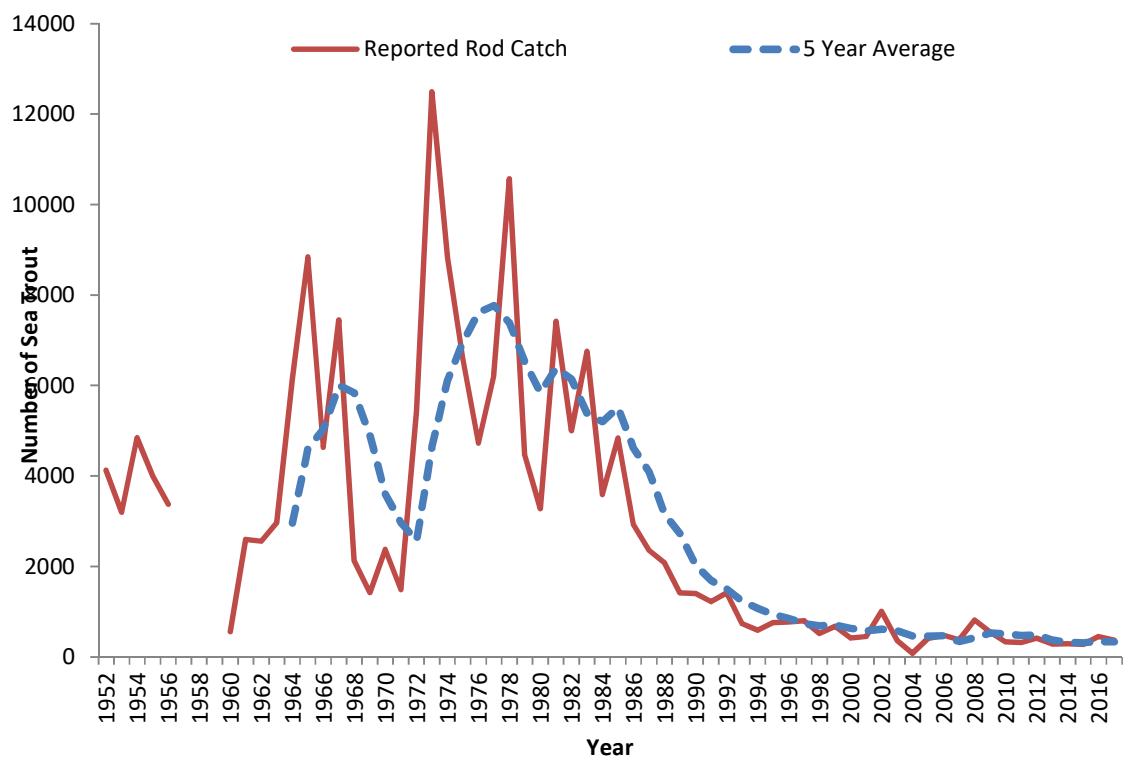


Fig.12 Reported rod catch for Sea trout in the Loughs Agency area and 5 year average.

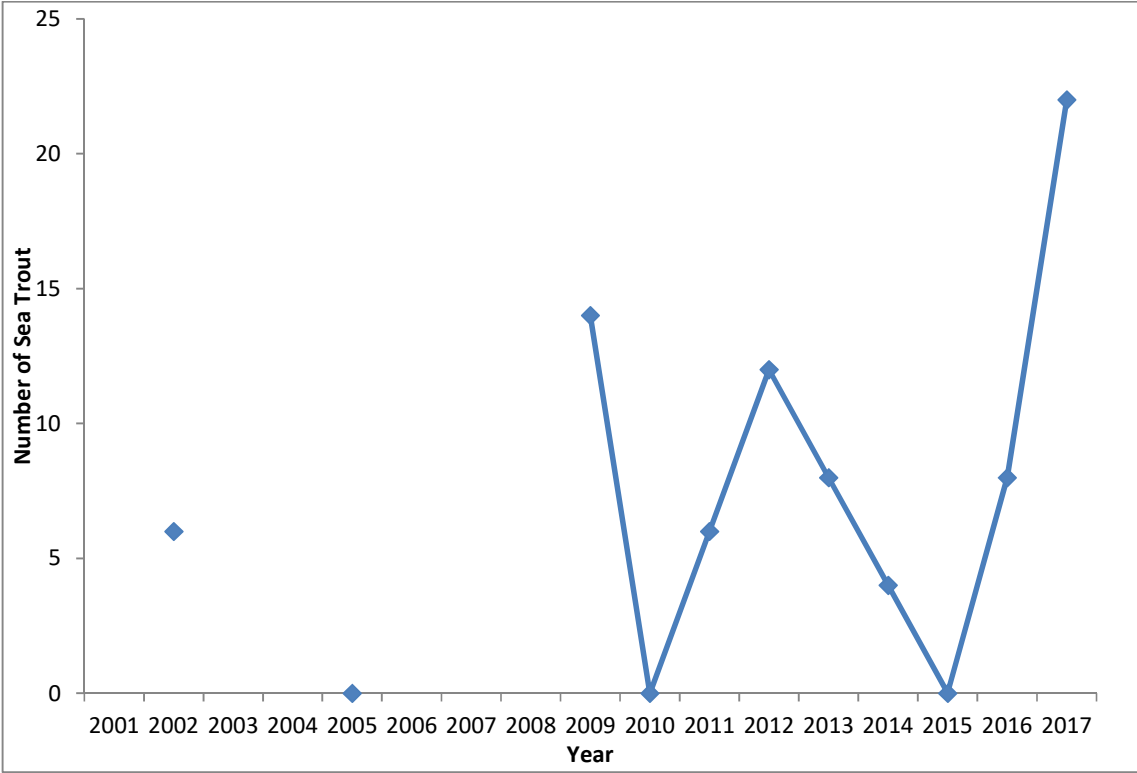


Fig.13 Newry/Clanrye catchment reported Sea trout rod catch.

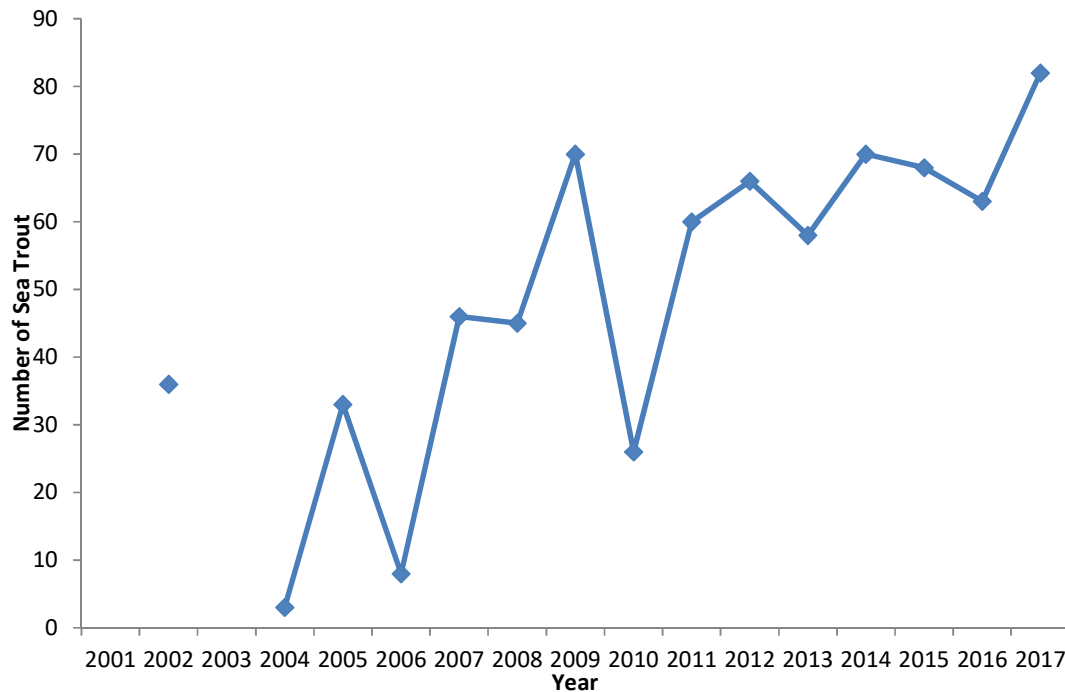


Fig.14 Whitewater catchment reported Sea trout rod catch.

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 2017 the mean number of trout fry (young of year) recorded at 6 monitoring stations within the Clanrye catchment was 2. The mean number of trout fry recorded at 11 monitoring stations within the Whitewater River was 9.



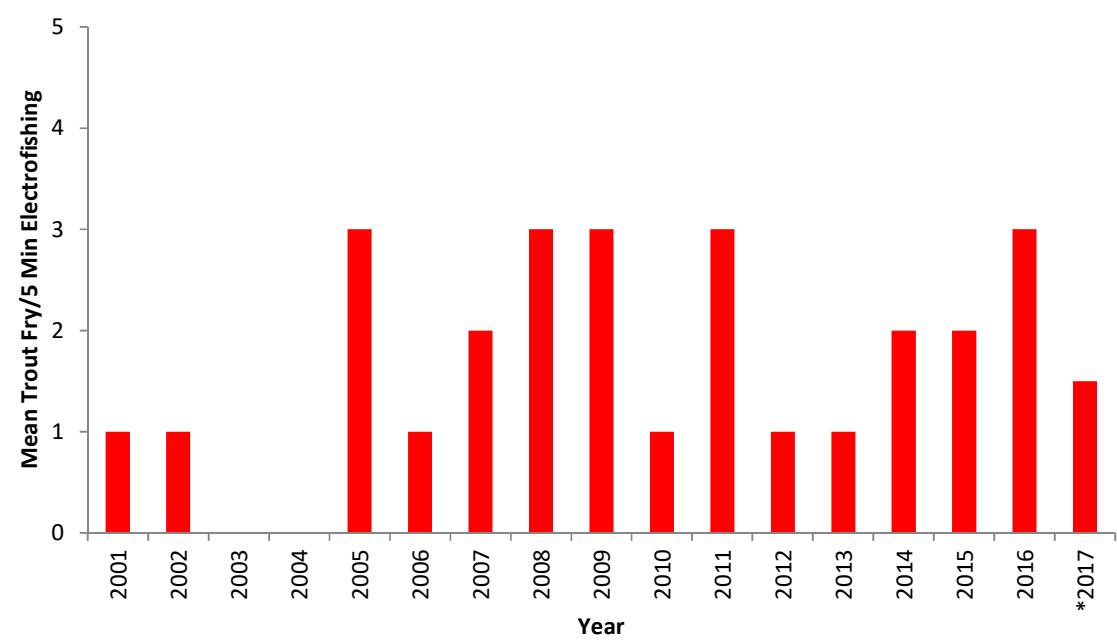


Fig.15 Newry/Clanrye trout fry index 2001-2017. Based on a fluctuating number of sites. * Denotes no site fished on the Newry River in 2017

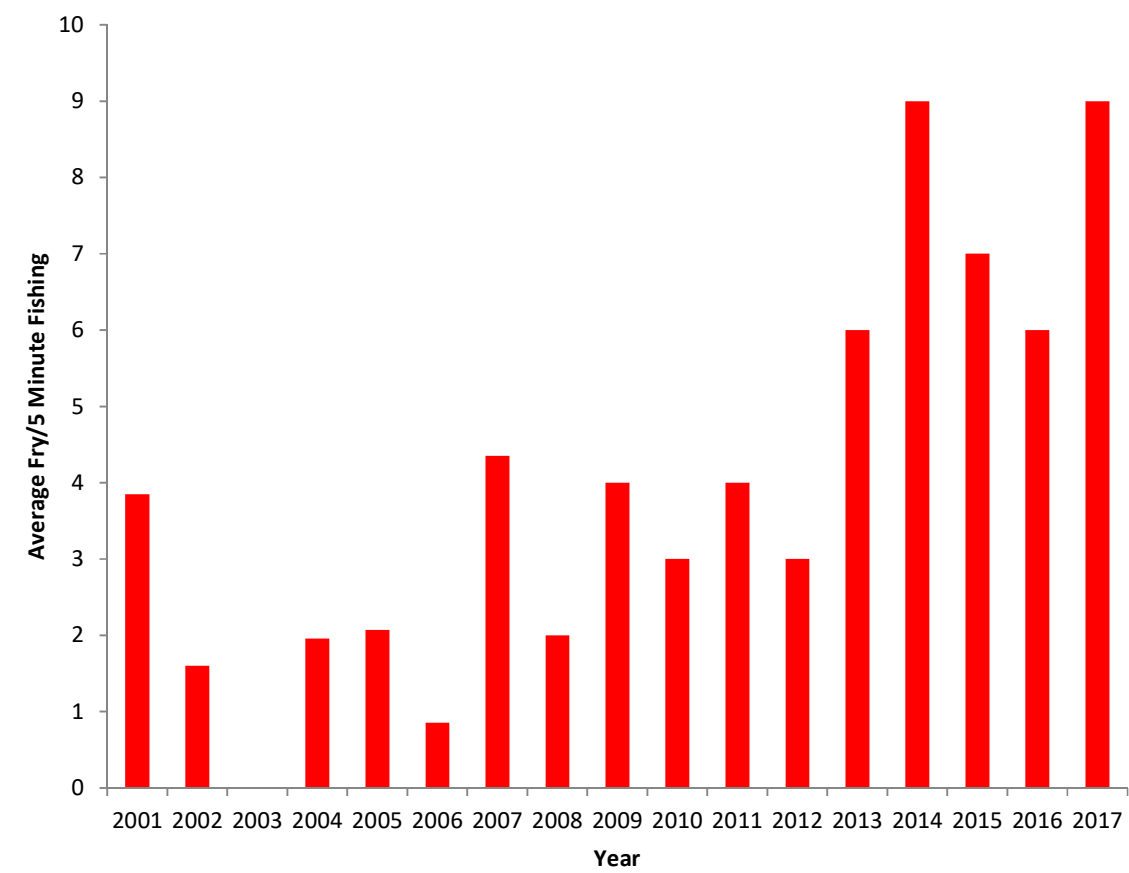


Fig.16 Whitewater trout fry index 2001-2017. Based on a fluctuating number of sites.

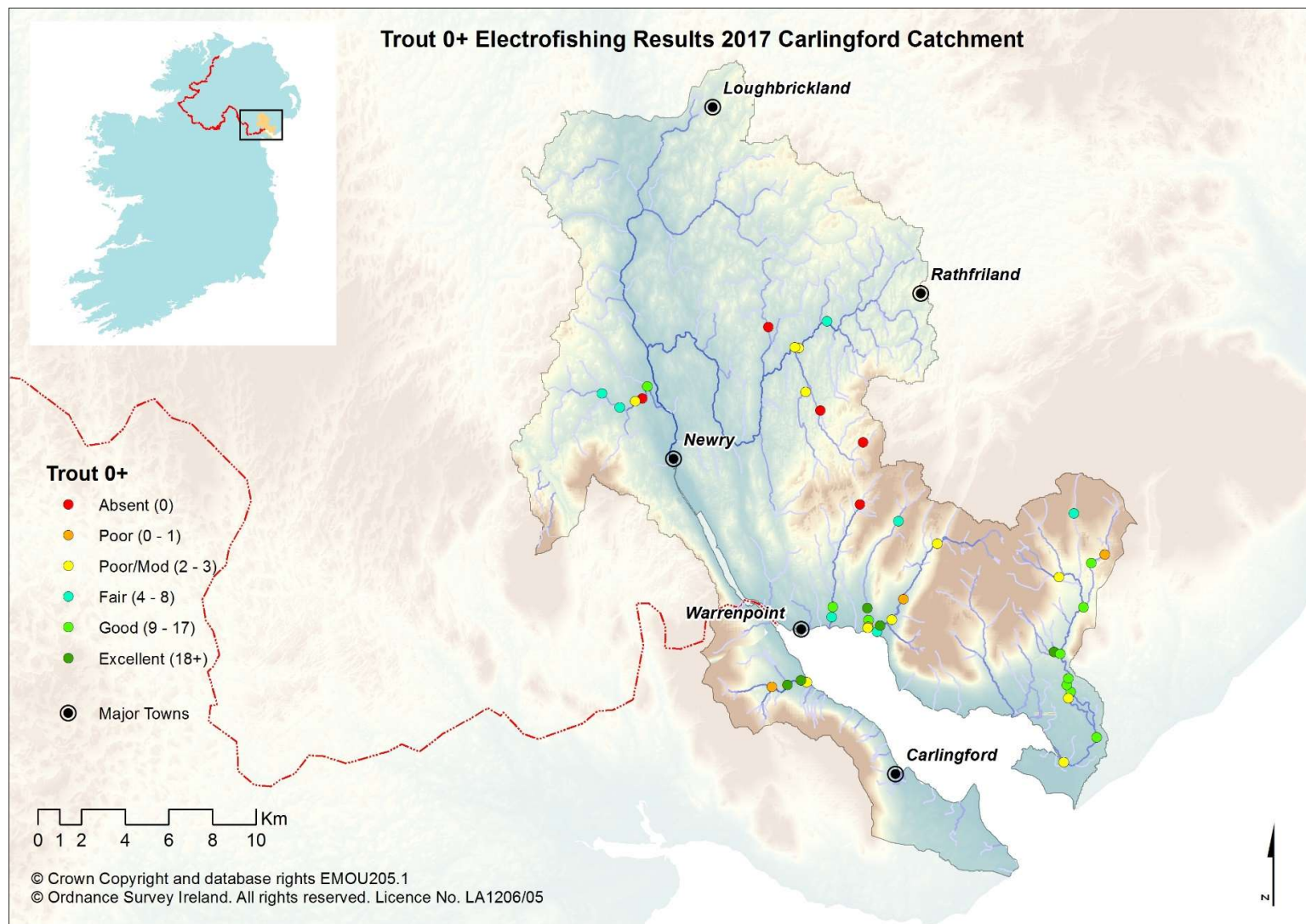


Fig.17 Carlingford area trout fry electrofishing classifications 2017.

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. In order to extend the baseline of information future expansion of the monitoring programmes could include the development of a Trout redd index on key tributaries. This would facilitate the analysis of trends over time and the effects of any remedial works. Adult Sea trout electrofishing surveys could also be conducted to gain key biological information which could assist with regulating catch size. The Carlingford catchments are significant habitats for Sea trout. Within the Carlingford area there is competition with Atlantic salmon for feeding territories. While both species have slightly different habitat requirements at times they do overlap. The general trend is that salmon dominate the main stem and swifter water while trout dominate the smaller tributaries.

Ongoing monitoring is essential for the development of appropriate and contemporary regulation of the rod fishery.



Fig.18 Electrofishing survey being conducted on the Killbroney River in 2017

4.0 SUMMARY OF OTHER SURVEYS AND FISH STOCK ASSESSMENTS

- Nine Water Framework Directive fish surveillance monitoring stations were surveyed within the Foyle & Carlingford areas in 2017. One of these surveys was carried out within the Carlingford area.
- Further details can be found in the 2017 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 Camlough in 2016. This was the first survey of this type conducted on Camlough and has provided a baseline of information from which to base future management.
- A method for validating the Newry River electronic fish counter was tested in 2016 and involved setting a wing net immediately upstream of the counter. The net was successfully deployed.
- In 2017 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 2017, 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.

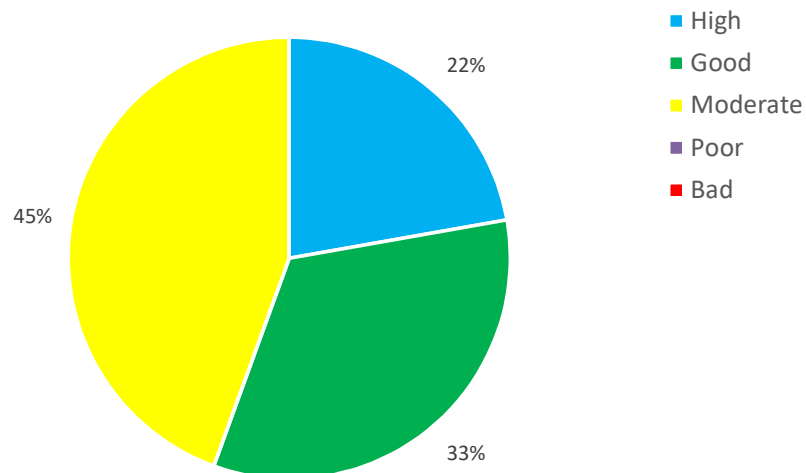
4.1 WATER FRAMEWORK DIRECTIVE FISH MONITORING

The WFD 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 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 2017 the Loughs Agency monitored nine surveillance stations including one in the Carlingford area.

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 and 45% as moderate status.



Fig.19 Sea trout from the Kilbroney River, 2017.



Classification in 2017 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 2017. Additional indicative classifications have been derived for water bodies within the Foyle and Carlingford areas where certain criteria have been applied to semi quantitative Salmon Management Plan 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 available under the publication section of the Loughs Agency website.



Fig. 20 WFD fish monitoring on the Kilbroney River 2017

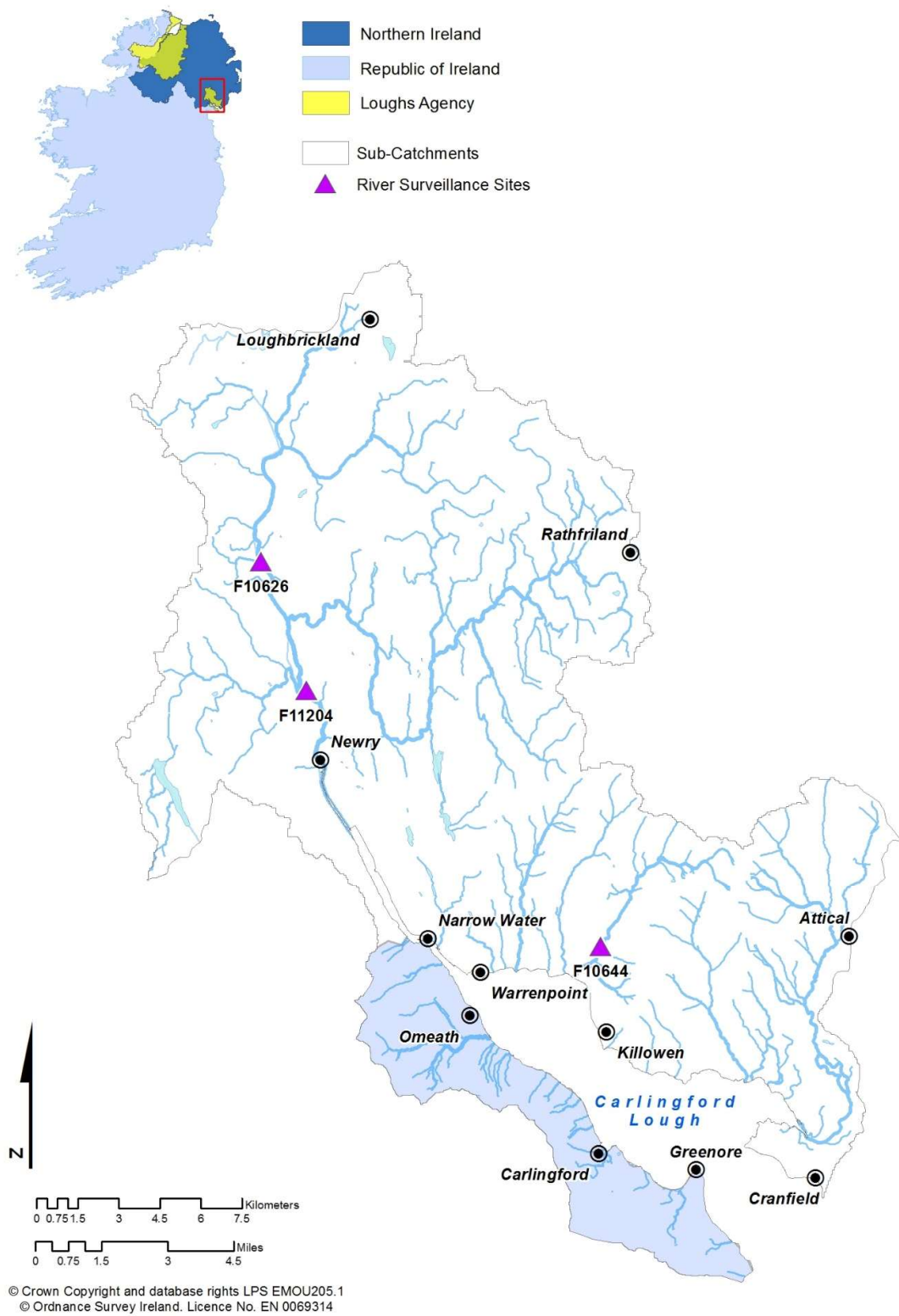


Fig.21 Water Framework Directive fish surveillance monitoring stations within the Carlingford area.

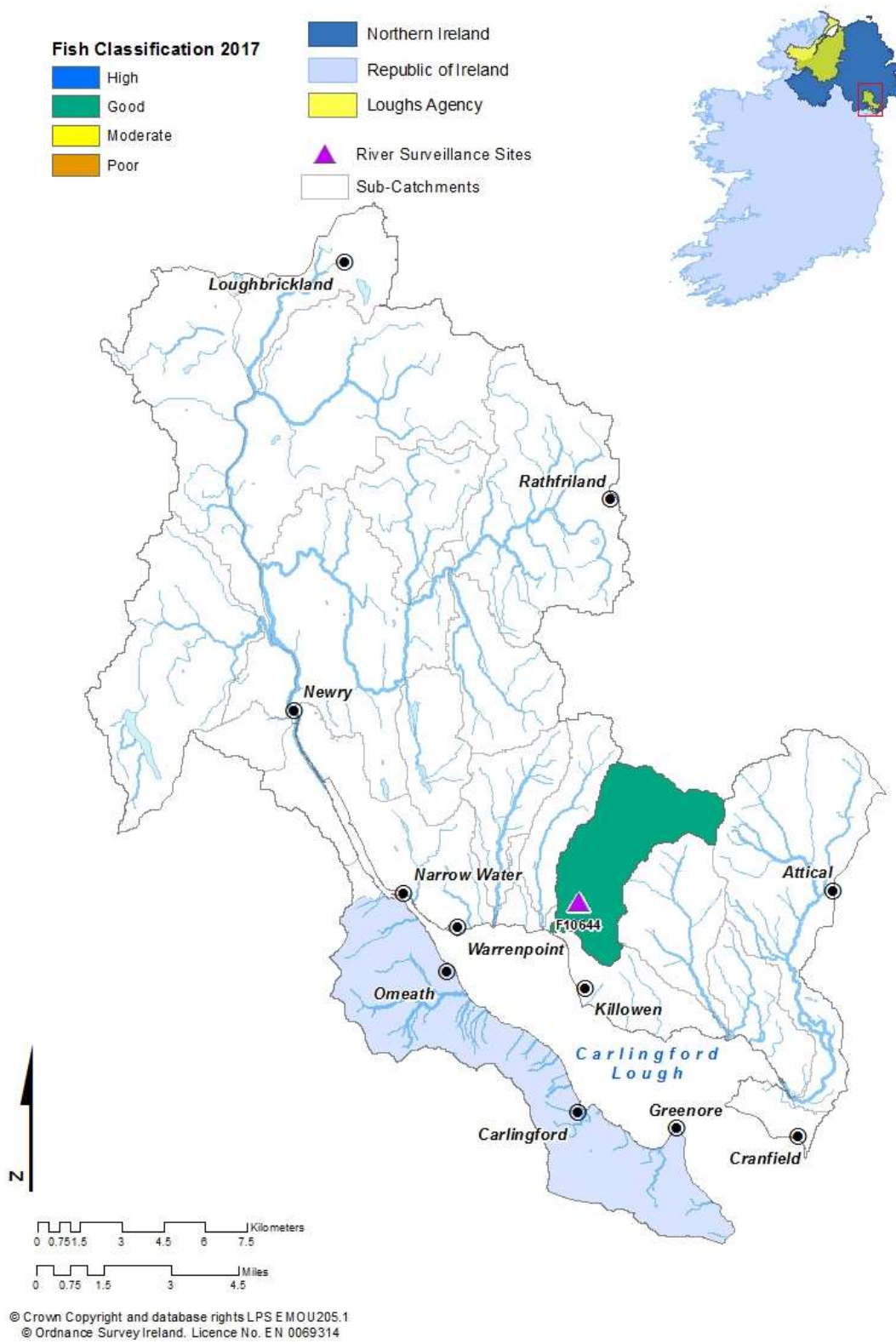


Fig.22 Loughs Agency WFD fish surveillance water body classifications 2017 Carlingford area

4.2 INVASIVE SPECIES AND BARRIERS TO MIGRATION

Controlling priority Invasive species and Restoring native Biodiversity (**CIRB**) project. **CIRB** was an INTERREG IVA funded project co-ordinated across three jurisdictions including Northern Ireland Republic of Ireland and Scotland. The partners include Queens University Belfast, University of Ulster, Rivers and Fisheries Trusts Scotland (RAFTS), Inland Fisheries Ireland, Tweed Foundation, Galloway Fisheries Trust and the Ayrshire Rivers Trust. A number of rivers within each jurisdiction including the Faughan and Newry catchments were chosen as demonstration sites where Invasive Non Native Species (INNS) were controlled and methods for restoring native biodiversity trialled. While the Loughs Agency was not a formal project partner it was a member of the steering group overseeing the project and has facilitated events and knowledge transfer.

The CIRB project was a good example of partnership working including the engagement of stakeholders to tackle a persistent issue. The CIRB project concluded in December 2014. Online resources can be found at <http://www.qub.ac.uk/research-centres/cirb/News/> <https://vimeo.com/113119046> & <https://vimeo.com/113110997>



Fig.23 Mapping invasive species on a handheld GIS.

5.0 SEA TROUT STATUS REPORT

A Sea trout status report has been developed which provides an appraisal of available historical and contemporary information on Sea trout populations in the Loughs Agency areas. Potential management measures are proposed for this important natural resource with a view to conserving, protecting and improving Sea trout populations and their habitats. The report highlights threats to and declines of Sea trout stocks and the potentially significant under reporting of small Sea trout.

An assessment of Loughs Agency survey data suggests that it would be appropriate to recommend the setting of 'slot limits' when deciding the size and numbers of Sea trout which anglers are permitted to retain. This could be implemented through direct regulation by the Loughs Agency, a voluntary code of best practice or through angling association rules/permit conditions. Controlling the taking of Sea trout within clearly defined size limits could conserve and protect active breeders while maintaining the option for retaining a predetermined number of Sea trout. The concept of "slot limits" is a common fishery management tool used in other jurisdictions which can facilitate a more tailored approach to individual river/stock management. It is evidence based management in practice. The Sea trout Status Report can be accessed on the Loughs Agency website.



Fig. 24 Sea trout

6.0 FISHERIES HABITAT IMPROVEMENT

In 2017 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

7.0 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 2017/18 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 art.niven@loughs-agency.org to discuss potential projects.



8.0 GENERAL ACTIONS FOR 2017/2018

- Communicate monitoring findings through various media to stakeholders.
- Implement and develop actions from the Trout Strategy.
- Continue to Implement and develop fisheries monitoring programme.
- 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.
- Work with interested statutory and non-statutory partners to improve water quality and native fish populations.

