



Foyle Area and Tributaries Catchment Status Report 2016

Conservation and assessment of fish
populations and aquatic habitats

Art Niven & Mark McCauley

August 2017



Conservation actions and assessments on 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

Headquarters
22, Victoria Road
Derry~Londonderry
BT47 2AB
Northern Ireland

Tel: +44(0)28 71 342100

Fax: +44(0)28 71 342720

general@loughs-agency.org

www.loughs-agency.org

Regional Office
Dundalk Street
Carlingford
Co Louth
Republic of Ireland

Tel+353(0)42 938 3888

Fax+353(0)42 938 3888

carlingford@loughs-agency.org

www.loughs-agency.org



Report Reference LA/CSR/F/17

Written and Prepared by Art Niven & Mark McCauley

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

DOCUMENT CONTROL

Name of Document	Foyle Area and Tributaries Catchment Status Report 2016				
Author (s):	Art Niven & Mark McCauley				
Authorised Officer:	John McCartney				
Description of Content:	Conservation and assessment of fish populations				
Approved by:	John McCartney				
Date of Approval:	31/08/17				
Assigned review period:	12 months				
Date of next review:	31/07/18				
Document Code	LA/CSR/F/17				
This documents comprises	TOC	Text	List of tables	Table of Figures	No. Appendices
	X	X	X	X	

Version Control Table

Version No.	Status	Author (s)	Reviewed by	Approved by	Data of issue
Version 1	Draft	Art Niven M. McCauley	Art Niven	John McCartney	31/08/17
Revision 2					
Version 3					

TABLE OF CONTENTS

TABLE OF CONTENTS	4
1.0 INTRODUCTION	8
2.0 ATLANTIC SALMON STOCKS SUMMARY.....	9
2.1 NET FISHERIES	10
Fig.1 Atlantic Salmon total commercial catch 1952-2016 and 5 year average total commercial catch.	10
2.2 ROD CATCH.....	11
Fig 2. Loughs Agency reported and corrected rod catch with % returns made.....	12
Fig.3 Reported rod catch for salmon/grilse in the Loughs Agency area and 5 year average.....	12
2.3 FISH COUNTERS.....	13
Fig.4 River Mourne annual fish counts with 5 year average, management target and conservation limit.	13
Fig.5 River Mourne monthly fish counts.....	14
Fig.6 River Finn annual fish counts with 5 year average, management target and conservation limit.	14
Fig.7 River Finn monthly fish counts.....	15
Fig.8 River Faughan annual fish counts with 5 year average, management target and conservation limit	15
Fig.9 River Faughan monthly fish counts.....	16
Fig.10 River Roe annual fish counts with 5 year average, management target and conservation limit.	16
Fig.11 River Roe monthly fish counts.	17
2.4 REDD COUNTS	17
Fig.12 Annual redd counts and 5 year running average.....	17
2.5 JUVENILE ABUNDANCE/ELECTROFISHING SURVEYS.....	18

Fig.13 Foyle area salmon fry index comparison chart 2016.....	18
Fig.14 Foyle area salmon fry electrofishing classifications 2016.....	19
2.6 MARINE SURVIVAL.....	20
2.7 DISCUSSION	20
3.0 TROUT STOCKS SUMMARY	21
3.1 ROD CATCH.....	22
Fig.15 Loughs Agency reported and corrected rod catch (Sea trout) with % returns made.	23
Fig.16 Reported rod catch for Sea trout in the Loughs Agency area and 5 year average.	24
3.2 JUVENILE ABUNDANCE/ELECTROFISHING SURVEYS.....	24
Fig.17 Foyle area trout fry index comparison chart 2015	24
Fig.18 Foyle area trout fry electrofishing classifications 2016.	25
3.3 DISCUSSION	26
Fig.19 Sea trout captured during electrofishing survey on the Altnaghree Burn, 2016.	26
4.0 SUMMARY OF OTHER SURVEYS AND FISH STOCK ASSESSMENTS	27
4.1 WATER FRAMEWORK DIRECTIVE FISH MONITORING	28
Fig.20 Atlantic salmon parr from the Bredagh River, 2016.....	28
Fig.21 Stop net on the Cappagh Burn, 2016.	29
Fig.22 Water Framework Directive fish surveillance monitoring stations within the Foyle area.	30
Fig.23 Loughs Agency WFD fish surveillance water body classifications 2016 Foyle area.....	31
Fig.24 Foyle area Semi-quantitative/salmon management plan derived indicative water body classifications 2016.	32
5.0 FOYLE SEA TROUT SURVEYS.....	33
5.1 SEA TROUT STATUS REPORT	33
6.0 RIVER FAUGHAN ROTARY SCREW TRAP.....	34

Fig.26 Rotary screw trap deployment on the River Faughan, 2016.	35
7.0 ASIAN CLAM (<i>Corbicula fluminea</i>).....	35
Fig 27. Asian clam <i>Corbicula fluminea</i> from the tidal River Foyle near the northern tip of Islandmore, March 2016.....	36
8.0 LAKE FISH SURVEYS.....	36
Fig 28. Depth survey transects for Enagh Lough East	37
Fig 29. Depth map and net locations for Enagh Lough East.....	38
Fig 30. Lake fish survey Enagh Lough East.	38
Fig 31. Trusk Lough bathymetry and net locations.	39
Fig 32. Gill net recovery from Trusk Lough, Co Donegal	39
9.0 EUROPEAN SMELT SURVEYS	40
Fig 33. Netting locations for 2016 European smelt survey	40
Fig 34. European smelt top and survey on the tidal River Foyle	41
10.0 RIVER MOURNE FISH COUNTER VALIDATION	42
Fig 35. Biological validation exercise on the River Mourne 2016.....	42
11.0 RIVER FINN HIB’s SURVEY	43
Fig 36. HIB’s survey on the Stranagoppogue River a tributary of the River Finn.....	43
12.0 DUCK AND SWANN MUSSEL SURVEY.....	43
Fig 37. Duck and Swan mussel survey 2016.....	44
13.0 FISHERIES HABITAT IMPROVEMENT	45
14.0 CATCHMENT INITIATIVES.....	45
15.0 GENERAL ACTIONS FOR 2017/2018	46



[@ArtNiven](#)



[Loughs Agency TV](#)

This document and its contents are copyright of the Loughs Agency ©2017

1.0 INTRODUCTION

2016 was another successful year for the Loughs Agency freshwater fisheries monitoring programme. Invaluable data was collected to inform management decision making across various project areas. This information has an internal audience for management purposes and a growing audience from a wide variety of external stakeholders.

This catchment status report aims to provide a timely synopsis of the key findings from across the range of Loughs Agency monitoring projects. The information may inform stakeholder decision making and it is hoped this information exchange can facilitate a growing awareness of the significant natural resources and assets that rely on healthy aquatic habitats within the Foyle and Carlingford areas.

The key long term data sets collected as part of the “audit point management system” for Atlantic salmon continue to be presented here and include rod catch, returning adult salmon fish counts derived from electronic fish counters, electrofishing surveys on juvenile Atlantic salmon and spawning counts.

Additional information reported on for 2016 includes the first record of the invasive non native species *Corbicula fluminea* (Asian clam) from the tidal River Foyle. Other key information collected during 2016 includes baseline information from a number of lake fish surveys, Water Framework Directive fish classifications, European smelt (a fish species of conservation interest) distribution and abundance, an expanded adult Sea trout monitoring project, adult Atlantic salmon monitoring, multi species monitoring on the River Faughan index site and habitat impacts, invasive species and barriers to fish migration monitoring.

The Loughs Agency continues to disseminate project findings across various media from traditional print, social media including Twitter, Facebook and YouTube and through direct presentations to interested stakeholders.

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

2.0 ATLANTIC SALMON STOCKS SUMMARY

- There were no net fisheries pursued for Atlantic salmon in the Foyle area in 2016. 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 for the Foyle and Carlingford area in 2016 was 2664. Catch and release for the Foyle and Carlingford areas was 51%.
- Returning adult Atlantic salmon counts derived from electronic fish counters in 2016 at Sion Mills on the River Mourne were 1350 salmon/grilse, Campsie Barrage on the River Faughan 3791, Limavady bypass on the River Roe 3809 and Killygordon on the River Finn 2589.
- Spawning redd counts for the Foyle area were 6738 in 2016/17. The dry winter weather provided excellent conditions to carry out extensive redd counting across all Foyle tributaries.
- Juvenile electrofishing surveys within the Foyle system at 322 sites recorded an average of 13 salmon fry (Young of Year).

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

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 subparagraph (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.

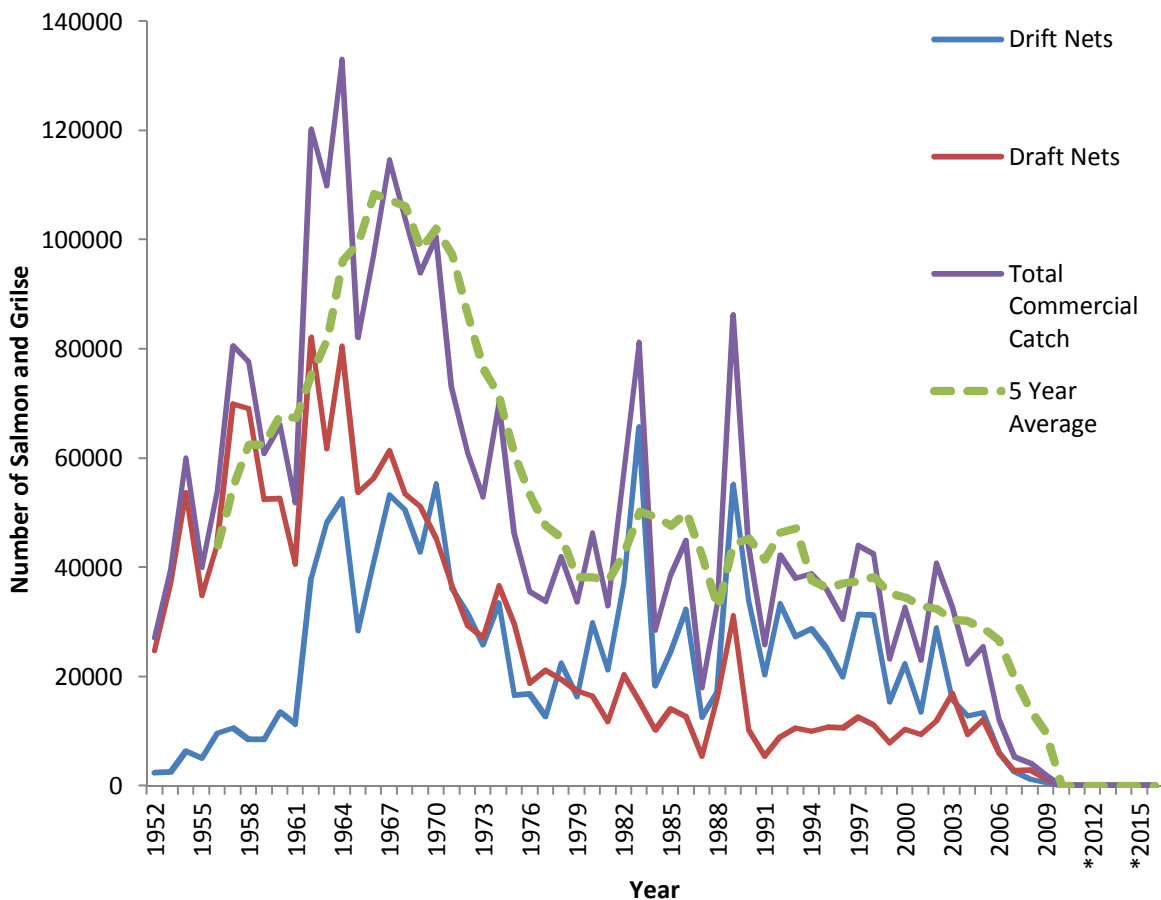


Fig.1 Atlantic Salmon total commercial catch 1952-2016 and 5 year average total commercial catch. * Denotes no commercial fisheries conducted since 2009

2.2 ROD CATCH

Total rod catch returns were 46% in 2016 (Figure 2). A total of 2664 salmon/grilse were caught in the Foyle and Carlingford areas in 2016 (Figure 2 & 3). 51% of the reported rod catch of salmon and grilse in the Foyle and Carlingford area were caught and released.

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.

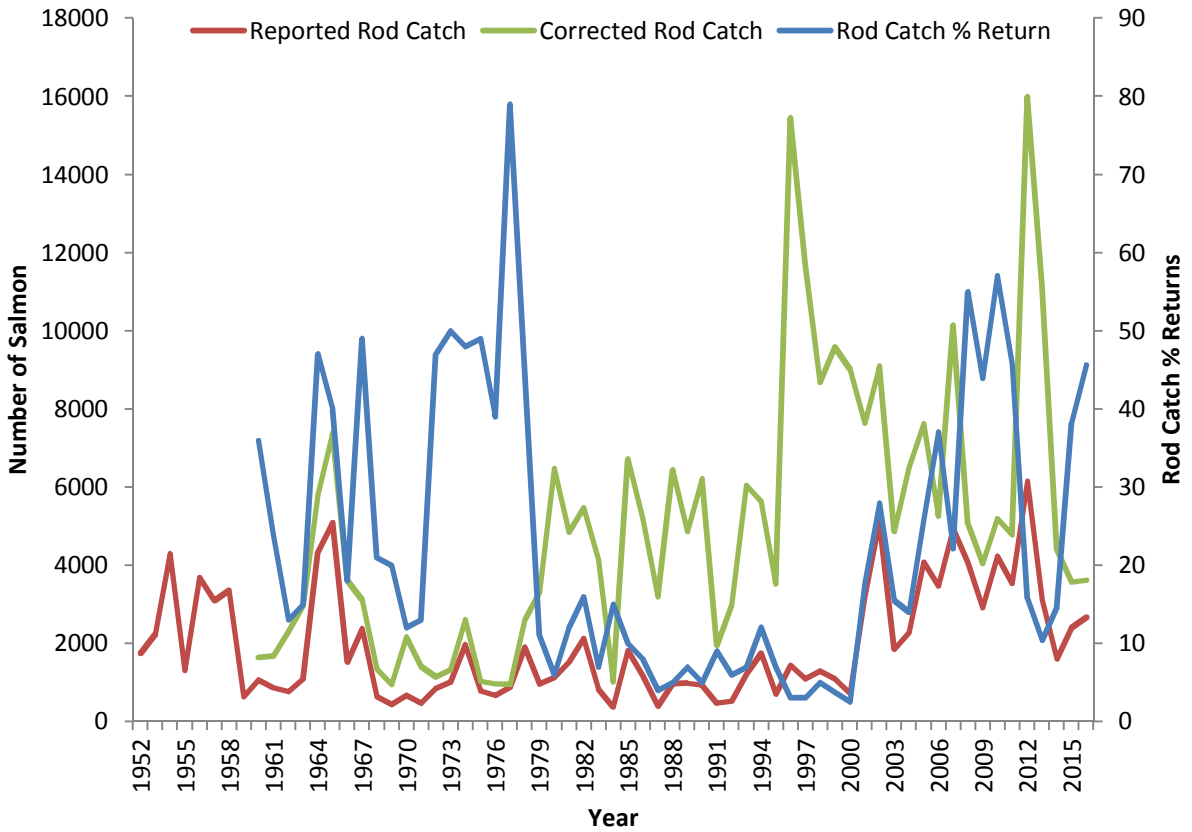


Fig 2. Loughs Agency reported and corrected rod catch with % returns made.

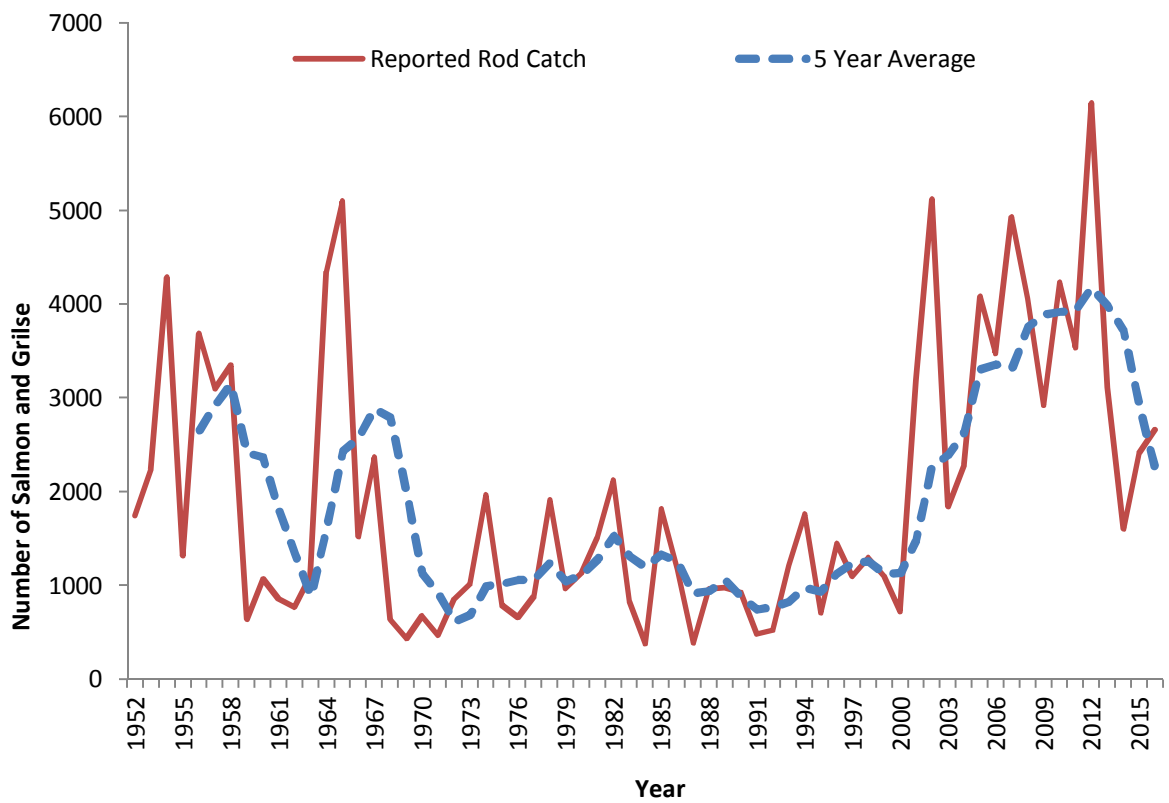


Fig.3 Reported rod catch for salmon/grilse in the Loughs Agency area and 5 year average.

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 2016 the key fish counts as recorded by the electronic fish counters on the River Mourne, River Faughan, River Roe and River Finn were; Mourne 1350 with a 5 year average of 2605, the management target for the Mourne is 8000 and the conservation limit is 6400. Faughan 3791 with a 5 year average of 2428, the management target for the Faughan is 800 and the conservation limit is 640. Roe 3809 with a 5 year average of 3486, the management target for the Roe is 1833 and the conservation limit is 1466. Finn 2589 with a 5 year average of 2859, the management target for the Finn is 5410 and the conservation limit is 4328.

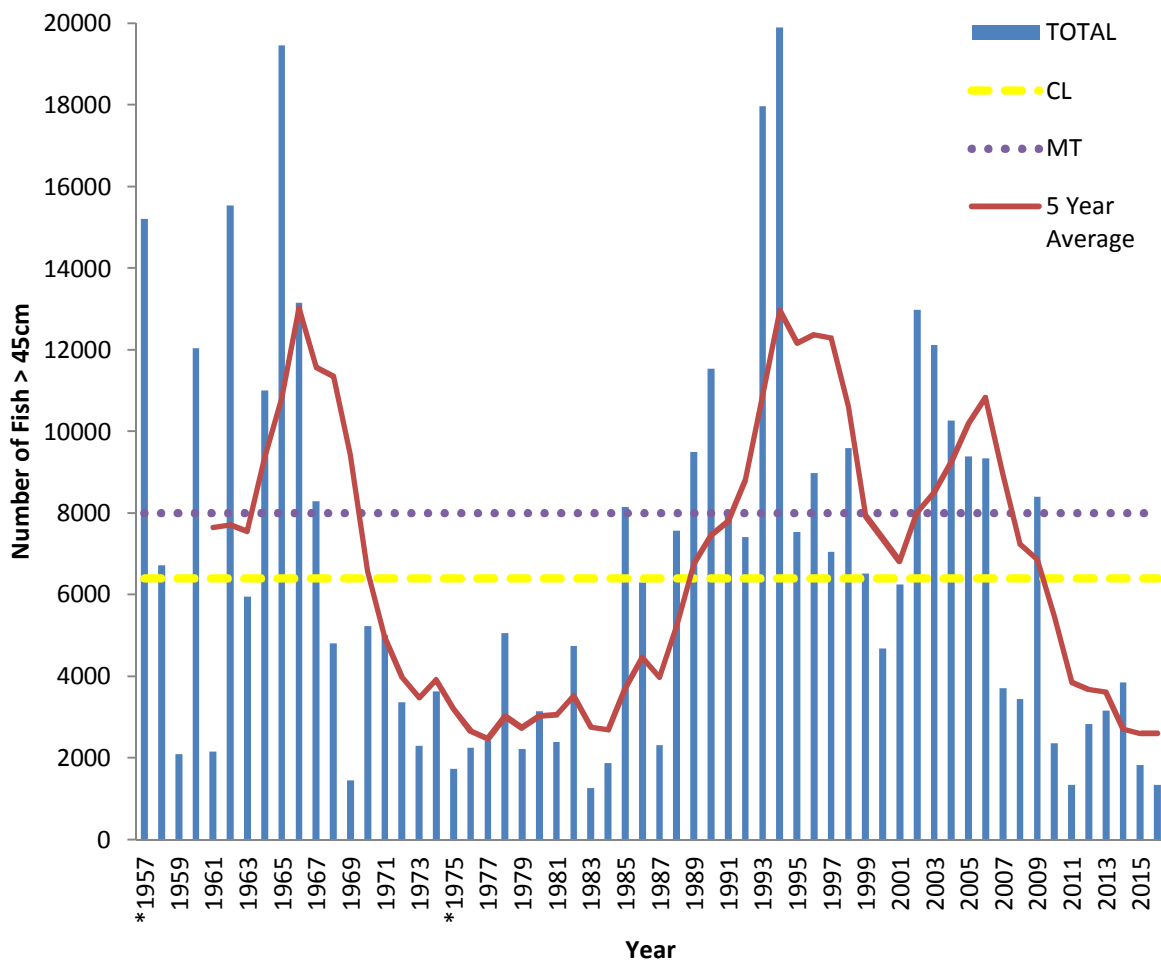


Fig.4 River Mourne annual fish counts with 5 year average, management target and conservation limit.

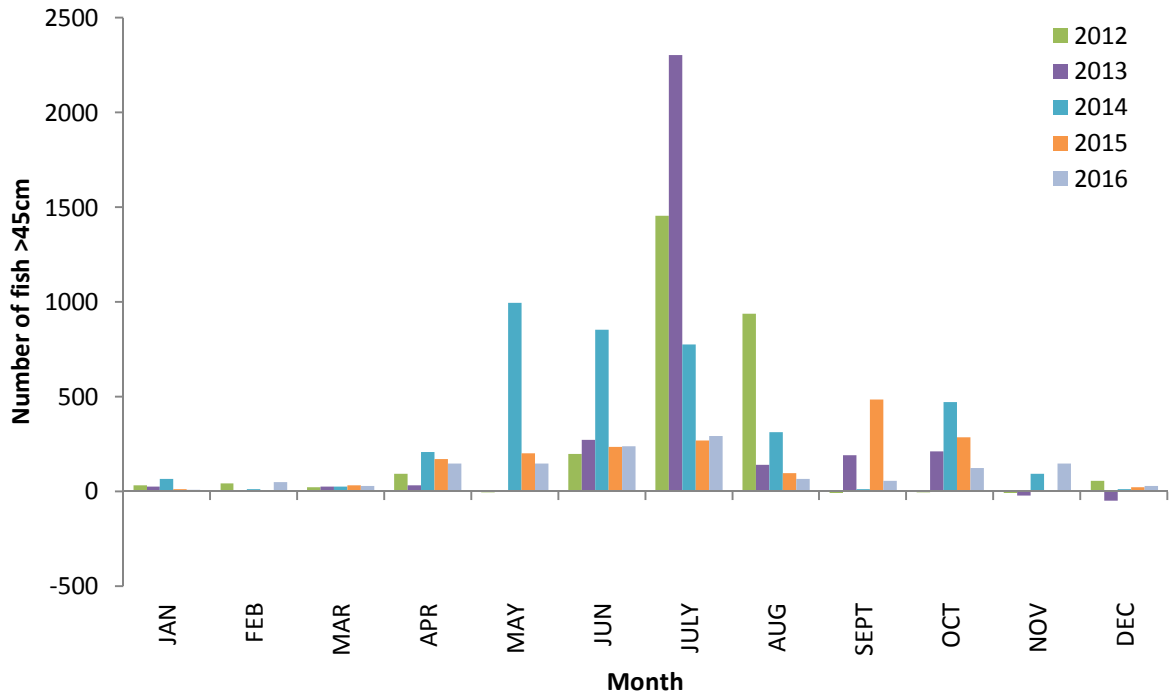


Fig.5 River Mourne monthly fish counts. Negative counts represent kelts moving downstream.

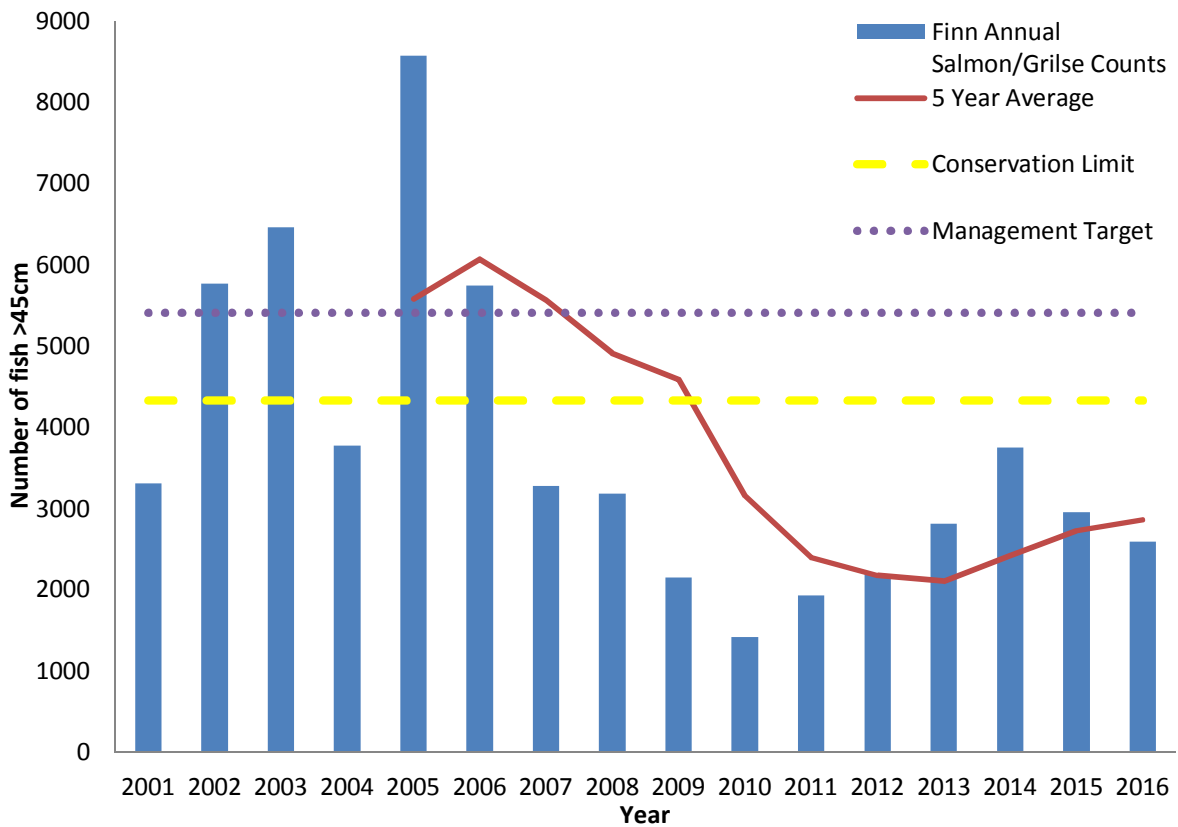


Fig.6 River Finn annual fish counts with 5 year average, management target and conservation limit.

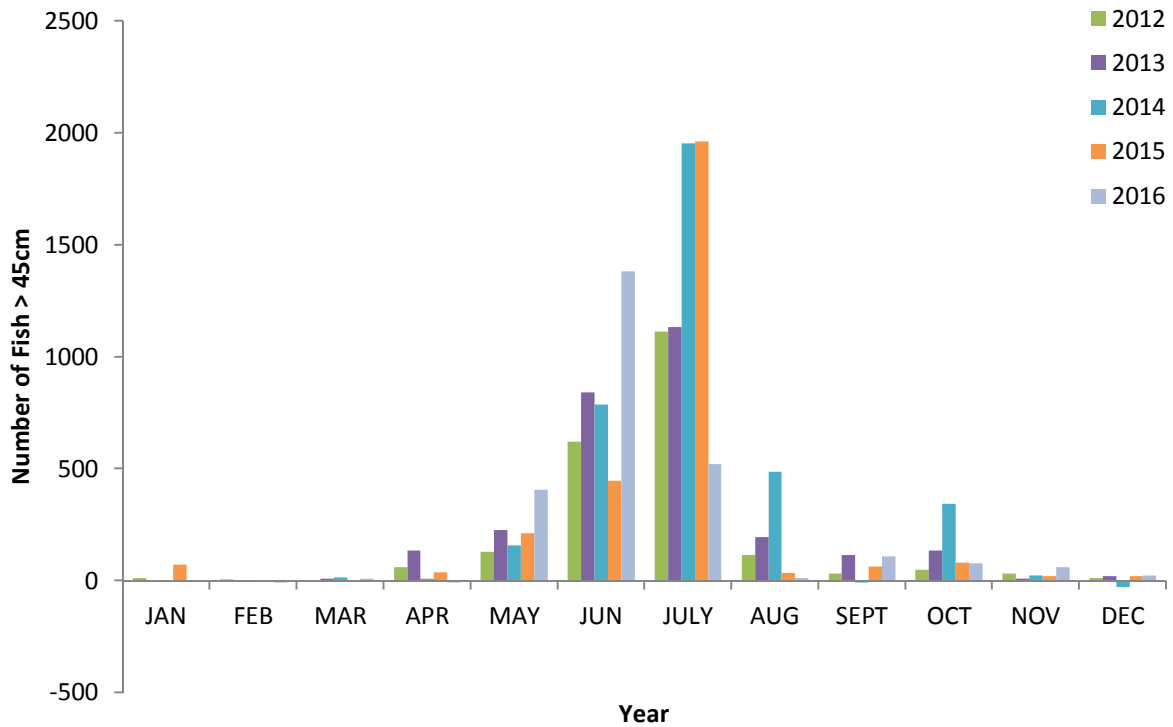


Fig.7 River Finn monthly fish counts. Negative counts represent kelts moving downstream.

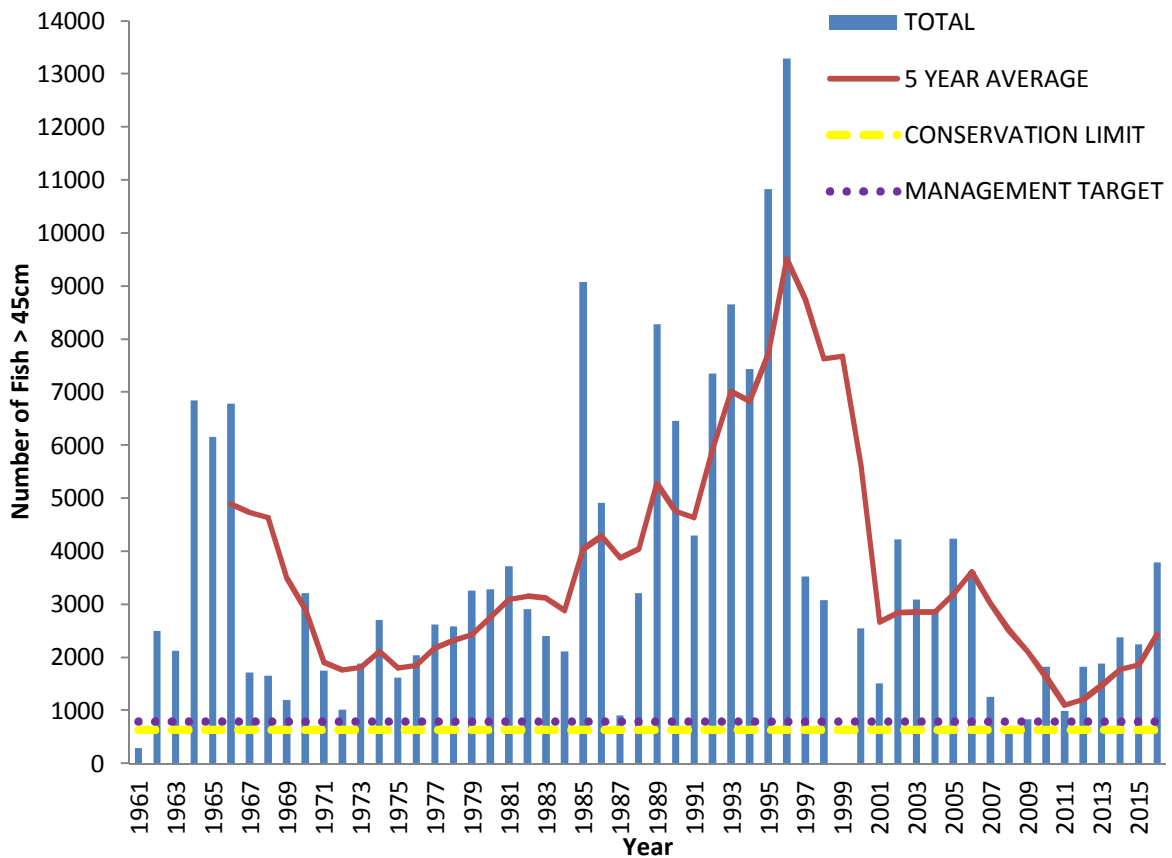


Fig.8 River Faughan annual fish counts with 5 year average, management target and conservation limit

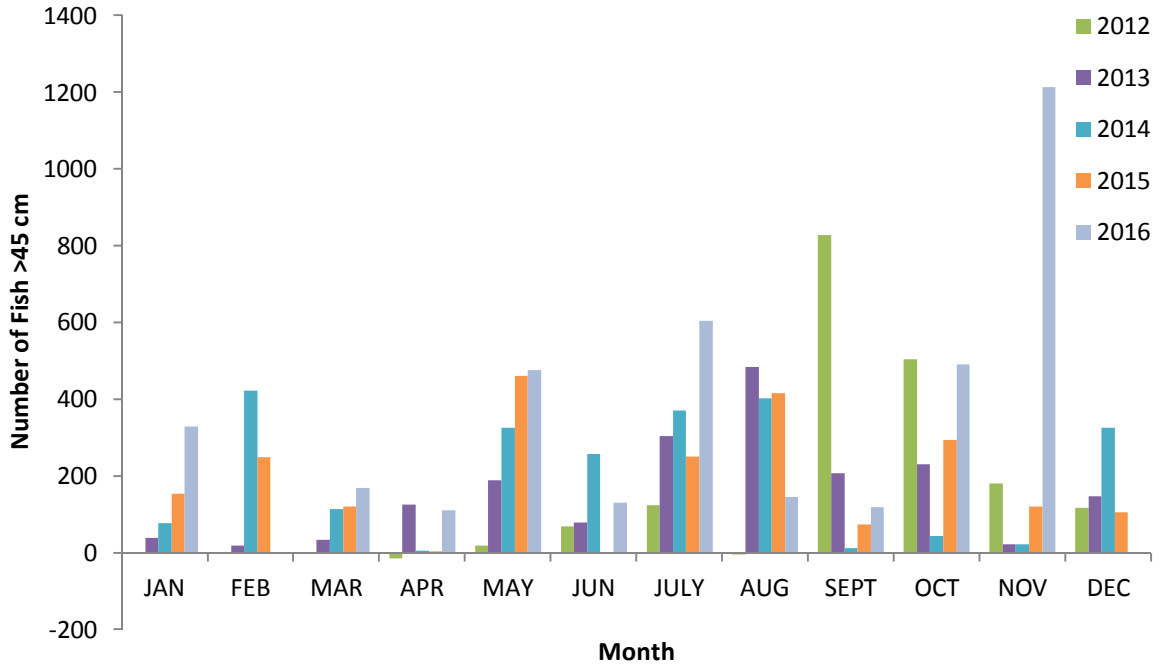


Fig.9 River Faughan monthly fish counts. Negative counts represent kelts moving downstream.

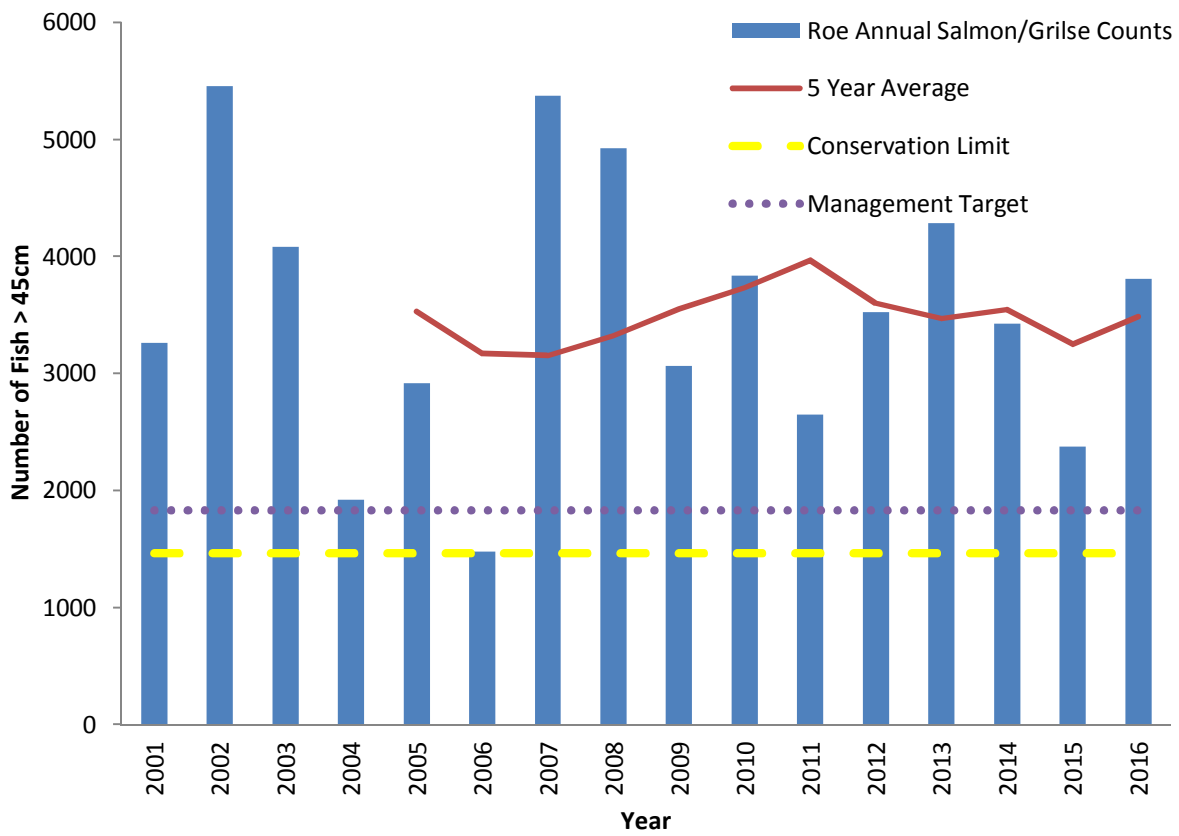


Fig.10 River Roe annual fish counts with 5 year average, management target and conservation limit.

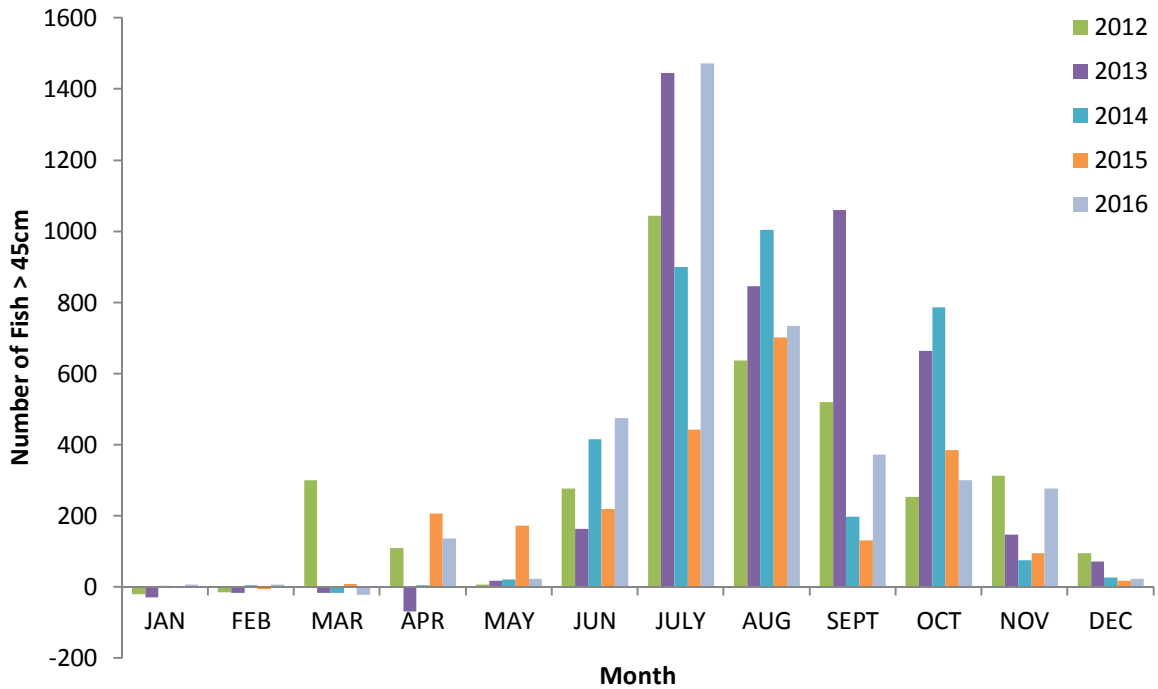


Fig.11 River Roe monthly fish counts. Negative counts represent kelts moving downstream.

2.4 REDD COUNTS

Atlantic salmon redds (spawning nests) are counted on an annual basis and have been shown to be a good indicator of returning population size. Annual redd counts and the 5 year running average are displayed in Figure 12. In 2016/17 there was a total count of 6738 redds with a five year running average of 2830.

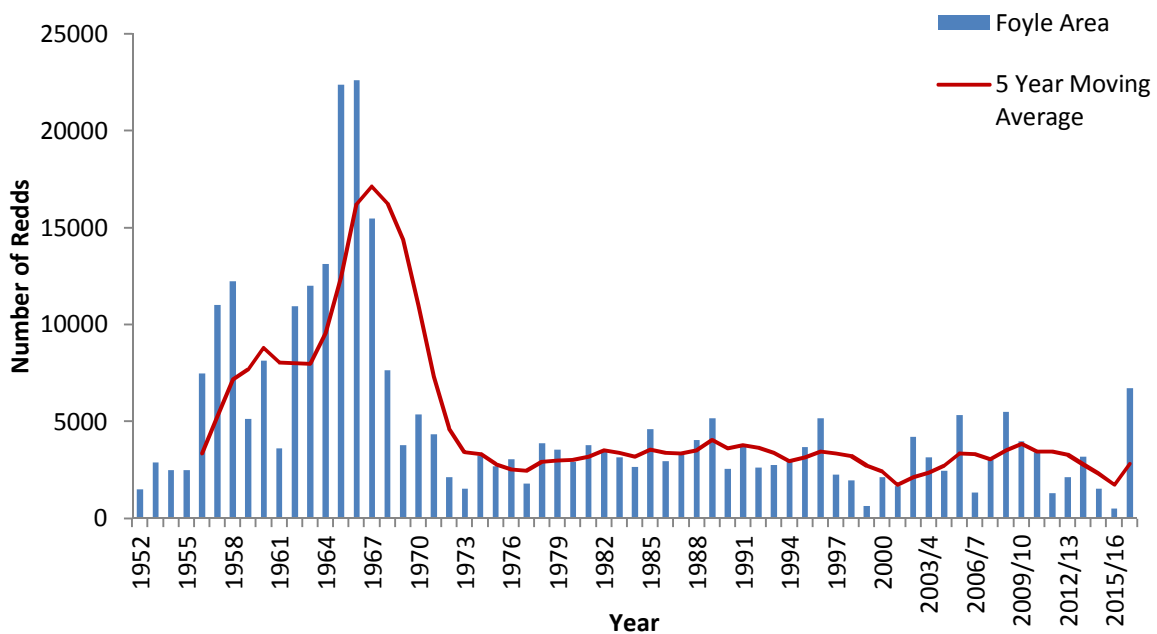


Fig.12 Annual redd counts and 5 year running average.

2.5 JUVENILE ABUNDANCE/ELECTROFISHING SURVEYS

Juvenile Atlantic salmon abundance is measured on an annual basis by following a standardised procedure (Crozier and Kennedy, 1996). 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 13). In 2015 the mean number of salmon fry (young of year) recorded at 412 sampling stations in the Foyle area was 14.

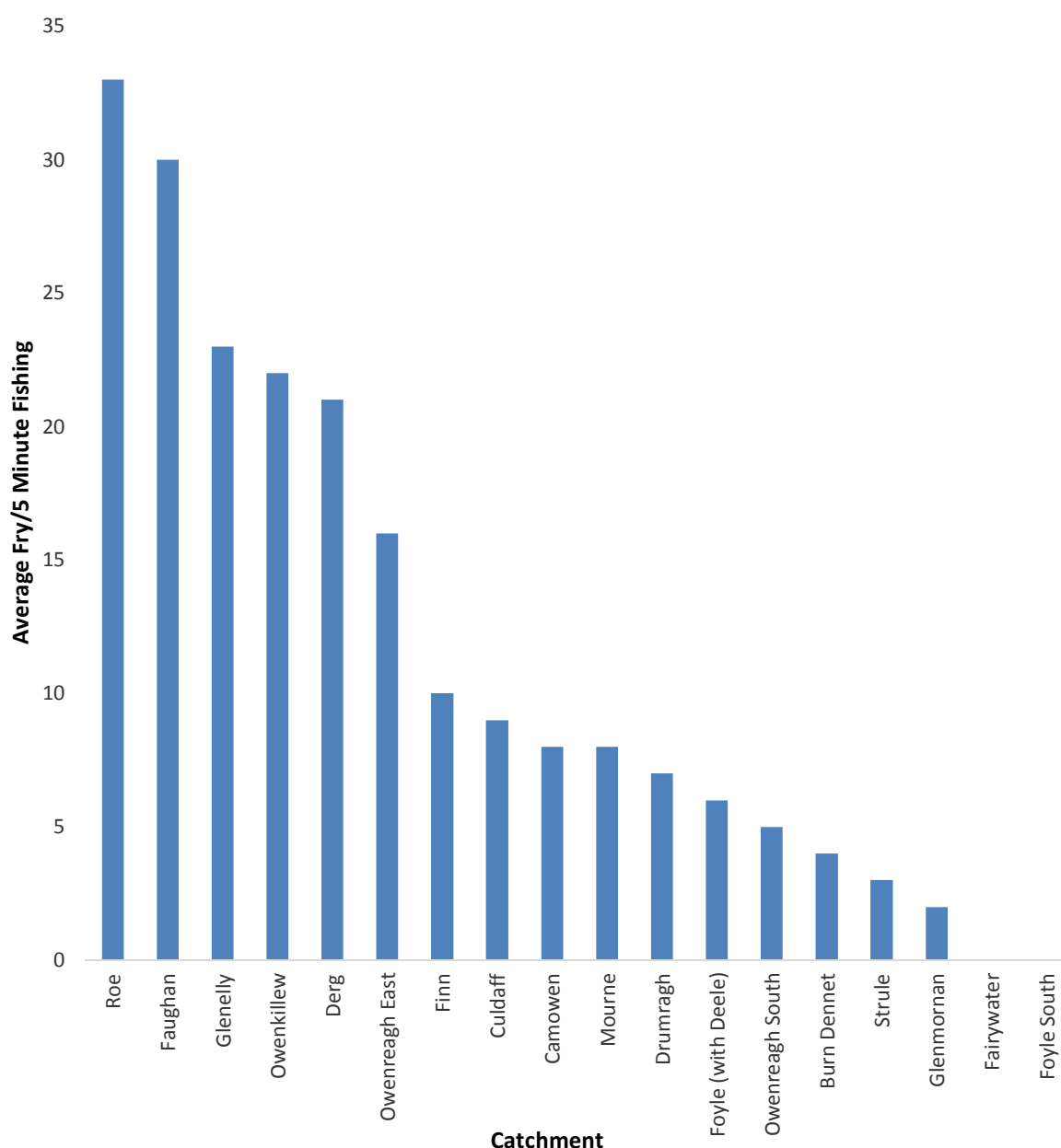


Fig.13 Foyle area salmon fry index comparison chart 2016 (NB: the number of standard monitoring stations varies between catchments).

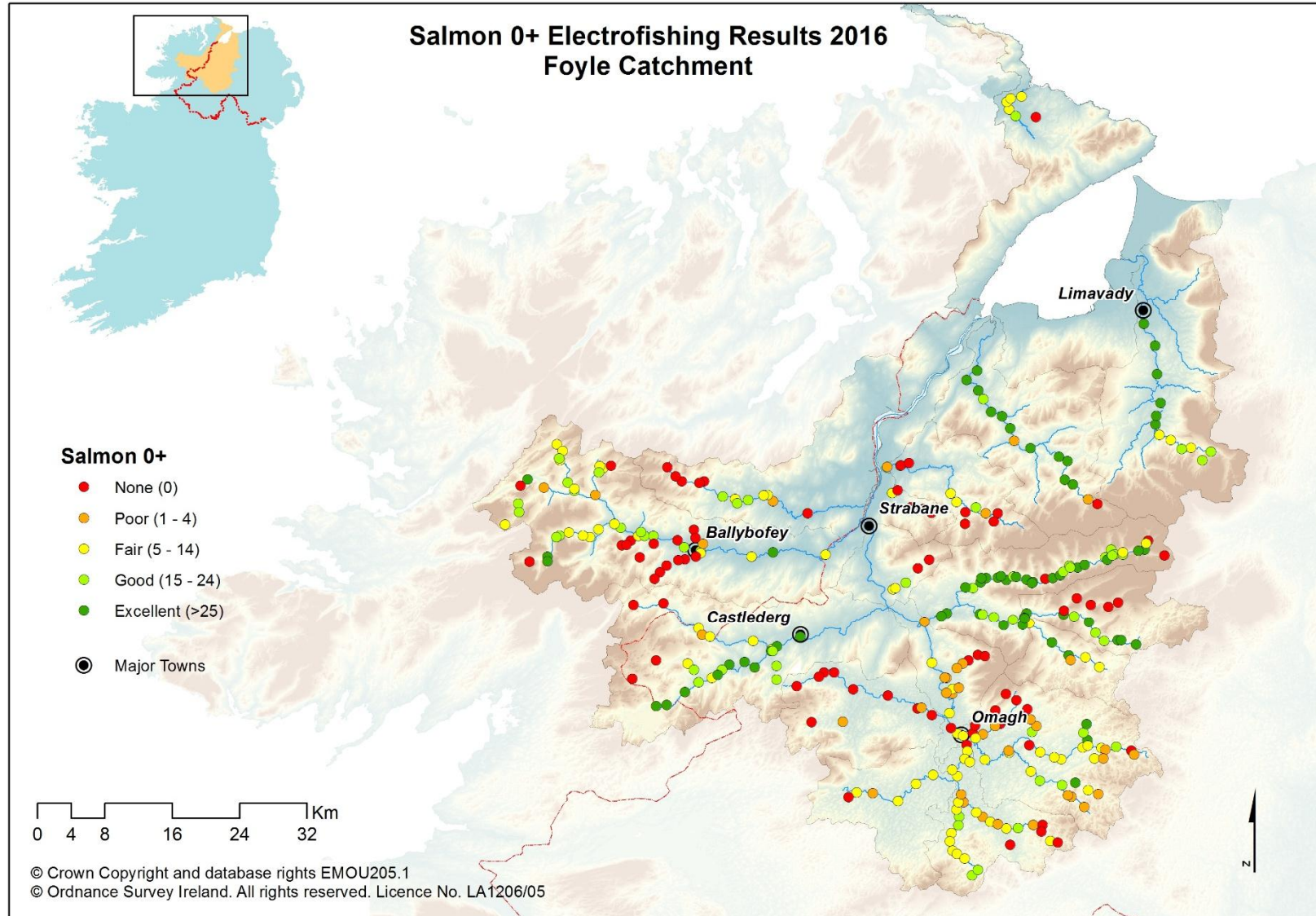


Fig.14 Foyle area salmon fry electrofishing classifications 2016

2.6 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 6.66% has been calculated for the 2015 cohort returning to the river in 2016. This is an increase from the 2.9% marine survival rate recorded for the 2014 cohort, but still 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.

2.7 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 2016 the total declared Sea trout rod catch for the Foyle and Carlingford areas was 450. Total declared Brown trout rod catch for the Foyle and Carlingford areas was 430.
- In 2016 juvenile electrofishing surveys within the Foyle area at 322 standard sites recorded an average of 5.3 trout fry.
- 2016 was noted by many anglers as a better year for Sea trout catches. This was also observed by Loughs Agency reported catch returns.
- The Loughs Agency continued to develop and conduct sea trout research projects in 2016 to monitor local sea trout populations.
- The Loughs Agency is keen to develop a Foyle Sea Trout Partnership in tandem with local angling associations to help monitor the distribution and abundance of Foyle Sea Trout stocks and to contribute towards their conservation and protection

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 2016 the sea trout monitoring programme on a tributary of the Burdennet was expanded to include the Culdaff River and adult trapping on the River Mourne. This is addition to the long term multi species monitoring project on the River Faughan.

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 15 & 16 outline Sea trout rod catch for the Foyle and Carlingford areas. Many catchments within the Foyle area would merit further investigation in relation to developing collaborative Sea trout monitoring projects with interested parties. Contact art.niven@loughs-agency.org to discuss potential project development.

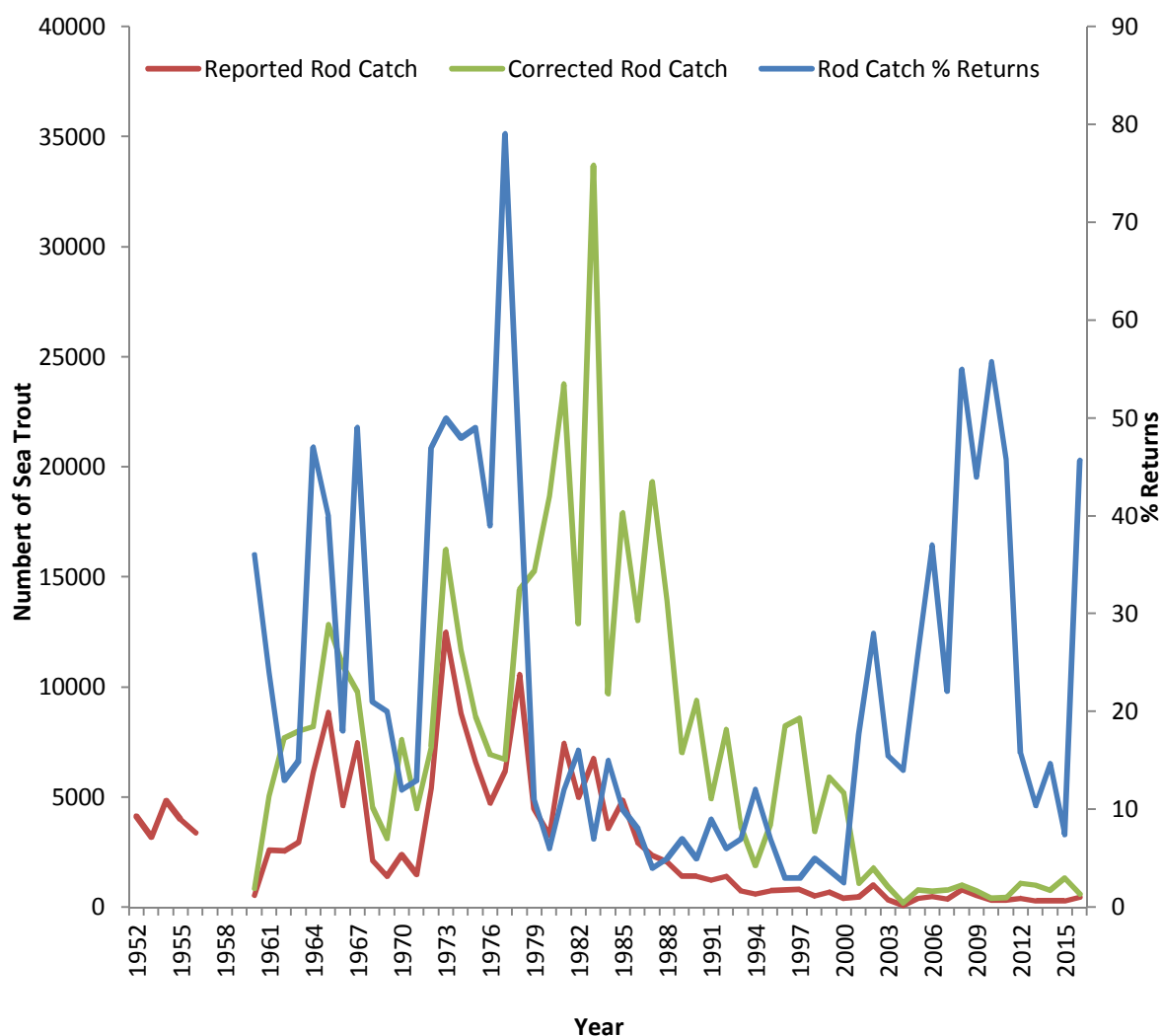


Fig.15 Loughs Agency reported and corrected rod catch (Sea trout) with % returns made.

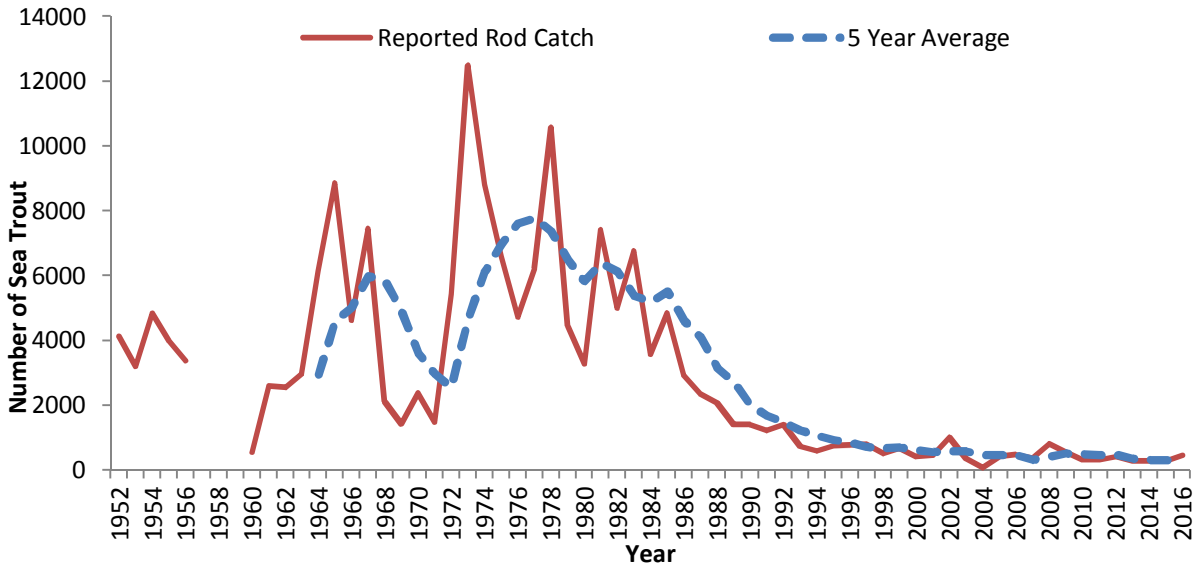


Fig.16 Reported rod catch for Sea trout in the Loughs Agency area and 5 year average.

3.2 JUVENILE ABUNDANCE/ELECTROFISHING SURVEYS

As for juvenile Atlantic salmon, juvenile Trout abundance is also measured on an annual basis by following the same standardised procedure (Crozier and Kennedy, 1996). 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 17). In 2016 the mean number of trout fry (young of year) recorded at 322 monitoring stations within the Foyle area was 5.3.

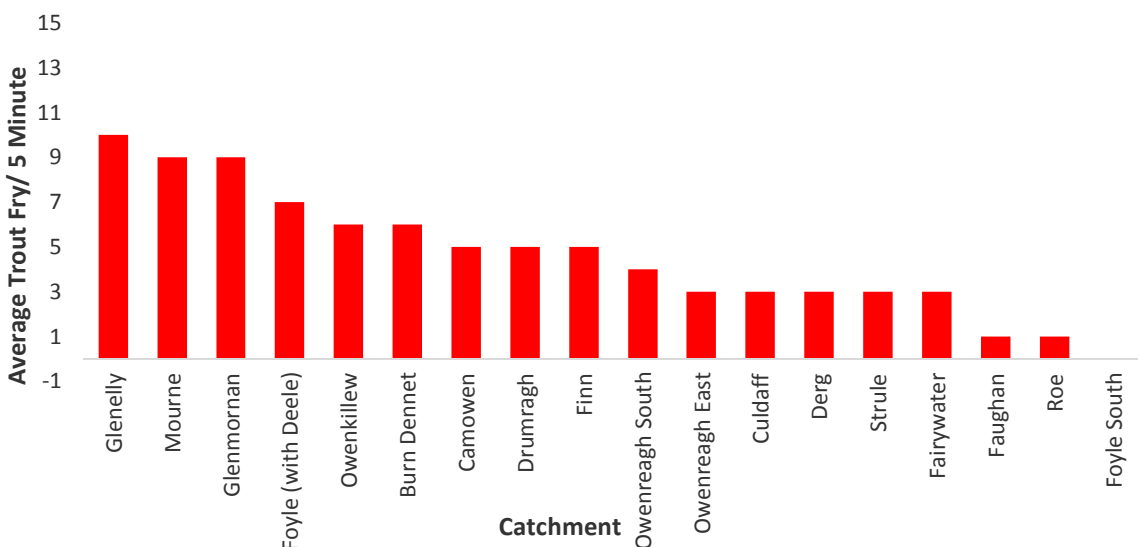


Fig.17 Foyle area trout fry index comparison chart 2015 (NB: the number of standard monitoring stations varies between catchments).

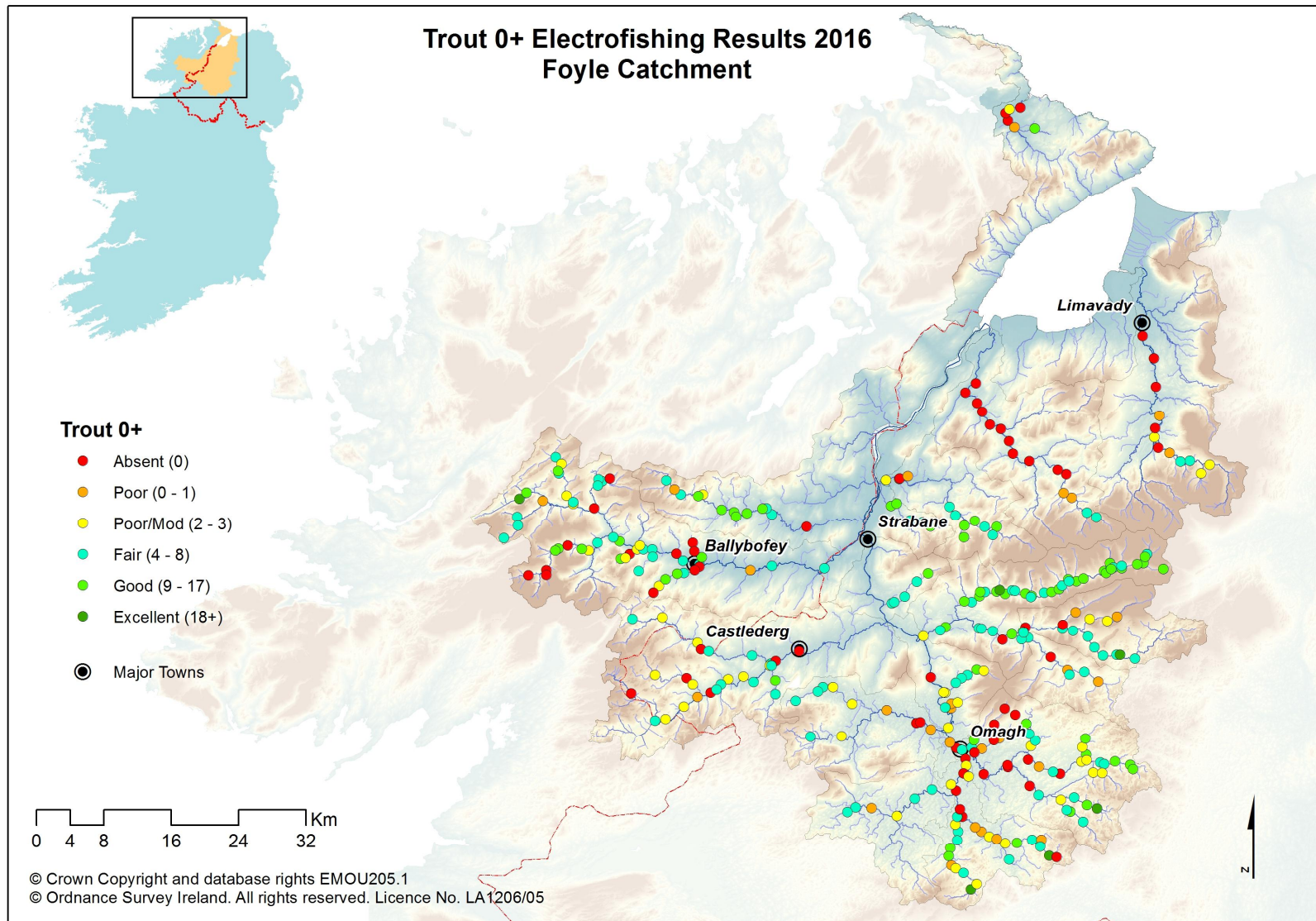


Fig.18 Foyle area trout fry electrofishing classifications 2016.

3.3 DISCUSSION

At present rod catch and juvenile electrofishing surveys are the two main 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 Foyle area forms a significant habitat for Sea trout. Within the catchments of the Foyle 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. Collaborative monitoring of Sea trout populations should be a priority within the tributaries of the Foyle area contact art.niven@loughs-agency.org to discuss this potential further.

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



Fig.19 Sea trout captured during electrofishing survey on the Altnaghree Burn, 2016.

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 2015. Six were in Northern Ireland and three in Ireland.
- Further details can be found in the 2016 WFD Fish Surveillance Report on the Loughs Agency website under the publications section www.loughs-agency.org
- River Faughan Rotary Screw Trap long term monitoring project. Genetic samples were collected from River and Brook Lamprey caught in a rotary screw trap on the River Faughan in 2016. Key biological data including scale samples were taken from all Sea trout caught in the trap. A census was conducted on all other species captured.
- The Altnaghree Burn Sea trout project an index tributary for Sea trout in the Foyle area continued in 2016. This project was extended to include the Culdaff River.
- A population of the invasive Asian clam *Corbicula fluminea* was discovered in the tidal River Foyle during survey
- Sion Mills fish counter channel validation was conducted through a programme of adult trapping.

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 of fishery resources.

During 2016 a combined habitat impacts, invasive species and barriers to migration project continued in the River Finn catchment in Co Donegal.

A European smelt survey was conducted on the tidal River Foyle, River Deelee and River Finn.

Two lake fish surveys were conducted in the Foyle area (Trusk Lough and Enagh Lough East).

Revised biosecurity protocols were developed and rolled out to all field crews to prevent and control the spread of invasive alien species.

In 2016 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 and to deliver on conservation and protection targets as outlined in the Loughs Agency Corporate and Business Plans.

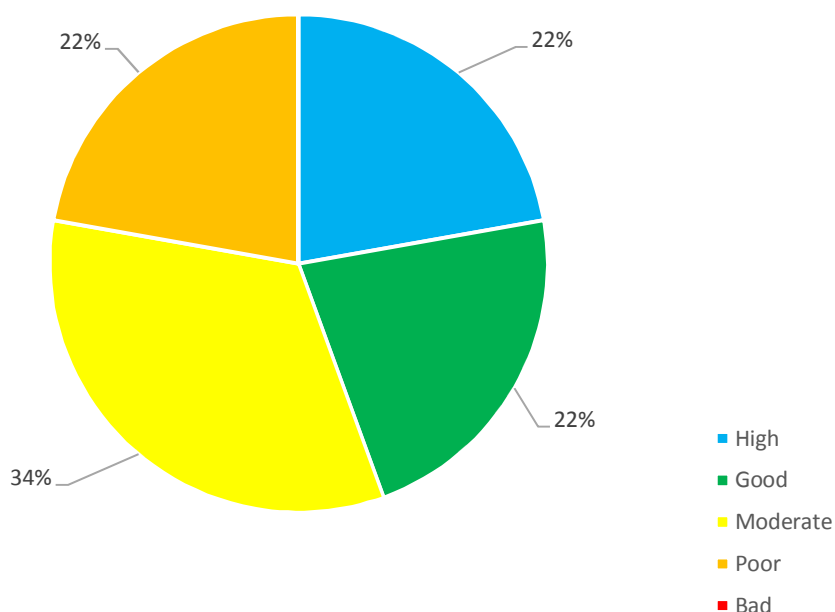
4.1 WATER FRAMEWORK DIRECTIVE FISH MONITORING

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, and Poor Ecological Status to Bad Ecological Status. The target set by the WFD is that all water bodies must reach Good Ecological Status by 2021. In 2016 the Loughs Agency monitored nine surveillance stations within the Foyle and Carlingford areas.

Of the nine Water Framework Directive fish surveillance monitoring stations surveyed within the Loughs Agency jurisdictions in 2016 six were within Northern Ireland and three were within Ireland. 22% of sites surveyed were classified as high status, 22% as good status, 33% as moderate status, 22% of sites were classified as poor and 0% as bad status.



Fig.20 Atlantic salmon parr from the Bredagh River, 2016.



Classification in 2016 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 2016. 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 is available under the publications section of the Loughs Agency website.



Fig.21 Stop net on the Bredagh River, 2016.

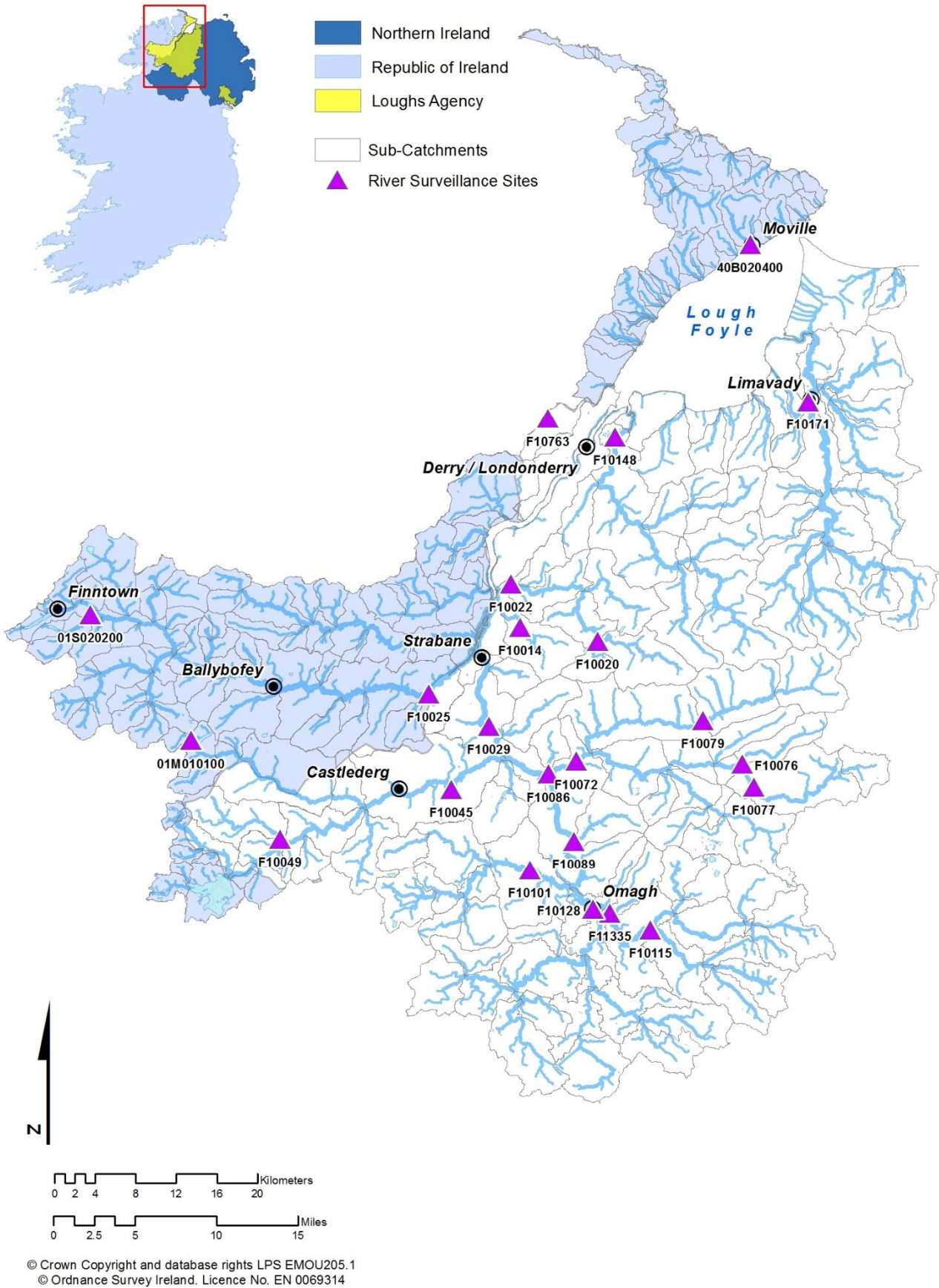


Fig.22 Water Framework Directive fish surveillance monitoring stations within the Foyle area.

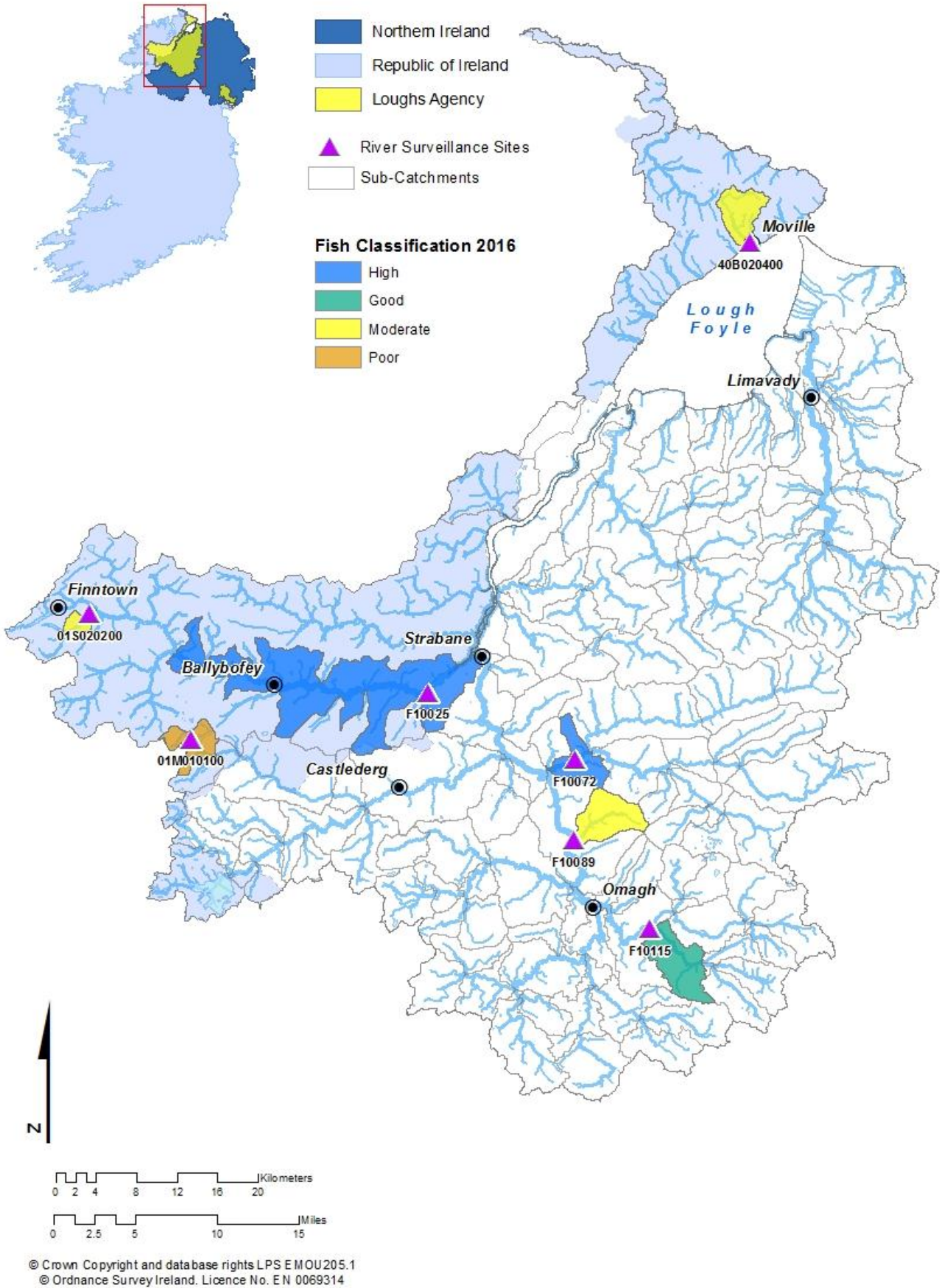


Fig.23 Loughs Agency WFD fish surveillance water body classifications 2016 Foyle area.

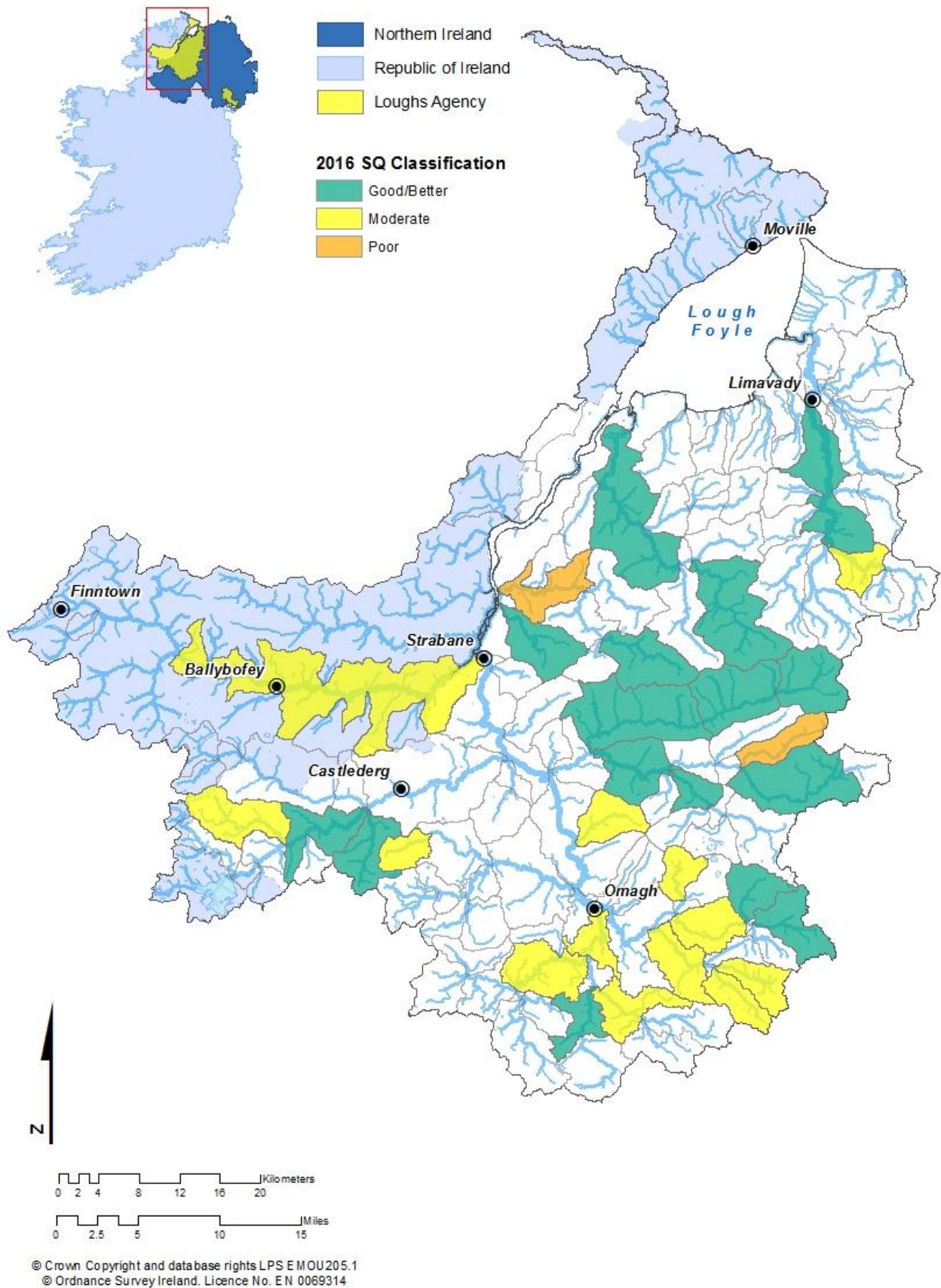


Fig.24 Foyle area Semi-quantitative/salmon management plan derived indicative water body classifications 2016.

5.0 FOYLE SEA TROUT SURVEYS

The Loughs Agency monitors three index sites for returning adult Sea trout, the Altnaghree Burn, the River Mourne at Sion Mills and The Culdaff River. These are all significant Sea trout rivers. Monitoring commenced on the Altnaghree Burn in the autumn of 2011 after habitat improvement works had been undertaken on some stretches of the river in 2010. In the autumn of 2016 this index tributary was surveyed using standard electrofishing techniques. A total of 57 returning, pre spawning adult Sea trout were captured. Lengths and weights were recorded for each individual fish. Scale samples were taken for age analysis from all fish, before they were released back into the river. Also in the autumn of 2016 the Culdaff River was surveyed for the first time as part of the developing network of Sea trout index sites using standard electrofishing techniques. A total of eleven Sea trout were captured, lengths, weights and scale samples were collected.

During the summer of 2016 a project commenced to biologically validate the electronic fish counter on channel 1 of the River Mourne at Sion Mills through adult fish trapping. A total of 59 adult Sea trout were sampled in addition to Atlantic salmon during this project which ran periodically from June to October 2016.

A key recommendation from this work is that additional adult Sea trout index sites are incorporated into this monitoring programme to provide key biological information for management purposes. It is hoped that by extending the programme into other known Sea trout tributaries, it may be possible to identify any potential diversity in run timing and key biological characteristics such as length, weight, age and sex ratios. The Loughs Agency is keen to develop a wider Foyle Sea Trout Partnership project in conjunction with local angling associations with the aim of monitoring the abundance and distribution of Foyle Sea Trout stocks on a variety of tributaries.

5.1 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.



6.0 RIVER FAUGHAN ROTARY SCREW TRAP

The long term deployment of a Rotary Screw Trap (RST) continued on the River Faughan in 2016. The original rationale for carrying out trapping operations at the tidal barrage on the River Faughan had been to facilitate the coded wire tagging of Atlantic salmon smolts on their seaward migration. This tagging

programme continued from 2002 to 2009. There was a break in the project in 2010 with the closure of the commercial mixed stock interceptory drift net fisheries which had been the main recapture method. During the spring of 2014, 2015 and 2016 the rotary screw trap was reinstated as part of the Loughs Agency Freshwater Fisheries Monitoring Programme. Although initially the trap had been used to assist with the coded wire tagging project, the scope of the project has since expanded to act as a census of all fish caught. In 2016 a particular focus was placed on the collection of Lamprey biological data including genetic sampling and the collection of key biological data including scale samples from Sea trout. For the past two years Salmon smolts have continued to be counted to add to the long term data set on the run timing and abundance of Faughan Salmon smolts.



Fig.26 Rotary screw trap deployment on the River Faughan, 2016.

7.0 ASIAN CLAM (*Corbicula fluminea*)

During a survey for European smelt on the Tidal River Foyle in March 2016 the Invasive Alien Species (IAS) Asian Clam (*Corbicula fluminea*) was identified by the

Loughs Agency Fisheries Biologist. This was the first recorded occurrence of the species in Northern Ireland and the first recorded occurrence in the Foyle area within Ireland. The relevant authorities were alerted on both sides of the border and an inter-agency team met to discuss and plan the way forward. It was agreed that a baseline survey would be commissioned by NIEA and supported by Loughs Agency. In June 2016 INVAS Biosecurity supported by Loughs Agency conducted the baseline survey for Asian clam to identify the areas colonised. The downstream spread is controlled by the marine influence as Asian clam cannot survive in marine conditions. Upstream spread appears to be limited to the area around the island downstream of Strabane Lifford. Further survey work is recommended to monitor distribution and abundance over time.



Fig 27. Asian clam *Corbicula fluminea* from the tidal River Foyle near the northern tip of Islandmore, March 2016

The Loughs Agency has communicated the findings to its staff and developed its biosecurity protocols for use during all field operations.

8.0 LAKE FISH SURVEYS

Three lake fish surveys were conducted in 2016. Two of these were in the Foyle area at Trusk Lough, Co Donegal and Enagh Lough East near Derry~Londonderry. The full reports can be accessed through the publications section of the Loughs Agency website www.loughs-agency.org

The lake fish surveys required a full depth survey of each lake prior to the lake fish survey being conducted. Utilising Loughs Agency bathymetric equipment (integrated depth sounder and GPS) detailed transects of each lake were surveyed with depth and location data logged. This information was then extrapolated to create a detailed depth chart/bathymetry chart for use during the full lake fish survey.

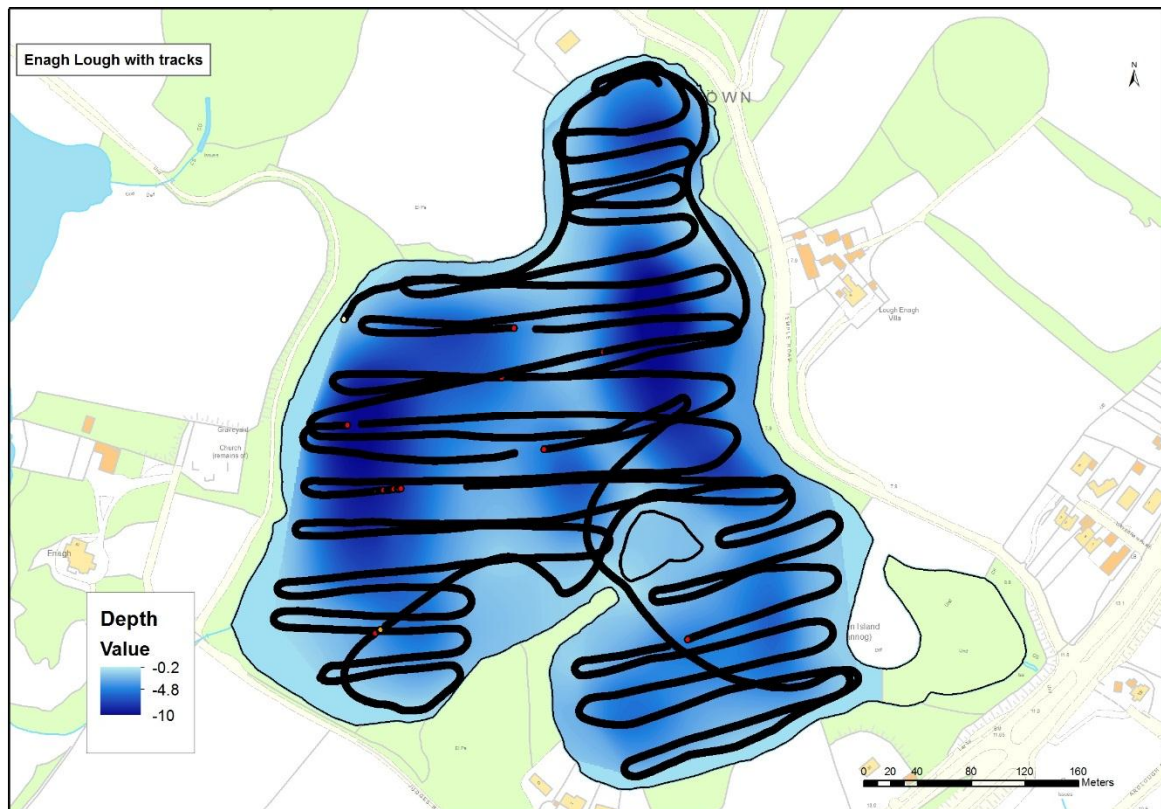


Fig 28. Depth survey transects for Enagh Lough East

The Loughs Agency follows the methodology developed for lake fish surveying under the Water Framework Directive. The method requires that a pre-determined number of benthic (bottom fishing) survey gillnets are set overnight within pre-selected depth zones. In addition a number of floating gill nets and fyke nets are also set.

The key data collected can be used to derive common statistics to compare lake fish populations over time and to compare trends with other lakes across Ireland and Europe.

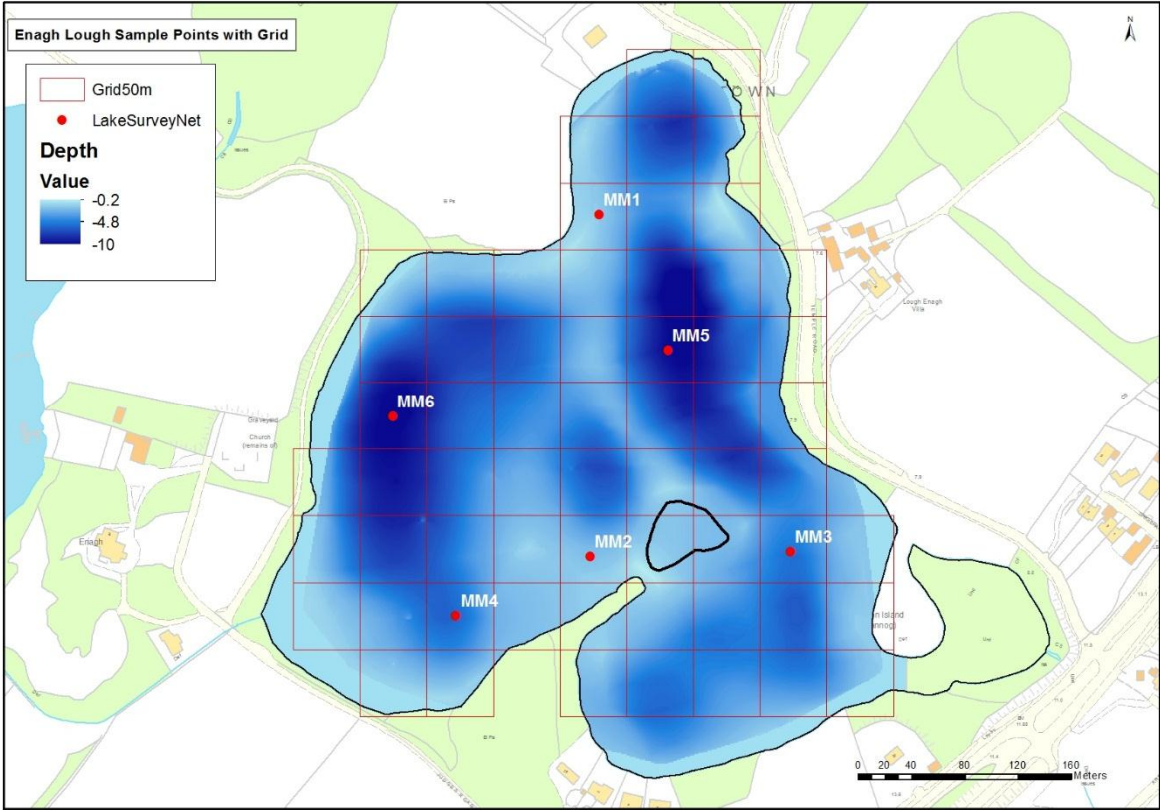


Fig 29. Depth map and net locations for Enagh Lough East



Fig 30. Lake fish survey Enagh Lough East.

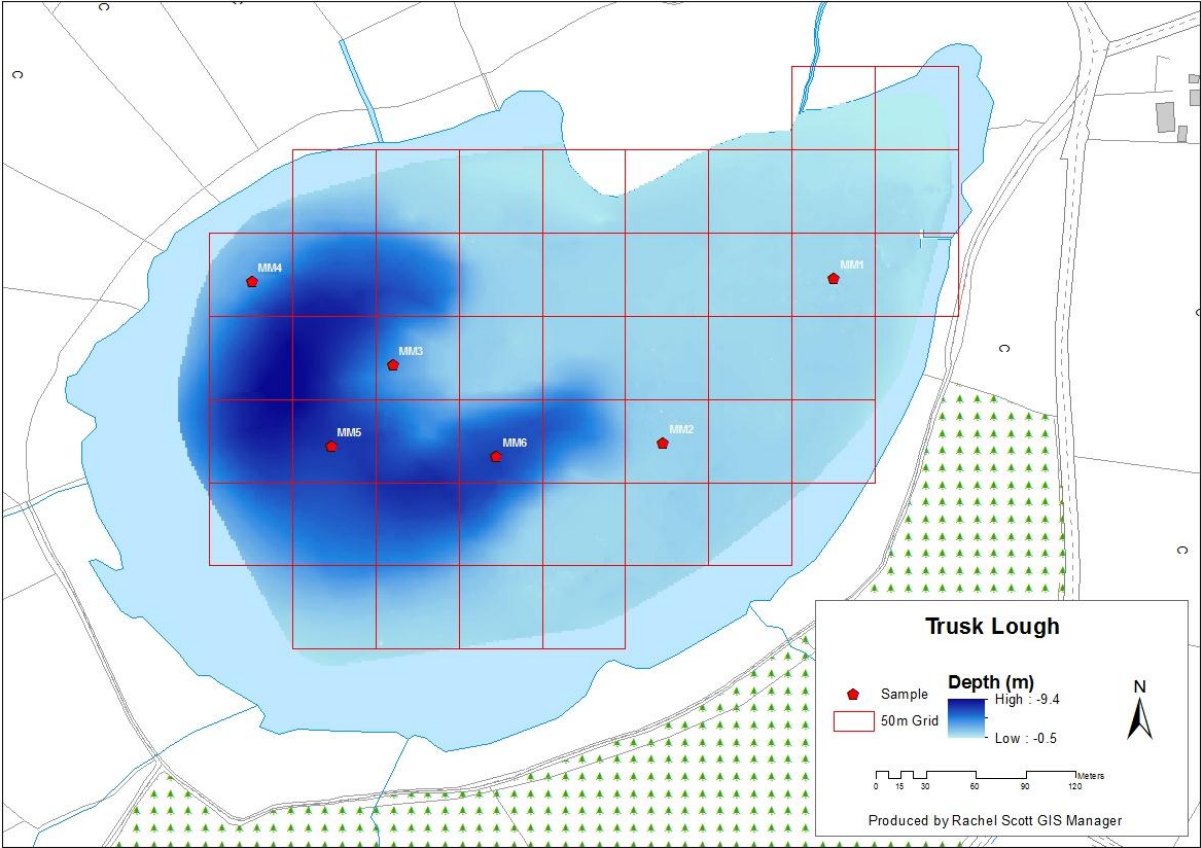


Fig 31. Trusk Lough bathymetry and net locations.



Fig 32. Gill net recovery from Trusk Lough, Co Donegal

9.0 EUROPEAN SMELT SURVEYS

During March and April 2016 a number of surveys targeting European smelt were conducted on the tidal River Foyle, River Deele and River Finn. The survey was a resurvey of a baseline survey conducted in 2010 and was conducted to appraise the continued presence of a spawning population of the European smelt which is a species of conservation interest. Fyke nets were deployed in multiple locations over multiple nights and key data collected. A report is in preparation and will provide an overview of the key findings. Core biological data including lengths, weights, scale samples, stomach content analysis and gill raker counts were conducted. Further survey is planned for 2017.

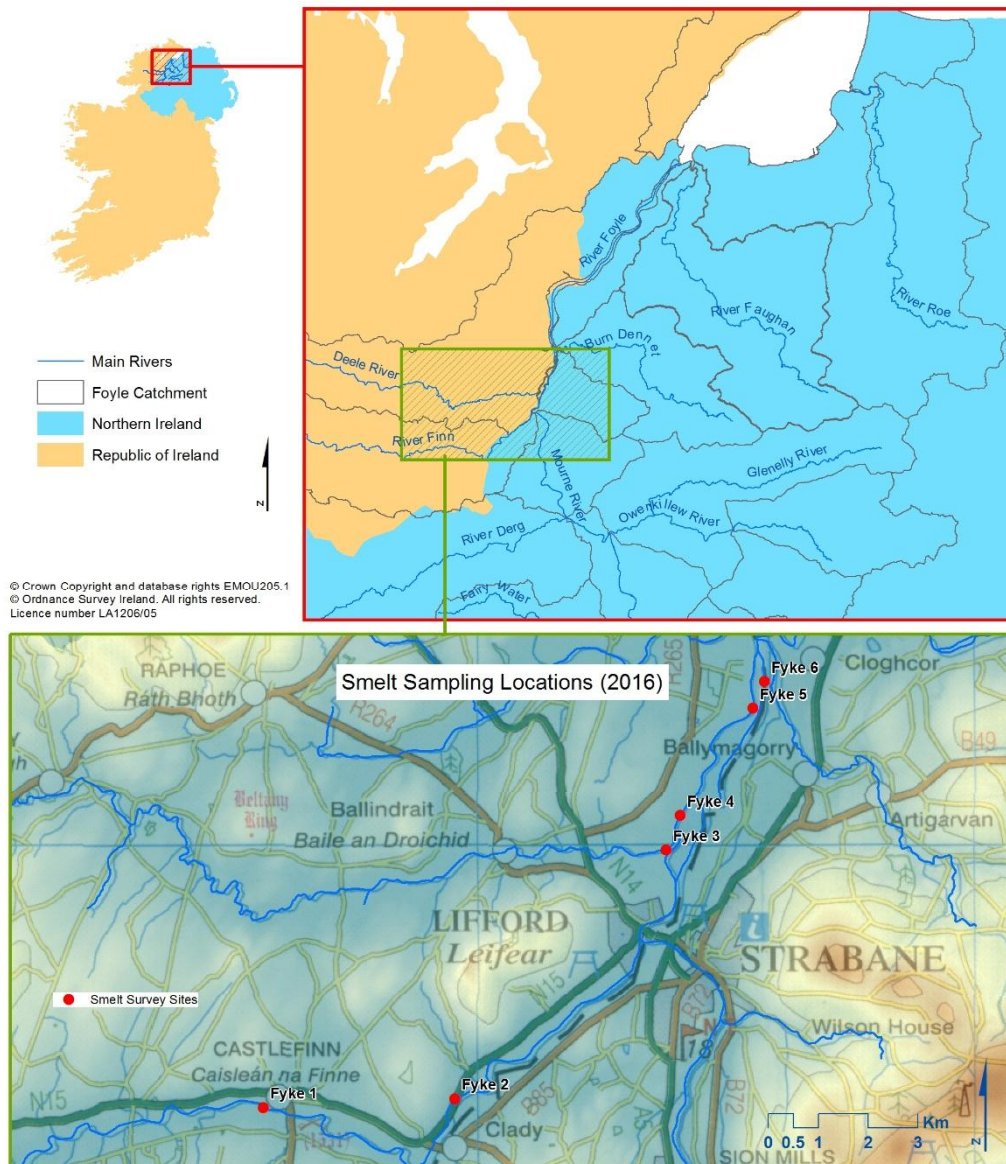


Fig 33. Netting locations for 2016 European smelt survey



Fig 34. European smelt top and survey on the tidal River Foyle

10.0 RIVER MOURNE FISH COUNTER VALIDATION

Biological validation of the River Mourne electronic fish counter on channel 1 was conducted from June to October 2016. A four hour sampling window was randomly selected each day and trap operated in tandem with the counter.



Fig 35. Biological validation exercise on the River Mourne 2016

11.0 RIVER FINN HIB's SURVEY

In 2016 the Habitats impacts, Invasive species and Barriers to migration survey continued within the River Finn catchment. The valuable information generated from this survey will drive programmes of measures designed to target specific impacts which will be having a negative impact on water quality within the catchment. An extensive survey taking a number of field seasons to complete the HIB's survey combines a number of surveys into one walkover survey. The survey information is recorded on a handheld data logger with integrated GPS. This information is stored within the Loughs Agency GIS. The survey has been designed to collect information which will facilitate the development of improvement projects.



Fig 36. HIB's survey on the Stranagoppogue River a tributary of the River Finn

12.0 DUCK AND SWANN MUSSEL SURVEY

The Loughs Agency Fisheries Biologist supported a survey by IT Sligo and the IUCN on native freshwater Swan and Duck mussels. A number of sites within the Foyle area were surveyed as part of a European wide survey.



Fig 37. Duck and Swan mussel survey 2016

13.0 FISHERIES HABITAT IMPROVEMENT

In 2016 a number of instream and riparian habitat improvement projects were conducted in the Foyle area. This included a variety of works ranging from native riparian tree planting projects, bank protection, and the introduction of spawning and nursery substrate into selected rivers.

14.0 CATCHMENT INITIATIVES

Integrated catchment management 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 and transposing national legislation 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 continue to engage local stakeholders in participating in a wide variety of actions designed to develop and implement aquatic and riparian conservation and protection projects. This may river corridor litter picks, the development of habitat improvement works and collaborative 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 Foyle please contact art.niven@loughs-agency.org to discuss potential projects.



15.0 GENERAL ACTIONS FOR 2017/2018

- Communicate monitoring findings through various media to stakeholders.
- Continue to Implement and develop the 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.

