



Sea trout (*Salmo trutta* L.) Status Report: Foyle & Carlingford Areas

Monitoring, Conservation & Protection

Loughs Agency of the Foyle Carlingford and Irish Lights Commission
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Baseline report on the status of Sea Trout stocks in the Foyle and Carlingford areas.

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EXECUTIVE SUMMARY

This status report 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 outlines threats to and declines of Sea trout stocks and the potentially significant under reporting of small Sea trout being retained by anglers.

An assessment of Loughs Agency survey data suggests that it may be appropriate to recommend the setting of 'slot limits' when deciding the size and numbers of Sea trout which anglers are permitted to retain. 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 report discusses the main audit points (juvenile trout electrofishing surveys and rod catch data) which are currently used to monitor Sea trout populations in the Foyle and Carlingford catchments. Semi-quantitative electrofishing is carried out at standardised monitoring stations, this has contributed towards the creation of an important index illustrating trends for individual sub catchments over space and time. In addition to rod catch and electrofishing surveys, the deployment of a rotary screw trap on the River Faughan has enabled the Loughs Agency to obtain key biological information from downstream migrating Sea trout smolts. This has provided data on run timing, abundance and other biological data from populations of known Sea trout provenance. Surveys of returning pre spawning adult Sea trout have also been conducted each autumn since 2011 at an index site on the Altnaghree Burn a tributary of the Burdenett. Significant habitat improvement works have been carried out on this burn over recent years by the Loughs Agency and in partnership with the Wild Trout Trust.

Habitat improvements are an important part of the Loughs Agency strategy to conserve, protect and improve freshwater habitats capable of supporting sustainable fish populations. In partnership with the Wild Trout Trust and local angling clubs the agency has shown what can be achieved by harnessing the volunteer potential of non-governmental organisations or community groups, and

incorporating an element of 'citizen science' into targeted environmental monitoring programmes.

Recommendations are made to demonstrate how this project could be developed and refined in the future to contribute towards the sustainable development of the local fishery management sector and to ensure Sea trout stocks are appropriately conserved, protected and improved.

1.0 INTRODUCTION

This status report has been written to communicate information the Loughs Agency holds on stocks of Sea trout within the Foyle and Carlingford areas to interested stakeholders. It provides a mechanism to communicate management recommendations based on the best available scientific information. The core aim of the Loughs Agency freshwater fisheries monitoring programme is to provide a strong evidence base for the management of the fishery resources and their habitats within the Loughs Agency area. This report will complement the Loughs Agency Trout Strategy. Recommendations will be made for future monitoring projects which will be designed to expand monitoring baselines into other water bodies and to implement new survey methods to increase our understanding of Sea trout stocks within the Loughs Agency areas.

Sea trout are a significant economic and social asset as part of a recreational fishery, they are also an important component of our native aquatic biodiversity. Sea trout are trout that make a migration to sea during their life cycle. Also known as White trout locally they tend to spend two to three years in their natal streams before going to sea to feed and grow, returning to freshwater to spawn. It is believed that both a scarcity of food in their native rivers, and genetics may play an important role in trout choosing to undertake a seaward migration. Trout pursue diverse life history strategies which facilitates some to take advantage of richer feeding in the marine environment. This can lead to Sea trout growing significantly larger than resident Brown trout and may give them a competitive advantage when breeding. Larger Sea trout will carry more eggs. Studies on Sea trout in other areas have shown that a disproportionate number of Sea trout are female.

There was a well documented collapse of Irish and Scottish Sea trout stocks in the late 1980's and early 1990's. It has been postulated that this may have coincided with the emergence of Atlantic salmon aquaculture and an increased abundance of sea lice present in the migratory pathways of Sea trout. Other reasons suggested for the decline in Sea trout populations include habitat loss and fragmentation, barriers to migration, natural population fluctuations, inshore marine ecosystem change, over fishing and pollution of key spawning streams. In some freshwater fisheries the practice of catch and release has been introduced to conserve and protect remaining Sea trout stocks. Despite the introduction of catch and release

on some fisheries, Sea trout populations have not yet returned to pre collapse numbers.



Fig.1 Adult Sea trout from the Altnaghree Burn, 2011.

2.0 CURRENT DISTRIBUTION

The Loughs Agency conducts fish monitoring within the Foyle and Carlingford areas. At present juvenile electrofishing surveys are one of the main audit points used to monitor trout populations. 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). This method was first developed for estimating numbers of Salmon fry. Over many years an index has been developed to illustrate trends for individual catchments (Figures 5 & 8). In 2014 the mean number of trout fry (young of year) recorded at 441 monitoring stations within the Foyle area was 7. In 2014 the mean number of trout fry (young of year) recorded at 78 monitoring stations within the Carlingford area was 4. 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.



Fig.2 Brown trout from electrofishing survey of the River Camowen, 2014.



Fig.3 Sea trout smolt from Faughan Rotary Screw Trap 2015.

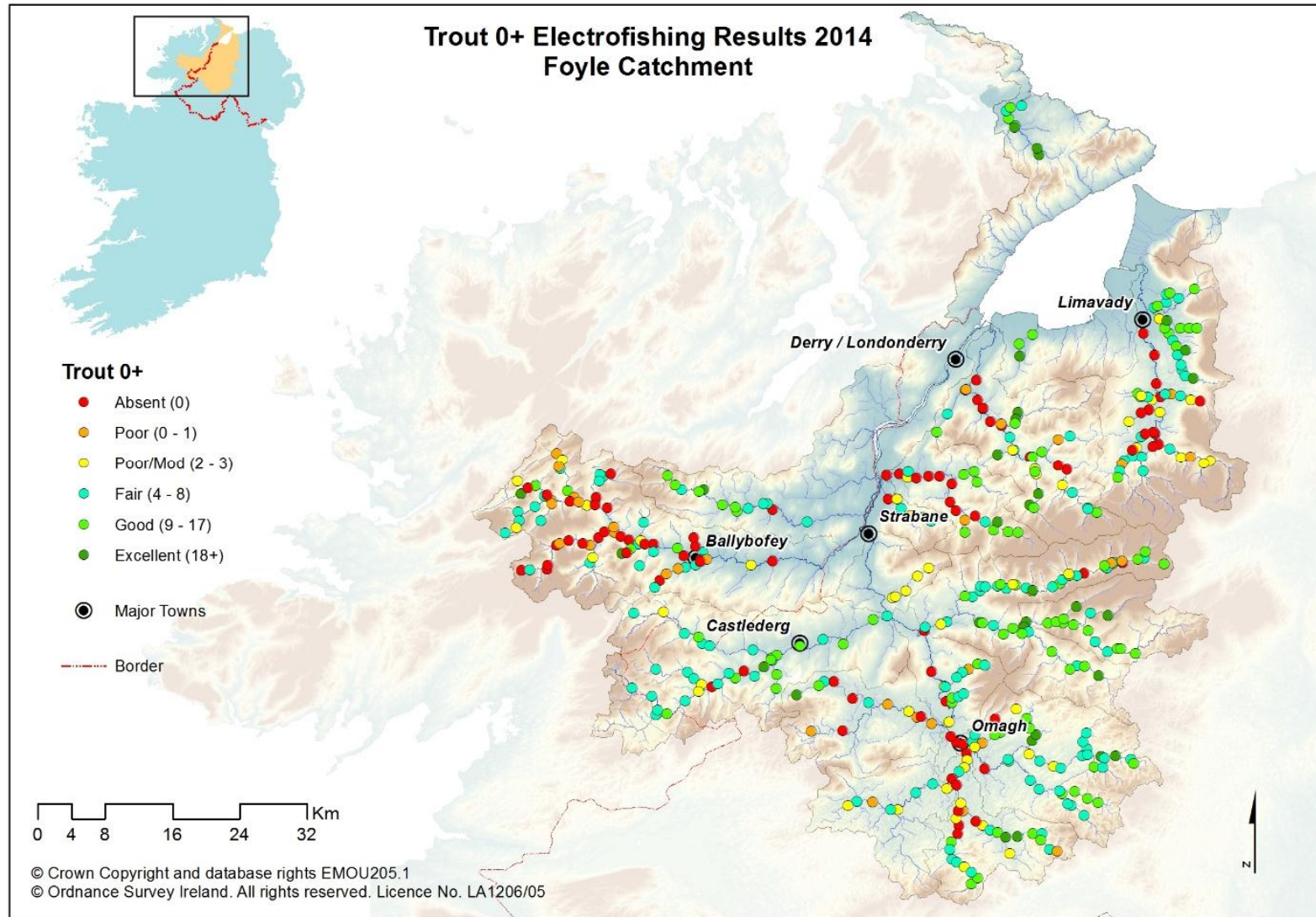


Fig.4 Trout 0+ electrofishing results 2014, Foyle area.

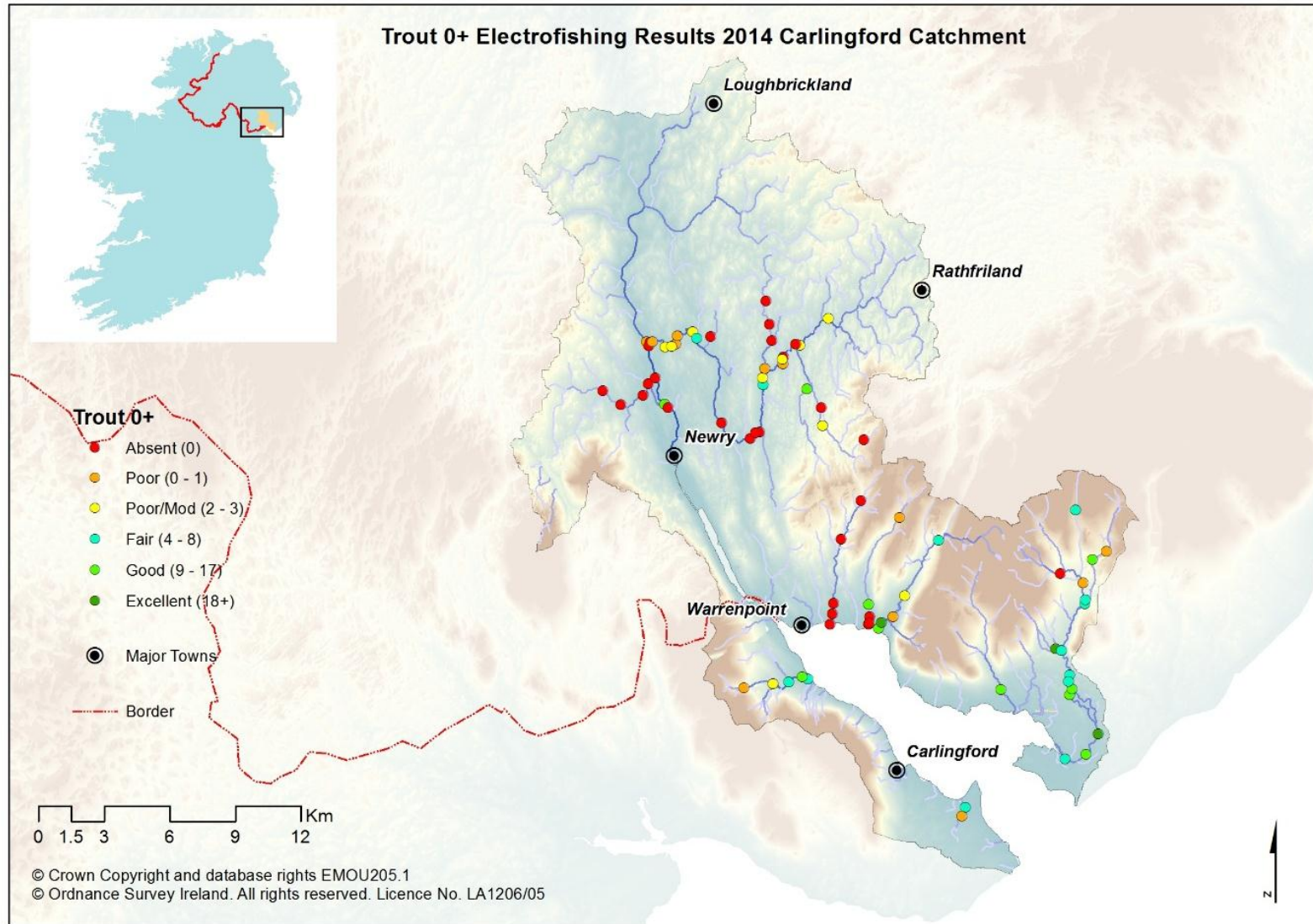


Fig.5 Trout 0+ electrofishing results 2014, Carlingford area.

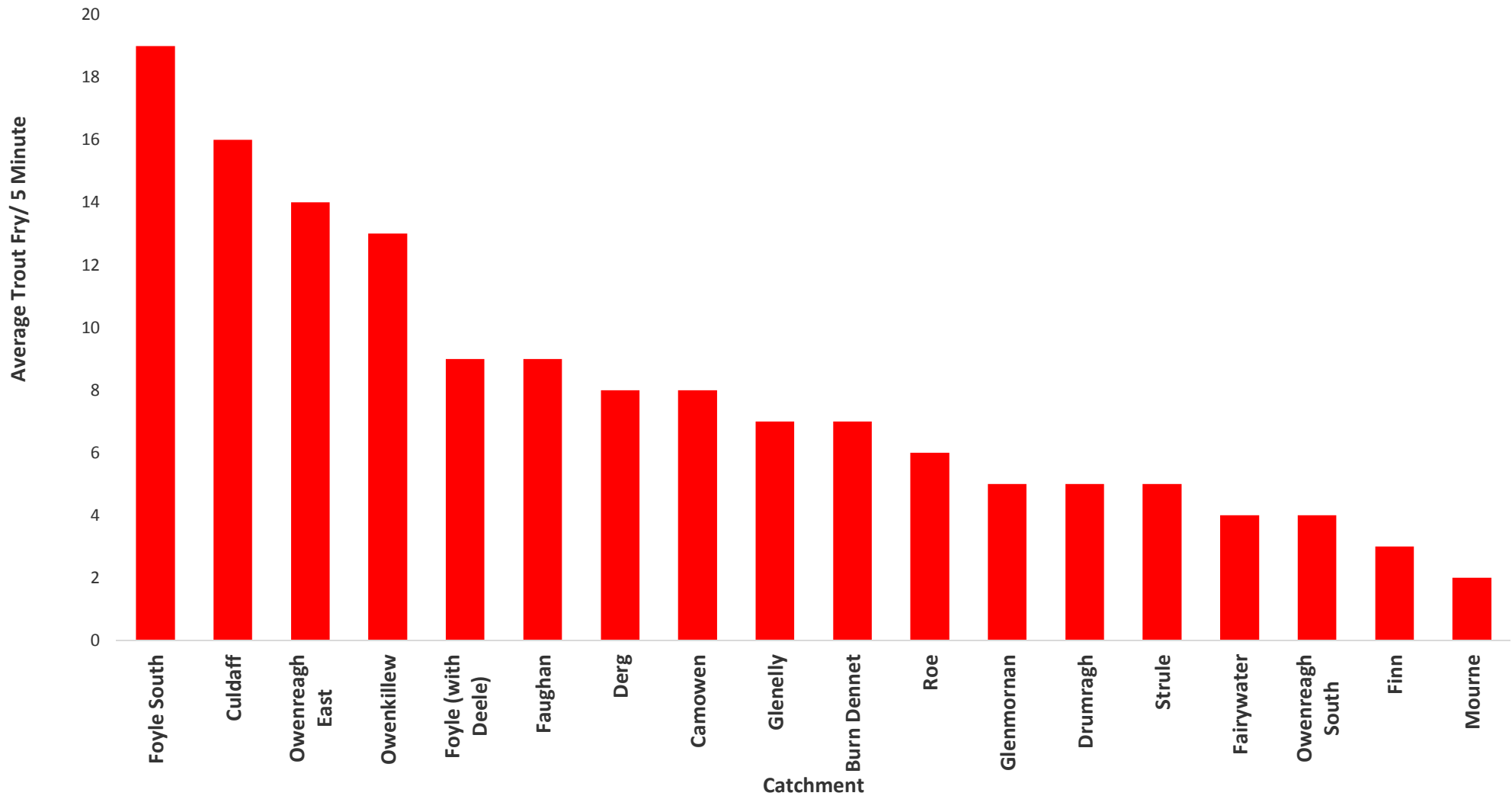


Fig.6 Foyle area Trout fry index comparison chart for 2014 (NB: the number of monitoring stations varies between catchments and year).

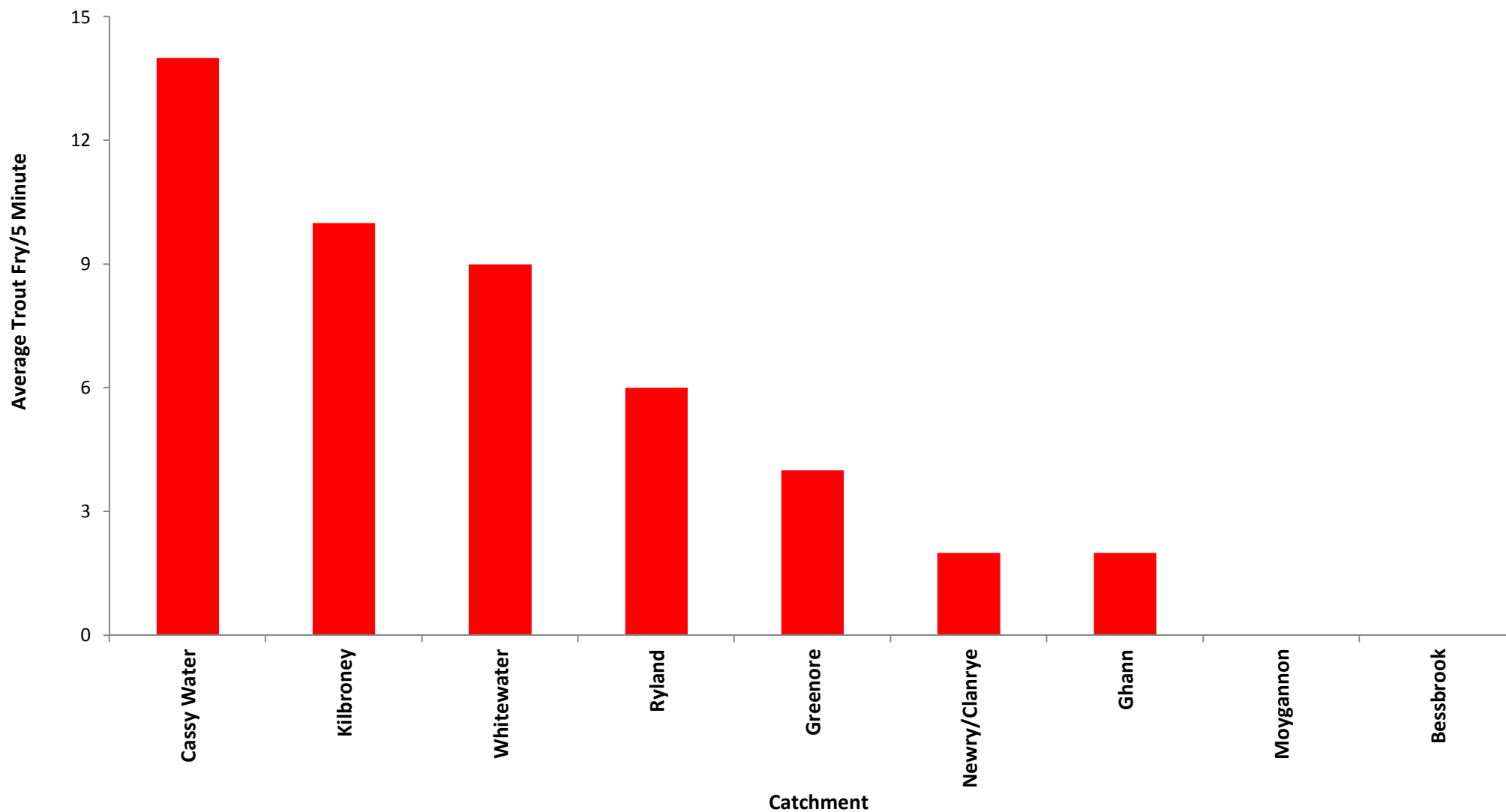


Fig.7 Carlingford area Trout fry index comparison chart for 2014 (NB: the number of standard monitoring stations varies between catchments).

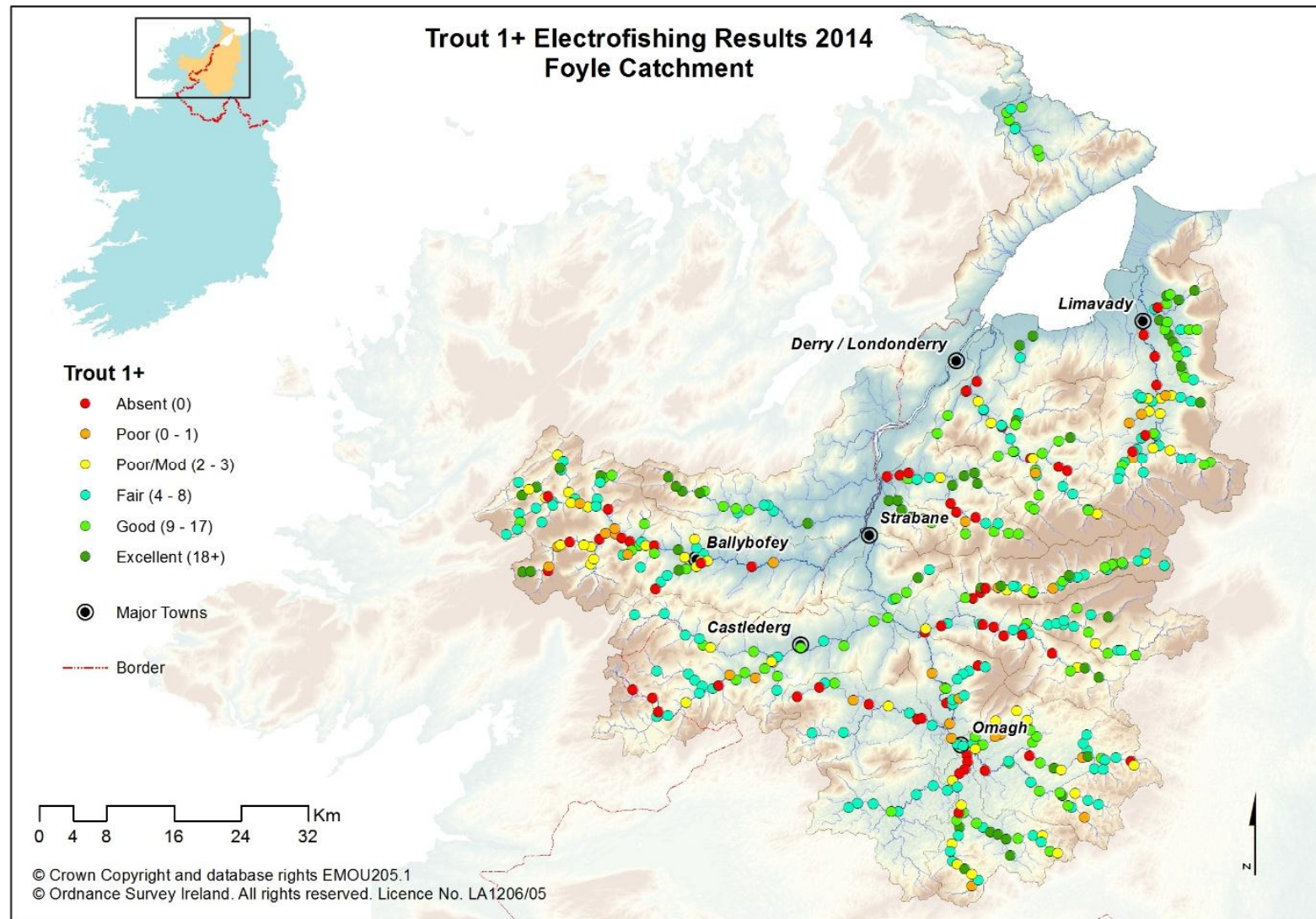


Fig.8 Trout 1+ electrofishing results 2014, Foyle area.

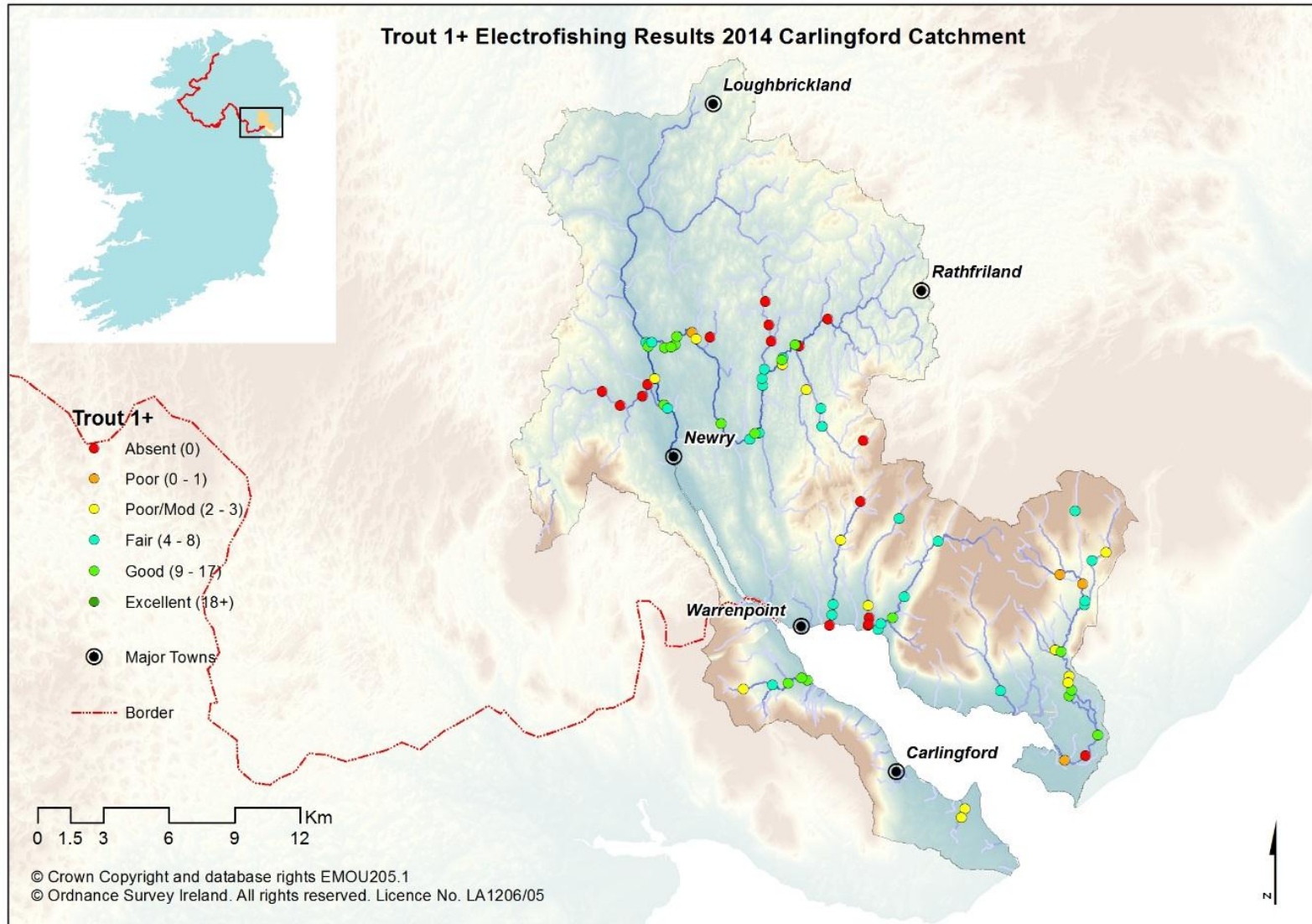


Fig.9 Trout 1+ electrofishing results 2014, Carlingford area.

3.0 HISTORICAL STOCK ABUNDANCE

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. Within the Carlingford area the Killbroney, Newry/Clanrye and Whitewater catchments are locally significant for Sea trout with many smaller catchments requiring assessment. In 2014 the total declared Sea trout rod catch for the Loughs Agency areas were 287, the Foyle area was 204 and the Carlingford area was 83. It may be the case that many small Sea trout are not being reported even though they are being retained by anglers. It should also be noted that salmon fishing dominates in the Foyle area.



Fig.10 Sea trout smolts and adult

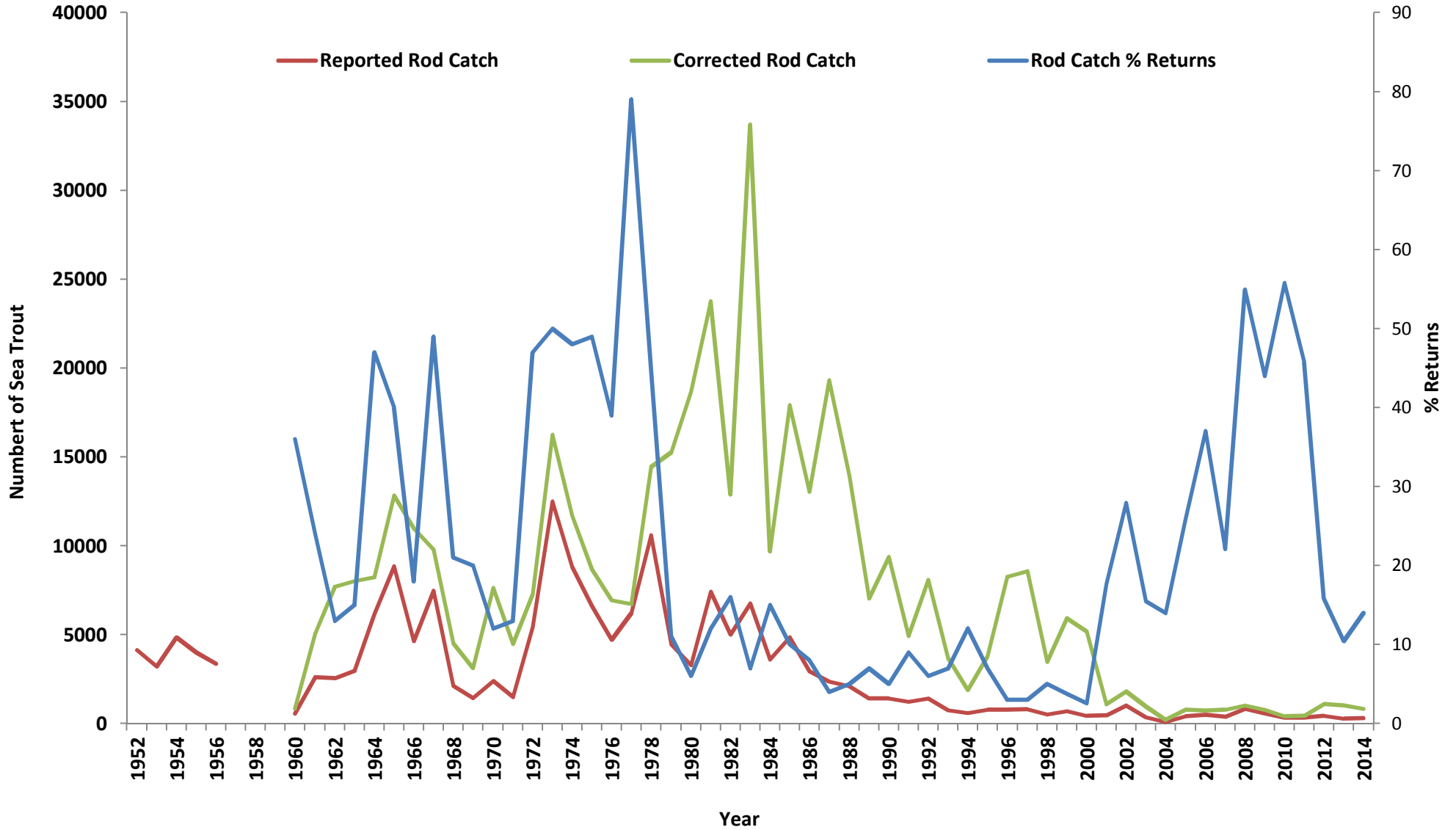


Fig.11 Loughs Agency reported and corrected rod catch (Sea trout) with % returns made

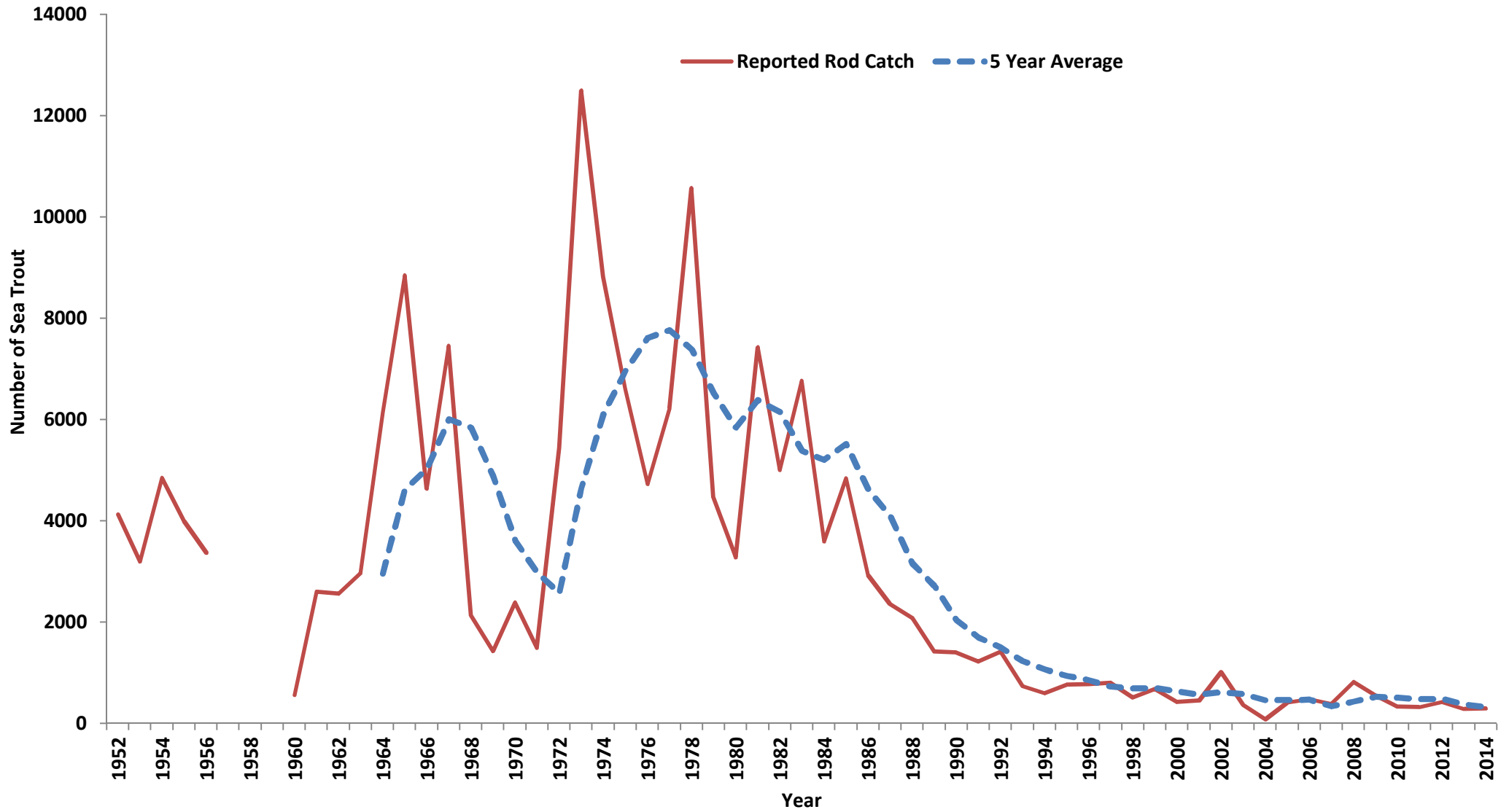


Fig.12 Reported rod catch for Sea trout in the Loughs Agency area and 5 year average.

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. The Loughs Agency is currently collecting lengths, weights and other biological information from adult Sea trout when encountered. The information collected from these surveys can be used to develop management recommendations. Taking a cursory look at adult Sea trout lengths and weights from one such survey in the Foyle area it becomes apparent that a large proportion of Sea trout fall within the limits of 25.4 - 40 centimetres. The current legislation states that there is a daily bag limit of 4 Brown trout or Sea trout of 40cm or less in length throughout the season with no season maximum. The Loughs Agency is currently aware that there is potentially significant under reporting of small Sea trout in the recreational fishery. Foyle Sea trout over 40cm appear to be few in number. By allowing anglers to retain significant numbers of Sea trout between 25.4– 40cm it could be significantly impacting upon numbers of active breeders.

4.0 TARGETED SEA TROUT SURVEYS

More data will help to successfully manage Sea trout stocks at an appropriate scale. Traditional data sets derived from rod catch and juvenile electrofishing surveys have been supplemented in recent years to include data collected from rotary screw traps on the River Finn and Faughan which are deployed to capture downstream migrating Sea trout smolts and other migrating fish. In addition to capturing out migrant smolts, early returning adult Sea trout, finnock and Sea trout kelts have also been caught. Key biological information including run timing, abundance, lengths, weights and scale samples can be used to facilitate future stock management. Since 2011 electrofishing surveys targeting pre spawning adult Sea trout have been conducted in late October and early November on the Altnaghree Burn, a significant Sea trout spawning tributary of the Burdennet catchment. This important tributary has now become an index site for monitoring returning adult Sea trout and it is hoped that similar monitoring projects can be

rolled out in other known spawning tributaries in the future to create a network of index sites.

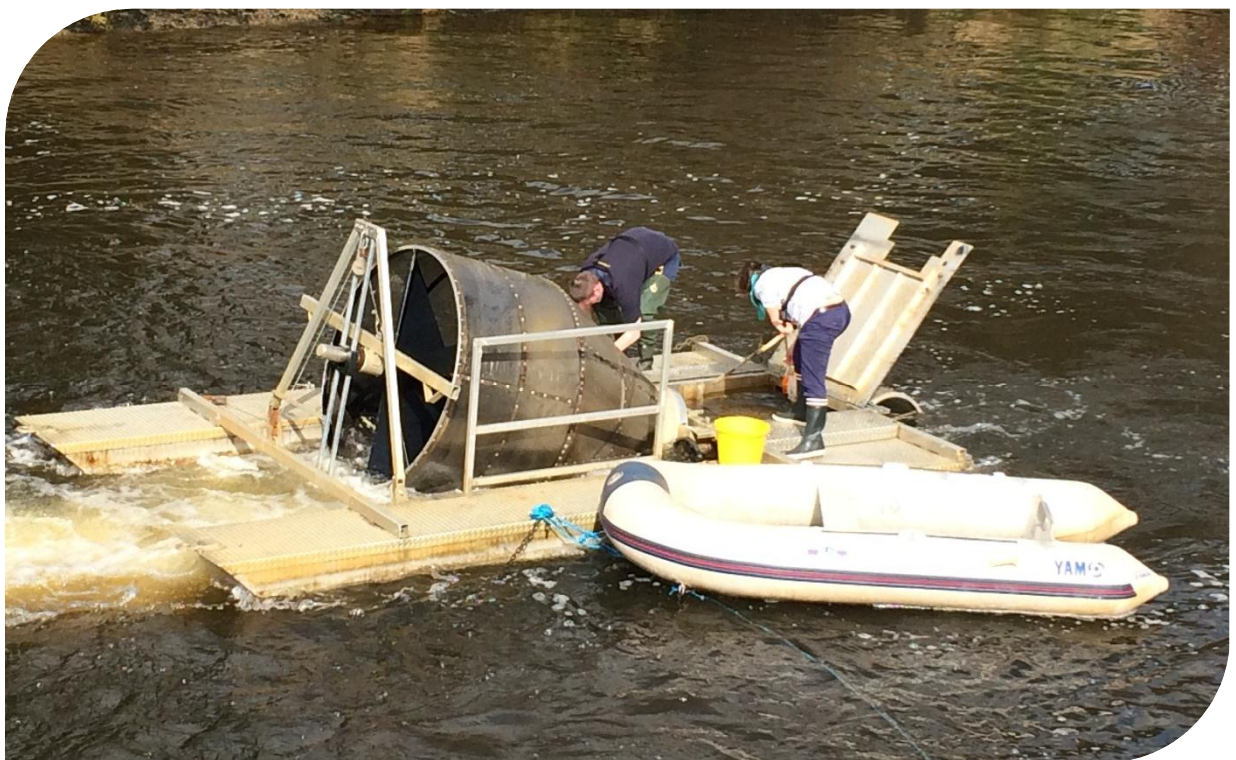


Fig.13 Rotary screw trap being used to capture Sea trout smolts, River Faughan 2015.

In the spring of 2003 a rotary screw trap (RST) was first deployed in the River Faughan to capture downstream migrating Atlantic salmon smolts as part of a coded wire tagging project. This project continued in 2004 and incorporated a mark recapture experiment to estimate the numbers of out migrant Atlantic salmon smolts. Salmon smolts were marked with a day specific batch code and transported 2km back upstream and released. By comparing the numbers that were released and those that were recaptured it was possible to work out a trap efficiency rate of 12%. It was therefore possible to calculate a minimum production estimate for salmon smolts over the period. From 2004 to 2009 biological data from Sea trout smolts was also recorded including the collection of scale samples for age determination and for future genetic analysis. There was a break in RST operations from 2010-2013. The rotary screw trap was deployed again in the spring of 2014 and 2015. In April 2014 an in depth Sea trout smolt survey was conducted in tandem with a study on lamprey.

Detailed census data from the Faughan RST on Sea trout run timing and abundance from 2004-2009 & 2014-2015 (see Fig.14 below) has been recorded at this site. By way of providing an indicative estimate of Sea trout smolt production the capture efficiency of the RST as calculated for salmon smolts was crudely transferred to Sea trout smolts for the 2014 and 2015 runs. The authors are aware that a Sea trout smolt specific mark recapture study should be conducted at some stage in the future to calculate a species specific RST capture efficiency rate. In 2014, 314 Sea trout smolts were captured in the RST between 10th April and 2nd May 2014. 324 Sea trout smolts were captured in the RST between 24th March and 29th May 2014. Applying the capture efficiency rate of 12% for the trap, the minimum estimate is 2616 Sea trout smolts migrating in 2014 and a minimum estimate of 2700 Sea trout smolts migrating in 2015. It should also be noted that the trap may not have been operational throughout the complete duration of the smolt run in both 2014 and 2015.

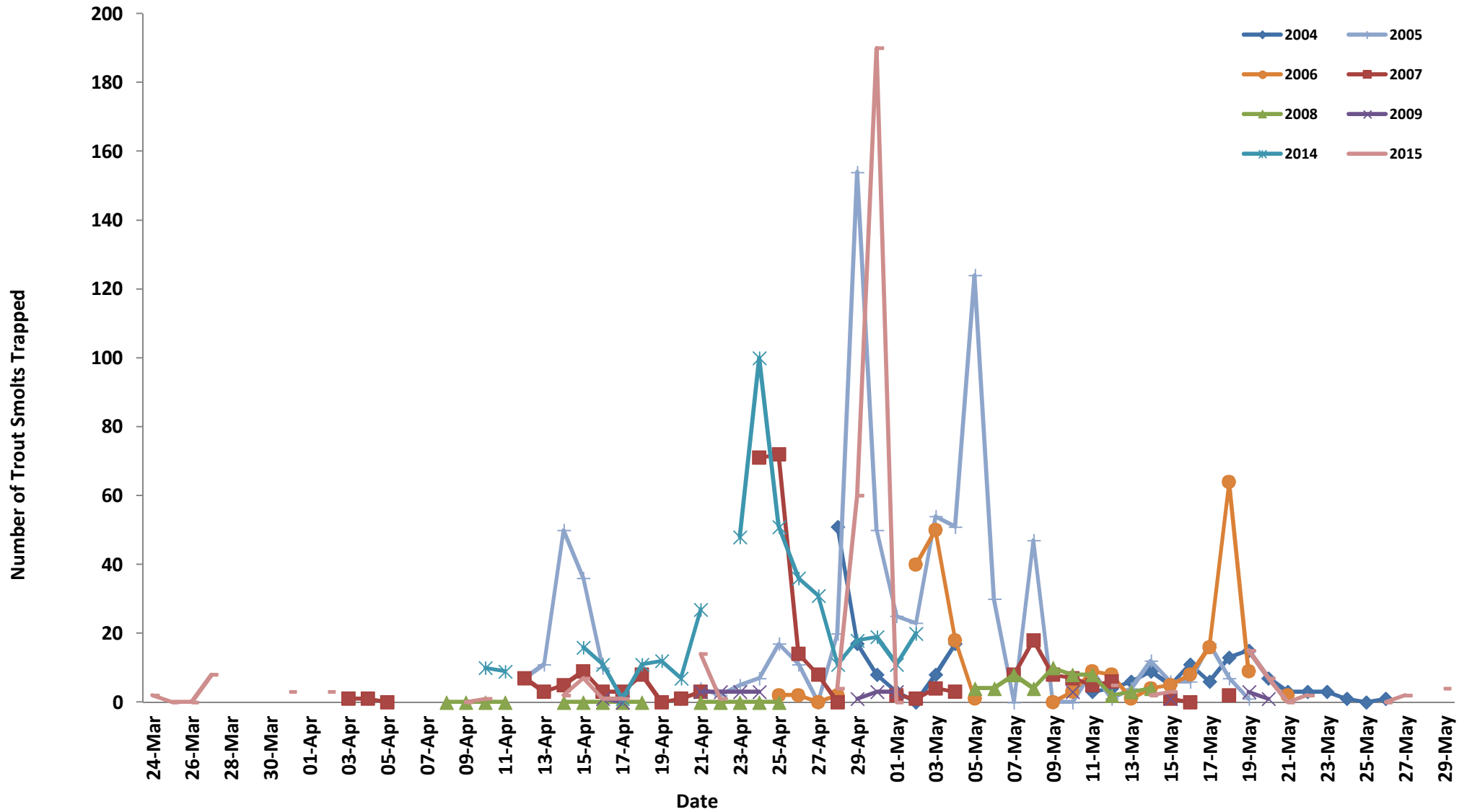


Fig.14 River Faughan Trout smolt run timing and abundance 2004 - 2009 & 2014 - 2015.

Scale samples have been used to conduct a Genetic Stock Identification exercise to allocate known Sea trout smolts back to reach of origin based on a genetic baseline of Faughan trout stocks. The majority of the Sea trout sampled in the River Faughan have been smolts but also included some adults and Finnock. Analysis of the overall length weight graphs and length frequency graphs (Figs. 15, 16, 18 & 19) for River Faughan and Altnaghree Sea trout suggests approximate lengths for Sea trout smolts as being 13 – 22.9cm. Finnock are approximately 23 – 32.9cm, whilst adults and Kelts are greater than 33cm long. Reliable length frequency data has an important use as a key management tool but should be complemented by accurate age data from scale reading. It can contribute towards the setting of slot limits for a specific species in a particular river system. The implementation of slot limits can prohibit the taking of fish within clearly defined size limits, providing protection to active breeders and juvenile fish. To ensure that a recreational fishery remains sustainable, slot limits can also be set which permit anglers to retain a quota of small Sea trout and a proportion of trophy fish.

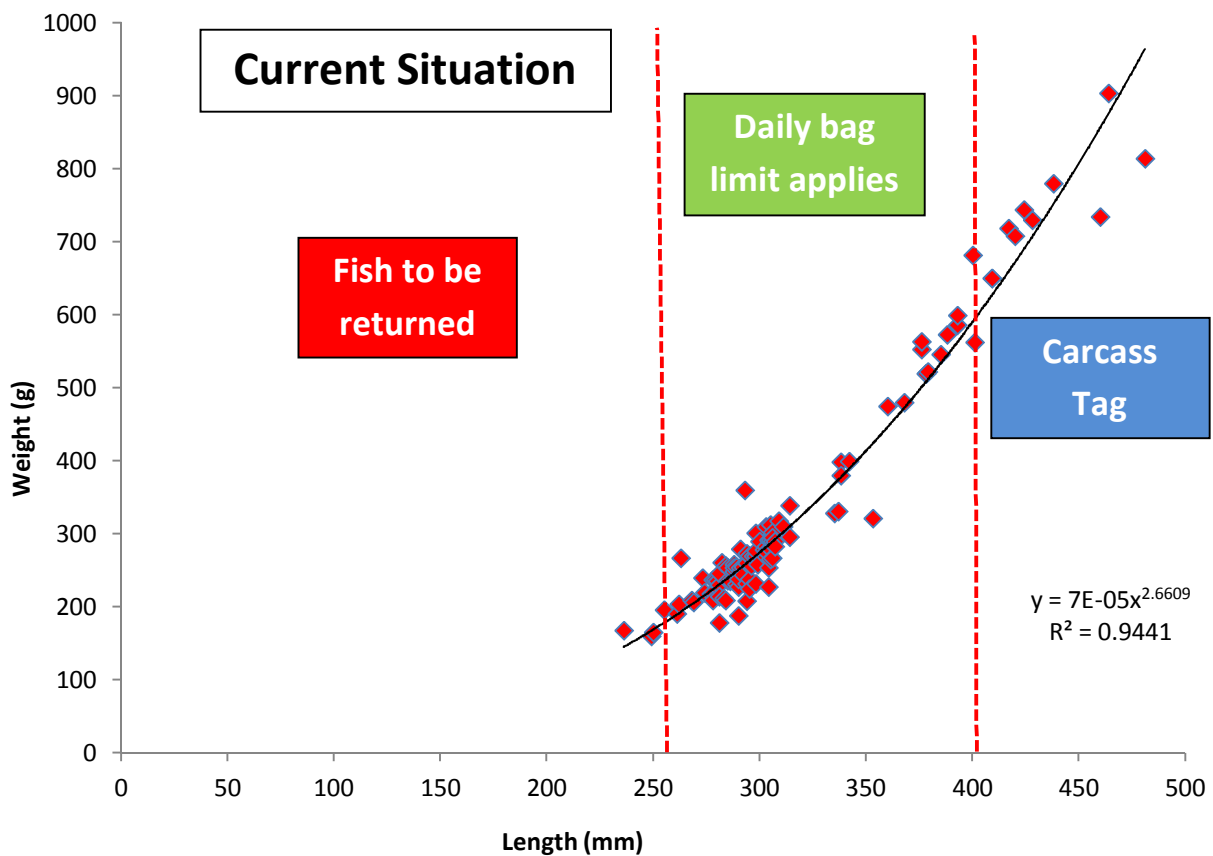


Fig.15 Length weight relationship of Foyle Sea trout (N=111) caught during survey. Many of these fish fall between the limits of 25.4cm and 40cm. Current legislation states these fish (up to a limit of 4 fish per day) can be retained without being tagged.

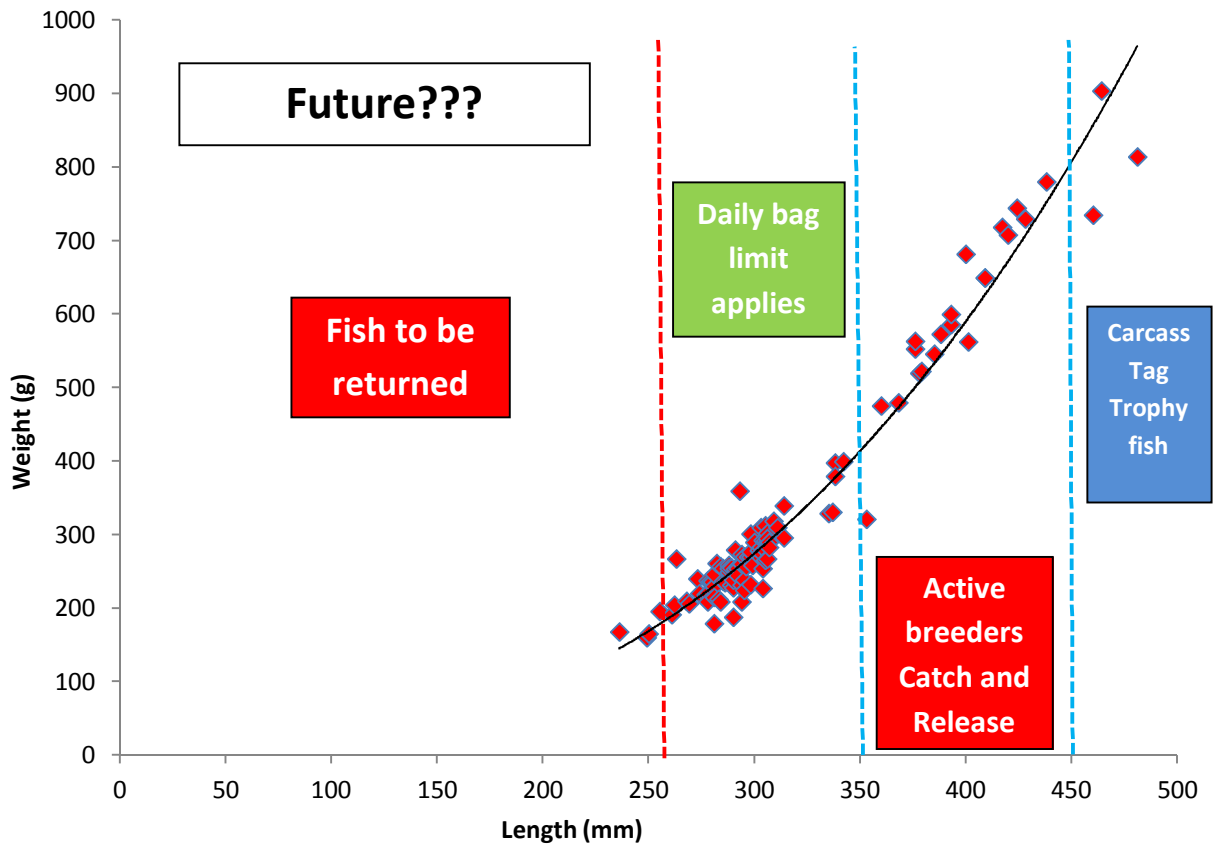


Fig.16 Length weight relationship of Foyle Sea trout (N=111) caught during survey. Many of these fish fall between the limits of 25.4cm and 40cm. Idealised slot limit scenario could include reduction on daily bag limit for fish between 25.4cm and 40cm, catch and release for 35cm to 45cm and retention of >45cm as trophy fish.



Fig.17 Altnaghree Sea trout

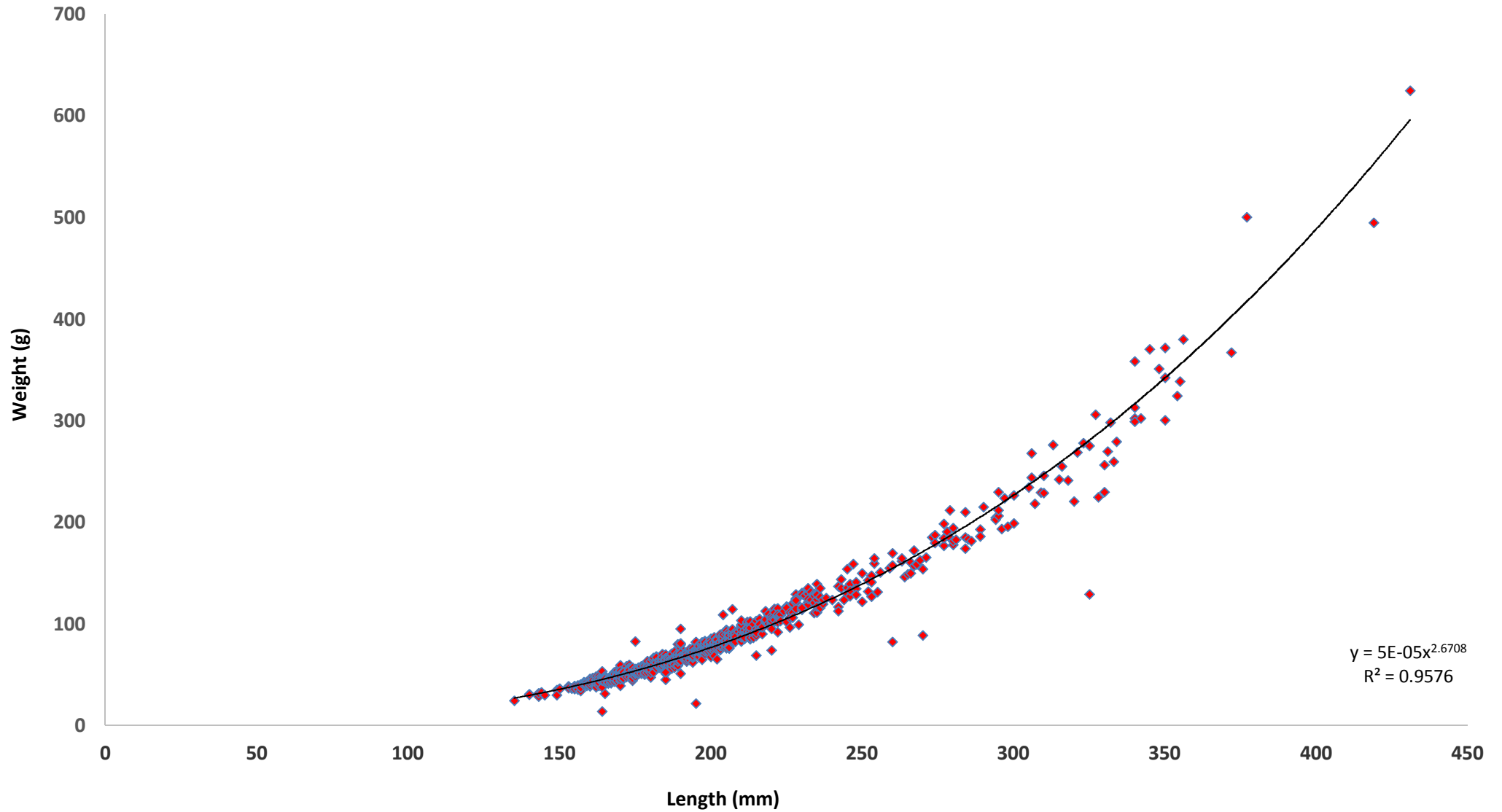


Fig.18 Length weight relationship of Sea trout, Faughan 2006 - 2009 & 2014 - 2015 (N=954)

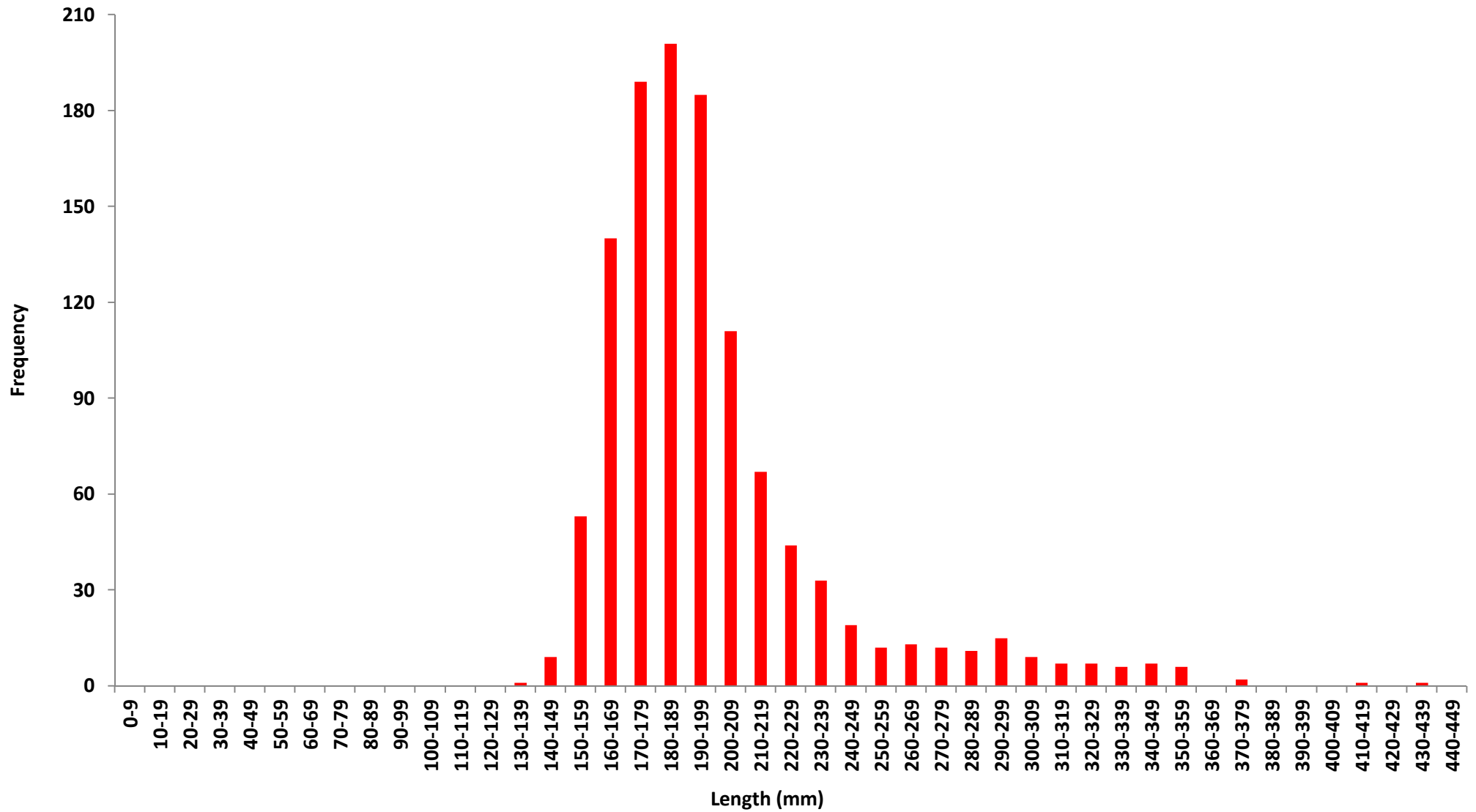


Fig.19 Length frequency of Sea trout, Faughan 2006 - 2009 & 2014 - 2015 (N=1161)

As outlined earlier the Loughs Agency monitors one index tributary for returning adult Sea trout. The Altnaghree Burn is a significant Sea trout spawning tributary of the Burdennet catchment. Monitoring commenced in the autumn of 2011 after habitat improvement works had been undertaken on some stretches of the river in 2010. Formerly the river had been dredged as part of an arterial drainage programme. Anecdotal evidence and local knowledge suggested that the Altnaghree had been an important Sea trout tributary in the past. In 2011 the first electrofishing survey was carried out for returning, pre-spawning adults. An electrofishing survey has been carried out on this same stretch of river each autumn since 2011. Lengths and weights were recorded for all fish, however no weights were recorded for any Sea trout caught in 2013. Scale samples have also been taken from all Sea trout and will be used for ageing. It is strongly recommended that additional adult Sea trout index sites are incorporated into this monitoring programme. It is hoped that by extending the programme it may be possible to identify any potential diversity in run timing, abundance and other key biological characteristics such as length, weight, age and sex ratios.

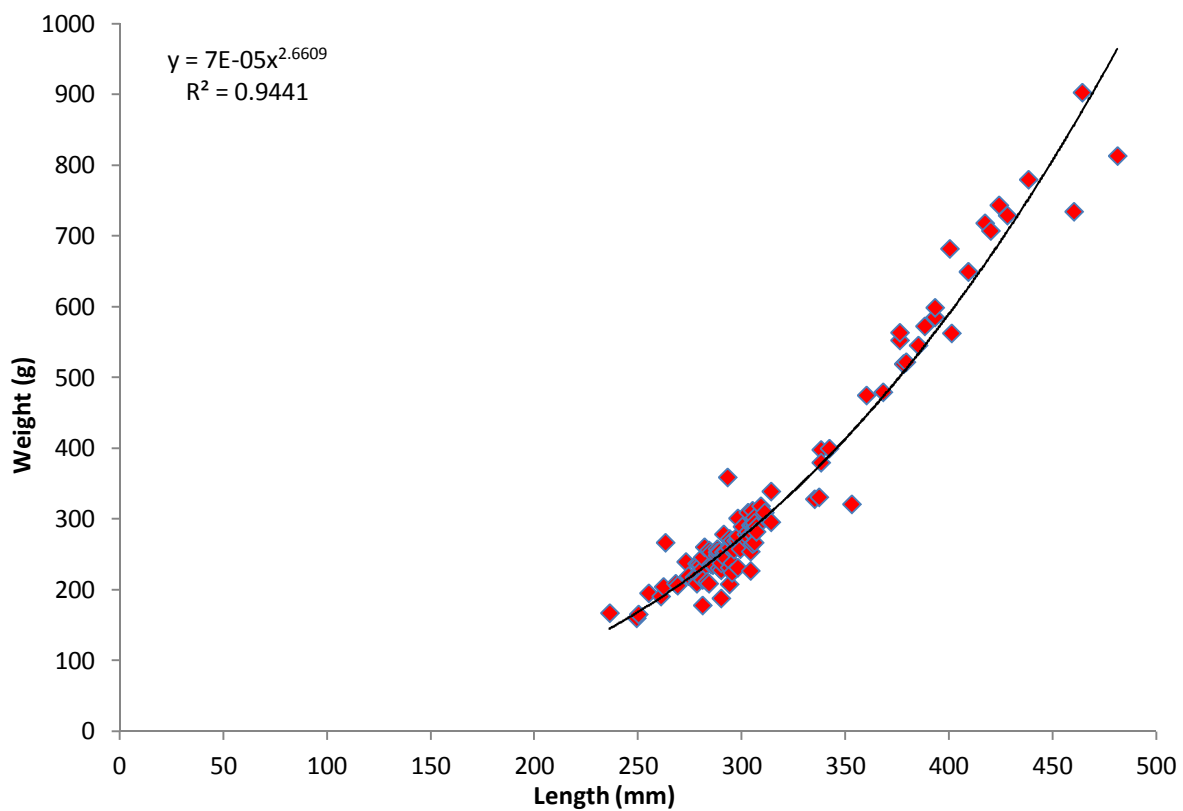


Fig.20 Length weight relationship of Altnaghree (Adult) Sea trout, 2011-2012 & 2014-2015 (N=111).

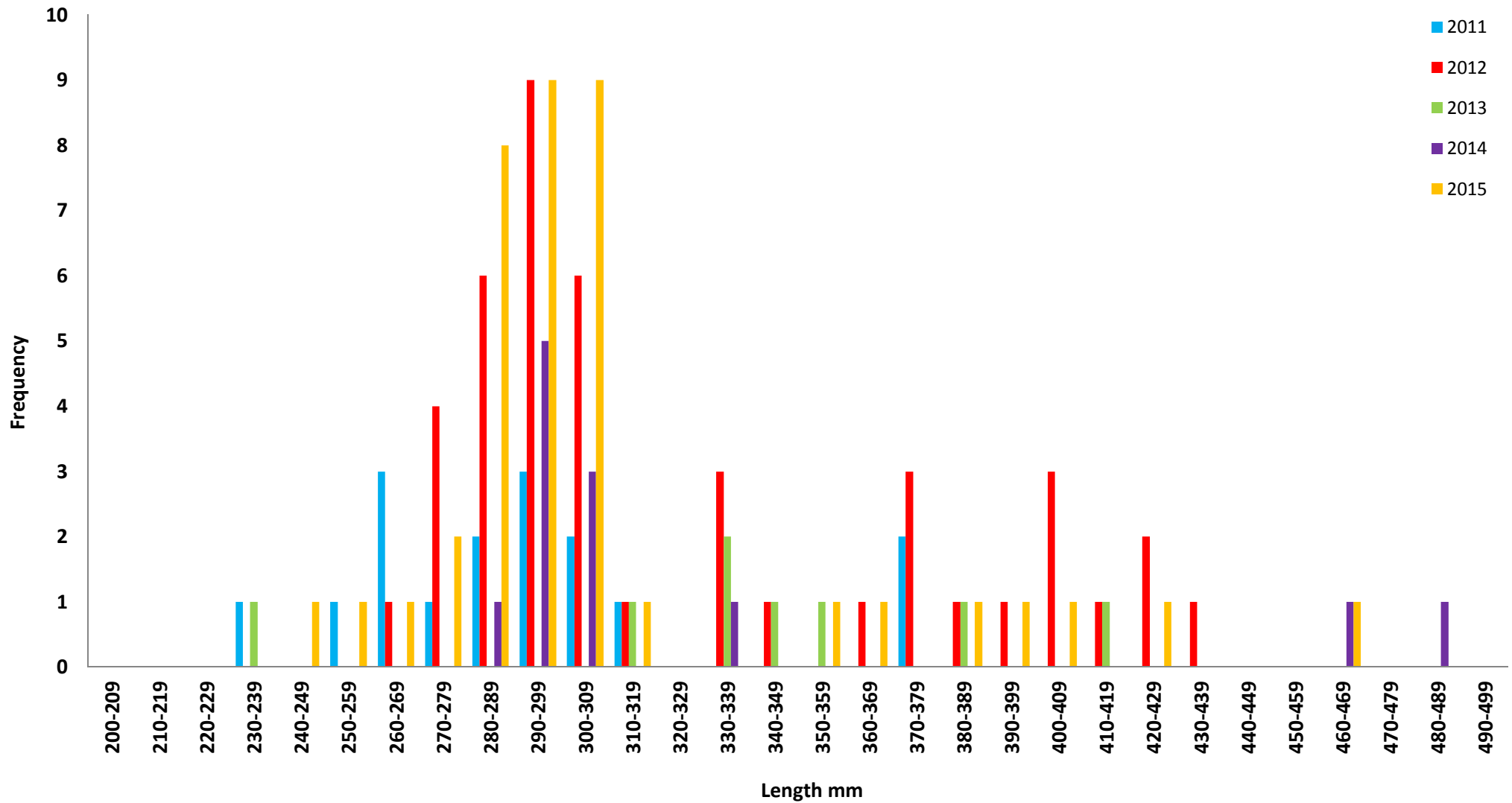


Fig.21 Length frequency of Altnaghree (Adult) Sea trout 2011 (N=16), 2012 (N=44), 2013 (N=8), 2014 (N=12) & 2015 (N=39).

The length frequency graph for Altnaghree Sea Trout (Fig.22) clearly shows that the majority of these Sea trout fall between the limits of 25.4 – 40cm. These are fish which under the existing legislation can be retained by anglers without the need for tagging. At present there is potentially significant under reporting of rod caught Sea trout. If only Sea trout over 40cm have to be tagged, this could be contributing to under reporting. The graph shows that Altnaghree Sea trout over 40cm which have to be tagged under existing legislation constitute only 12.5% of Sea trout sampled during surveys of the Altnaghree Burn. Of these fish the mean length was 428mm and the mean weight was 725g. Fish which can be retained without the need to tag make up 85% of the Sea trout sampled. Of these fish the mean length was 309mm and the mean weight was 300g. Fish which would have to be returned under current legislation made up only 2.5% of the total number of Sea trout recorded during these surveys. Of these fish the mean length was 238mm and the mean weight was 168g. By allowing anglers to retain all Sea trout between 25.4 – 40cm it may be the case that large numbers of active breeders are being taken out of current stocks. In order to protect the active breeding population, it may be necessary to introduce more appropriate slot limits (as outlined previously) designed specifically to conserve greater numbers of actively spawning adults.

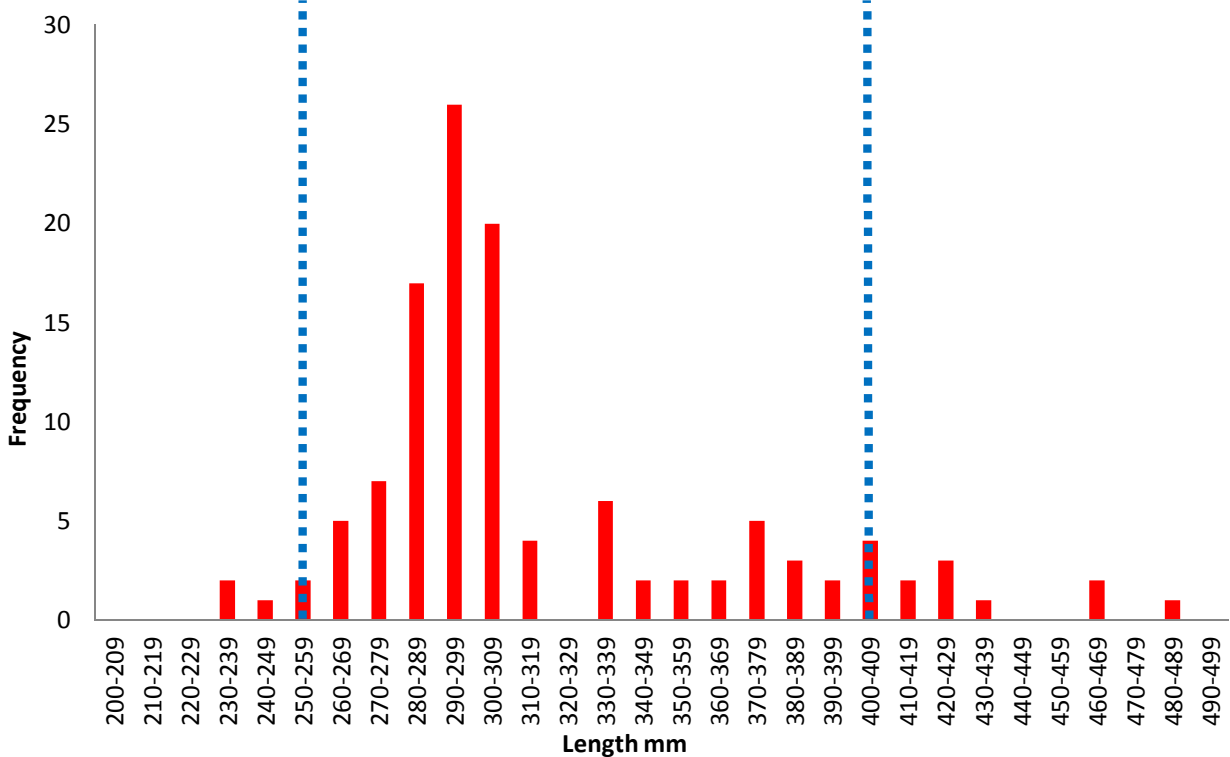


Fig.22 Length frequency of Altnaghree Sea trout (N119). The majority of the fish fall between the limits of 25.4 – 40cm. Current legislation states these fish can be retained without being tagged.



Fig.23 Returning adult Sea trout Altnaghree Burn, 2014.

5.0 IMPORTANCE OF SMALL STREAMS

Small streams are essential for Sea trout to complete their life cycle. A recommendation made by the Atlantic Salmon Trust, Sea Trout Workshop was that more attention should be given to the significance of small streams for Sea trout production. Sea trout are believed to have less competition for food in small streams as Salmon are generally fewer in number.

Even very small fishless streams can play an important role in providing a direct source of invertebrates for fish via downstream drift. These streams can also act as potential refuge for invertebrates in cases of pollution downstream. Small streams exhibit high heterogeneity in terms of species complement. They also make an important contribution to biodiversity with significant numbers of species found only in headwaters. It is thought that while macro-invertebrate abundance increases with distance from the stream source, heterogeneity declined. This may mean that Trout or Salmon in small streams have access to a wider food base.

Trout are widely regarded as a migratory species. As mentioned earlier within a population there is a tendency for males to be resident and females migratory. This

is particularly marked for anadromous populations. A trapping study carried out on the Tweed catchment showed that six out of seven burns showed very similar population structures with a predominance of small resident males and larger Sea trout females. The seventh burn higher up the catchment has a different profile, with only one main size group of larger, mostly resident fish, and a more even sex ratio.



Fig.24 The Altnaghree Burn, an important small stream for Sea trout.

Climate change could have ecological, biological and physical impacts on small streams. Data derived from modelling on the Burrishoole catchment in Co. Mayo suggests that seasonal rainfall will become increasingly pronounced, with the onset of drier summers and wetter winters. This change is likely to result in significant alterations to flow regimes. Small streams are vulnerable to increased temperature changes which could affect egg growth and juvenile survival. By and large Trout have a tighter range of optimal temperatures than Salmon. Increased in-stream temperatures could serve as a driver for some Trout to undertake an anadromous migration. Small streams have limited resilience to extreme floods and droughts and it is unclear how fish and other aquatic life will adapt to these fluctuating conditions. In the event of recurring extreme weather events the interfaces

between small and larger streams would be vital as refuge areas. Small streams need to be proactively managed they can be particularly vulnerable to acidification and they may be susceptible to invasive species introductions.

Small streams can contribute to larger water bodies failing to achieve good ecological status. However, many of these streams are too small to be classified as waterbodies under the Water Framework Directive, (Directive 2000/60/EC) as a result they do not receive any formal monitoring priority or the protection that they need (Whelan, 2014). Small coastal streams are important for both resident and migratory trout, with some short coastal streams holding substantial numbers of Trout fry. It is thought that Sea trout only enter these streams briefly during a flood event to spawn. There is evidence from Strangford Lough, Orkney and the Sussex Ouse of 0+ Trout fry moving downstream into brackish water. While 0+ fry can tolerate brackish water they could not survive in sea water. The economic importance of coastal Sea trout rod fisheries is increasing and it is possible that a substantial proportion of Sea trout targeted in these fisheries were produced in such streams. It has been argued that the significant numbers of Finnock actively feeding in bays around the Irish coast may be indicative of marine recruitment from these small coastal streams (McCully and Whelan, 2013).

There are potential benefits by further developing the Loughs Agency Index monitoring programme to include other tributaries, particularly where there is anecdotal evidence or local knowledge of Sea trout populations having been present in the recent past. It is known that Sea trout run the River Finn but there is a need to focus in on exactly where these fish are going to spawn. Some of the smaller coastal streams that discharge directly into Lough Foyle and Carlingford Lough might be the best place to start when trying to identify areas which are important for Sea trout. Small coastal streams provide a significant habitat resource as a proportion of total wetted area for Sea trout to complete their life cycle. By identifying potential and actual Sea trout spawning streams this will highlight areas that need to be protected.



6.0 PARTNERSHIP DEVELOPMENT AND CITIZEN SCIENCE

Monitoring of the Index site on the Altnaghree Burn is an integral component of the Loughs Agency Sea trout monitoring project designed to collect important biological data on Sea trout stocks to aid in future management decision making. A core aim is to expand it into other known spawning tributaries. To do this successfully will require more survey time, resources and ultimately more people. It may become necessary in the future to mobilise and make use of enthusiasts and volunteers as a support base for developing the Sea trout monitoring network into other tributaries. This practice has been referred to as 'Citizen Science'. These types of initiatives usually attract people from angling clubs and non-governmental organisations which have a vested interest in the biodiversity of our rivers and streams. The Flylife Partnership's Anglers Monitoring Initiative is a positive example of the use of volunteers to monitor freshwater invertebrate communities. This type of approach could also be extended to other forms of biological monitoring. The importance of establishing links and partnerships with other interested groups and organisations is an essential component of citizen science. If this volunteer potential is harnessed appropriately, it could ensure the practicality of long term monitoring projects at other key sites throughout the catchments of the Foyle and Carlingford area.

In September 2013 the Loughs Agency delivered two (IBIS funded) practical habitat improvement workshops. The habitat improvements were carried out on an inflowing tributary of Lough Derg, Co. Donegal and on the Altnaghree Burn at Liscloon in Co Tyrone. The workshops were delivered in partnership with the Wild Trout Trust and included stakeholders from both the Dennett Anglers and the Pettigo and District Angling Association. Over a period of four days approximately 50 participants using a variety of techniques, carried out habitat improvements at both sites. These workshops were a great example of volunteering in action and showed what can be achieved when organisations and individuals with a common purpose join together in partnership. The Loughs Agency does not have the capacity to deliver broad scale habitat improvements on its own, it requires the support and involvement of local interest groups to do so. There is a need for a developing third sector to bring forward collaborative projects involving a range of stakeholders.

Links to the videos of the Wild Trout Trust habitat improvement workshops and Loughs Agency Sea trout monitoring project are available below.

<https://www.youtube.com/watch?v=LMRX9IOiBul>

<https://www.youtube.com/watch?v=kDHdCWWmSmo>

https://www.youtube.com/watch?v=D1rARVjiPcw&index=2&list=PL_1i4BnYzhFyU1sZsfVji8s73CwIW_HIb



Fig.26 Habitat improvements being carried out on the Altnaghree Burn, September 2013.

Another excellent example of citizen science at work is the Moray Firth Trout Initiative in Scotland. The initiative was formed through a partnership project, working with local Fisheries Trusts, District Salmon Fishery Boards and Community Angling Associations. The various stakeholders realised that although Sea trout numbers were in decline, they were still an important part of Scotland's natural heritage. The initiative set out to introduce measures which would help to conserve the species and its habitats. It also sought to improve

education and raise awareness of trout ecology, create a network of community volunteers and generate a sustainable, locally managed rod and line trout fishery. This collaborative project set out to improve the understanding of Moray Firth Sea trout, gather baseline information which would help to protect the species and its habitats and provide evidence for informed management decisions of local Sea trout populations. In order to do this the Moray Firth Trout Initiative implemented a range of measures to help achieve the aims of its conservation programme.

- Electrofishing surveys to assess juvenile trout numbers, with emphasis on small coastal streams
- Habitat surveys by the local Fisheries Trusts
- Habitat restoration projects – identifying degraded habitats and utilising local volunteer networks to carry out remedial works
- Create an archive of Sea trout scales provided voluntarily by anglers
- Coastal seine netting surveys to improve understanding of Sea trout feeding habits
- Hill Loch sampling to provide data on distribution and the importance of upland streams
- Use of genetic and isotope analysis to improve understanding of population homogeneity

More information can be found at <http://www.morayfirthtrout.org/index.asp>

7.0 FUTURE WORK AND RESEARCH

The formation of a wider Sea trout index monitoring network is an important component of future Sea trout monitoring in the Foyle and Carlingford areas. Angling reports in 2015 would suggest that there has been an increase in the numbers of Sea trout returning to our rivers this year. Only by expanding the monitoring network to other key tributaries will the Loughs Agency begin to gain a better understanding of where Sea trout are returning to spawn and in what numbers. An expanded monitoring project could include the possibility of tracking of returning Sea trout on to their spawning areas. A knowledge of Sea

trout spawning areas is essential when trying to protect and conserve Sea trout stocks. It will allow the Loughs Agency to specifically target these tributaries for practical habitat improvement works designed to conserve, protect and improve the amount of suitable spawning habitat for Sea trout in these actively producing areas and to expand spawning areas through targeted habitat improvement projects. Any future work could also include provisions to create an archive of Sea trout scales for aging and possibly genetic analysis. A scale archive could be used to age the fish using back calculation methods, and would also be beneficial in calculating time of smolting and time spent at sea. Further analysis is needed to ascertain the setting of slot limits which will allow anglers to retain a proportion of the fish that they catch but which will also help to protect the active breeders within unique spawning stocks. The Loughs Agency should also consider the potential for trapping of adult Sea trout at suitable sites. This could be done as part of the project to expand the index monitoring network. The formation of a Sea Trout Partnership for the Foyle and Carlingford catchments could provide the focus for the conservation and protection of Sea trout within the Loughs Agency areas. A partnership working in collaboration with interested stakeholders, local communities, non-governmental organisations and angling associations could create the basis for a long term monitoring programme with the aim of conserving, protecting and improving Sea trout stocks. The amalgamation of these interest groups working in partnership with the Loughs Agency could provide the skills, people and resources necessary to roll out an index tributary monitoring network for Sea trout. A Sea trout partnership would be able to allocate resources, collect biological data, report its findings and empower anglers to become actively involved in the conservation of Sea trout stocks.

8.0 LEGISLATION AND REGULATION

The Loughs Agency operates under the Foyle Fisheries Act 1952 and the Foyle Fisheries Act (NI) 1952. These are parallel pieces of primary legislation enacted through the UK and Irish legislatures. Provisions are made within the primary acts and amendments to facilitate the development of sub ordinate regulations. Regulations can be created to support the primary legislation and include control of fishing, seasons, methods etc. The Loughs Agency enforces all

relevant fisheries legislation and regulations within the Foyle and Carlingford areas through its fishery inspectorate which lies under the Loughs Agency directorate of conservation and protection.

Local angling associations in contrast can create their own club rules for club waters but they are not statutorily enforceable. Loughs Agency legislation and regulations apply to all clubs operating within the Foyle and Carlingford areas. Loughs Agency regulations which are directly applicable to Sea trout are as follows:

Size limit - game fish - No salmon, brown trout or sea trout of less than 25.4cm (10 inches) may be retained!

Tagging - salmon and sea trout - Anglers must gill tag all salmon and all sea trout over 40cm (15 1/2 inches) that are caught and retained immediately on landing the fish!

Sale of Rod Caught Fish - A person shall not sell - or offer for sale - salmon or sea trout caught by rod and line.

Gravid Fish - In the interests of conservation, anglers are urged to return gravid fish to the water unharmed.

Weirs - There is a general prohibition of angling within 5 meters of any weir in the Foyle and Carlingford areas. This distance may be extended locally. For instance, at Sion Mills, Omagh and elsewhere - check locally!

Rivers Foyle & Finn - For conservation reasons, the rivers Finn and Foyle have been declared 'catch and release' - single barbless hooks must be used and all fish (Brown trout, Sea trout and salmon) must be returned to the water unharmed.

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. Anglers are advised to update themselves on current regulations.

In addition to legislation and regulation particular consideration should be given to the development of codes of good practice. Encouragement and guidance should also be given to clubs/associations who are eager to implement conservation and protection focused rules based on a strong evidence base.

9.0 DISCUSSION

Rod catch and juvenile electrofishing surveys are the two main sources of data collected annually on Trout populations within the Foyle and Carlingford areas. Rod catch returns in 2014 were 14% and have been under 20% for the past three consecutive years. It is a legal requirement for an angler to present the Loughs Agency with an accurate and timely rod catch return. There is limited up to date information on Sea trout stocks and rod catch returns are an important tool in filling the information gap. 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 Sea trout spawning tributaries within defined index reaches.

Further research could facilitate a better understanding of the status and distribution of Sea trout within the Loughs Agency area. Populations of sea trout stocks collapsed in the 1980's and they have generally been in decline ever since. However, many of the measures taken by the Loughs Agency to protect Atlantic salmon have also had the added benefit of aiding Sea trout. A review of current legislation and regulations would also be beneficial. Any review should focus on whether current legislation is compatible with the key biological data being collected in the Foyle and Carlingford areas at present. Long term monitoring may also be useful in assessing previous habitat improvement programmes. 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. The formation of a Foyle Sea Trout Partnership could provide a focus for the conservation and protection of Sea trout stocks and provide the basis for an enhanced Sea trout monitoring programme. Current monitoring methods being used on the Altnaghree Burn could be expanded out into other tributaries and additional catchments within the Foyle with a long term view of creating an Index Tributary Monitoring Network. There is a possibility of providing anglers with basic sampling kits to record lengths, weights and take scale samples from any rod caught Sea trout. An inventory of Sea trout scales would be used for ageing fish or for any future genetic stock identification exercise. This approach could also empower angling associations to become actively involved in the conservation and monitoring of Sea trout stocks.

10.0 CONCLUSIONS

The Loughs Agency has historically recorded Sea trout rod catches and juvenile trout electrofishing data. Both these data sets have good spatial and temporal distribution. In recent years this information has been complemented by data on Sea trout smolts and adult Sea trout. This growing baseline of information provides a strong evidence base from which to guide the development of conservation and protection policy and to aid in the future management of Sea trout stocks.

Significant resources have also been expended to develop a Trout strategy and to develop and implement salmonid habitat improvement projects. Communication and information dissemination on Sea trout populations within the Foyle and Carlingford areas has been instigated through traditional print media, the Loughs Agency website, various social media feeds and through the Loughs Agency You Tube TV channel.

<https://www.youtube.com/channel/UCGosHAjPKnFTI-o1RjOCebw>



This report is intended to provide baseline information on Sea trout held by the Loughs Agency, to provide a synopsis of ongoing Sea trout monitoring efforts and to offer some recommendations for future co-ordinated management of Sea trout stocks within the Foyle and Carlingford areas.

Two of the key recommendations are:

1. Expand and resource the Sea trout index tributary monitoring network and establish an estuarine/coastal monitoring project to collect key biological information to guide future management decision making.
2. Develop both a Foyle and a Carlingford trout partnership in collaboration with stakeholders and volunteers. This proposal could have significant social, economic and environmental benefits. A strong application for external funding could be made for a participative project.

An integrated and coordinated approach towards the management of our Sea trout resource needs to be taken to ensure existing and future resources are managed in a sustainable manner. Knowledge and information gaps need to be filled where possible to ensure progress can be made towards the key aims of conserving, protecting, developing and improving our Sea trout resource. All efforts should be made to achieve this through the development of collaborative and participative processes. Close liaison and communication with angling development initiatives and anglers specialising in Sea trout fishing should be instigated and prioritised.

11.0 RECOMMENDATIONS

- Develop an index tributary monitoring programme on known Sea trout rivers.
- Create a Sea Trout Partnership for the Foyle and Carlingford catchments with the aim of conserving, protecting, developing and improving Sea trout stocks.
- Develop and promote advice on the setting of slot limits which will determine the sizes of fish which anglers will be permitted to retain. There is the potential for new regulations to be introduced or for angling clubs to incorporate slot limits into their club rules.
- Review the procedures for reporting of rod caught Sea trout in the Loughs Agency area.
- Develop a GIS based inventory of known Sea trout spawning tributaries.
- Investigate the potential to develop local conservation and protection designations for Sea trout in vulnerable areas.
- Continue and develop River Faughan Rotary Screw Trapping index site for Sea trout smolts

- Conduct further genetic stock identification to ascertain population structures of migratory and resident trout within catchments.
- Develop and carry out adult Sea trout trapping at Sion Mills and on the River Finn to collect key biological information.
- Identify key Sea trout spawning areas by conduct tagging studies.
- Develop coastal and estuarine acoustic telemetry studies to fill knowledge gaps in relation to utilisation of local feeding ranges.
- Investigate the importance of estuaries in juvenile and adult life stages of Sea trout.
- Carry out aging of Sea trout scales from historic and future scale samples.
- Explore the use of stable isotope analysis to determine Salmonid diets.
- Investigate the possibility of a survey of the main tidal Foyle and its estuary.
- Explore the possibility of an enhanced recreational fishery on the Foyle.
- Develop monitoring and education programmes to highlight the importance of coastal streams in contributing to Sea trout numbers.
- Improve our knowledge of macro-invertebrate communities and the productivity of small streams.
- Develop and implement Sea trout partnerships through external funding opportunities.
- Incorporate social and historical aspects into any future Sea trout projects.



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