LOUGHS AGENCY OF THE FOYLE CARLINGFORD AND IRISH LIGHTS COMMISSION

Loughs Agency Water Framework Directive Fish in Rivers Classification Report 2015

Water Framework Directive Fish Population Assessment

Loughs Agency of the Foyle Carlingford and Irish Lights Commission
Art Niven, Mark McCauley & Rachel Scott, May 2016

This report outlines results and classifications from Water Framework Directive fish surveillance and routine monitoring programmes within rivers of the Foyle and Carlingford areas during 2015

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Land owners and angling associations are also gratefully acknowledged for their co-operation.

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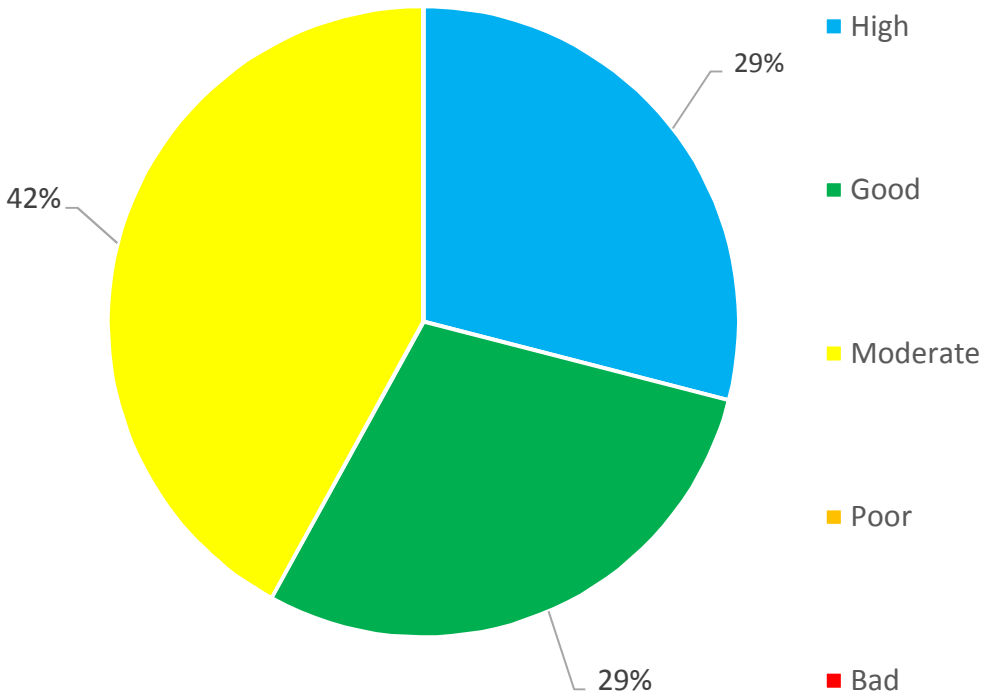
EXECUTIVE SUMMARY

Seven Water Framework Directive fish surveillance monitoring stations were surveyed within the Loughs Agency jurisdiction in 2015. All seven were within Northern Ireland. 29% of sites surveyed were classified as high status, 29% as good status and 42% as moderate status. 0% of sites were classified as poor or bad status.



Classification in 2015 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 2015. An overview of the classification system is provided and a synopsis of the survey data presented.

Additional data and information has been presented in a series of excel spreadsheets and ESRI Arc GIS shape files. All data reported is stored within the Loughs Agency Geographical Information System (GIS) and is available upon

request. Photographs of each site have been included and outline recommendations made for consideration as part of any programme of measures.

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 this report.

A number of recommendations are made to ensure the continued success of Water Framework Directive river fish monitoring.

1.0 INTRODUCTION

This report has been prepared to disseminate results for Water Framework Directive fish monitoring within the Foyle and Carlingford areas as managed by the Loughs Agency. The Loughs Agency reports this information to the Northern Ireland Environment Agency. The report provides classifications for water bodies with surveillance monitoring stations and for water bodies covered by routine semi quantitative Salmon Management Plan monitoring within the Loughs Agency jurisdictions of the Foyle and Carlingford areas for 2015. Additional information has been provided in electronic format.

WFD compliant fish surveys at surveillance stations are required under national and European law. Annex V of the WFD outlines that rivers are included within monitoring programmes and that the composition abundance and age structure of fish fauna are examined (Council of the European Communities, 2000).

A synopsis of targeted Water Framework Directive river fish sampling within the Foyle and Carlingford areas has been provided below for fieldwork conducted in 2015.

Other sites outside the Foyle and Carlingford areas have been monitored by the Agri Food and Biosciences Institute (AFBI) under contract to NIEA. Loughs Agency and AFBI have previously collaborated on a number of surveys to ensure continuity of sampling methods, no collaborative surveys were conducted in 2015.

2.0 BASIS FOR WATER FRAMEWORK DIRECTIVE FISH CLASSIFICATION

The Fish Classification Scheme 2 tool for Ireland (FCS2 Ireland) has been developed to classify fish fauna from high status to bad status to comply with Water Framework Directive requirements. FCS2 Ireland is a statistical model based on the Environment Agency (England) Fisheries Classification Scheme 2 (FCS2). FCS2 Ireland compares the observed abundance of fish of each species with a site specific prediction of the expected fish community under near undisturbed “reference conditions”. The predicted reference conditions are estimated using models created for each part of the UK and Ireland (UKTAG, 2013).

FCS2 Ireland was used for the first time within the Loughs Agency jurisdiction in 2012 to classify fish in rivers. This methodology is WFD compliant and has replaced professional opinion as the main method of classification. A professional opinion over ride can still be employed if deemed appropriate. Fish classifications will be incorporated into final surface water classifications.

Data collection was conducted in the field during July and August 2015 and involved the use of a quantitative electrofishing methodology. Electrofishing is the preferred method for WFD surveillance monitoring of fish in rivers to obtain a representative sample of fish from each monitoring station. This method is compliant with the European Committee for Standardisation (CEN) standards for assessing fish stocks in wadeable rivers (CEN, 2003).

Quantitative electrofishing requires the netting off of a section of river using stop nets. Removal sampling is then conducted utilising electrofishing equipment with the numbers, age class and species of each fish being recorded for each pass. After an appropriate depletion has been achieved, which facilitates a density estimation to be made, all fish were returned alive to the river.

Additional habitat variables were recorded and the exact sampling locations were recorded using a Trimble Juno hand held GPS unit.

Professional judgement over ride can be utilised where classifications are deemed to be inaccurate due to the presence of barriers to migration downstream of the sampling stations. Consideration of this issue has not been incorporated into the FCS2 (Ireland) model at this time. Other scenarios for professional judgement over ride include significant deviation from expected classification and higher than normal water levels during survey.

NURSERY AREA	
Grade 1	• 50 -80mm water depth • 0.5 – 8% gradient • Stable cobble/boulder substrate > or = 70% bed cover • Providing adequate cover

Grade 2	Marginally outside grade 1 on one count only
Grade 3	Well outside grade 1 on one or more counts
Grade 4	Absent, deep, channelized, silty etc.
SPAWNING AREA	
Grade 1	• Flow 300 – 600mm/sec • Water depth 150 – 700mm • 70% substrate 30-80mm diameter • Gravel depth: Trout = 50-150mm Salmon = 200-500mm
Grades 2-4	Failing as for nursery habitat above
HOLDING AREA	
Grade 1	• Depth minimum m ideally > or = 2m • Suitable cover • Bankside/substrate stability
Grades 2-4	Failing as for nursery habitat above

Table 1. Habitat classification based on Department of Agriculture for Northern Ireland (Fisheries Division) advisory leaflet on the evaluation of habitat for salmon and trout

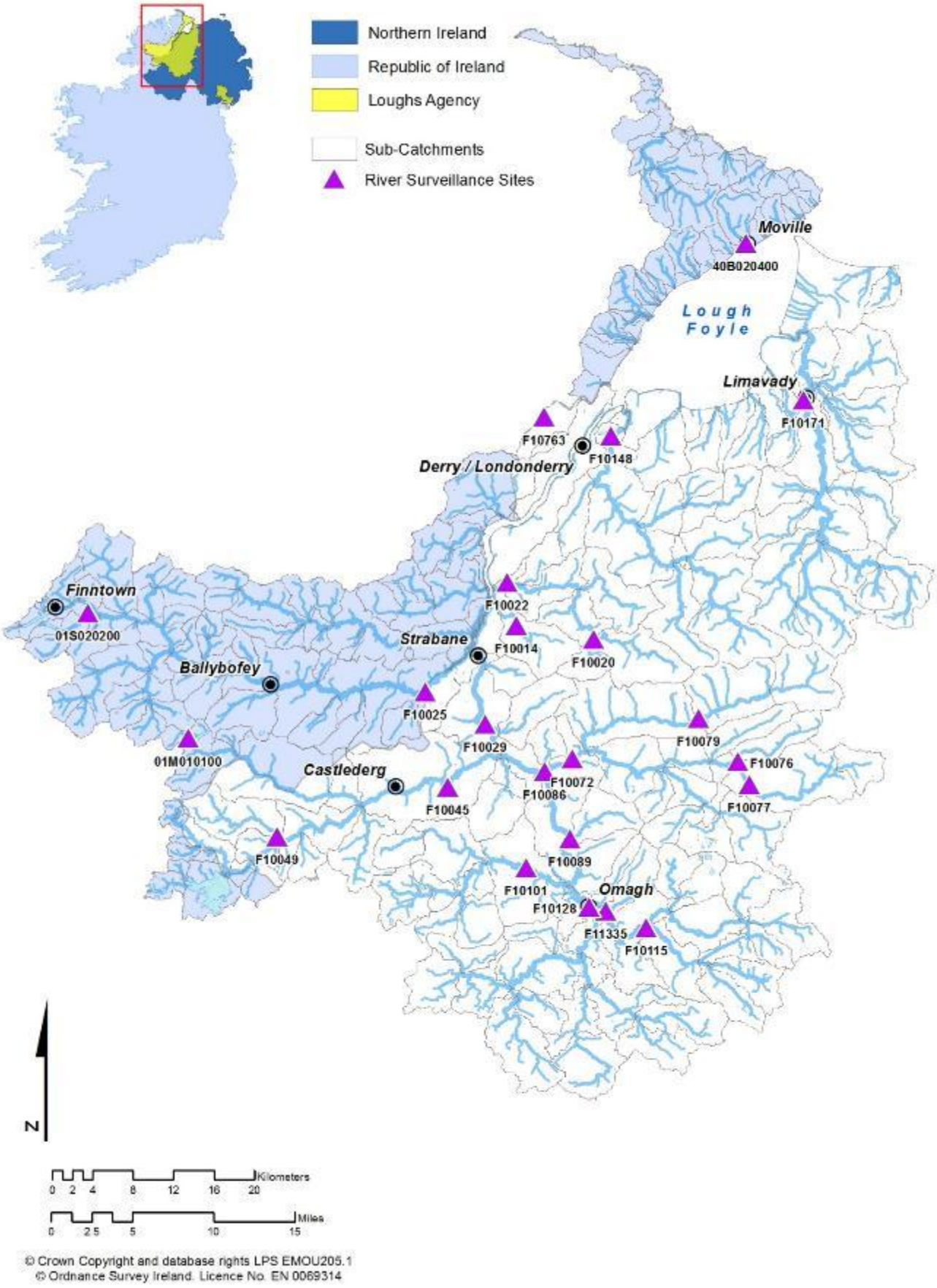


Figure 1. WFD Fish surveillance river sites within the Foyle area, Northern Ireland and Ireland

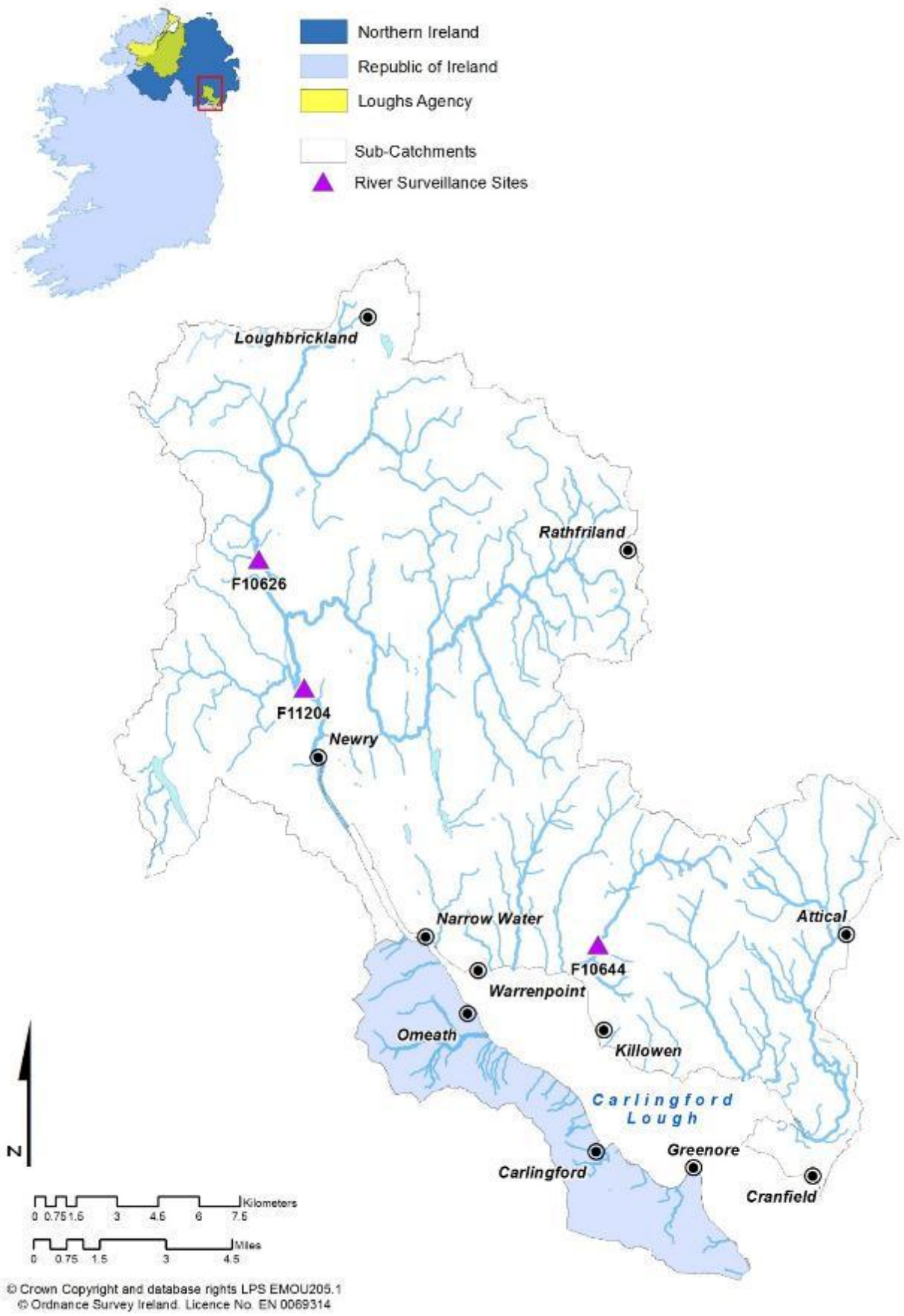


Fig 2. WFD fish surveillance river sites within the Carlingford area, Northern Ireland. There are no sites within Ireland in the Carlingford area.

3.0 CLASSIFICATIONS

3.1 F10014 Glenmornan River at Catherines Bridge GBNI1NW010101075 Glenmornan WFD Fish Classification 2015

MODERATE

METHOD	Sal 0+	Sal 1+	Tro 0+	Tro 1+	Eel	Total
1st Pass	0	0	8	18	0	**26**
2nd Pass	0	0	8	2	0	**10**
3rd Pass	0	0	6	2	0	**8**
TOTAL	**0**	**0**	**20**	**22**	**0**	**44**

Table 2. Electrofishing sampling results

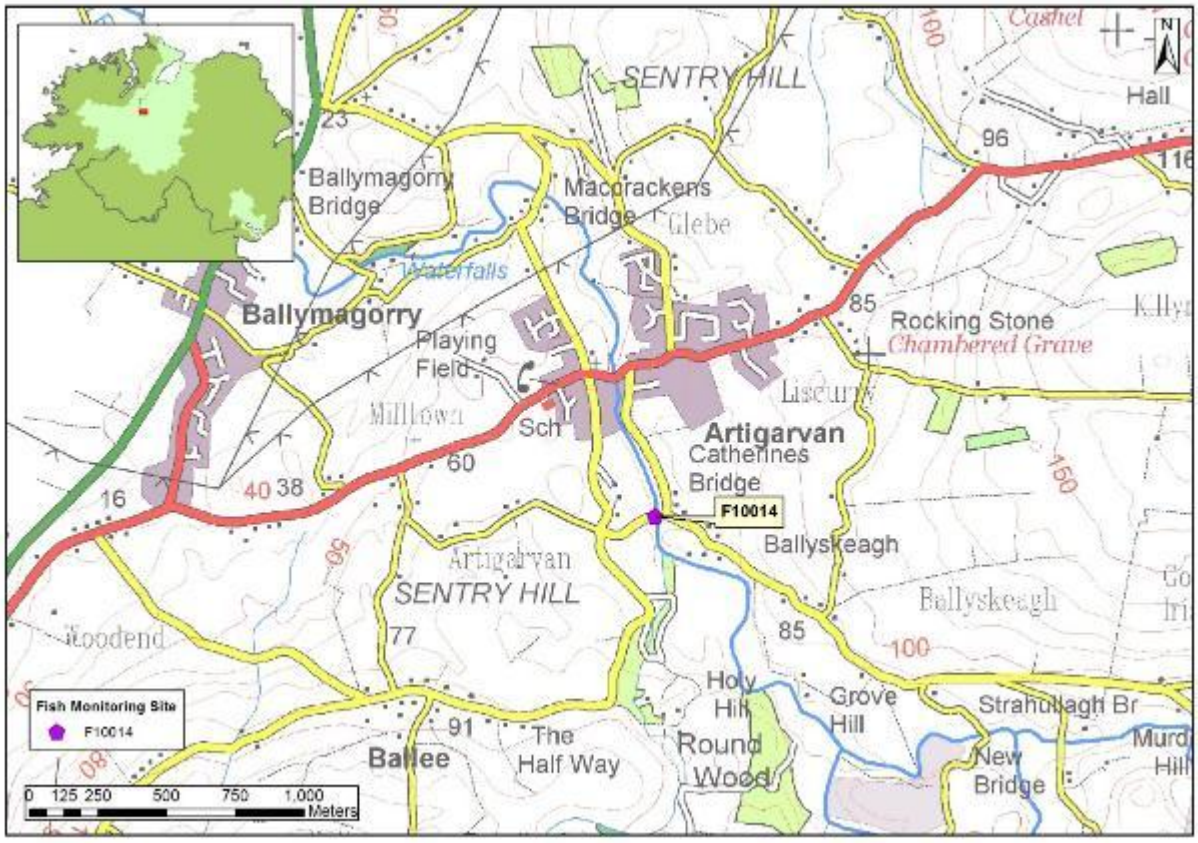


Fig 3. Site F10014

3.11 Results

Site F10014 was surveyed using a quantitative electrofishing method. This involved stop netting the river at both upstream and downstream limits of the selected site. Between the stop nets removal sampling was conducted. From this data, density estimates have been calculated for all species and age classes present.

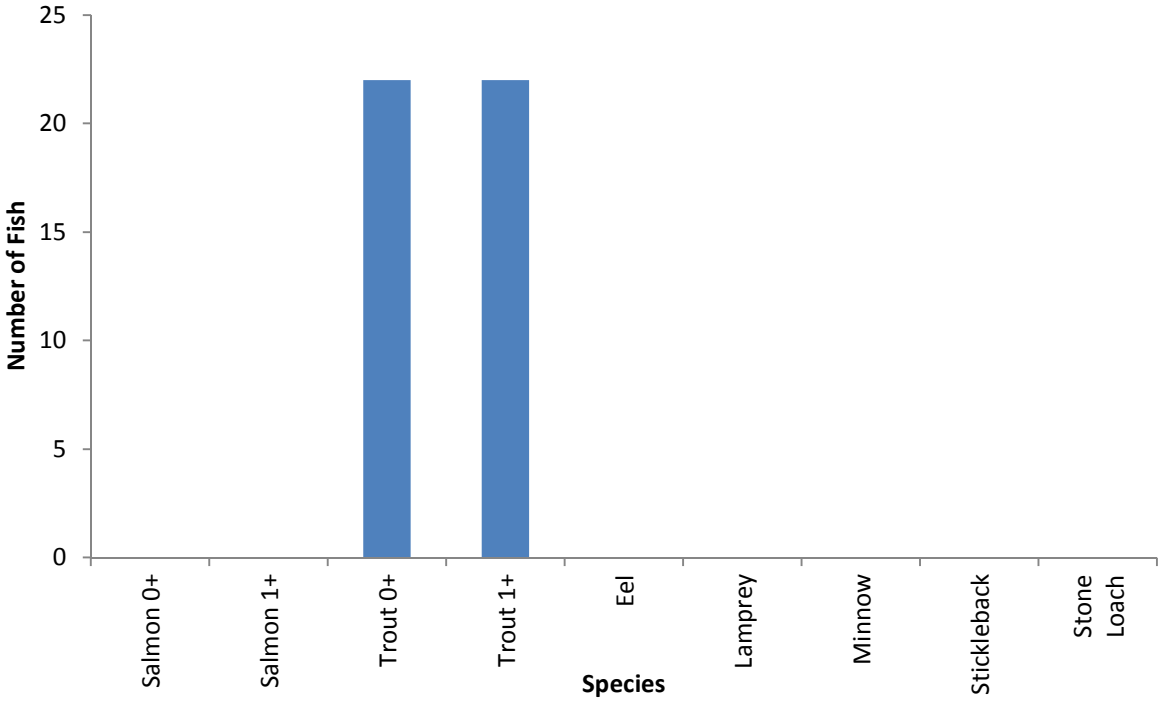


Fig 4. Total catch

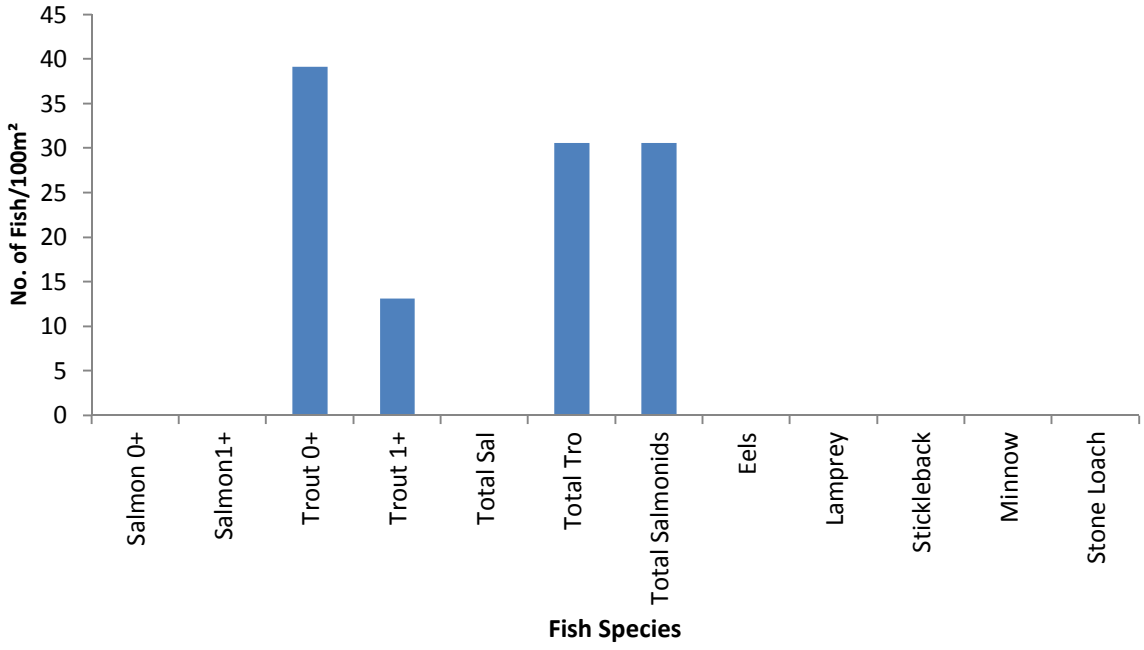


Fig 5. Density/100m²

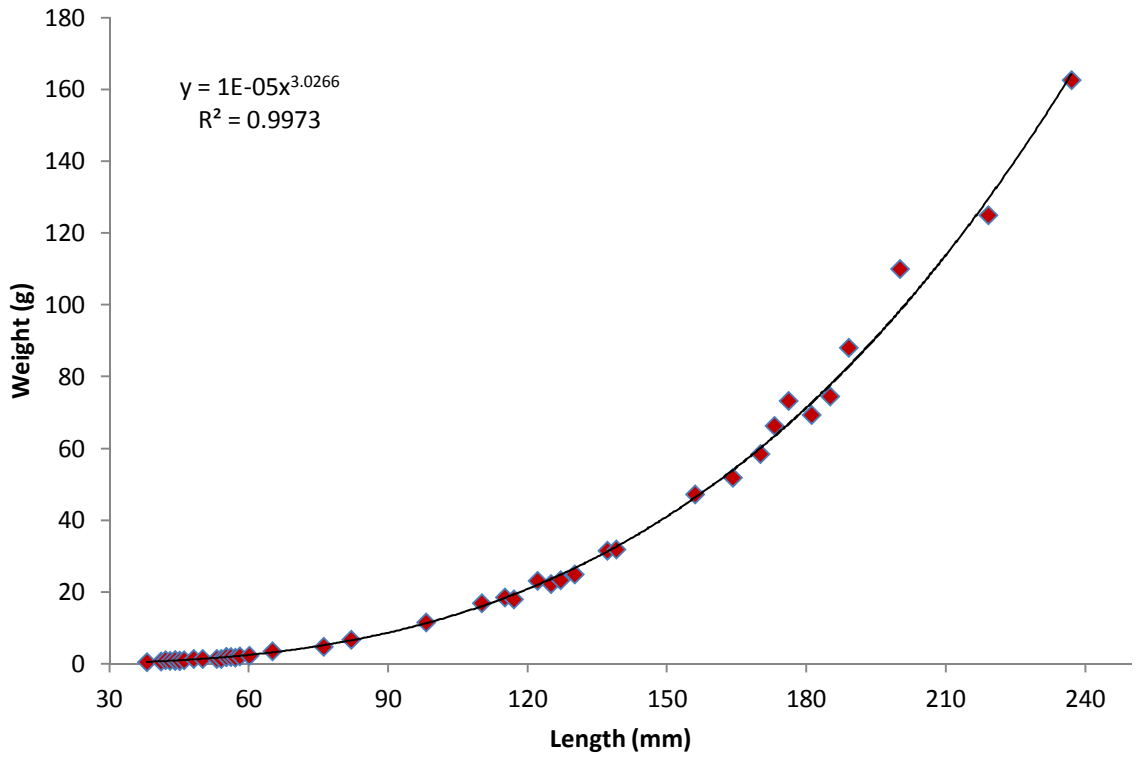


Fig 6. Length weight relationship of trout n = 44

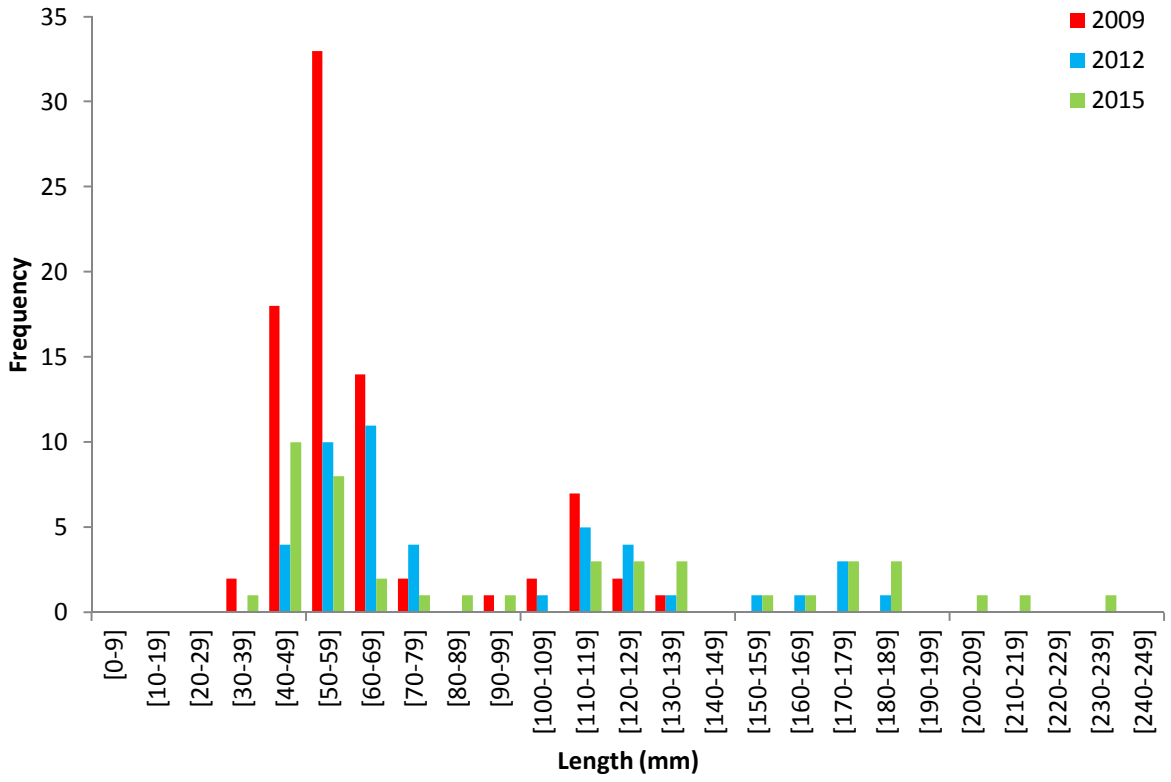


Fig 7. Length frequency distribution for trout. 2009 n = 82, 2012 n = 46 & 2015 n = 44

This site is composed predominantly of grade 2 nursery habitat (45%) with grade 2 spawning habitat (30%) and grade 2 holding habitat (25%).

This site was fished upstream of the monitoring station for operational reasons. The exact location is given in the spreadsheets supplied which provide grid references for upstream and downstream stop net locations.

The site is upstream of a natural barrier to migration for migratory salmonids. The site is also upstream of a WWTW. Additional biological information is available in the spreadsheets provided. The right hand bank has been heavily trampled by livestock. Himalayan balsam is present on both banks and there is rubbish and farm plastic on the right hand bank. Excellent trout holding water upstream.

3.12 Proposed Programme of Measures

Potential programmes of measures could include improved riparian land management in the form of stock proof fencing, native buffer zone creation with limited access grazing and pasture pump installation. Some improvement of in-channel substrate could be conducted by either loosening compacted gravels or by importing new substrate. Treatment of riparian invasive species is also required. These measures are site specific. At the waterbody level riparian invasive species particularly Himalayan balsam is a significant problem. Bank erosion as a result of trampling by cattle is also an issue.

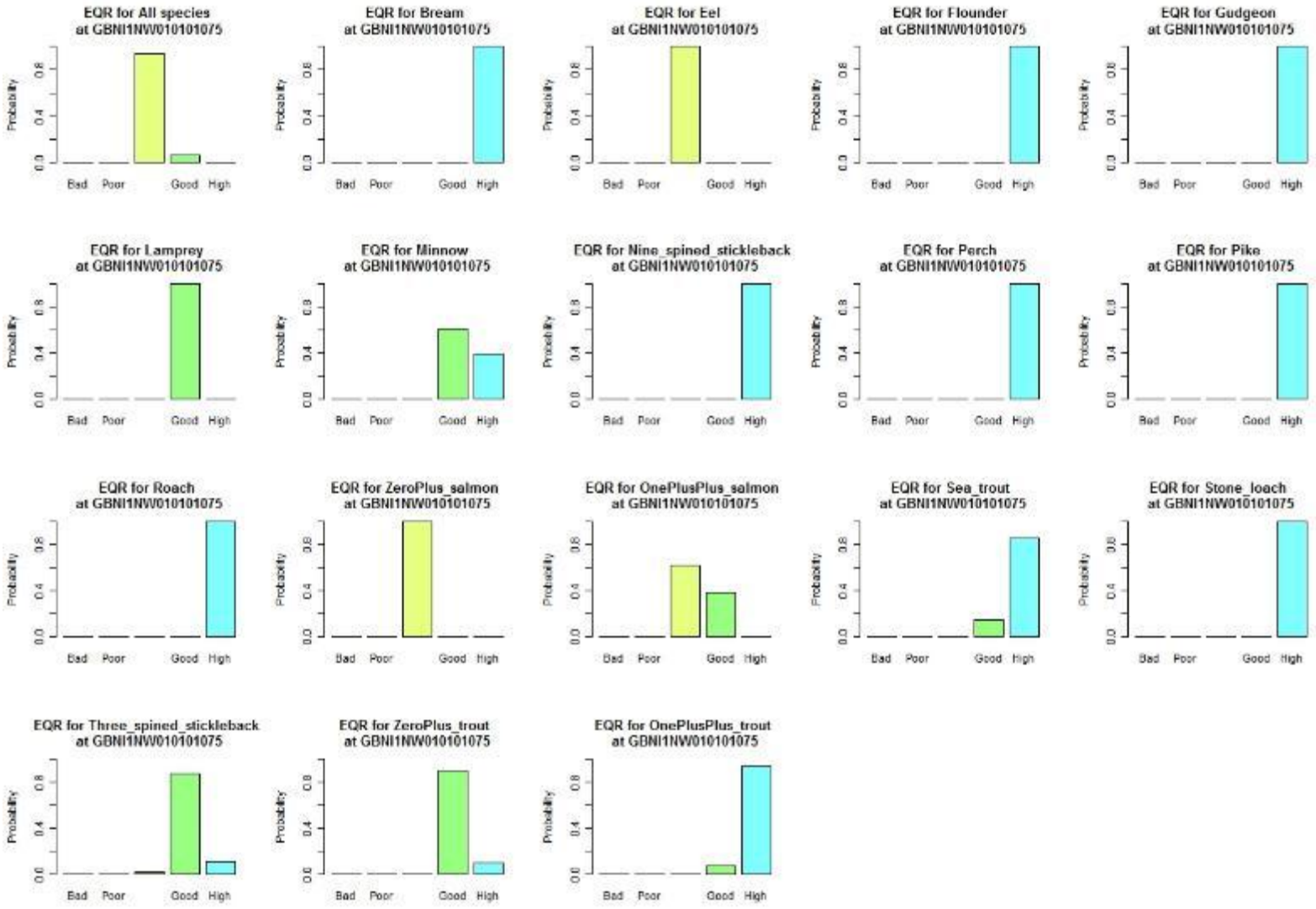


Fig 8. FCS2 (Ireland) output. Bar charts of the probability of class

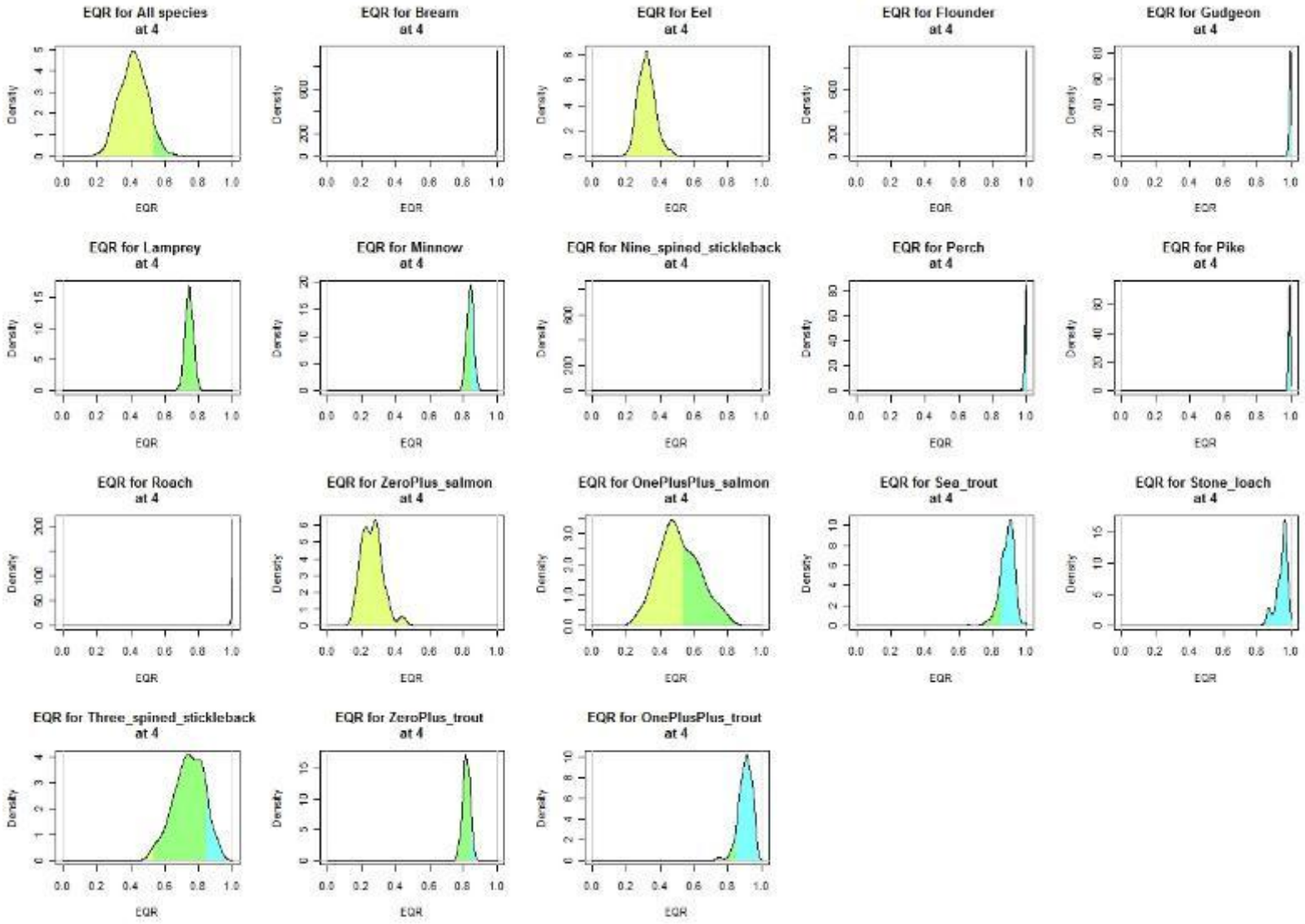


Fig 9. FCS2 (Ireland) output. Density estimates of the EQR variables

3.2 F10022 Burndennet River at Burndennet Bridge GBNI1NW010101070
Burndenett WFD Fish Classification 2015

MODERATE

FISHING	Sal 0+	Sal 1+	Tro 0+	Tro 1+	Eel	Lamprey	3 Spined Stickleback	Stone Loach	Total
1st	61	1	5	0	5	15	2	9	98
TOTAL	**61**	**1**	**5**	**0**	**5**	**15**	**2**	**9**	**98**

Table 3. Sampling results

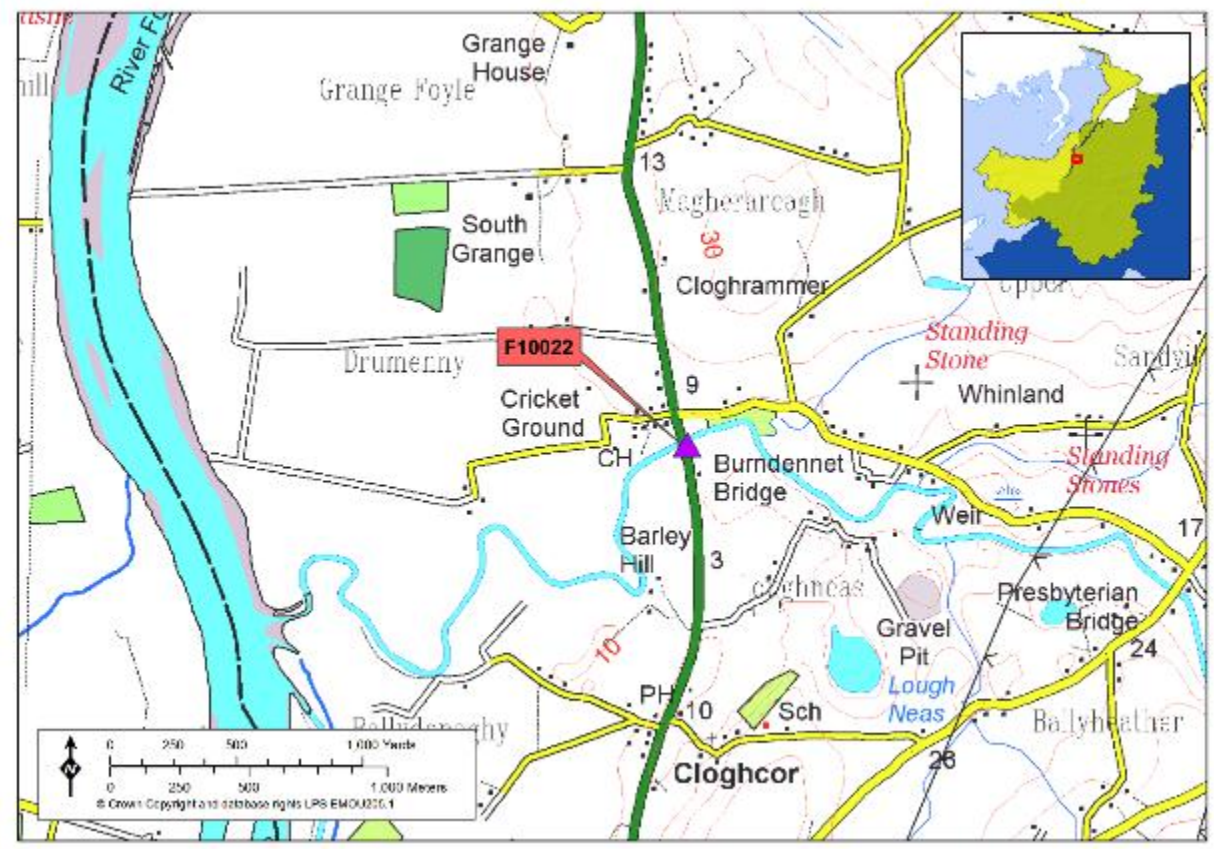


Fig 3. Site F10022

3.21 Results

Site F10022 was surveyed using a single pass quantitative electrofishing method. Prevailing high air and water temperatures precluded removal sampling over multiple passes. From this data minimum density estimates have been calculated for all species present.

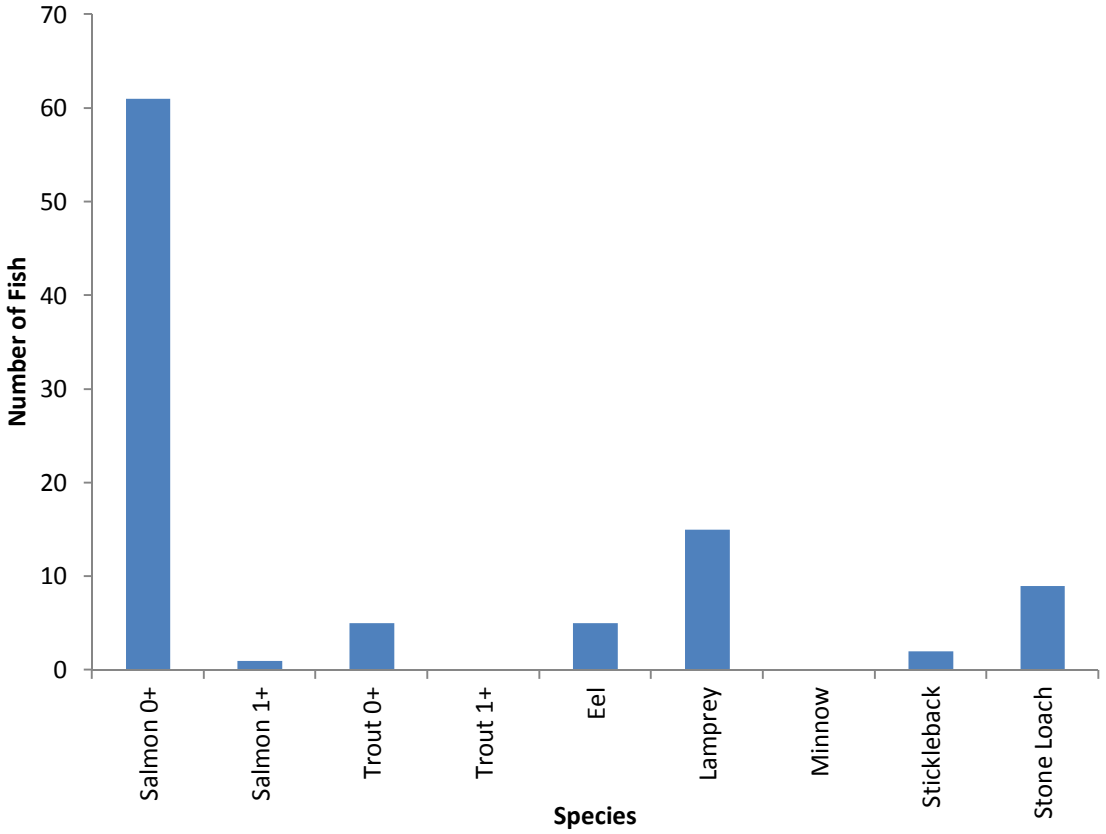


Fig 10. Total catch

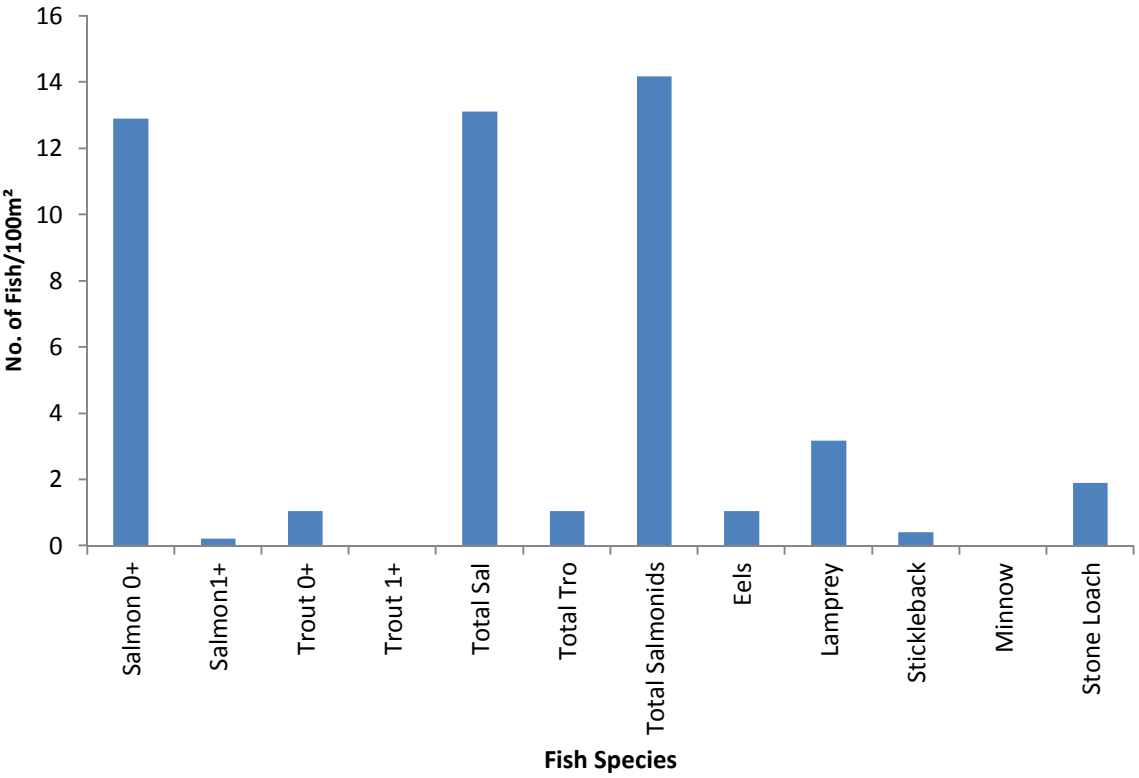


Fig 11. Density/100m²

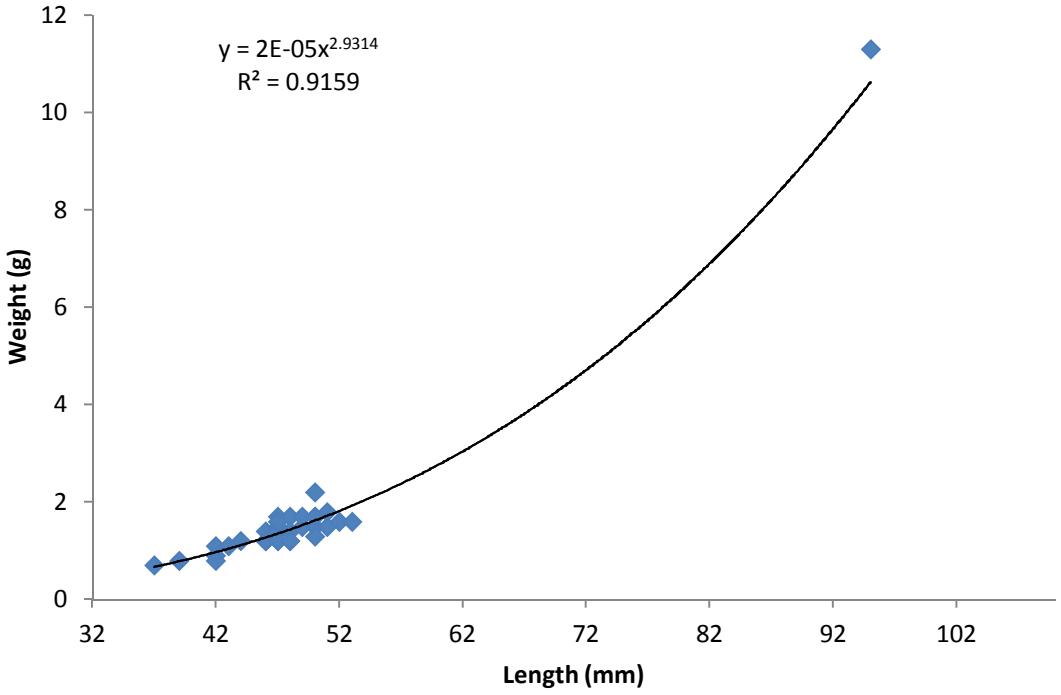


Fig 12. Length weight relationship of a sub sample n = 36 of salmon

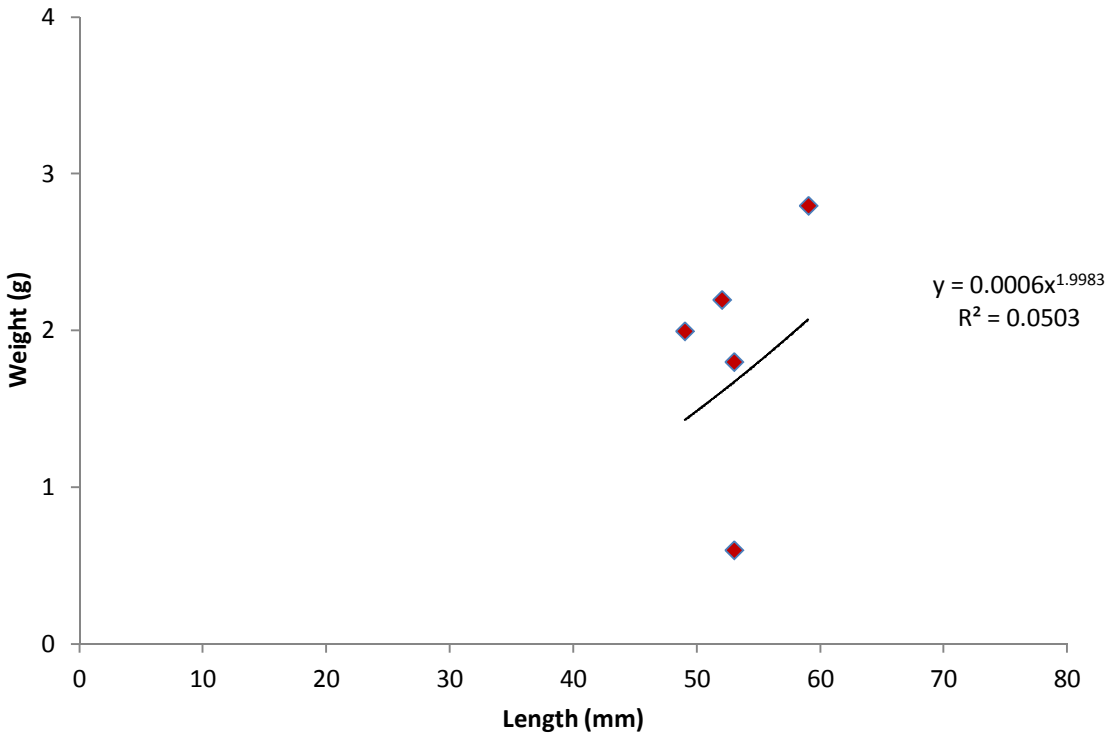


Fig 13. Length weight relationship of all trout caught n = 5

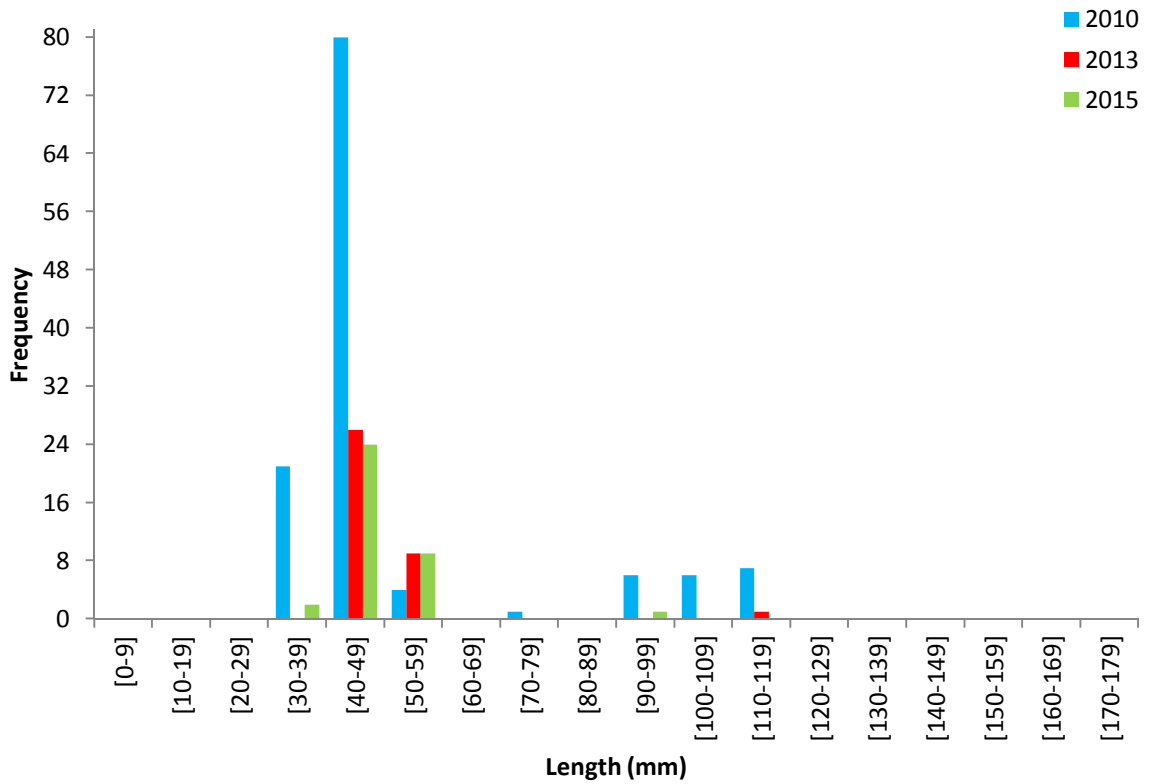


Fig 14. Length frequency distribution for juvenile salmon caught (this can be used to assess the presence of different age classes/cohorts). 2015 n = 36, 2013 n= 36, 2010 n = 125. * Note not all salmon were measured in 2013 due to warm weather conditions/fish health.

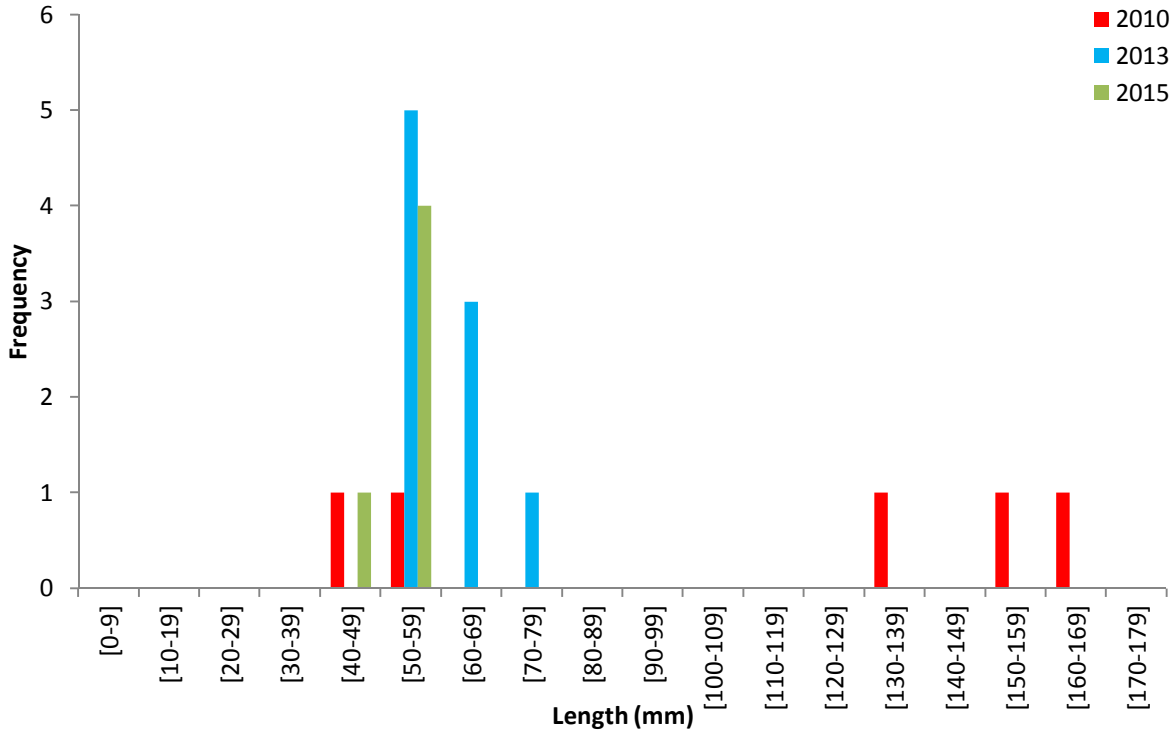


Fig 15. Length frequency distribution for trout. 2015 n = 5, 2013 n = 9, 2010 n = 5

This site is composed predominantly of grade 3 holding habitat (55%) with grade 3 nursery habitat (30%) and grade 2 spawning habitat (15%).

Additional biological information is available in the spreadsheets provided.

3.22 Proposed Programme of Measures

This water body has suffered from arterial drainage in the past with regular maintenance works conducted. High flood banks are present on both sides of the channel with both Japanese Knotweed and Himalayan Balsam present. The surrounding land use is grazing and silage production with some arable crop rotation.

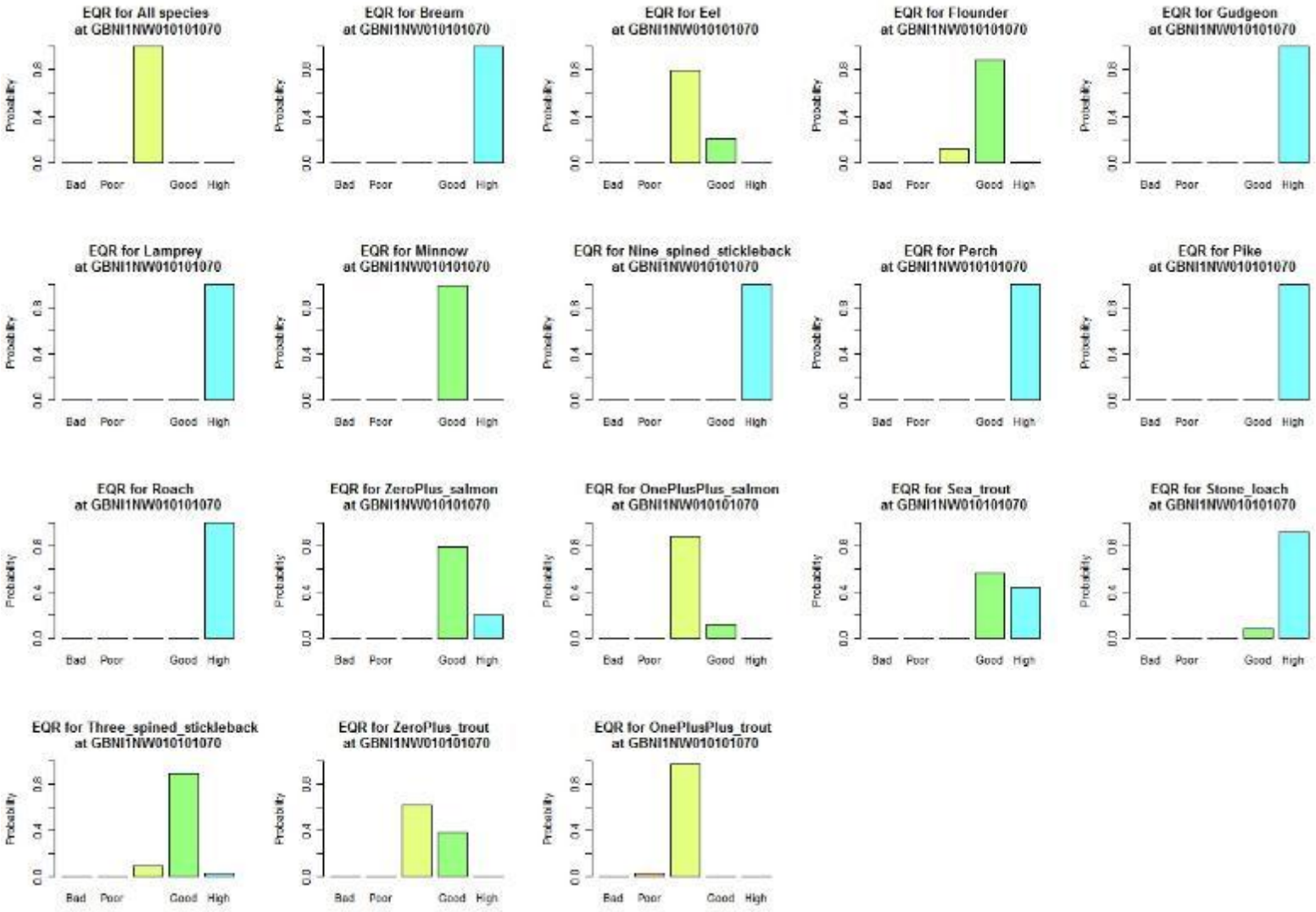


Fig 16. FCS2 (Ireland) output. Bar charts of the probability of class

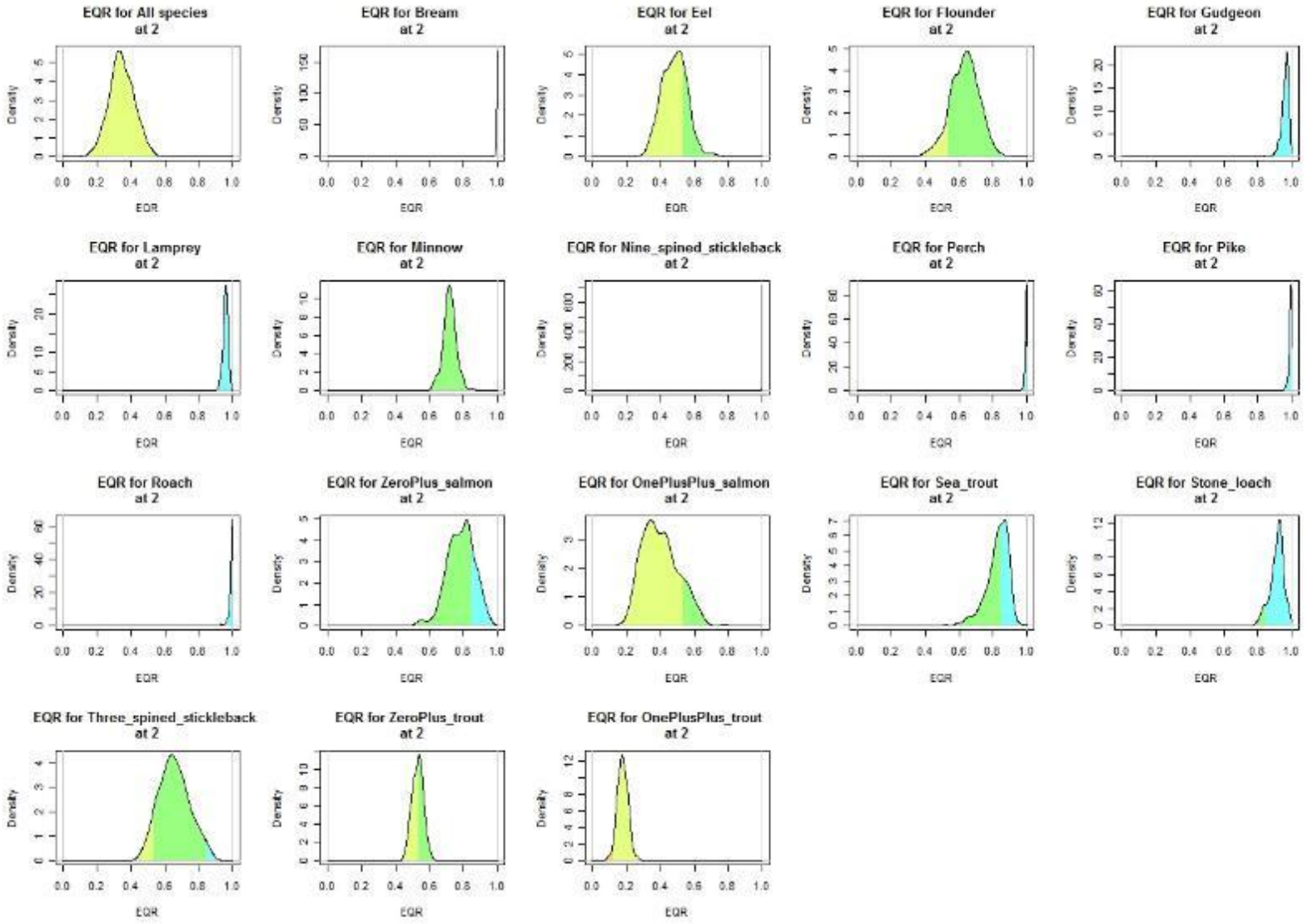


Fig 17. FCS2 (Ireland) output. Density estimates of the EQR variables

3.3 F10076 Coneyglen Burn at Coneyglen Br GBNI1NW010102085
Owenkillew WFD Fish Classification 2015

GOOD

FISHING	Sal 0+	Sal 1+	Tro 0+	Tro 1+	Eel	Total
1st	14	25	2	6	2	49
TOTAL	**14**	**25**	**2**	**6**	**2**	**49**

Table 4. Sampling results

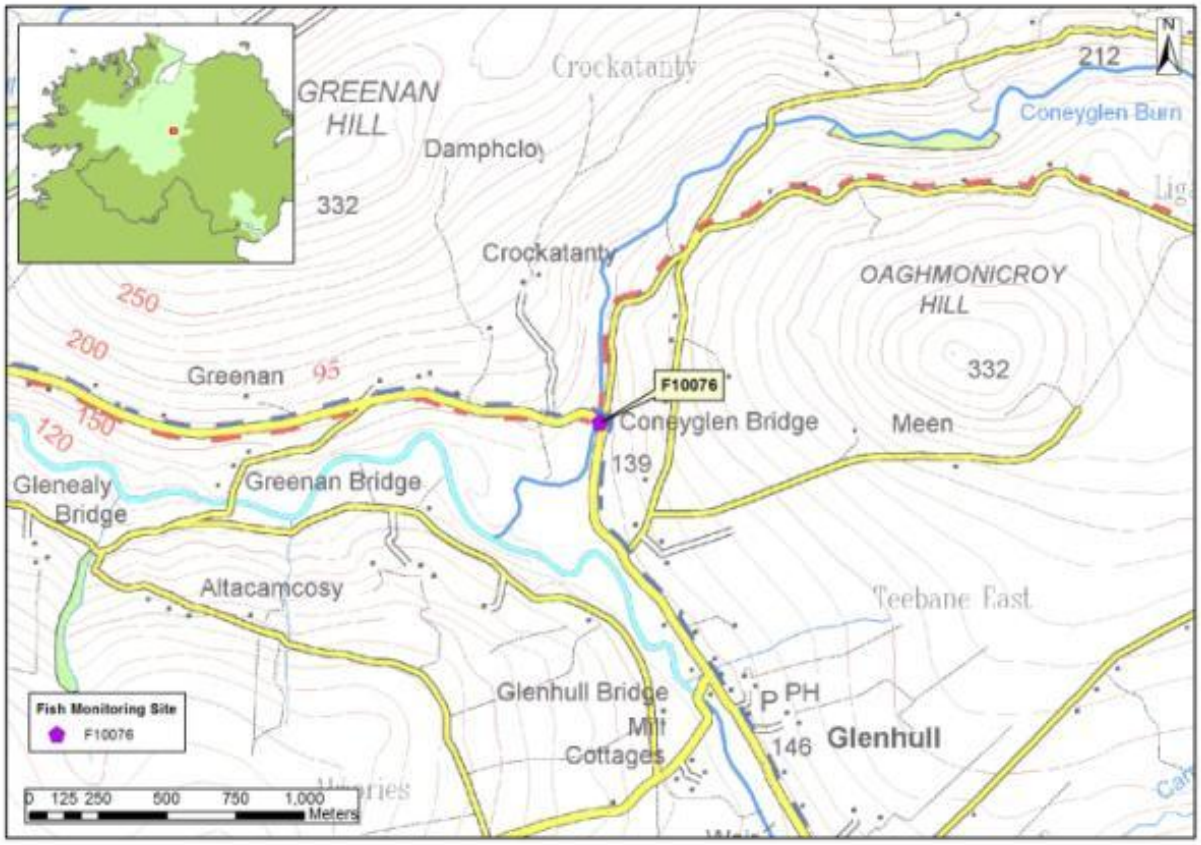


Fig 18. Site F10076

3.31 Results

Site F10076 was surveyed using a quantitative electrofishing method. This involved a single pass within a defined area. Consistently high water was encountered throughout the sampling period and on the third visit to this site it was decided to conduct a single pass survey. From this data minimum density estimates have been calculated for all species and age classes present.

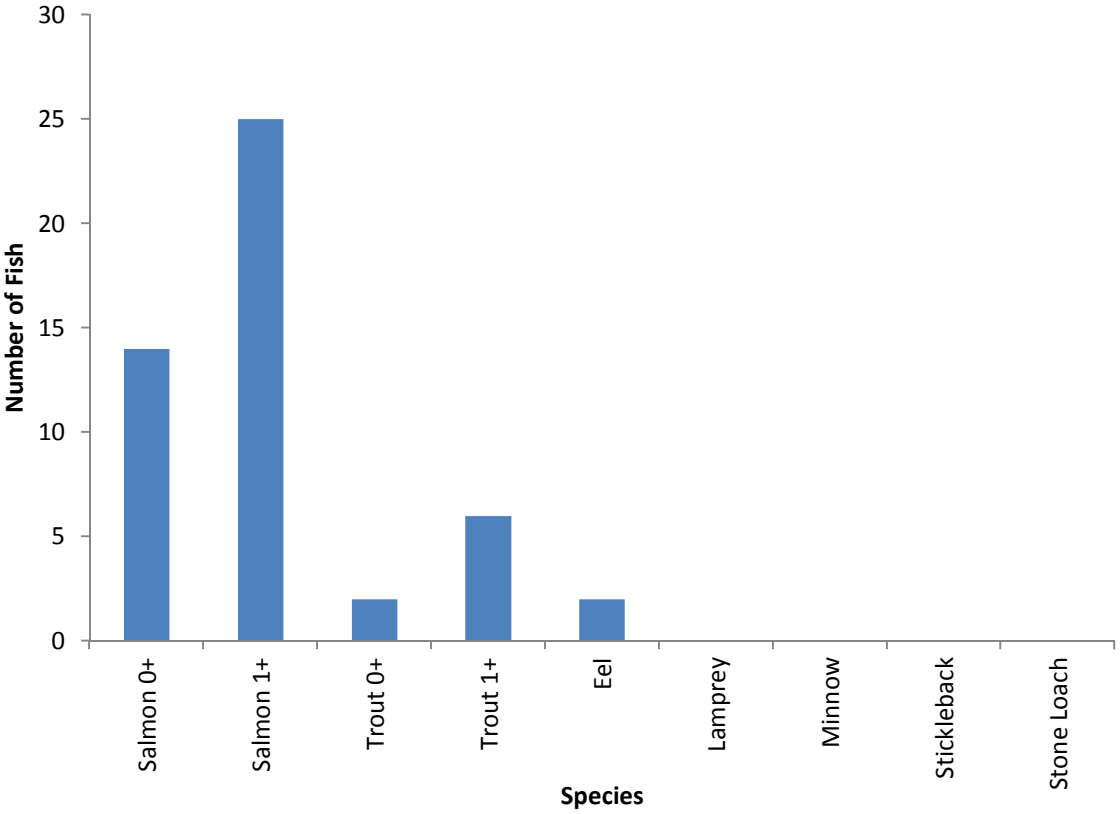


Fig 19. Total catch

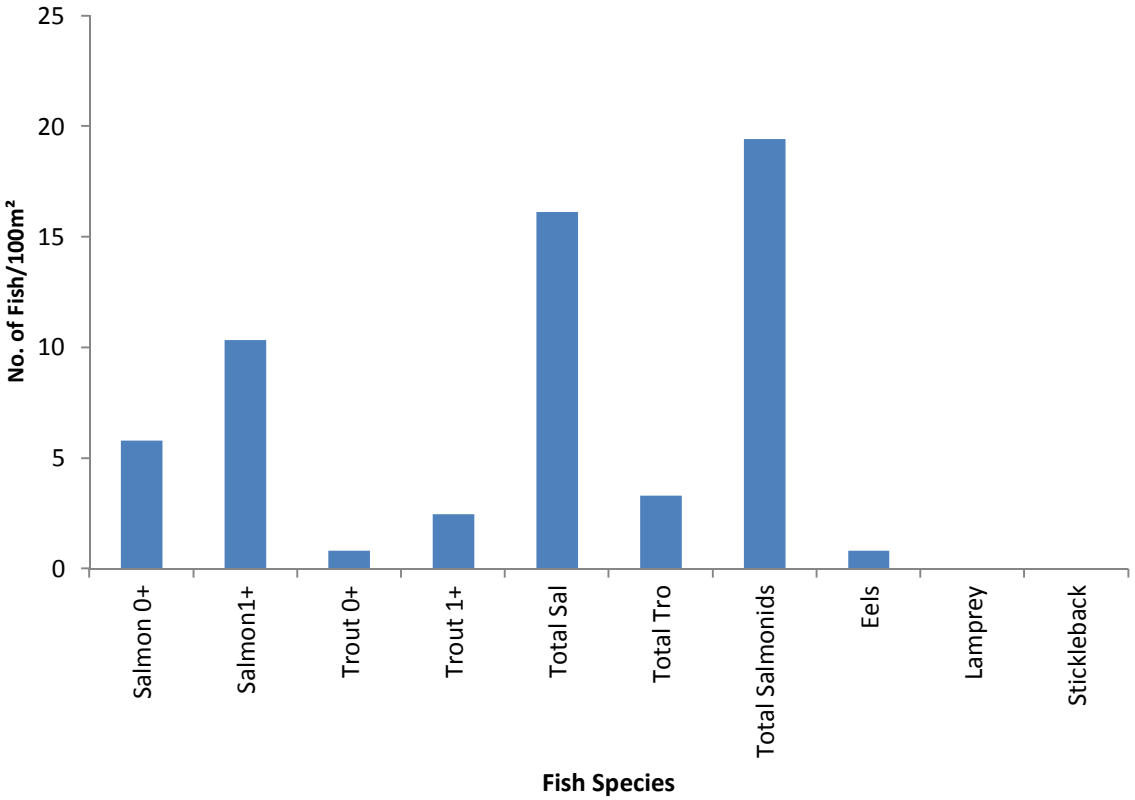


Fig 20. Density estimate/100m^2

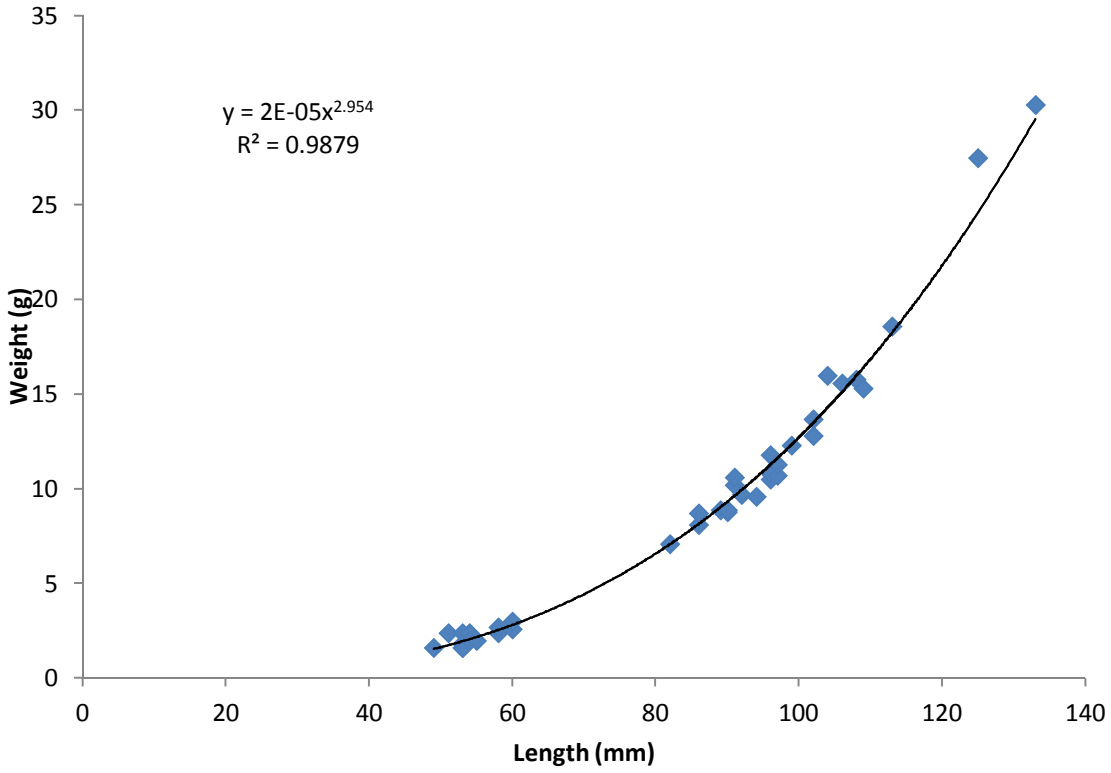


Fig 21. Length weight relationship of all juvenile Salmon caught n = 39

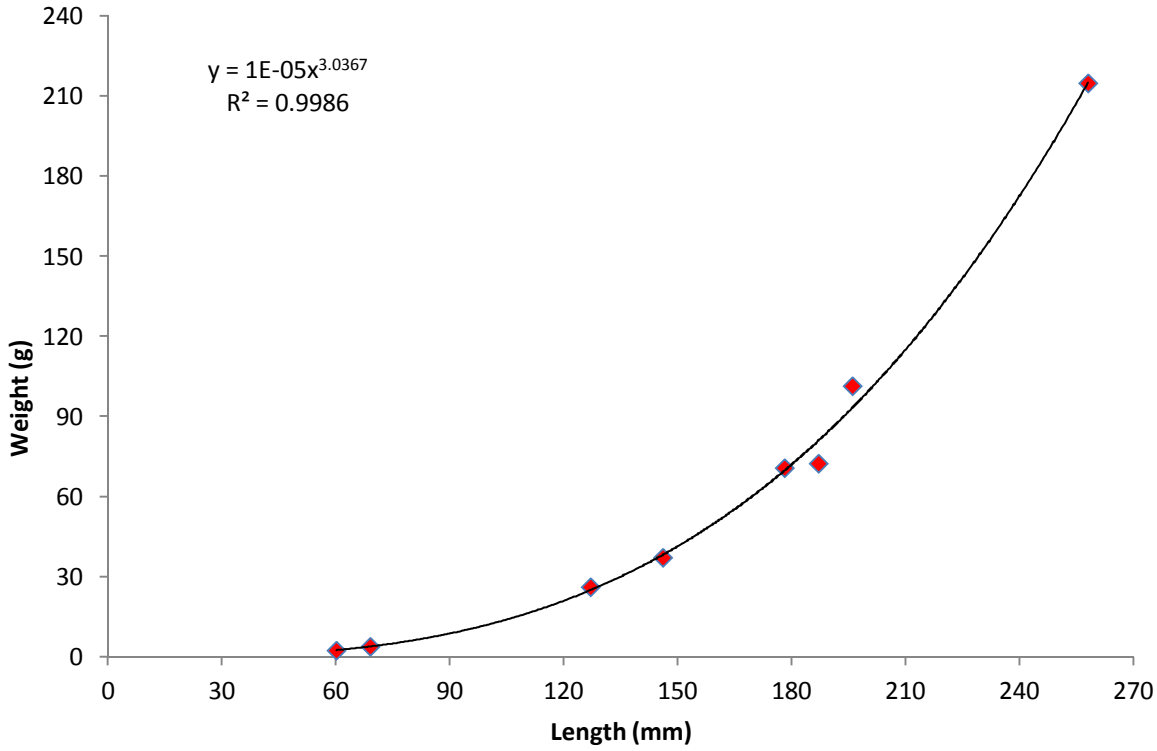


Fig 22. Length weight relationship of all juvenile Trout caught n = 8

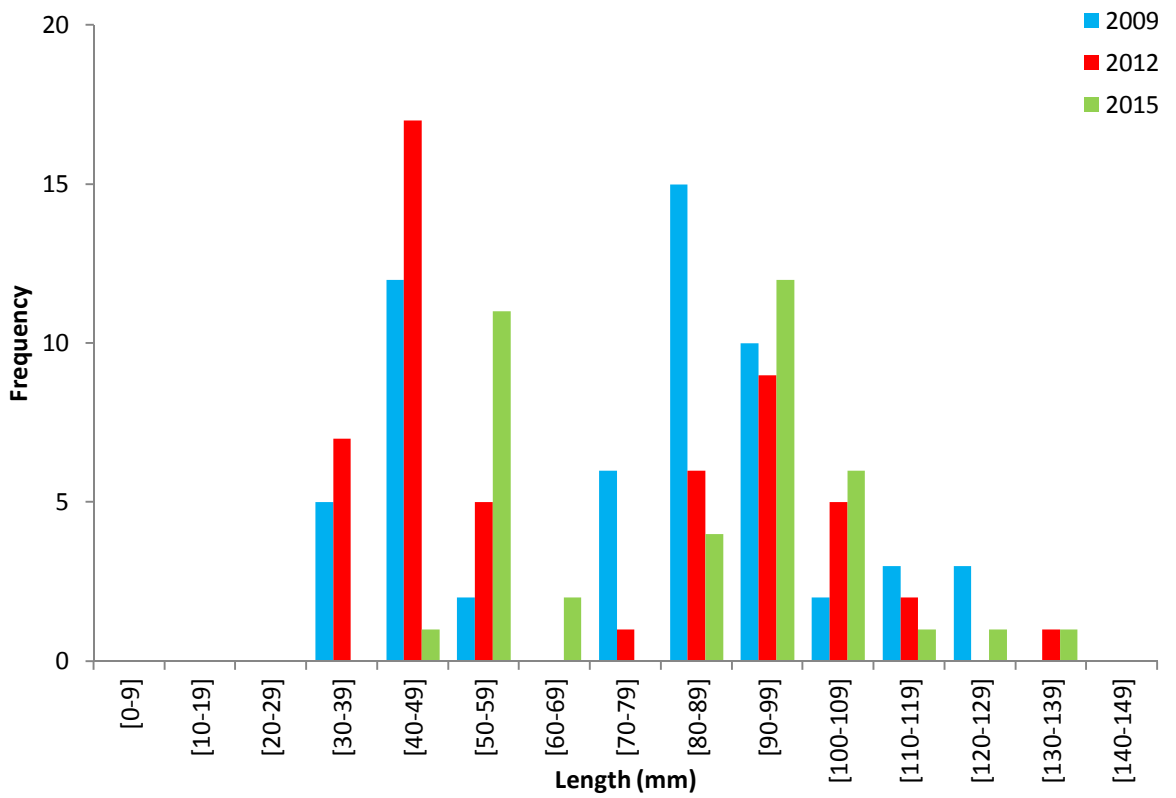


Fig 23. Length frequency distribution for all salmon caught 2015 n= 39, 2012 n = 53 & 2009 n = 58

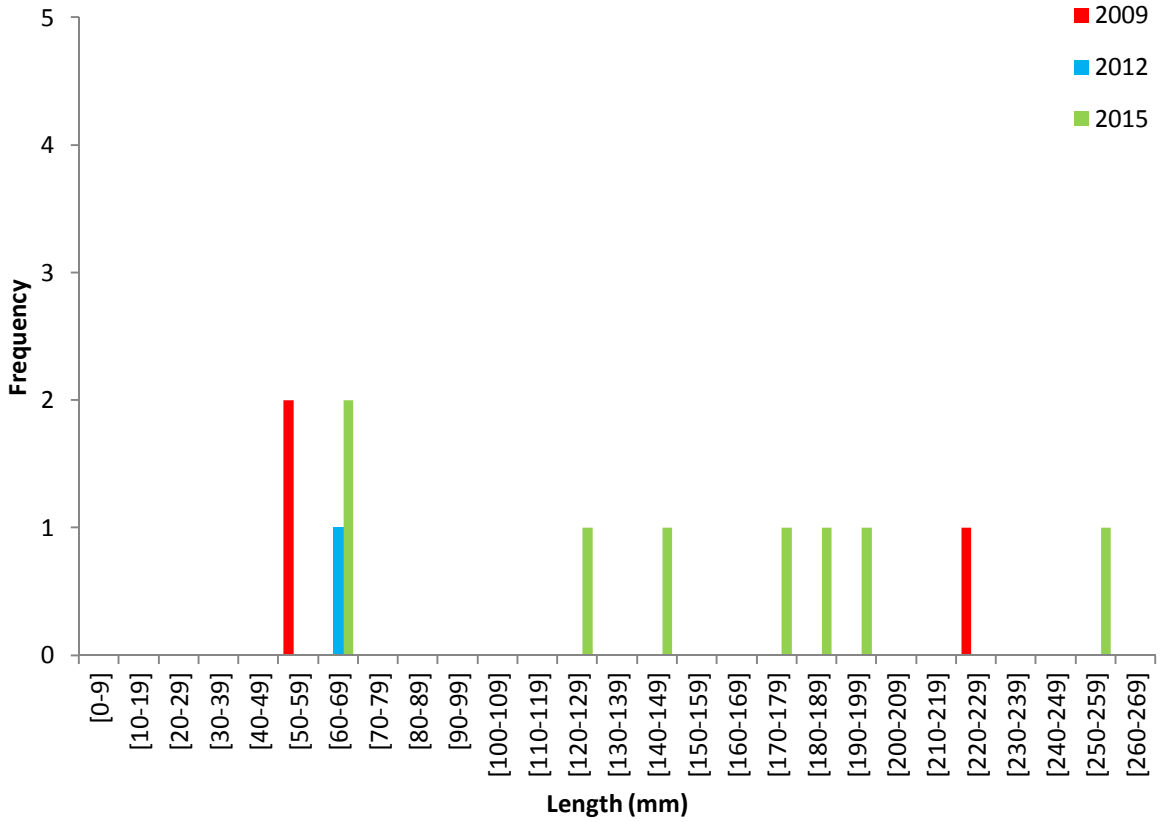


Fig 24. Length frequency distribution for all salmon caught 2015 n= 8, 2012 n = 1 & 2009 n = 3

This site is composed of grade 3 nursery habitat (65%), grade 3 holding habitat (20%) and grade 3 spawning habitat (15%). This site is located upstream of an active crossing ford connecting two fields.

3.32 Proposed Programme of Measures

Potential programmes of measures could include installing a clear span bridge to replace the existing ford or the creation of alternative access. Fencing should be erected to limit stock access with gated access to the crossing ford. Access for cattle to drinking water could be supplied by the installation of a pasture pump.

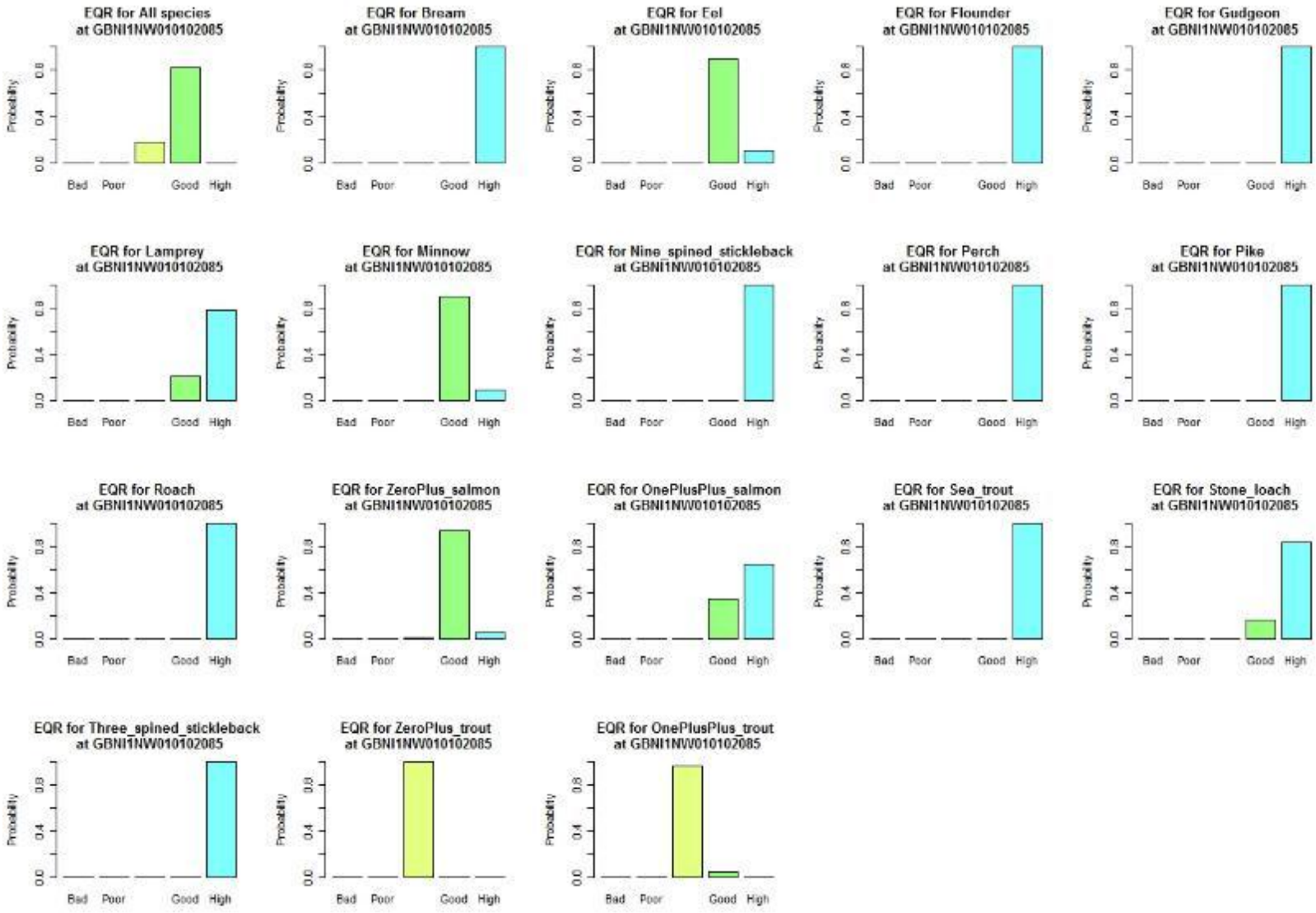


Fig 25. FCS2 (Ireland) output. Bar charts of the probability of class

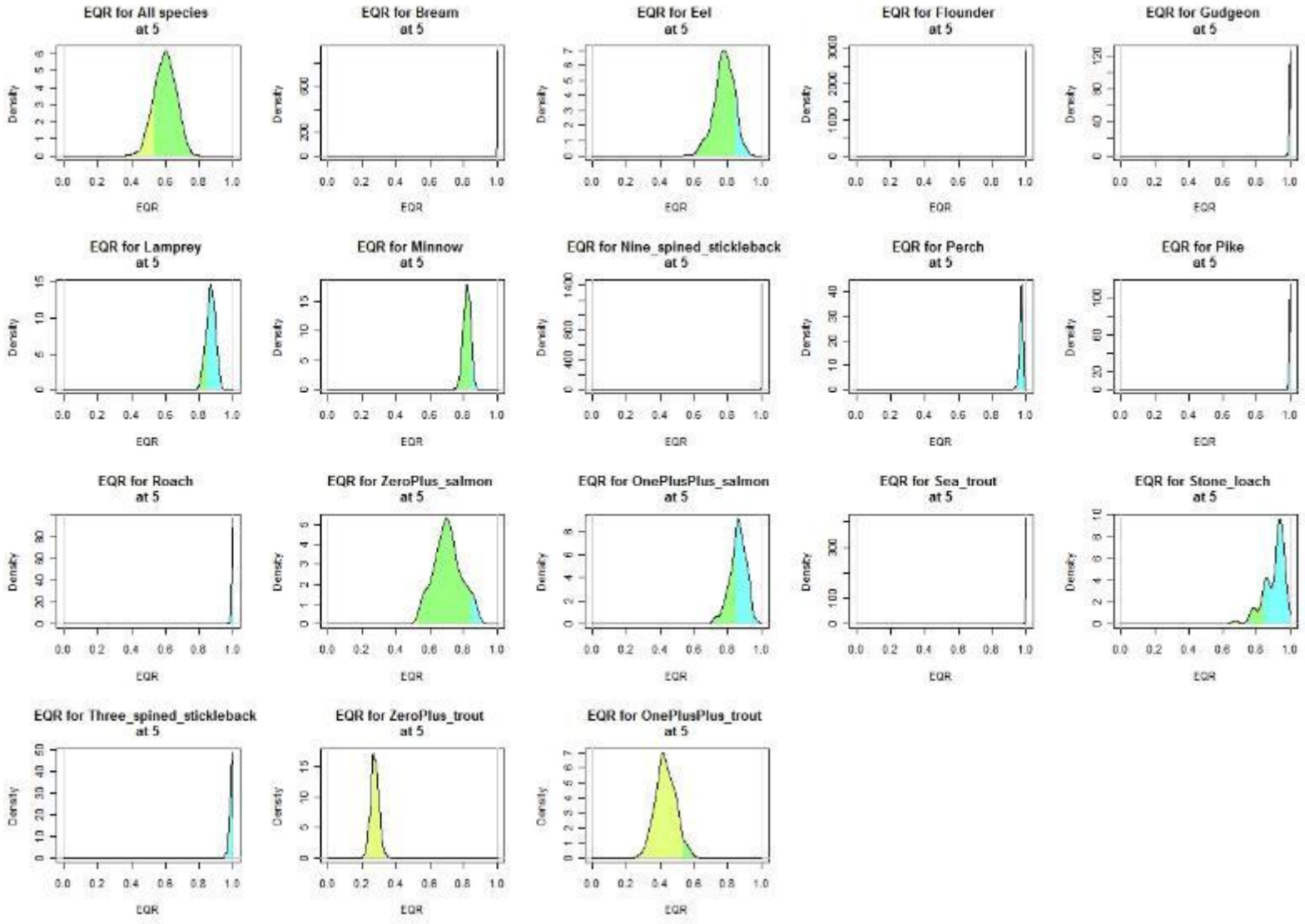


Fig 26. FCS2 (Ireland) output. Density estimates of the EQR variables

3.4 F10077 Owenkillew R at Monanameal Br GBNI1NW010102086
Owenkillew WFD Fish Classification 2015

GOOD

FISHING	Sal 0+	Sal 1+	Tro 1+	Tro 1+	Eel	Lamprey	Minnow	Total
1st	86	33	1	5	2	7	1	135
TOTAL	**86**	**33**	**1**	**5**	**2**	**7**	**1**	**135**

Table 5. Sampling results

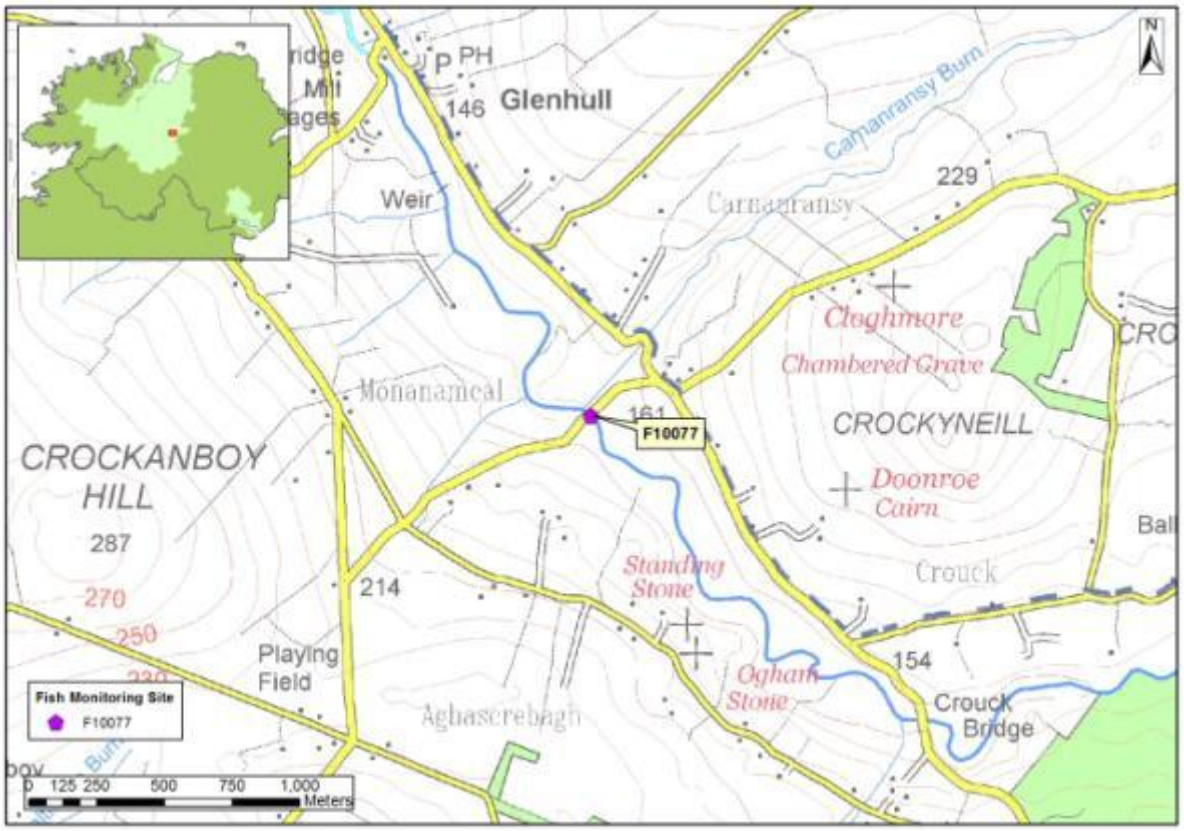


Fig 27. Site F10077

3.41 Results

Site F10077 was surveyed using a single pass electrofishing method. The FCS2 (Ireland) model can accept data from a single pass electrofishing survey within a defined area. Minimum density estimates were calculated for all species and age classes present based on the single pass electrofishing results and the area surveyed.

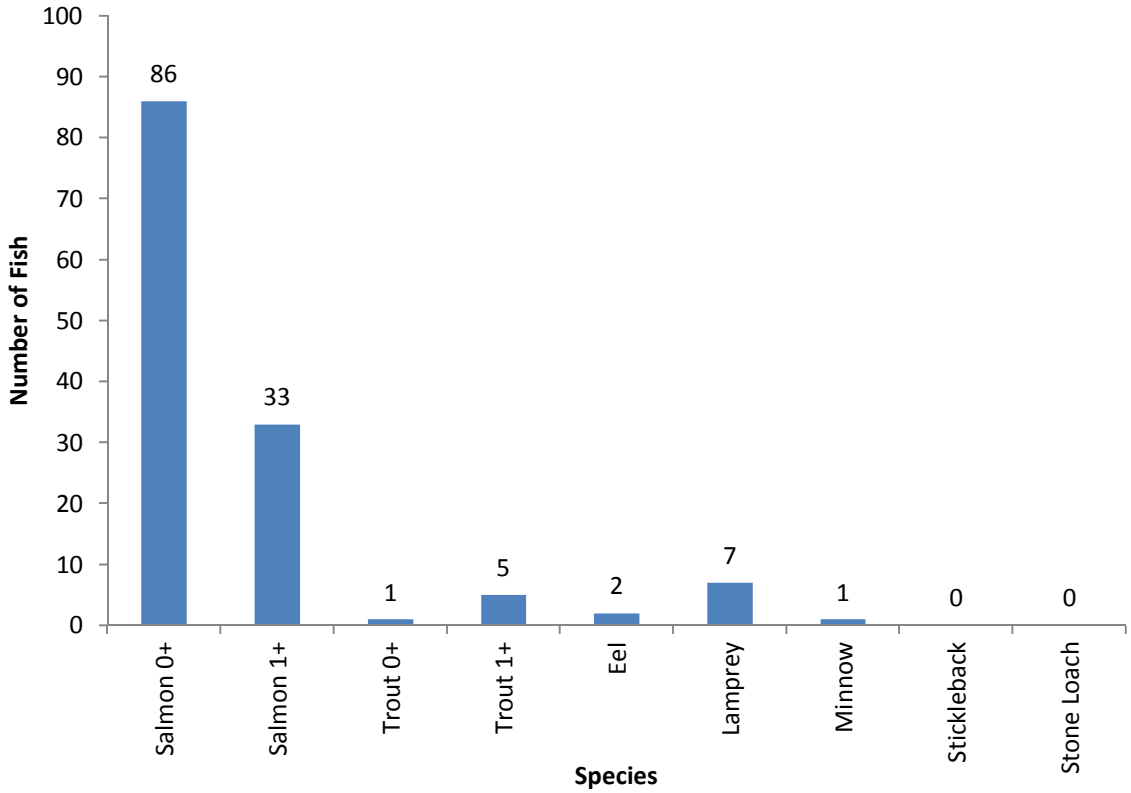


Fig 28. Total catch

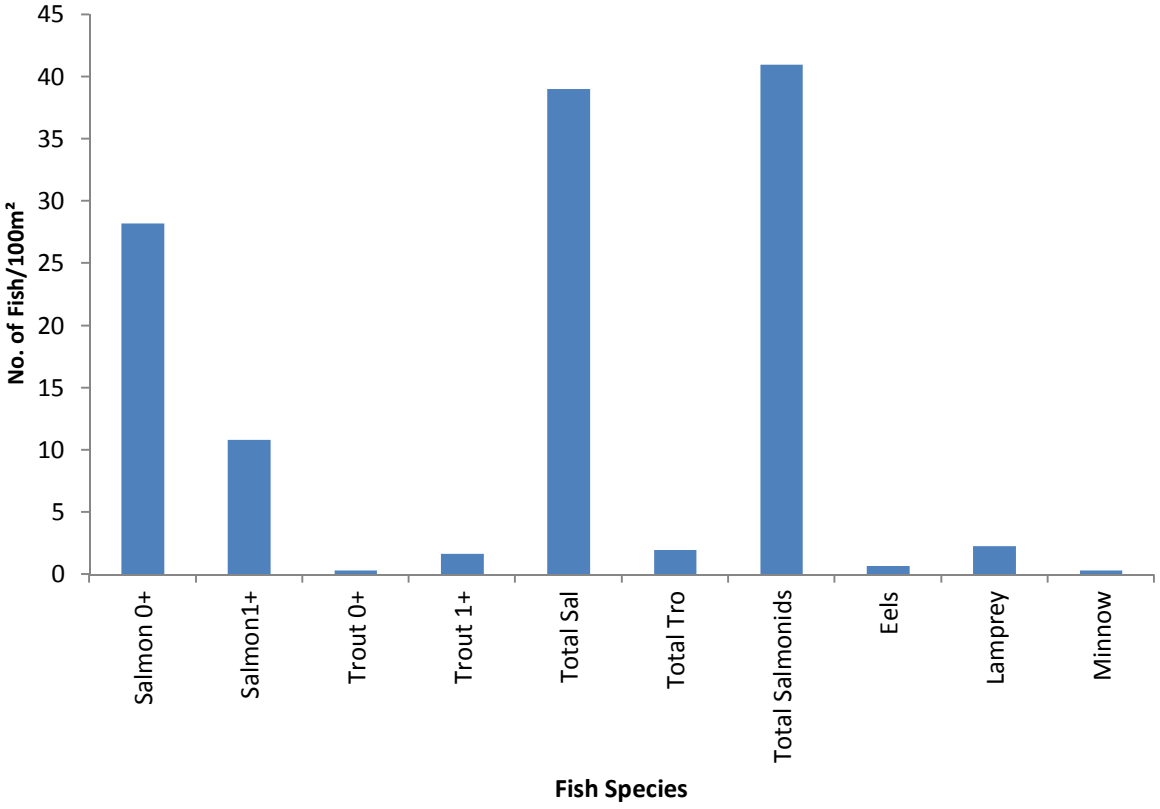


Fig 29. Density estimate/100m^2

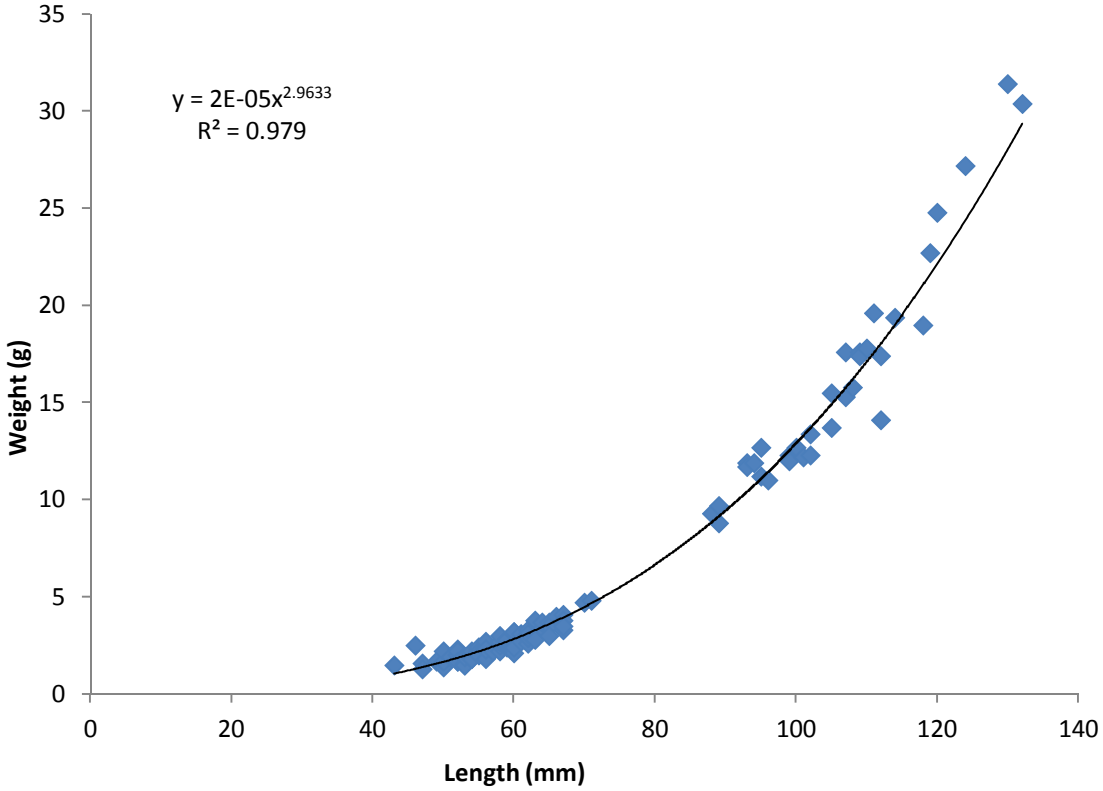


Fig 30. Length weight relationship of all Salmon caught

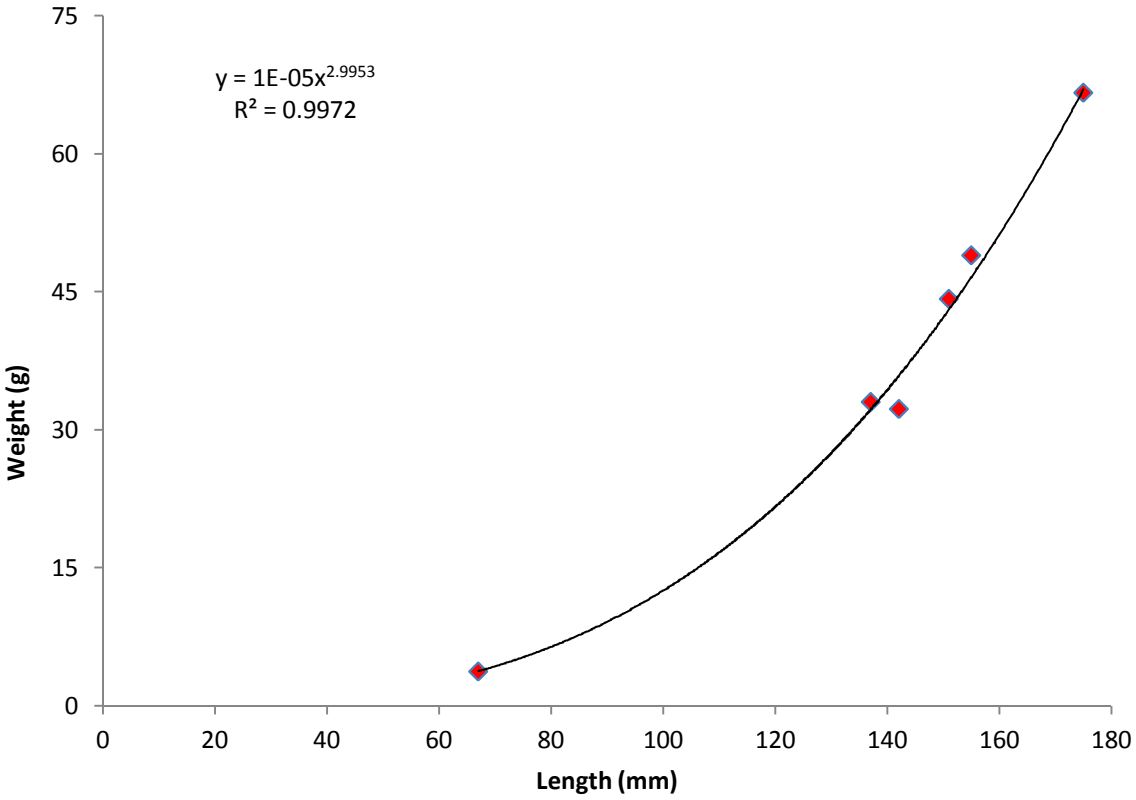


Fig 31. Length weight relationship of all trout caught

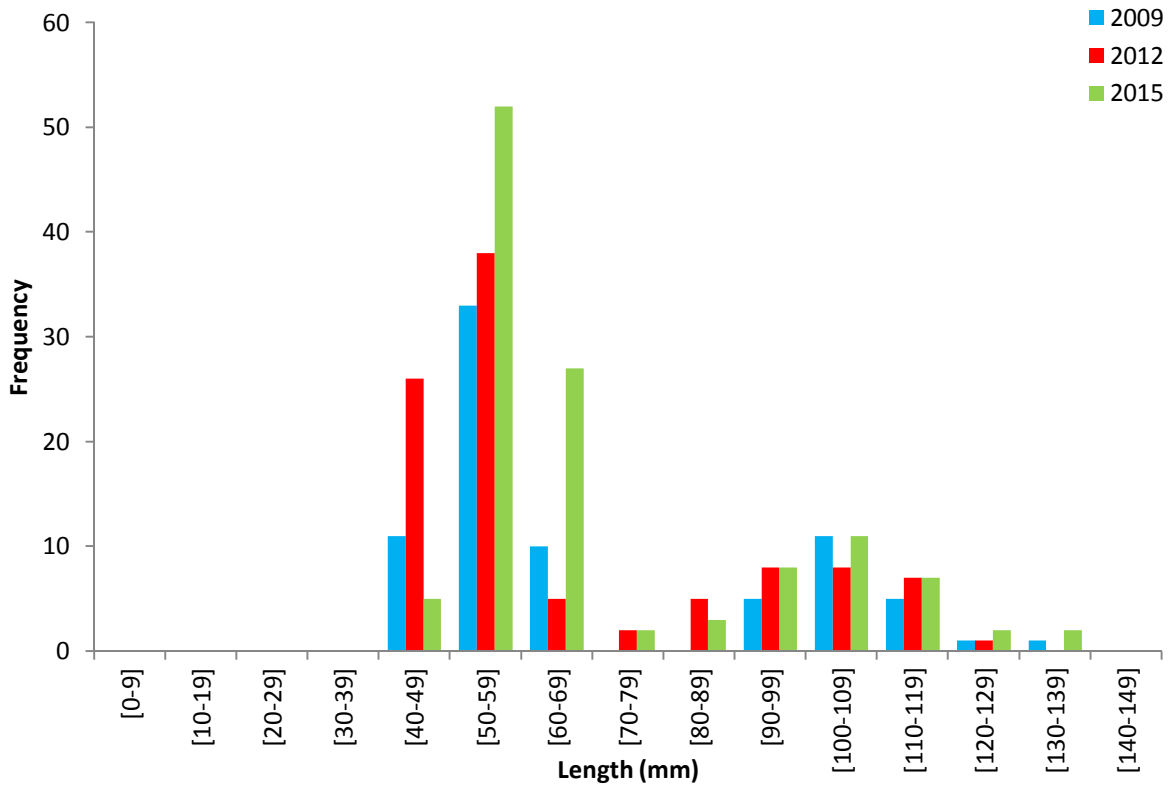


Fig 32. Length frequency distribution of all Salmon caught 2015 n = 119, 2012 n = 100 & 2009 n = 77

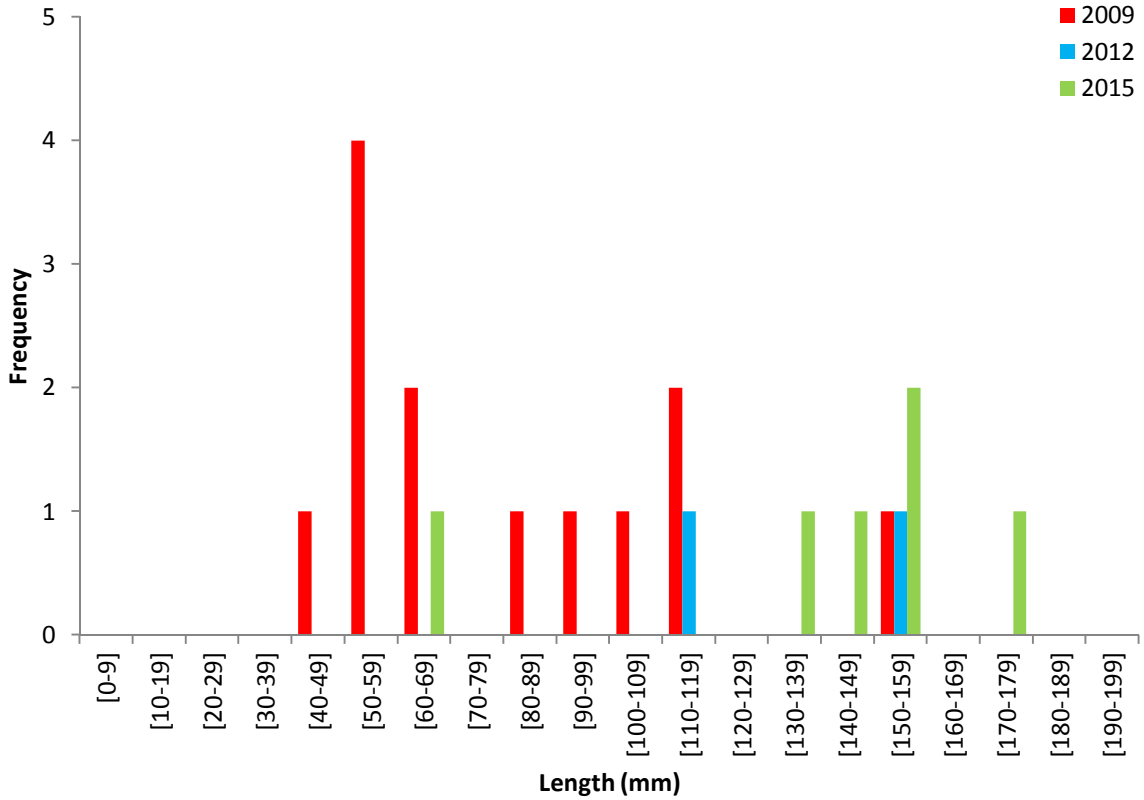


Fig 33. Length frequency distribution of all trout caught 2015 n = 6, 2012 n = 2 & 2009 n = 13

This site is composed of grade 1 nursery habitat (60%), grade 1 spawning habitat (30%) and grade 2 holding habitat (10%). This site had excellent natural channel structure

3.42 Proposed Programme of Measures

Potential programmes of measures include the development of catchment initiatives to ensure water quality and habitat quality are maintained or improved.

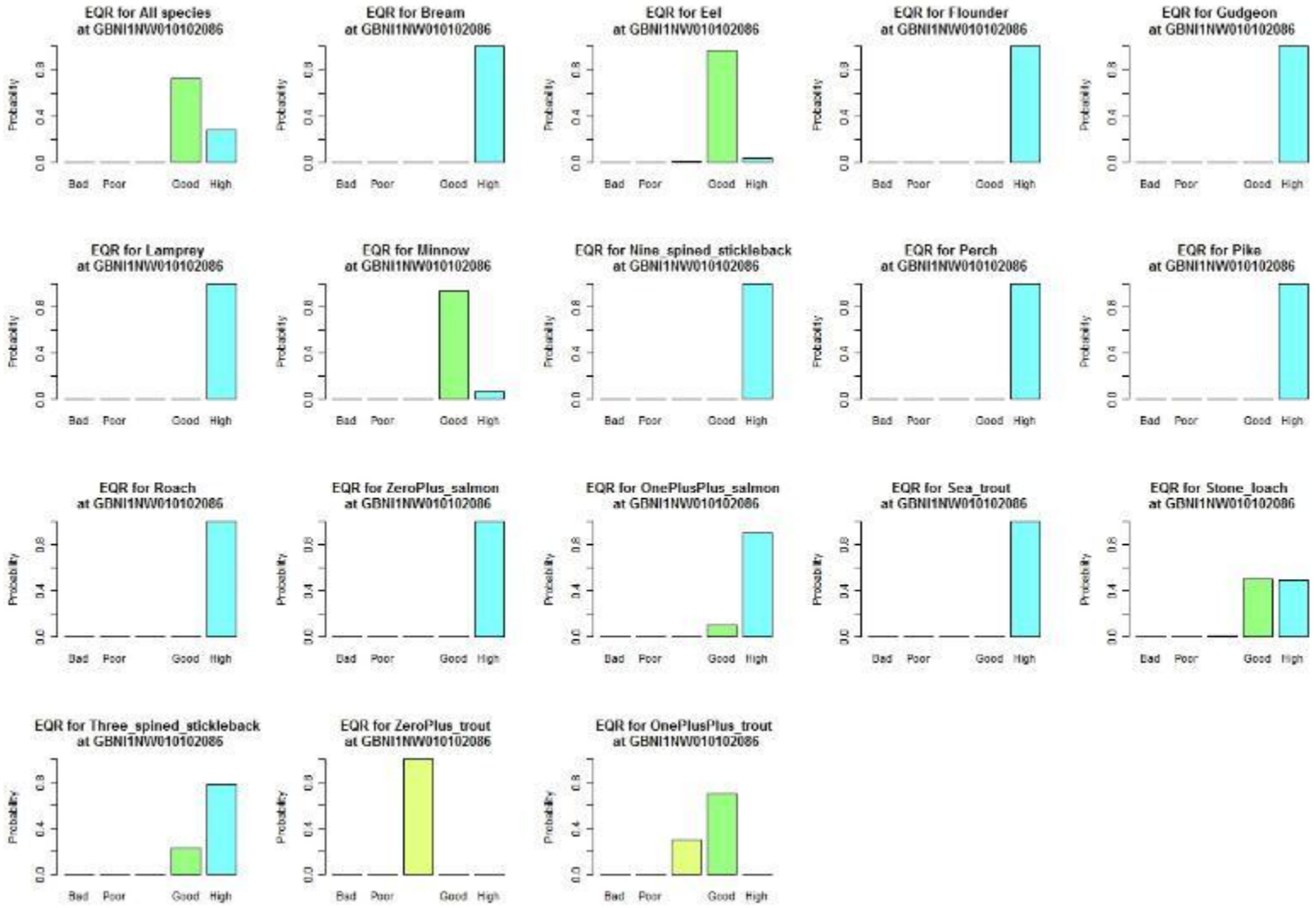


Fig 34. FCS2 (Ireland) output. Bar charts of the probability of class

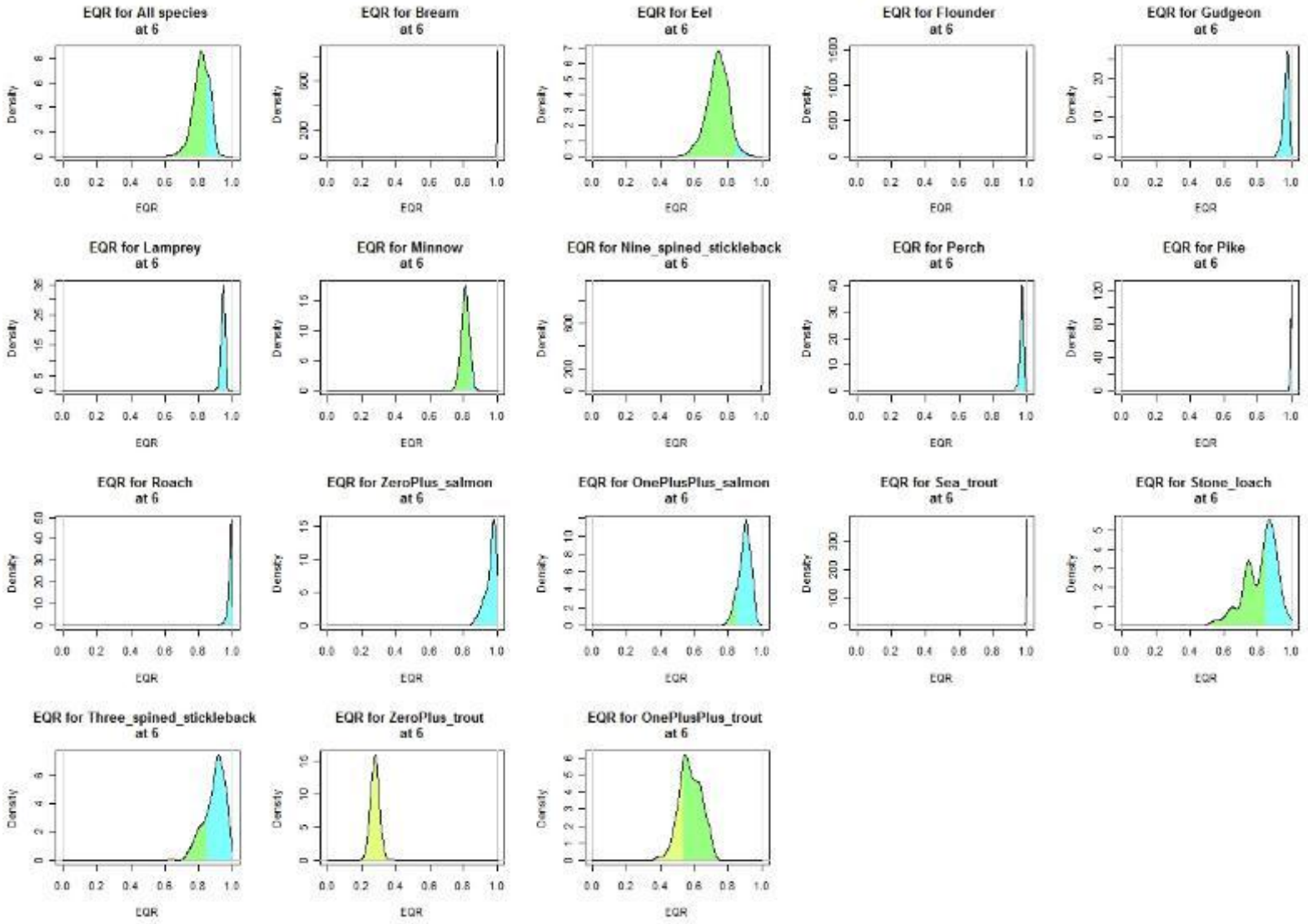


Fig 35. FCS2 (Ireland) output. Density estimates of the EQR variables

3.5 F10079 Glenelly River at Clogherny Br GBNI1NW010102048
Glenelly WFD Fish Classification 2015

HIGH

METHOD	Sal 0+	Sal 1+	Tro 0+	Tro 1+	Eel	Lamprey	Minnow
1ST	71	31	11	5	2	11	1
TOTAL	**71**	**31**	**11**	**5**	**2**	**11**	**1**

Table 6. Sampling results

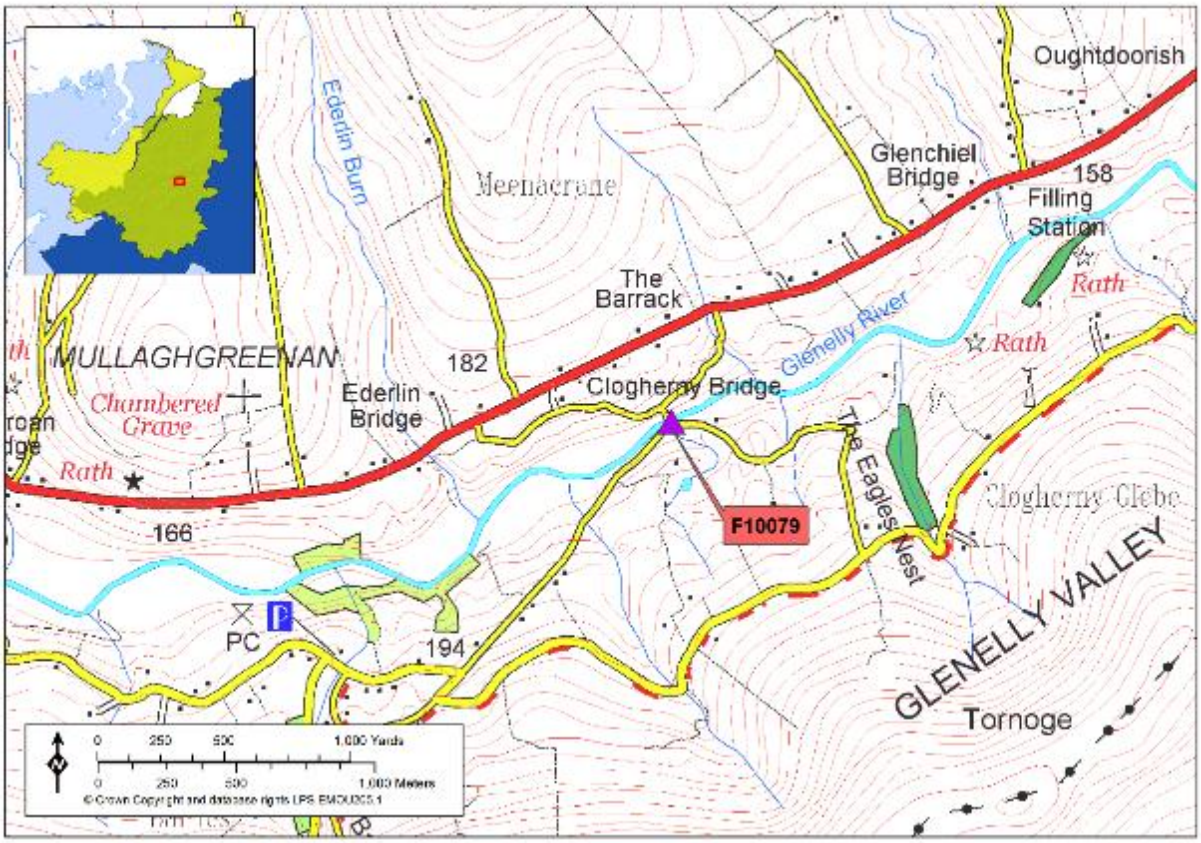


Fig 36. Site F10079

3.51 Results

Site F10079 was surveyed using a single pass quantitative electrofishing method. From this data minimum density estimates have been calculated for all species and age classes present.

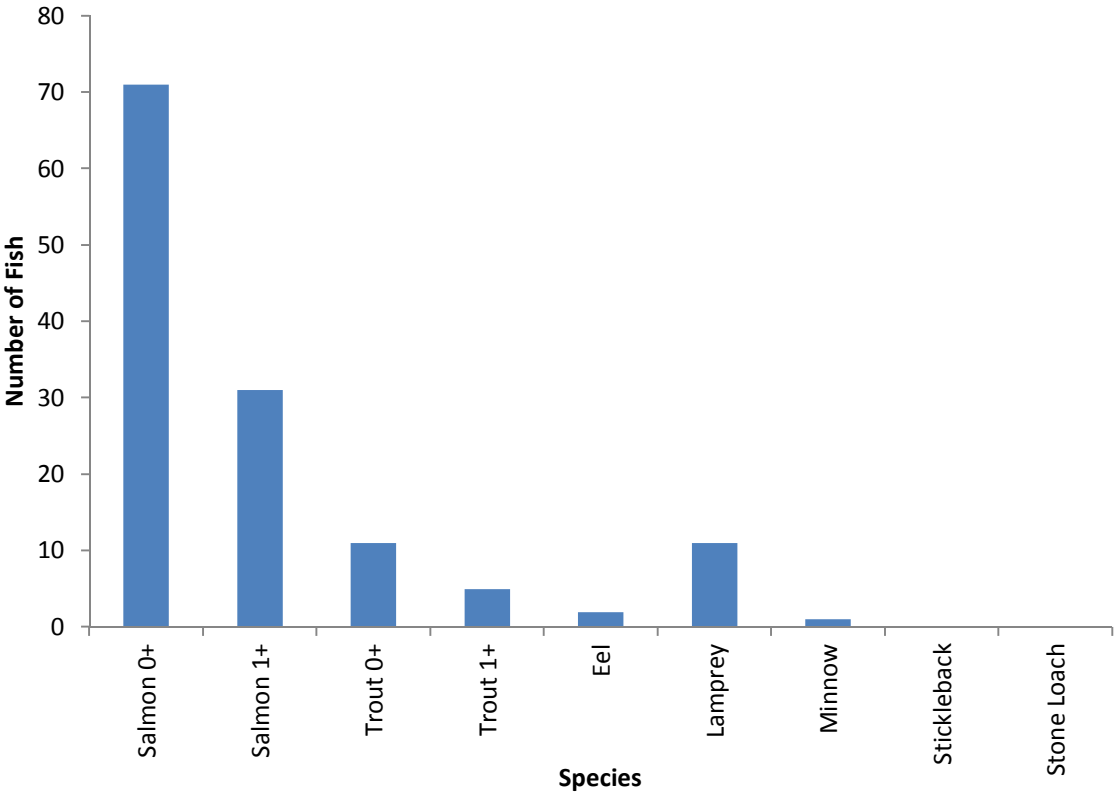


Fig 37. Total catch

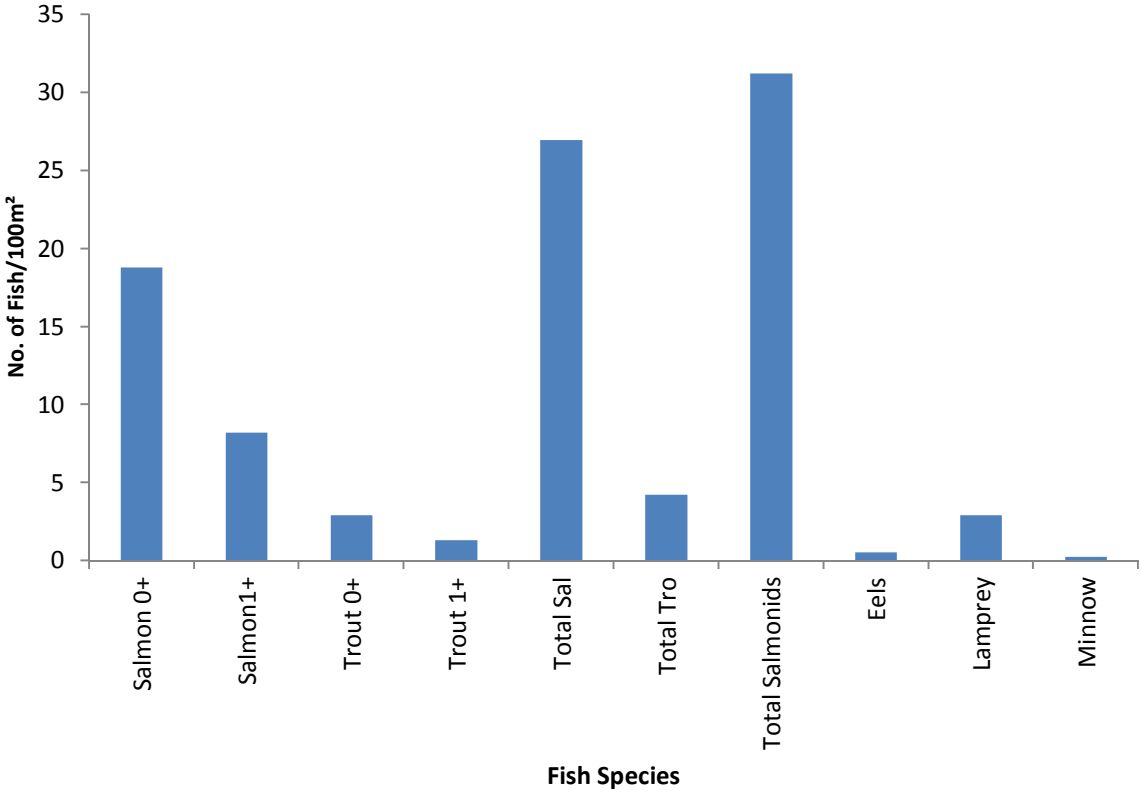


Fig 38. Density estimate in 100m²

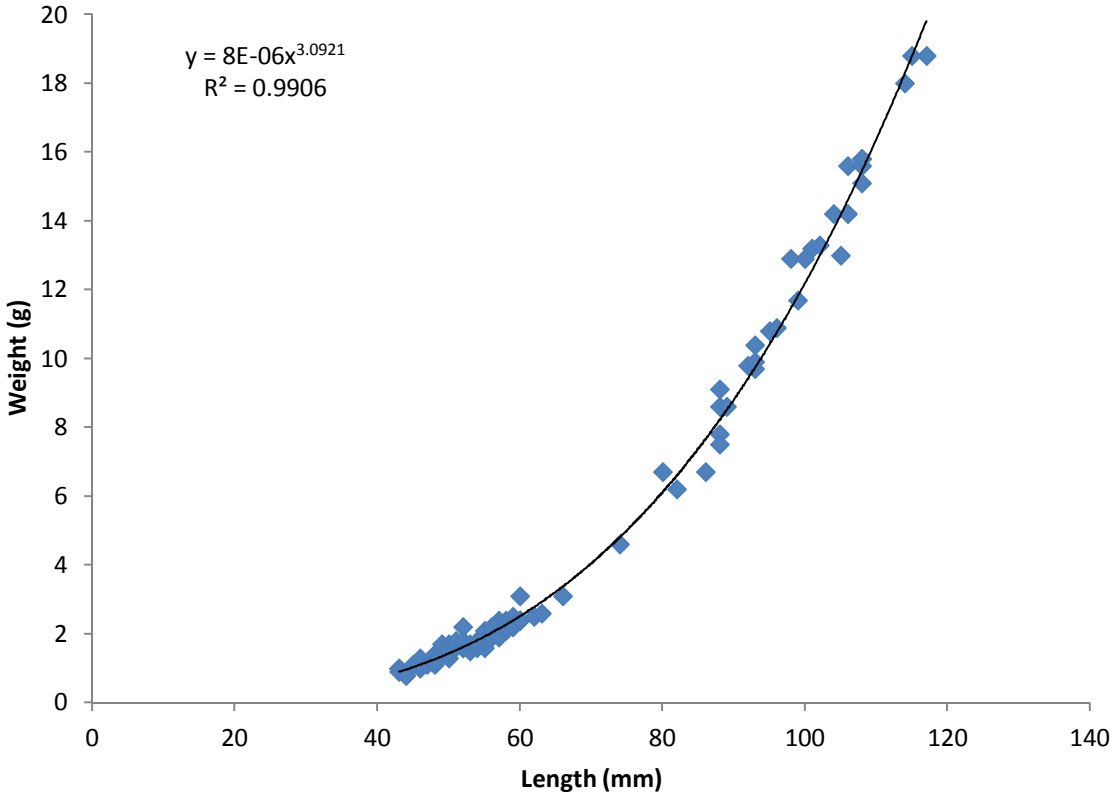


Fig 39. Length weight relationship of salmon n = 102

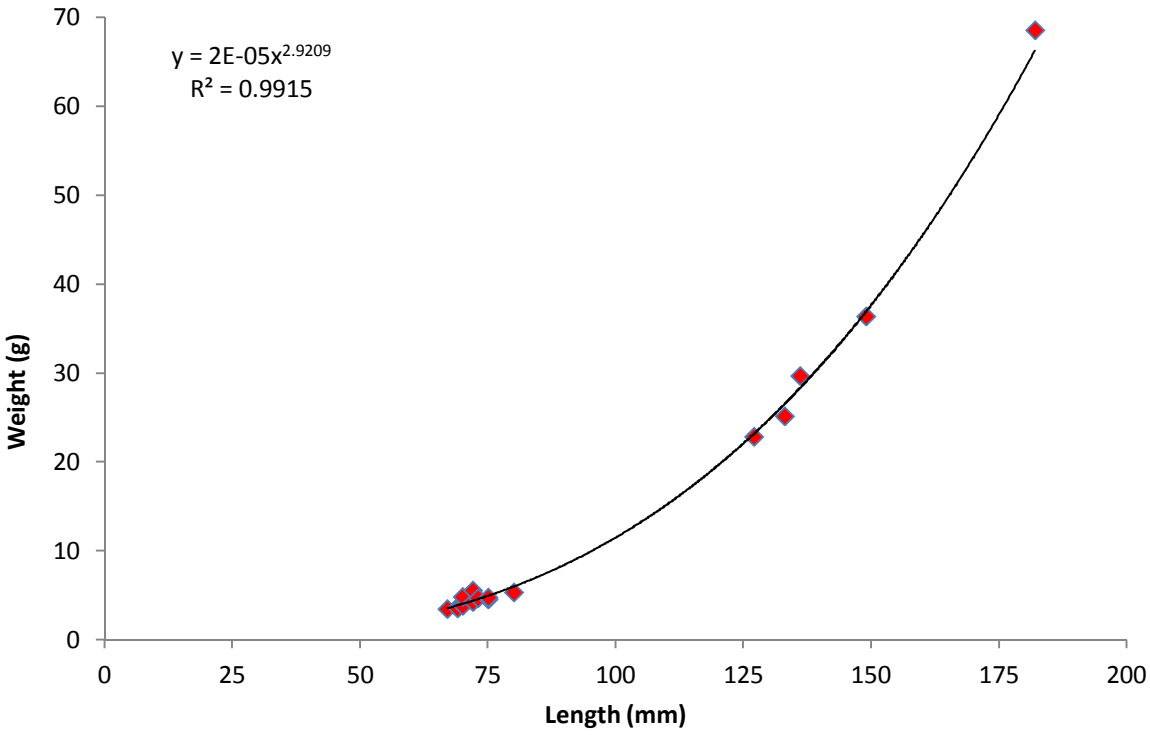


Fig 40. Length weight relationship of trout n = 16

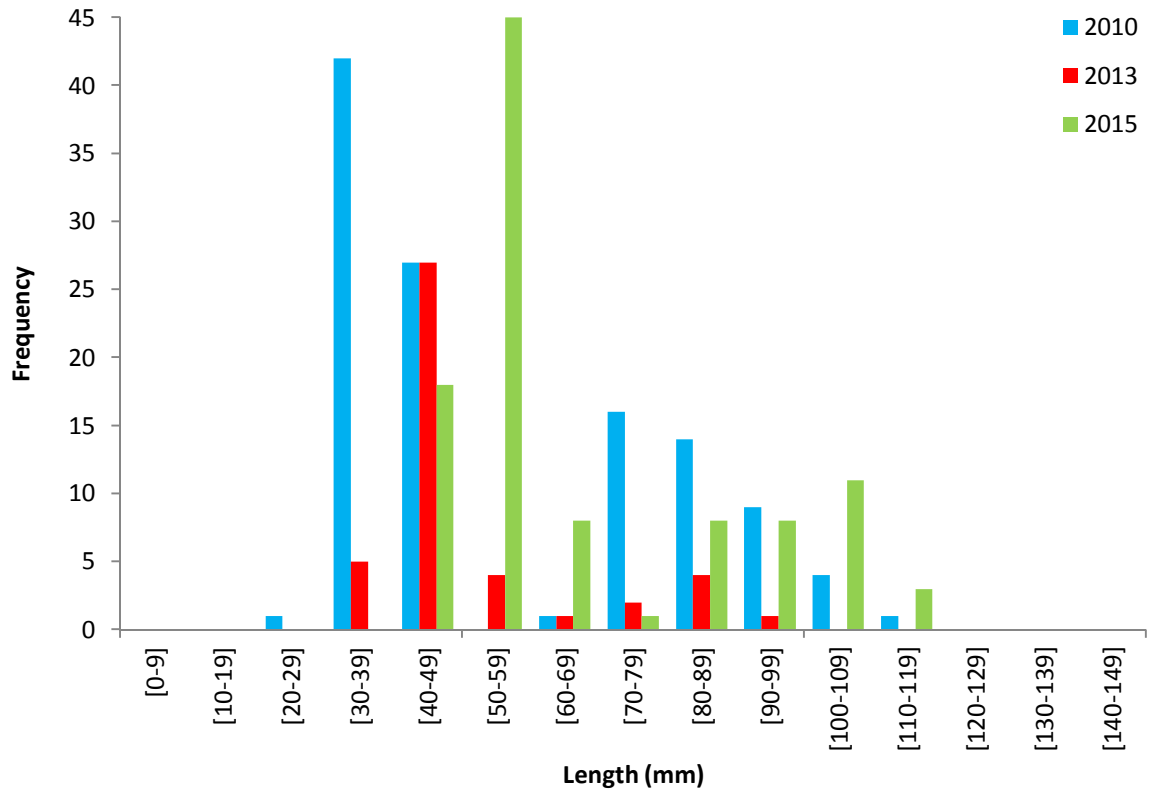


Fig 41. Length frequency distribution for salmon. 2010 n = 115, 2013 n = 44 & 2015 n = 102. * Note not all salmon were measured in 2013 due to warm weather conditions/fish health.

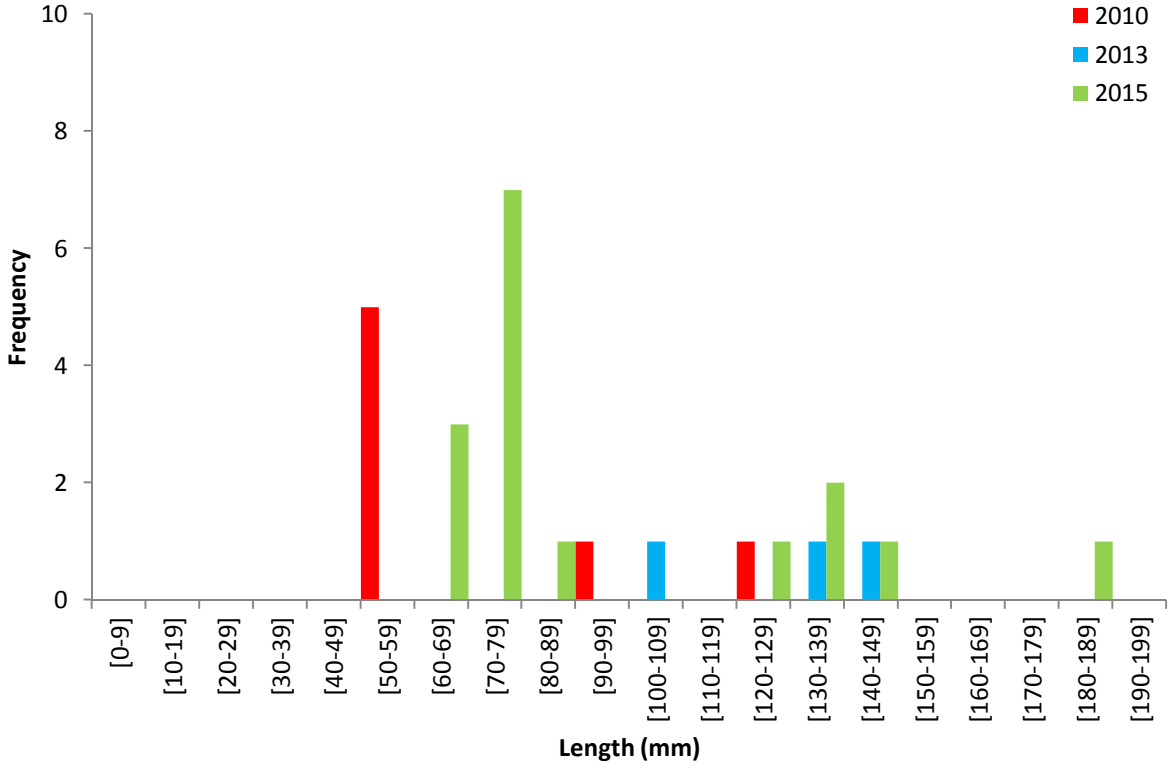


Fig 42. Length frequency distribution for trout. 2010 n = 7, 2013 n = 3 & 2015 n = 16. * Note not all salmon were measured in 2013 due to warm weather conditions/fish health.

This site is composed predominantly of grade 1 nursery habitat (60%) with grade 1 spawning habitat (30%) and grade 2 holding habitat (10%). This waterbody is of high value with natural channel structure throughout.

Impacts at the site include no or poor riparian fencing on both banks. There was evidence of some unauthorised gravel extraction ongoing. Fly tipping occurs at this site and there was rubbish and farm plastic in the watercourse.

Additional biological information is available in the spreadsheets provided

3.52 Proposed Programme of Measures

Potential programmes of measures include the development of catchment initiatives to ensure water quality and habitat quality are maintained or improved. Riparian fencing with pasture pumps, gated access and styles should be installed to control stock access to the watercourse. Adjacent landowners and the local community should be engaged in catchment management planning. Unauthorised gravel extraction should be further investigated.

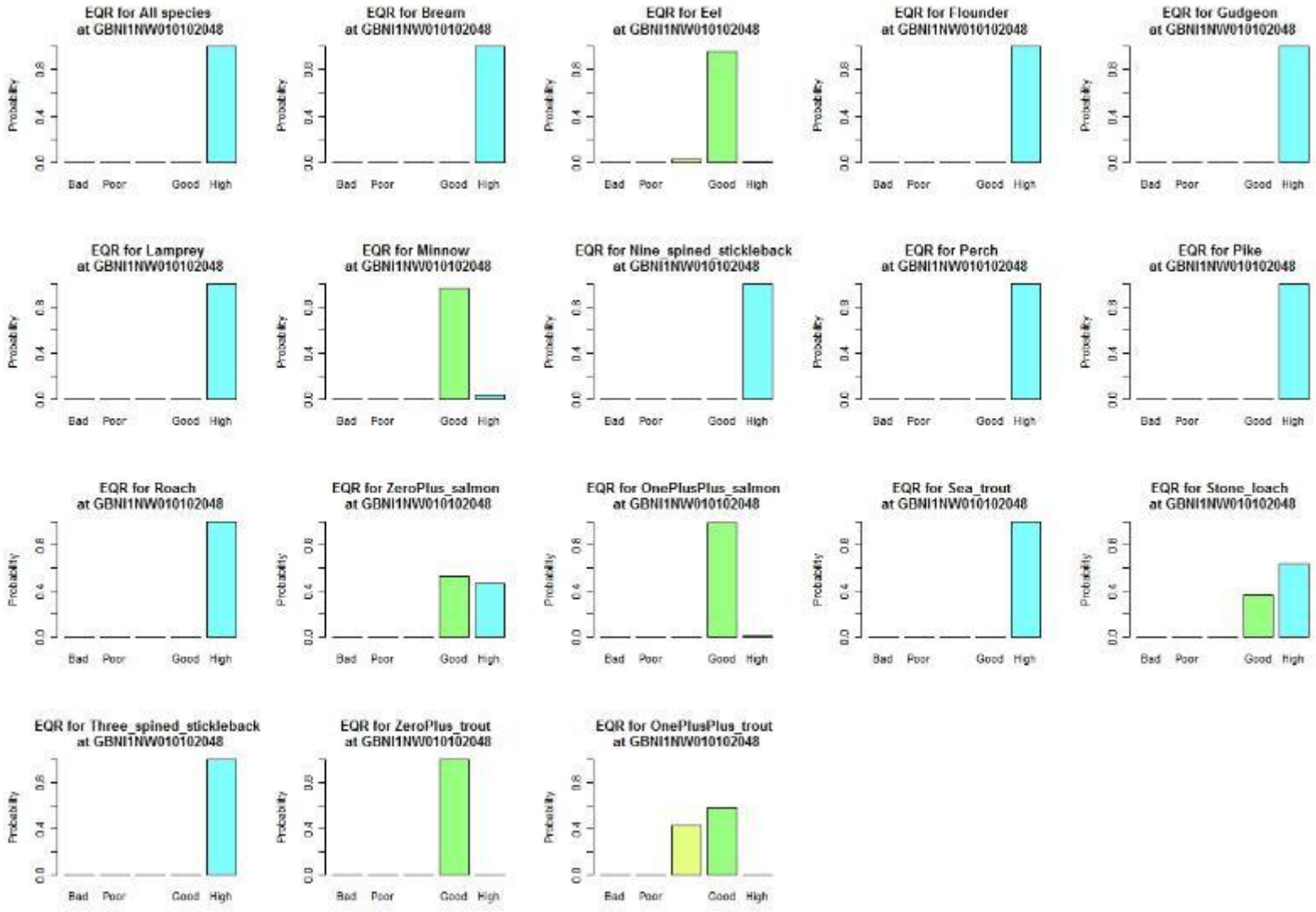


Fig 43. FCS2 (Ireland) output. Bar charts of the probability of class

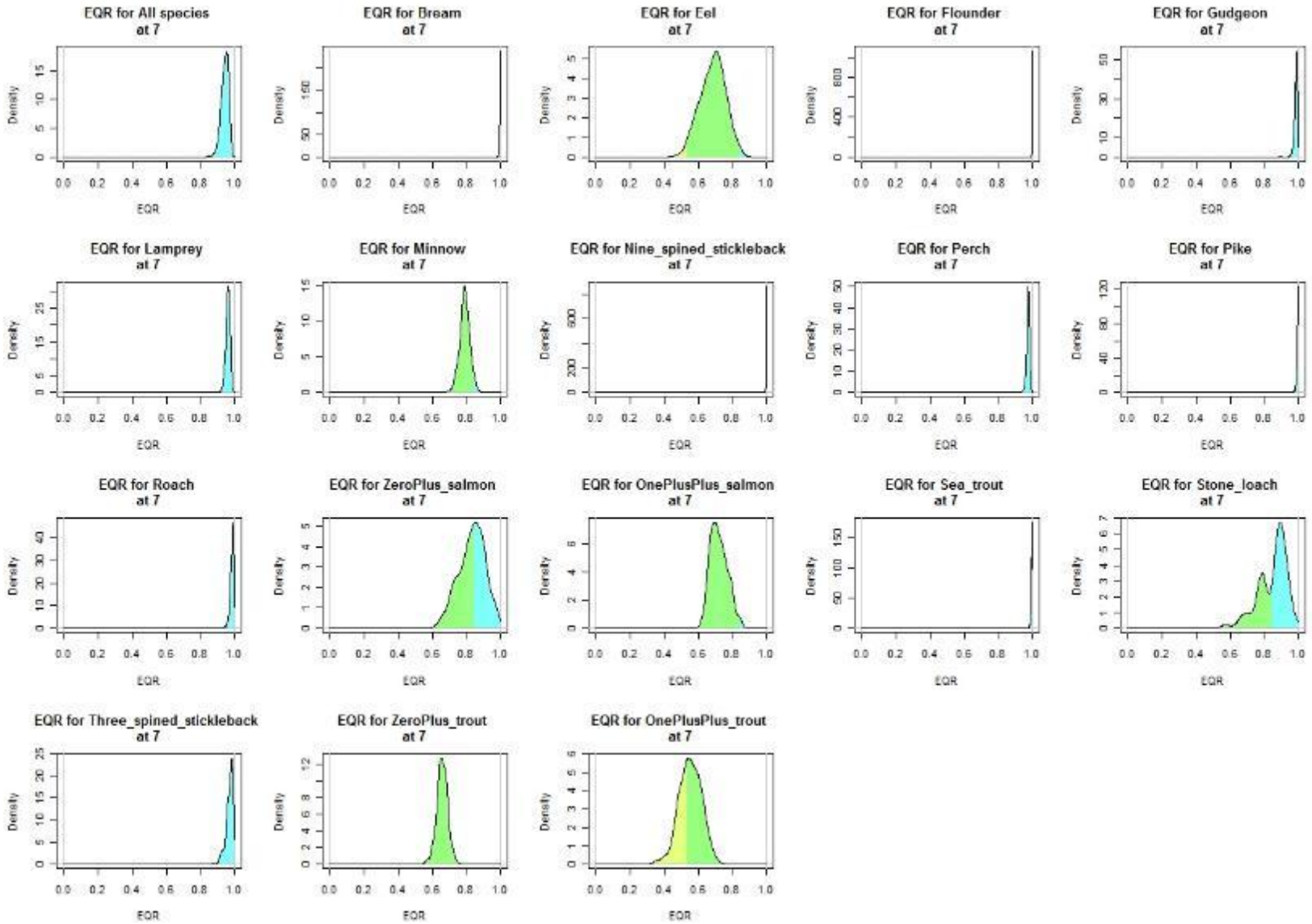


Fig 44. FCS2 (Ireland) output. Density estimates of the EQR variables

3.6 F10763 Skeoge River at Elagh Road GBNI1NW393901002
Burnfoot WFD Fish Classification 2015

MODERATE

FISHING	Salmon 0+	Salmon 1+	Trout 0+	Trout 1+	Eel	Stickleback	Roach	Total
1st	0	0	4	1	10	24	1	40
TOTAL	**0**	**0**	**4**	**1**	**10**	**24**	**1**	**40**

Table 7. Sampling results

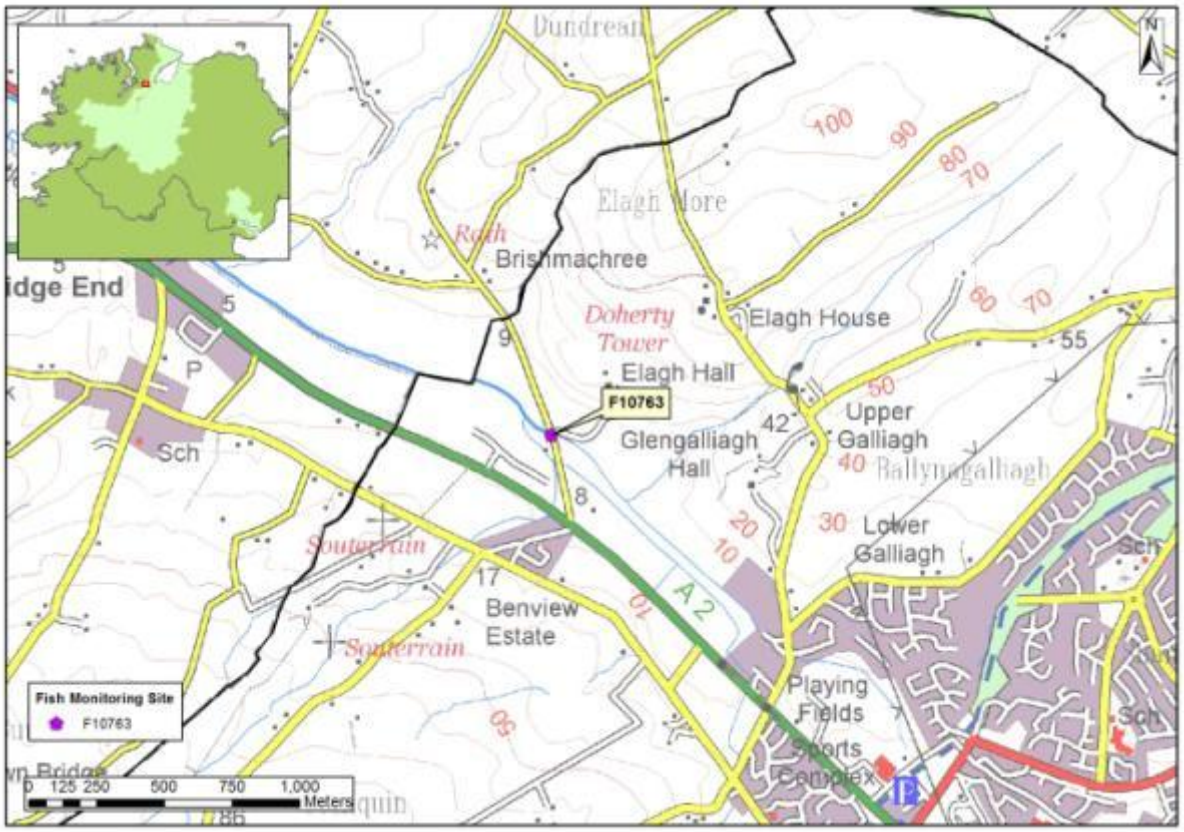


Fig 45. Site F10763

3.61 Results

Site F10763 was surveyed using a single pass quantitative electrofishing method. From this data minimum density estimates have been calculated for all species and age classes present.

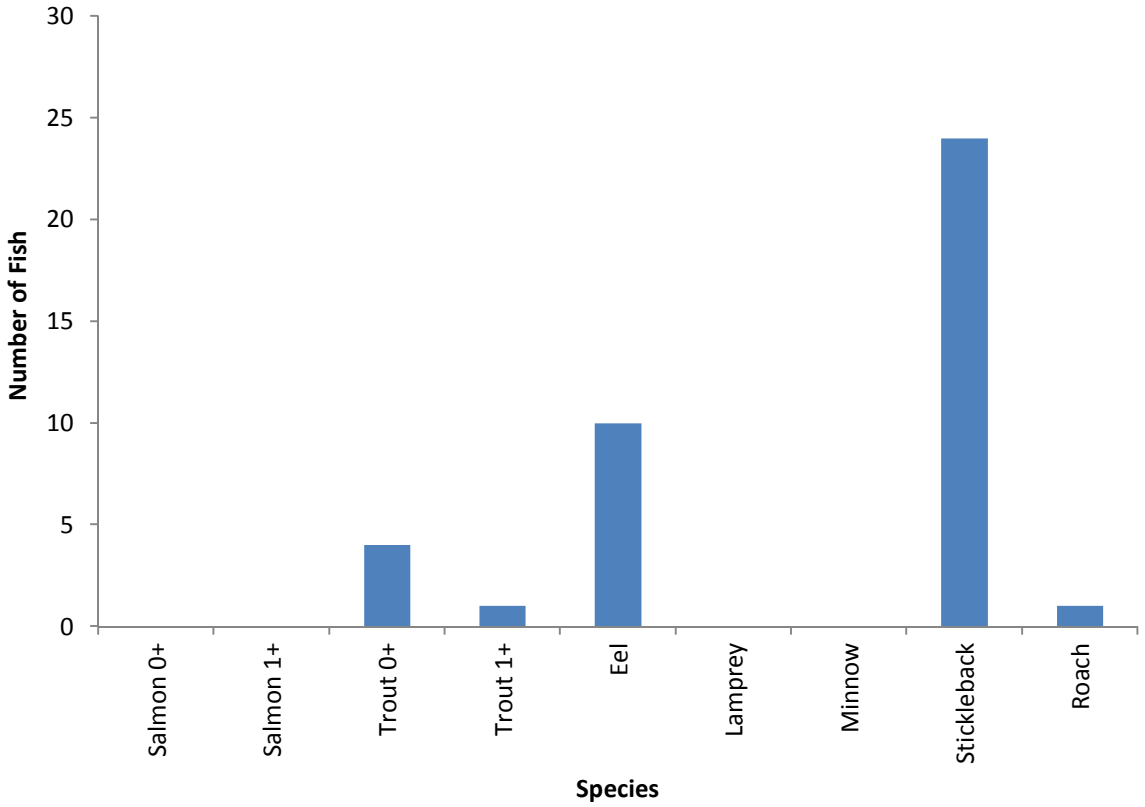


Fig 46. Total catch

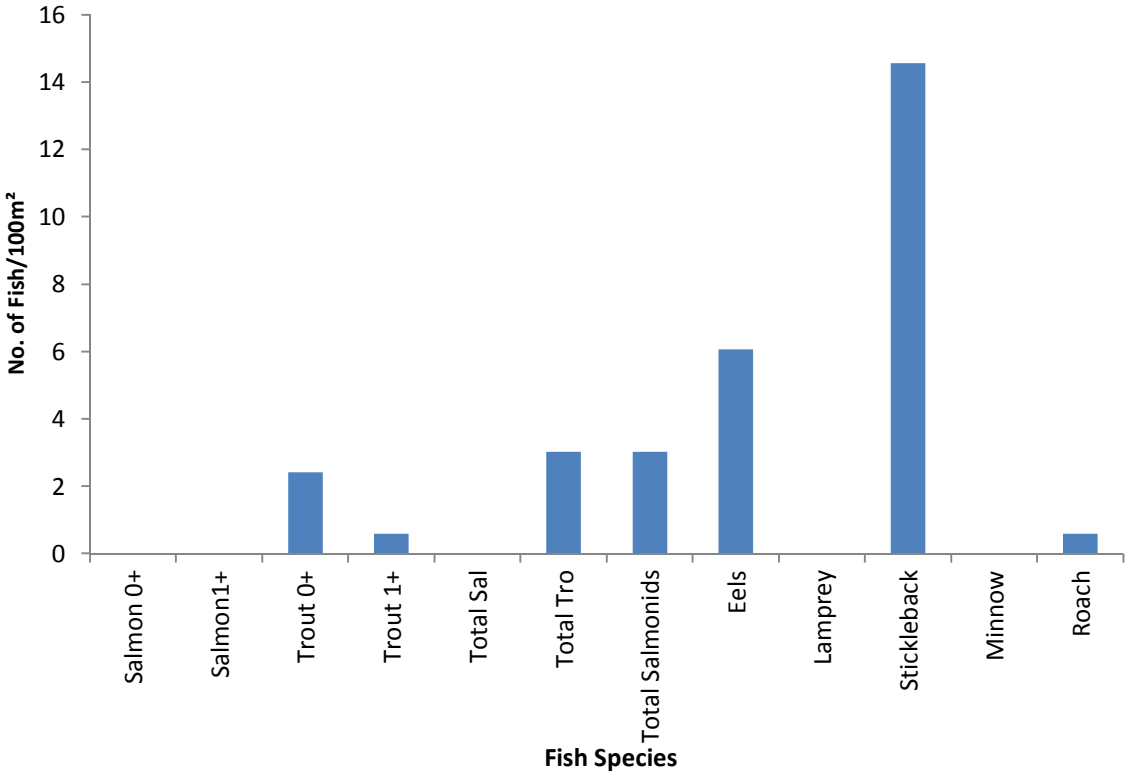


Fig 47. Density/100m^2

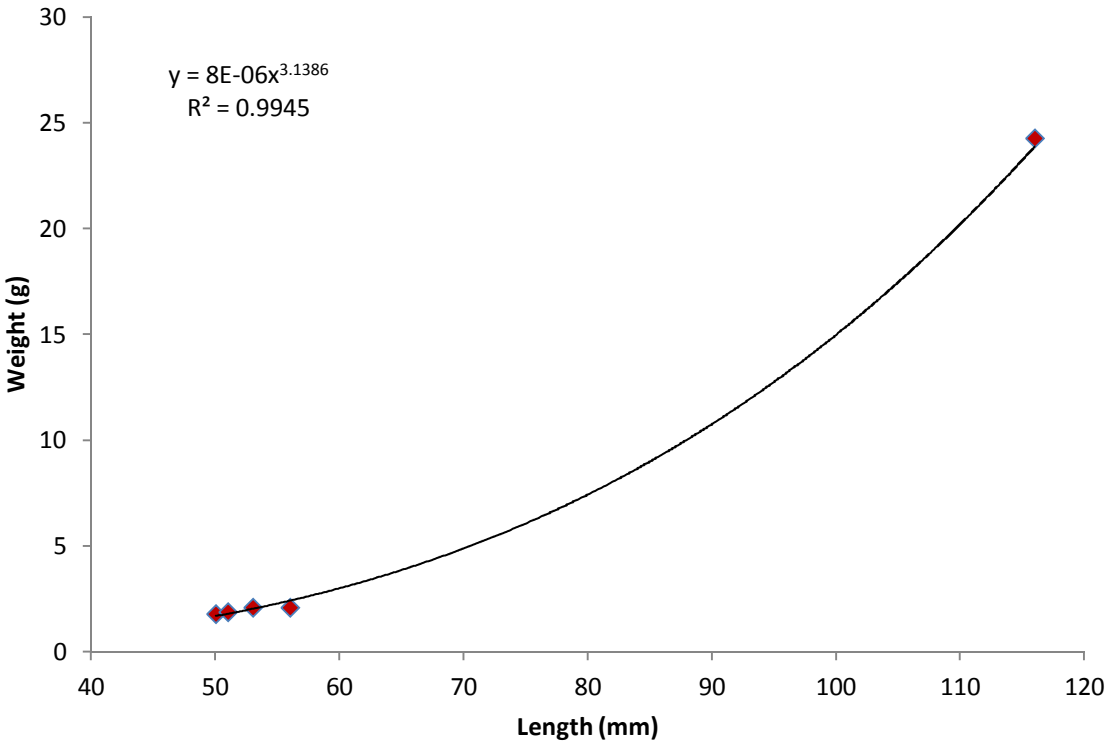


Fig 48. Length weight relationship of all juvenile trout caught n = 5

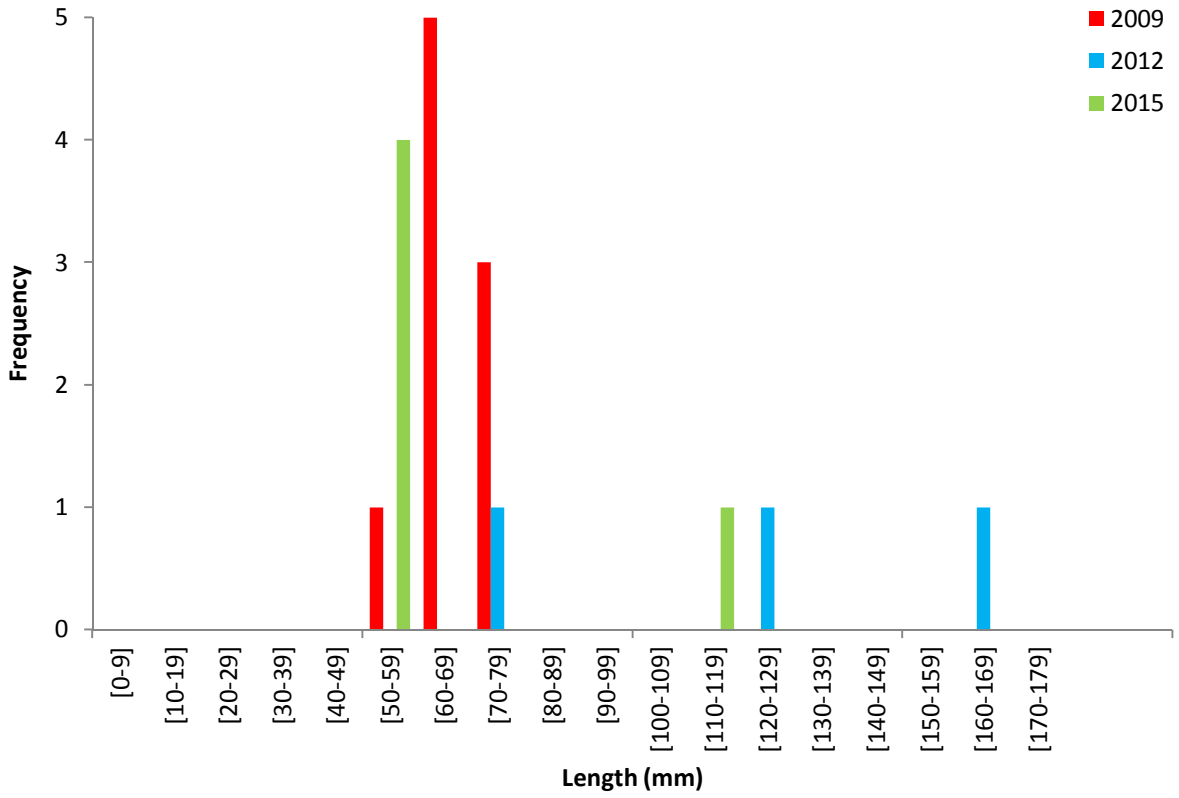


Fig. 49. Length frequency distribution for all trout caught. 2009 n= 9, 2012 n = 3 & 2015 n = 5

This site is composed predominantly of grade 3 holding habitat (75%) with grade 3 nursery habitat (10%) and grade 3 spawning habitat (15%). This channel has little diversity in river bed substrate and demonstrates significant signs of being arterially drained in the past. It flows through an urban area until just upstream of the survey site.

This channel forms part of a cross border catchment with the water body ultimately discharging to Lough Swilly, Co Donegal through a heavily modified artificial impoundment at Inch Levels.

It is suspected that developments upstream of this site may be responsible for untreated effluent entering this water body from misconnected waste water systems.

Additional biological information is available in the spreadsheets provided.

3.62 Proposed Programme of Measures

Potential programmes of measures could include, monitoring of consented and non-consented discharges, increased water quality monitoring, community engagement and introduction of substrate suitable for native fish species.

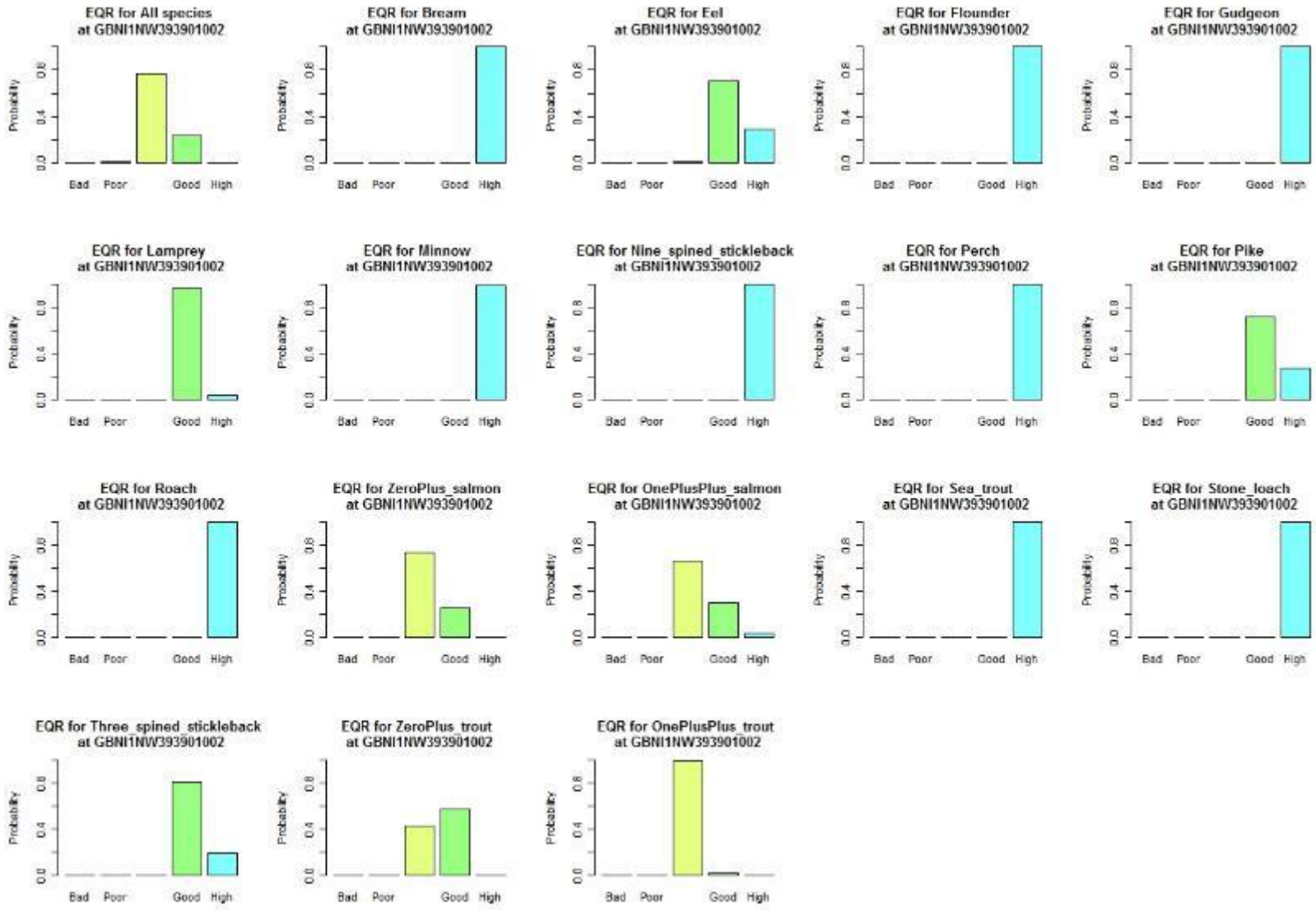


Fig 50. FCS2 (Ireland) output. Bar charts of the probability of class

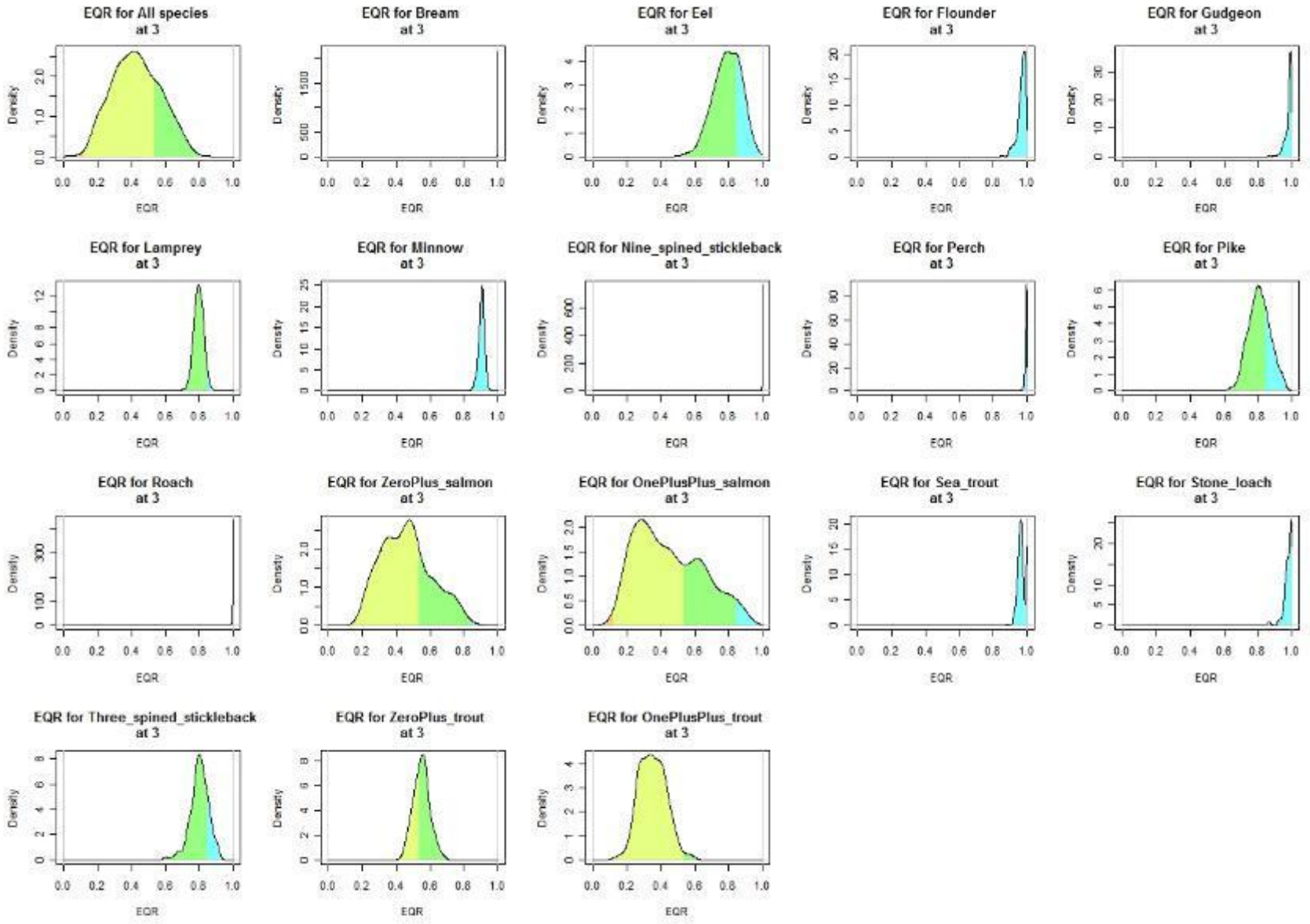


Fig 51. FCS2 (Ireland) output. Density estimates of the EQR variable

3.7 F10020 Dunnyboe Burn at Dunnyboe Bridge GBNI1NW010101072 Burndenett WFD Fish Classification 2015

HIGH

FISHING	Salmon 0+	Salmon 1+	Trout 0+	Trout 1+	Eel	Total
1st	13	7	11	8	1	**40**
2nd	14	2	3	4	1	**24**
3rd	11	3	3	1	0	**18**
TOTAL	**38**	**12**	**17**	**13**	**2**	**82**

Table 8. Removal sampling results

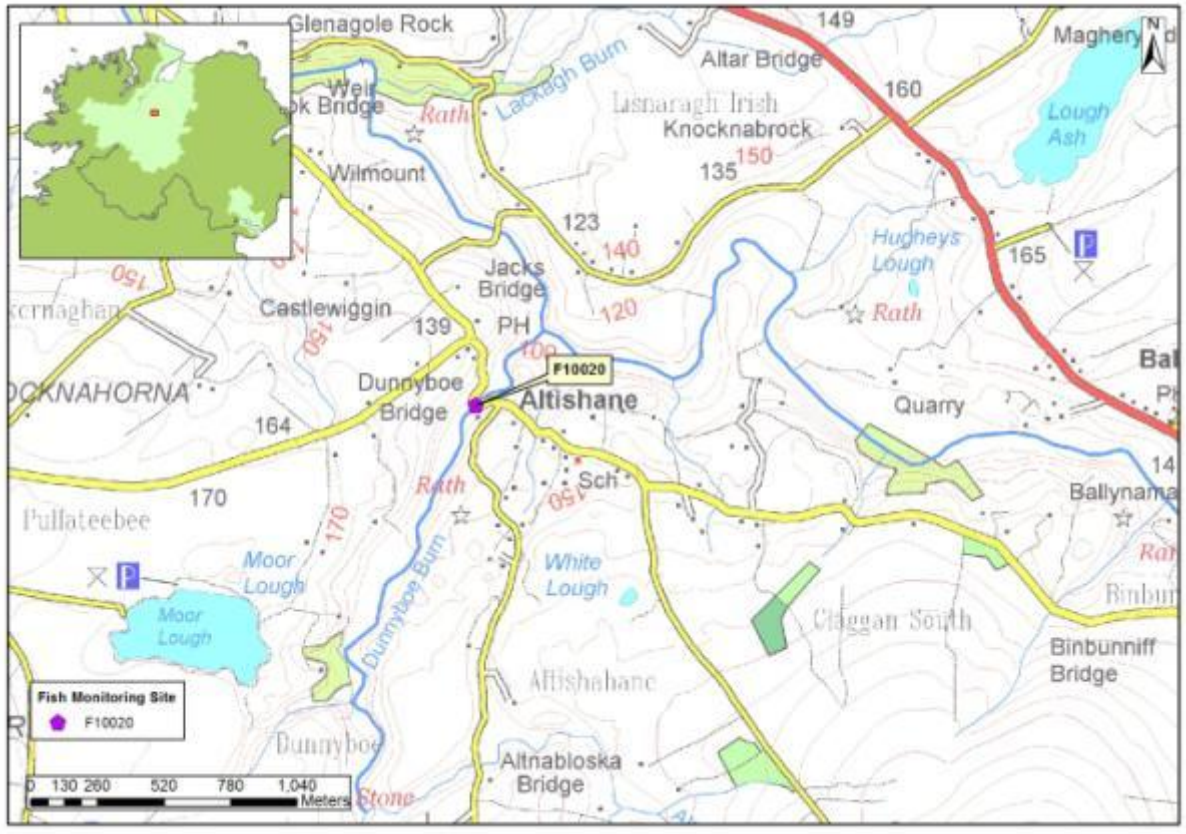


Fig 52. Site F10020

3.71 Results

Site F10020 was surveyed using a quantitative electrofishing method. This involved stop netting the river at both upstream and downstream limits of the selected site. Between the stop nets removal sampling was conducted. From this data density estimates have been calculated for all species and age classes present.

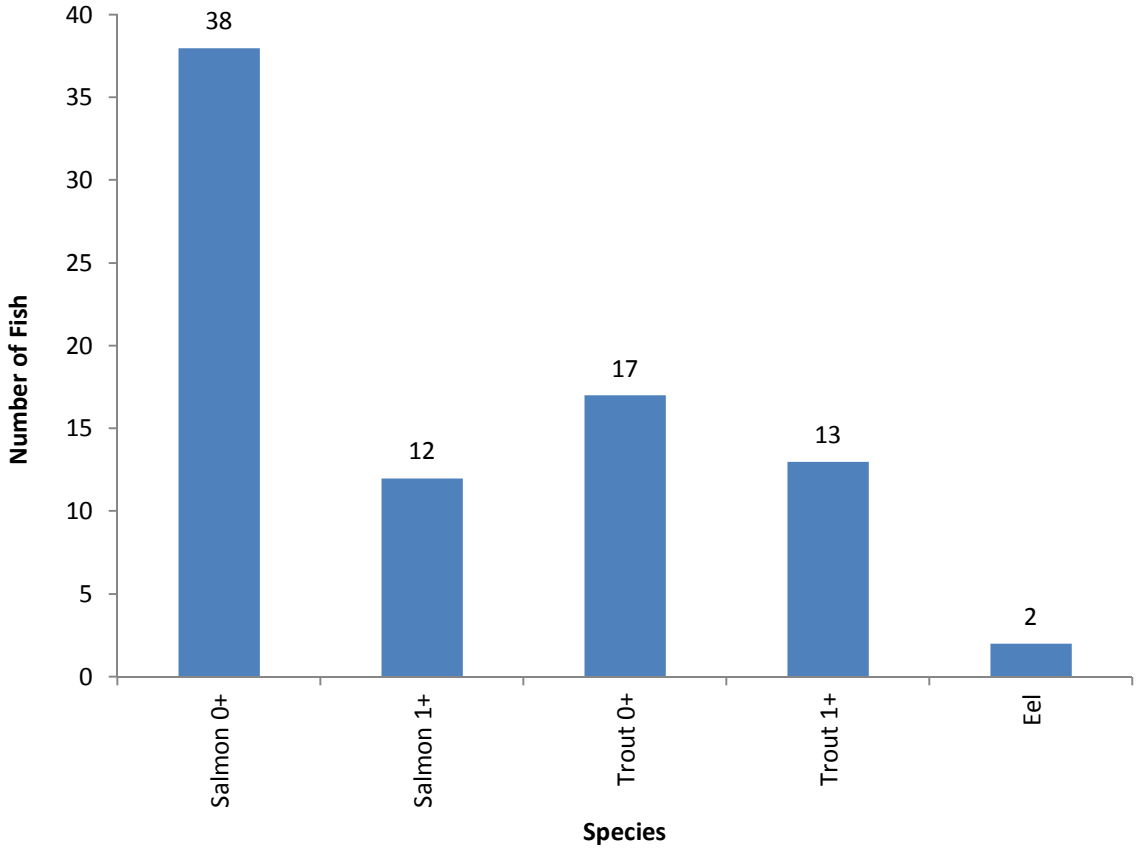


Fig 53. Total catch

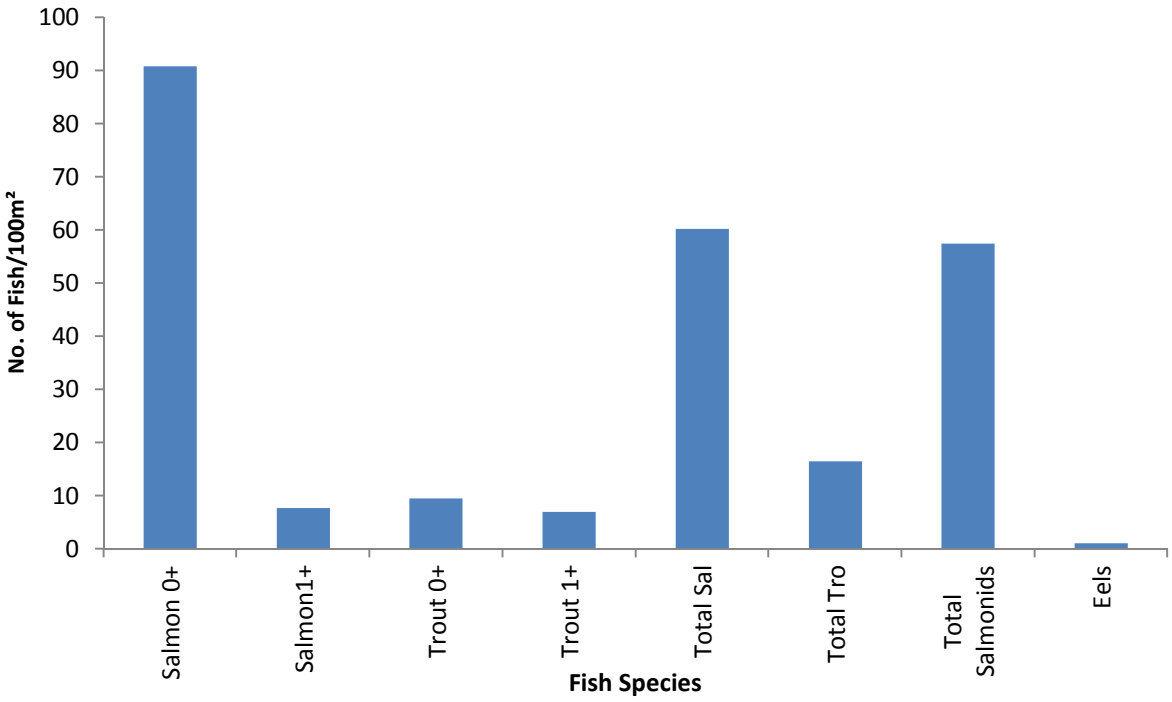


Fig 54. Density/100m²

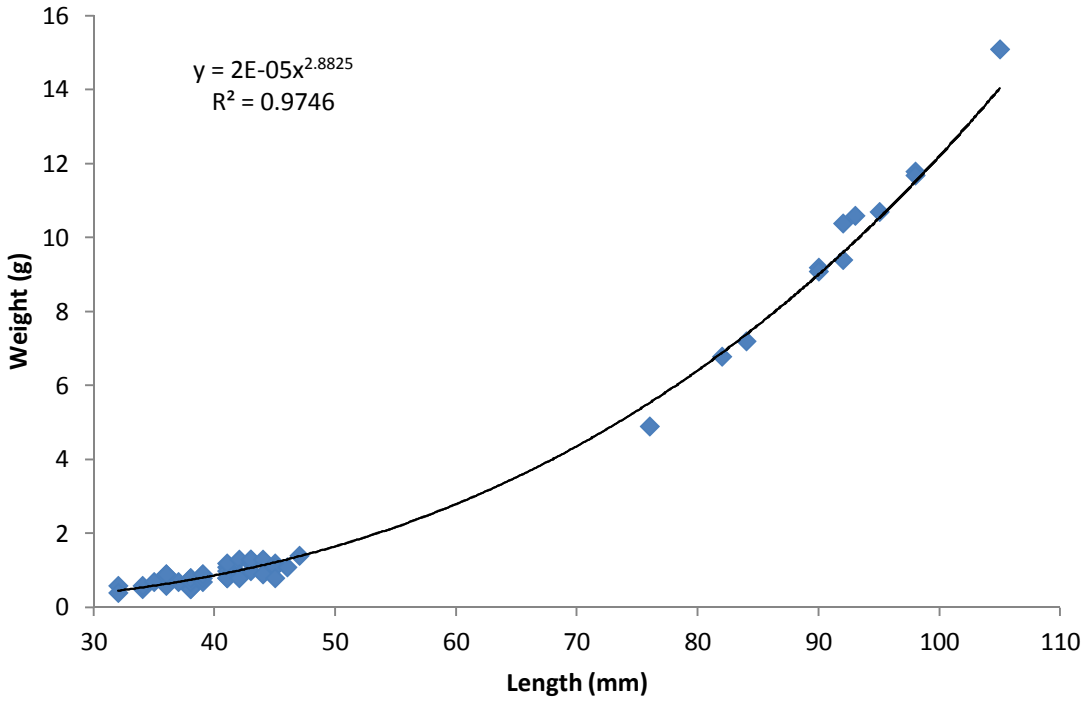


Fig 55. Length weight relationship of all salmon n = 50

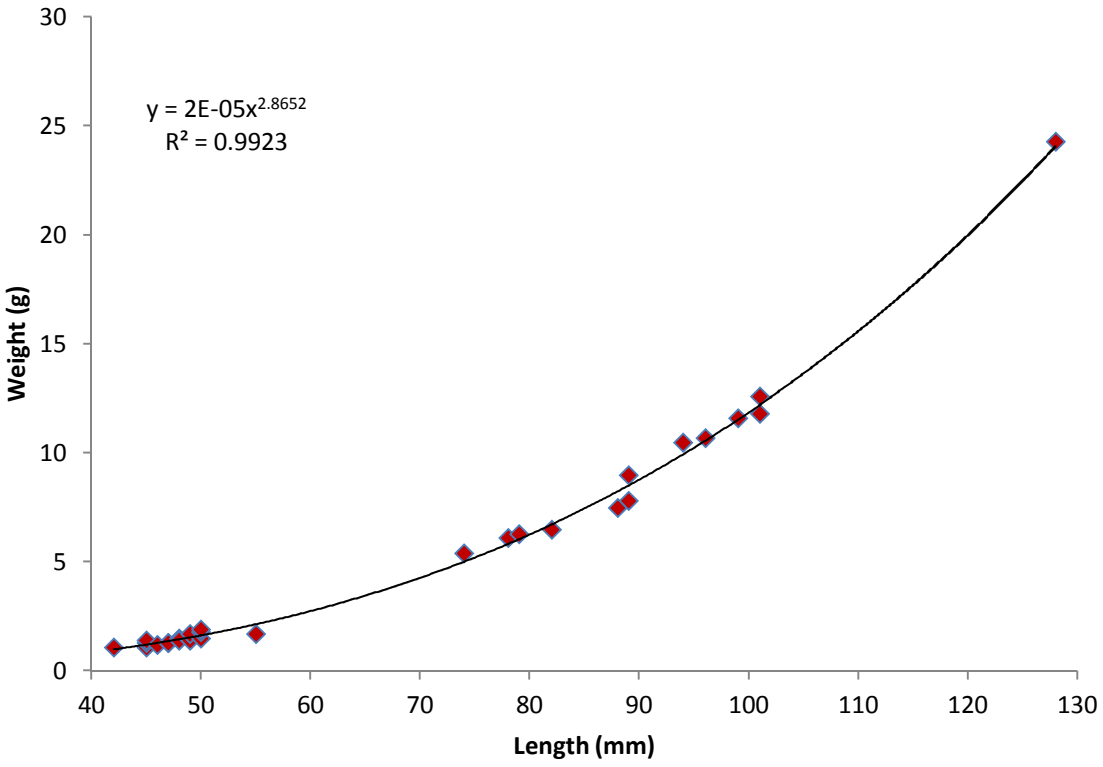


Fig 56. Length weight relationship of all trout caught n = 30

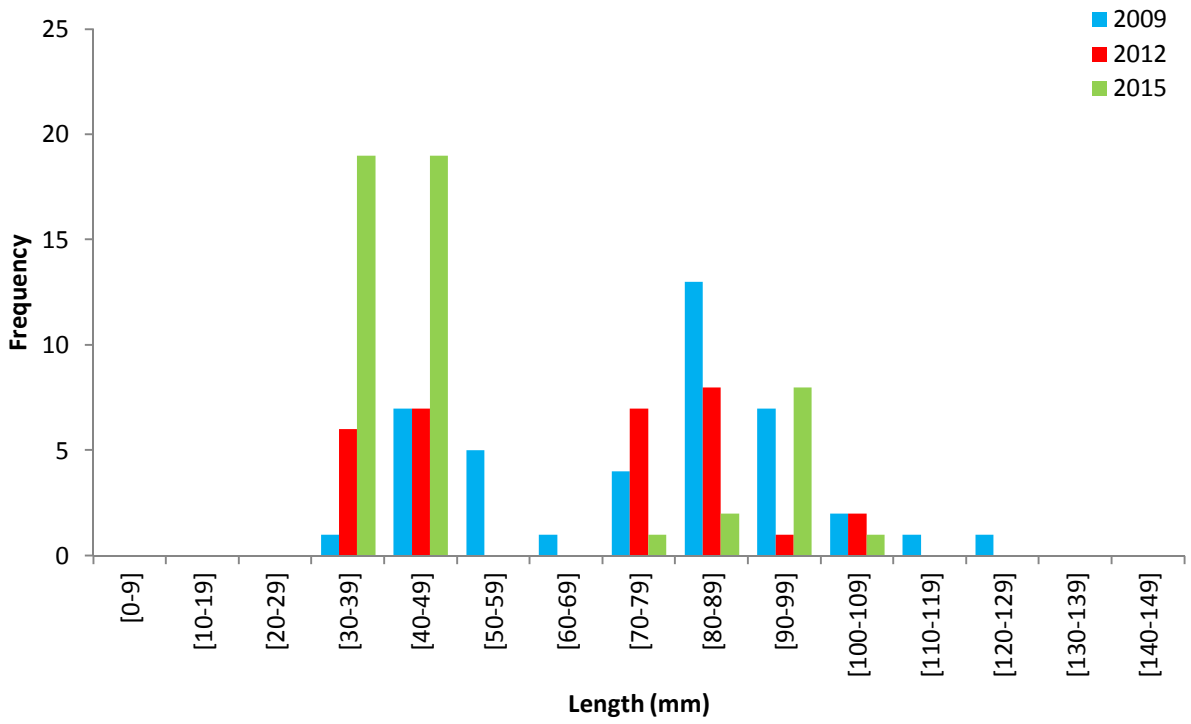


Fig 57. Length frequency distribution for all juvenile salmon caught (this can be used to assess the presence of different age classes/cohorts). 2009 n = 42, 2012 n = 31 & 2015 n = 50

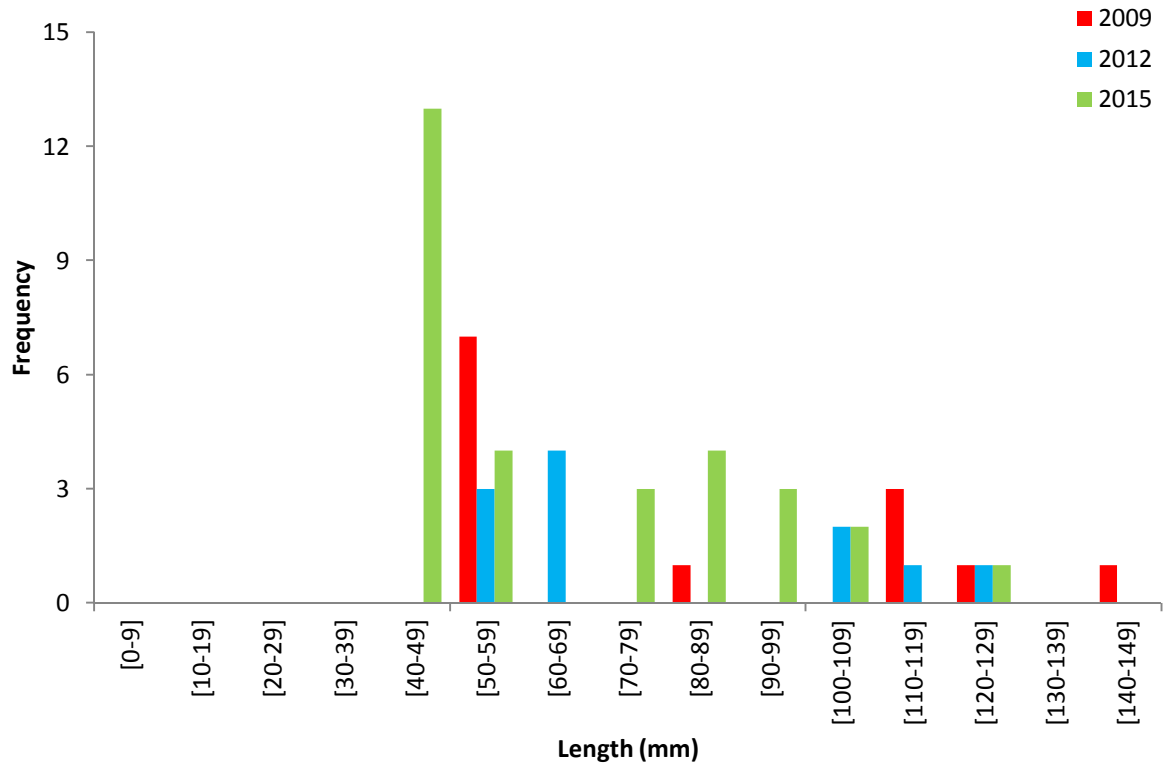


Fig 58. Length frequency distribution for all trout caught. 2009 n = 13, 2012 n = 11 & 2015 n = 30

This site is composed predominantly of grade 1 nursery habitat (80%) with grade 3 spawning habitat (10%) and grade holding habitat (10%).

Additional biological information is available in the spreadsheets provided.

This water body has natural channel form at the surveillance site, although there is some tunnelling by bank side tree cover. The left hand bank is planted with a dense stand of conifers which over shadows the water course. There are further issues with tunnelling on this water body which could be limiting primary productivity.

3.72 Proposed Programme of Measures

Potential programmes of measures could include, monitoring of consented and non-consented discharges, increased water quality monitoring, community engagement and introduction of substrate suitable for native fish species.

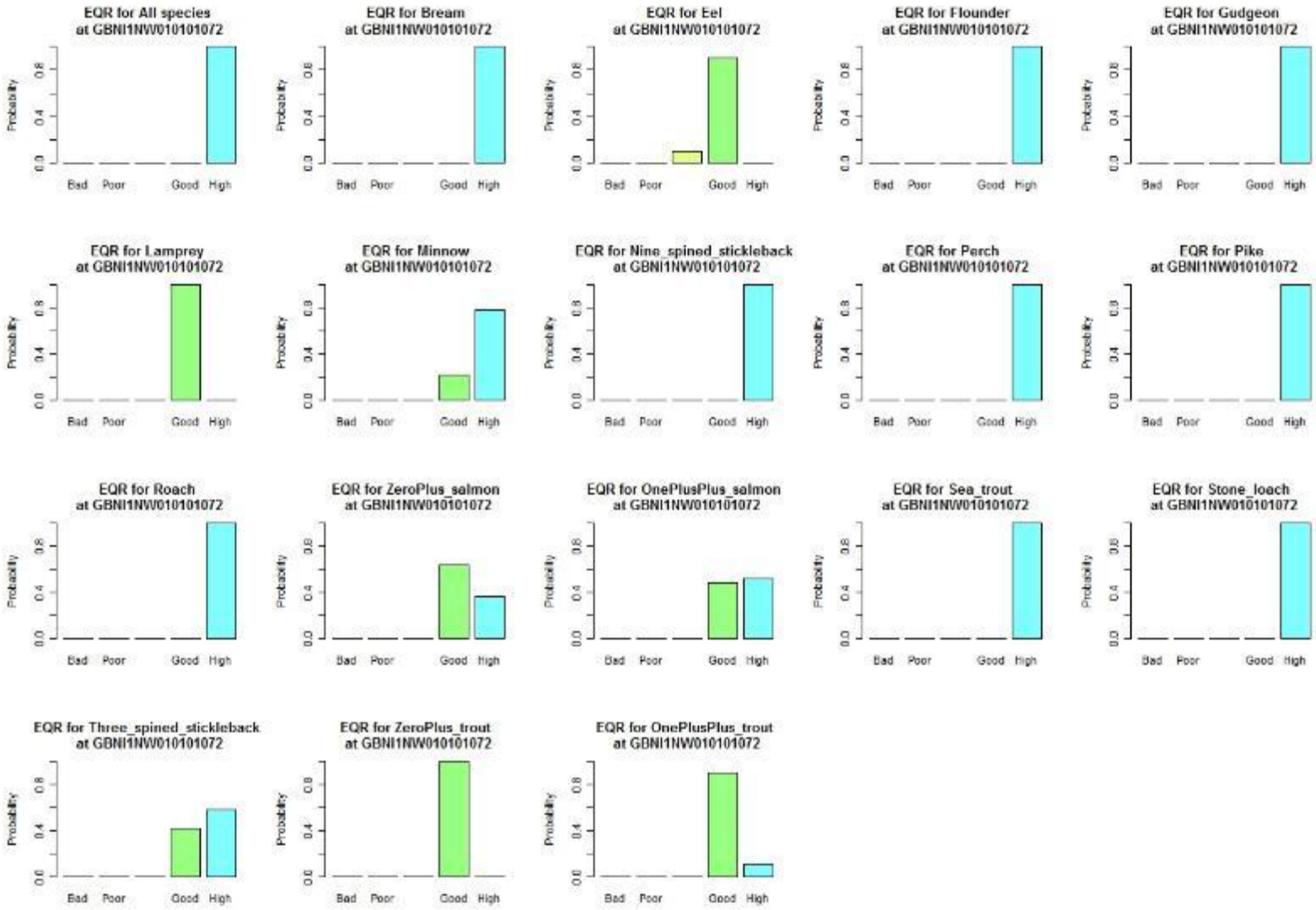


Fig 59. FCS2 (Ireland) output. Bar charts of the probability of class

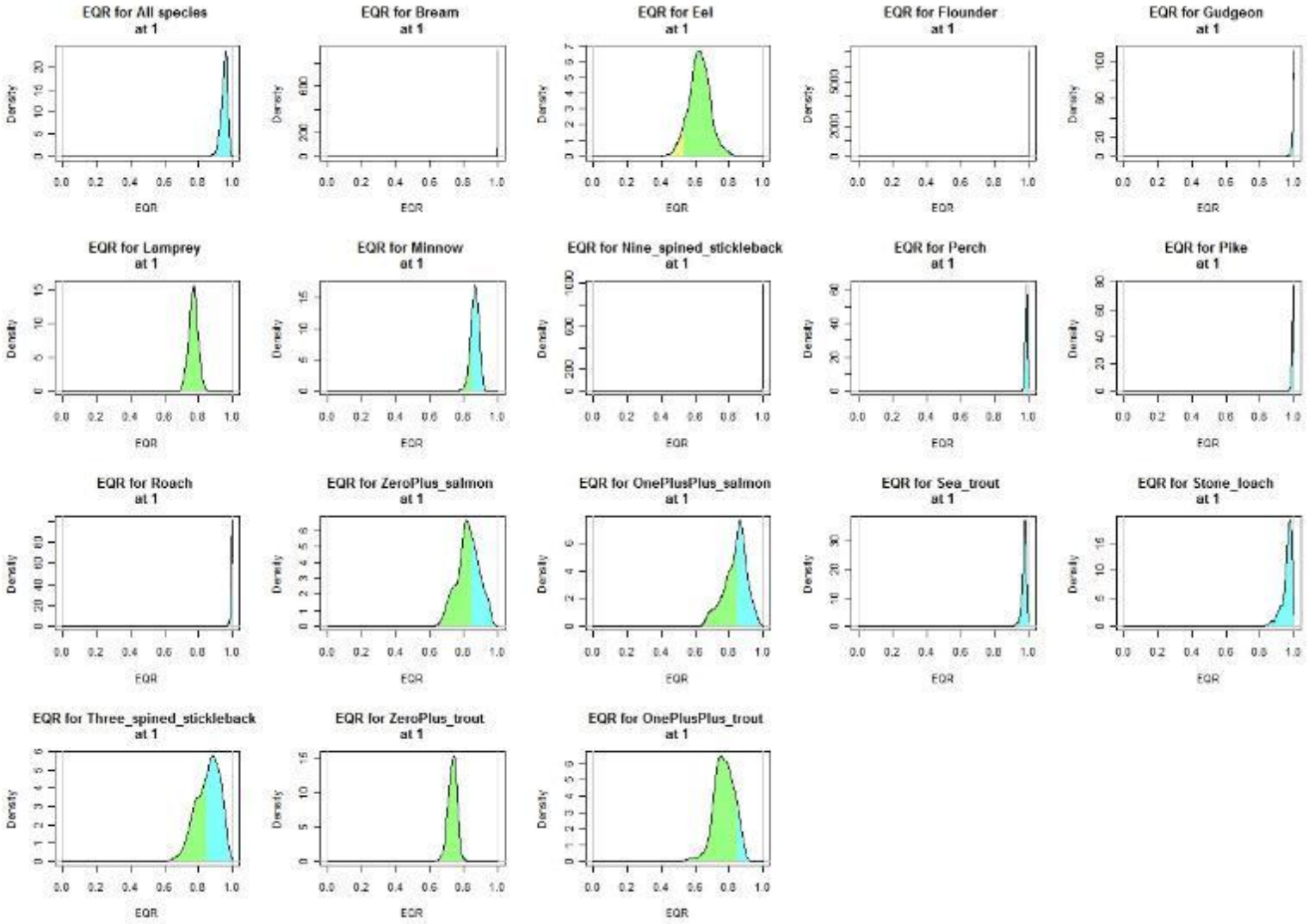


Fig 60. FCS2 (Ireland) output. Density estimates of the EQR variable

4.0 OVERVIEW OF WFD FISH SURVEILLANCE RESULTS

The results for WFD river fish monitoring within the Loughs Agency areas for 2015 are outlined in the table below. In 2015 a total of seven WFD river fish surveillance monitoring stations were monitored. All seven were in Northern Ireland. Classifications are outlined in the figure below. FCS2 (Ireland) was the primary classification tool from 2012, prior to this classifications were based on professional opinion. No additional waterbodies were classified using FCS2 in 2015.

Site Code	Year of 1st Survey	Catchment	Classification							
			2008	2009	2010	2011	2012	2013	2014	2015
F10086	2008	Strule	Good				Good			
F10089	2009	Strule		Mod			Good			
F10076	2009	Owenkillew		Good			Mod			Good
F10020	2009	Burndennet		Good			High			High
F10014	2009	Glenmornan		Mod			Good			Mod
F10626	2009	Newry		Mod			Good			
F10644	2009	Killbroney		Mod			Poor			
F10077	2009	Owenkillew		Good			Good			Good
F10763	2009	Skeoge		Poor			Poor			Mod
F10022	2010	Burndennet			Good			Mod		Mod
F10049	2010	Derg			Good			Good		
F10079	2010	Glenelly			Good			Mod		High
F10115	2010	Camowen			Good			Good		
F10170	2010	Roe			Good					
F10029	2013	Mourne						Poor		

Site Code	Year of 1st Survey	Catchment	Classification							
			2008	2009	2010	2011	2012	2013	2014	2015
40B020400	2010	Bredagh			N/A			Mod		
01M010100	2010	Derg			N/A			Poor		
01S020200	2010	Finn			N/A			Mod		
F10111	2011	Camowen				Good			Good	
F10045	2011	Derg				Good			High	
F10128	2011	Drumragh				Good			High	
F10101	2011	Fairywater				Good			Mod	
F10148	2011	Faughan				Good			Poor	
F10072	2011	Owenkillew				Good			High	
F10171	2011	Roe				Good			Good	
F10025	2012	Finn					Mod			
F11204	2012	Newry					Mod			

Table 9. WFD fish surveillance stations surveyed by the Loughs Agency 2008-2015

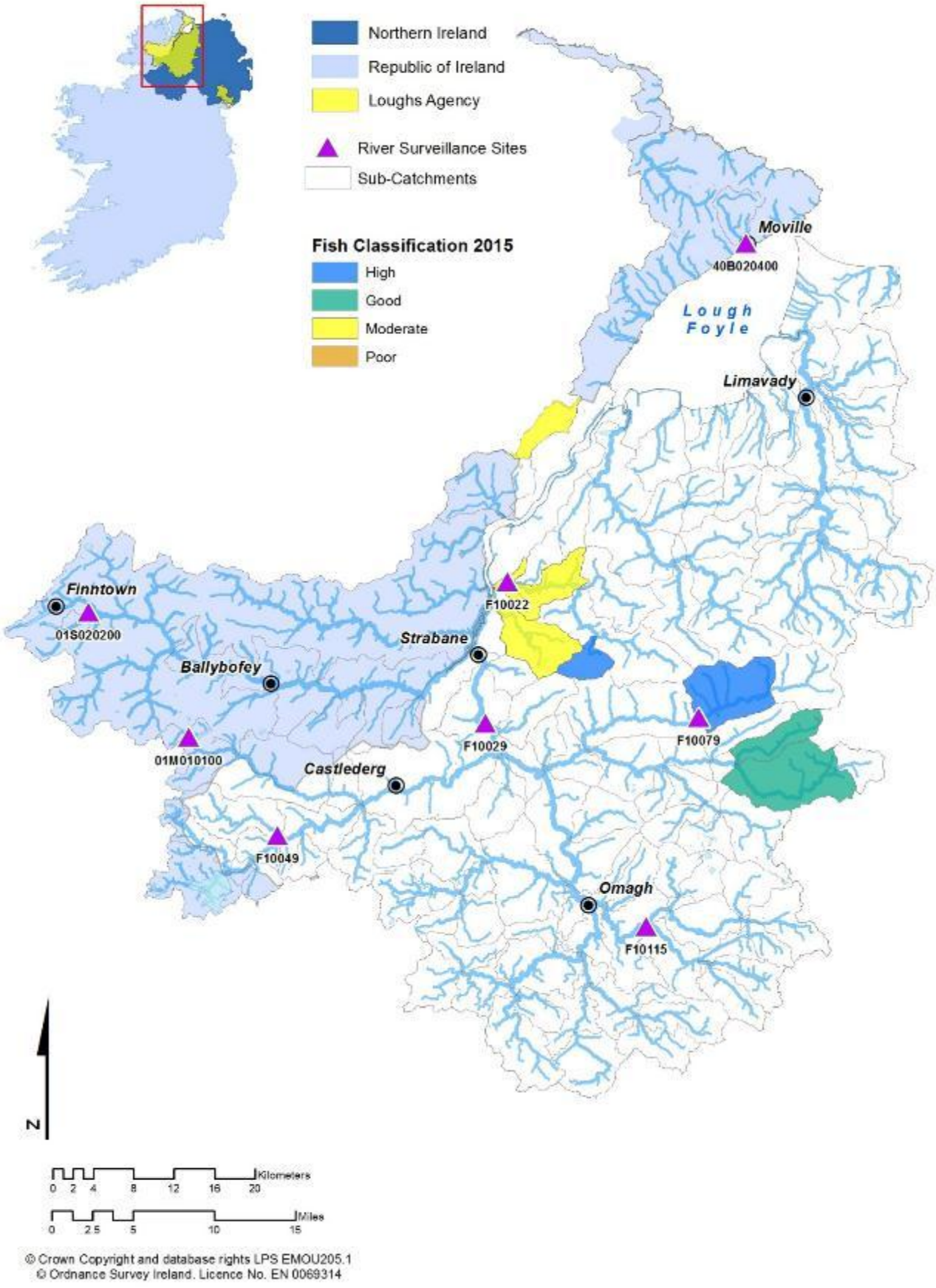


Fig 61. Loughs Agency WFD fish surveillance water body classifications 2015 Foyle area

5.0 SEMI QUANTITATIVE/SALMON MANAGEMENT PLAN CLASSIFICATIONS

For classification in 2015 the NI WFD Fish Group continued to adopt the set of rules for deriving indicative fish classifications for waterbodies in which annual semi quantitative/salmon management plan electrofishing surveys are conducted. Within the Foyle and Carlingford areas approximately 500 sites are semi quantitatively surveyed annually. The ability to derive indicative classifications greatly facilitates the ability to highlight pressures within specific waterbodies and can assist with the development of programmes of measures. The refined rules as of January 2013 are listed below.

1. Only use if there are a minimum of three sites per water body - suggest a minimum of the three largest rivers for which data is available – important to record the stations used.

2. Classify according to the dominant salmonid species within the water body where adequate historical data is available.

3. Classify if ≥ 66% of sites agree

4. Classify as Good or better, moderate or Poor or worse

5. Use the most recent years data

Site	In Agreement	SMP Class	WFD Class
Glenmornan	Yes	**Moderate**	**Moderate**
Burndennett	No	**Moderate**	**Moderate**
Coneyglen	No	**Moderate**	**Good**
Owenkillew	No	**Good**	**Good**
Glenelly	No	**Good**	**High**
Skeoge	No	**Unclassified**	**Moderate**
Dunnyboe	No	**Unclassified**	**High**

Table 10. 2015 method comparisons

The maps below provide an overview of results for the application of this method within the Foyle and Carlingford areas in 2015. GIS shape files containing the raw data behind these maps including site id's has been provided to NIEA.

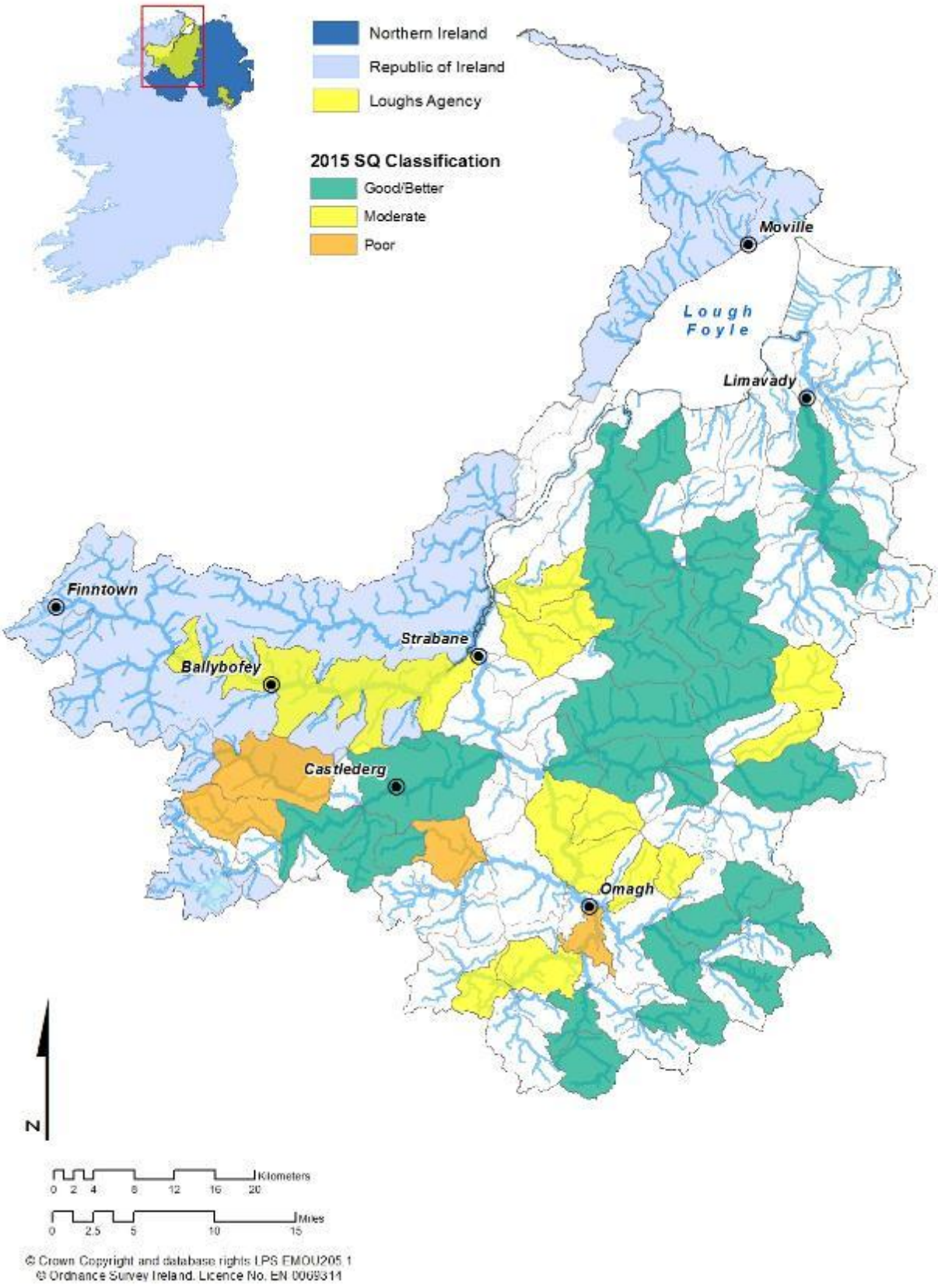


Fig 62. Foyle area Semi quantitative/salmon management plan derived indicative water body classifications 2015

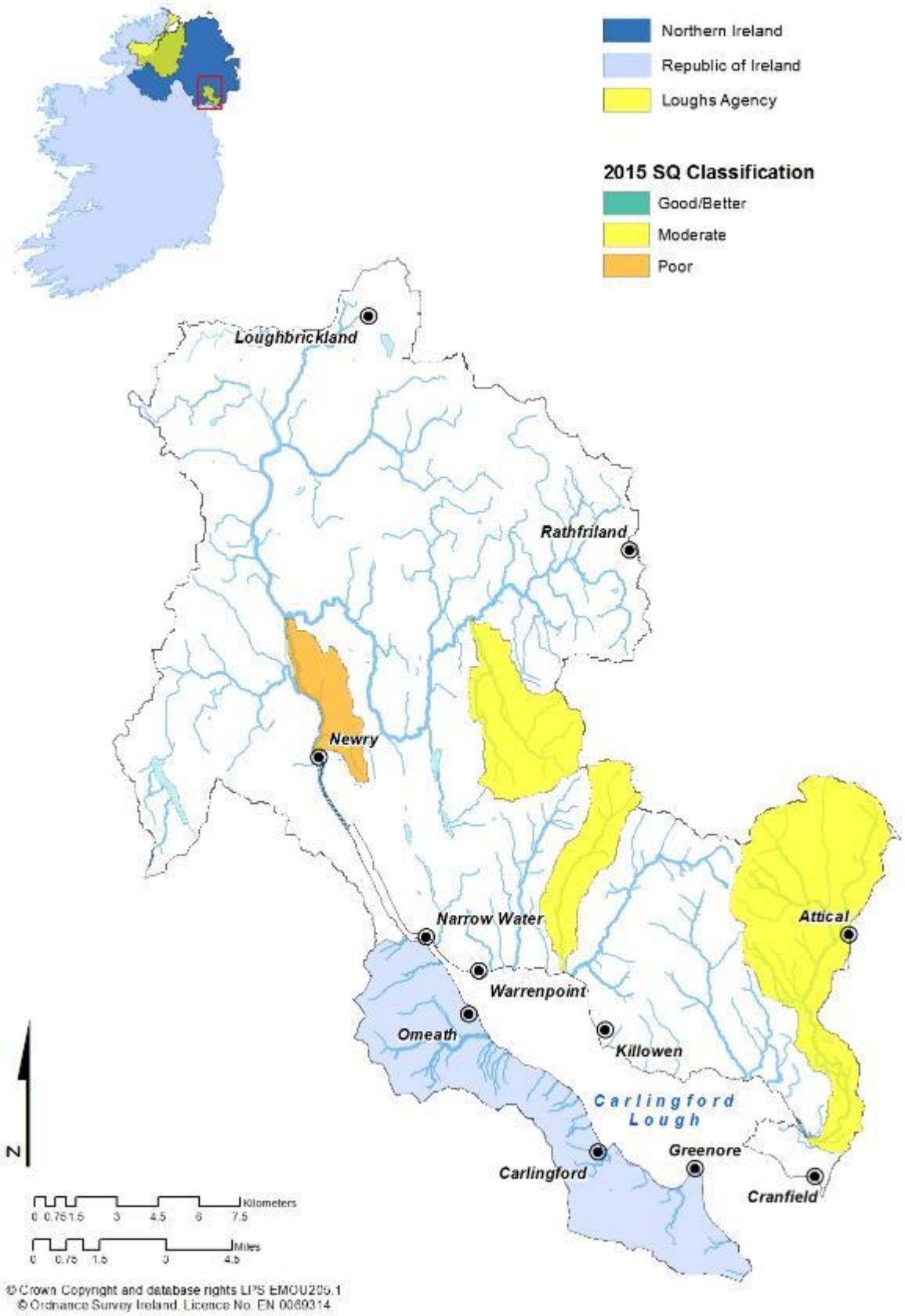


Fig 63. Carlingford area Semi quantitative/salmon management plan derived indicative water body classifications 2015

6.0 CONCLUSION

From 2012 classification has been predominantly based on the FCS2 (Ireland) model. This has replaced the professional opinion classification method as the dominant classification method. A professional opinion over ride exists to correct classifications based on a paucity of information including the presence of barriers downstream to a monitored site. The professional opinion override was not utilised in 2015.

2015 marked the first year in the second monitoring period/cycle of the Water Framework Directive. In 2015 a number of sites were surveyed using a single pass electrofishing survey. When it was not possible to install stop nets due to excessive flow, depth and or width a single pass survey within a defined area was conducted. This approach was instead of the previously utilised multi method approach.

The FCS2 (Ireland) tool has passed the intercalibration process and has now been fully adopted for use across the island of Ireland. Further refinements may be made to the model in the future to incorporate issues such as full consideration of barriers downstream and acceptance of different types of survey data. During the second cycle of The WFD more emphasis will be placed on reasons for waterbody failures and the development of appropriate programmes of measures to address these. This approach will involve wider utilisation of existing fisheries data sets, additional empirical data collection and expert analysis of this information.

A degree of flexibility will need to be maintained in collecting and analysing fisheries data which can be utilised for WFD classification purposes. Early consultation on any potential developments to the FCS2 (Ireland) model should be encouraged through the relevant technical advisory group.

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CEN (2003) *Water Quality – Sampling of Fish with Electricity.* European Standard. Ref. No. EN14011:2000.

Council of the European Communities (2000) Establishing a framework for community action in the field of water policy. Directive of the European Parliament and of the Council establishing a framework (2000)/60/EC). *Official Journal of the European Communities,* **43,** 1-73.

UK Technical Advisory Group on the Water Framework Directive (2012) Proposed recommendations on biological standards, Consultation