



Loughs Agency Water Framework Directive Fish in Rivers Classification Report 2012

Water Framework Directive Fish Population Assessment

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Art Niven, May 2013



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

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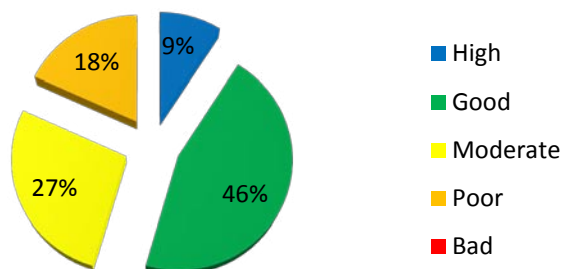
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EXECUTIVE SUMMARY

Eleven Water Framework Directive fish surveillance monitoring stations were surveyed within the Loughs Agency jurisdiction in 2012. All of these were within Northern Ireland. 9% of sites surveyed were classified as high status, 46% as good status, 27% as moderate status and 27% as poor status. 0% of sites were classified as bad status.



Classification in 2012 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 2012. 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 submitted to Northern Ireland Environment Agency (NIEA). 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 programmes 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 for Northern Ireland Environment Agency by way of part fulfilment of the Loughs Agency agreement to survey and provide classifications for Water Framework Directive river fish monitoring. 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 2012. 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 2012.

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 collaborated on one large river site in 2012 to ensure continuity of sampling methods.

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, August and September 2012 and involved the use of a quantitative electrofishing methodology and a multi method survey technique. 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.

At a number of larger river sites where quantitative electrofishing was not possible due to width and or depth a multi method sampling approach was adopted which included single pass electrofishing, the deployment of 1m "D" ring fyke nets overnight and seine netting.

Additional habitat variables were recorded and the exact sampling locations were recorded using a Trimble Geo XT 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 in to the FCS2 (Ireland) model at this time. Other scenarios for professional judgement over ride include significant deviation from expected classification and high water levels during survey.

NURSERY AREA	
Grade 1	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Flow 300 – 600mm/sec • Water depth 150 – 700mm • 70% substrate 30-80mm diameter • Gravel depth: <ul style="list-style-type: none"> Trout = 50-150mm Salmon = 200-500mm
Grades 2-4	Failing as for nursery habitat above
HOLDING AREA	
Grade 1	<ul style="list-style-type: none"> • 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

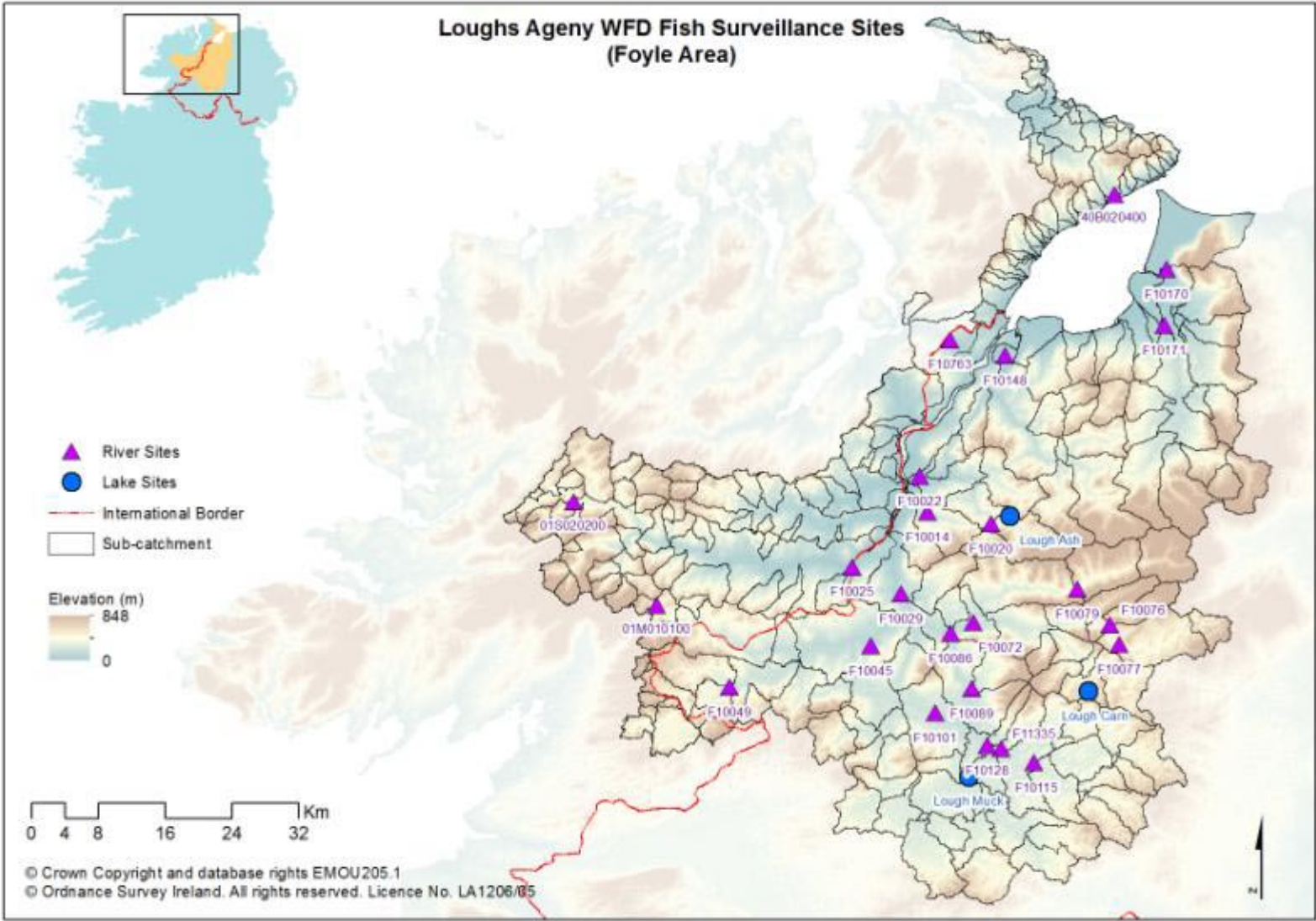


Figure 1. WFD Fish surveillance river sites within the Foyle area, Northern Ireland and Ireland.

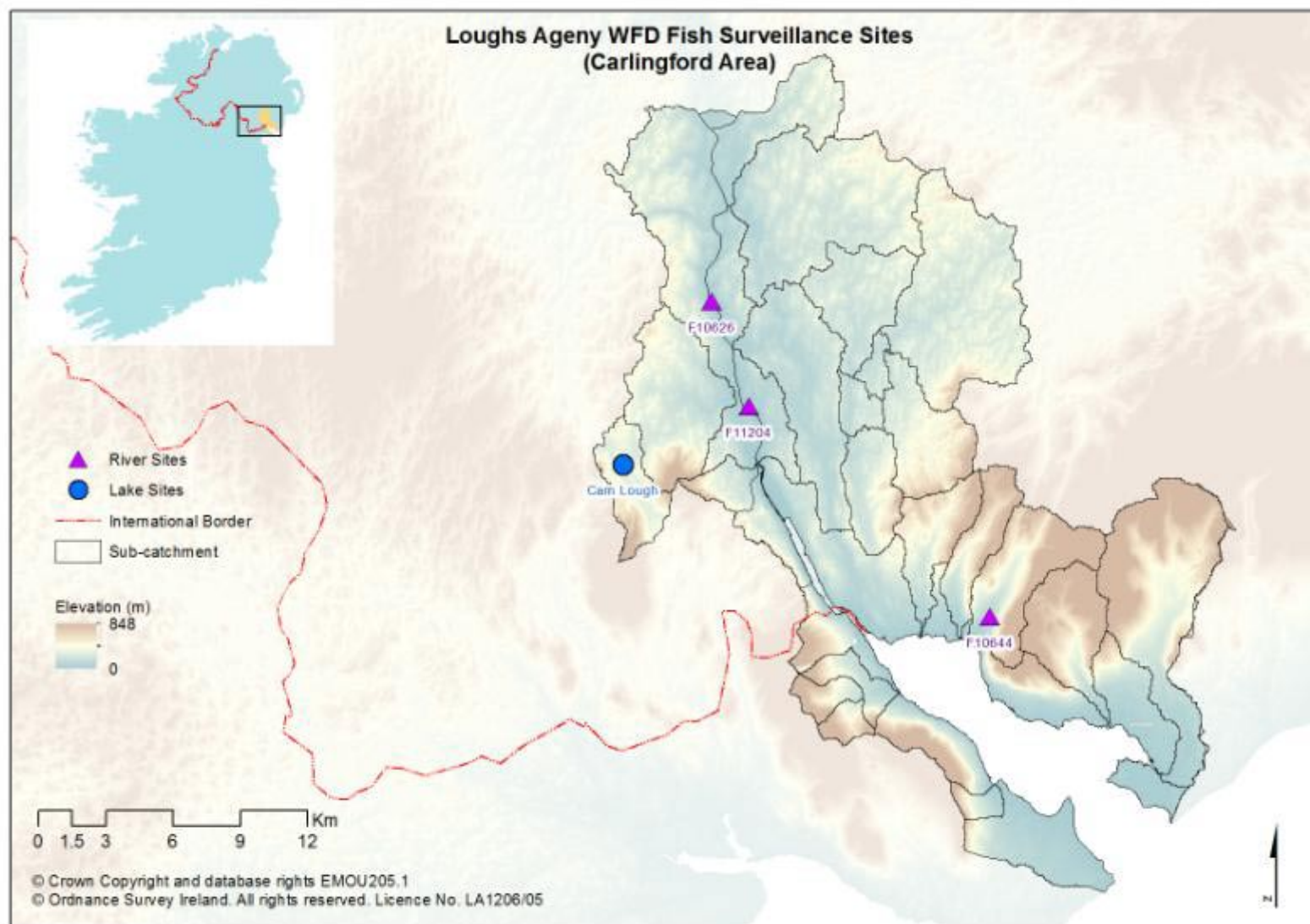


Fig 2. WFD fish surveillance river sites within the Carlingford area, Northern Ireland. There are no sites within Ireland in the Carlingford area.

3.0 CLASSIFICATIONS

3.1 F10020 **Dunnyboe Burn at Dunnyboe Bridge** **GBNI1NW010101072**
Burdenett **WFD Fish Classification 2012**

HIGH

FISHING	Salmon 0+	Salmon 1+	Trout 0+	Trout 1+	Eel	Total
1st	9	14	2	3	2	30
2nd	4	3	1	2	1	11
3rd	0	1	0	3	0	4
TOTAL	13	18	3	8	3	45

Table 2. Removal sampling results

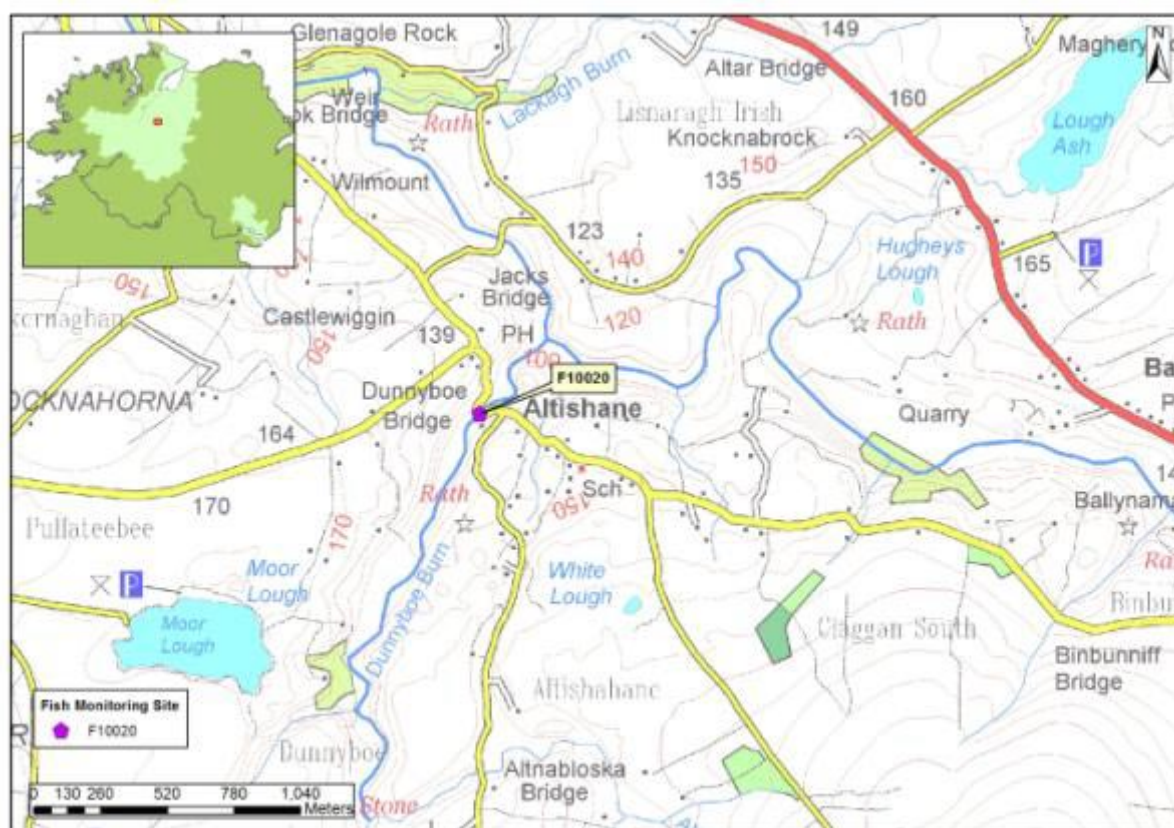


Fig 3. Site F10020

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 present.

Fish Species and Number Caught, Dunnyboe Burn (F10020) 2012

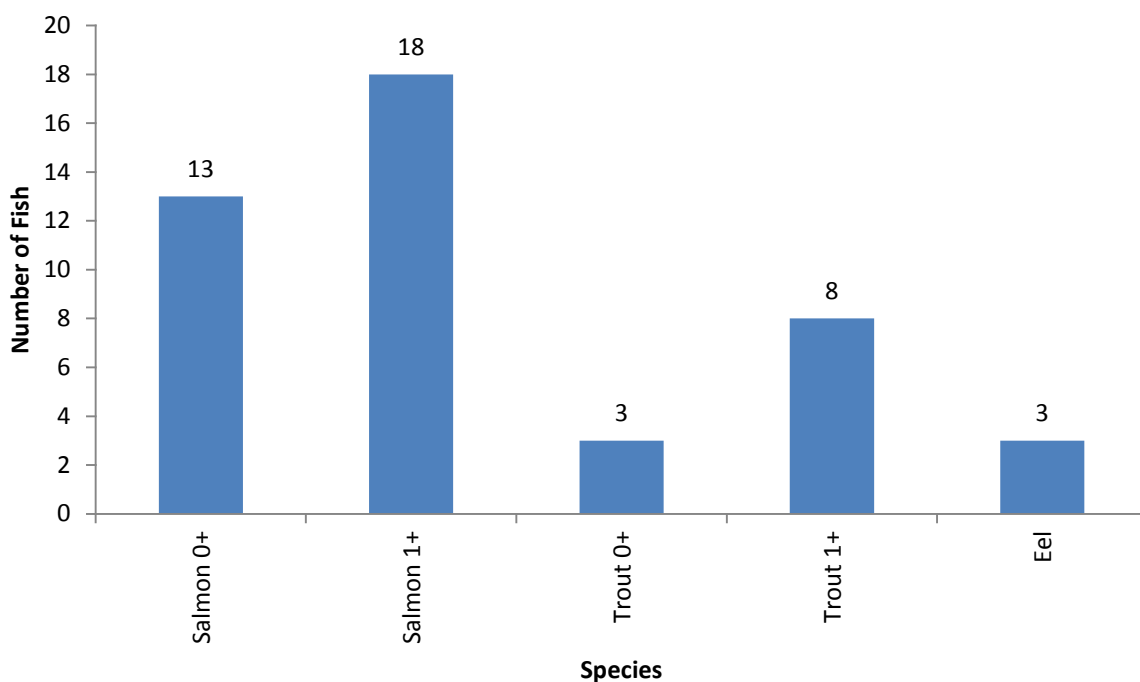


Fig 4. Total catch

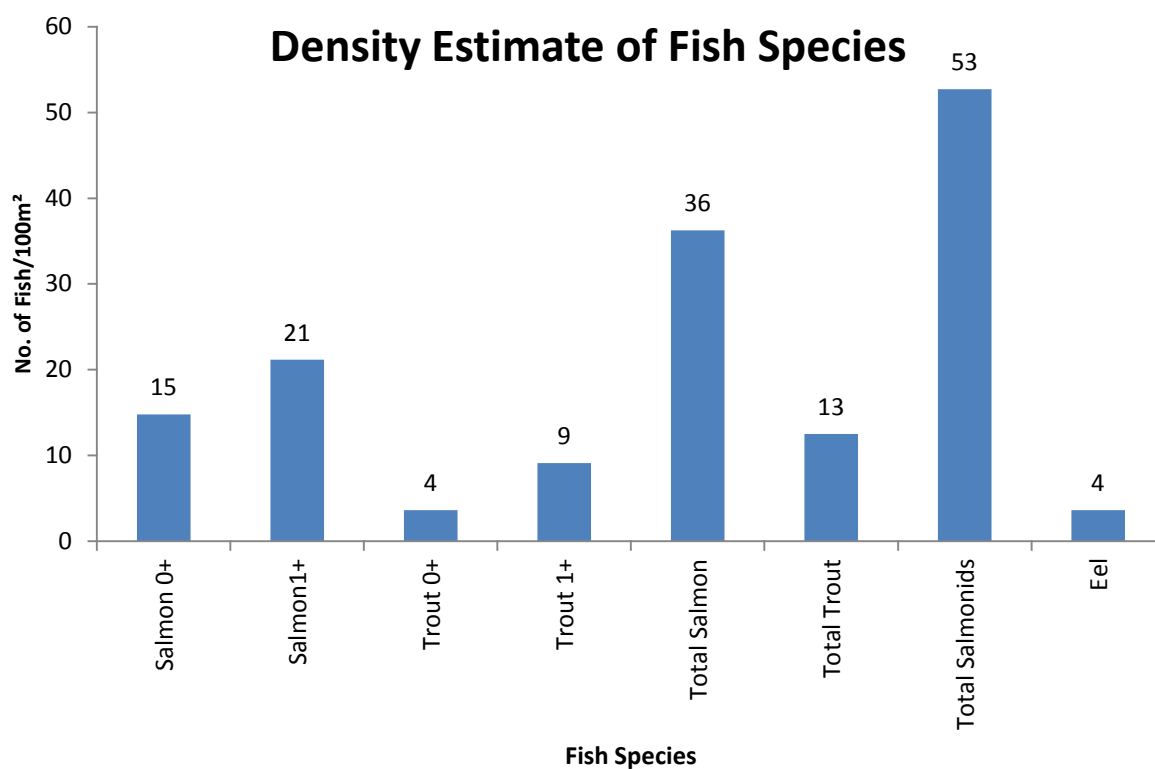


Fig 5. Density/100m²

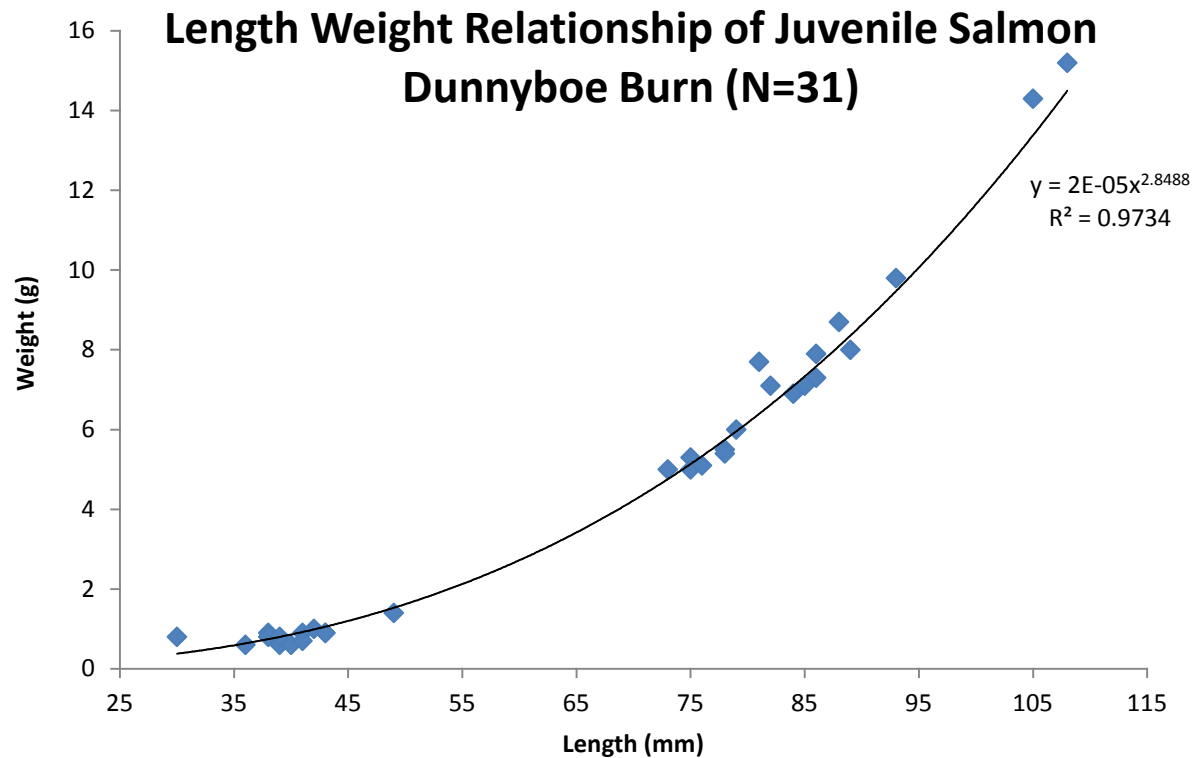


Fig 6. Length weight relationship of all salmon

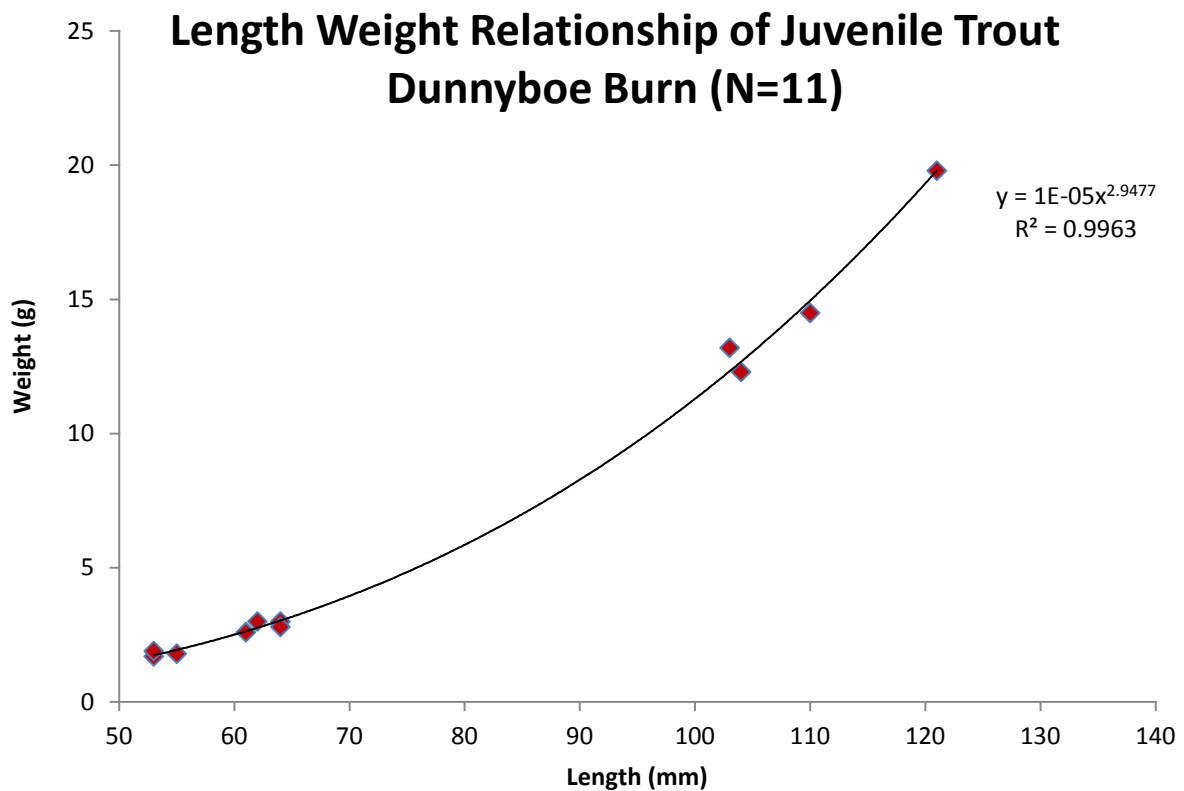


Fig 7. Length weight relationship of all trout caught

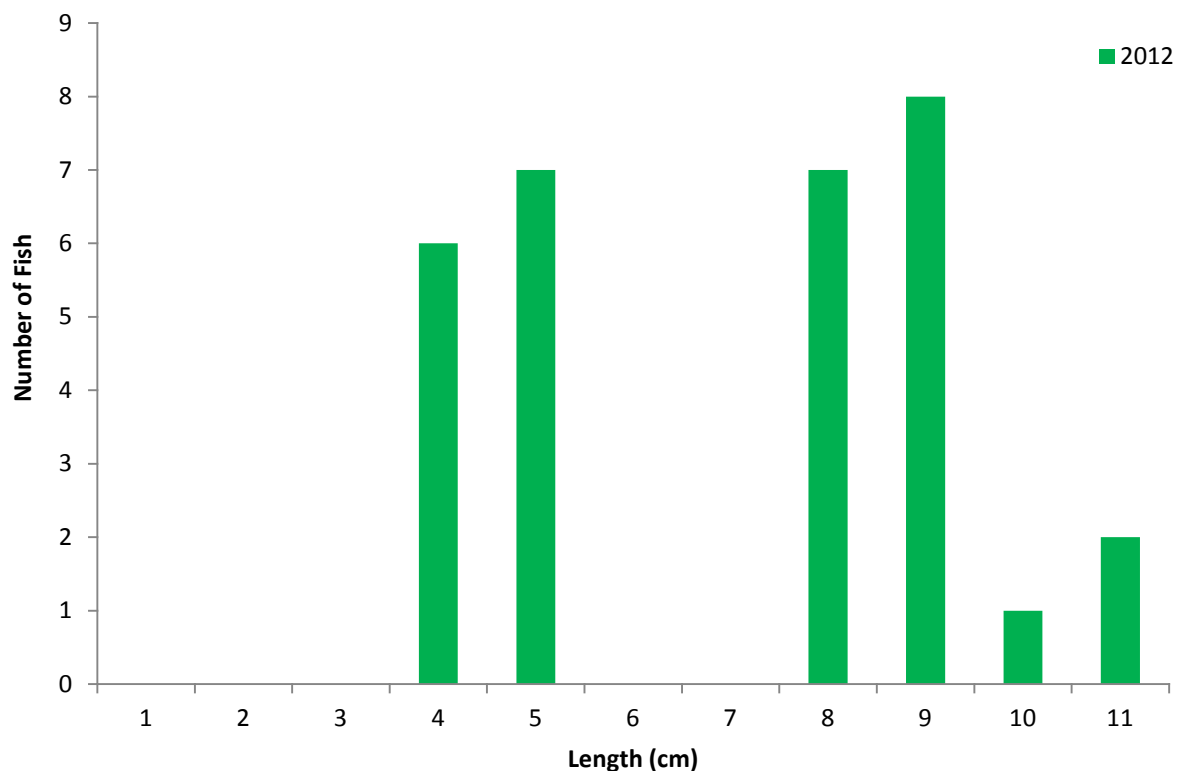


Fig 8. Length frequency distribution for all juvenile salmon caught (this can be used to assess the presence of different age classes/cohorts).

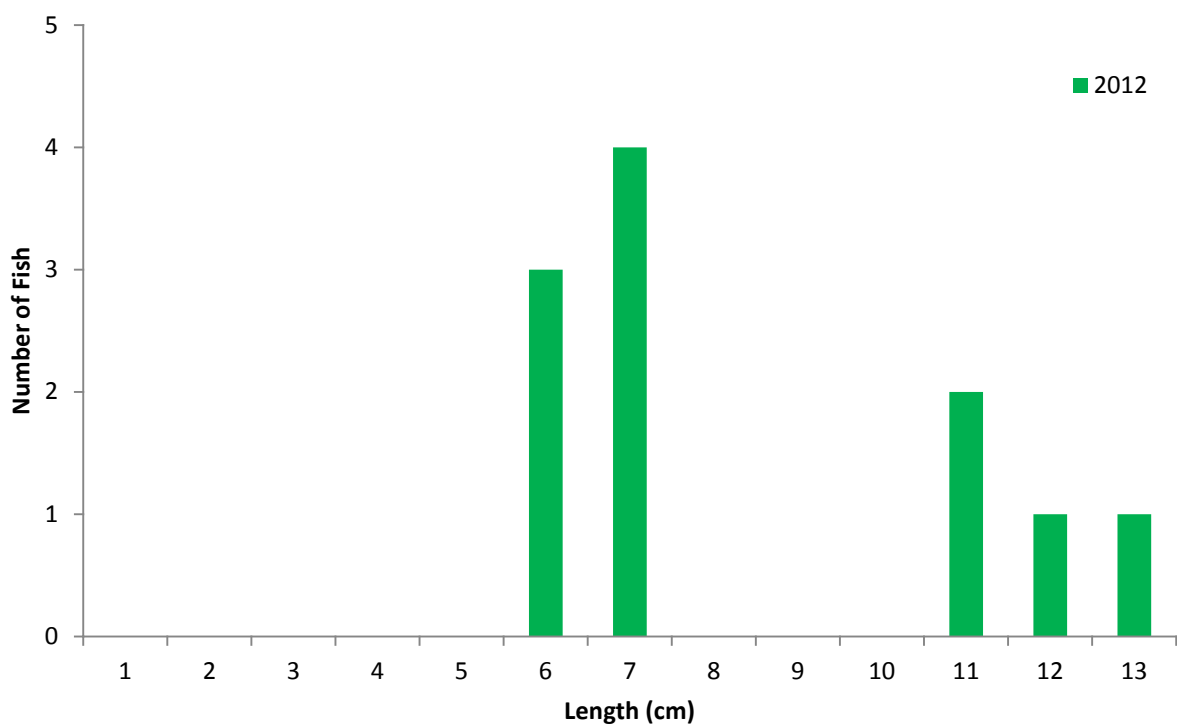


Fig 9. Length frequency distribution for all trout caught.

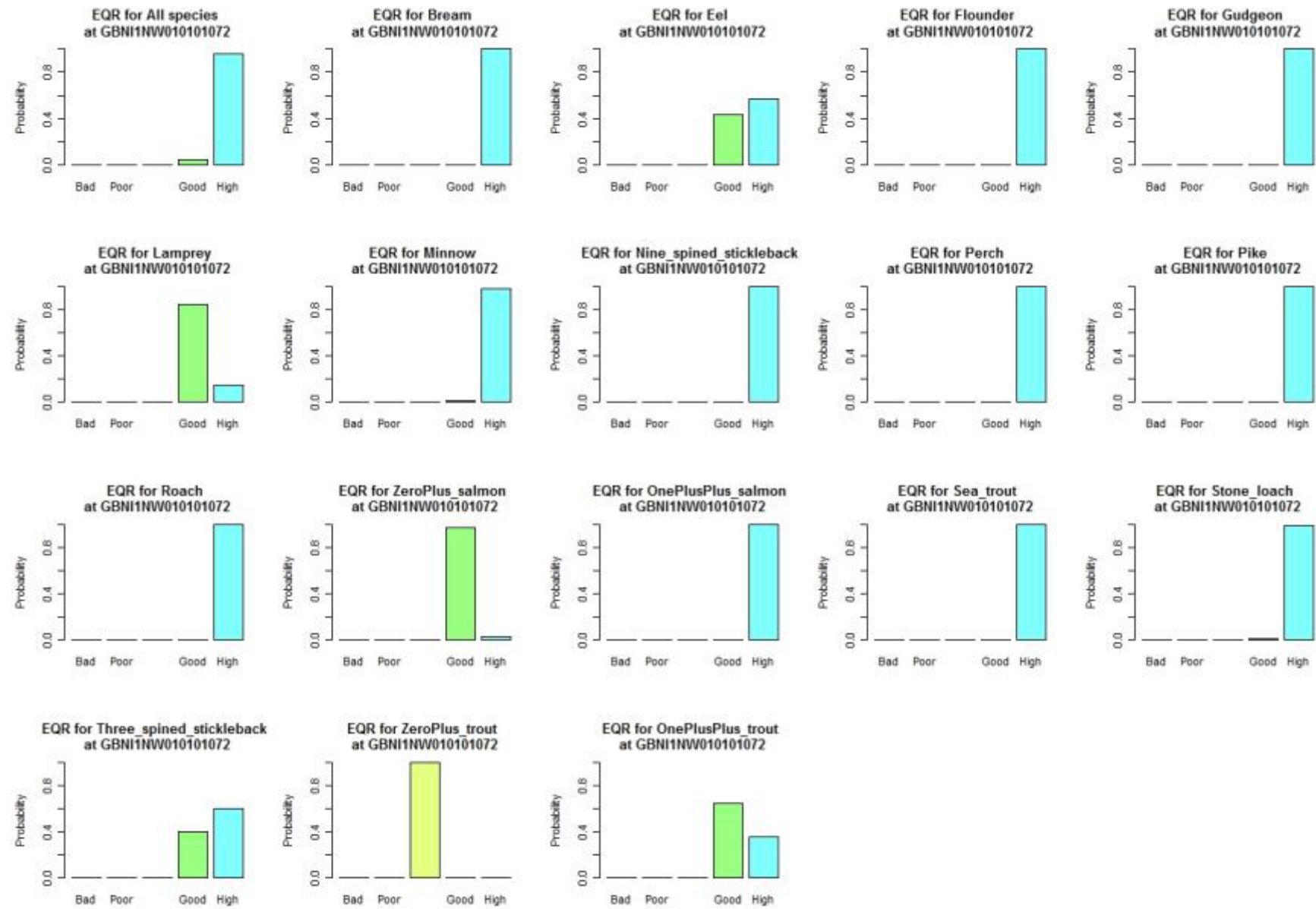
This site is composed predominantly of grade 2 nursery habitat (90%) with grade 3 spawning habitat (10%) and no holding habitat.

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.







**3.2 F10763 Skeoge River at Elagh Road
Burnfoot WFD Fish Classification 2012**

GBNI1NW393901002

POOR

FISHING	Salmon 0+	Salmon 1+	Trout 0+	Trout 1+	Stickleback	Total
1st	0	0	3	0	1	4
2nd	0	0	0	0	0	0
TOTAL	0	0	3	0	0	4

Table 3. Removal sampling results

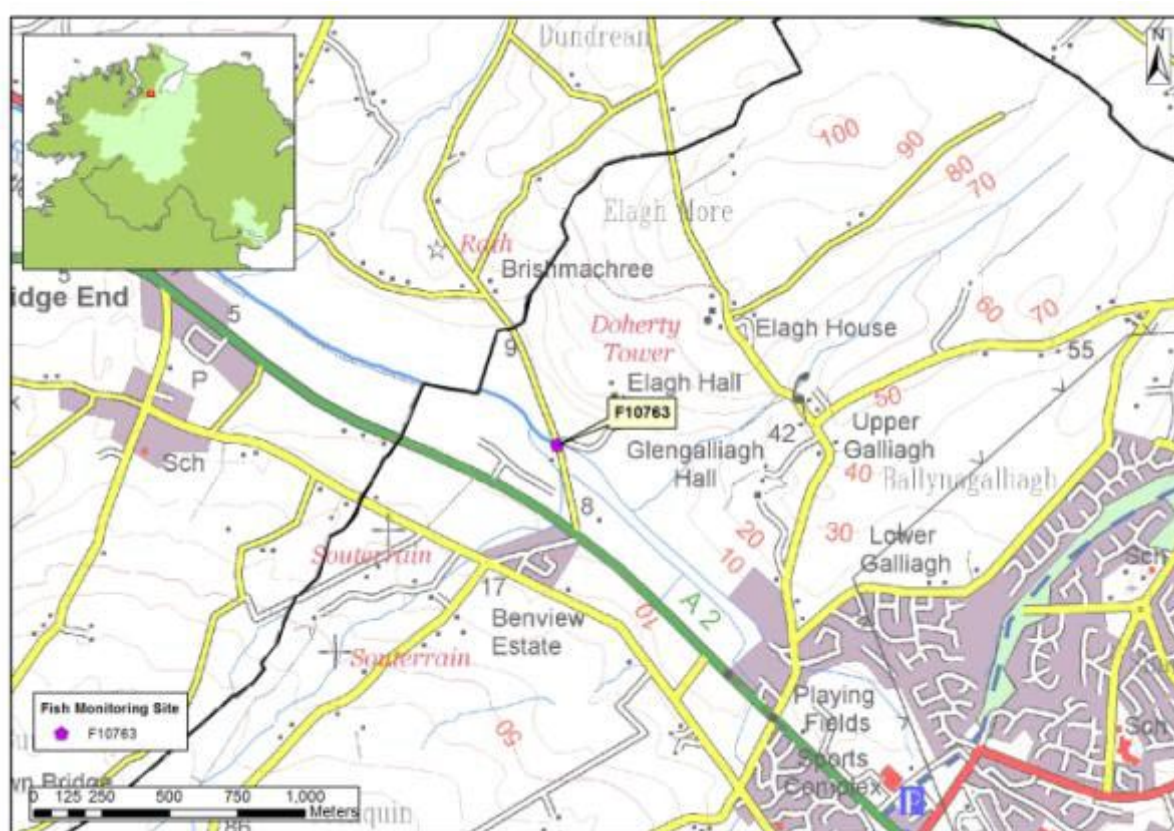


Fig 10. Site F10763

Site F10763 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. Due to the low numbers of fish present at this site only two passes were made. From this data density estimates have been calculated for all species present.

Fish Species and Number Caught, Skeoge River 2012 (F10763)

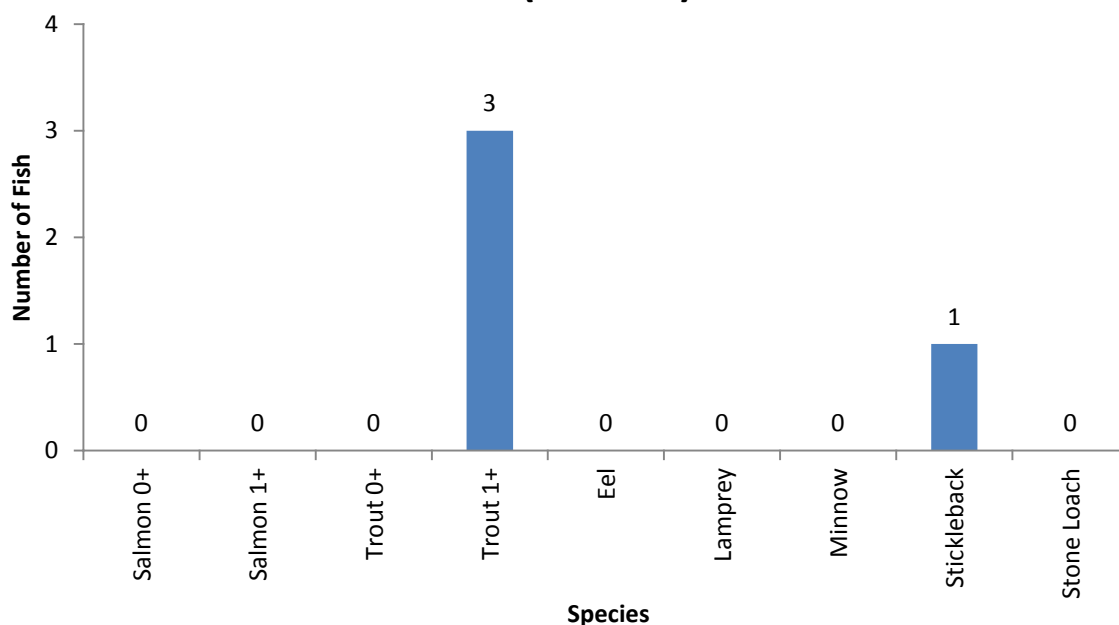


Fig 11. Total catch

Density Estimate of Fish Species, Skeoge River 2012 (F10763)

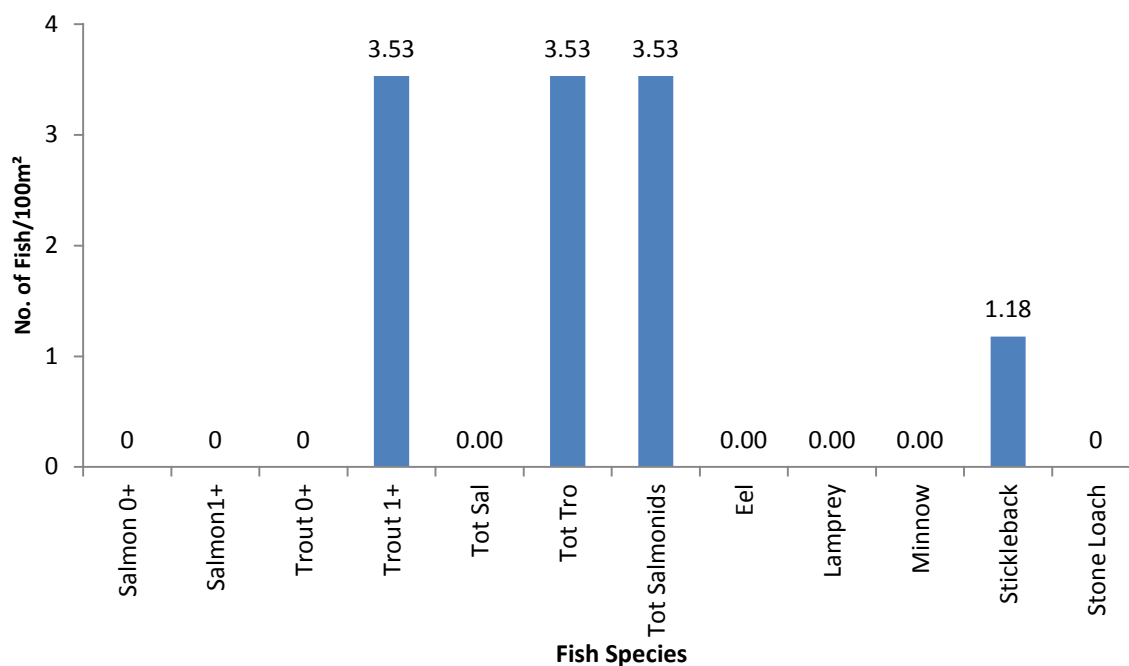


Fig 12. Density/100m²

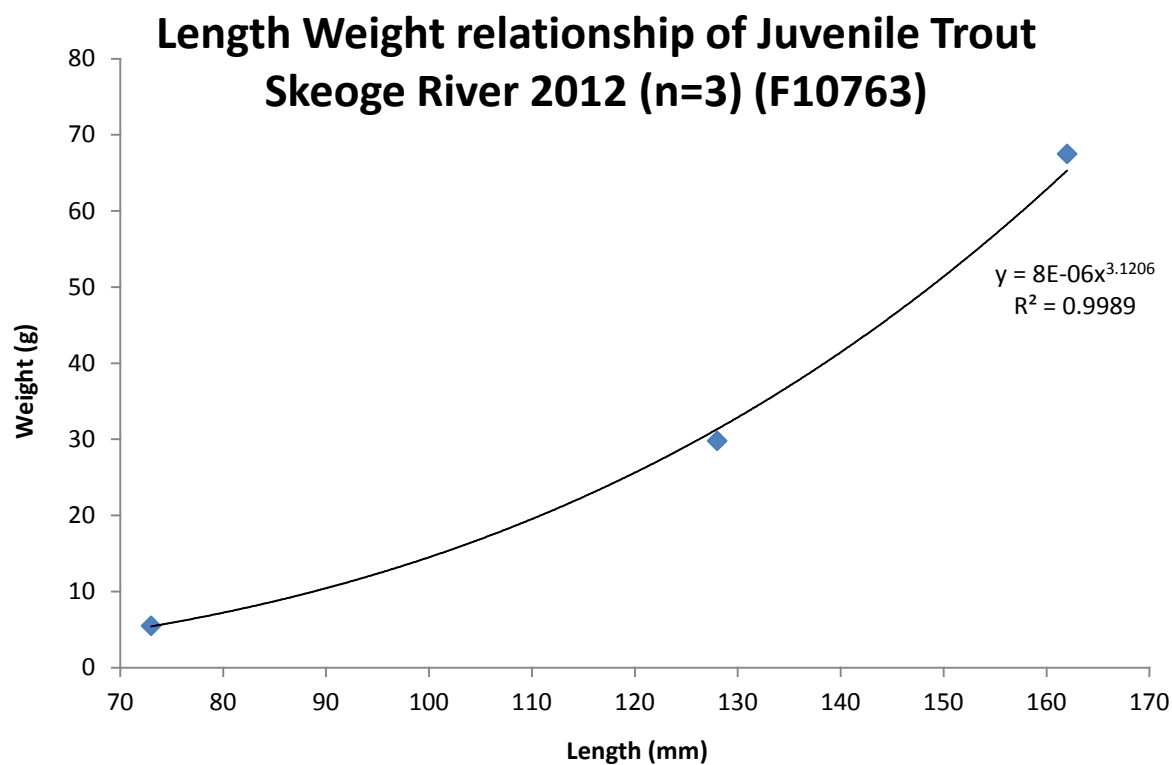


Fig 13. Length weight relationship of all juvenile trout caught.

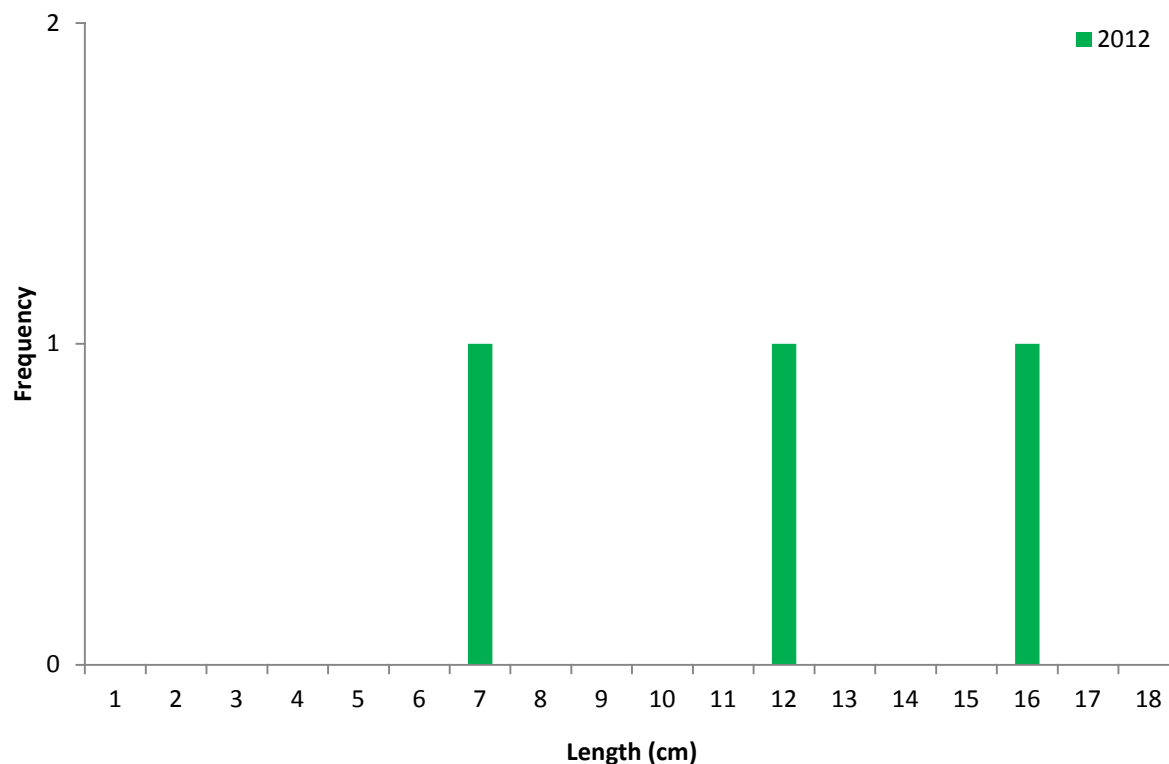


Fig. 14. Length frequency distribution for all trout caught.

This site is composed predominantly of grade 3 holding habitat (90%) with grade 4 nursery habitat (5%) and grade 4 spawning habitat (5%). This channel has little diversity in river bed substrate and demonstrates significant signs of being arterially drained in the past.

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.

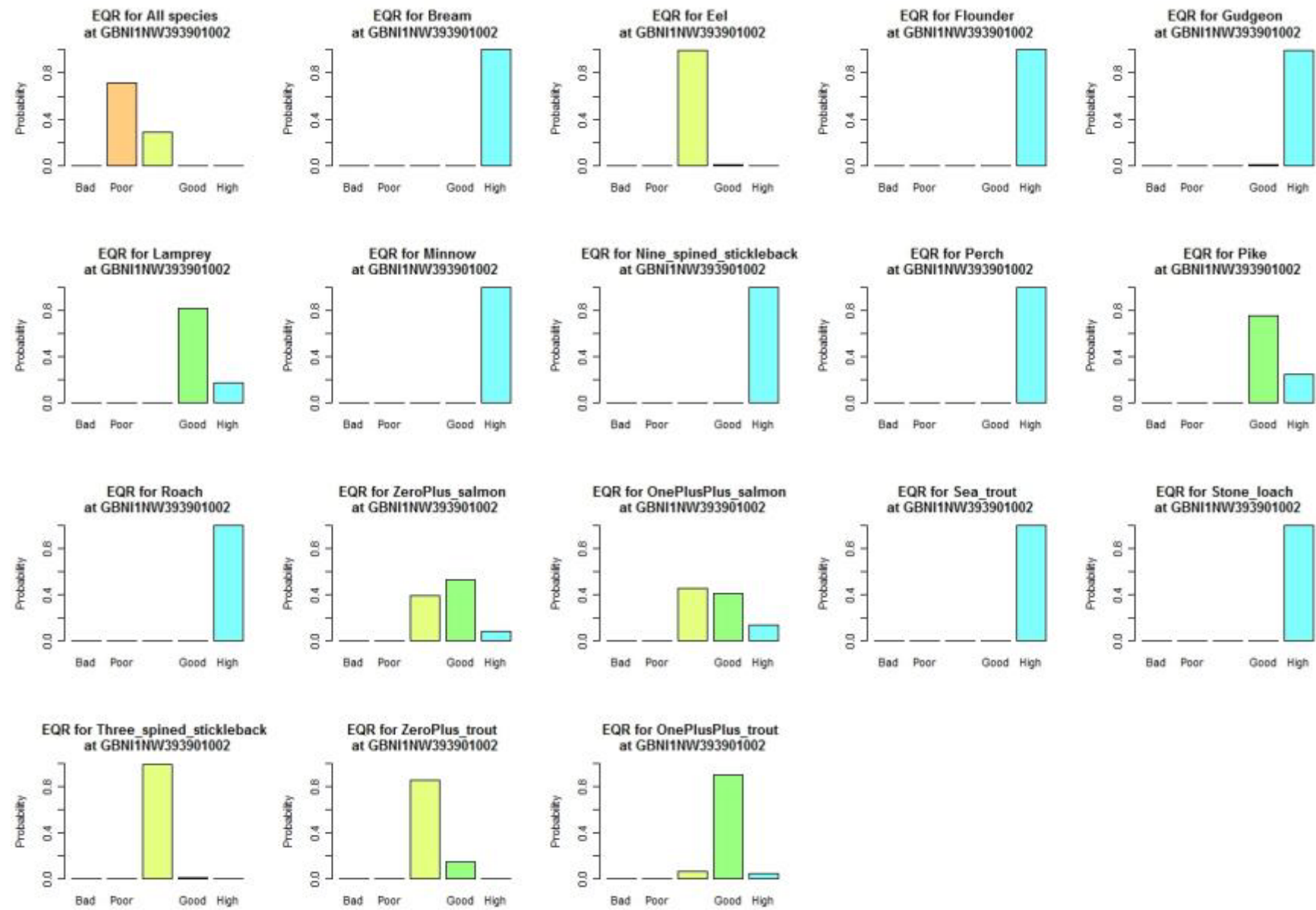
It is suspected that developments upstream of this site may be responsible for untreated effluent entering this water body from misconnected waste water systems.

Additional biological information is available in the spreadsheets provided.



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.





3.3 F10025 River Finn (Foyle) at Clady Bridge
Finn WFD Fish Classification 2012

GBNI1NW010103063

MODERATE

METHOD	Sal 1+	Tro 1+	Eel	Minn	Flounder	SB	Roach	Gudgeon	Total
Seine Net	1	13	0	9	12	1	24	0	60
1 st Fyke	0	4	9	0	0	0	2	0	15
2 nd Fyke	0	4	4	0	1	0	0	1	10
TOTAL	1	21	13	9	13	1	26	1	85

Table 4. Sampling results

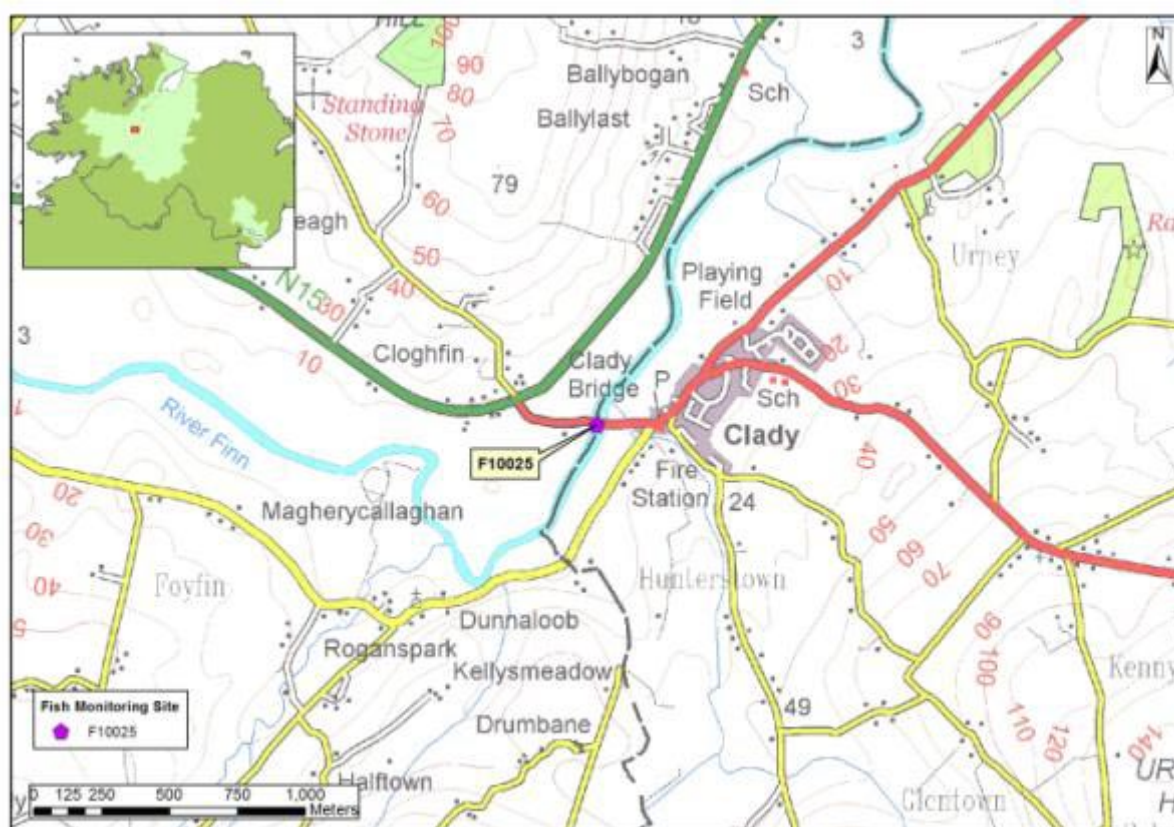


Fig 15. Site F10025

Site F10025 has been classified as a large river site where quantitative electrofishing is not possible. This site was surveyed using a multi method approach. The multi method approach is usually conducted across a range of habitats and combines electrofishing at a suitable riffle habitat, seine netting and fyke netting. Due to the high river flows which dominated the 2012 field

season the electrofishing component of the survey was unable to be completed. The results presented here are for the seine netting and fyke netting components of the multi method survey only.

The data collected during survey was combined and entered into the FCS2 (Ireland) model as a single pass electrofishing exercise. At present the FCS2 (Ireland) model can only accept electrofishing data. Both the professional opinion and FCS2 (Ireland) model classified this site as moderate. If a single pass electrofishing exercise had been conducted this would also have been run through the model both as an independent data set and as a combined data set with the seine and fyke netting results. This would have provided for three independent classifications which would provide the basis for a professional opinion over ride.

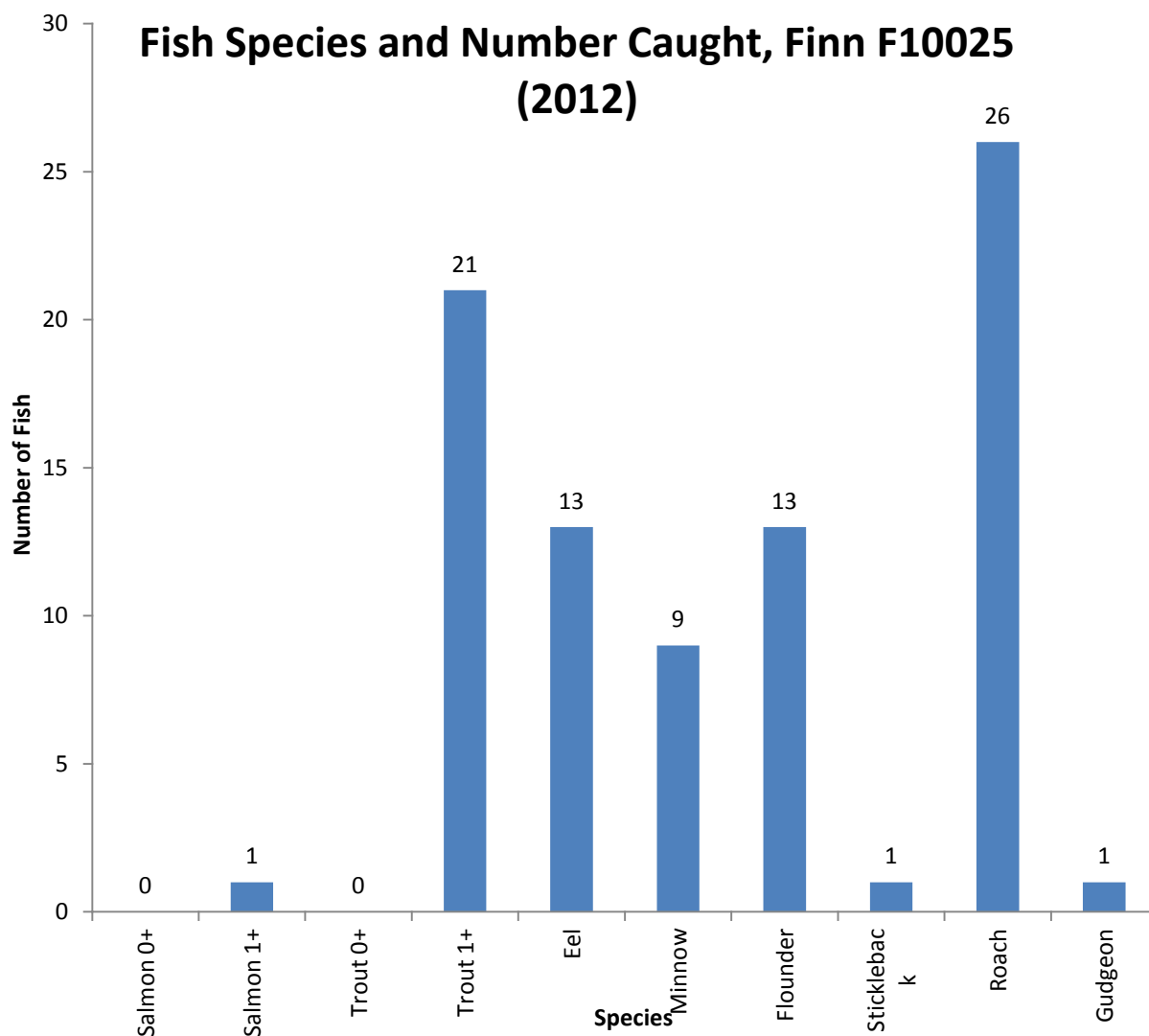


Fig 16. Total catch

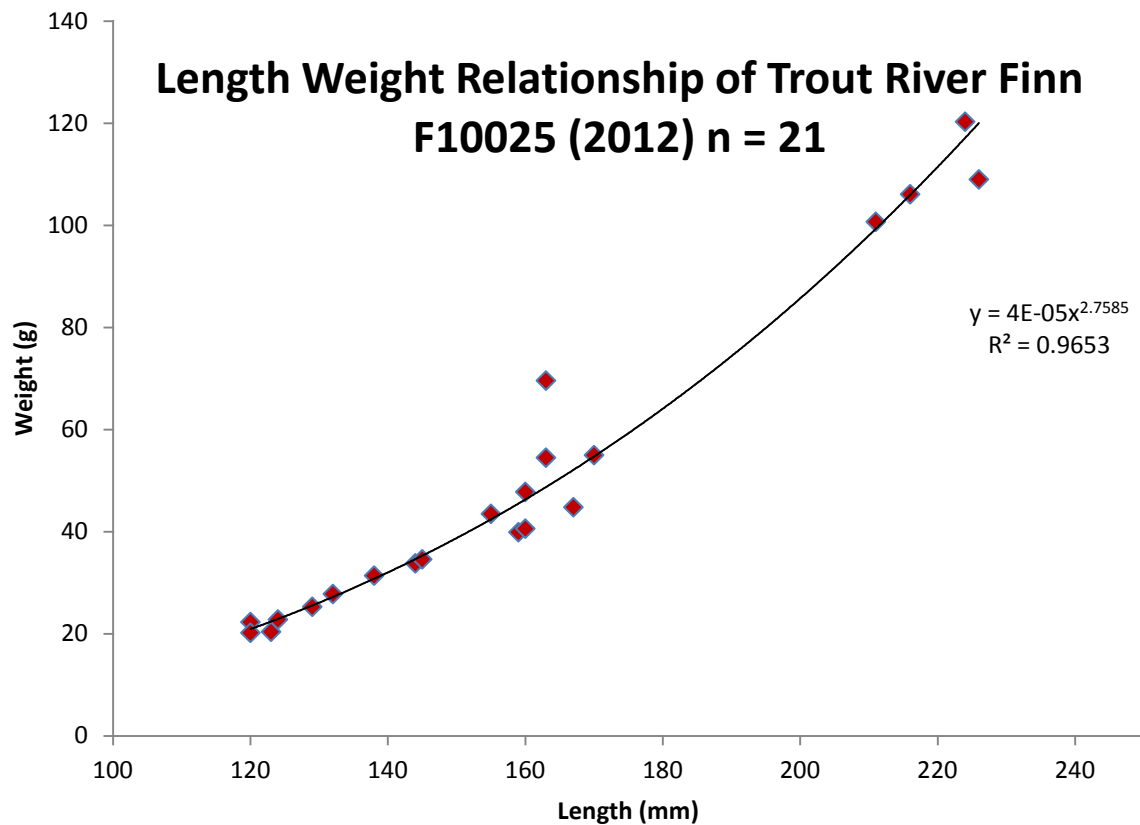


Fig 17. Length weight relationship of all Trout

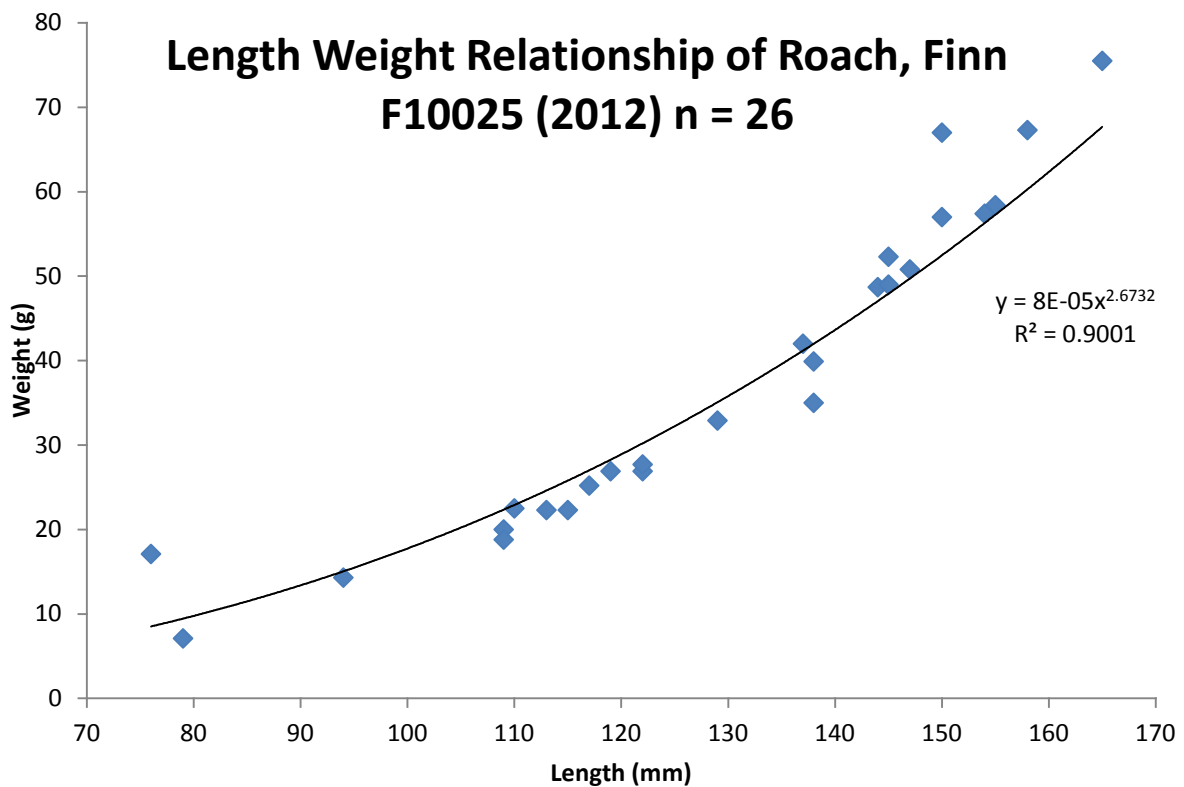


Fig 18. Length weight relationship of all Roach

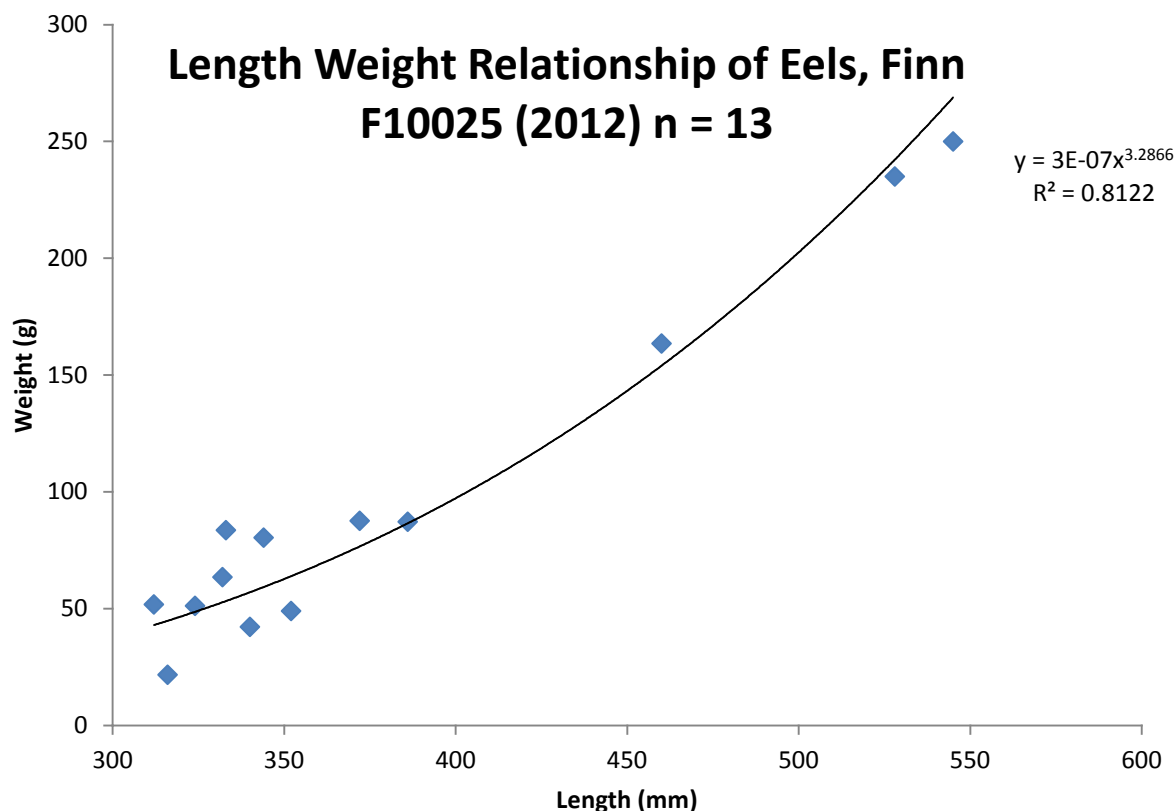


Fig 19. Length weight relationship of all Eels

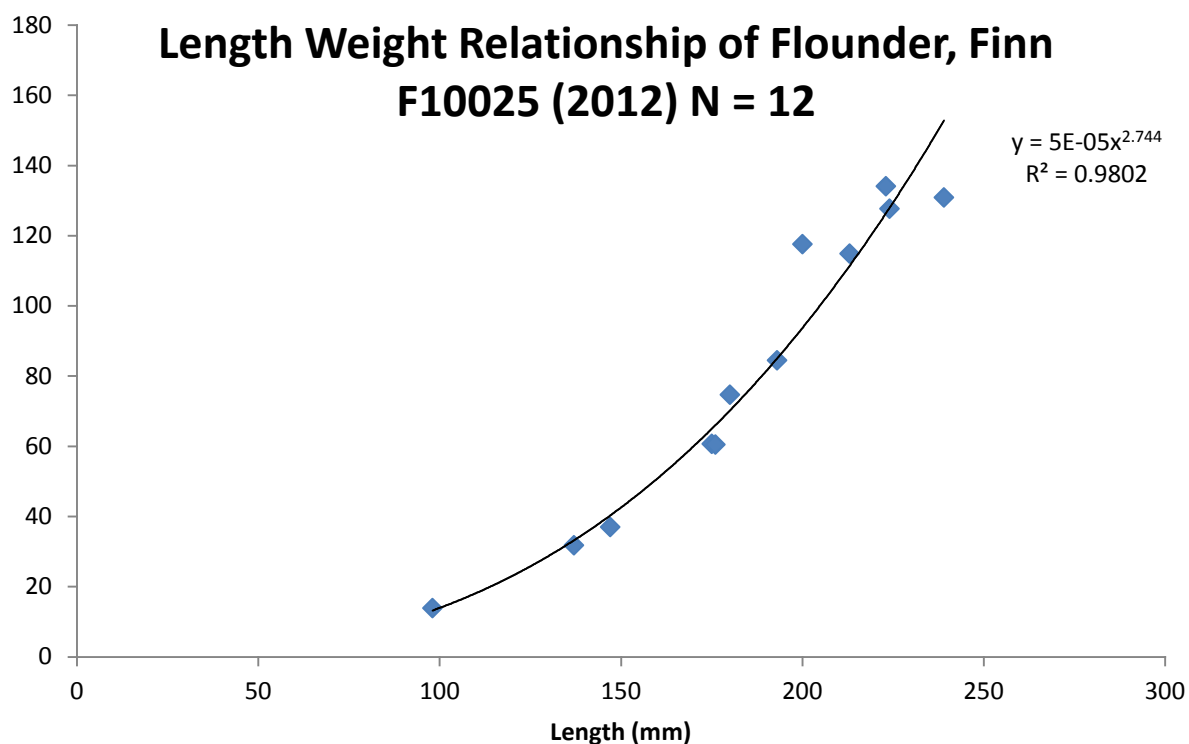


Fig 20. Length weight relationship of all Flounder

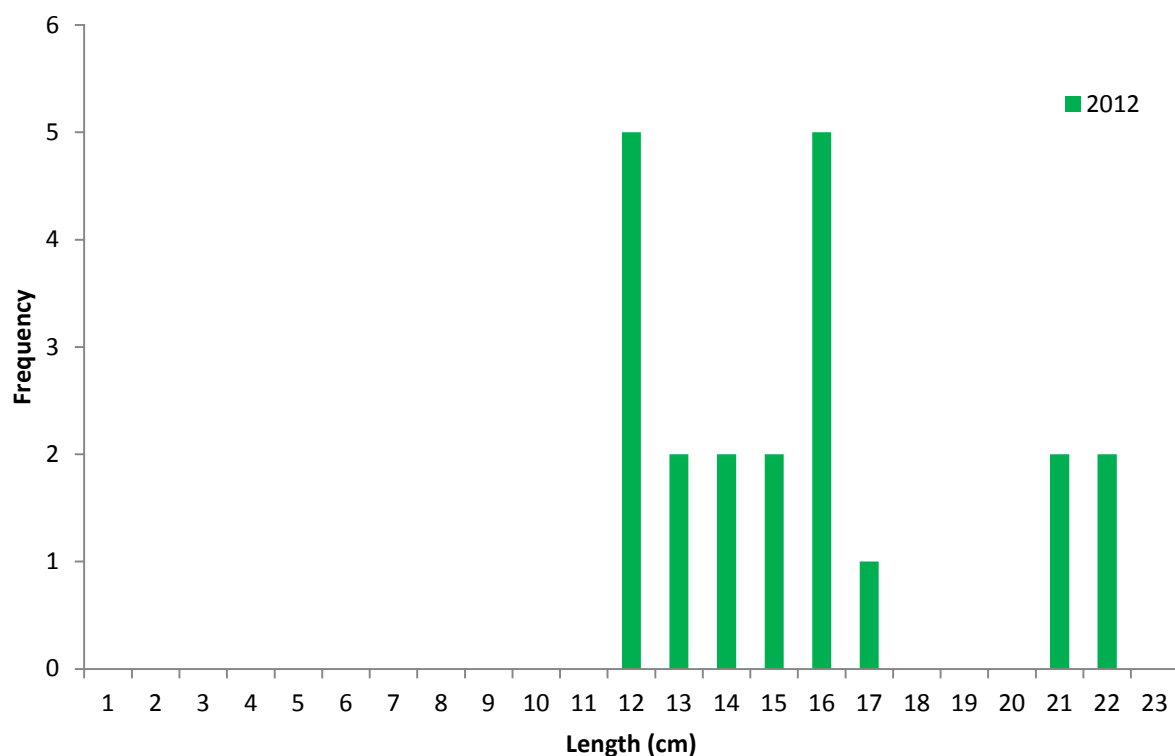


Fig 21. Length frequency distribution for all Trout caught (this can be used to assess the presence of different age classes/cohorts).

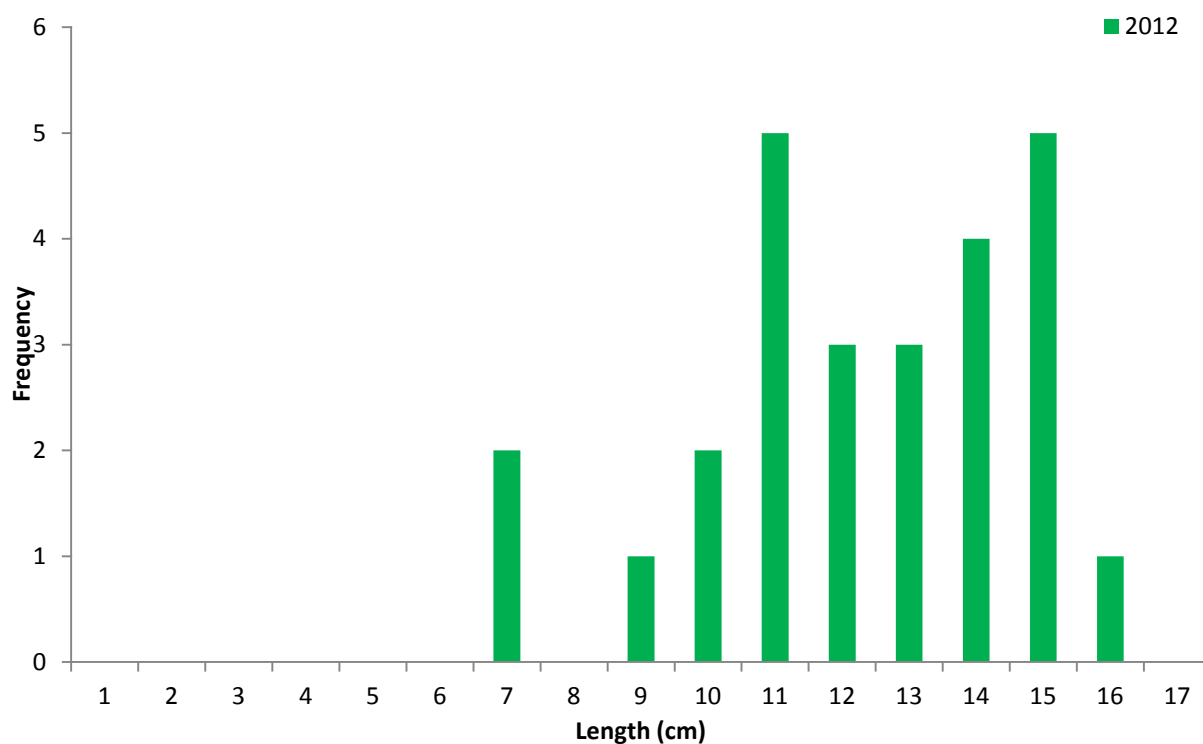


Fig22. Length frequency distribution for all Roach.

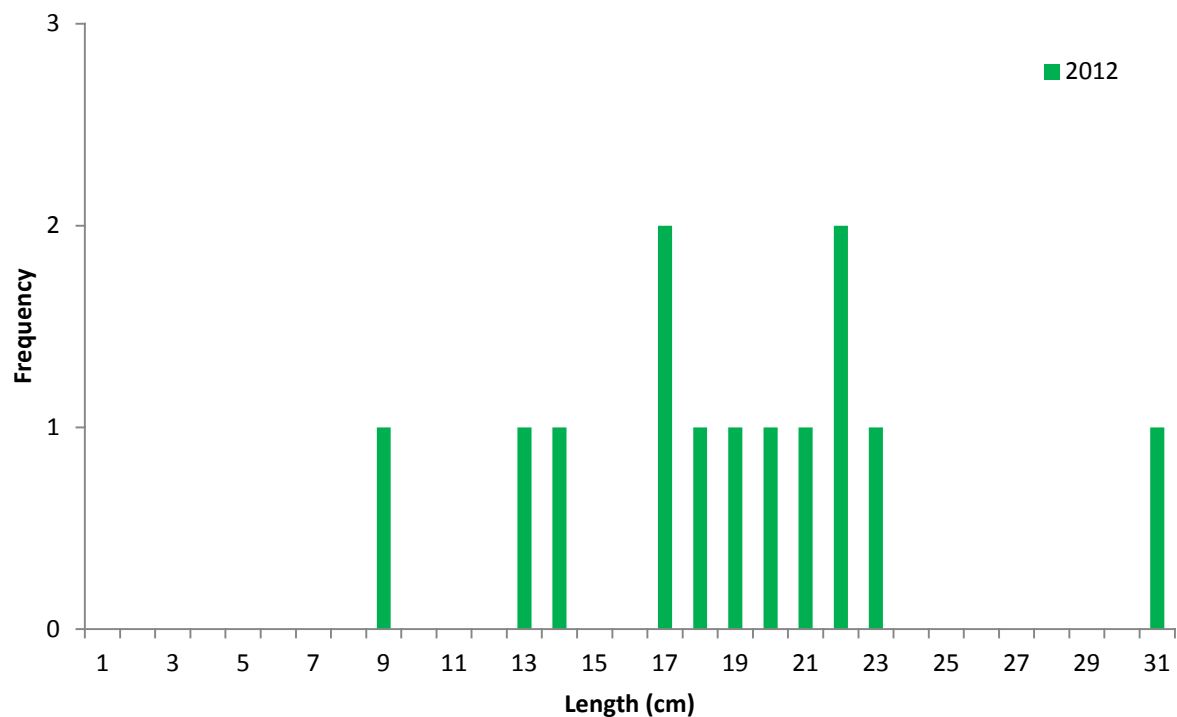


Fig 23. Length frequency distribution for all Flounder.

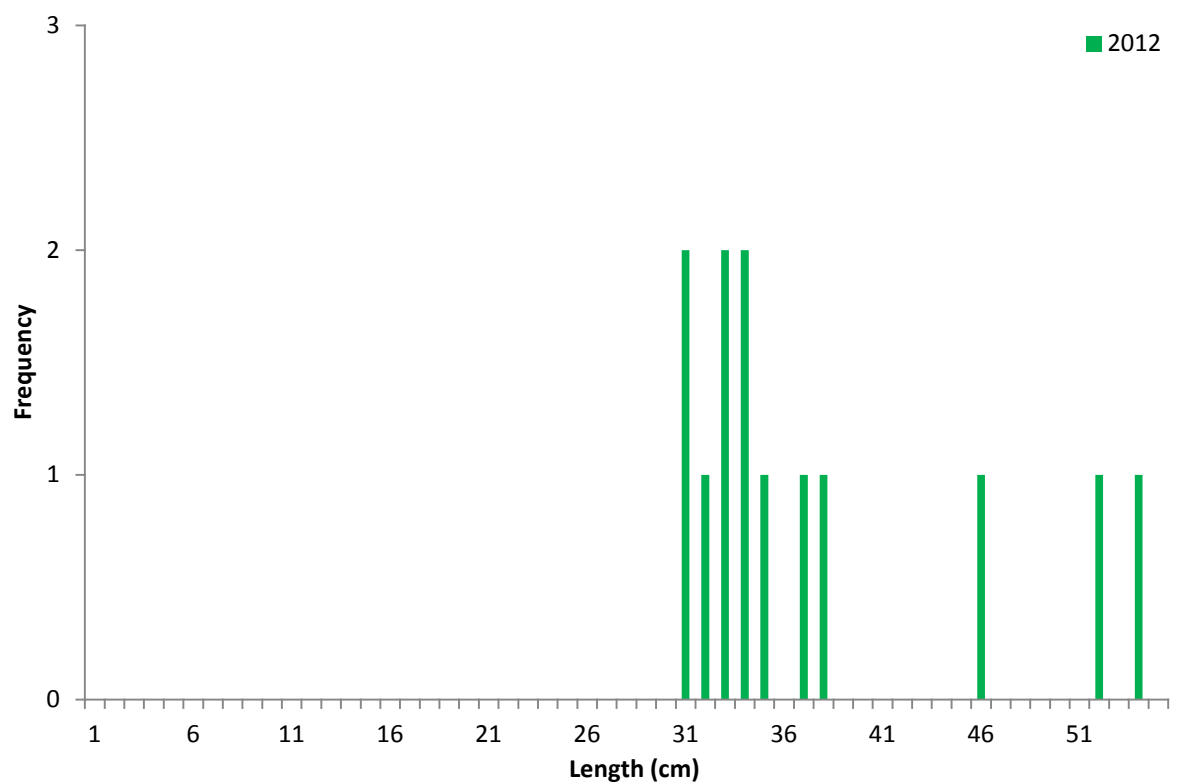


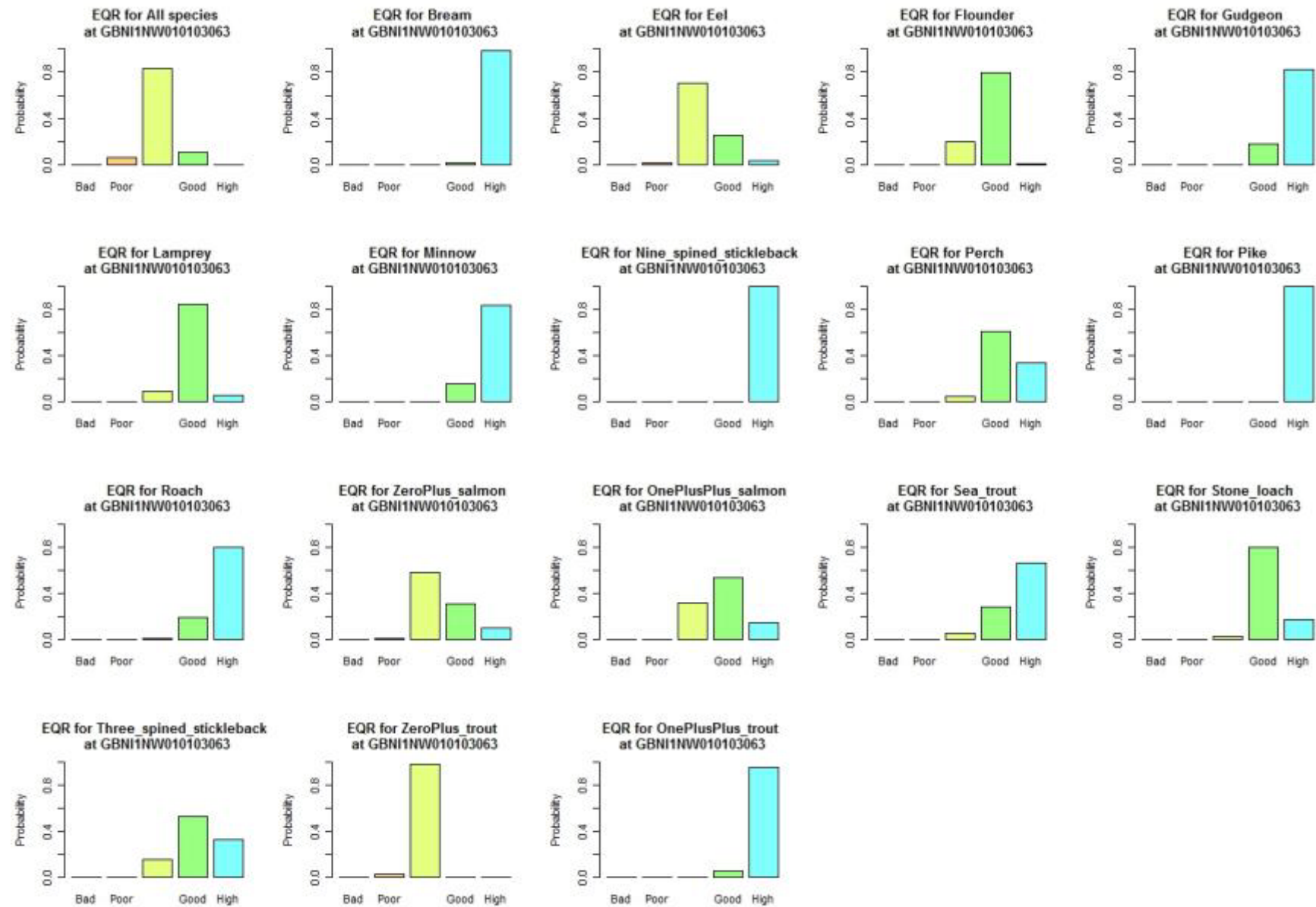
Fig 24. Length frequency distribution for all Eels.

The site surveyed was uniformly deep and wide in nature with vegetated banks and flood embankments present throughout. Land use adjacent to the site is agricultural in nature alternating between grazing, silage production and arable crops. A suitable site was chosen downstream at a riffle area for electrofishing. It was not possible to survey this site in 2012 due to high water levels.

Additional biological information is available in the spreadsheets provided.







3.4 F10014 Glenmornan River GBNI1NW010101075
Foyle (with Deelee) WFD Fish Classification 2012

GOOD

FISHING	Trout 0+	Trout 1+	Total
1st	21	15	36
2nd	7	0	7
3rd	6	2	8
4th	5	1	6
5th	3	0	3
TOTAL	42	18	60

Table 5. Removal sampling results

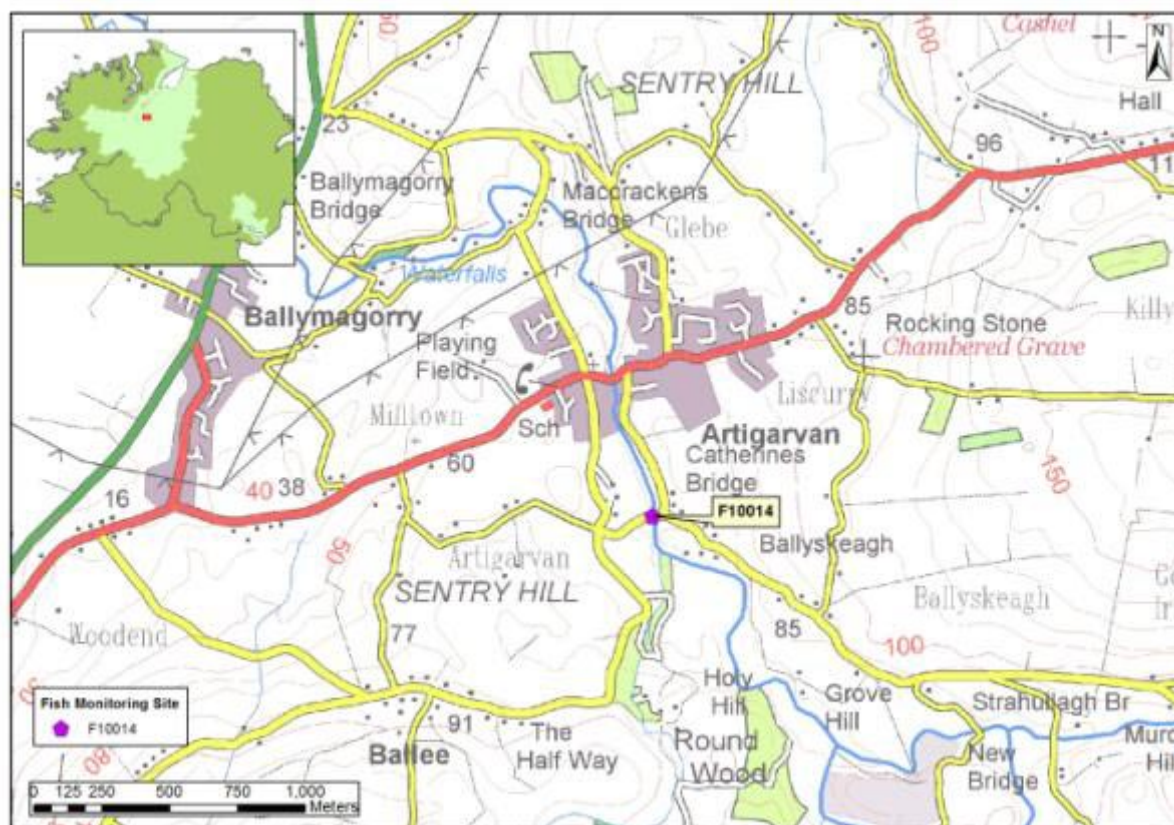


Fig 25. Site F10014

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 present.

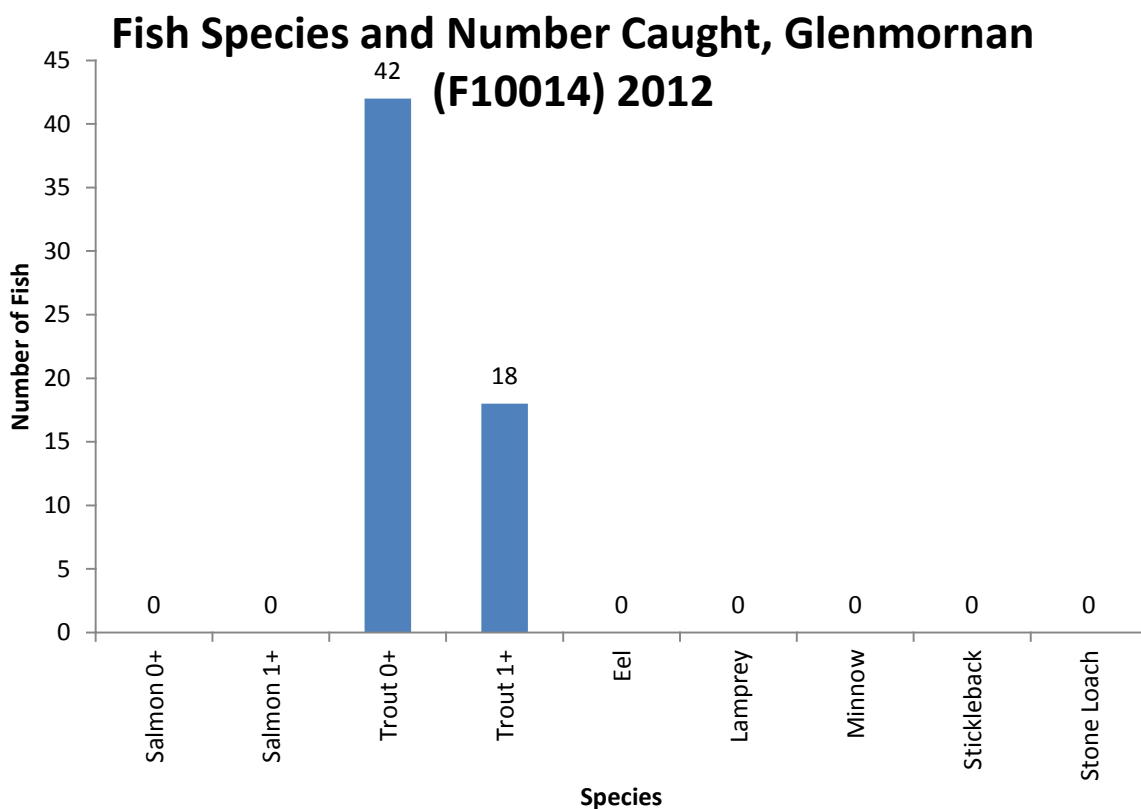


Fig 26. Total catch

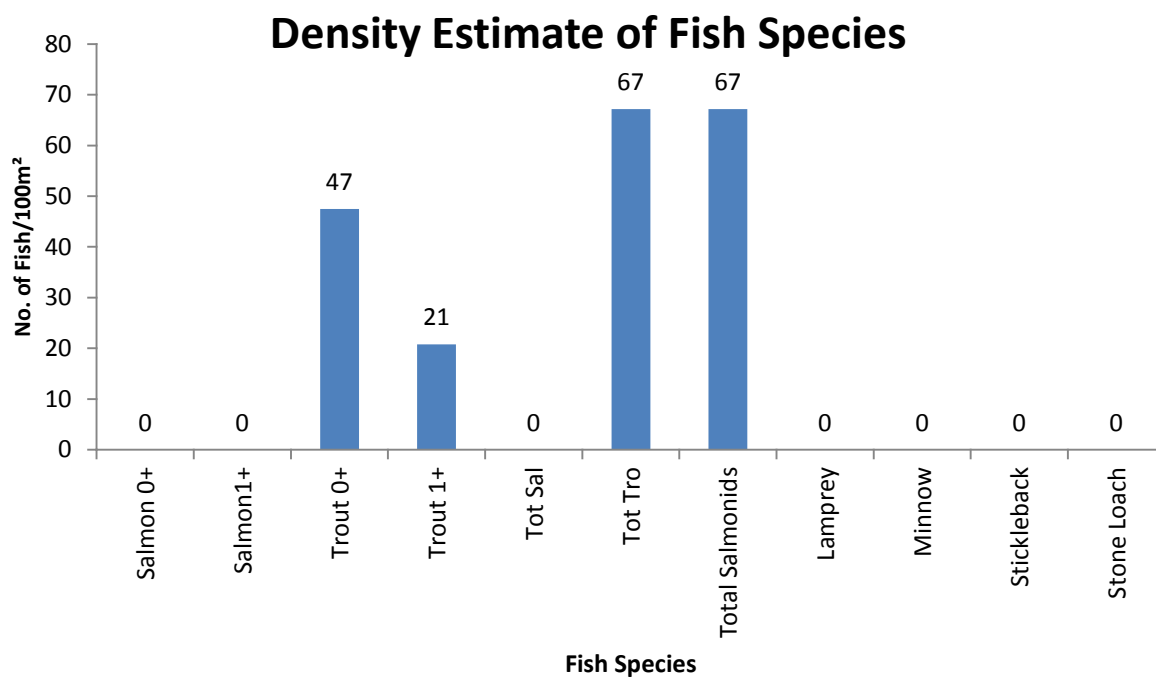


Fig 27. Density/100m²

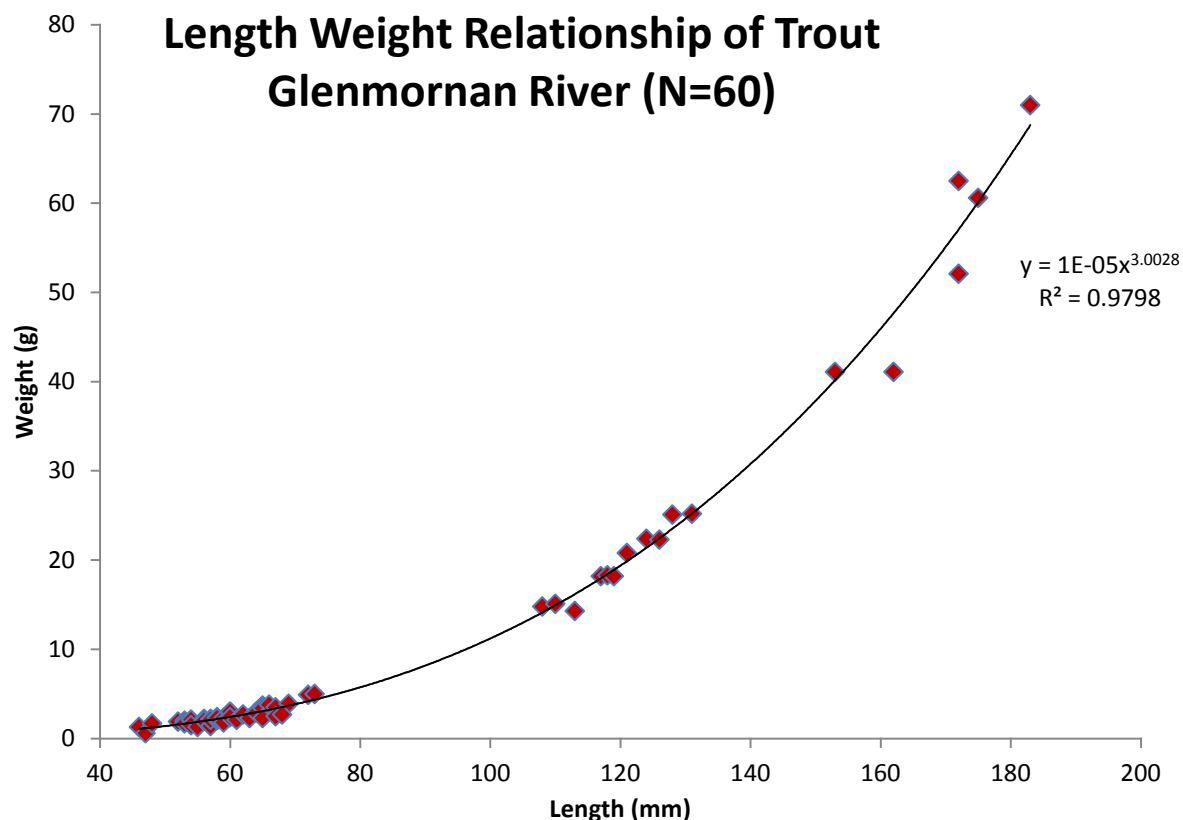


Fig 28. Length weight relationship of all trout caught

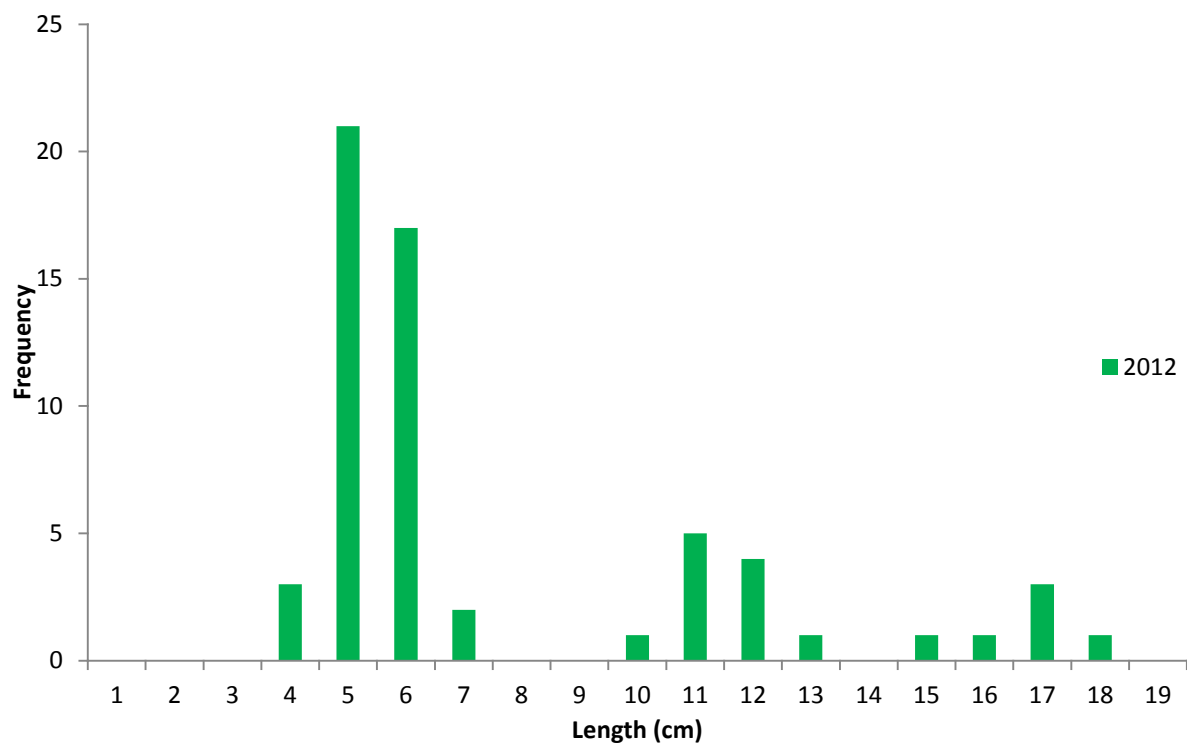


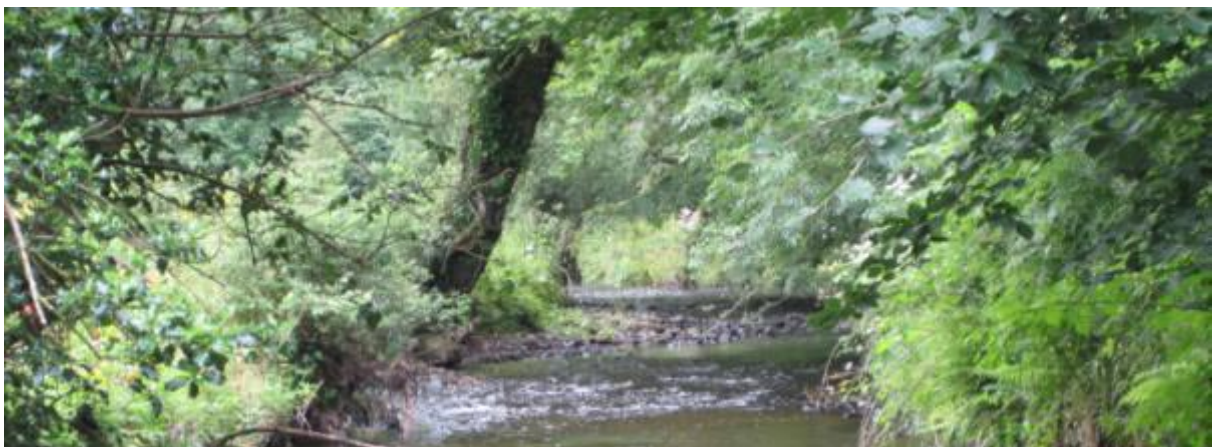
Fig 29. Length frequency distribution for all trout caught.

This site is composed predominantly of grade 3 nursery habitat (75%) with grade 3 spawning habitat (5%) and grade 3 holding habitat (20%).

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.

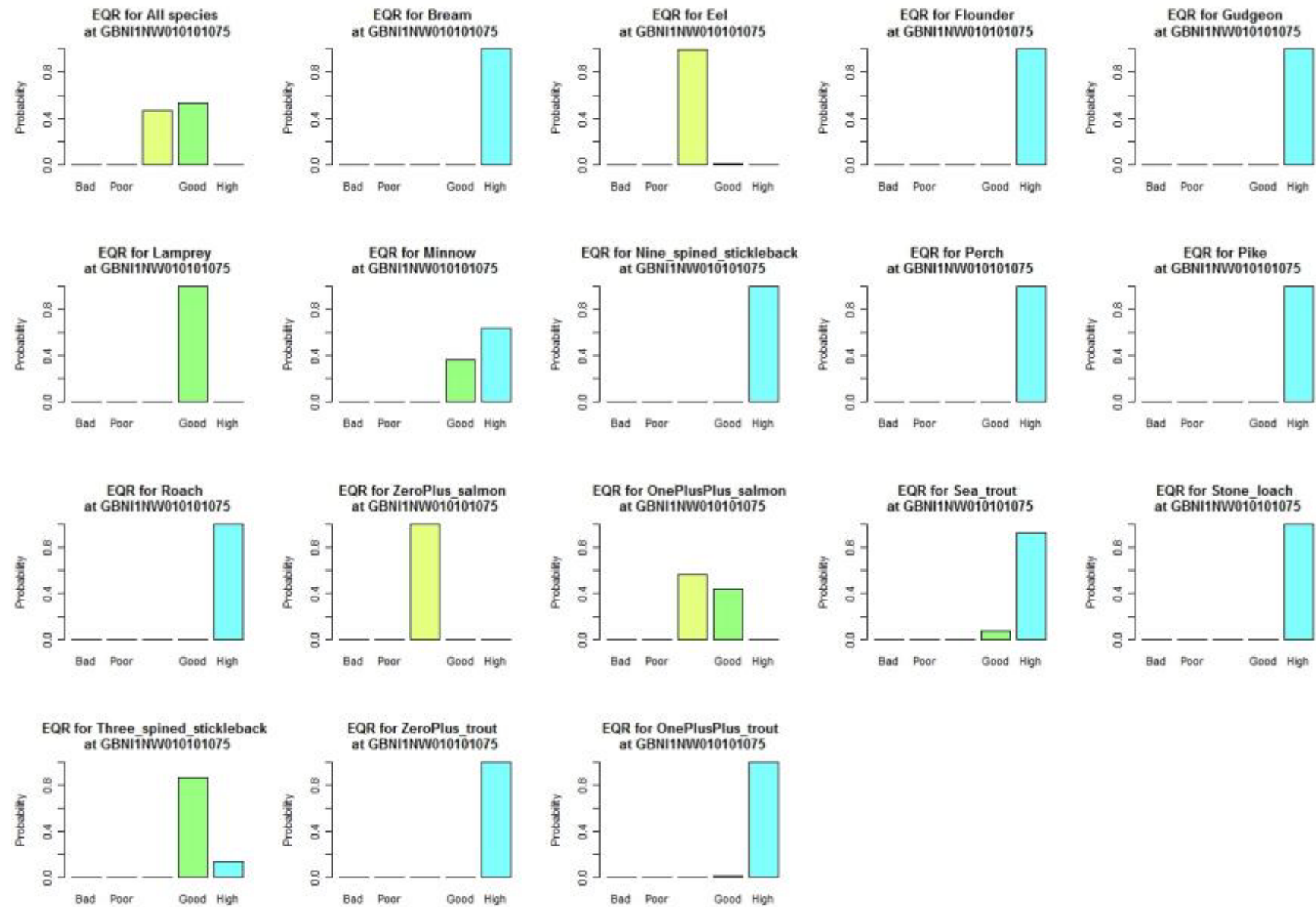
The site is upstream of a natural barrier to migration for migratory salmonids. The site is also upstream of a WWTW. Additional biological information is available in the spreadsheets provided. The right hand bank was heavily trampled by livestock. Himalayan balsam was present on both banks and there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

The FCS 2 (Ireland) model classified this site as Good. The professional opinion over ride has not been used here to reflect the author's opinion that this site is at least good as demonstrated by the good presence of trout. It should be noted that there is a natural barrier downstream of this site which would inhibit upstream salmonid migration which may have justified a High status classification.



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. 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.





3.5 F10626
Newry

Jerrettspass R (Jerrettspass)
WFD Fish Classification 2012

GBNI1NB060604047

GOOD

FISHING	Trout 0+	Trout 1+	Eels	SB	SL	Total
1st	3	13	2	4	13	35
2nd	4	4	4	0	6	18
3rd	4	0	1	2	3	10
TOTAL	11	17	7	6	22	63

Table 6. Removal sampling results

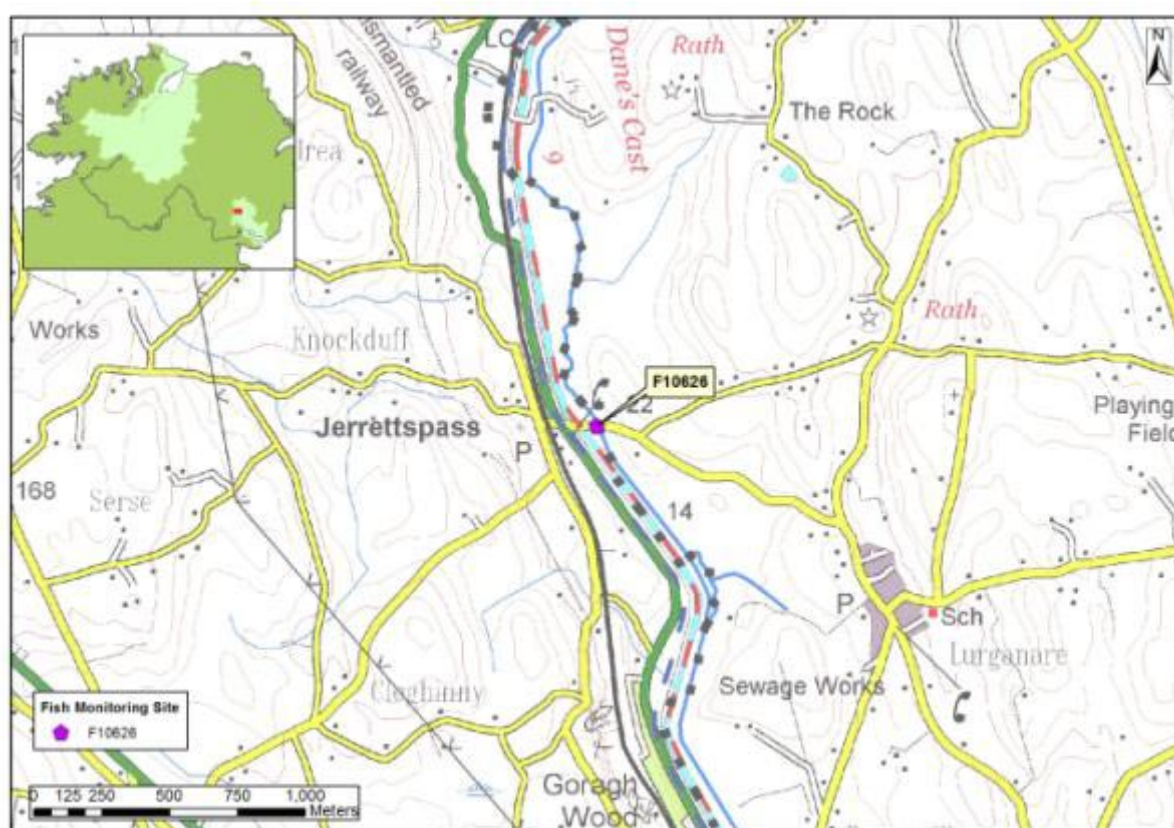


Fig 30. Site F10626

Site F10626 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 present.

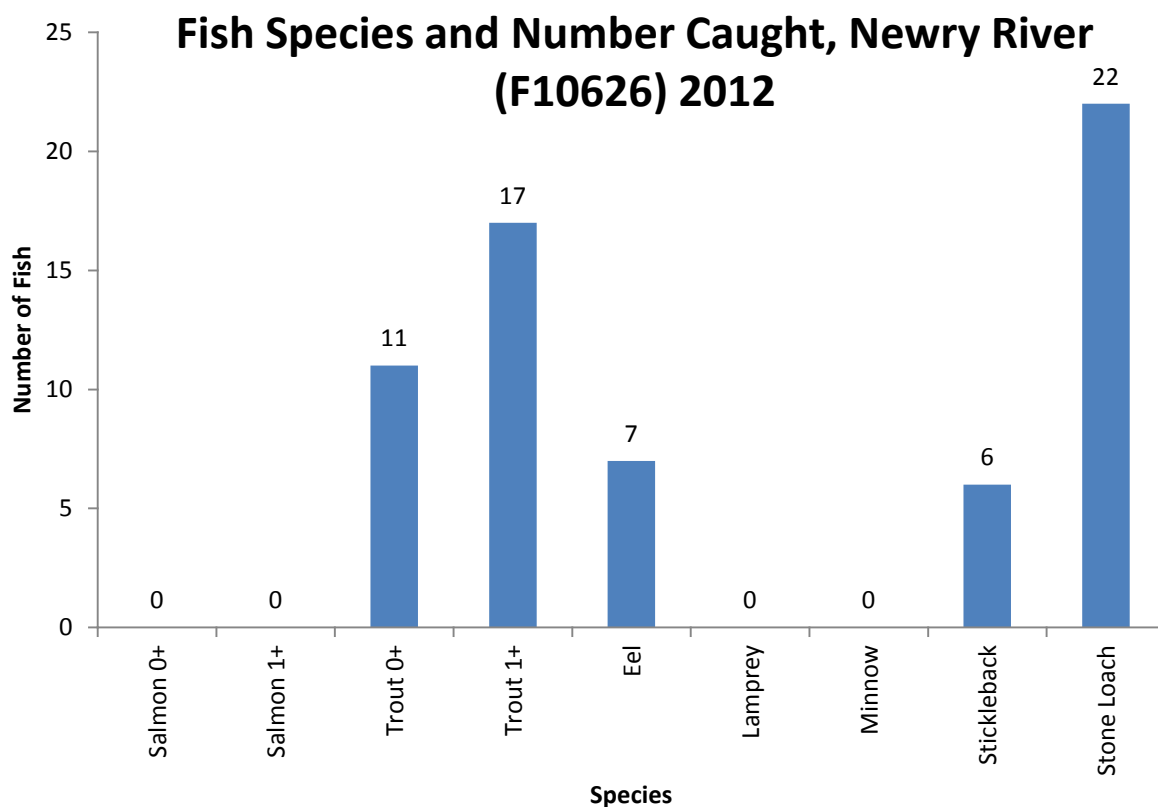


Fig 31. Total catch

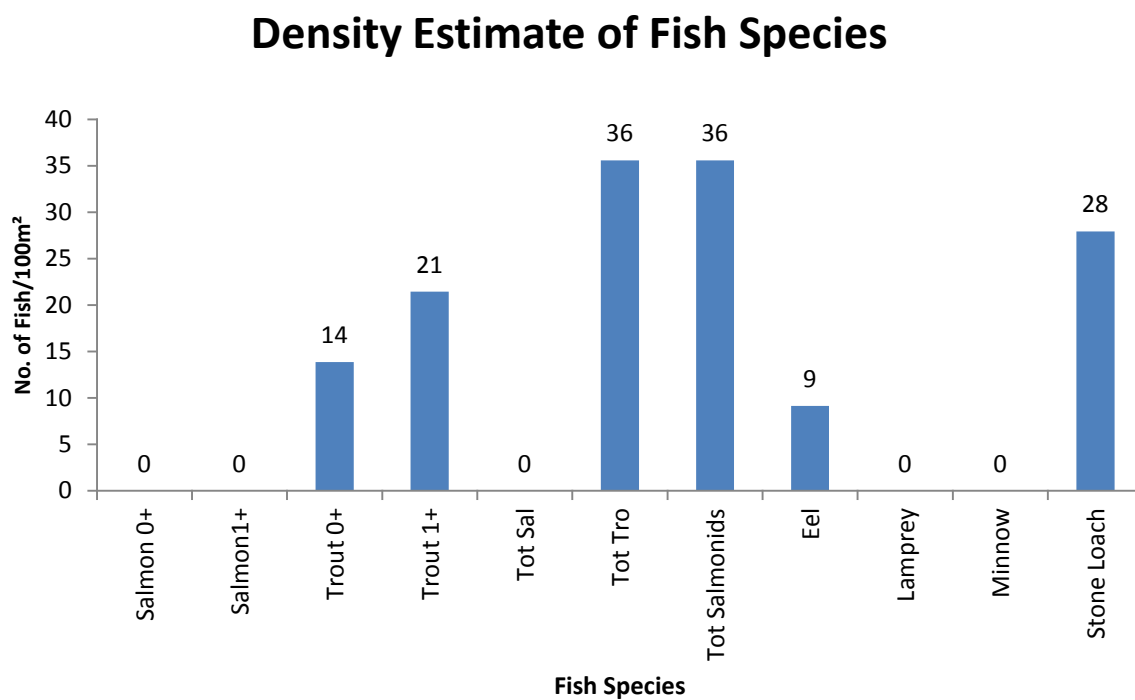


Fig 32. Density/100m²

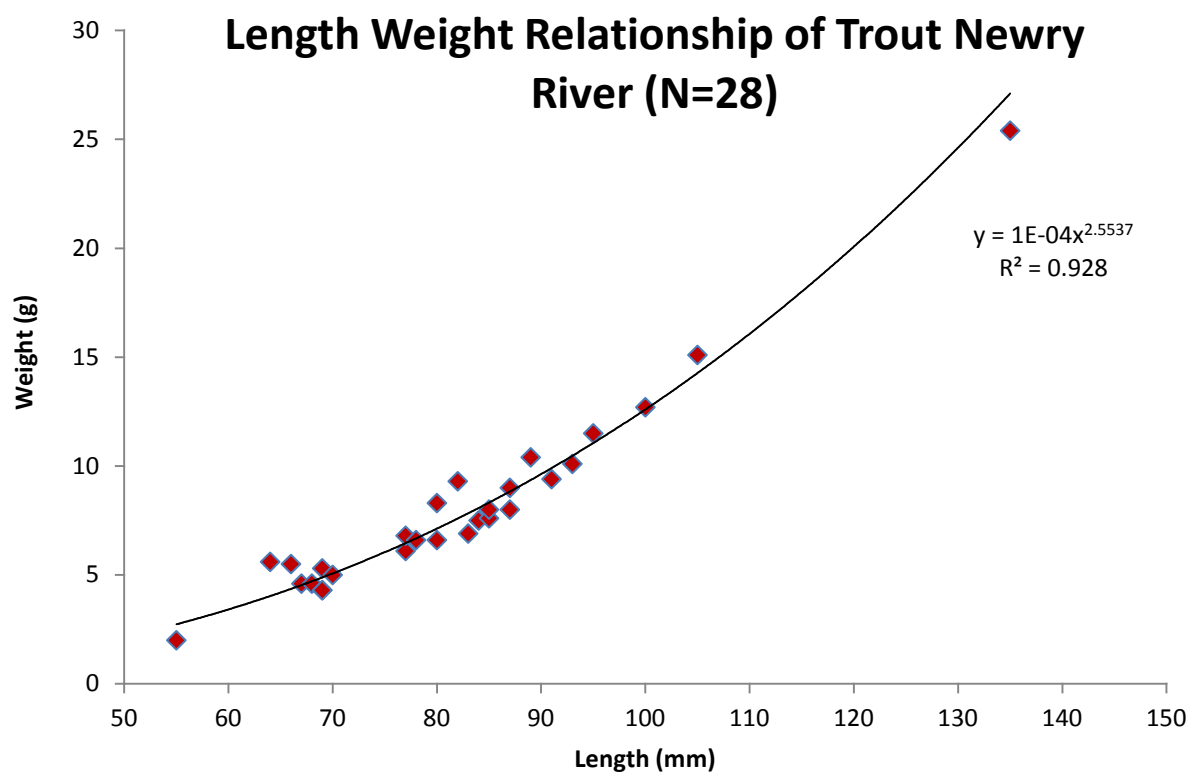


Fig 33. Length weight relationship of all trout caught

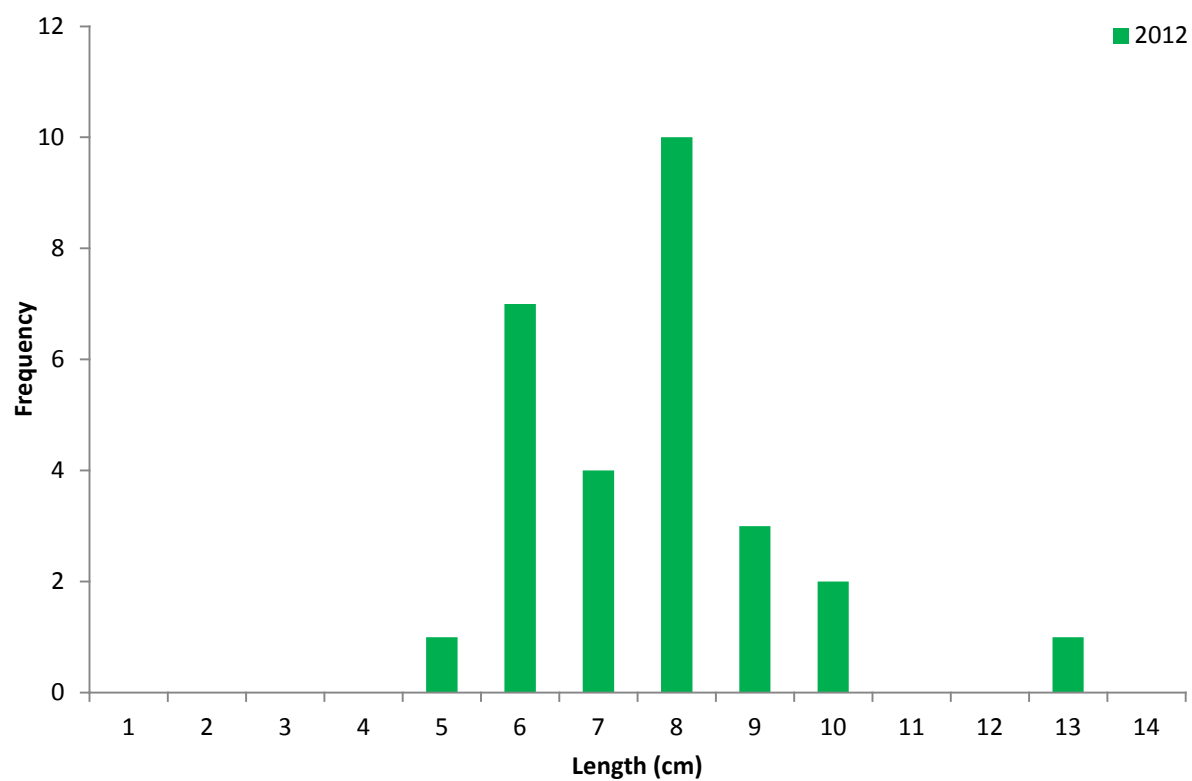


Fig. 34. Length frequency distribution for all trout caught.

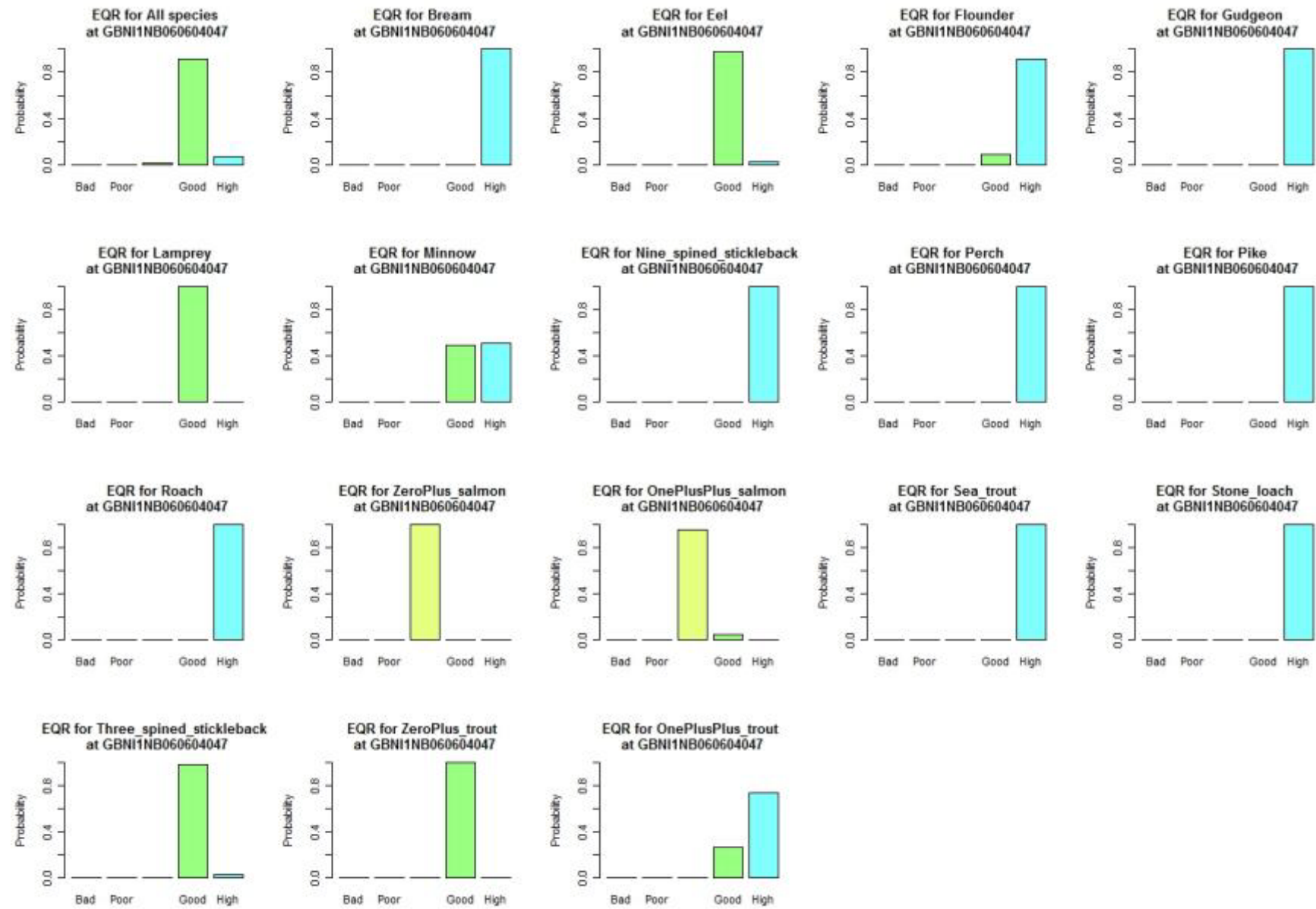
This site is composed of grade 3 nursery habitat (70%), grade 3 spawning habitat (10%) and grade 3 holding habitat (20%). This site is located at a Rivers Agency gauging station. There is tunnelling by overhanging trees downstream of the site. Green sponges and aquatic vegetation are growing within the channel.



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. Some improvement of in-channel habitat could be

made by importing new nursery and spawning substrate and by creating some holding water developing a functional habitat unit. Some bank side maintenance is required.





3.6 F11204
Newry
Newry River at Damolly Row
WFD Fish Classification 2012

GBNI1NB060604046

MODERATE

FISHING	Tro 0+	Tro 1+	Eel	Lamp	SB	Minn	SL	Total
1st	0	7	5	8	1	14	12	47
TOTAL	0	7	5	8	1	14	12	47

Table 7. Removal sampling results

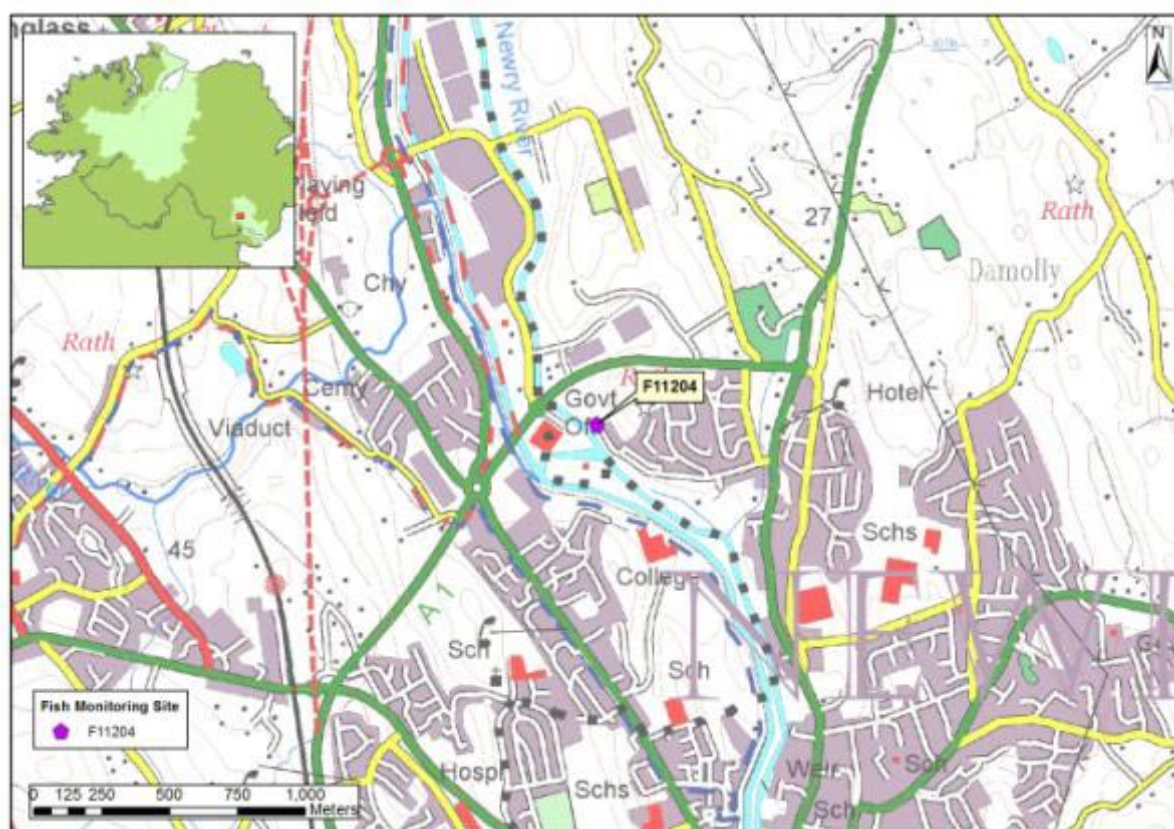


Fig 35. Site F11204

Site F11204 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. This site was surveyed in higher than desired water conditions. Due to the prevailing water conditions the decision was taken to survey in sub optimal conditions. Minimum density estimates were calculated for all species based on the single pass electrofishing results and the area surveyed.

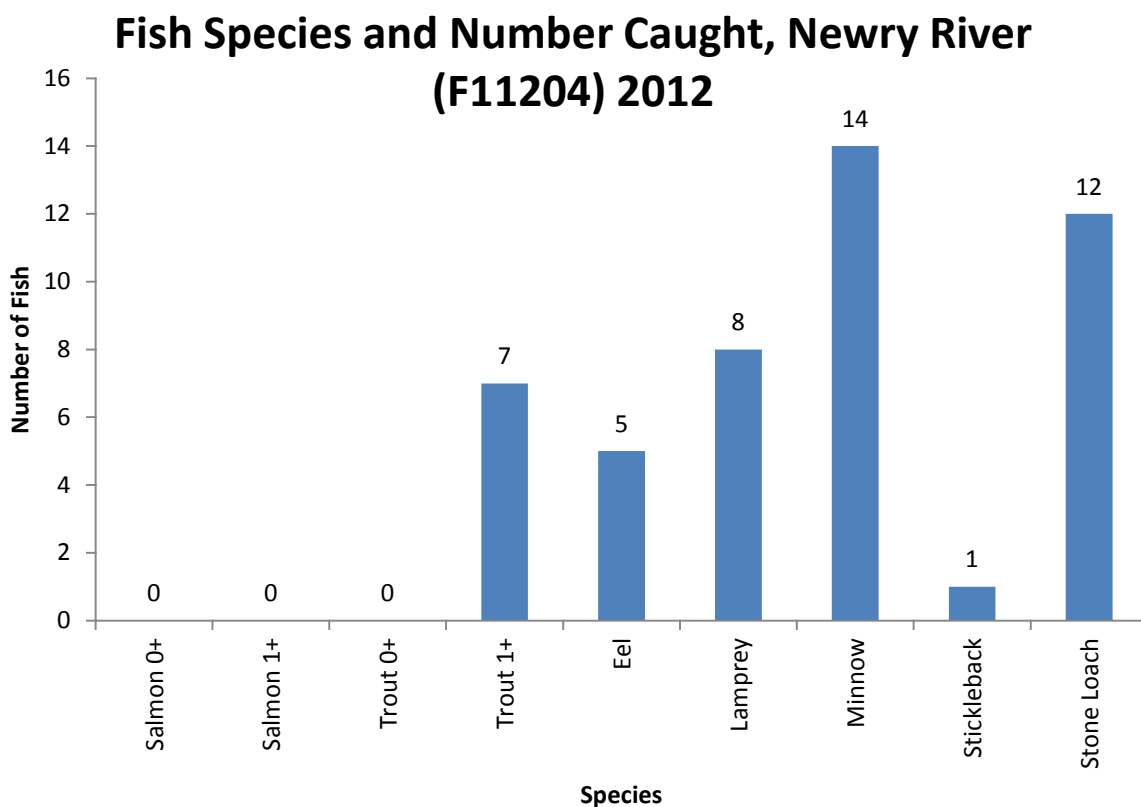


Fig 36. Total catch

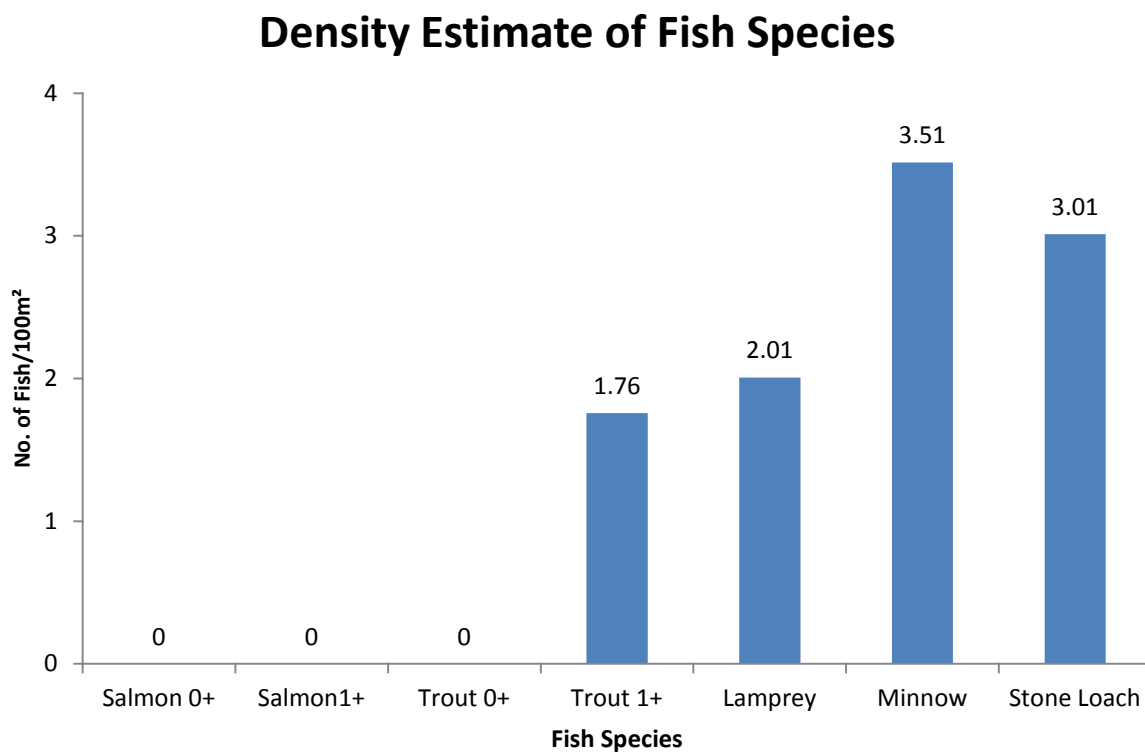


Fig 37. Density estimate/100m²

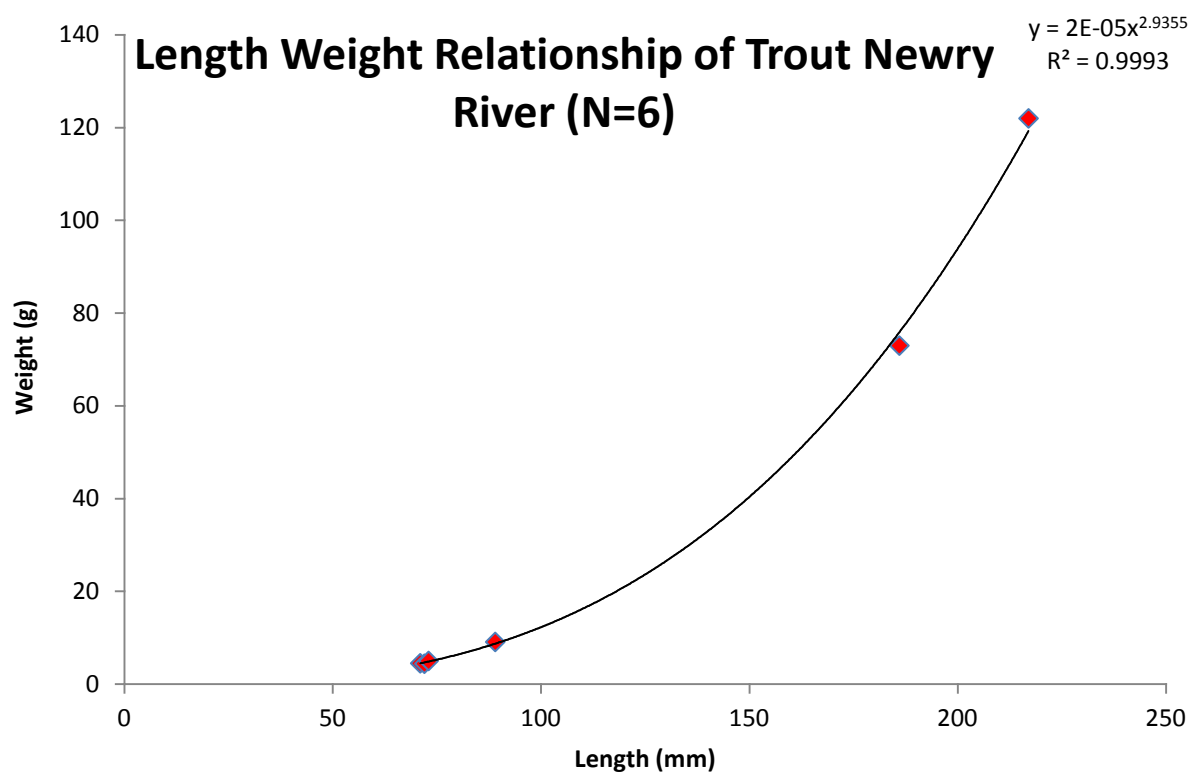


Fig 38. Length weight relationship of all Trout caught

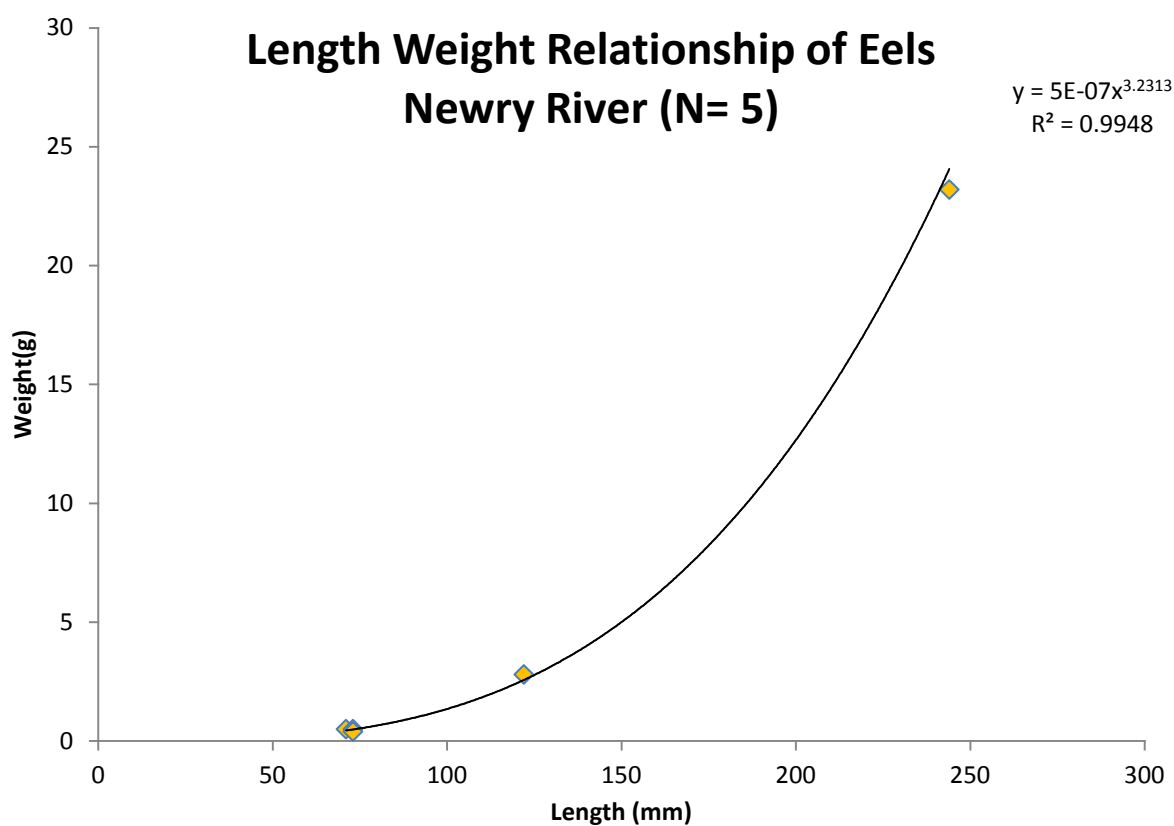


Fig 39. Length weight relationship of all Eels caught

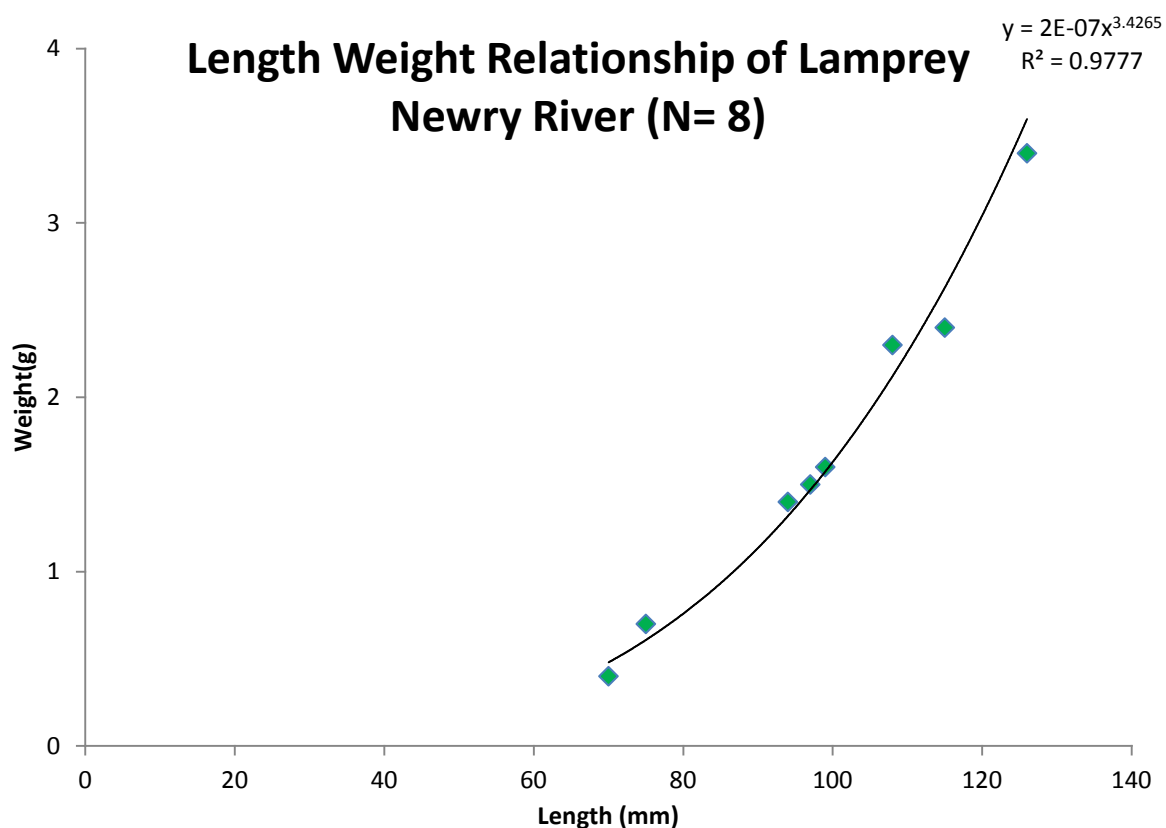


Fig 40. Length weight relationship of all lamprey caught

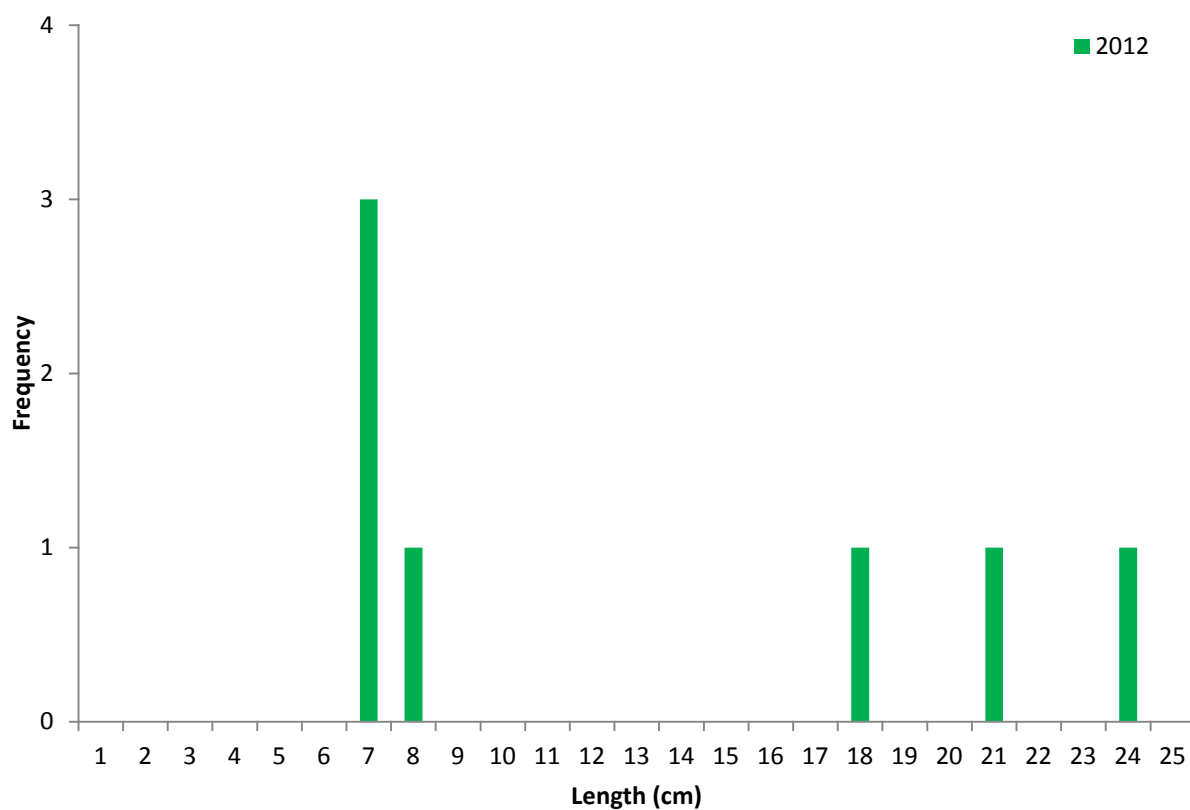
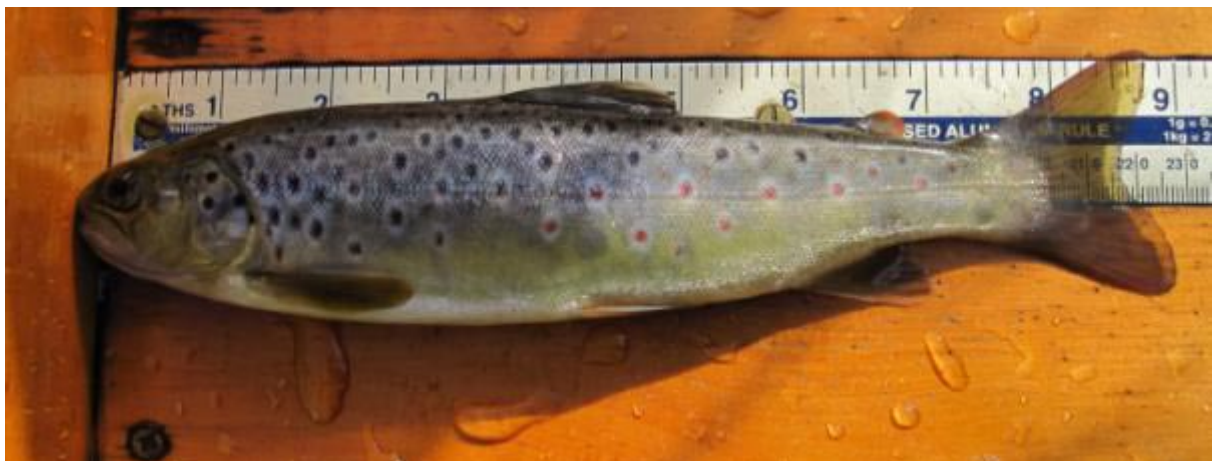


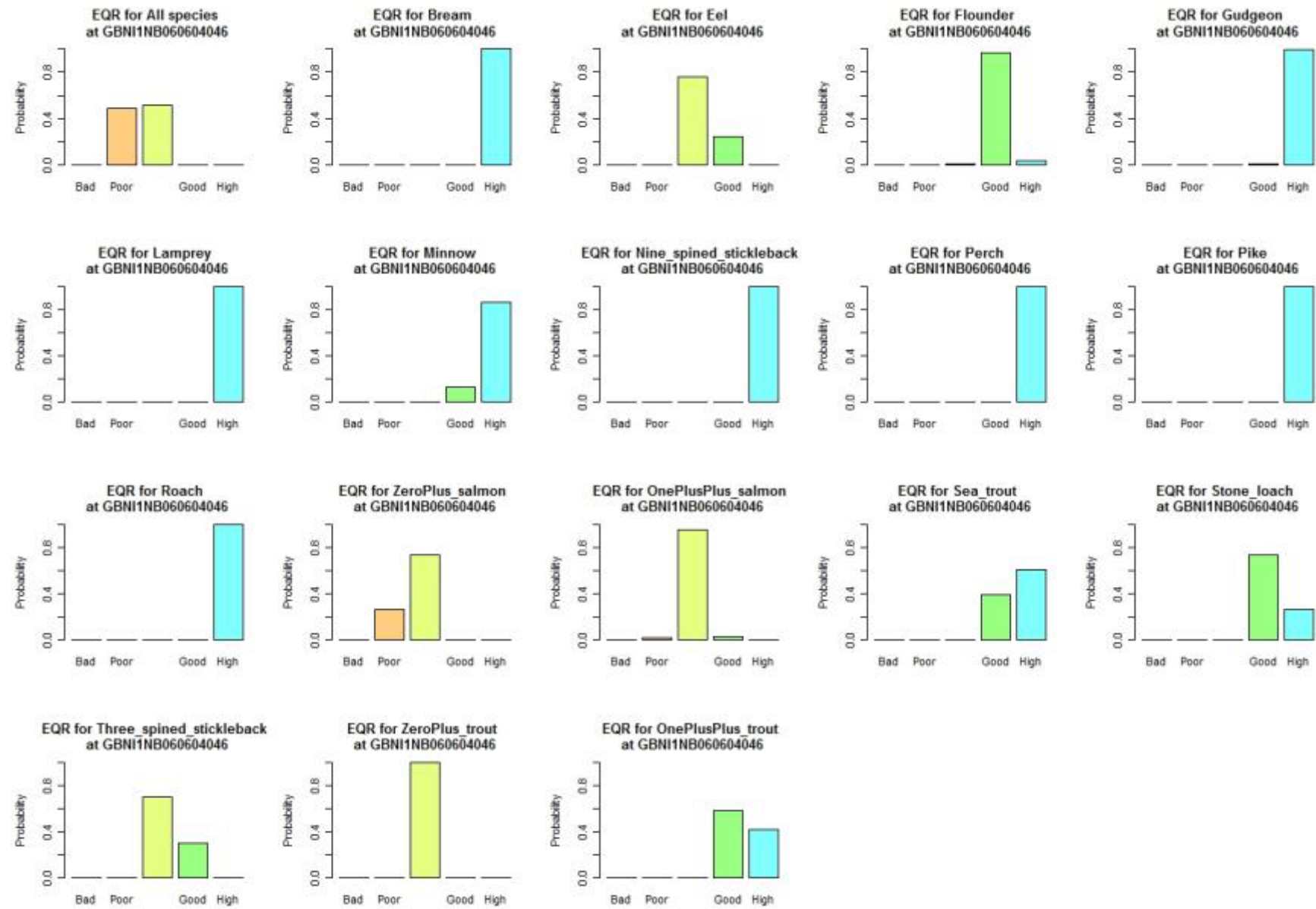
Fig 41. Length frequency distribution of all trout caught

This site is composed of grade 4 nursery habitat (45%) and grade 3 holding habitat (55%). This site was surveyed in higher than desired water conditions which made it difficult to fully appraise the in-channel habitat.



This site demonstrates evidence of being arterially drained. Potential programmes of measures could include importing new spawning and nursery substrate to compensate for substrate lost at the time of drainage. It should be noted that at the downstream end of the site underneath the clear span road bridge there is good lamprey ammocoete habitat which should be left undisturbed.





**3.7 F10076 Coneyglen Burn at Coneyglen Br
Owenkillew WFD Fish Classification 2012**

GBNI1NW010102085

Moderate

FISHING	Sal 0+	Sal 1+	Tro 0+	Eel	Total
1st	22	17	1	2	42
2nd	5	5	0	0	10
3rd	2	2	0	0	4
TOTAL	29	24	1	2	56

Table 8. Removal sampling results

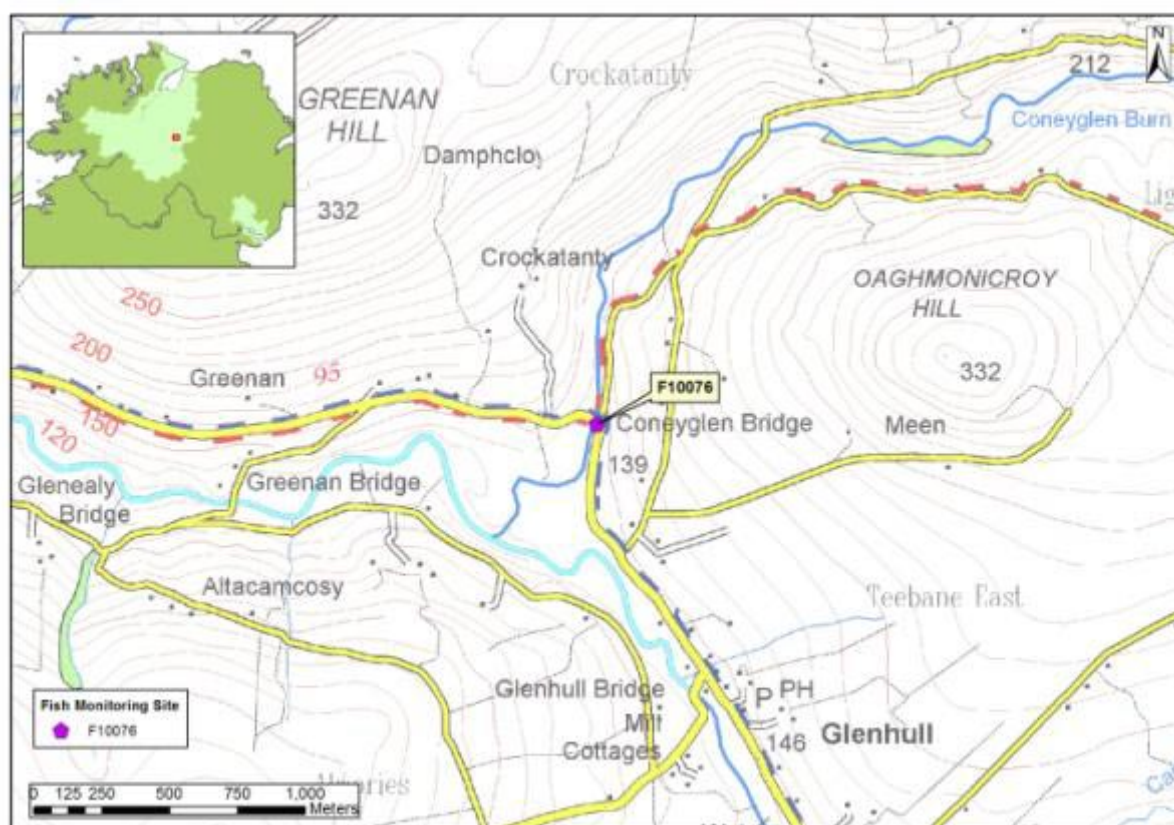


Fig 42. Site F10076

Site F10076 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 present.

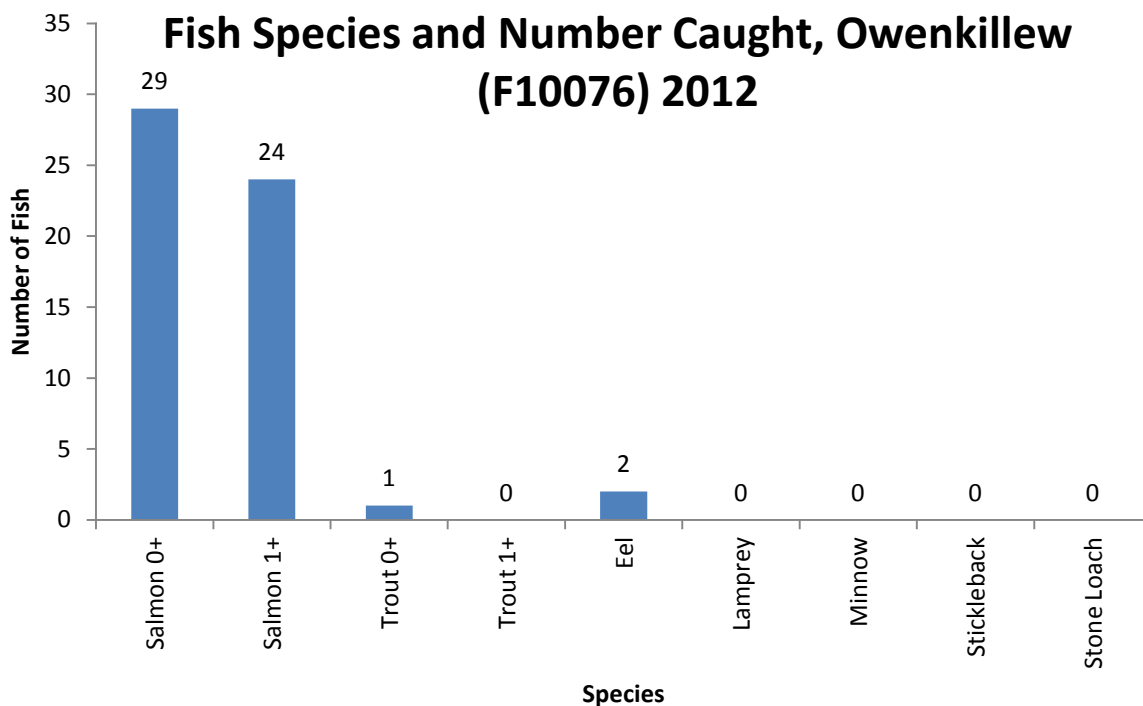


Fig 43. Total catch

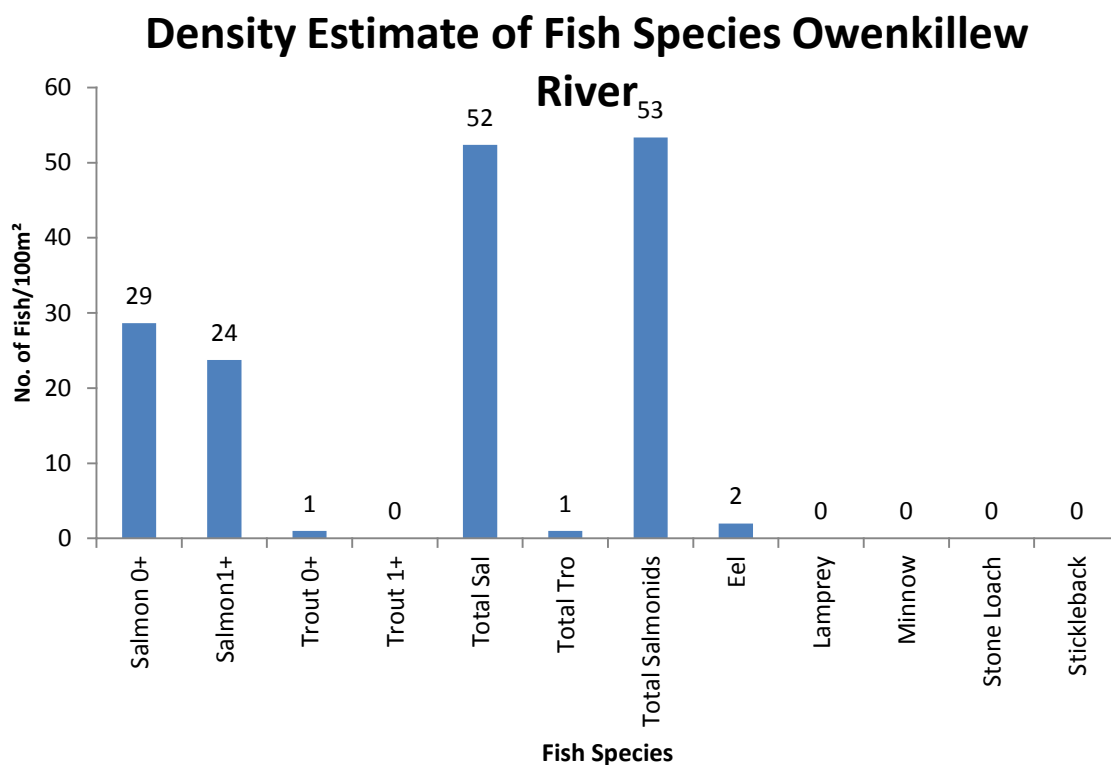


Fig 44. Density estimate/100m²

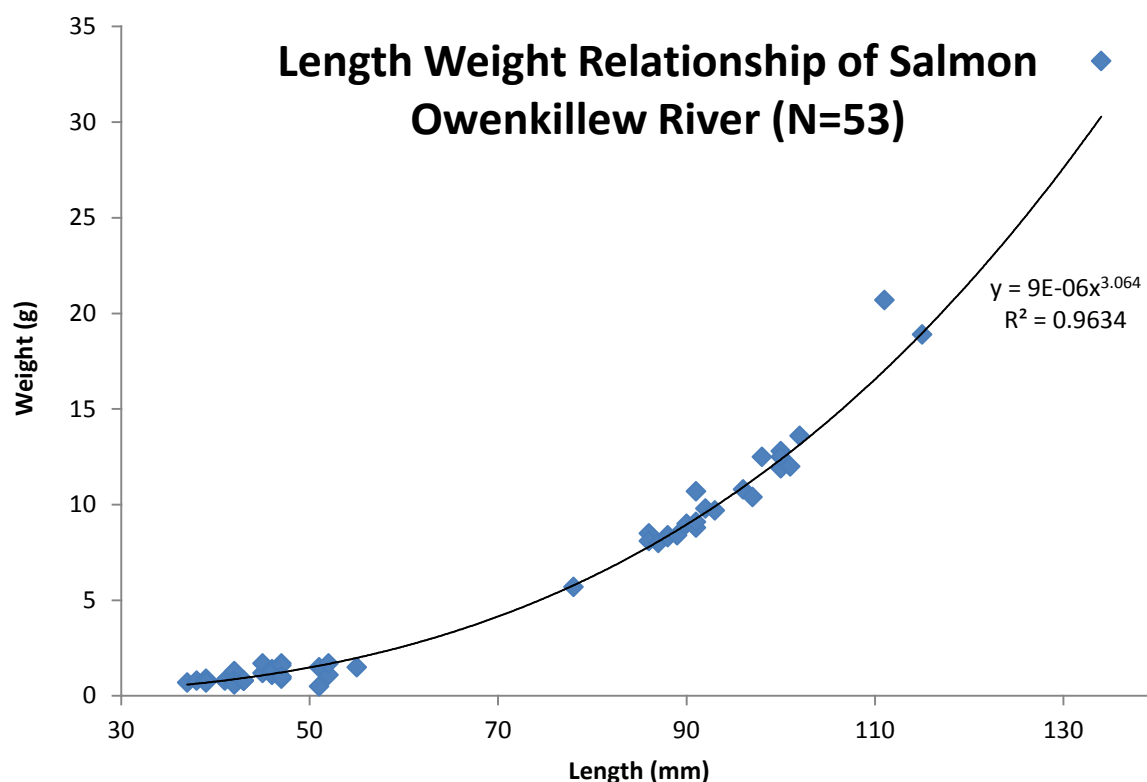


Fig 45. Length weight relationship of all juvenile Salmon caught

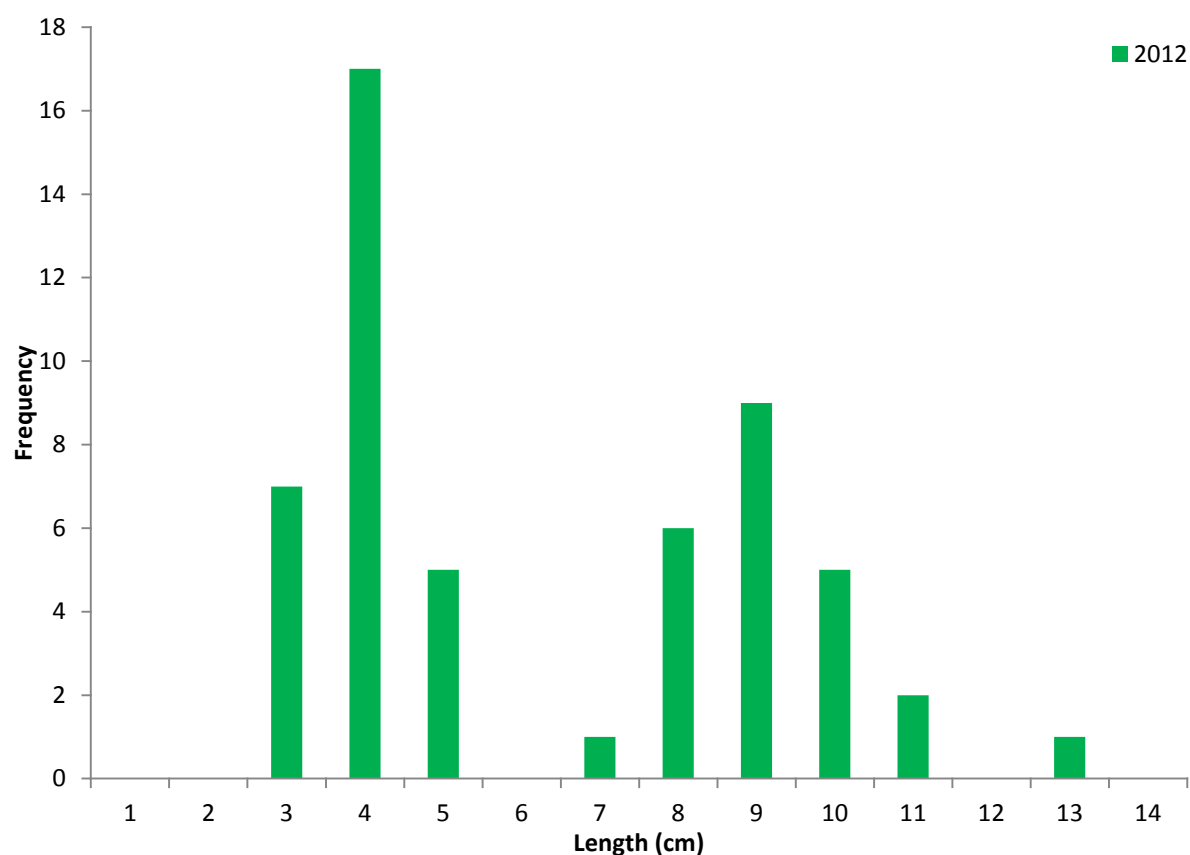


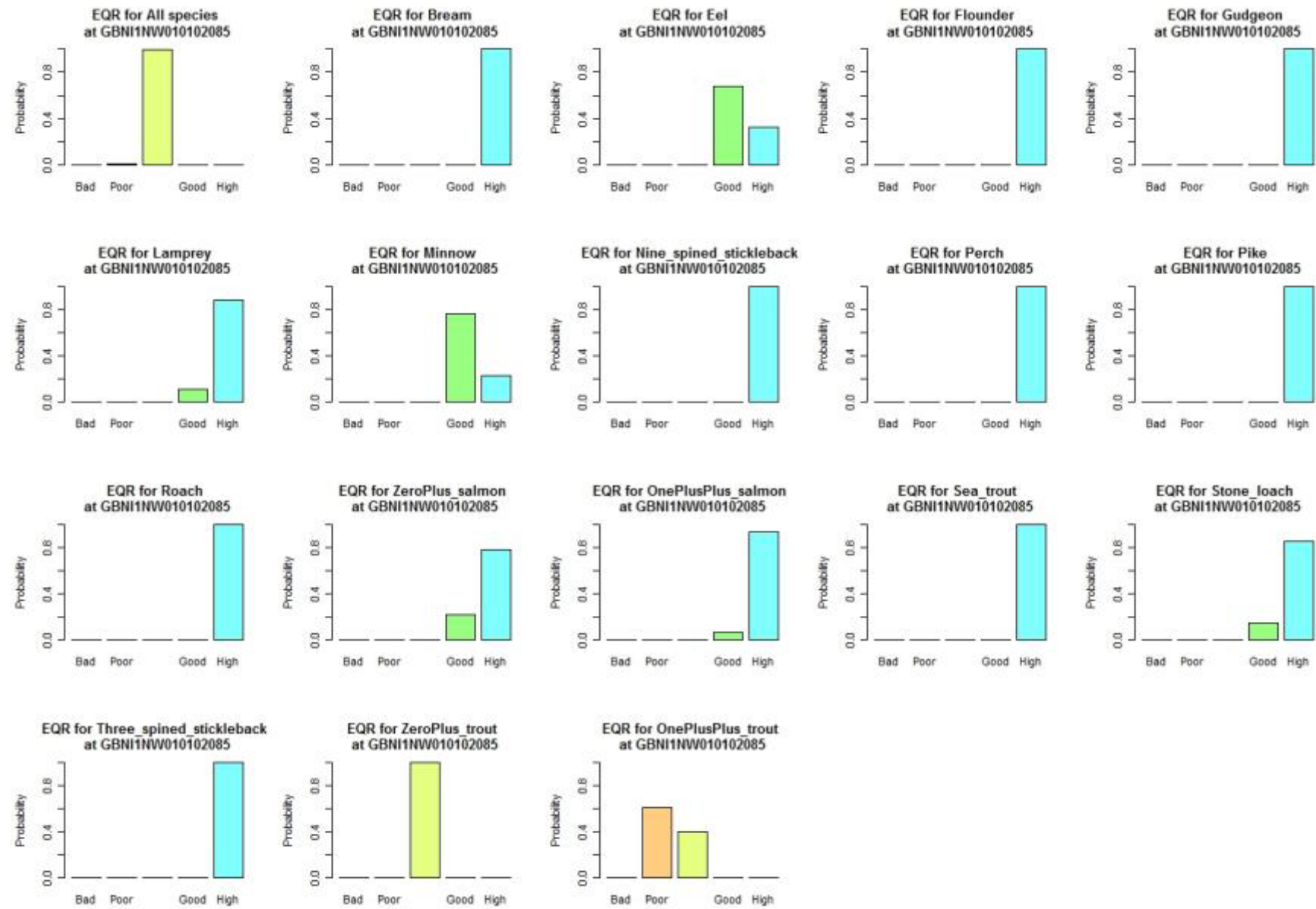
Fig 46. Length frequency distribution for all salmon caught

This site is composed of grade 2 nursery habitat (70%), grade 3 spawning habitat (15%) and grade 3 holding habitat (15%). This site is located downstream of a ford connecting two fields. The FCS 2 (Ireland) model classified this site as Poor, the professional opinion over ride has been used here to reflect the author's opinion that this site is at least moderate as demonstrated by the good presence of salmon and the presence of trout and eels.



Potential programmes of measures could include installing a clear span bridge to replace the existing ford or the creation of alternative access.





3.8 F10077 Owenkillew R at Monanameal Br
Owenkillew WFD Fish Classification 2012

GBNI1NW010102086

GOOD

FISHING	Sal 0+	Sal 1+	Tro 1+	Eel	Total
1st	138	30	2	1	171
TOTAL	138	30	2	1	171

Table 9. Removal sampling results

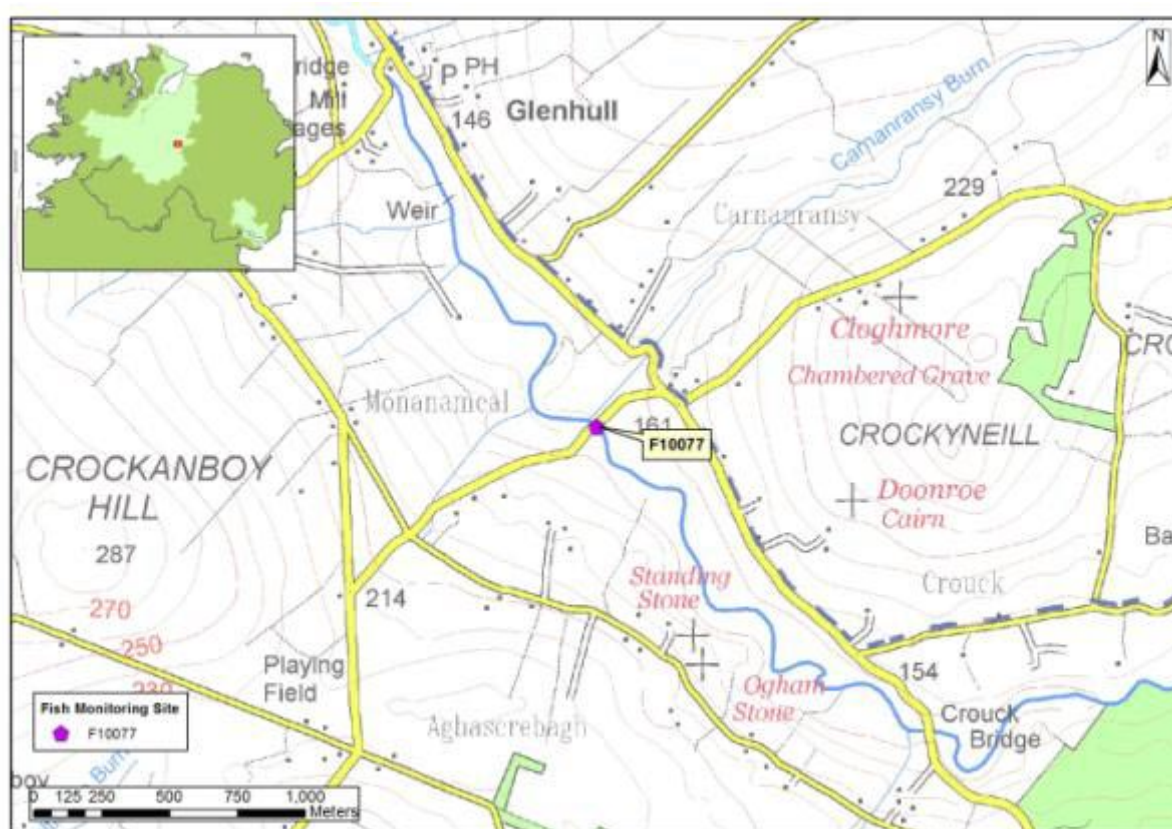


Fig 47. Site F10077

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. This site was surveyed in higher than desired water conditions. Due to the prevailing water conditions the decision was taken to survey in sub optimal conditions. Minimum density estimates were calculated for all species based on the single pass electrofishing results and the area surveyed.

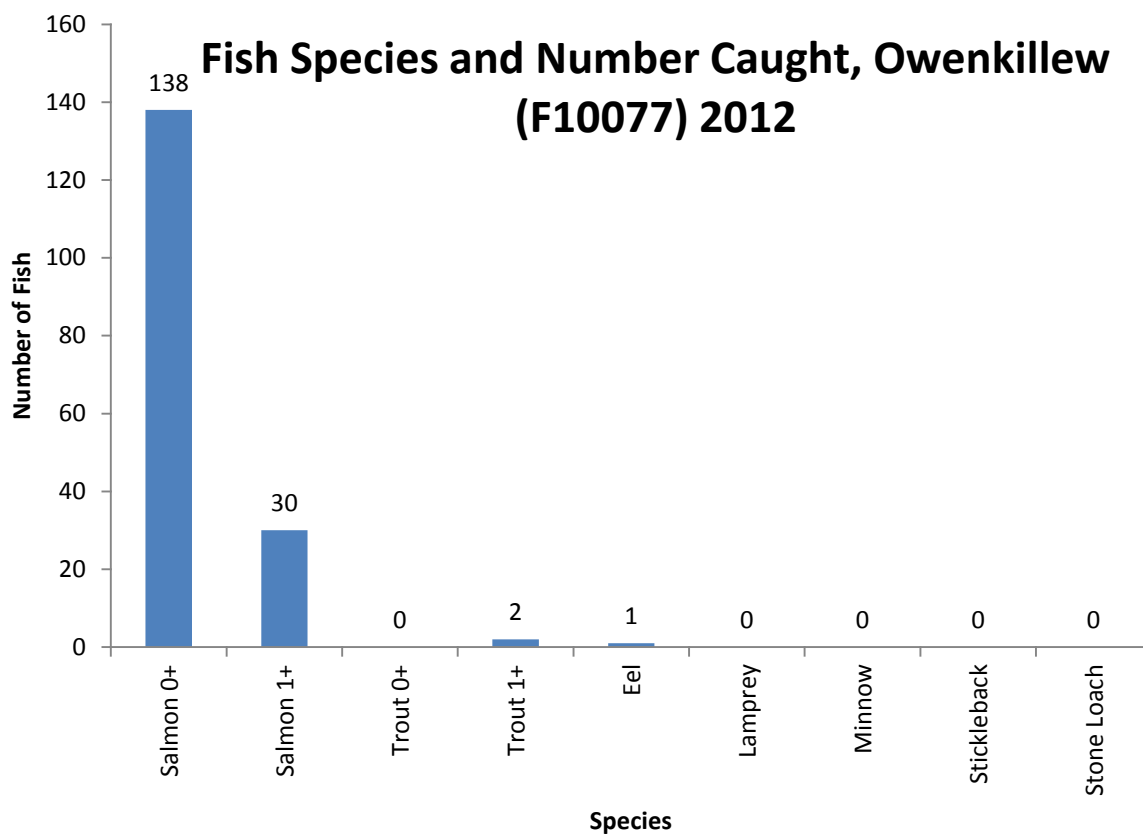


Fig 48. Total catch

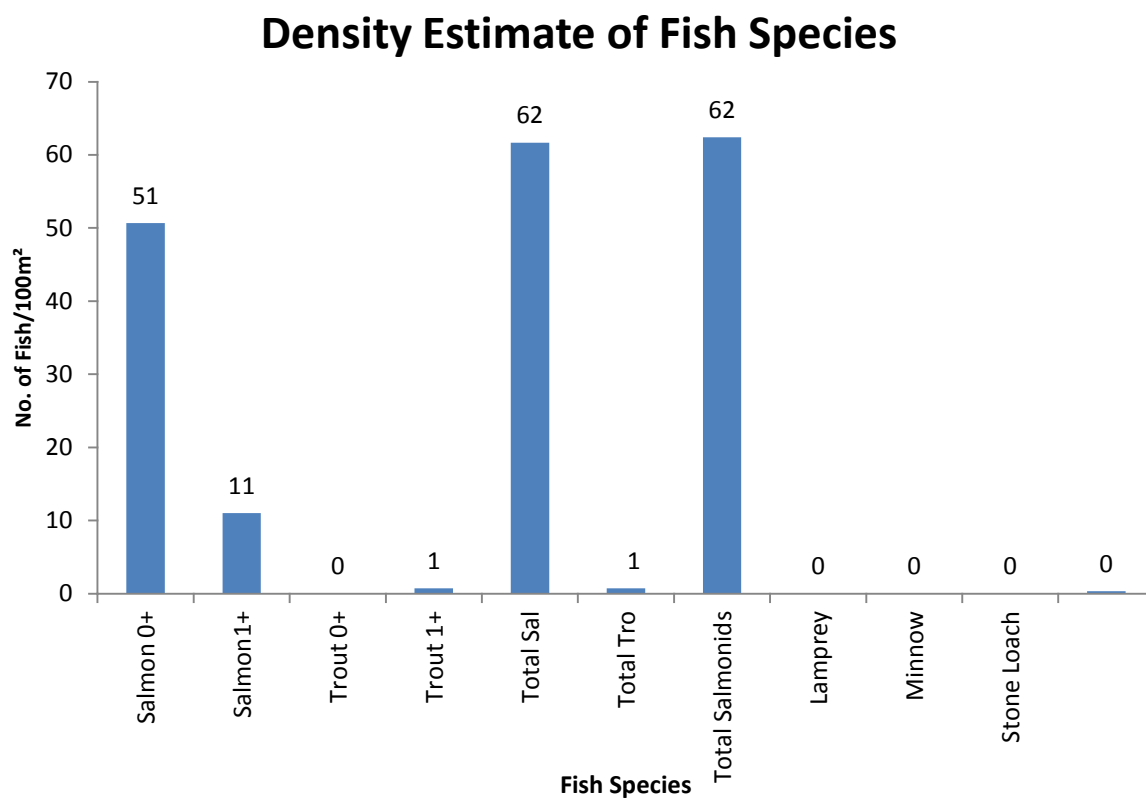


Fig 49. Density estimate/100m²

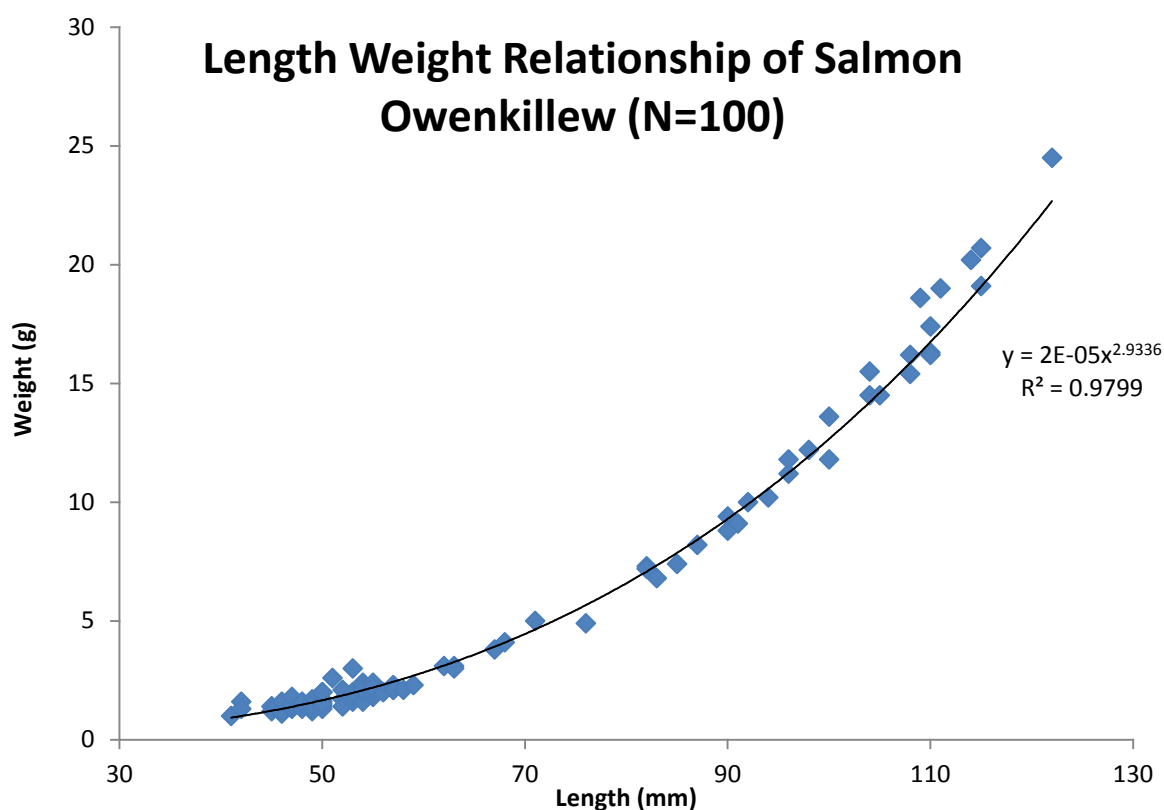


Fig 50. Length weight relationship of all Salmon caught

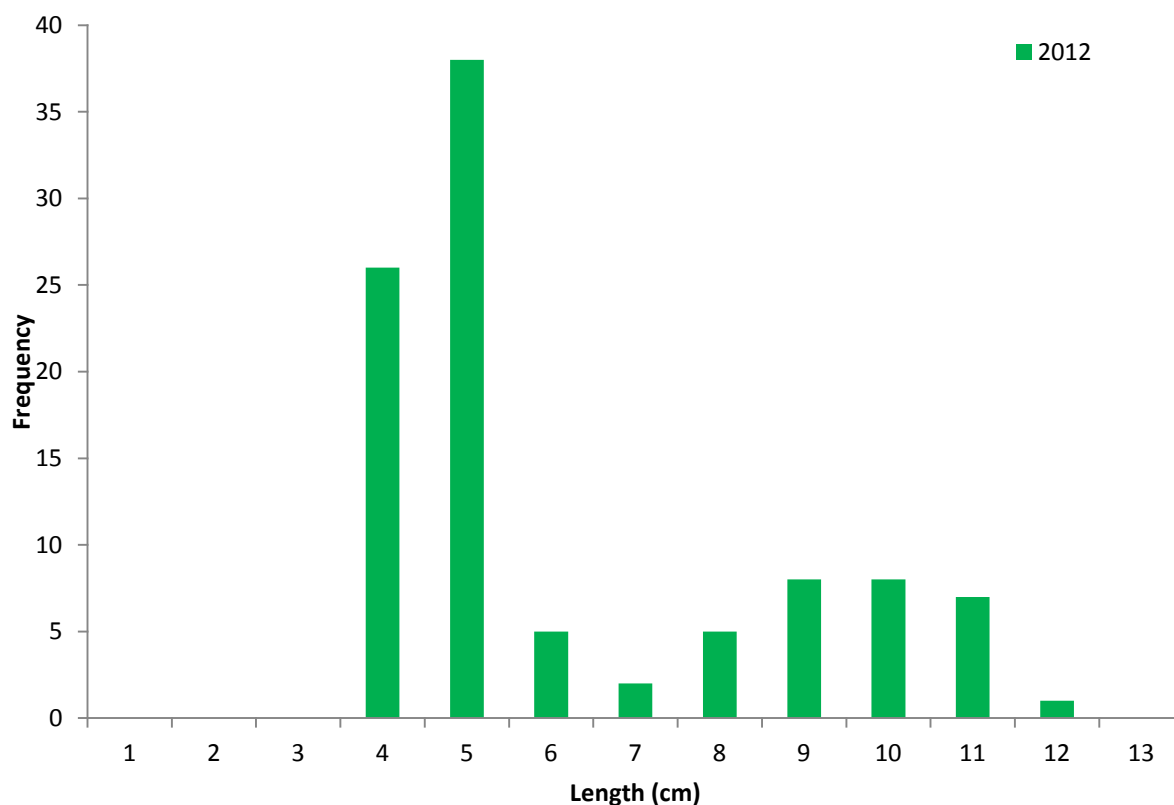


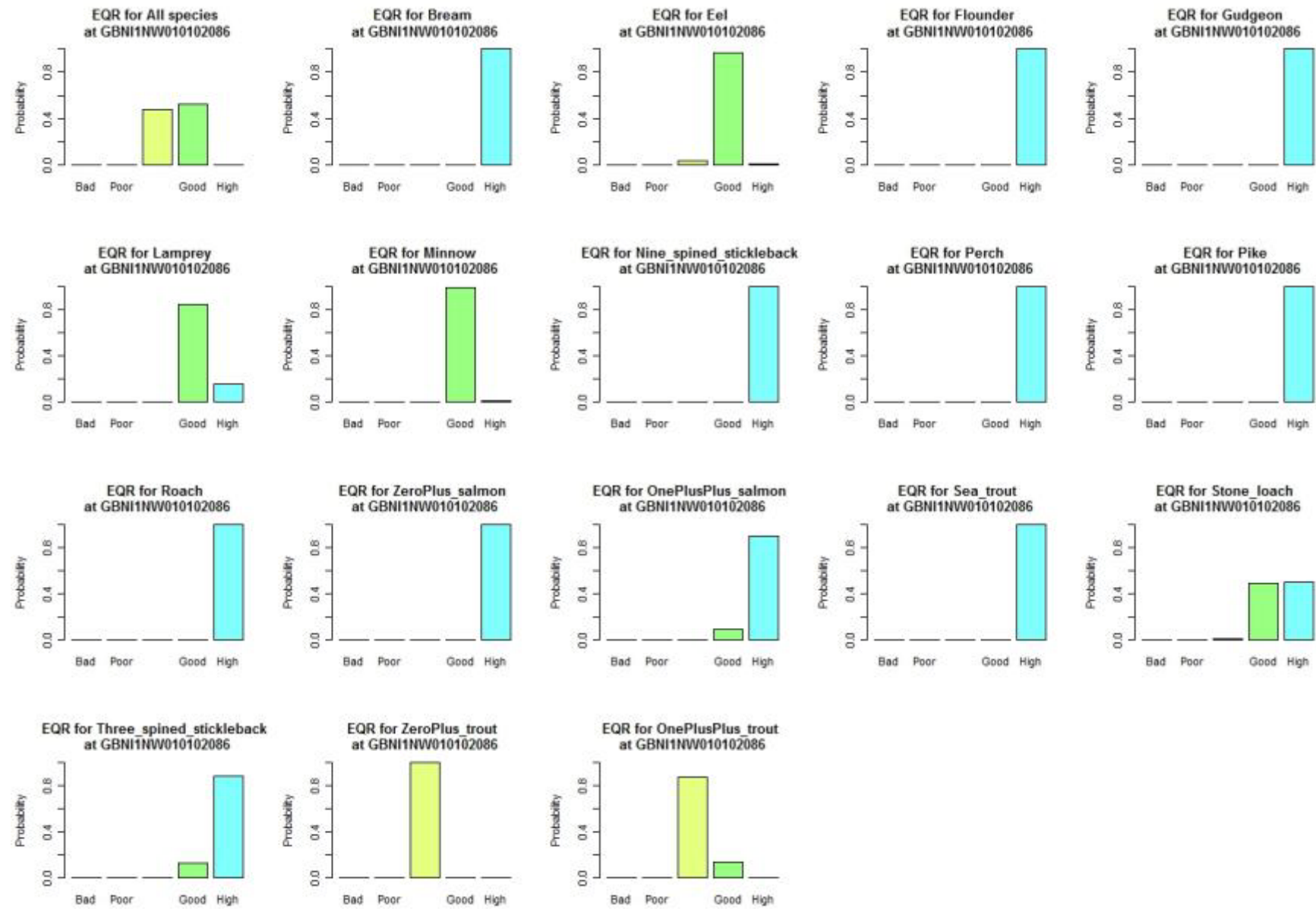
Fig 51. Length frequency distribution of all Salmon caught

This site is composed of grade 1 nursery habitat (85%), grade 3 spawning habitat (10%) and grade 3 holding habitat (5%). This site was surveyed in higher than desired water conditions which made it difficult to fully appraise the in-channel habitat. The FCS 2 (Ireland) model classified this site as moderate. The professional opinion over ride has been used here to reflect the author's opinion that this site is at least good as demonstrated by the good presence of salmon and the presence of trout and eels as recorded during less than optimal conditions.



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





3.9 F10086
Strule

Strule R at Moyle Br
WFD Fish Classification 2012

GBNI1NW010102020

GOOD

METHOD	Sal 1+	Sal 1+	Tro 1+	Eel	Minn	SL	SB	Gudgeon	Total
EF Single Pass	17	9	2	1	2	5	0	0	36
Seine Net	0	5	3	0	71	0	11	1	91
1 st Fyke	0	2	0	0	0	0	0	0	2
2 nd Fyke	0	1	3	5	0	0	0	0	9
TOTAL	17	17	8	6	73	5	11	1	138

Table 10. Sampling results

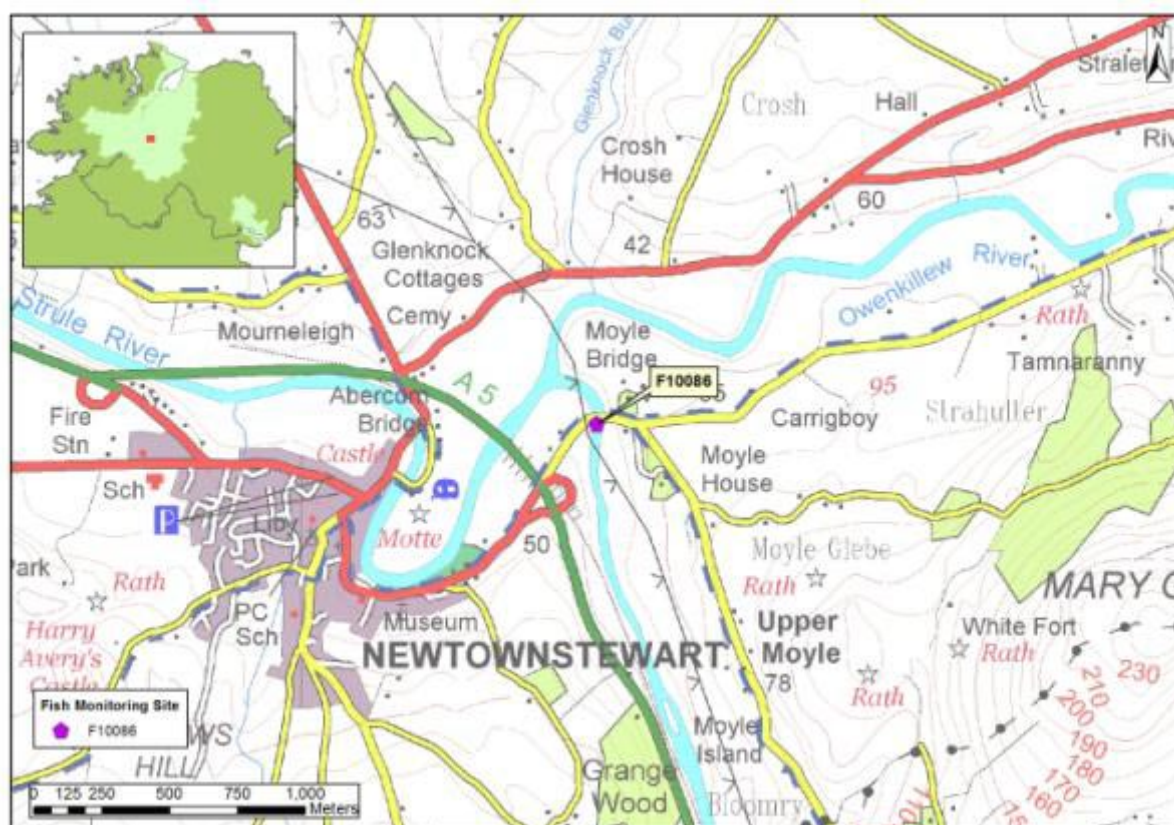


Fig 52. Site F10086

Site F10086 has been classified as a large river site where quantitative electrofishing is not possible. This site was surveyed using a multi method approach. The multi method approach is usually conducted across a range of habitats and combines electrofishing at a suitable riffle habitat, seine netting

and fyke netting. Due to the high river flows which dominated the 2012 field season the electrofishing component of the survey was conducted in sub optimal conditions.

The data collected during this survey was pooled in three separate ways and entered into the FCS2 (Ireland) model as single pass electrofishing exercises. The three groupings were single pass electrofishing data only, netting data only and all data combined. At present the FCS2 (Ireland) model can only accept electrofishing data. Both the professional opinion and FCS2 (Ireland) model utilising all three pooled data sets classified this site as Good. This provided three independent classifications.

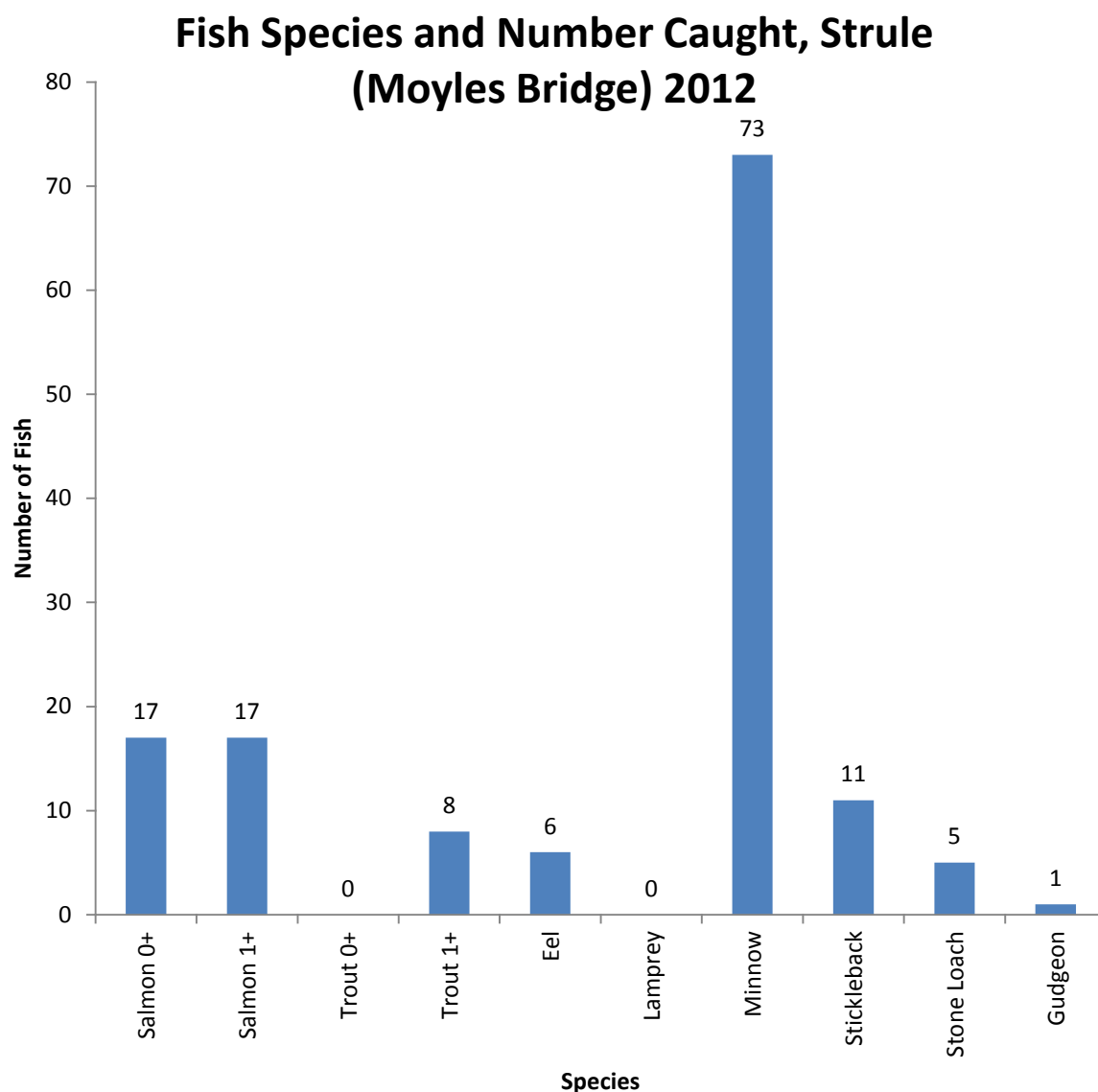


Fig 53. Total catch

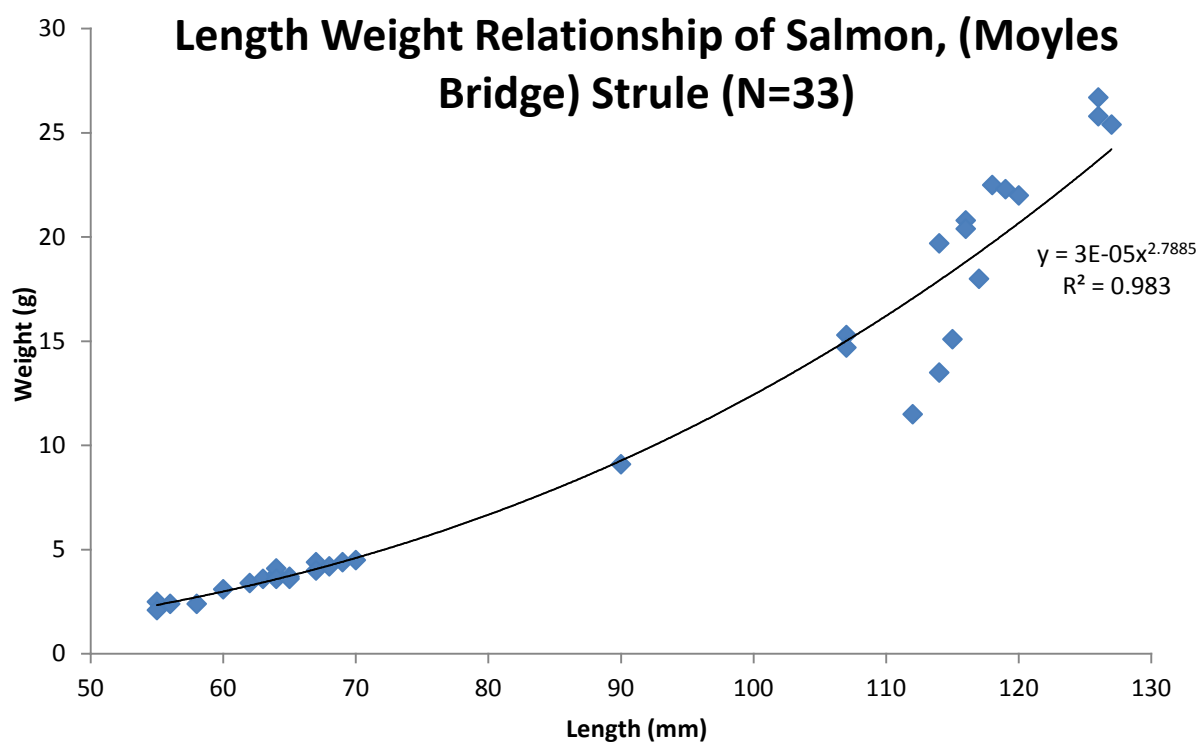


Fig 54. Length weight relationship of all juvenile Salmon

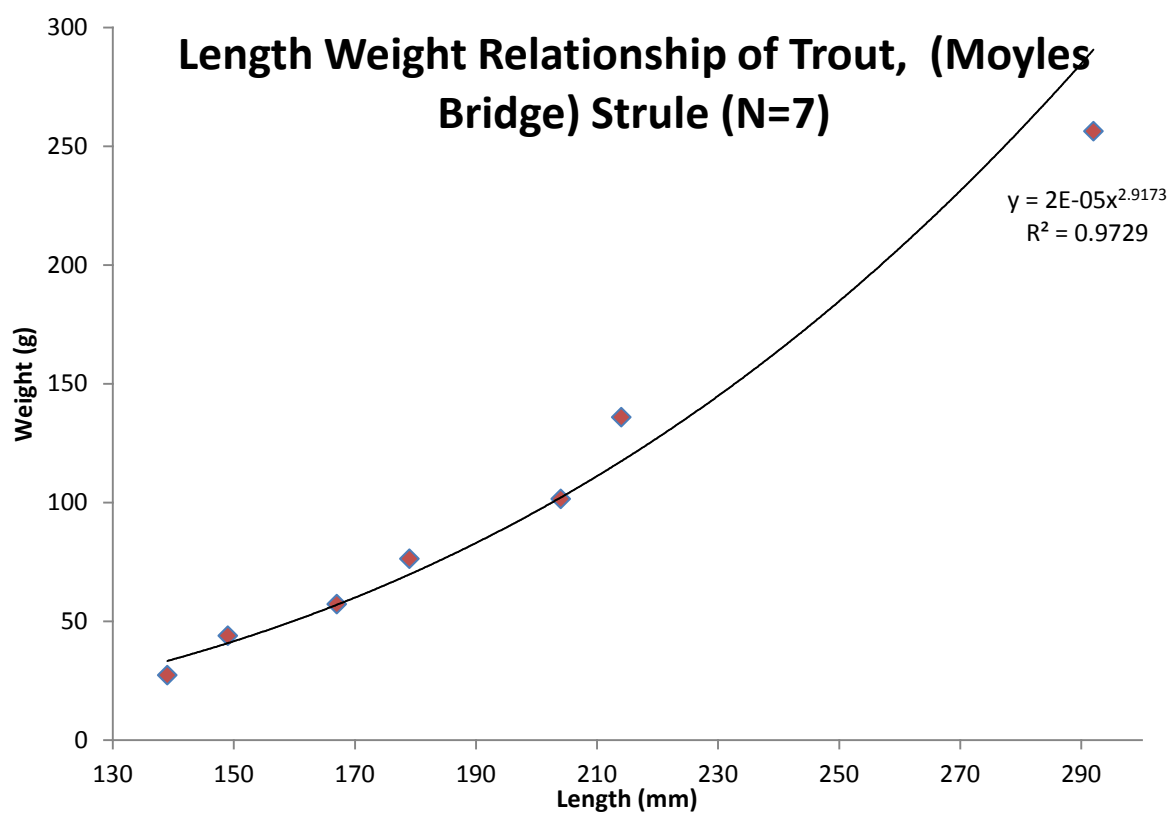


Fig 55. Length weight relationship of all Trout

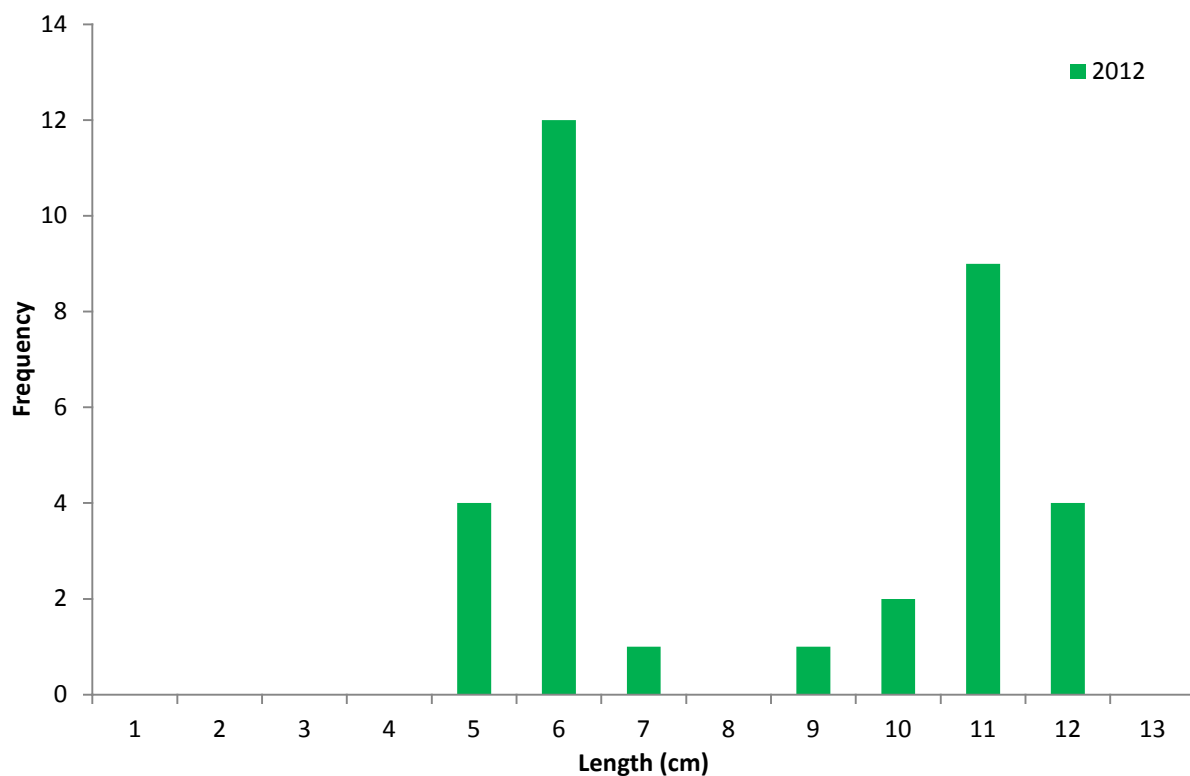


Fig 56. Length frequency distribution of all juvenile Salmon

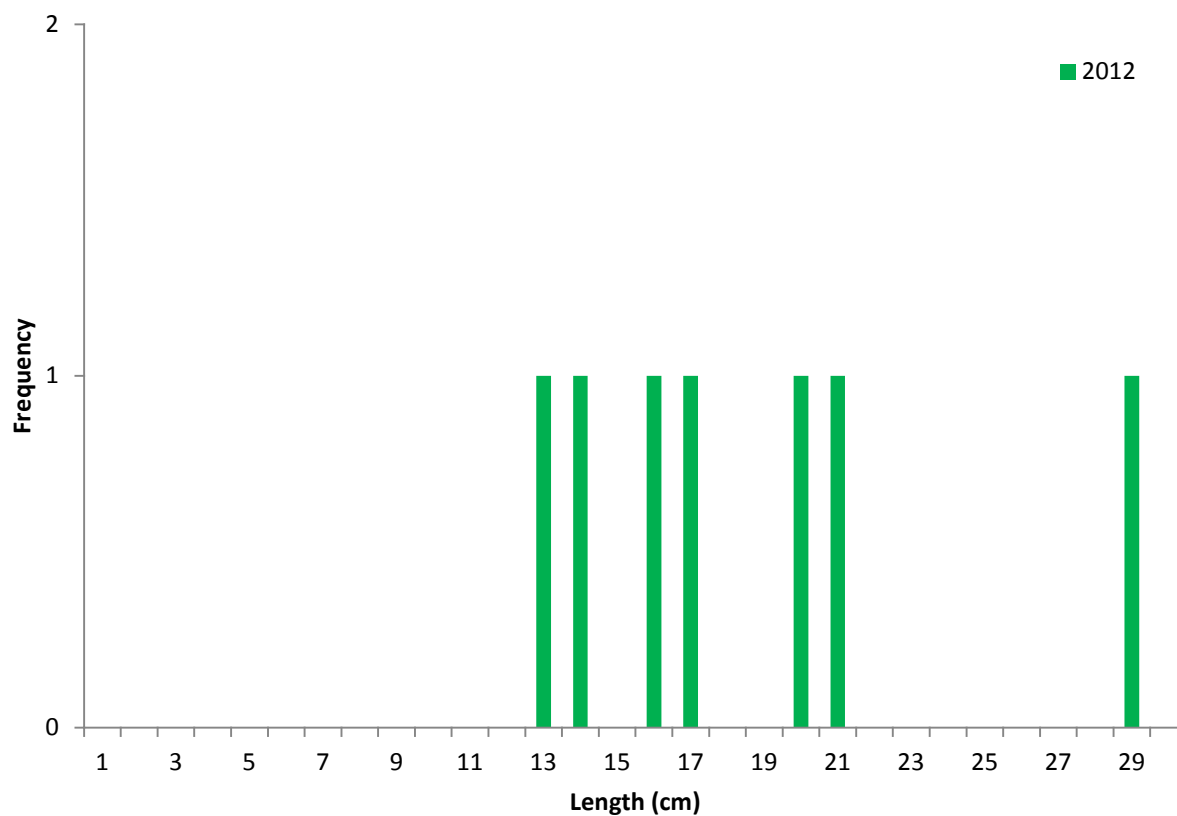


Fig 57. Length frequency distribution of all Trout

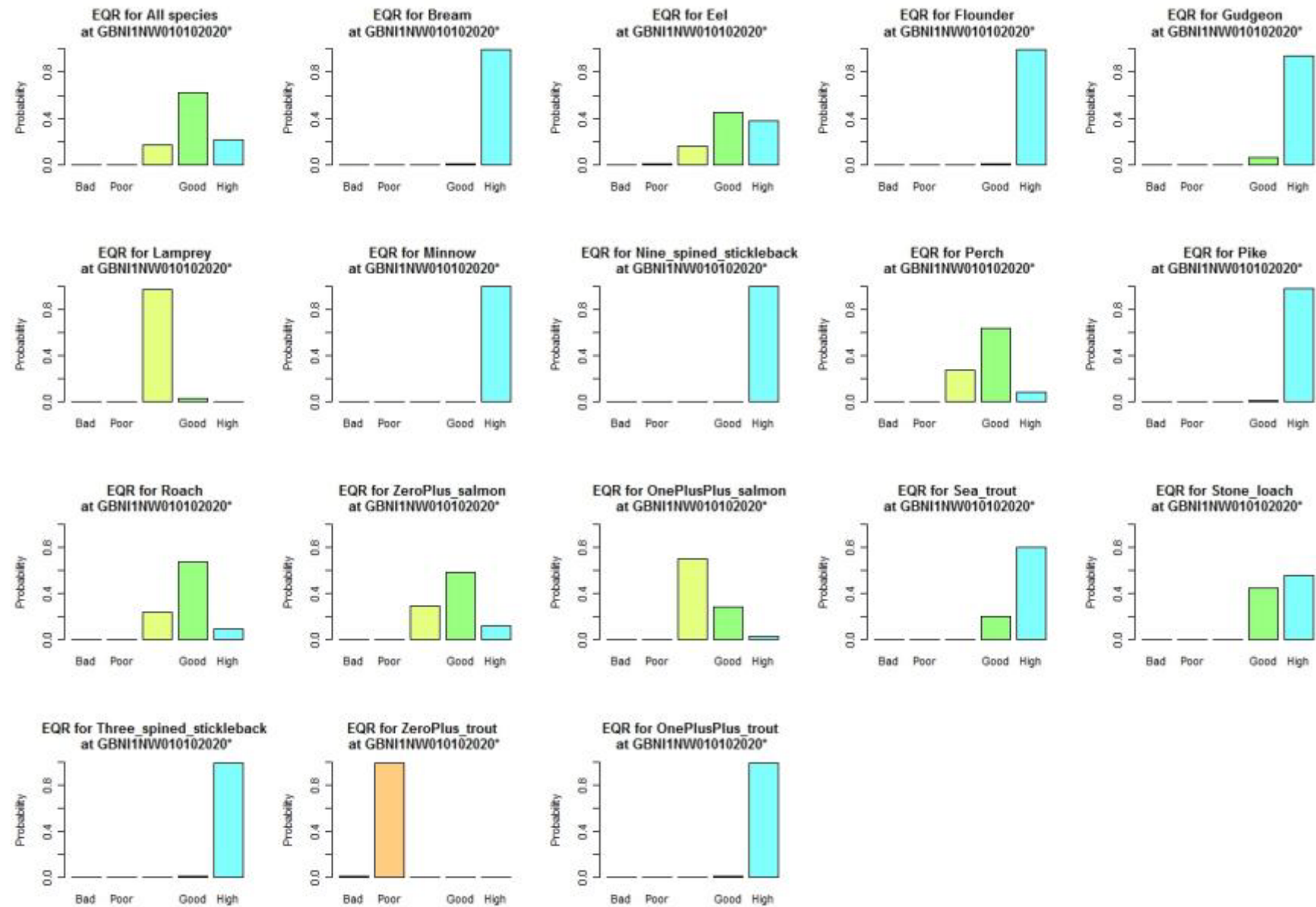
The site surveyed was composed of a deep riffle area flowing into a glide which in turn ran into a deeper pool area. The area surveyed included grade 3 nursery habitat, grade 3 spawning habitat and grade 1 holding habitat. This site was surveyed in higher than desired water conditions which made it difficult to fully appraise the in-channel habitat.

Additional biological information is available in the spreadsheets provided.



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





**3.10 F10089
Strule****Cappagh Burn at Tattynure Br
WFD Fish Classification 2012****GBNI1NW010102021****GOOD**

FISHING	Sal 0+	Sal 1+	Tro 0+	Tro 1+	Lam	SL	Total
1st	7	2	18	9	0	11	47
2nd	7	0	6	2	1	9	25
3rd	0	0	1	0	1	5	7
TOTAL	14	2	25	11	2	25	79

Table 11. Removal sampling results



Fig 58. Site F10089

Site F10089 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 present.

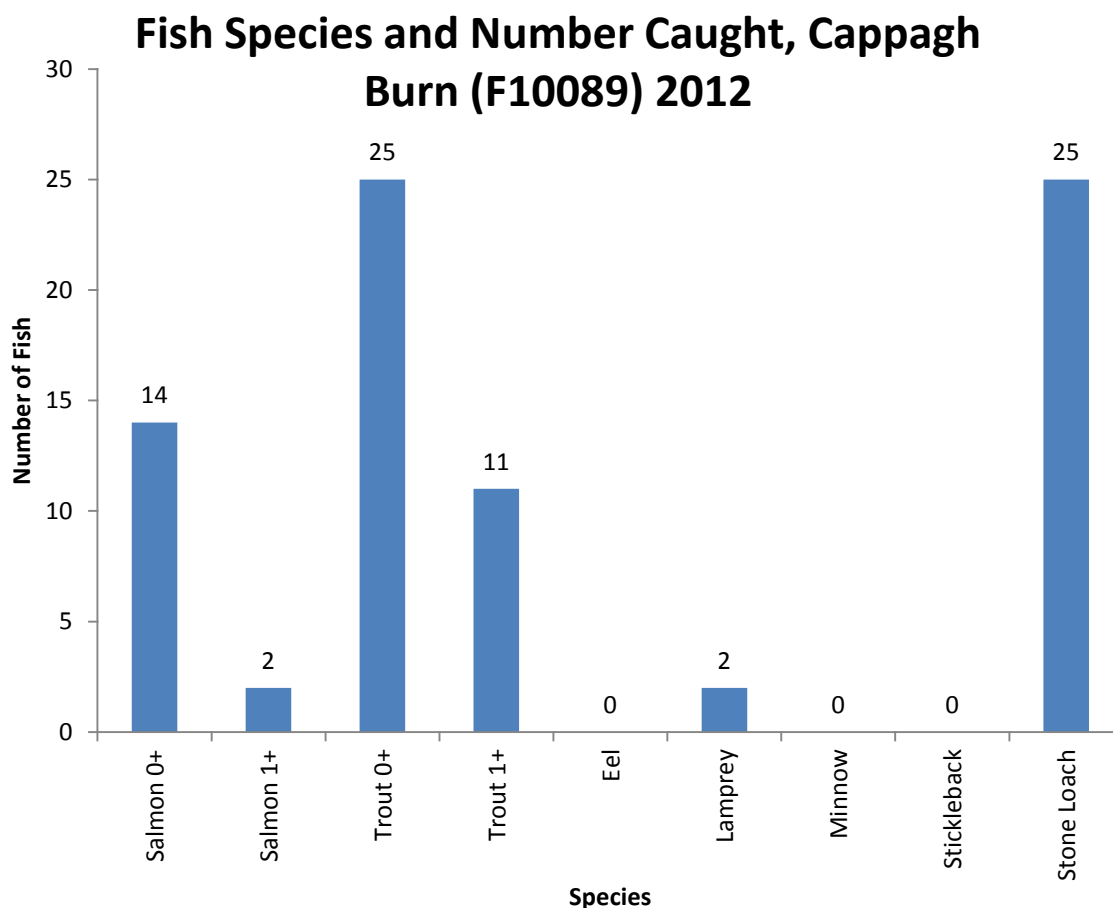


Fig 59. Total catch

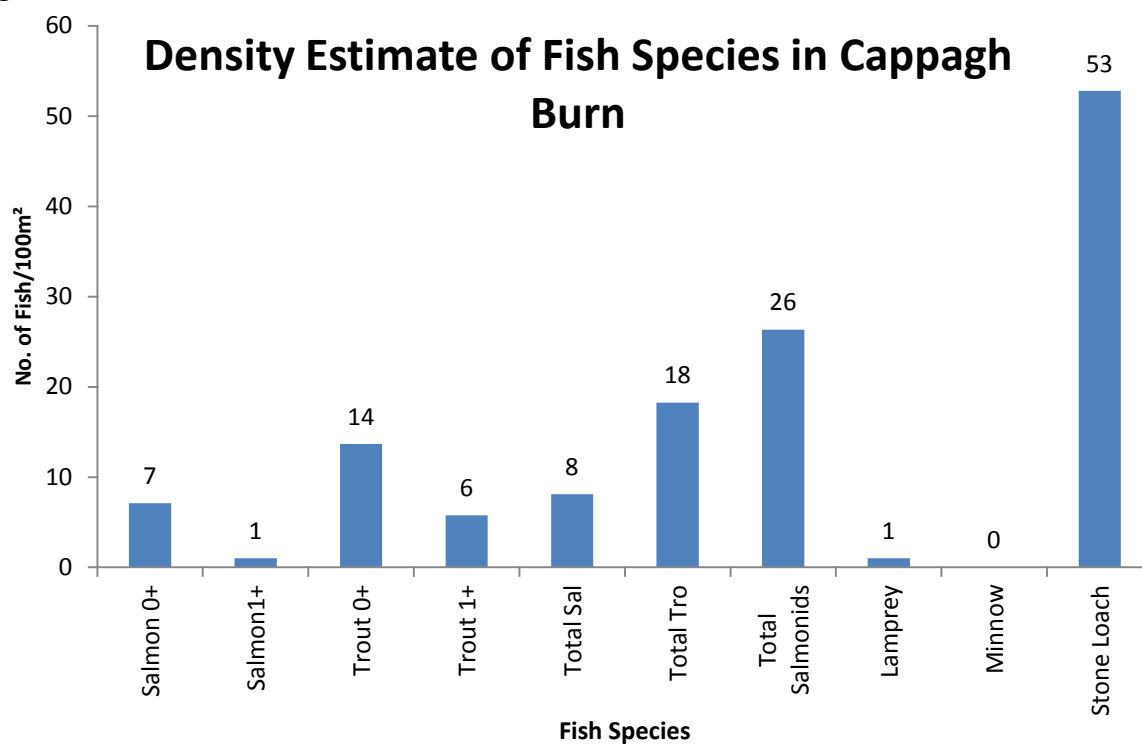


Fig 60. Density estimate/100m²

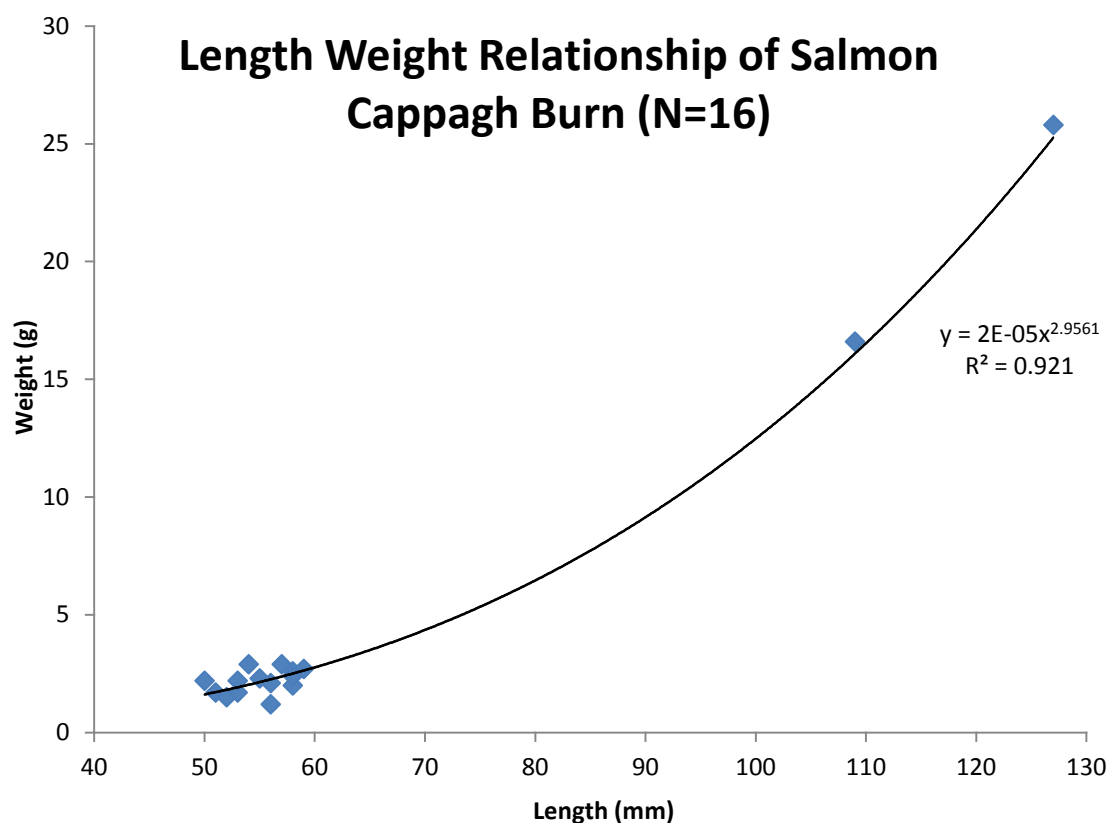


Fig 61. Length weight relationship of all juvenile Salmon caught

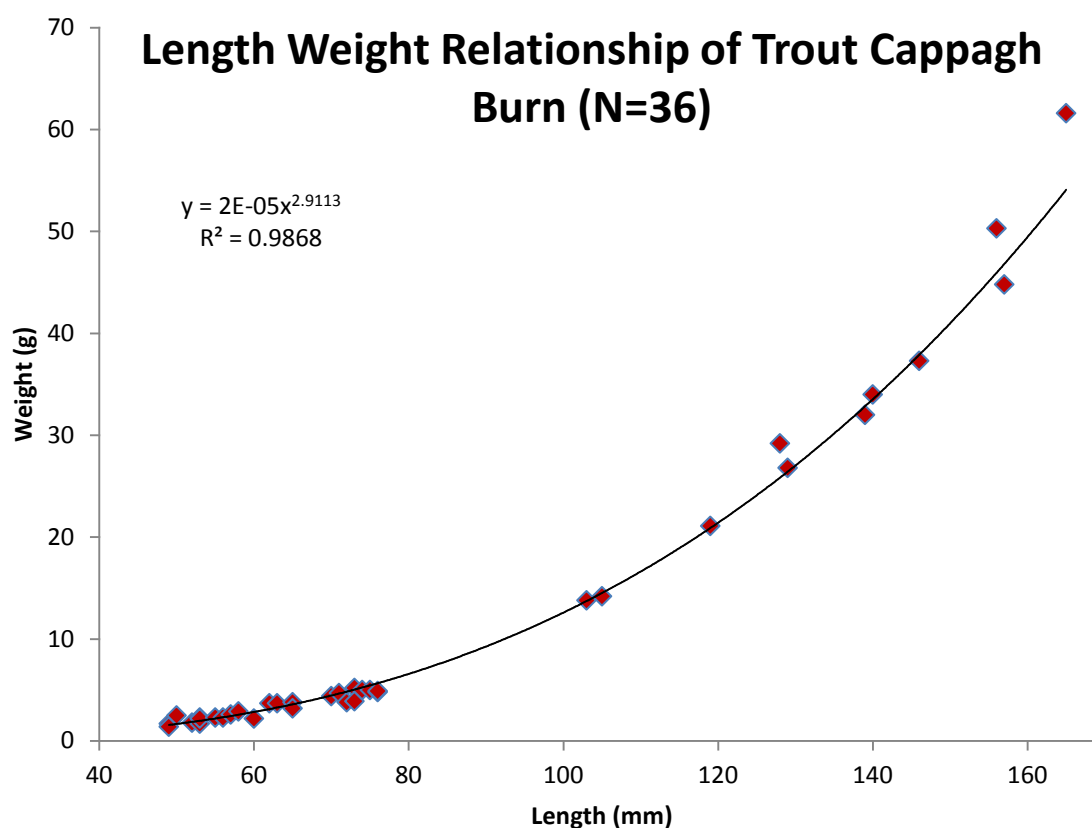


Fig 62. Length weight relationship of all trout caught

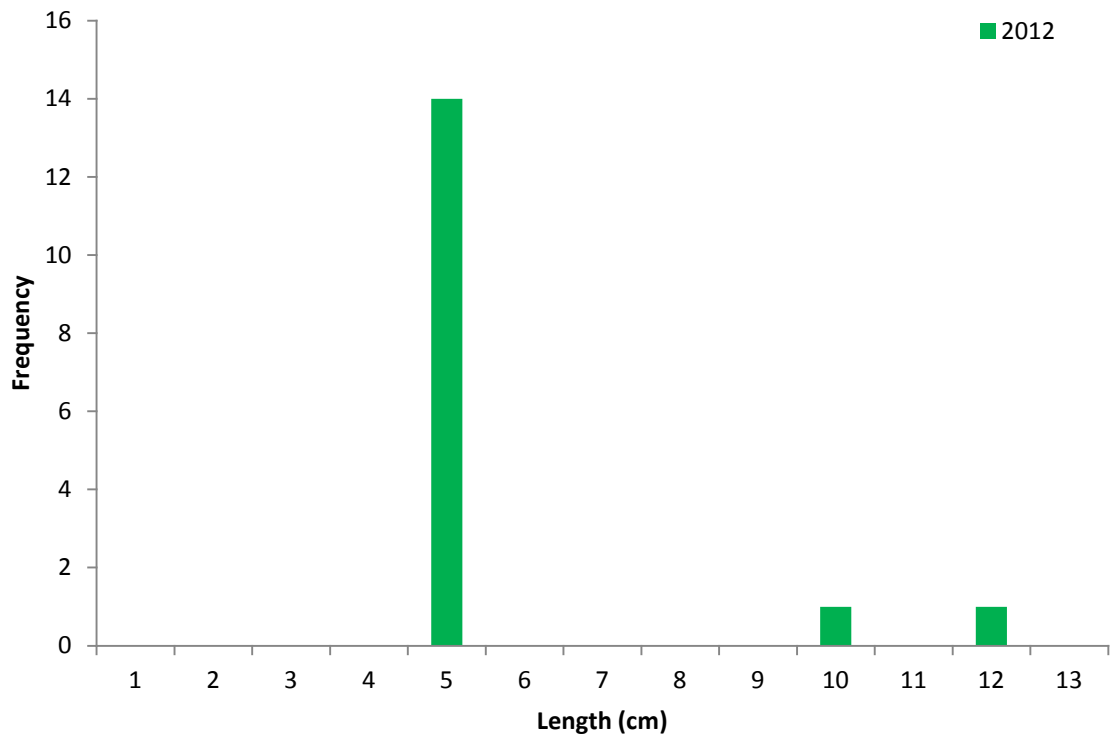


Fig 63. Length frequency distribution for all juvenile salmon caught

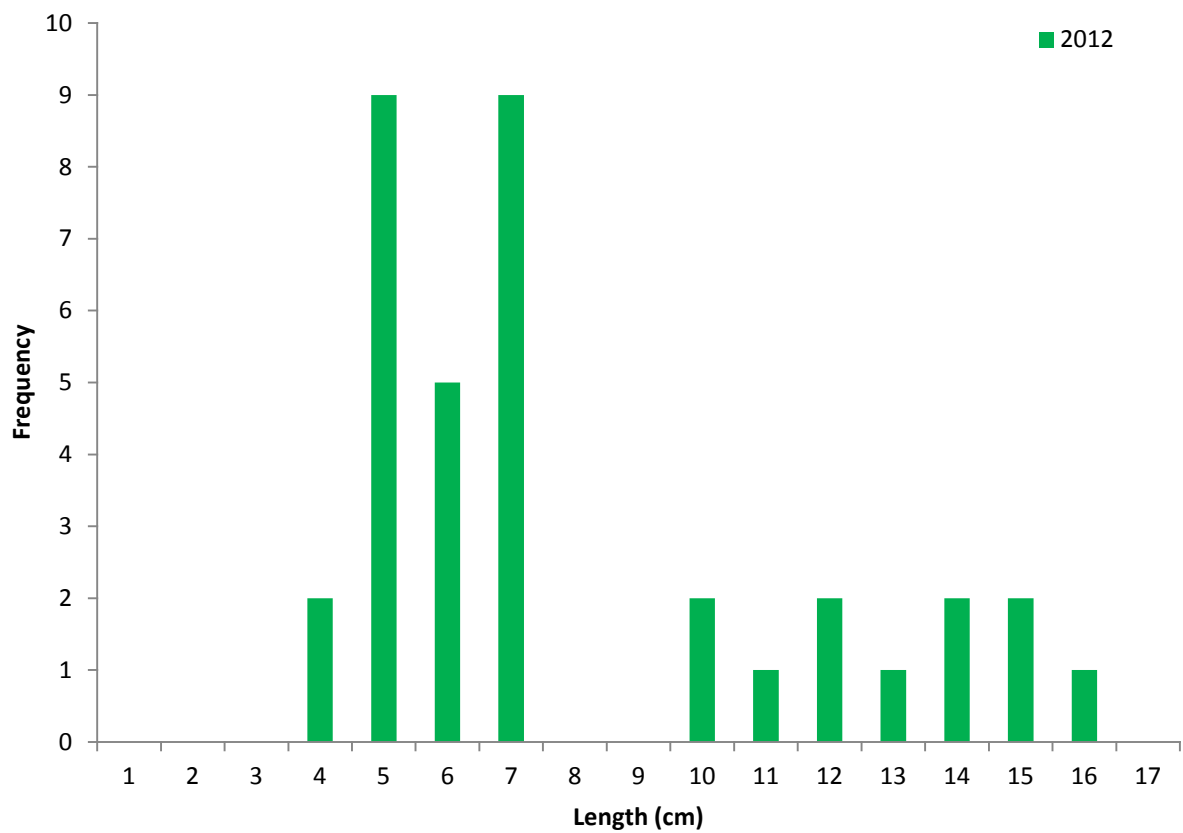


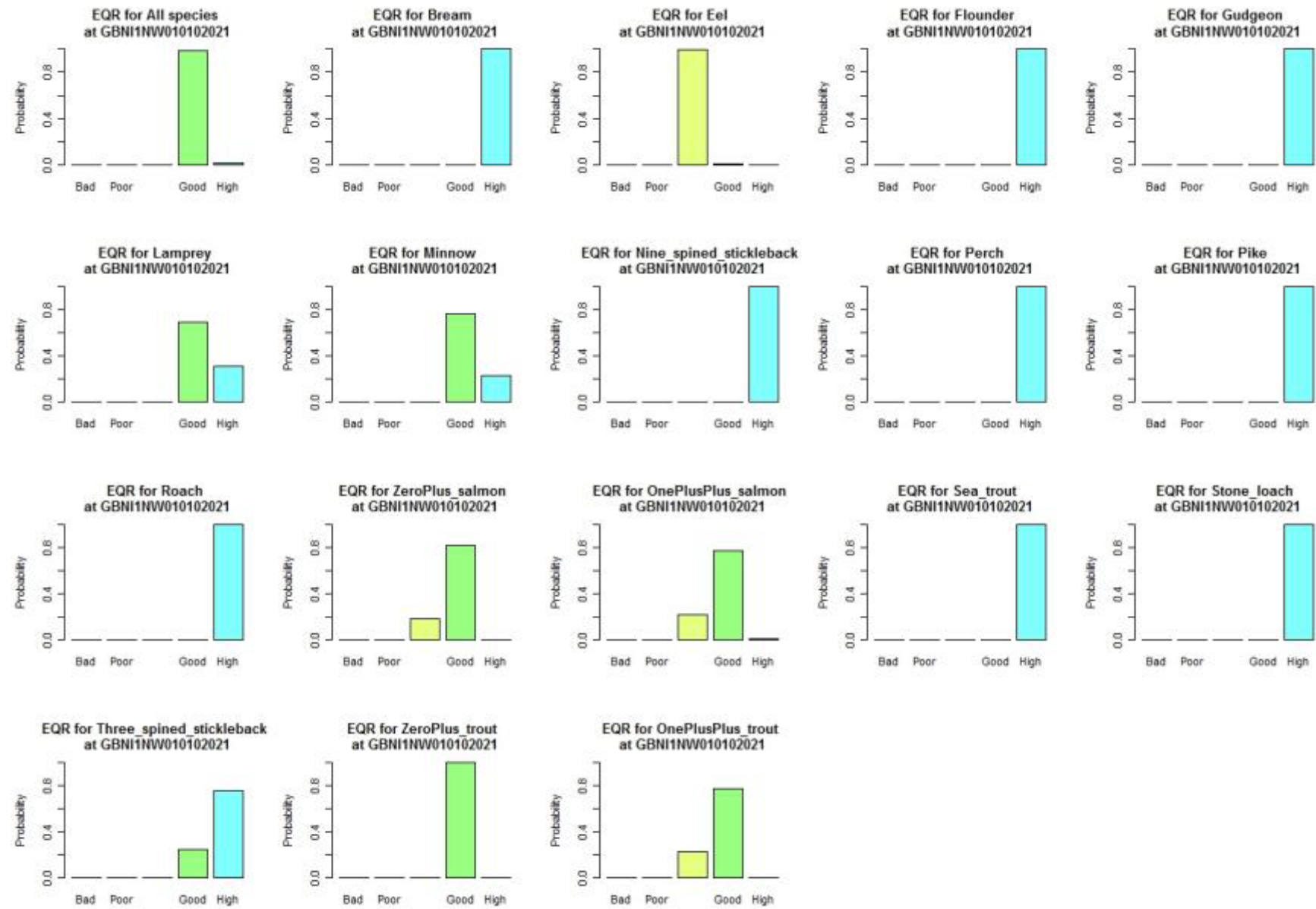
Fig 64. Length frequency distribution for all trout caught

This site is composed of grade 3 nursery habitat (75%), grade 3 spawning habitat (15%) and grade 4 holding habitat (10%). The site surveyed is slightly downstream of the site surveyed in 2009. There is trampling of the bank in places by livestock and no fencing. This water course experiences high energy floods which has caused erosion in places.



Programmes of measures could include stock proof fencing with gated access, tree coppicing and catchment scale initiatives to improve water quality and to ameliorate the impacts of flooding.





3.11 F10644
Kilbroney River at Newtown Br
Kilkeel and Mourne

Kilbroney River at Newtown Br
WFD Fish Classification 2012

GBNI1NB060604041

POOR

FISHING	Tro 0+	Tro 1+	Total
1st	2	9	11
2nd	1	5	6
3rd	0	0	0
TOTAL	3	14	17

Table 12. Removal sampling results



Fig 65. Site F10644

Site F10644 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 present.

Fish Species and Number Caught, Kilbroney River (F10644) 2012

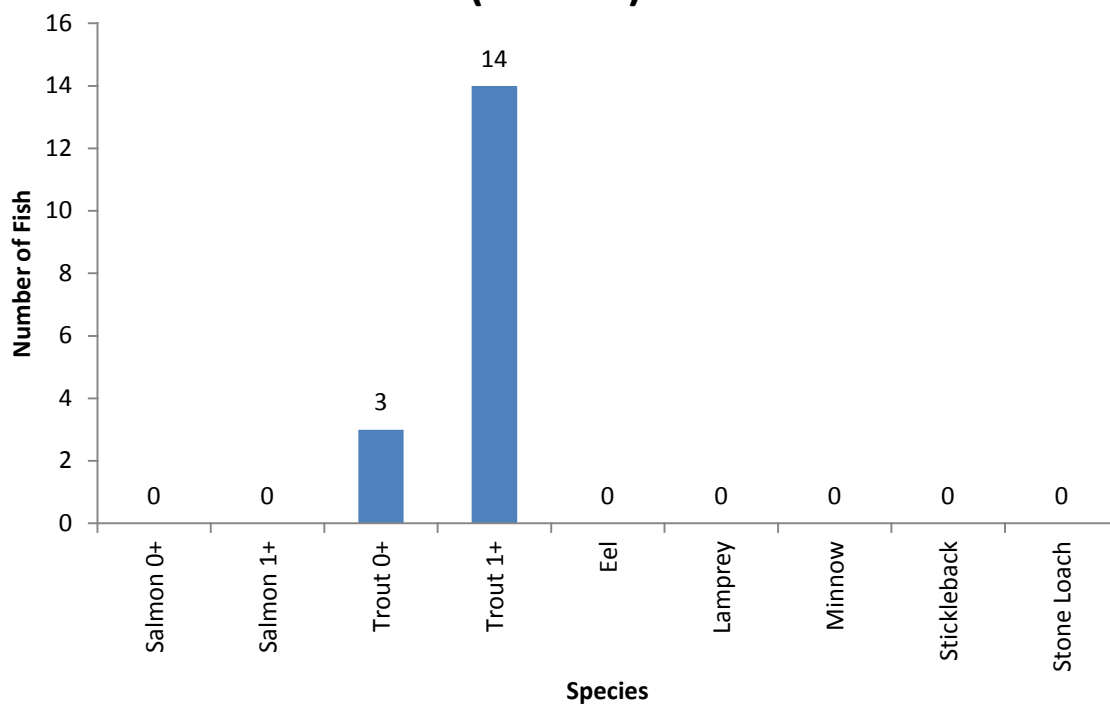


Fig 66. Total catch

Density Estimate of Fish Species

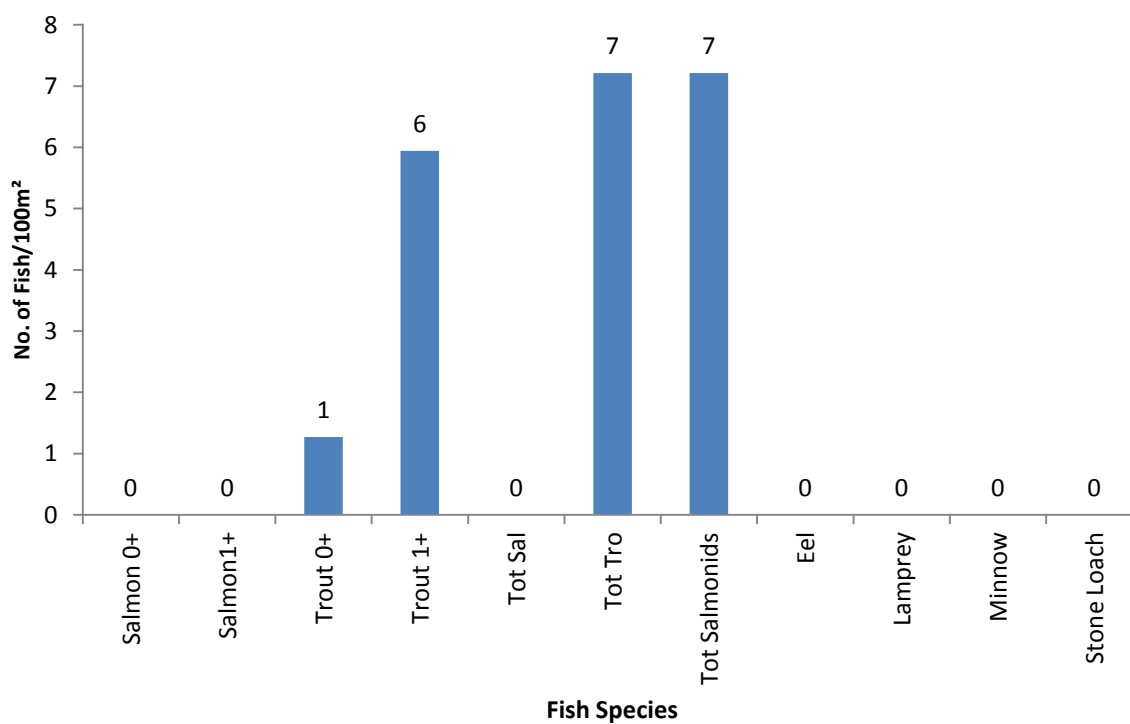


Fig 67. Density estimate/100m²

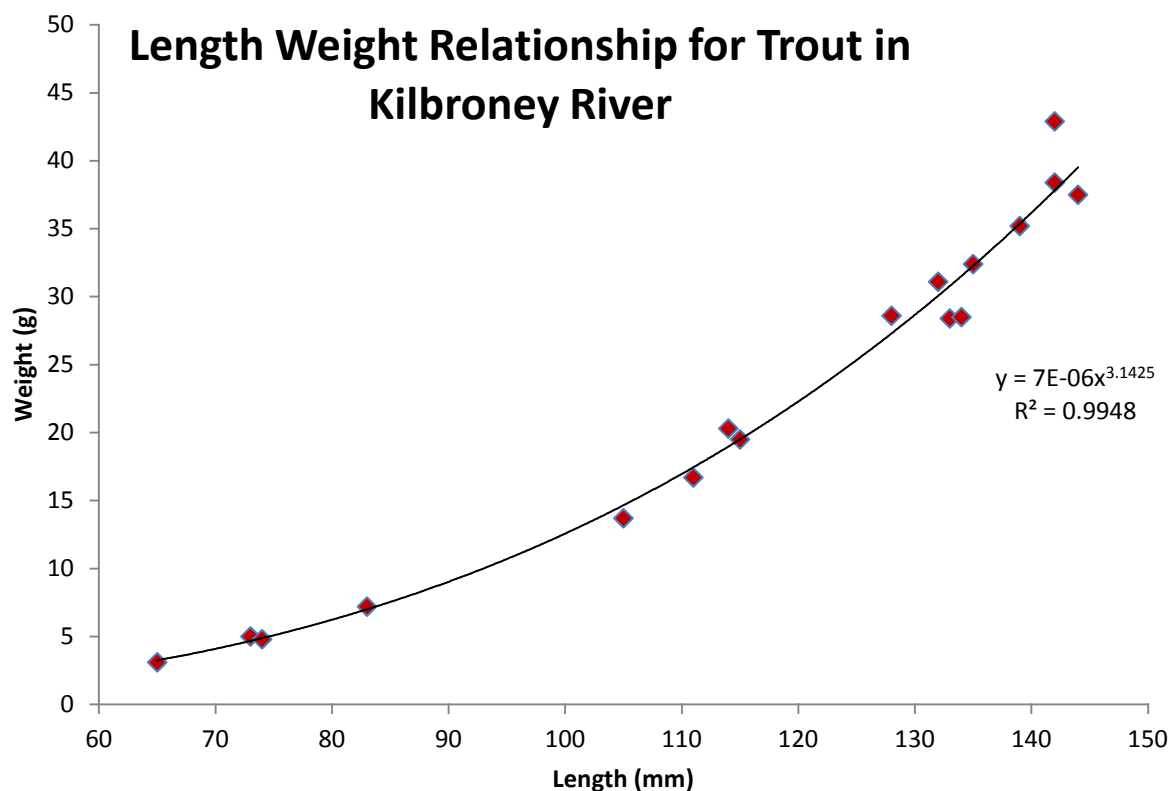


Fig 68. Length weight relationship of all Trout caught

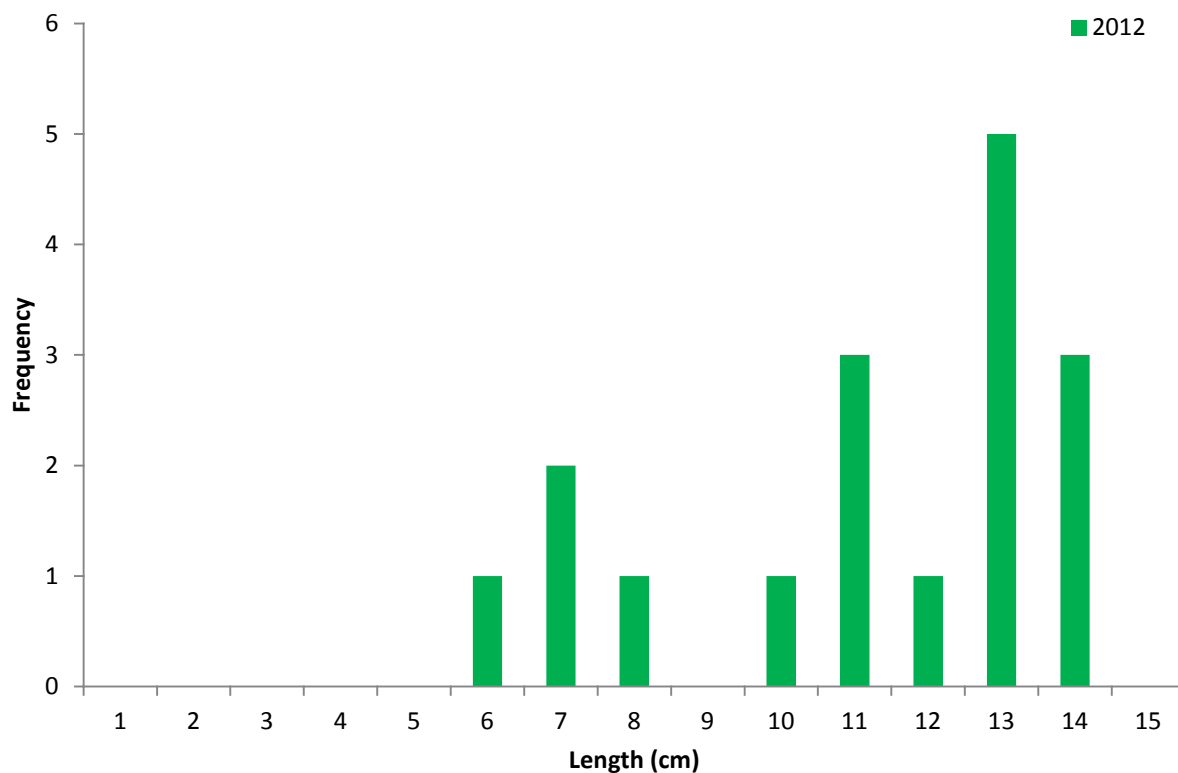


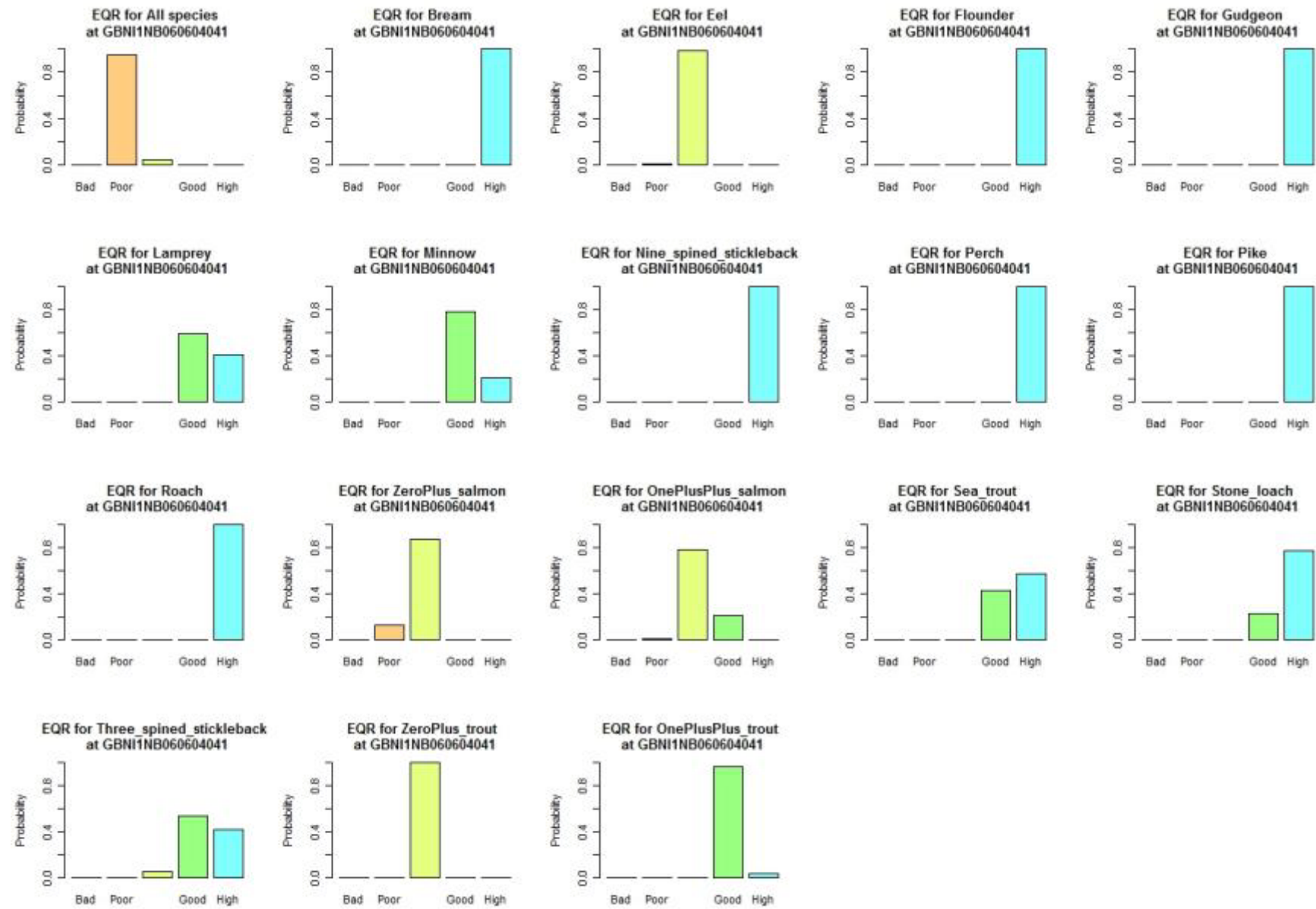
Fig 70. Length frequency distribution for all Trout caught

This site is composed of grade 3 nursery habitat (55%) and grade 3 holding habitat (45%). The site is located above the bridge and weir. Access to the bridge site is not possible. Rivers Agency bank protection works have impacted channel diversity. Fly tipping and tunnelling in places.



Possible programmes of measures could include reconnection of river with floodplain on right hand bank downstream of bridge. Tree coppicing. Community involvement and catchment scale initiatives to improve water quality.





4.0 OVERVIEW OF WFD FISH SURVEILLANCE RESULTS

The results for WFD river fish monitoring within the Loughs Agency areas from 2008-2012 are outlined in the table below. In 2012 a total of eleven WFD river fish surveillance monitoring stations were monitored, 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.

Site Code	Year Surveyed	1 st Catchment	Classification				
			2008	2009	2010	2011	2012
F10086	2008	Strule	Good				Good
F10089	2009	Strule		Mod			Good
F10076	2009	Owenkillew		Good			Mod
F10020	2009	Burndennet		Good			High
F10014	2009	Glenmornan		Mod			Good
F10626	2009	Newry		Mod			Good
F10644	2009	Killbroney		Mod			Poor
F10077	2009	Owenkillew		Good			Good
F10763	2009	Skeoge		Poor			Poor
F10022	2010	Burndennet			Good		
F10049	2010	Derg			Good		
F10079	2010	Glenelly			Good		
F10115	2010	Camowen			Good		
F10170	2010	Roe			Good		
F10111	2011	Camowen				Good	
F10045	2011	Derg				Good	
F10128	2011	Drumragh				Good	
F10101	2011	Fairywater				Good	
F10148	2011	Faughan				Good	
F10072	2011	Owenkillew				Good	

F10171	2011	Roe				Good	
F10025	2012	Finn					Mod
F11204	2012	Newry					Mod

Table 13. WFD fish surveillance stations surveyed by the Loughs Agency 2008-2012

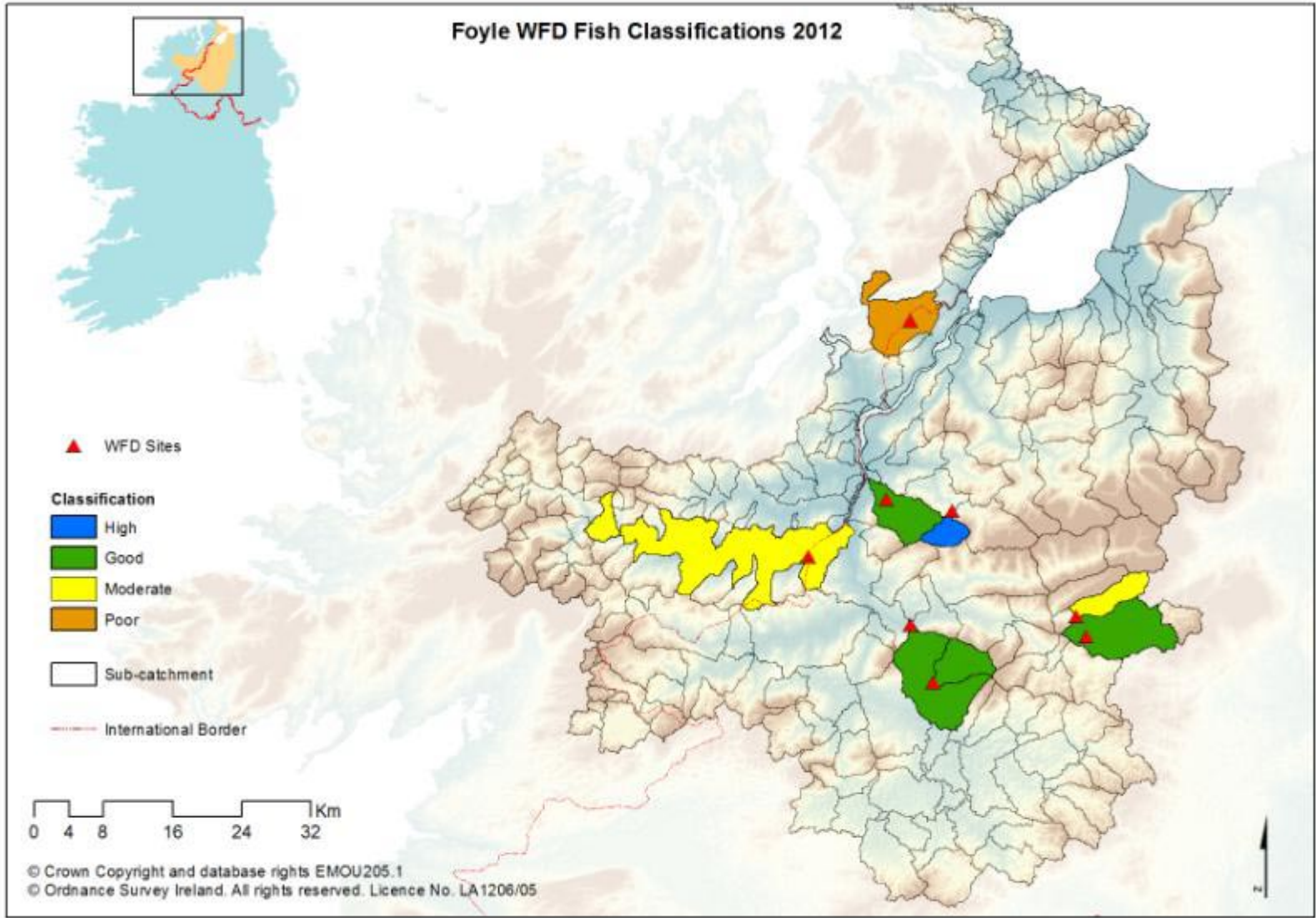


Fig 71. Loughs Agency WFD fish surveillance water body classifications 2012 Foyle area

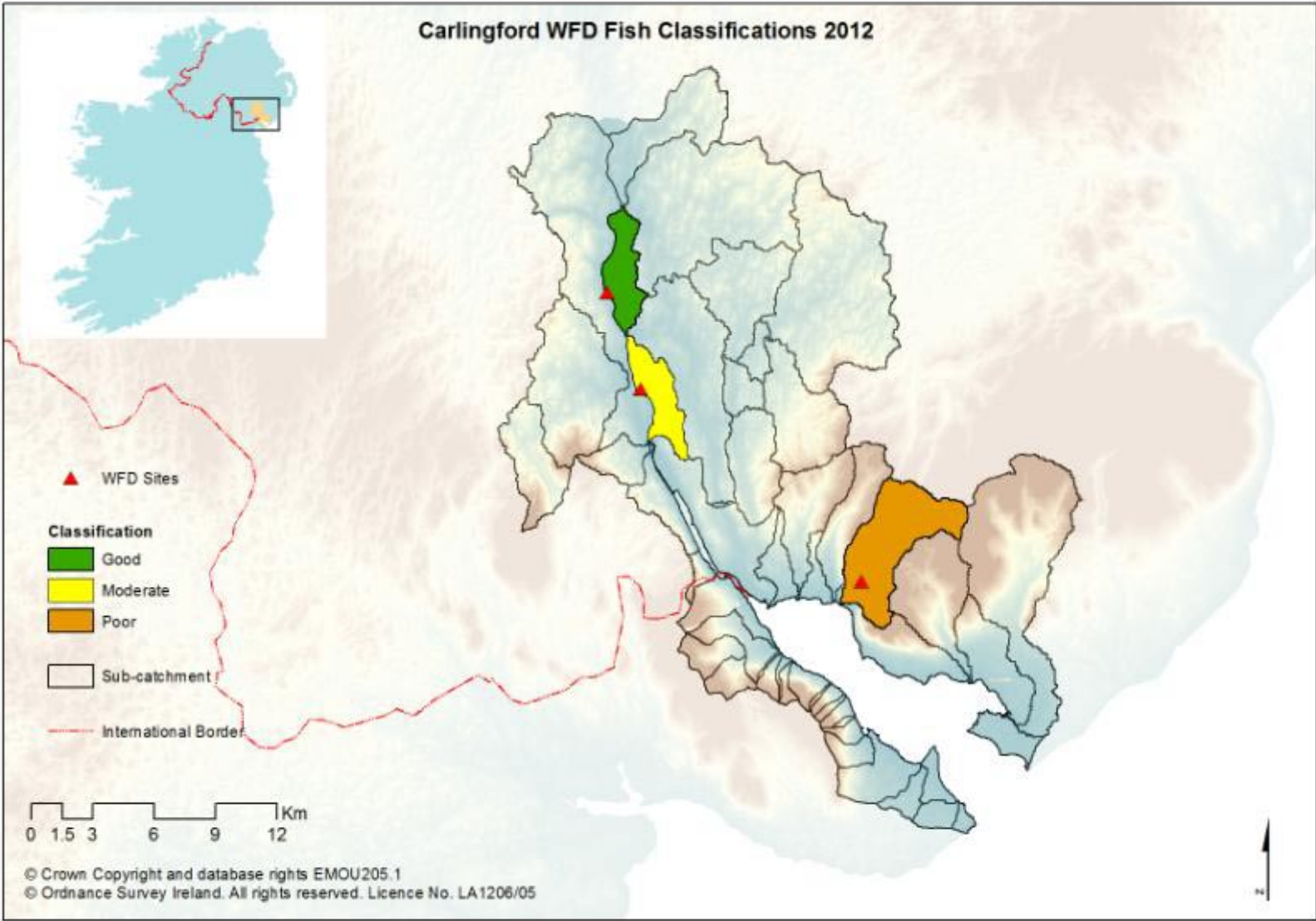


Fig 72. Loughs Agency WFD fish surveillance water body classifications 2012 Carlingford area

5.0 SEMI QUANTITATIVE/SALMON MANAGEMENT PLAN CLASSIFICATIONS

During 2012 the NI WFD Fish Group continued to develop and refine 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 would greatly facilitate the ability to highlight pressures within specific waterbodies and to 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 $\geq 66\%$ of sites agree
4. Classify as Good or better or as Poor or worse
5. Use the most recent years data

The maps below provide an overview of results for the application of this method within the Foyle and Carlingford areas in 2012. GIS shape files containing the raw data behind these maps including site id's has been provided to NIEA.

It should be noted that fewer than average sites were surveyed in 2012 using the semi quantitative/salmon management plan method due to prolonged high water during the 2012 survey season. A significant number of water bodies were classified.

For waterbodies that were classified using both methods one site in the Foyle area and one site in the Carlingford area were in disagreement. In all cases the FCS2 (Ireland) tool classified the waterbody one grade higher. This is deemed to be acceptable under a precautionary approach.

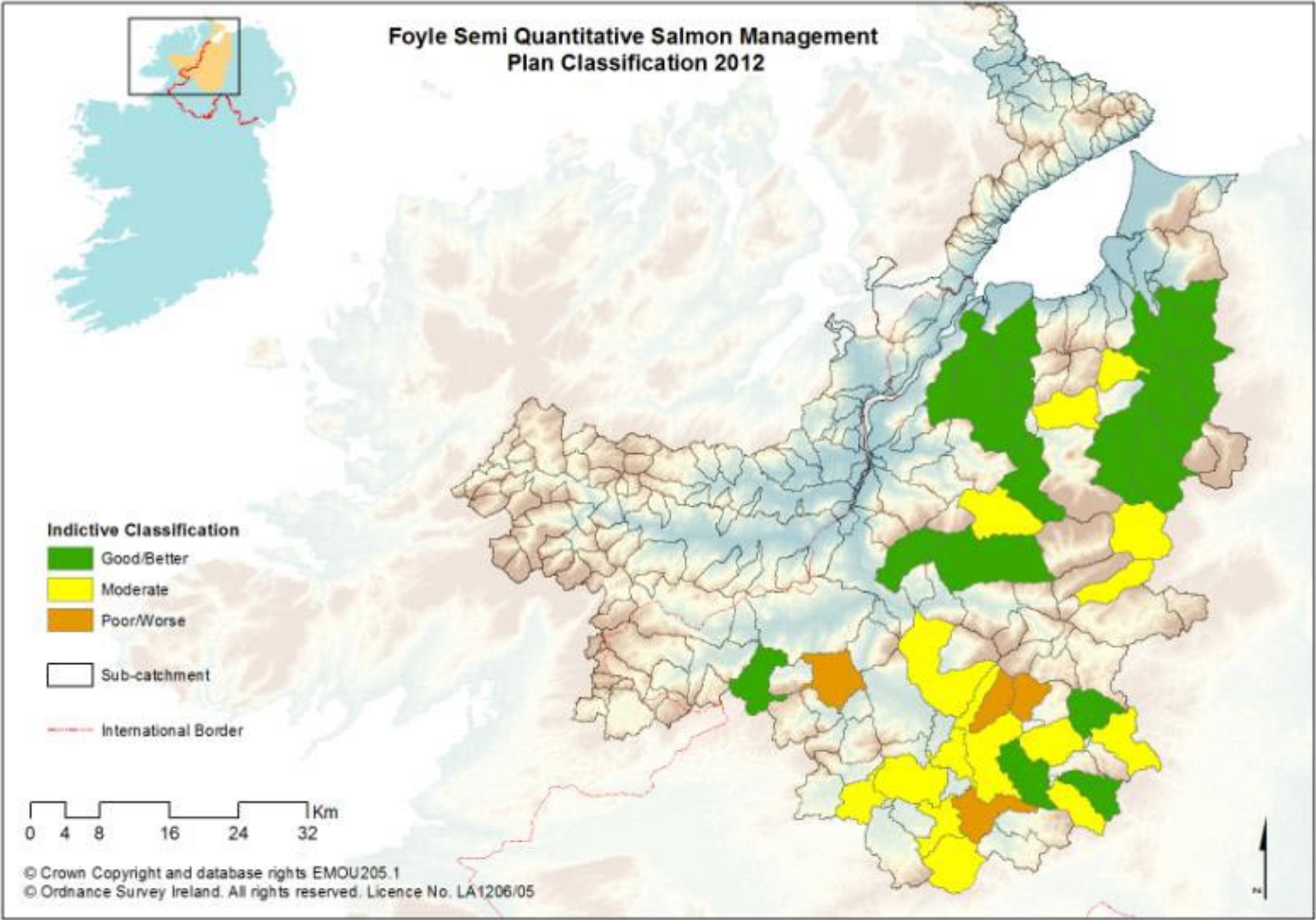


Fig 73. Foyle area Semi quantitative/salmon management plan derived indicative water body classifications 2012



Fig 74. Carlingford area Semi quantitative/salmon management plan derived indicative water body classifications 2012

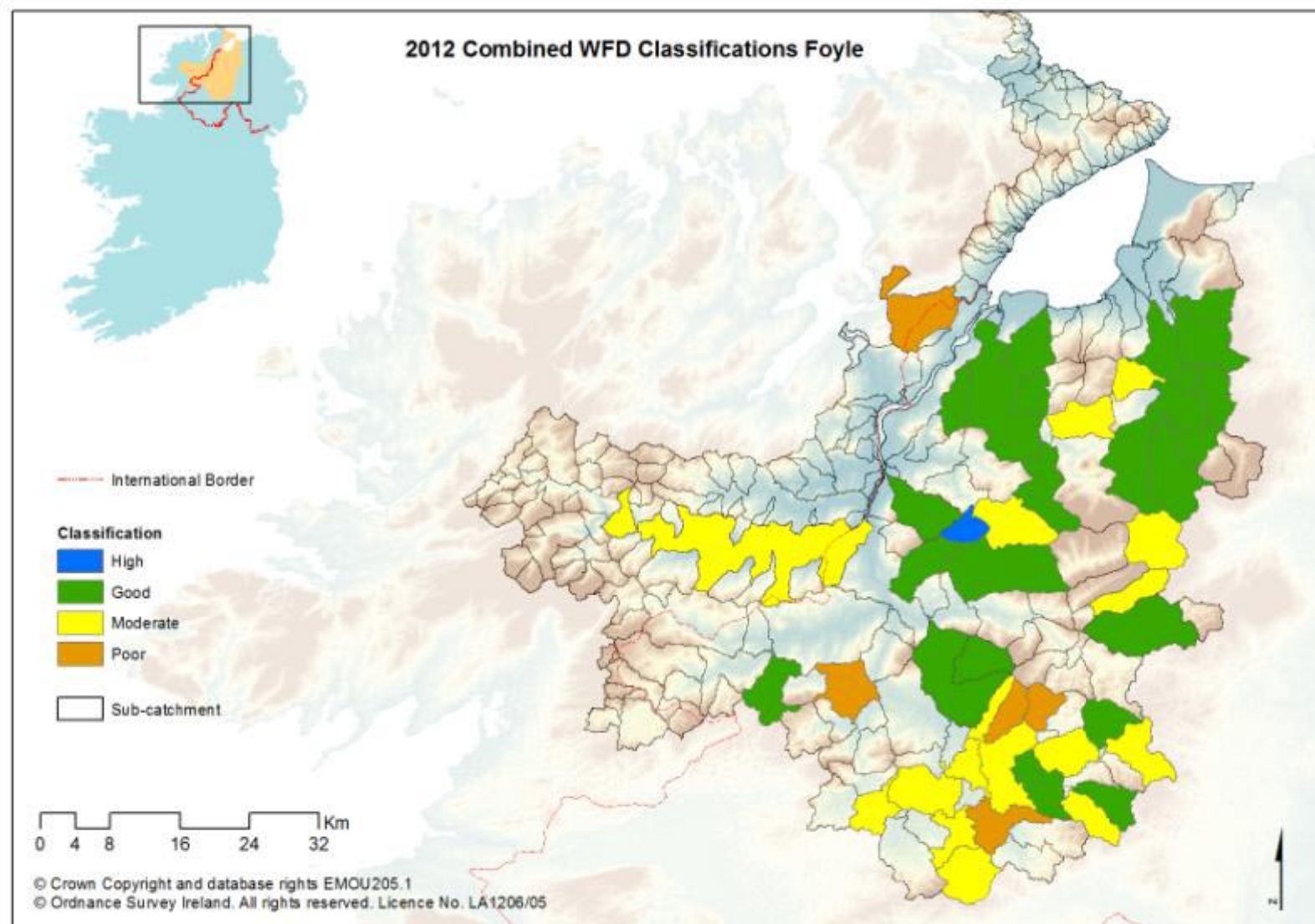


Fig 75. Foyle area combined WFD surveillance and semi quantitative/salmon management plan classifications 2012

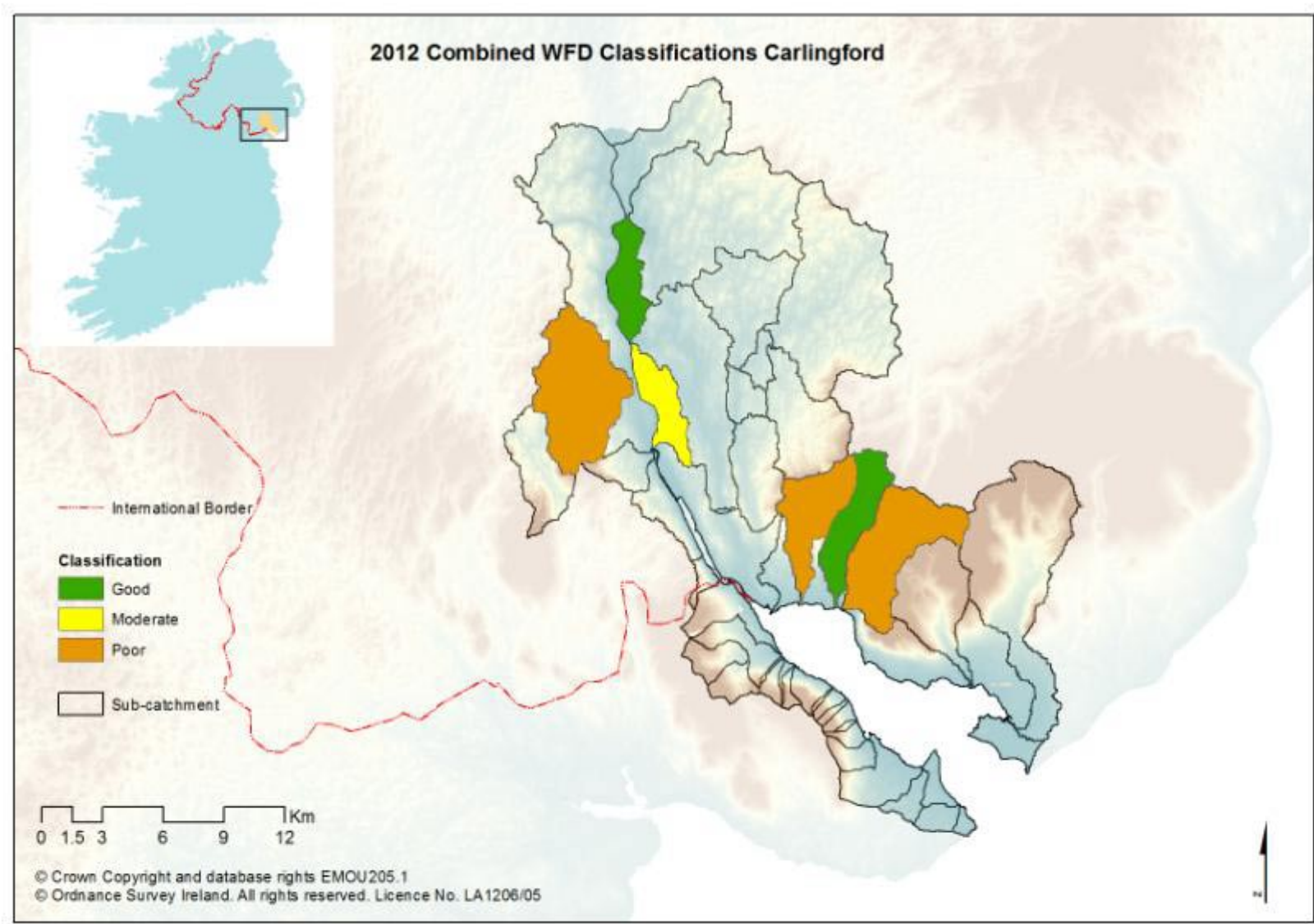


Fig 76. Carlingford area combined WFD surveillance and semi quantitative/salmon management plan classifications 2012

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 override 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 2012.

Site Id	Site Name	Professional Opinion Classification	FCS2 Classification
F10020	DUNNYBOE BURN AT DUNNYBOE BR	Good	High
F10763	SKEOGE RIVER AT ELAGH ROAD	Poor	Poor
F10025	FINN (FOYLE) R AT CLADY BR	Moderate	Moderate
F10014	GLENMORNAN R AT CATHERINES BR	Good	Good
F10626	JERRETTSPASS R AT JERRETTSPASS	Moderate	Good
F11204	NEWRY R AT DAMOLLY ROW	Moderate	Moderate
F10076	CONEYGLEN BURN AT CONEYGLEN BR	Good	Moderate
F10077	OWENKILLEW R AT MONANAMEAL BR	Good	Good
F10086	STRULE R AT MOYLE BR	Good	Good
F10089	CAPPAGH BURN AT TATTYNURE BR	Good	Good
F10644	KILBRONEY R AT NEWTOWN BR	Moderate	Poor

Table 14. WFD surveillance site classifications 2012. Comparison with professional opinion, FCS2 (Ireland) and professional opinion override.

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. Adoption of the FCS2 (Ireland) model marks an end to a very positive beginning for WFD compliant fish monitoring in the rivers of Northern Ireland.

A degree of flexibility will need to be maintained in collecting and analysing fisheries data which can be utilised for WFD classification purposes and to ensure future development of the model.

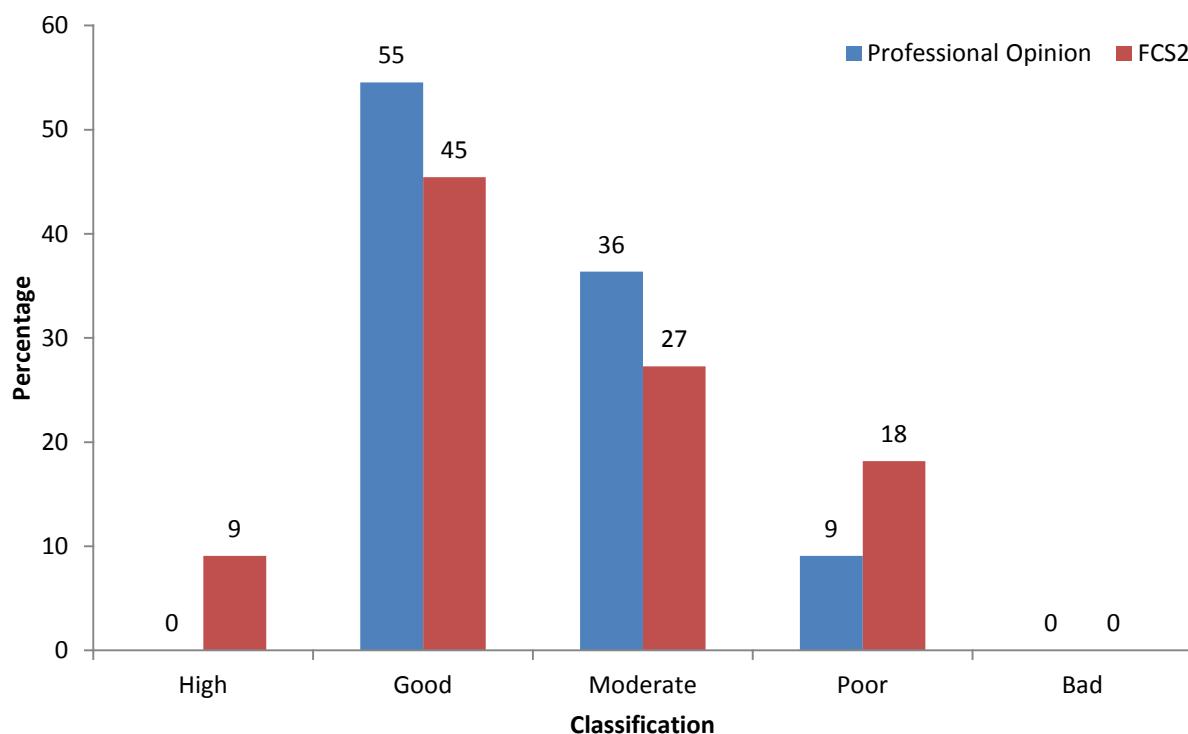


Fig 77. Percentage of water bodies in each class determined using professional opinion and FCS2 (Ireland) classification methods for the Foyle and Carlingford areas 2012.

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