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.
ACKNOWLEDGEMENTS

The Loughs Agency sponsoring departments, board and staff are gratefully acknowledged for the funding, support and assistance provided to conduct Water Framework Directive fish monitoring in the Foyle and Carlingford areas.

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

PROJECT STAFF 2012

Fisheries Biologist/Project Manager  Art Niven
GIS Officer  Rachel Scott
Assistant Scientific Officer  Mark McCauley
Assistant Scientific Officer  Simon Guist
Fisheries Intern  Luke Murphy
Fisheries Intern  Sylvain Poral

For further information contact art.niven@loughs-agency.org
# TABLE OF CONTENTS

1.0 INTRODUCTION .................................................................................................................10

2.0 BASIS FOR WATER FRAMEWORK DIRECTIVE FISH CLASSIFICATION........10

   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..................................................................................................................12

   Figure 1. WFD Fish surveillance river sites within the Foyle area, Northern Ireland and Ireland..................................................................................................................13

   Fig 2. WFD fish surveillance river sites within the Carlingford area, Northern Ireland. There are no sites within Ireland in the Carlingford area...........................................................................................................................14

3.0 CLASSIFICATIONS ...............................................................................................................15

   3.1 F10020 Dunnyboe Burn at Dunnyboe Bridge GBNI1NW010101072 Burndenett WFD Fish Classification 2012.................................................................15

       Table 2. Removal sampling results .............................................................................15

       Fig 3. Site F10020 .................................................................................................15

       Fig 5. Density/100m² ............................................................................................16

       Fig 6. Length weight relationship of all salmon .................................................17

       Fig 7. Length weight relationship of all trout caught ......................................17

       Fig 8. Length frequency distribution for all juvenile salmon caught (this can be used to assess the presence of different age classes/cohorts)......18

       Fig 9. Length frequency distribution for all trout caught. .................................18

   3.2 F10763 Skeoge River at Elagh Road GBNI1NW393901002 Burnfoot WFD Fish Classification 2012.................................................................22

       Table 3. Removal sampling results ........................................................................22

       Fig 10. Site F10763 .............................................................................................22

       Fig 11. Total catch ...............................................................................................23

       Fig 12. Density/100m² ........................................................................................23
Fig 13. Length weight relationship of all juvenile trout caught ..................24
Fig. 14. Length frequency distribution for all trout caught .......................24

3.3 F10025 River Finn (Foyle) at Clady Bridge GBN1NW010103063 Finn WFD Fish Classification 2012 .................................................................28
Table 4. Sampling results ........................................................................28
Fig 15. Site F10025 ...............................................................................28
Fig 16. Total catch ..................................................................................29
Fig 17. Length weight relationship of all Trout ......................................30
Fig 18. Length weight relationship of all Roach ......................................30
Fig 19. Length weight relationship of all Eels ........................................31
Fig 20. Length weight relationship of all Flounder ...............................31
Fig 21. Length frequency distribution for all Trout caught (this can be used to assess the presence of different age classes/cohorts). .............32
Fig 22. Length frequency distribution for all Roach. .............................32
Fig 23. Length frequency distribution for all Flounder ...........................33
Fig 24. Length frequency distribution for all Eels .................................33

3.4 F10014 Glenmornan River GBN1NW010101075 Foyle (with Deele) WFD Fish Classification 2012 .................................................................37
Table 5. Removal sampling results ..........................................................37
Fig 25. Site F10014 ...............................................................................37
Fig 26. Total catch ..................................................................................38
Fig 27. Density/100m² .........................................................................38
Fig 28. Length weight relationship of all trout caught ............................39
Fig 29. Length frequency distribution for all trout caught .....................39

3.5 F10626 Jerrettspass R (Jerrettspass) GBN1NB060604047 Newry WFD Fish Classification 2012 .................................................................43
Table 6. Removal sampling results ..........................................................43
Fig 30. Site F10626 ...............................................................................43
Fig 31. Total catch ..................................................................................44
Fig 32. Density/100m² ................................................................. 44
Fig 33. Length weight relationship of all trout caught ..................... 45
Fig. 34. Length frequency distribution for all trout caught .............. 45

3.6 F11204 Newry River at Damolly Row  GBNI1NB060604046 Newry
WFD Fish Classification 2012 .................................................... 49
Table 7. Removal sampling results ............................................. 49
Fig 35. Site F11204 ................................................................ 49
Fig 36. Total catch .................................................................. 50
Fig 37. Density estimate/100m² ................................................. 50
Fig 38. Length weight relationship of all Trout caught .................. 51
Fig 39. Length weight relationship of all Eels caught ................. 51
Fig 40. Length weight relationship of all lamprey caught .......... 52
Fig 41. Length frequency distribution of all trout caught .......... 52

3.7 F10076 Coneyglen Burn at Coneyglen Br  GBNI1NW010102085
Owenkillew WFD Fish Classification 2012 ................................ 56
Table 8. Removal sampling results ............................................. 56
Fig 42. Site F10076 ................................................................ 56
Fig 43. Total catch .................................................................. 57
Fig 44. Density estimate/100m² ................................................. 57
Fig 45. Length weight relationship of all juvenile Salmon caught .... 58
Fig 46. Length frequency distribution for all salmon caught ....... 58

3.8 F10077 Owenkillew R at Monanameal Br  GBNI1NW010102086
Owenkillew WFD Fish Classification 2012 ................................ 62
Table 9. Removal sampling results ............................................. 62
Fig 47. Site F10077 ................................................................ 62
Fig 48. Total catch .................................................................. 63
Fig 49. Density estimate/100m² ................................................. 63
Fig 50. Length weight relationship of all Salmon caught .......... 64
Fig 51. Length frequency distribution of all Salmon caught ....... 64
3.9 F10086 Strule R at Moyle Br  GBNI1NW010102020 Strule  WFD Fish Classification 2012 .................................................................68
   Table 10. Sampling results .................................................................68
   Fig 52. Site F10086 ..............................................................................68
   Fig 53. Total catch ................................................................................69
   Fig 54. Length weight relationship of all juvenile Salmon ..................70
   Fig 55. Length weight relationship of all Trout .................................70
   Fig 56. Length frequency distribution of all juvenile Salmon ..........71
   Fig 57. Length frequency distribution of all Trout ..............................71
3.10 F10089 Cappagh Burn at Tattynure Br  GBNI1NW010102021 Strule  WFD Fish Classification 2012 .......................................................75
   Table 11. Removal sampling results .................................................75
   Fig 58. Site F10089 ..............................................................................75
   Fig 59. Total catch ................................................................................76
   Fig 60. Density estimate/100m² ............................................................76
   Fig 61. Length weight relationship of all juvenile Salmon caught ....77
   Fig 62. Length weight relationship of all trout caught .......................77
   Fig 63. Length frequency distribution for all juvenile salmon caught ..78
   Fig 64. Length frequency distribution for all trout caught .................78
3.11 F10644 Kilbroney River at Newtown Br  GBNI1NB060604041 Kilkeel  and Mourne  WFD Fish Classification 2012 ..................................................82
   Table 12. Removal sampling results .................................................82
   Fig 65. Site F10644 ..............................................................................82
   Fig 66. Total catch ................................................................................83
   Fig 67. Density estimate/100m² ............................................................83
   Fig 68. Length weight relationship of all Trout caught .......................84
   Fig 70. Length frequency distribution for all Trout caught .................84
4.0 OVERVIEW OF WFD FISH SURVEILLANCE RESULTS ......................88
Table 13. WFD fish surveillance stations surveyed by the Loughs Agency 2008-2012 .................................................................89

Fig 71. Loughs Agency WFD fish surveillance water body classifications 2012 Foyle area.................................................................90

Fig 72. Loughs Agency WFD fish surveillance water body classifications 2012 Carlingford area .................................................................91

5.0 SEMI QUANTITATIVE/SALMON MANAGEMENT PLAN CLASSIFICATIONS 92

Fig 73. Foyle area Semi quantitative/salmon management plan derived indicative water body classifications 2012 ........................................93

Fig 74. Carlingford area Semi quantitative/salmon management plan derived indicative water body classifications 2012 .........................94

Fig 75. Foyle area combined WFD surveillance and semi quantitative/salmon management plan classifications 2012 .......................95

Fig 76. Carlingford area combined WFD surveillance and semi quantitative/salmon management plan classifications 2012.................96

6.0 CONCLUSION .................................................................................................................................97

Table 14. WFD surveillance site classifications 2012. Comparison with professional opinion, FCS2 (Ireland) and professional opinion over ride. 97

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.................................................................98
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

<table>
<thead>
<tr>
<th>Grade</th>
<th>Characteristics</th>
</tr>
</thead>
</table>
| 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

<table>
<thead>
<tr>
<th>Grade 1</th>
<th>Characteristics</th>
</tr>
</thead>
</table>
|         | • 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

<table>
<thead>
<tr>
<th>Grade 1</th>
<th>Characteristics</th>
</tr>
</thead>
</table>
|         | • 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
Burndenett WFD Fish Classification 2012

<table>
<thead>
<tr>
<th>FISHING</th>
<th>Salmon 0+</th>
<th>Salmon 1+</th>
<th>Trout 0+</th>
<th>Trout 1+</th>
<th>Eel</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>9</td>
<td>14</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>2nd</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>3rd</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>TOTAL</td>
<td>13</td>
<td>18</td>
<td>3</td>
<td>8</td>
<td>3</td>
<td>45</td>
</tr>
</tbody>
</table>

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**

![Bar chart showing the number of different fish species caught in Dunnyboe Burn in 2012.](chart1.png)

**Fig 4. Total catch**

**Density Estimate of Fish Species**

![Bar chart showing the density estimate of different fish species in Dunnyboe Burn in 2012.](chart2.png)

**Fig 5. Density/100m²**
Fig 6. Length weight relationship of all salmon

\[ y = 2E^{-05}x^{2.8488} \]

\[ R^2 = 0.9734 \]

Fig 7. Length weight relationship of all trout caught

\[ y = 1E^{-05}x^{2.9477} \]

\[ R^2 = 0.9963 \]
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.
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 disconnected 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

MODERATE

<table>
<thead>
<tr>
<th>METHOD</th>
<th>Sal 1+</th>
<th>Tro 1+</th>
<th>Eel</th>
<th>Minn</th>
<th>Flounder</th>
<th>SB</th>
<th>Roach</th>
<th>Gudgeon</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seine Net</td>
<td>1</td>
<td>13</td>
<td>0</td>
<td>9</td>
<td>12</td>
<td>1</td>
<td>24</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>1st Fyke</td>
<td>0</td>
<td>4</td>
<td>9</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>2nd Fyke</td>
<td>0</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>1</td>
<td>21</td>
<td>13</td>
<td>9</td>
<td>13</td>
<td>1</td>
<td>26</td>
<td>1</td>
<td>85</td>
</tr>
</tbody>
</table>

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.

**Fish Species and Number Caught, Finn F10025 (2012)**

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmon 0+</td>
<td>0</td>
</tr>
<tr>
<td>Salmon 1+</td>
<td>1</td>
</tr>
<tr>
<td>Trout 0+</td>
<td>0</td>
</tr>
<tr>
<td>Trout 1+</td>
<td>21</td>
</tr>
<tr>
<td>Eel</td>
<td>13</td>
</tr>
<tr>
<td>Minnow</td>
<td>9</td>
</tr>
<tr>
<td>Flounder</td>
<td>13</td>
</tr>
<tr>
<td>Stickleback</td>
<td>1</td>
</tr>
<tr>
<td>Roach</td>
<td>26</td>
</tr>
<tr>
<td>Gudgeon</td>
<td>1</td>
</tr>
</tbody>
</table>

Fig 16. Total catch
Fig 17. Length weight relationship of all Trout

Length Weight Relationship of Trout River Finn
F10025 (2012) n = 21

\[ y = 4E-05x^{2.7585} \]
\[ R^2 = 0.9653 \]

Fig 18. Length weight relationship of all Roach

Length Weight Relationship of Roach, Finn
F10025 (2012) n = 26

\[ y = 8E-05x^{2.6712} \]
\[ R^2 = 0.9001 \]
Fig 19. Length weight relationship of all Eels

Length Weight Relationship of Eels, Finn F10025 (2012) n = 13

\[ y = 3E^{-0.07}x^{3.2866} \]

\[ R^2 = 0.8122 \]

Fig 20. Length weight relationship of all Flounder

Length Weight Relationship of Flounder, Finn F10025 (2012) N = 12

\[ y = 5E^{-0.05}x^{2.744} \]

\[ R^2 = 0.9802 \]
Fig 21. Length frequency distribution for all Trout caught (this can be used to assess the presence of different age classes/cohorts).

Fig 22. 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 GBN1NW010101075
Foyle (with Deele) WFD Fish Classification 2012

GOOD

<table>
<thead>
<tr>
<th>FISHING</th>
<th>Trout 0+</th>
<th>Trout 1+</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>21</td>
<td>15</td>
<td>36</td>
</tr>
<tr>
<td>2nd</td>
<td>7</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>3rd</td>
<td>6</td>
<td>2</td>
<td>8</td>
</tr>
<tr>
<td>4th</td>
<td>5</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>5th</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>42</strong></td>
<td><strong>18</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

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

Fish Species and Number Caught, Glenmornan (F10014) 2012

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 Jerrettspass R (Jerrettspass) Newry WFD Fish Classification 2012

<table>
<thead>
<tr>
<th>FISHING</th>
<th>Trout 0+</th>
<th>Trout 1+</th>
<th>Eels</th>
<th>SB</th>
<th>SL</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>3</td>
<td>13</td>
<td>2</td>
<td>4</td>
<td>13</td>
<td>35</td>
</tr>
<tr>
<td>2nd</td>
<td>4</td>
<td>4</td>
<td>0</td>
<td>6</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>3rd</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>TOTAL</td>
<td>11</td>
<td>17</td>
<td>7</td>
<td>6</td>
<td>22</td>
<td>63</td>
</tr>
</tbody>
</table>

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

Fish Species and Number Caught, Newry River (F10626) 2012

Density Estimate of Fish Species

Fig 32. Density/100m²
Fig 33. Length weight relationship of all trout caught

\[ y = 1 \times 10^{-0.04}x^{2.5537} \]

\[ R^2 = 0.928 \]

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.
Table 7. Removal sampling results

<table>
<thead>
<tr>
<th>FISHING</th>
<th>Tro 0+</th>
<th>Tro 1+</th>
<th>Eel</th>
<th>Lamp</th>
<th>SB</th>
<th>Minn</th>
<th>SL</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>1</td>
<td>14</td>
<td>12</td>
<td>47</td>
</tr>
<tr>
<td>TOTAL</td>
<td>0</td>
<td>7</td>
<td>5</td>
<td>8</td>
<td>1</td>
<td>14</td>
<td>12</td>
<td>47</td>
</tr>
</tbody>
</table>

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

**Fish Species and Number Caught, Newry River (F11204) 2012**

![Bar chart showing fish species and number caught](chart1)

- **Salmon 0+**
- **Salmon 1+**
- **Trout 0+**
- **Trout 1+**
- **Eel**
- **Lamprey**
- **Minnow**
- **Stickleback**
- **Stone Loach**

Fig 37. Density estimate/100m²

**Density Estimate of Fish Species**

![Bar chart showing density estimate of fish species](chart2)

- **Salmon 0+**
- **Salmon 1+**
- **Trout 0+**
- **Trout 1+**
- **Lamprey**
- **Minnow**
- **Stone Loach**

- **Density Estimate**: Minnow - 3.51, Stone Loach - 3.01
Fig 38. Length weight relationship of all Trout caught

\[ y = 2E^{-0.05x^{2.9355}} \]
\[ R^2 = 0.9993 \]

Fig 39. Length weight relationship of all Eels caught

\[ y = 5E^{-0.07x^{2.2313}} \]
\[ R^2 = 0.9948 \]
Fig 40. Length weight relationship of all lamprey caught

\[ y = 2 \times 10^{-7}x^{3.4265} \]

\[ R^2 = 0.9777 \]

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  
GBN1NW010102085

**WFD Fish Classification 2012**

<table>
<thead>
<tr>
<th>FISHING</th>
<th>Sal 0+</th>
<th>Sal 1+</th>
<th>Tro 0+</th>
<th>Eel</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>22</td>
<td>17</td>
<td>1</td>
<td>2</td>
<td>42</td>
</tr>
<tr>
<td>2nd</td>
<td>5</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>3rd</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>29</strong></td>
<td><strong>24</strong></td>
<td><strong>1</strong></td>
<td><strong>2</strong></td>
<td><strong>56</strong></td>
</tr>
</tbody>
</table>

Table 8. Removal sampling results

![Site F10076](image)

**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.
Fish Species and Number Caught, Owenkillew (F10076) 2012

Fig 43. Total catch

Density Estimate of Fish Species Owenkillew River

Fig 44. Density estimate/100m²
Fig 45. Length weight relationship of all juvenile Salmon caught

\[ y = 9 \times 10^{-0.6}x^{3.064} \]

\[ R^2 = 0.9634 \]

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.
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.
### Fish Species and Number Caught, Owenkillew (F10077) 2012

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmon 0+</td>
<td>138</td>
</tr>
<tr>
<td>Salmon 1+</td>
<td>30</td>
</tr>
<tr>
<td>Trout 0+</td>
<td>0</td>
</tr>
<tr>
<td>Trout 1+</td>
<td>2</td>
</tr>
<tr>
<td>Eel</td>
<td>1</td>
</tr>
<tr>
<td>Lamprey</td>
<td>0</td>
</tr>
<tr>
<td>Minnow</td>
<td>0</td>
</tr>
<tr>
<td>Stickleback</td>
<td>0</td>
</tr>
<tr>
<td>Stone Loach</td>
<td>0</td>
</tr>
</tbody>
</table>

**Fig 48. Total catch**

### Density Estimate of Fish Species

<table>
<thead>
<tr>
<th>Species</th>
<th>No. of Fish/100m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmon 0+</td>
<td>51</td>
</tr>
<tr>
<td>Salmon 1+</td>
<td>11</td>
</tr>
<tr>
<td>Trout 0+</td>
<td>0</td>
</tr>
<tr>
<td>Trout 1+</td>
<td>1</td>
</tr>
<tr>
<td>Total Sal</td>
<td>62</td>
</tr>
<tr>
<td>Total Tro</td>
<td>62</td>
</tr>
<tr>
<td>Total Salmonids</td>
<td>62</td>
</tr>
<tr>
<td>Lamprey</td>
<td>0</td>
</tr>
<tr>
<td>Minnow</td>
<td>0</td>
</tr>
<tr>
<td>Stickleback</td>
<td>0</td>
</tr>
<tr>
<td>Stone Loach</td>
<td>0</td>
</tr>
</tbody>
</table>

**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.
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.

**Fish Species and Number Caught, Strule (Moyles Bridge) 2012**

<table>
<thead>
<tr>
<th>Species</th>
<th>Number of Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmon 0+</td>
<td>17</td>
</tr>
<tr>
<td>Salmon 1+</td>
<td>17</td>
</tr>
<tr>
<td>Trout 0+</td>
<td>0</td>
</tr>
<tr>
<td>Trout 1+</td>
<td>8</td>
</tr>
<tr>
<td>Eel</td>
<td>6</td>
</tr>
<tr>
<td>Lamprey</td>
<td>0</td>
</tr>
<tr>
<td>Minnow</td>
<td>73</td>
</tr>
<tr>
<td>Sickleback</td>
<td>11</td>
</tr>
<tr>
<td>Stone Loach</td>
<td>5</td>
</tr>
<tr>
<td>Gudgeon</td>
<td>1</td>
</tr>
</tbody>
</table>

Fig 53. Total catch
Fig 54. Length weight relationship of all juvenile Salmon

Length Weight Relationship of Salmon, (Moyles Bridge) Strule (N=33)

\[ y = 3 \times 10^{-5} x^{2.7885} \]

\[ R^2 = 0.983 \]

Fig 55. Length weight relationship of all Trout

Length Weight Relationship of Trout, (Moyles Bridge) Strule (N=7)

\[ y = 2 \times 10^{-5} x^{2.9173} \]

\[ R^2 = 0.9729 \]
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.
**GOOD**

<table>
<thead>
<tr>
<th>FISHING</th>
<th>Sal 0+</th>
<th>Sal 1+</th>
<th>Tro 0+</th>
<th>Tro 1+</th>
<th>Lam</th>
<th>SL</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>7</td>
<td>2</td>
<td>18</td>
<td>9</td>
<td>0</td>
<td>11</td>
<td>47</td>
</tr>
<tr>
<td>2nd</td>
<td>7</td>
<td>0</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>3rd</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>14</strong></td>
<td><strong>2</strong></td>
<td><strong>25</strong></td>
<td><strong>11</strong></td>
<td><strong>2</strong></td>
<td><strong>25</strong></td>
<td><strong>79</strong></td>
</tr>
</tbody>
</table>

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

Fish Species and Number Caught, Cappagh Burn (F10089) 2012

- Salmon 0+: 14
- Salmon 1+: 2
- Trout 0+: 25
- Trout 1+: 11
- Eel: 0
- Lamprey: 2
- Minnow: 0
- Stickleback: 0
- Stone Loach: 25

Fig 60. Density estimate/100m²

Density Estimate of Fish Species in Cappagh Burn

- Salmon 0+: 7
- Salmon 1+: 1
- Trout 0+: 14
- Trout 1+: 6
- Total Sal: 8
- Total Tro: 18
- Total Salmons: 26
- Lamprey: 1
- Minnow: 0
- Stone Loach: 53

Fish Species
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.
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

\[ y = 7 \cdot 6 \times 10^{-6} x^{1.425} \]

\[ R^2 = 0.9948 \]

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.

<table>
<thead>
<tr>
<th>Site Code</th>
<th>Year Surveyed</th>
<th>1st Catchment</th>
<th>Classification 2008</th>
<th>Classification 2009</th>
<th>Classification 2010</th>
<th>Classification 2011</th>
<th>Classification 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>F10086</td>
<td>2008</td>
<td>Strule</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>F10089</td>
<td>2009</td>
<td>Strule</td>
<td>Mod</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>F10076</td>
<td>2009</td>
<td>Owenkillew</td>
<td>Good</td>
<td></td>
<td>Mod</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F10020</td>
<td>2009</td>
<td>Burndennet</td>
<td>Good</td>
<td></td>
<td></td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>F10014</td>
<td>2009</td>
<td>Glenmornan</td>
<td>Mod</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>F10626</td>
<td>2009</td>
<td>Newry</td>
<td>Mod</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>F10644</td>
<td>2009</td>
<td>Killbroney</td>
<td>Mod</td>
<td></td>
<td></td>
<td></td>
<td>Poor</td>
</tr>
<tr>
<td>F10077</td>
<td>2009</td>
<td>Owenkillew</td>
<td>Good</td>
<td></td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>F10763</td>
<td>2009</td>
<td>Skeoge</td>
<td>Poor</td>
<td></td>
<td></td>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>F10022</td>
<td>2010</td>
<td>Burndennet</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>F10049</td>
<td>2010</td>
<td>Derg</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>F10079</td>
<td>2010</td>
<td>Glenelly</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>F10115</td>
<td>2010</td>
<td>Camowen</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>F10170</td>
<td>2010</td>
<td>Roe</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>F10111</td>
<td>2011</td>
<td>Camowen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>F10045</td>
<td>2011</td>
<td>Derg</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>F10128</td>
<td>2011</td>
<td>Drumragh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>F10101</td>
<td>2011</td>
<td>Fairywater</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>F10148</td>
<td>2011</td>
<td>Faughan</td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>F10072</td>
<td>2011</td>
<td>Owenkillew</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Good</td>
</tr>
<tr>
<td>Code</td>
<td>Year</td>
<td>Station</td>
<td>Fish Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td>---------</td>
<td>--------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F10171</td>
<td>2011</td>
<td>Roe</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F10025</td>
<td>2012</td>
<td>Finn</td>
<td>Mod</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F11204</td>
<td>2012</td>
<td>Newry</td>
<td>Mod</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 ≥ 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 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 2012.

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

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

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.

![Bar chart showing percentage of water bodies in each class determined using professional opinion and FCS2 (Ireland) classification methods for the Foyle and Carlingford areas 2012.]

**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.

**REFERENCES**

