

River Basin Management Plans 2015 - 2021

# River Continuity Classification

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# River Continuity Classification 2015

## Introduction

River continuity is the third element assessed under hydromorphology for the Water Framework Directive. It is a supporting element with hydrology and morphology, and at present will only be used to confirm high status or otherwise. River continuity assessments *per se* are not yet incorporated in formal WFD classification procedures or regulations, however, it forms an important part for freshwater fish classification. At present it is taken into account by the local knowledge of the fish experts who deliver fish classification for NIEA. The work described below represents an initial assessment and testing of the continuity classification methodologies developed to date

This paper describes how 2015 river continuity classification was put together. It is based on the first river basin plan cycle 575 river water body set. The work included detailed working with the Loughs Agency, AFBI (Agri-food and Biosciences Institute) and DCAL (collectively referred to below as the 'Fisheries Agencies') in their respective jurisdictions. 2015 classification has only been assessed for adult salmonids as insufficient data was available for juveniles and other native migratory species. It covers most, but not all of the major rivers in Northern Ireland.

Water Management Unit of NIEA would like to acknowledge the generous assistance given by all those in the agencies and other bodies mentioned below.

## River continuity classification

The work had three main data sources:

1. Detailed catchment studies including WFD 111 barrier assessments, basic measurements and desktop studies undertaken by NIEA,
2. Fishing data and the Fisheries Agencies' local knowledge with the focus being the capability of adult salmonids to reach the upper stretches of rivers. Local knowledge is essential as, for example, salmon will be more likely to spawn in wider rivers and therefore would not be found in the smaller upper reaches, and
3. Information supplied by other bodies such as the Ballinderry Rivers Trust and Ulster Angling Federation

It had been agreed that the classification classes reported would be to the shortened scale as shown below as it was considered that, at this stage, there would be insufficient resolution to be more definitive. The definitions are also more subjective:

	High	Good	Moderate	Poor	Bad
UKTAG	Severe loss of fish access to rivers draining less than 1% of catchment area of the water body	Severe loss of fish access to rivers draining less than 5% of catchment area of the water body	Severe loss of fish access to rivers draining less than 20% of catchment area of the water body	n/a	n/a
Initially Proposed for NIEA 2015 classification if detailed salmon data available	All salmon age groups present in expected proportions	All salmon age groups present, possible distortion in one age class	Definite distortion in one age group	One or more age groups missing and proportions distorted	Possibly only one age group present, or none present where would otherwise be expected
<b>Scales shortened thus:</b>	<b>Good or better</b>		<b>Moderate</b>	<b>Poor or worse</b>	
Descriptor	Known access through or to at least most of water body		Known obstacle or fish data indicating inhibited access	Access severely inhibited or stopped	

On occasions it was difficult to choose class, particularly between Good or better and Moderate. Where evidence sources cast doubt about the continuity in a water body the tendency has been to cautiously downgrade to moderate (low confidence). This approach was taken to focus attention on it for the future. When working with the Fisheries Agencies detailed notes were taken on potential in-channel structures of concern and where WFD 111 assessments have not yet been undertaken but could be particularly useful.

Some water bodies are unclassified and coloured grey. Examples of these would be:

- Upstream water bodies with no fish data, and
- Streams such as the Burngushet in North Antrim with no data because there is no fishery interest

We are aware that when continuity classification for other species and ages classes is included that the assessments may identify larger areas of catchments where continuity is restricted than for adult salmonids only. Because of different age classes and different species' abilities, continuity classification for each one may always have to be reported separately

## Information utilised

### 1. NIEA detailed weir and catchment surveys.

Up to the end of the first river basin cycle, NIEA have undertaken detailed surveys of the Ballinderry (Tyrone), Lagan and Six Mile Water, with the Rivers Moyola and Maine well underway. All surveys have utilised the SNIFFER WFD 111<sup>1</sup> weir assessment methodology. The Ballinderry and Lagan surveys assessed what would be considered the major structures only; whilst the Six Mile Water and Maine surveys have included hundreds of other smaller obstacles such as bridge aprons, sluices and hydraulic rams. The Moyola survey has mainly assessed bridge aprons and road culverts with only a few additional priority obstacles assessed. The Six Mile Water survey also included culverts which were part of the A8 road scheme. Some limited fish passage data obtained from tagging studies was available for the Ballinderry and more has been planned for the Maine. In addition, WFD 111 survey data was available for a number of other weirs throughout NI, including those done in conjunction with Inland Fisheries Ireland.

There will, however, always be a high degree of uncertainty in resulting classifications. This is because even with detailed studies of water levels and velocities over structures there is no guaranteeing if and when such events could occur, meaning that classification on the same structure could vary from year to year.

Hydromorphology RHAT<sup>2</sup> surveys also assess continuity but are unable to consider in detail every potential barrier in a water body. Also, RHAT is more concerned with sediment transport and how in-river structures affect flow variability rather than detailed aspects of fish passage. For catchments where we have comprehensive RHAT and fish passage assessments we can now look at how the differing methodologies complement each other in order to gain the maximum benefit in the future.

### 2. Fishing data and Agencies' expert knowledge.

Both DCAL and the Loughs Agency provided NASCO (North Atlantic Salmon Conservation Organisation) fishing data from which we plotted the most upstream points on each river fished, i.e. the points at which at least some salmon were able to get to. Also considered was the fish data used for WFD fish classification sampled at WFD surveillance stations by the Loughs Agency and AFBI for NIEA. From these datasets, however, what is not

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<sup>1</sup> See <http://www.sniffer.org.uk/knowledge-hubs/resilient-catchments/water-framework-directive-and-uktag-co-ordination/fish-obstacles-porosity/> for details and manuals

<sup>2</sup> RHAT – Rivers Hydromorphology Assessment Technique – this is the methodology used to assess river hydromorphology in NI and RoI. See <http://www.wfduk.org/resources/river-hydromorphology-assessment-technique-rhat>

known definitively is the degree of difficulty for fish getting upstream and whether stocked fish may be predominant in some cases – although the latter is thought unlikely. In areas that have been stocked with salmon, the assumption is that they would have been able to return.

The Loughs Agency have also done walk over surveys of many rivers in relation to river continuity. WFD 111 data is available for a number of weirs in the Faughan as some of the project development work was undertaken there. In addition, a PhD under the IBIS project<sup>3</sup> studied salmon passage in the River Mourne.

A series of working meetings were held where we went through the available data for each river under study in detail. This also included site visits with DCAL staff in some areas.

3. Information from other bodies such as Ballinderry Rivers Trust and Ulster Angling Federation.

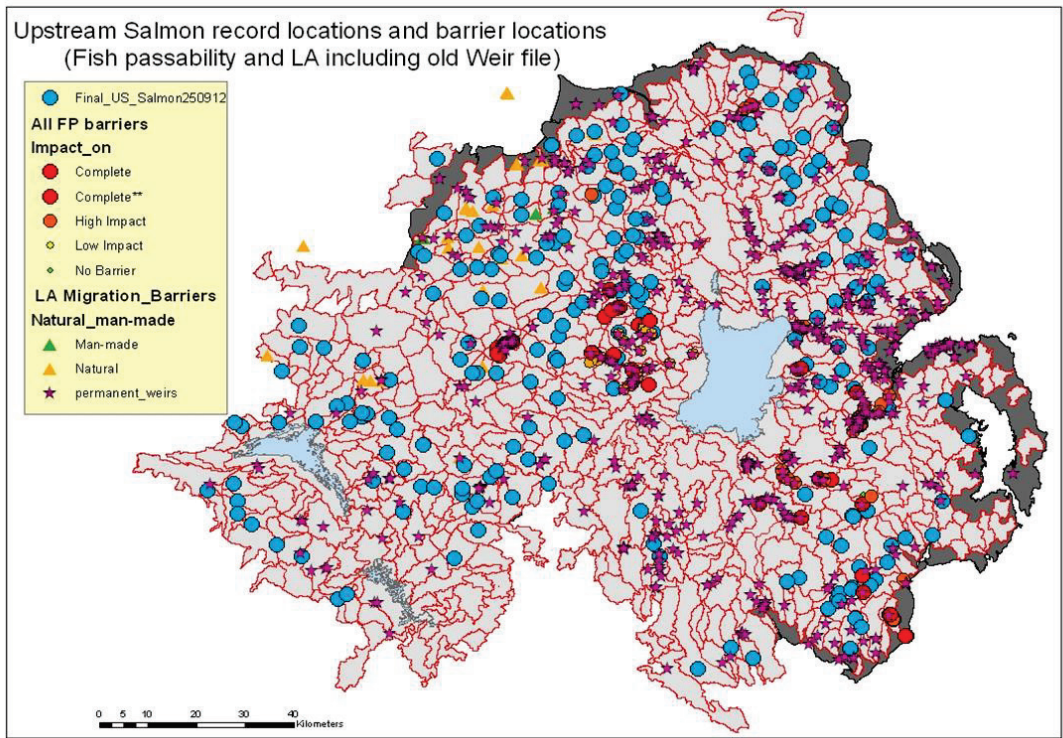
The Ballinderry Rivers Trust (previously the Ballinderry River Enhancement Association) undertook a preliminary survey of the Ballinderry, funded by NIEA to identify and provide details of weirs as a precursor to the NIEA survey.

The Ulster Angling Federation (UAF) volunteered to ask their clubs to provide basic weir details on a range of catchments. Feedback from this led to the Six Mile Water survey and they also supplied a report which identified many structures on the Lagan.

Below for illustration is a map showing a summary of information that was available as of November 2012 at the start of the project.

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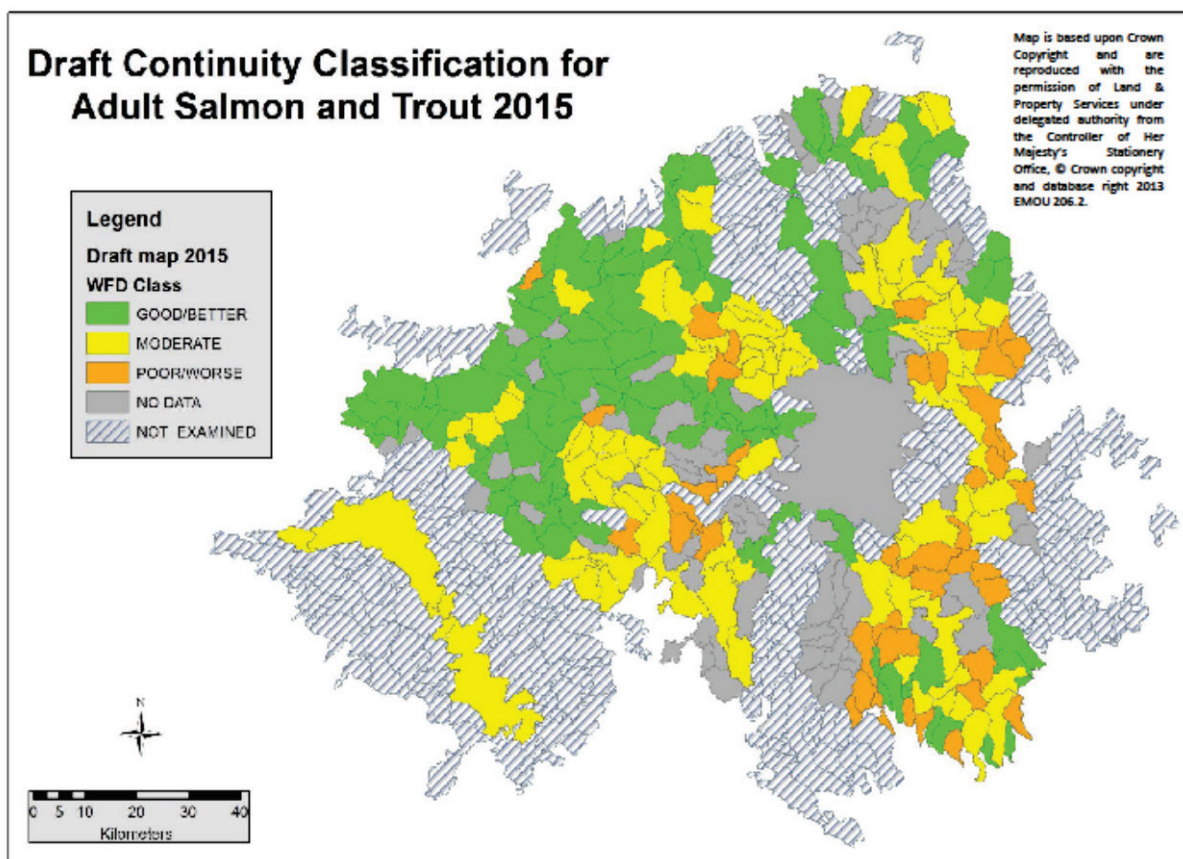
<sup>3</sup> <http://www.loughs-agency.org/ibis>



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## Classification 2015 and conclusions

The 2015 classification for adult salmonids is presented below:



Restricting classification to adult salmonids raises issues. For example, it is considered that the upper reaches of the Blackwater would be moderate due to restrictions on salmon passage. However, there is no reason why many areas in the upper reaches could not be good or better for brown trout as they do not have to migrate to and from the sea. Generally, salmon will only move as far upstream as they have to find suitable spawning grounds which means that, in years with large salmon runs, simple pressure of numbers may require some to move further upstream than if numbers were lower. So there are times when their migration is not just limited by barriers. Similarly, access is also determined by flow levels which in some years will permit more upstream movement than others.

As per above, there are areas where we have downgraded as a precautionary measure. There is probably none more so than Lough Erne where there is considerable debate around the ease of passage into the Lower Lough. For this reason it was decided not to extend the classification into the major Lough Erne rivers.

River continuity classification is a highly complex issue although there are a number of areas that are well known to be causing problems. With the exception of the Lough Erne rivers mentioned above, however, we have achieved wide coverage of the major rivers in NI.