Know Your River - Ogwen

Salmon & Sea Trout Catchment Summary

Introduction

This report describes the status of the salmon and sea trout populations in the Ogwen catchment. Bringing together data from rod catches, stock assessments and juvenile monitoring, it will describe the factors limiting the populations and set out the challenges faced in the catchment.

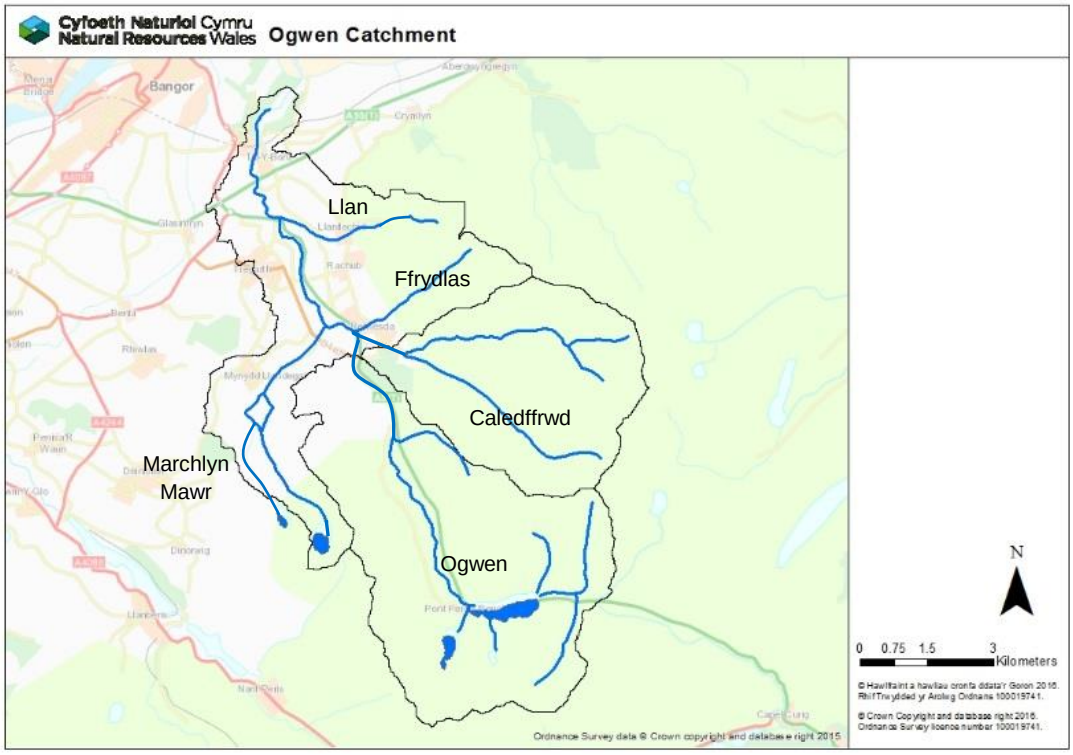
Action tables set out habitat improvements to restore freshwater productivity of salmon and sea trout populations. These tables also include some work which will be carried out by our partner organisations, not just Natural Resources Wales (NRW).

NRW has a duty, defined in the Environment (Wales) Act 2016 to have Sustainable Management of Natural Resources (SMNR) at the core of everything that we do. By applying the principles of SMNR in all of our activities - from agriculture, forestry and flood defence to development planning - we are undertaking catchment-wide initiatives that will deliver for fish stock improvements. Our reports highlight the importance of considering the whole catchment when identifying and addressing fisheries issues; and of working with partners.

NRW is committed to reporting on the status of salmon stocks in all principal salmon rivers where, in the past, Salmon Action Plans have been produced, and/or, in SAC rivers, where condition assessments have been undertaken under the Habitats Directive. In addition, the status of various fish species in all our rivers is reported as part of Water Framework Directive (WFD) assessments. This report refers to these commitments. Its purpose is to provide, for our customers, an informative and useful summary of stock status and remedial work planned - specifically for anglers, fishery and land owners; as well as other partners.

Catchment

The Afon Ogwen catchment extends from the uplands of the Carneddi range down to the Menai Straits east of Bangor. Migratory salmonids have access to most of the main Ogwen River, however the waterfall at the outlet of Llyn Ogwen is a natural barrier stopping access to the lake and upper tributaries. Access to the other tributaries is also limited by waterfalls.

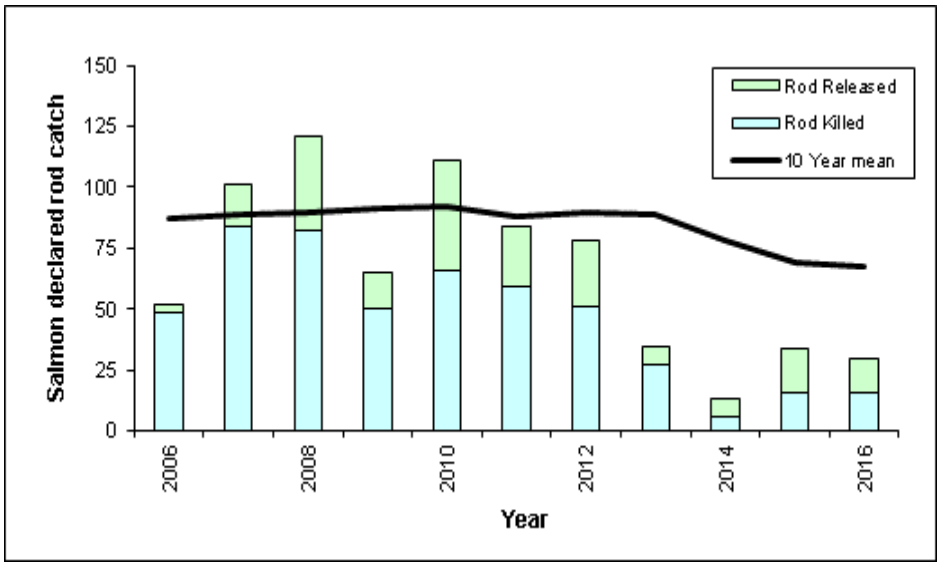


Water quality on the catchment is good with acidic upland streams being buffered by the underlying calcareous bedrock. The land use is mainly agricultural and slate quarrying is the main industry present.

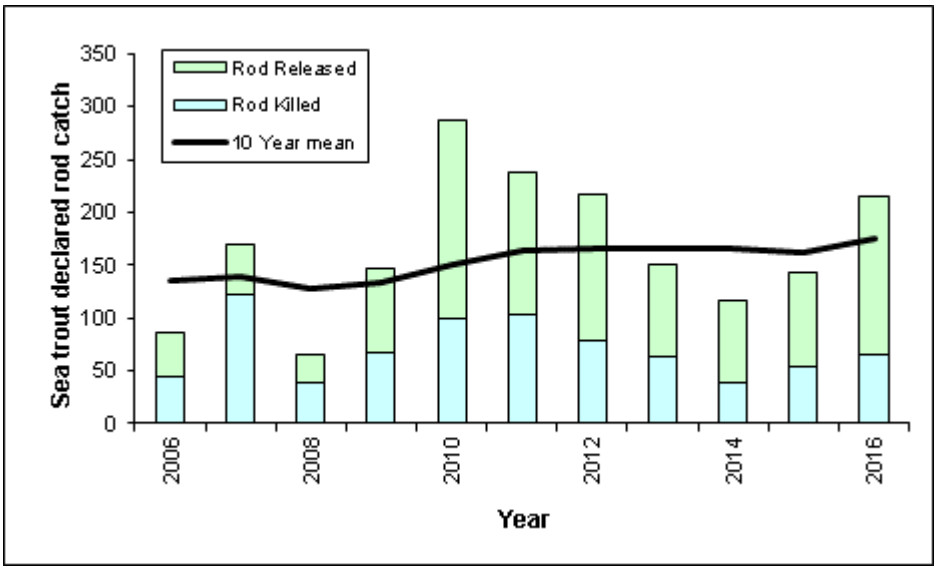
Rod catches

The following graphs show the total declared rod catches for salmon and sea trout on the Ogwen.

Salmon rod catch – has declined since 2012. The release rate in 2016 was 47%. This is poor and needs to improve to conserve stocks. The North Wales average is 62%.



Sea trout rod catch – improved in 2016 and returned to just above the 10 year average. The release rate in 2016 was 69%. This is poor and needs to improve to conserve stocks. The North Wales average is 79%.

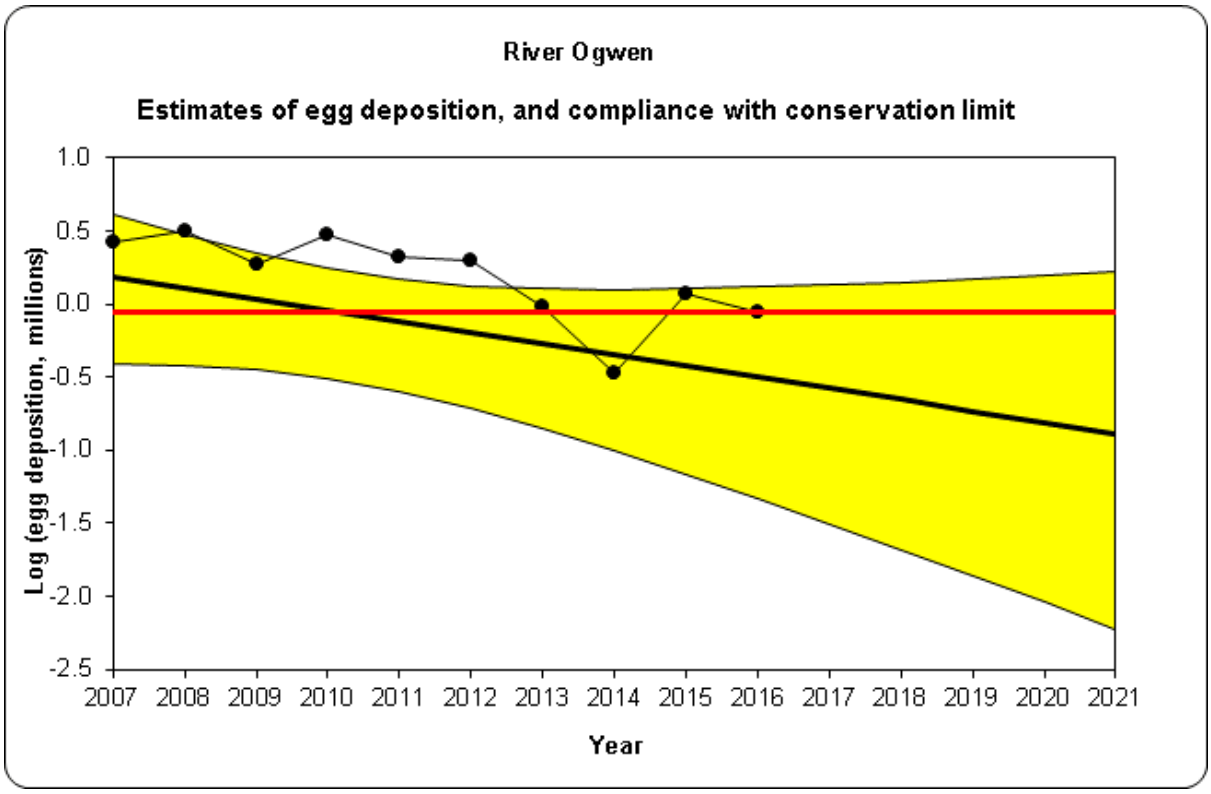


Stock status

Conservation of Salmon

Salmon stock status is assessed using 'Conservation Limits' which provide an objective reference point against which to assess the status of salmon stocks in individual rivers.

This is calculated by applying assumed angling exploitation rates to catch data to derive run estimates; adopting standard sex ratios and weight-fecundity relationships to generate egg deposition figures. The numbers of salmon a river can produce (and consequently the catches that the stocks support) are a function of the quality and quantity of accessible spawning and rearing area. Therefore, in general, big rivers have larger catches and have correspondingly bigger total spawning requirements than small rivers. Thus, for any given rivers there should be an optimum level of stock which the conservation limit seeks to protect. The conservation limit represents the number of eggs that must be deposited each year within a given catchment in order to conserve salmon stocks in the future.



Are enough salmon eggs being deposited to conserve salmon stocks in the catchment?

The red line represents the number of eggs required to be deposited to sustain a healthy salmon stock. The black trend line and its confidence limits (the yellow band) is fitted to the most recent 10-year series of egg deposition estimates (2007-2016).

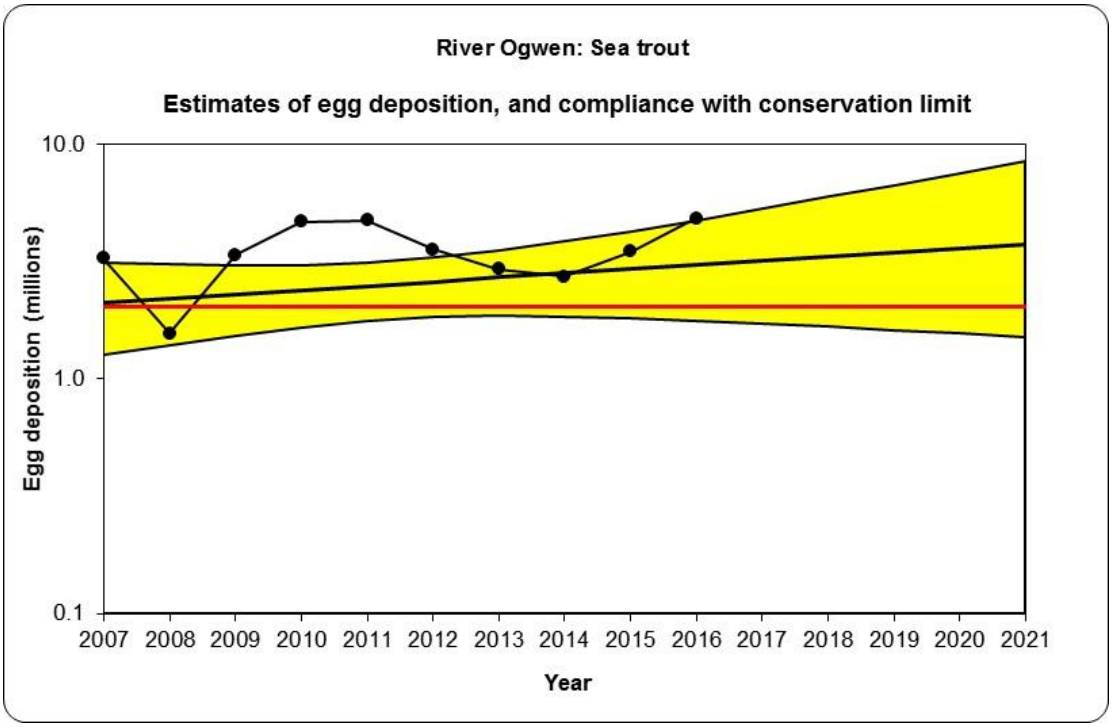
- Current number of eggs being deposited puts stocks **probably at risk**
- In 5 years' time the predicted status of salmon stocks will be **probably at risk**
- Based on current data, and the projection of the graph, the stocks of salmon on the Ogwen will continue to **decline** **(uncertain)**

Conservation of Sea Trout

In contrast to salmon, no established methods of setting Conservation Limits or similar have been available for sea trout. In the absence of such analysis, NRW and the Environment Agency have, for several years, routinely applied a fishery based assessment to the principal sea trout rivers. This method – used previously in this report - utilises time-series' of angling catch per unit effort (CPUE) data ('catch per day') to examine sea trout performance on a river-by-river basis.

Recently an alternative stock-based assessment method has been developed by NRW and is applied here. This utilises angling catch data to derive run and egg deposition estimates for sea trout in much the same way that similar data sets are used in Conservation Limit compliance procedures for salmon assessment.

Further details on this method are given in the recent Technical Case supporting net and rod fishery byelaw proposals on all rivers in Wales and the cross-border rivers Wye and Dee (see: http://naturalresourceswales.gov.uk/media/682258/technical-case-structure-final.pdf)



Are enough sea trout eggs being deposited to conserve stocks in the catchment?

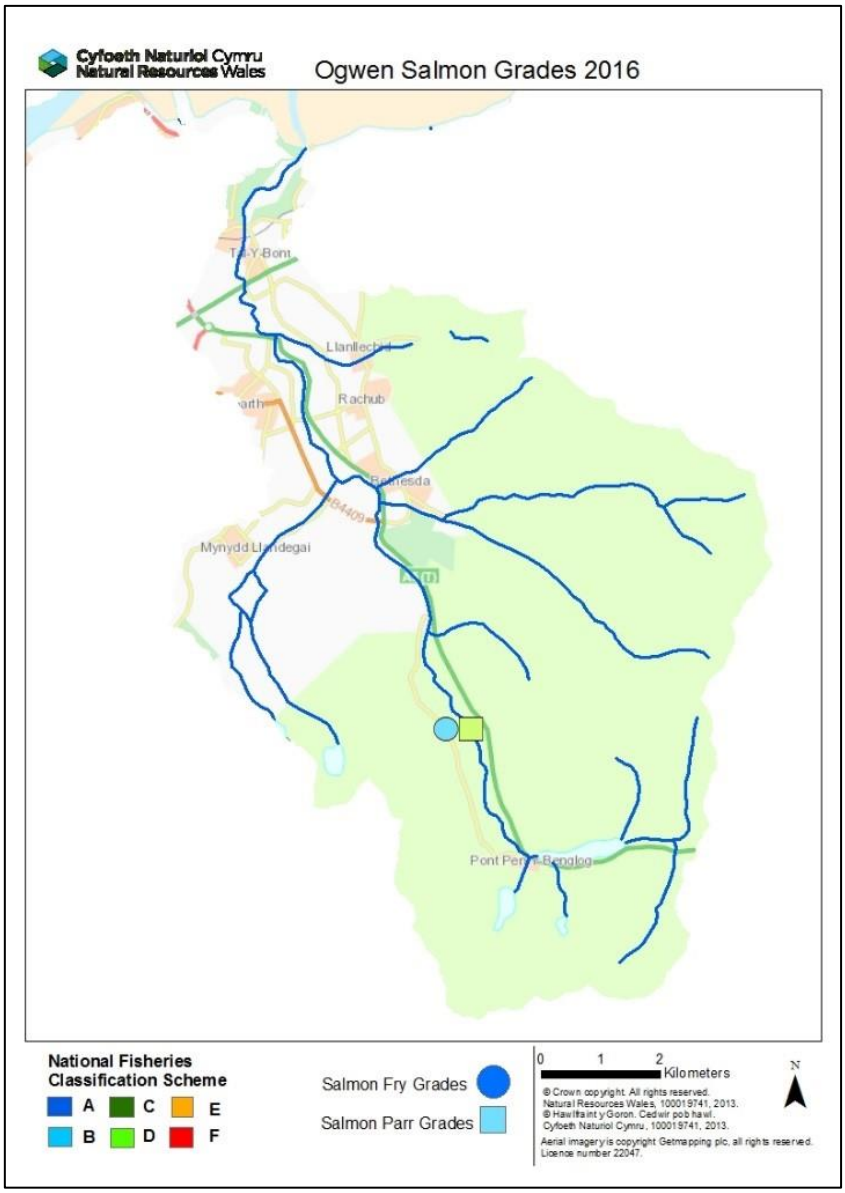
The red line represents the number of eggs required to be deposited to sustain a healthy sea trout stock. The black trend line and its confidence limits (the yellow band) is fitted to the most recent 10-year series of egg deposition estimates (2007-2016).

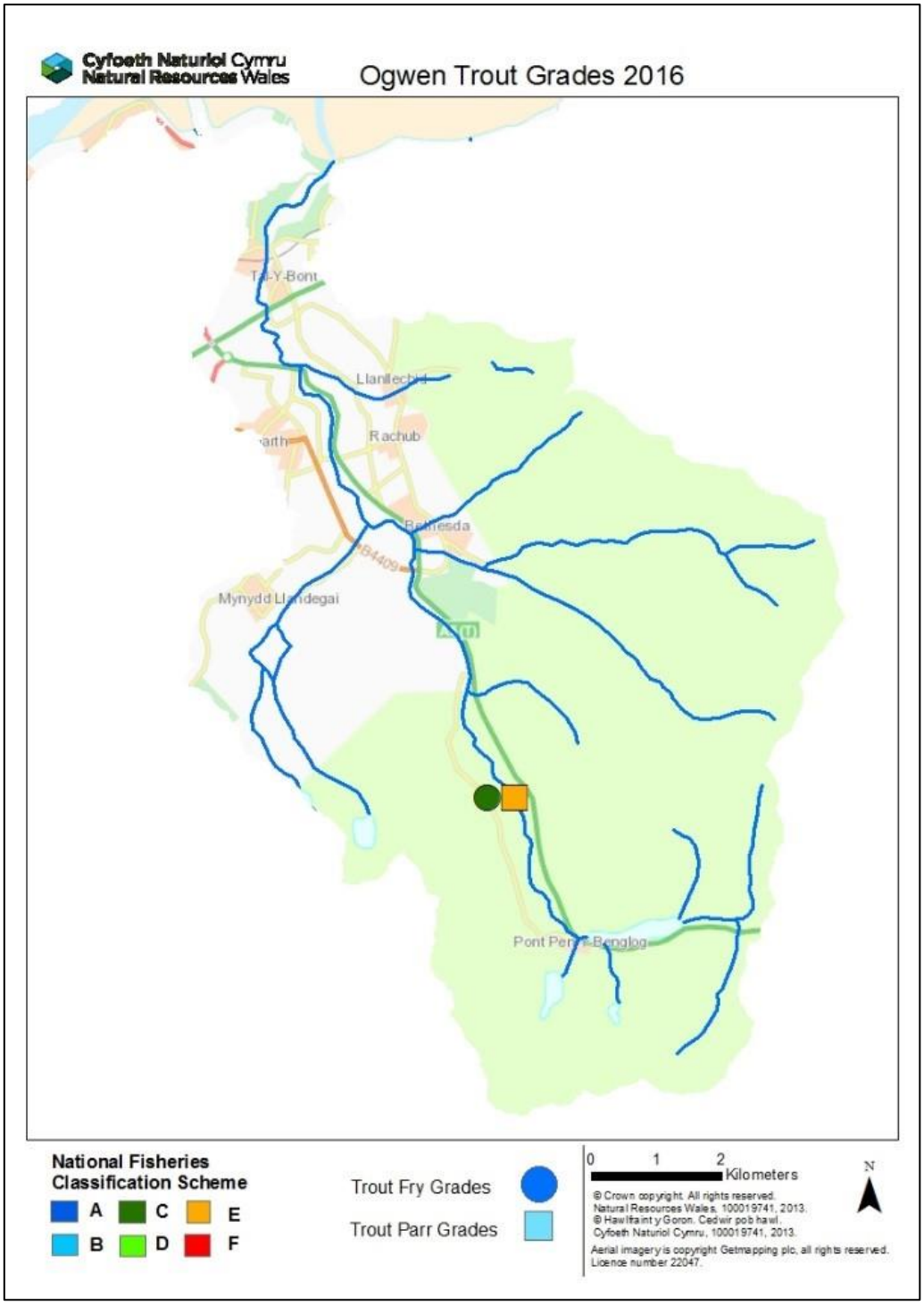
- Current number of eggs being deposited puts stocks **probably not at risk**
- In 5 years' time the predicted status of salmon stocks will be **probably not at risk**
- Based on current data, and the projection of the graph, sea trout stocks will continue to **improve** **(uncertain)** on the Ogwen

Juvenile monitoring

The following map shows the results of the 2015 juvenile salmonid population surveys. They display the National Fish Classification (NFC) grades which have been developed to evaluate and compare the results of fish population surveys in a consistent manner. The NFC ranks survey data by comparing fish abundance at the survey sites with sites nationally where juvenile salmonids are present. Sites are classified into categories A to F, depending on densities of juvenile salmonids at the site. The following table shows the values and classification of NFC.

GRADE	Description	Interpretation
A	Excellent	In the top 20% for a fishery of this type
B	Good	In the top 40% for a fishery of this type
C	Fair	In the middle 20% for a fishery of this type
D	Fair	In the bottom 40% for a fishery of this type
E	Poor	In the bottom 20% for a fishery of this type
F	Fishless	No fish of this type present




Cyfoeth Naturiol Cymru
Natural Resources Wales
Ogwen Trout Grades 2016
Ty-Y-Bont
Llanllechid
Rachub
Bethesda
Mynydd Llandegai
Pont Pen-y-Benglog
National Fisheries
Classification Scheme
A
B
C
D
E
F
Trout Fry Grades
Trout Parr Grades
0 1 2
Kilometers
N
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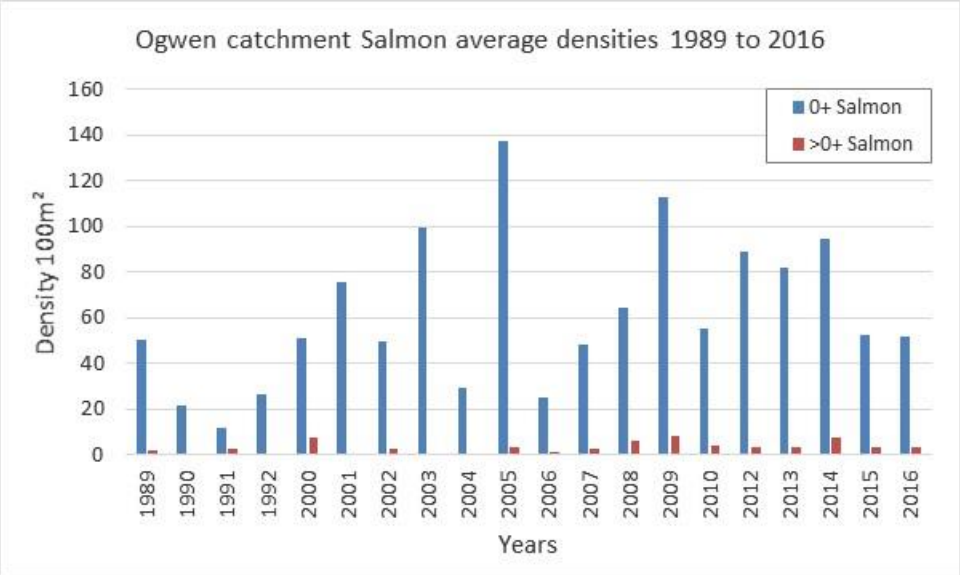
Juvenile Trend Analysis

Statistical analysis of the juvenile monitoring programme is currently being reviewed. The graphs below are catchment averages for salmon and trout from 1989 to 2016.

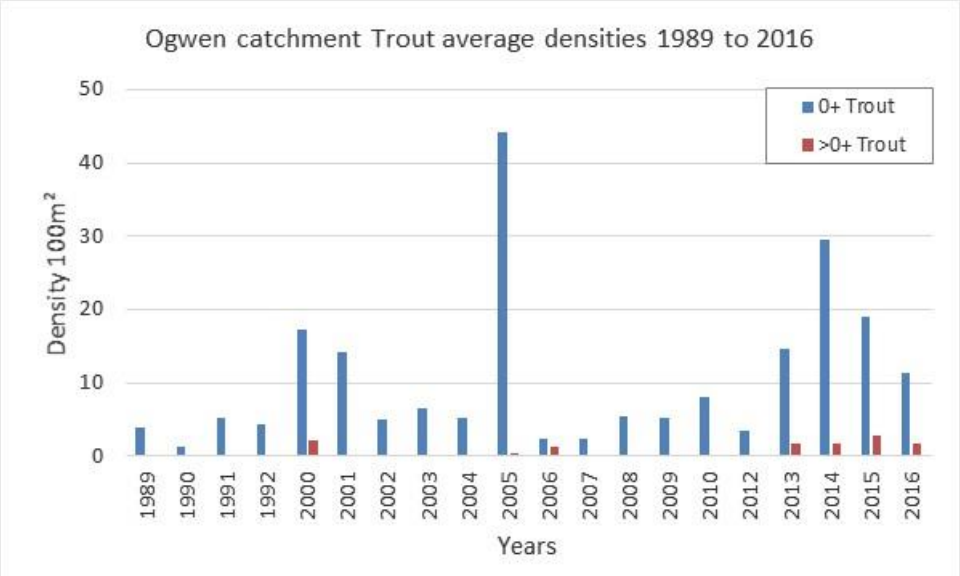
Salmon



Salmon fry densities have varied since 1989. The density in 2016 is not low compared to the historic data and is positive compared to many catchments in Wales. Salmon parr numbers have been consistently low at this site due to habitat.

Juvenile salmon densities across Wales in 2016 have been poor, with some catchments showing significant absences of salmon fry. Though declining spawning stock will have lowered recruitment, it is thought that the extremely high flows and unseasonably warm temperatures throughout Nov/Dec/Jan will have adversely affected spawning.

Trout



Brown trout fry densities on the Ogwen have fluctuated, and have never been exceptionally high due to the habitat. The brown trout fry densities in 2016 are good compared to the historic data. This is reflected by the good sea trout rod catch in 2015. Trout parr numbers have also improved but the numbers are marginal.

Salmon & Sea Trout Catchment Summary

Fisheries Actions – Ogwen

Site	Action	Benefits	Lead	Partner(s)	Timescales for delivery
Ogwen	**Habitat improvements:** We will investigate where there is opportunity to improve habitat for fish through restoration of riparian and instream habitat	More natural river system, reduced siltation, increased flow diversity, improved spawning gravels and juvenile habitat. Improved fish numbers.	NRW		Ongoing
	Barriers to be addressed: • Investigation of other barriers to improve fish passage • Maintenance of Ogwen bank fish pass	• Improved knowledge of barriers to improve access for salmon and trout to spawning areas upstream. • Improved access to spawning areas and habitat upstream.	NRW Landowner		Ongoing 2016/17
	Water Framework Directive: We will continue work to ensure no deterioration, monitor the status of the environment and investigate causes of failures. Together with our partners we will look to put in place measures that protect and improve the status of the water environment.	• Water bodies protected and improved • WFD waterbodies achieving Good Status/Potential	NRW	NRW Wildlife Trusts Local Authorities Landowners SNPA	Ongoing
	Enforcement: Action to reduce illegal activity on information provided and investigations	Reduced illegal activity, more fish remain in the system.	NRW	Stakeholders North Wales Police	Ongoing

Abbreviations

NRW – Natural Resources Wales **SNPA – Snowdonia National Park Association**