



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).

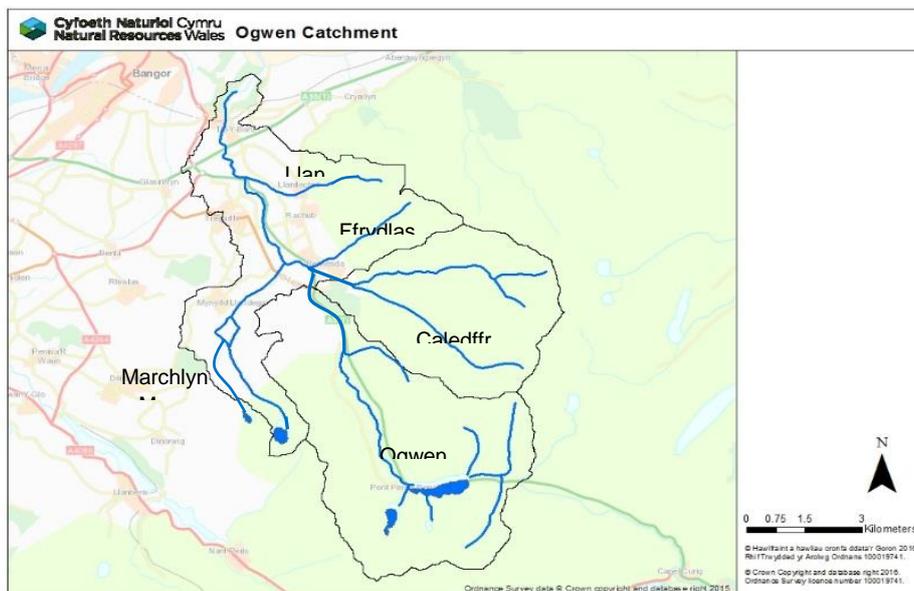
NRW has a duty, defined in the Environment (Wales) Act 2016 to have Sustainable Management of Natural Resources (SMNR) at the core of everything that we do. By applying the principles of SMNR in all of our activities - from agriculture, forestry and flood defence to development planning - we are undertaking 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.

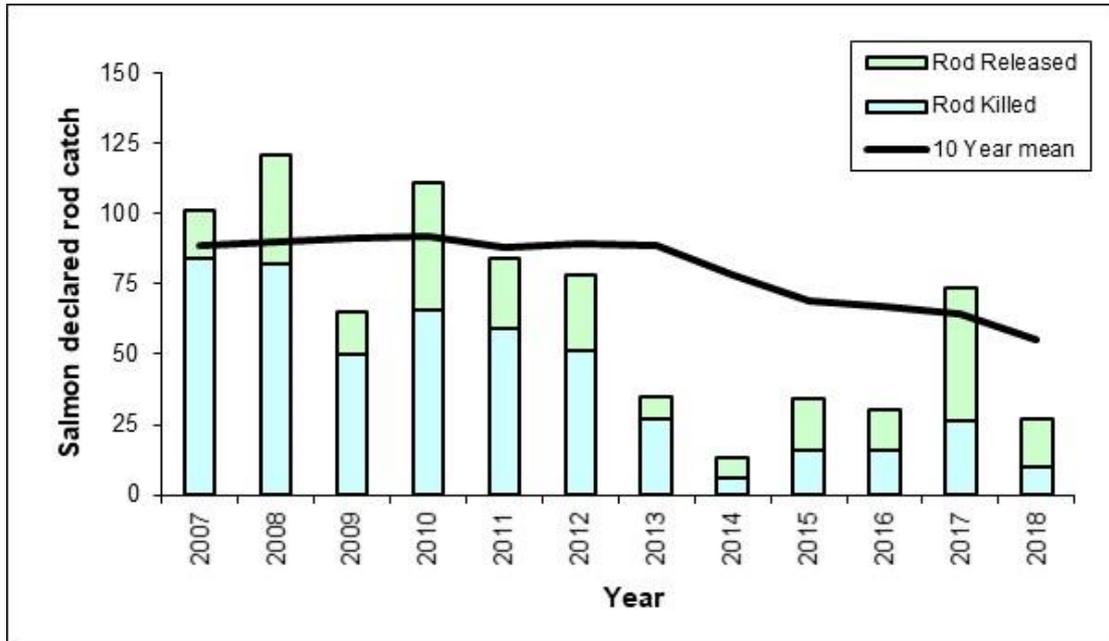
Water quality on the catchment is good with acidic upland streams being buffered by the underlying calcareous bedrock. The land use is mainly agricultural and slate quarrying is the main industry present.



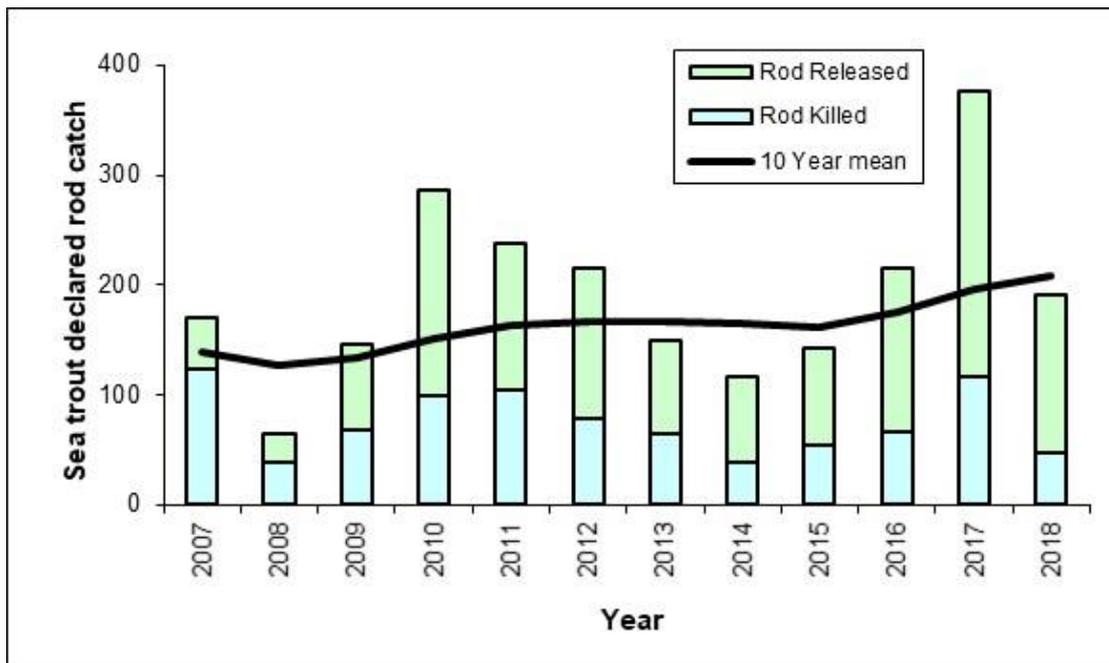
Rod catches

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

Salmon rod catch – has declined in 2018 and is well below the 10 year average catch. This is disappointing compared to 2017 and we believe this was due to the extreme summer weather conditions. The release rate in 2018 was 63%. This is poor compared to many catchments in North Wales and this needs to improve to conserve stocks.



Sea trout rod catch – has declined in 2018 compared to 2017, however the rod catch is around the 10-year mean. The release rate in 2018 was 75% and this is also low compared to other catchments in North Wales, this needs to improve to conserve stocks.

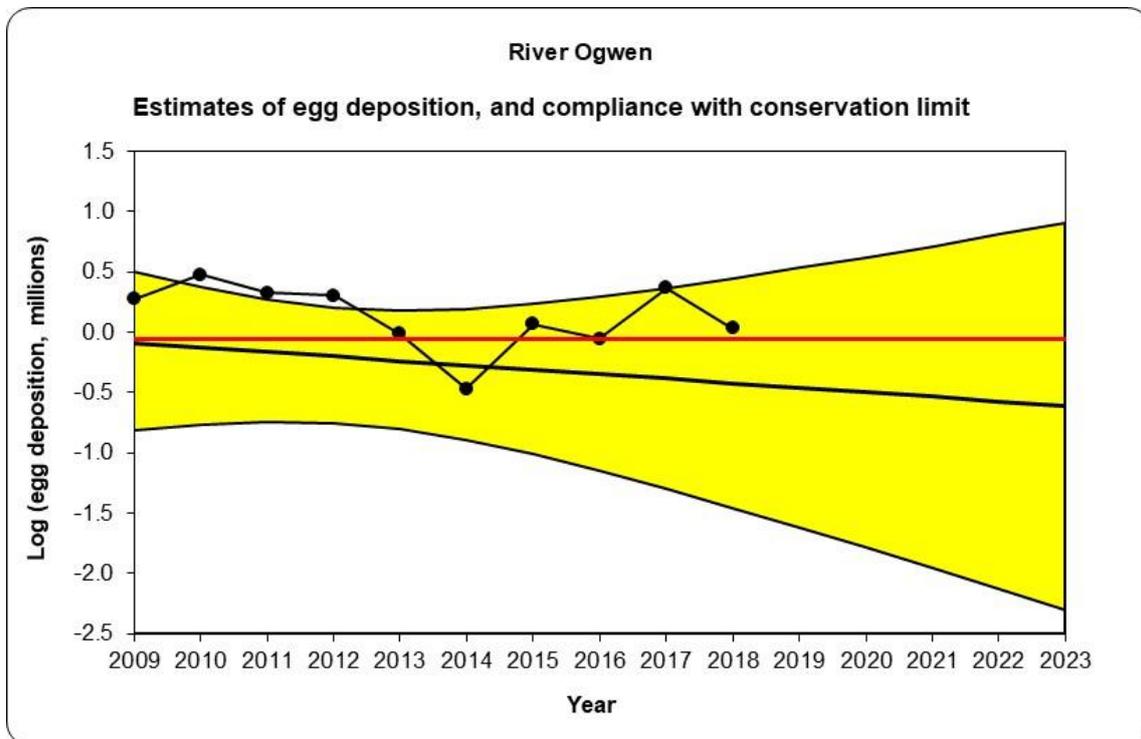


Stock status

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 (2009-2018).

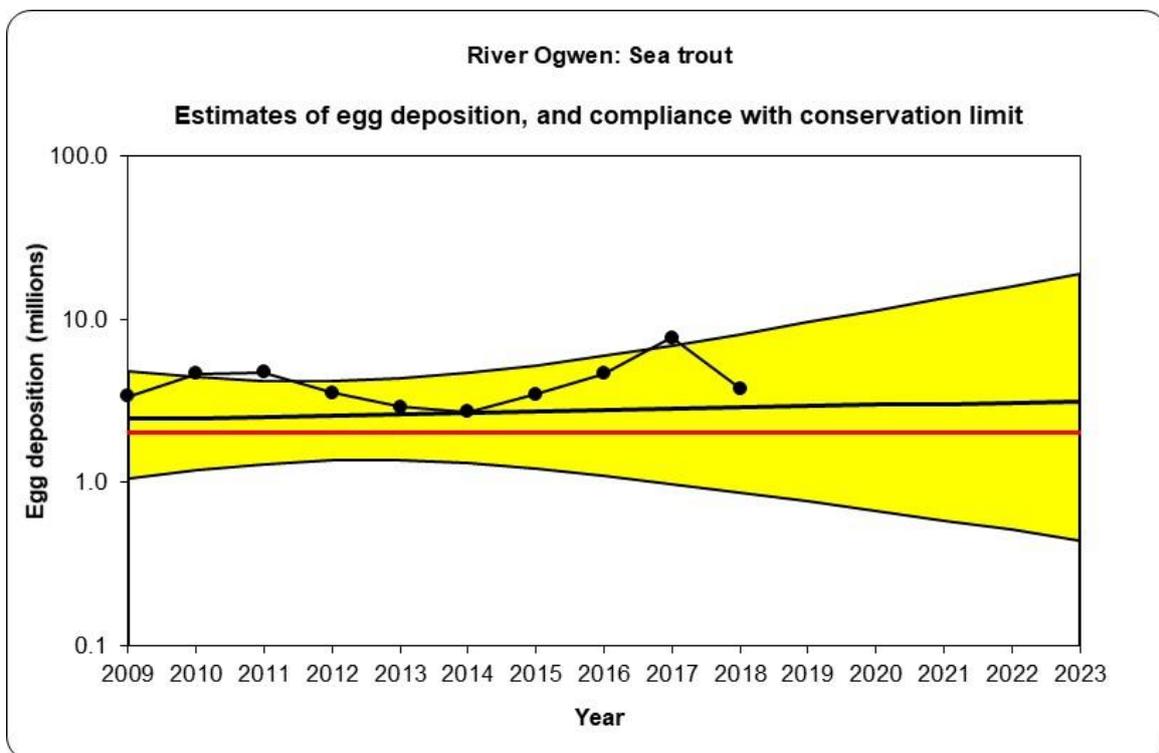
- Current number of eggs being deposited puts stocks **probably at risk**
- In 5 years' time the predicted status of salmon stocks will be **probably at risk**
- Based on current data, and the projection of the graph, the stocks of salmon on the Ogwen will continue to **decline (uncertain trend)**

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?

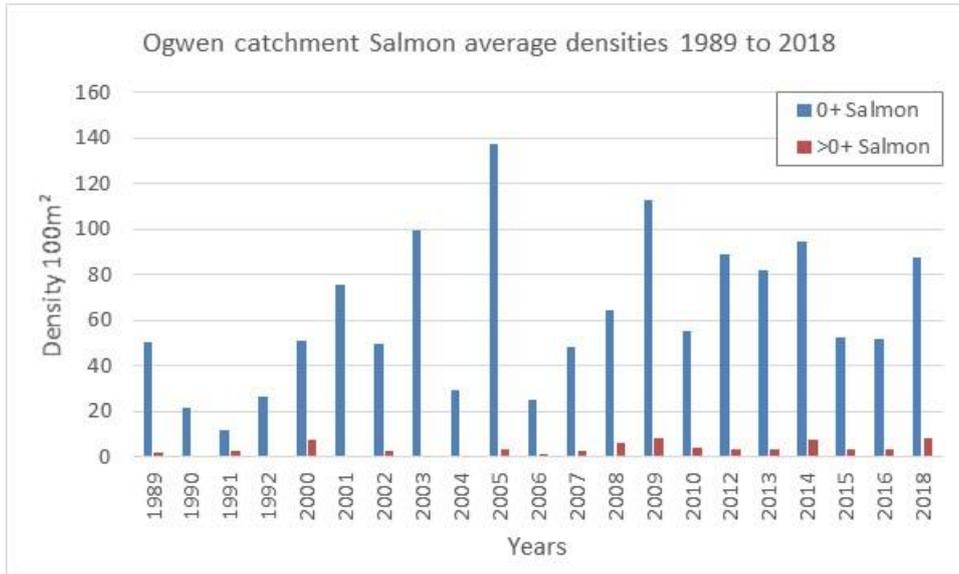
The red line represents the number of eggs required to be deposited to sustain a healthy sea trout stock. The black trend line and its confidence limits (the yellow band) is fitted to the most recent 10-year series of egg deposition estimates (2009-2018).

- 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, the stocks of sea trout on the Ogwen will continue to **improve (uncertain trend)**

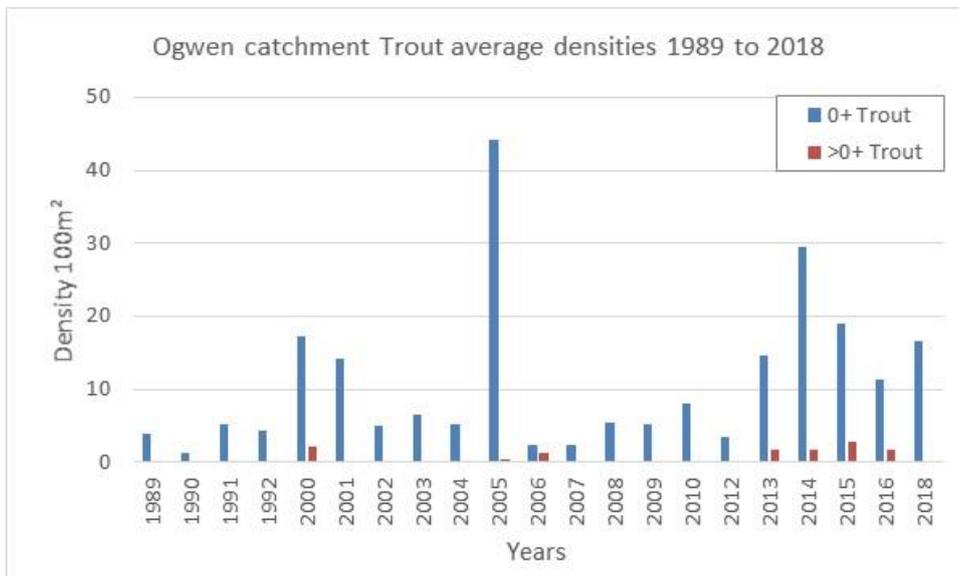
Catchment Population Trends

The graphs below show a simple comparison of average salmon and trout densities on the Ogwen catchment since surveying began in 1989. NB – the data shown here is from Quantitative and Semi Quantitative surveys, the site was not done every year, and no surveys were done from 1993 to 1999, 2011 and 2017. Historic catch efficiency data allows the semi quantitative figures to be comparable with quantitative data.

Salmon fry densities have varied since 1989. The density in 2018 is good compared to the historic data and is positive compared to many catchments in Wales. Salmon parr density has improved compared to historic data but is still relatively low.



Brown trout fry densities on the Ogwen have fluctuated and have never been high due to the habitat. The brown trout fry densities in 2018 are in-line with densities recorded since 2013. No trout parr were caught in 2018, however densities are always minimal. The habitat is mainly salmon biased.



The following table shows a simple comparison of the catchment average density of juvenile salmon and trout from 2018, and compares this to 2016 (poor spawning year across the UK) and the 5-year average (2011-15). The site was not fished in 2017 so no comparison is available.

	0+ Salmon	>0+ Salmon	0+ Trout	>0+ Trout
2018 average density	87.5	8.4	16.5	0.0
2016 average density	52.0	3.3	11.4	1.6
Percentage difference to 2016	68%	159%	44%	-100%
5-yr average (2011-15)	79.5	4.3	16.7	1.5
Percentage difference to 5-yr average	10%	95%	-1%	-100%

The improvement in salmon fry & parr against the five-year average links directly to rod catch. Rod catch has improved since 2015 from 34 salmon per season to 74 salmon in 2017.

The trout fry densities in 2018 do not reflect the improvement in sea trout rod catch on the catchment. Rod catch has improved since 2015 from 143 sea trout per season to 377 sea trout in 2017. The electro-fishing site is predominantly salmon habitat, with limited spawning gravels for sea trout.