

## **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).

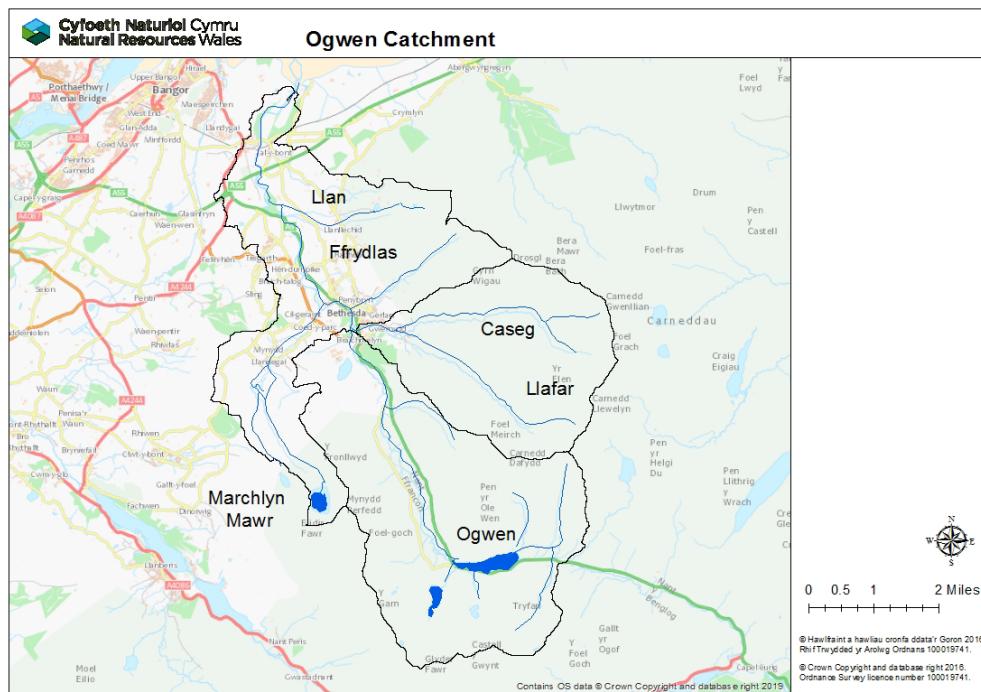
NRW has a duty, defined in the Environment (Wales) Act 2016 to have Sustainable Management of Natural Resources (SMNR) at the core of everything that we do. By applying the principles of SMNR in all of our activities - from agriculture, forestry and flood defence to development planning - we are undertaking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

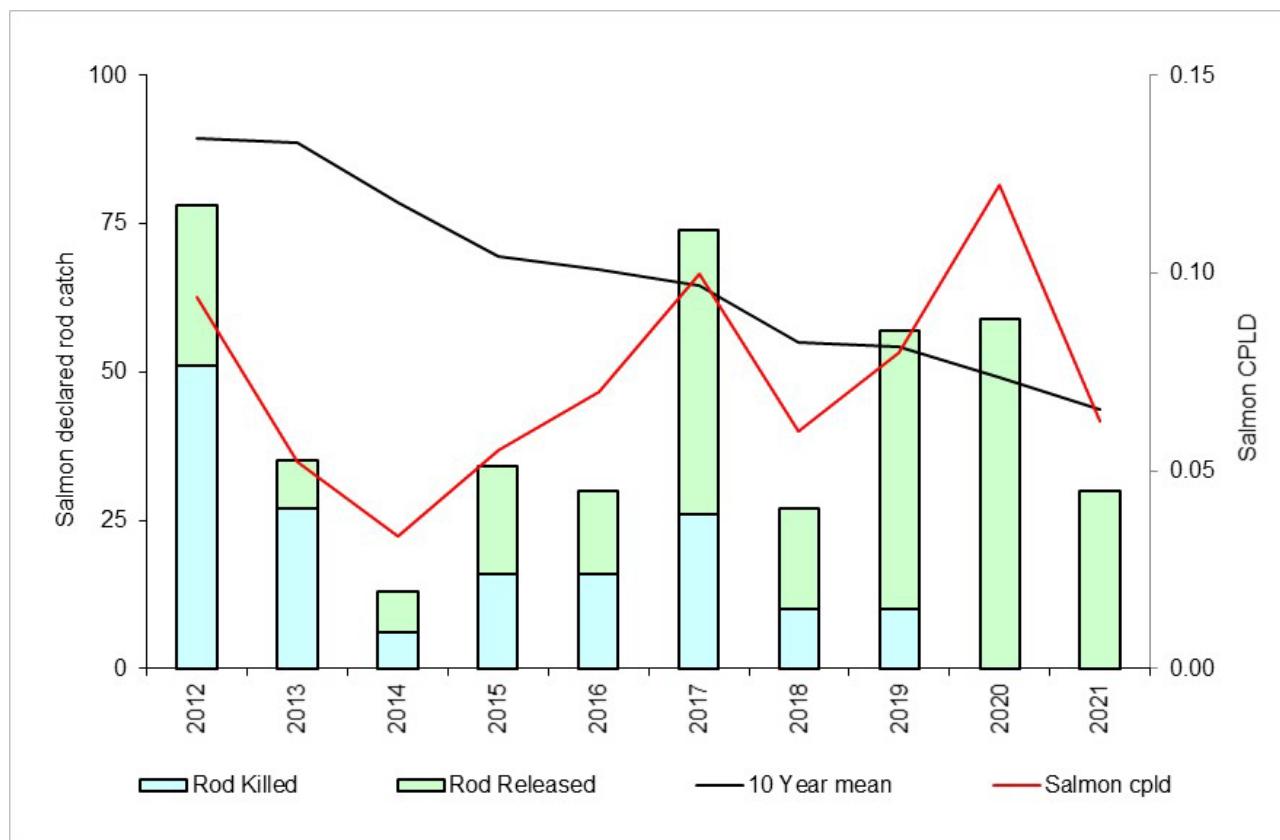


## Rod Catches

The following tables/graphs show the total declared rod catches for salmon and sea trout on the Ogwen and also the Catch Per Licence Day. CPLD is an estimate of the average catch per fishing day on a catchment.

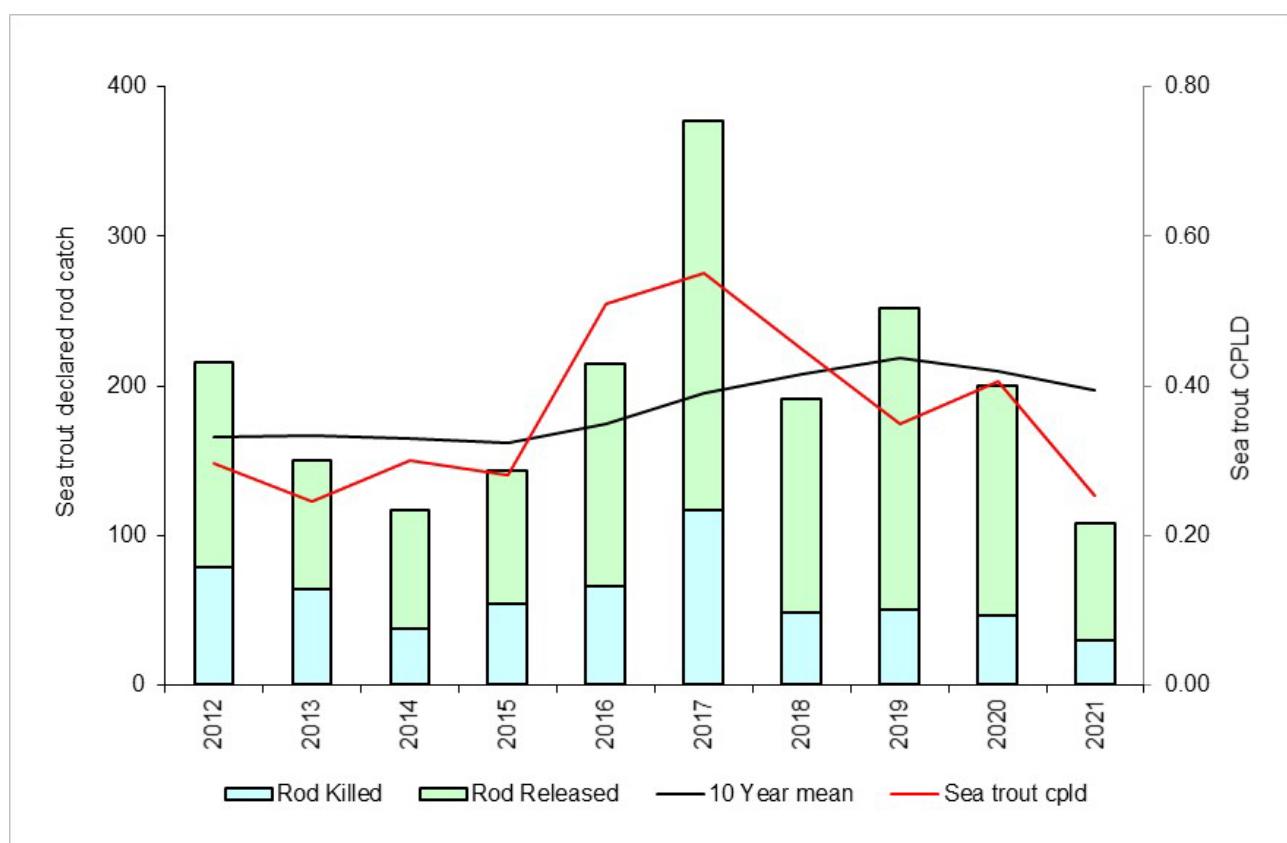
### Salmon Rod Catch

Year	Caught	Rod Killed	Rod Released	10 Year mean	Percentage released	Catch per license day
2021	30	0	30	43.7	100	0.063
2020	59	0	59	49.1	100	0.122
2019	57	10	47	54.3	82	0.080
2018	27	10	17	55.1	63	0.060
2017	74	26	48	64.5	65	0.100
2016	30	16	14	67.2	47	0.070
2015	34	16	18	69.4	53	0.055
2014	13	6	7	78.5	54	0.033
2013	35	27	8	88.6	23	0.052
2012	78	51	27	89.4	35	0.094



### Sea Trout Rod Catch

Year	Caught	Rod Killed	Rod Released	10 Year mean	Percentage released	Catch per license day
2021	108	30	78	196.9	72	0.252
2020	200	46	154	209.9	77	0.415
2019	252	50	202	218.6	80	0.350
2018	191	48	143	208.0	75	0.450
2017	377	117	260	195.4	69	0.550
2016	215	66	149	174.7	69	0.510
2015	143	54	89	161.8	62	0.280
2014	117	38	79	165.2	68	0.300
2013	150	64	86	166.5	57	0.245
2012	216	79	137	166.3	63	0.296

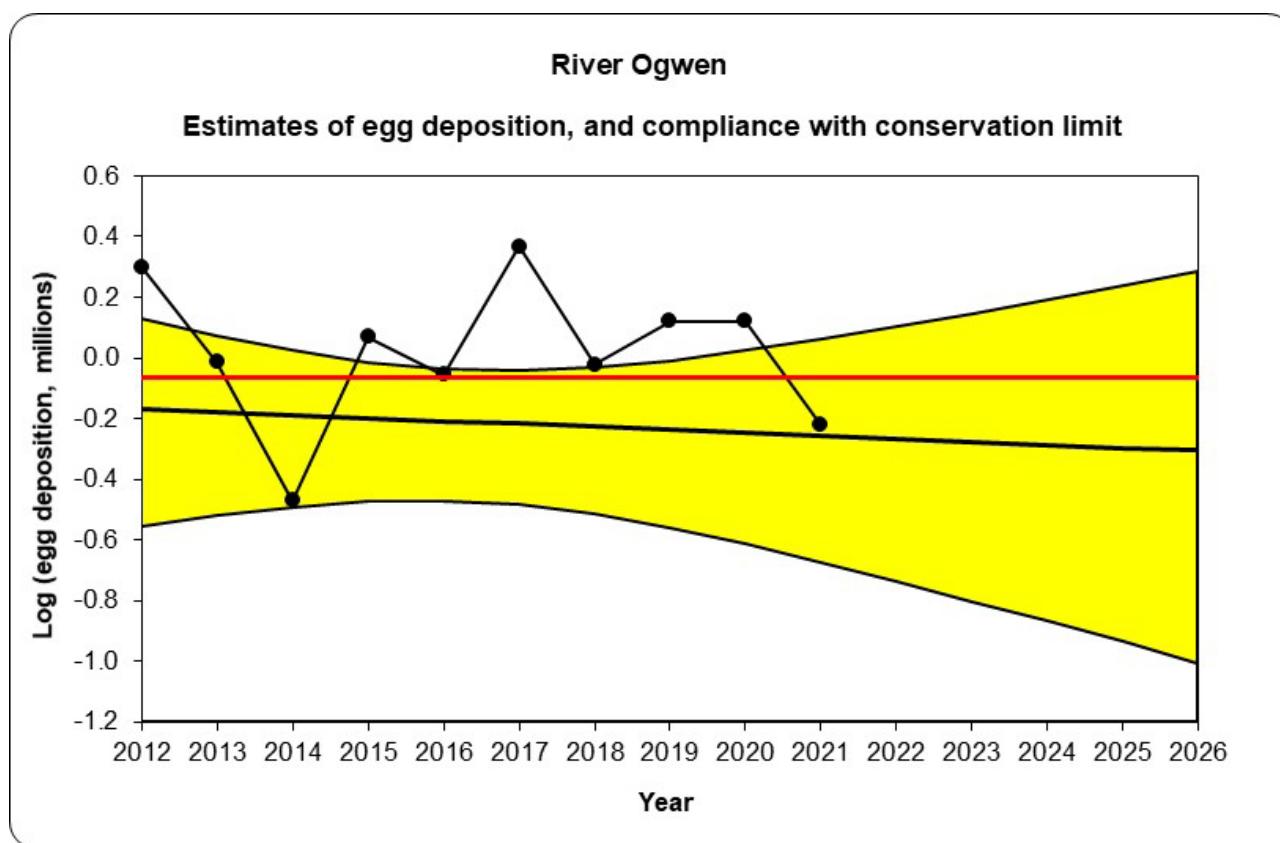


## Stock status

### 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 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 ten-year series of egg deposition estimates (2012-2021).

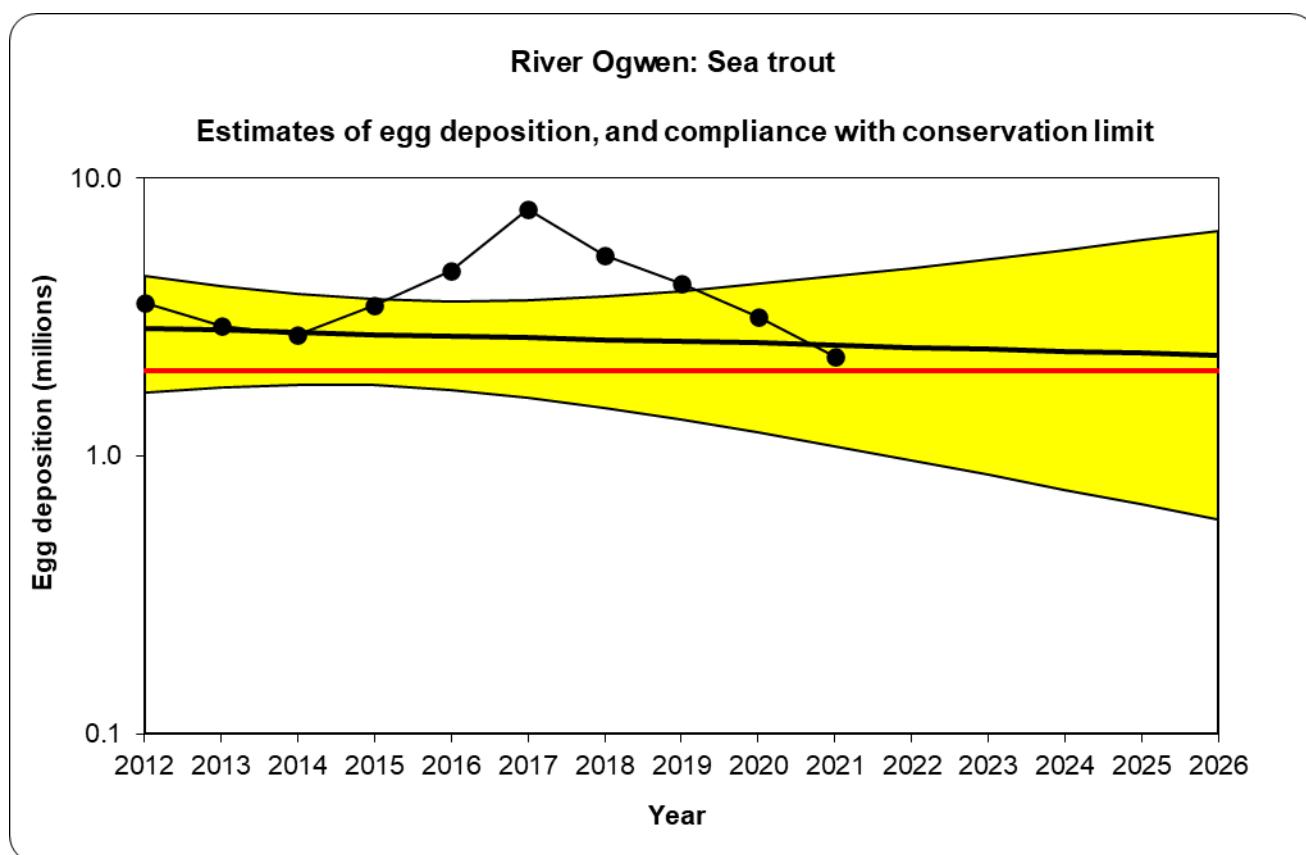
- Current number of eggs being deposited puts stocks **probably at risk**
- In five years' time the predicted status of salmon stocks will be **probably at risk**
- Based on current data, and the projection of the graph, the stocks of salmon on the Ogwen will continue to **decline (uncertain trend)**

### 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: [Technical case for fishing controls to protect salmon and sea trout](#)).



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 ten-year series of egg deposition estimates (2012-2021).

- Current number of eggs being deposited puts stocks **probably not at risk**
- In five 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 **decline (uncertain trend)**

## Juvenile Salmonid Monitoring Programme

In 2022 the temporal (annual) programme consisted of two sites on the Ogwen. The temporal data is used to look at trends in juvenile salmon and trout densities giving an indication of how successful spawning has been across the whole catchment.

### Salmon and Trout Classifications

The tables/maps below show the results of the routine juvenile salmonid population surveys on the Ogwen in 2022.

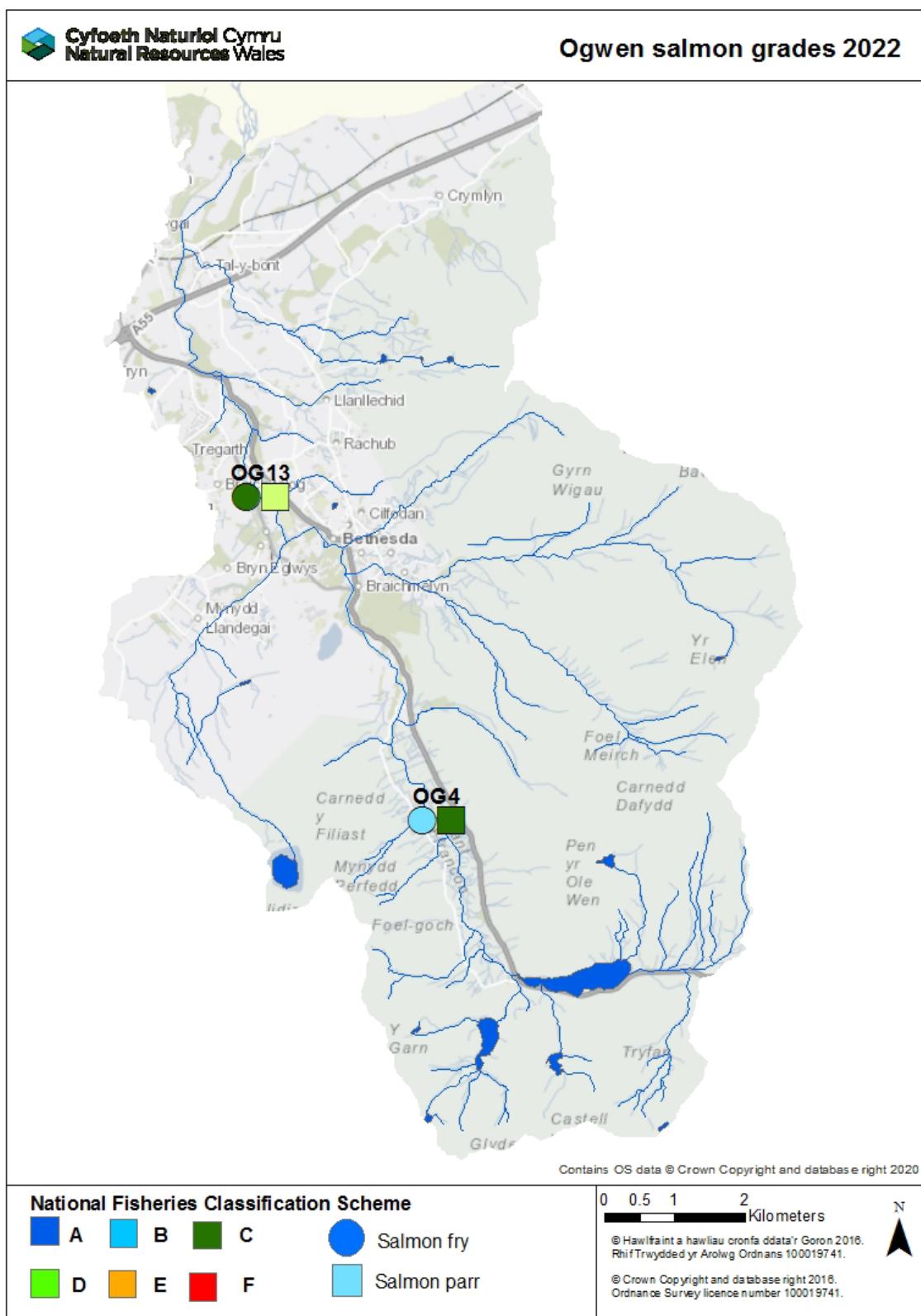
The symbols display the National Fish Classification Scheme (NFCS) grades which have been developed to evaluate and compare the results of fish population surveys in a consistent manner. The NFCS ranks survey data by comparing fish abundance at the survey sites with sites across Wales and England where juvenile salmonids are present. Sites are classified into categories A to F, depending on densities of juvenile salmonids at the site.

Grade	Descriptor	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

Catchment	Site code	Year	Salmon fry grade	Salmon parr grade	Trout fry grade	Trout parr grade
Ogwen	4	2022	B	C	B	D
Ogwen	13	2022	C	D	B	E

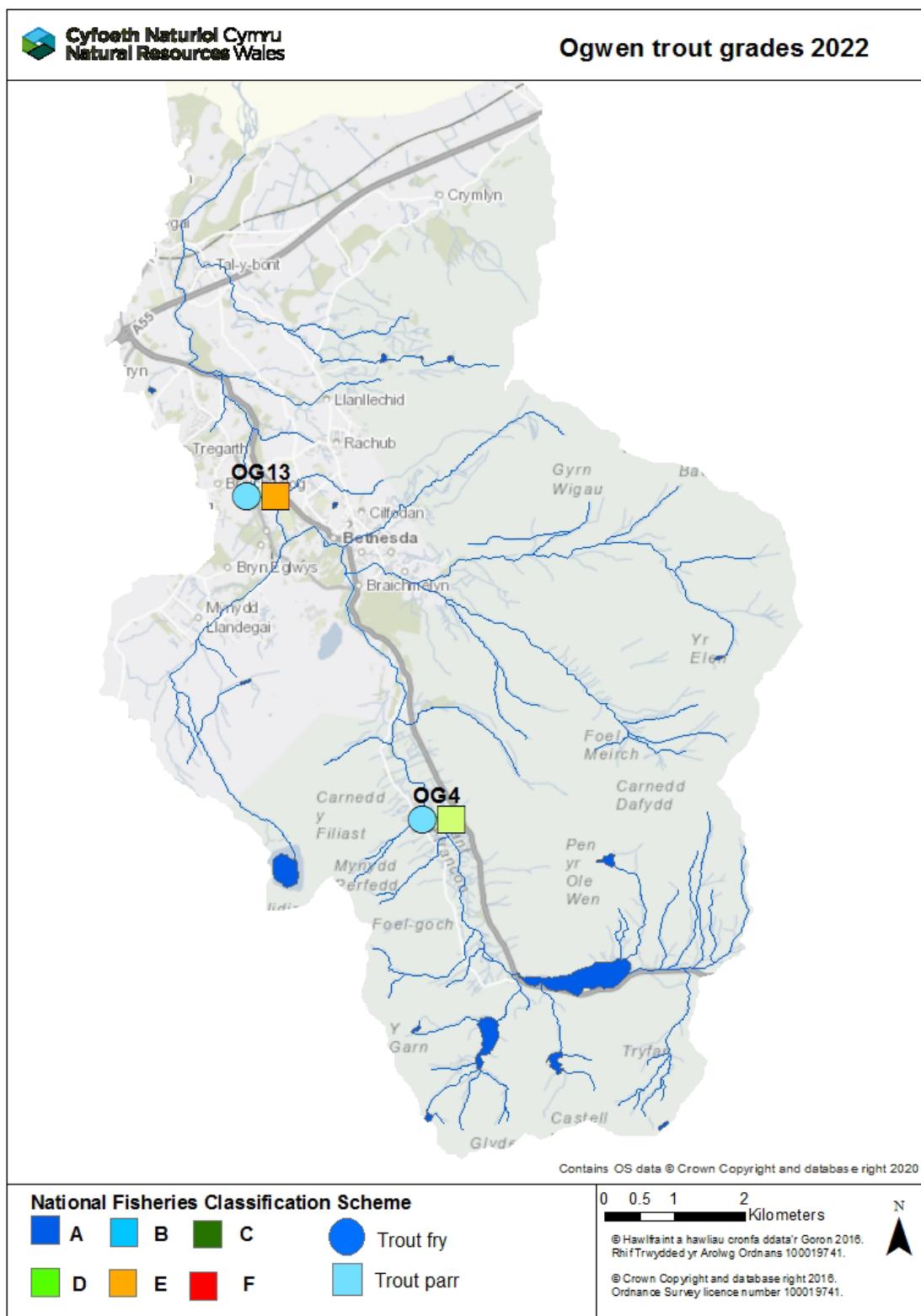


## Ogwen juvenile salmon grades 2022





## Ogwen juvenile trout grades 2022

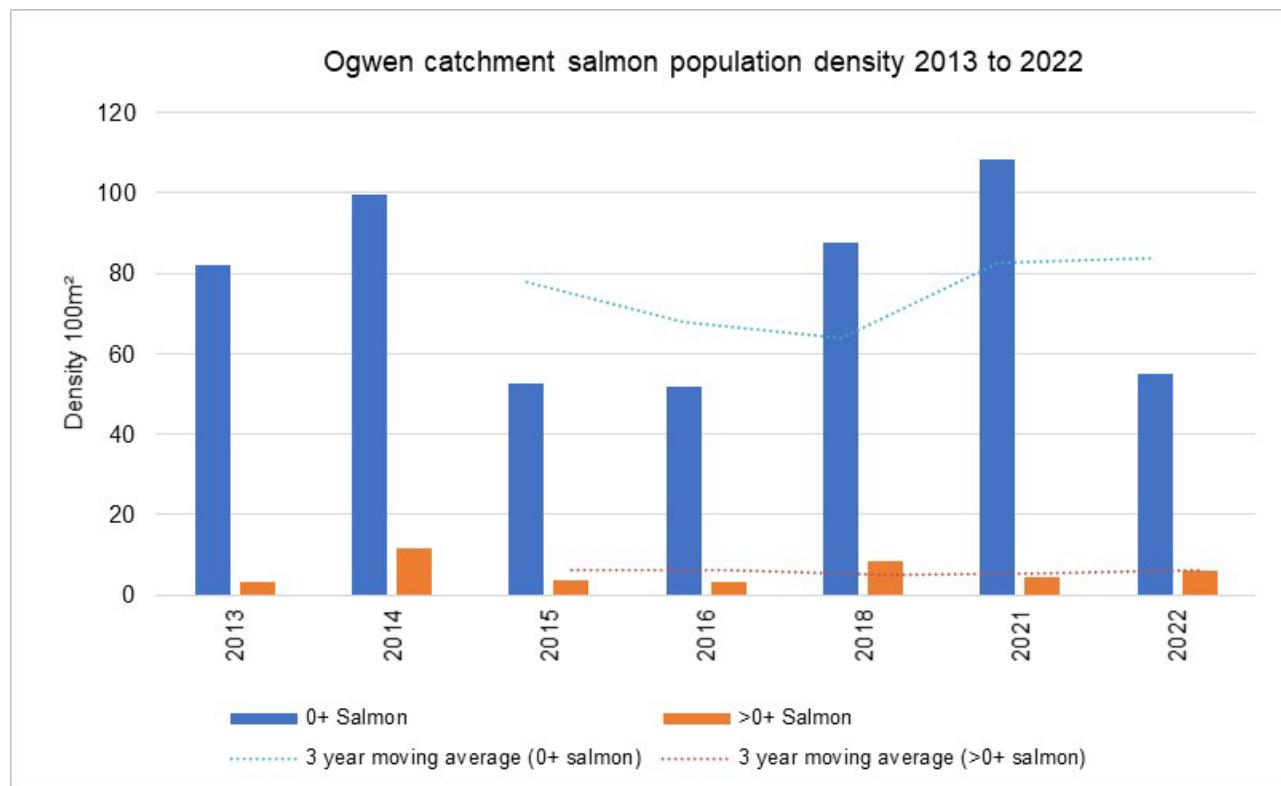


## Catchment Population Trends

The table below shows the average salmon and trout densities from the temporal site on the Ogwen catchment since 2013. Surveys were not carried out in 2017 & 2019 due to high flows, all surveys were cancelled in 2020 due to covid restrictions. Site 13 on the Ogwen is a new annual site and has only been surveyed in 2014 and 2022. NA stands for not applicable.

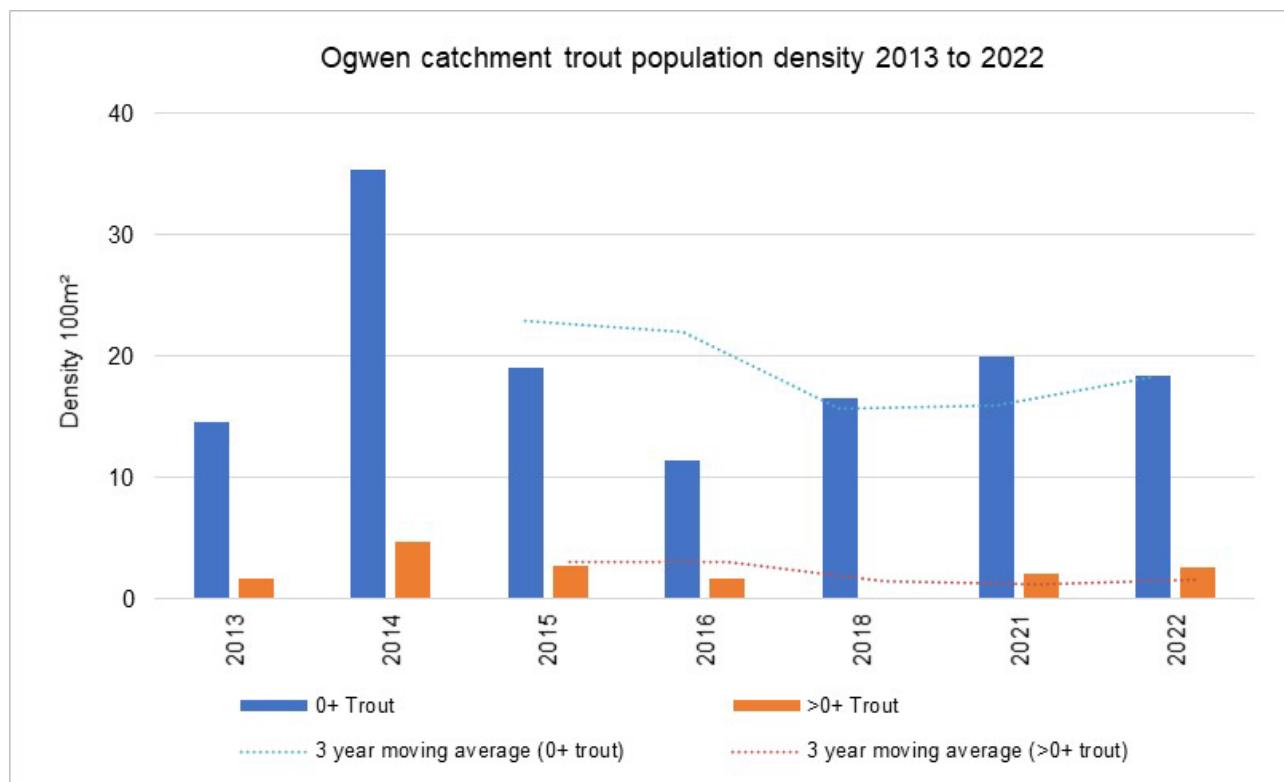
### Salmon Population Estimate

Year	0+ Salmon	3-year average (0+ salmon)	>0+ Salmon	3-year average (>0+ salmon)
2022	54.9	83.6	5.9	6.2
2021	108.5	82.7	4.3	5.3
2018	87.5	64.0	8.4	5.1
2016	52.0	67.9	3.3	6.1
2015	52.4	78.0	3.6	6.1
2014	99.4	NA	11.6	NA
2013	82.2	NA	3.2	NA



## Trout Population Estimate

Year	0+ Trout	3-year average (0+ trout)	>0+ Trout	3-year average 
2022	18.3	18.3	2.5	1.5
2021	19.9	16.0	2.0	1.2
2018	16.5	15.7	0.0	1.5
2016	11.4	22.0	1.6	3.0
2015	19.0	23.0	2.7	3.0
2014	35.4	NA	4.6	NA
2013	14.5	NA	1.6	NA



## Ogwen Fisheries Action Table

Planned actions	Benefits	Lead	Partner(s)	Timescale for delivery
<b>Habitat improvements:</b> We will investigate where there is opportunity to improve habitat for fish through improving access over barriers, restoration of riparian and instream habitat, including control of invasive species.	More natural river system, reduced siltation, increased flow diversity, improved spawning gravels and juvenile habitat. Improved fish numbers.	NRW		On-going
<b>Water Framework Directive:</b> We will continue to work to ensure no deterioration, monitor the status of the environment and investigate the 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.	Waterbodies protected and improved WFD waterbodies achieving Good Status/Potential.	NRW	NRW Wildlife trusts Local authorities Landowner DCWW	On-going
<b>Enforcement:</b> Action to reduce illegal activity on information provided and investigations.	Reduce illegal activity, more fish remain in the system.	NRW	Stakeholders North Wales Police	On-going