Know Your River – Conwy
Salmon & Sea Trout Catchment Summary

Introduction

This report describes the status of the salmon and sea trout populations in the Conwy 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.

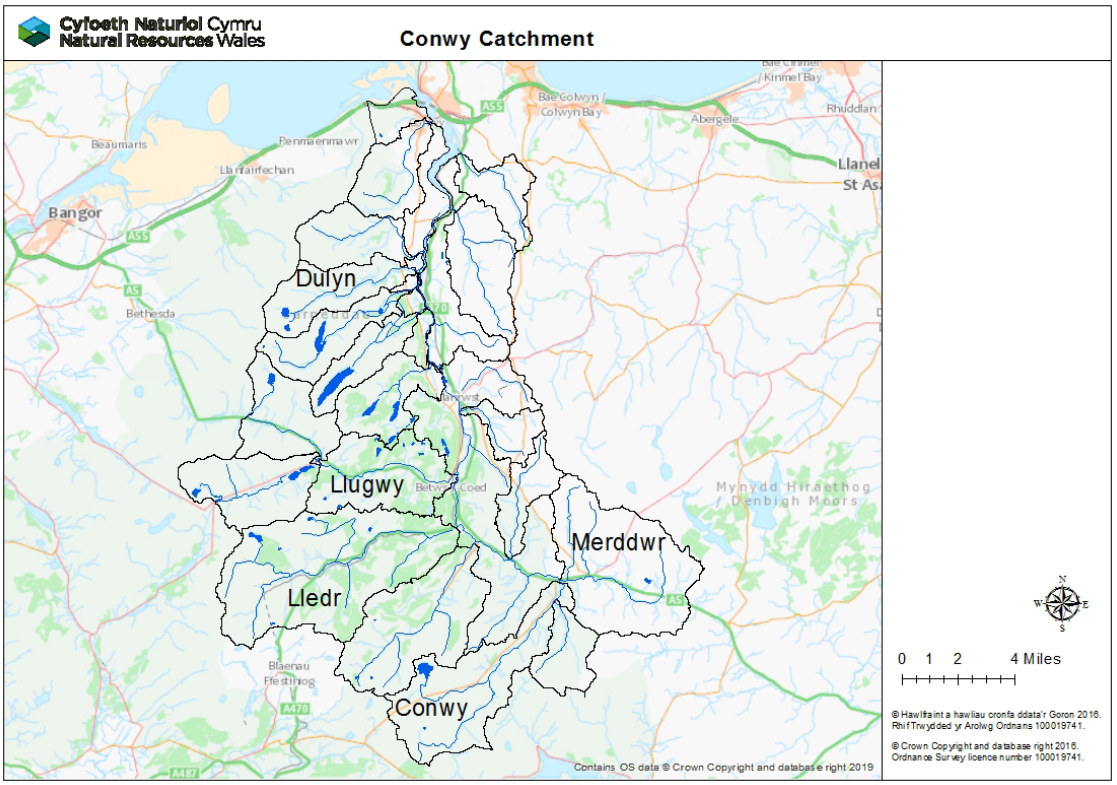
Action tables set out habitat improvements to restore freshwater productivity of salmon and sea trout populations. These tables also include some work which will be carried out by our partner organisations, not just Natural Resources Wales (NRW).

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 Conwy rises from Llyn Conwy in the Migneint Moors in Snowdonia and drains a predominantly upland catchment discharging into Liverpool Bay at Conwy. The catchment is mainly rural with limited industrial development. Land use is dominated by agriculture (75%), mainly sheep grazing with some dairy farming, and coniferous afforestation (12%). Tourism also plays an important role in the local economy.



The ‘hard’ Ordovician rocks in the south and west areas of the catchment have given rise to thin, poorly buffered soils that are susceptible to the effects of acidification. The weather resistance of these rocks has also given rise to steep slopes that have rendered most of the sub catchments in the south-western area inaccessible to migratory fish. In contrast, the geology of the north-eastern area of the catchment provides more buffering which reduces acid sensitivity.

Abandoned metal mine shafts, adits and spoil heaps act as point sources of metal contamination in parts of the Gwydyr forest just north of Betws y Coed. This contamination has a localised impact upon the Nant Gwydyr and minor tributaries of the lower Llugwy.

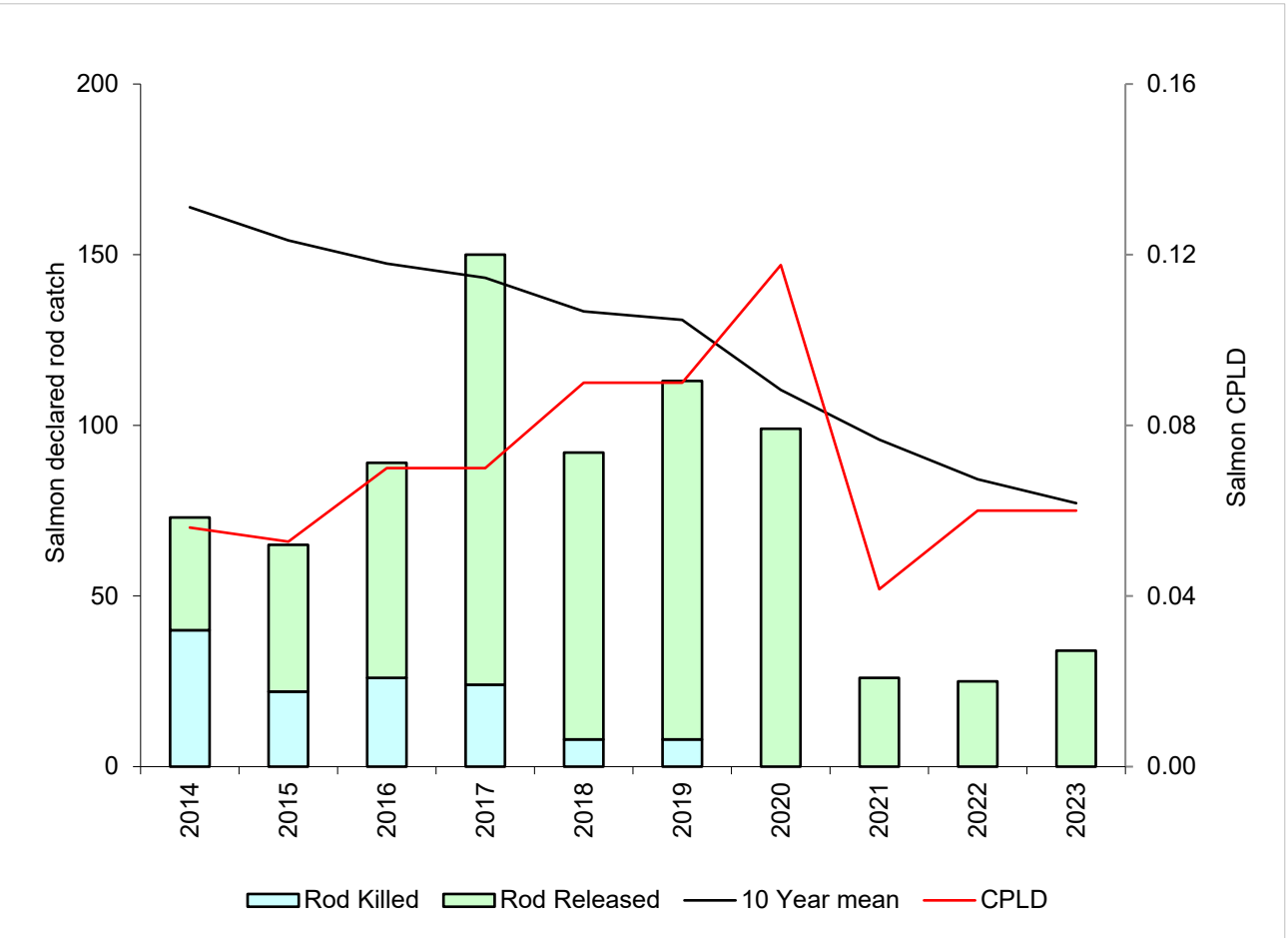
The Conwy falls fish pass was constructed in compensation for any disturbance to the Conwy’s fisheries during the construction of the A55 expressway tunnel at Conwy. This was opened in 1994 and opened an additional 40% of spawning and nursery area within the catchment.

Rod Catches

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

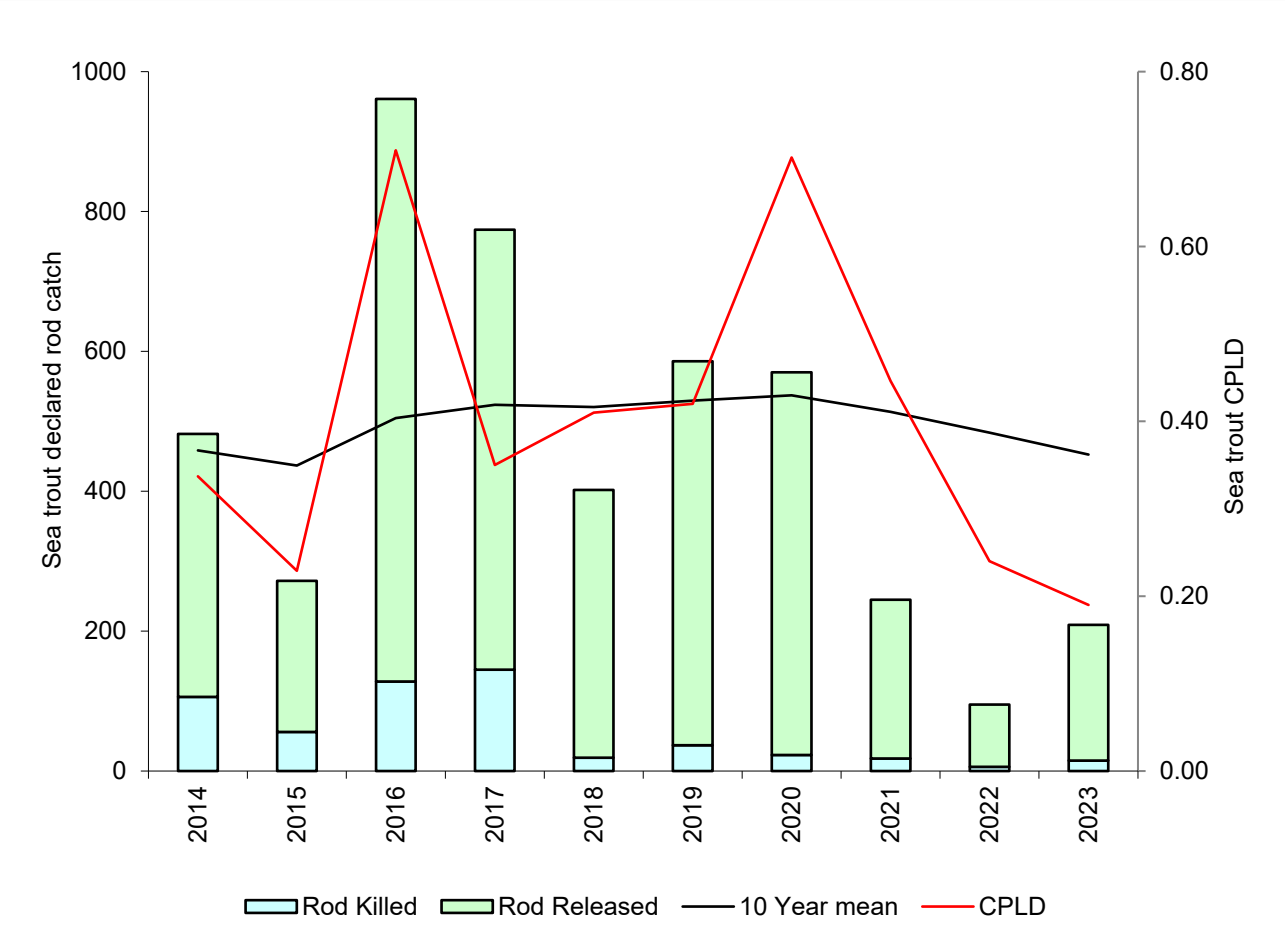
Salmon Rod Catch

Year	Caught	Rod Killed	Rod Released	10 Year mean	Percentage released	Catch per license day
2023	34	0	34	77.2	100	0.06
2022	25	0	25	84.2	100	0.06
2021	26	0	26	95.8	100	0.042
2020	99	0	99	110.4	100	0.119
2019	119	9	110	130.9	93	0.094
2018	92	8	84	133.4	91	0.094
2017	150	24	126	143.2	84	0.069
2016	89	26	63	147.4	71	0.070
2015	65	22	43	154.2	66	0.053
2014	73	40	33	163.9	45	0.056



Sea Trout Rod Catch

Year	Caught	Rod Killed	Rod Released	10 Year mean	Percentage released	Catch per license day
2023	209	15	194	452.6	93	0.19
2022	95	6	89	483.8	94	0.24
2021	245	18	227	513.5	93	0.466
2020	570	37	547	529.7	96	0.713
2019	586	23	549	537.2	94	0.420
2018	402	19	383	520.4	95	0.411
2017	774	145	629	523.6	81	0.350
2016	961	128	833	504.7	87	0.710
2015	272	56	216	436.8	79	0.229
2014	482	106	376	458.5	78	0.337



Stock status

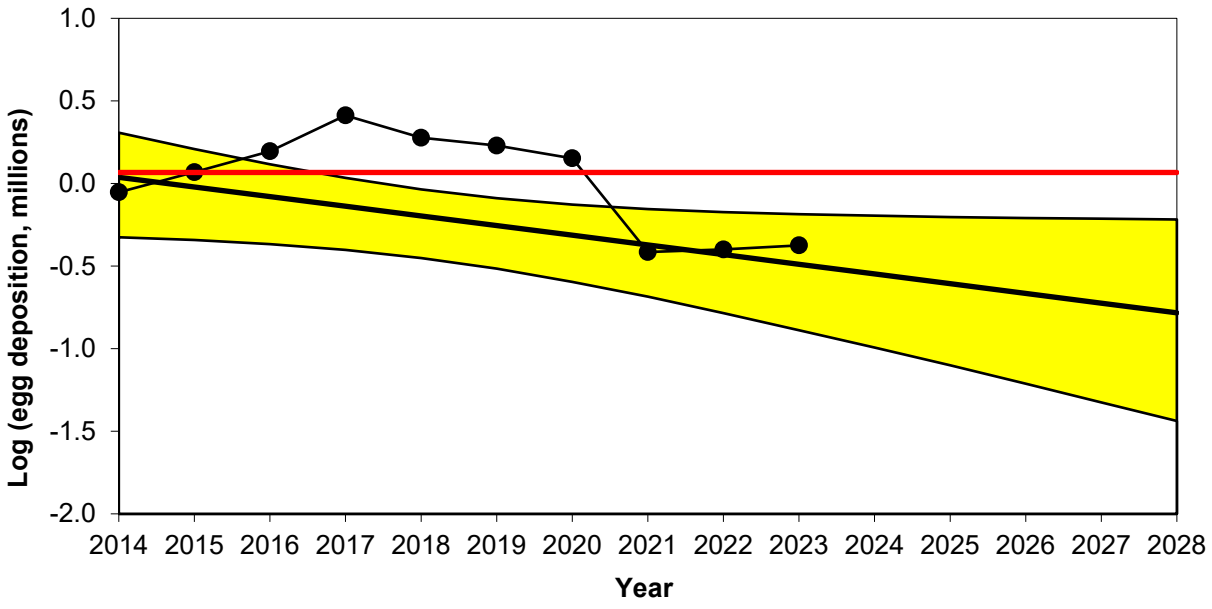
Conservation of Salmon

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 to conserve salmon stocks in the future.

River Conwy

Estimates of egg deposition, and compliance with conservation limit



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 (2014-2023).

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

Conservation of Sea Trout

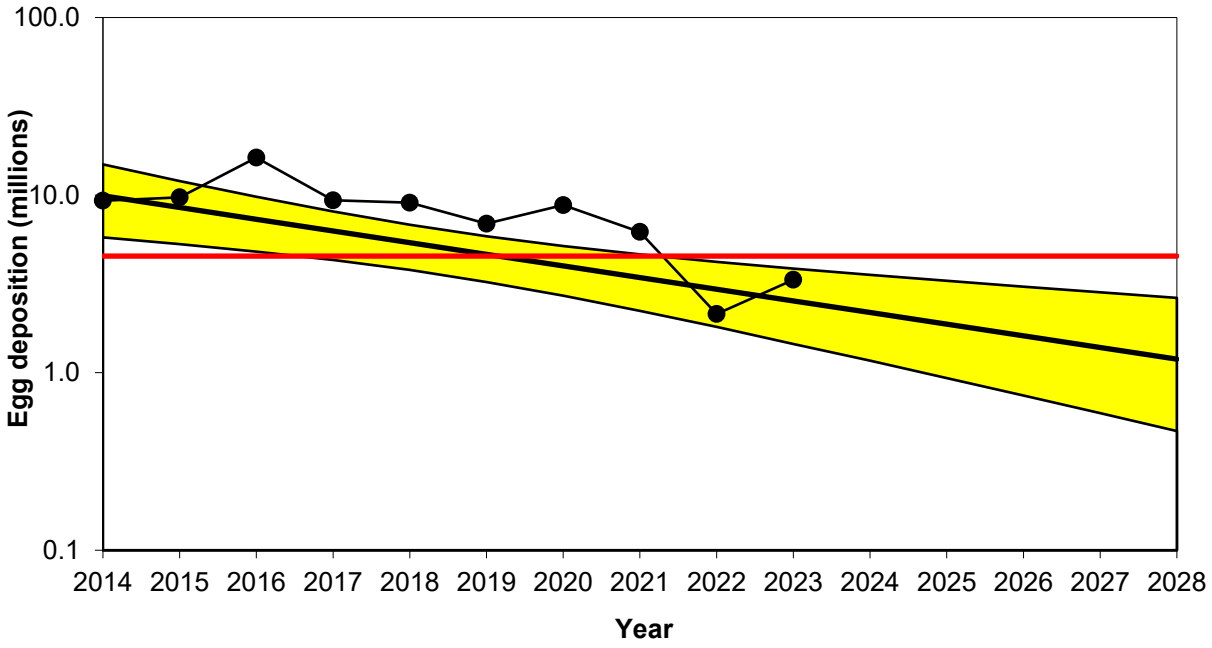
In contrast to salmon, no established methods of setting Conservation Limits or similar have been available for sea trout. In the absence of such analysis, NRW and the Environment Agency have, for several years, routinely applied a fishery-based assessment to the principal sea trout rivers. This method – 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).

River Conwy: Sea trout

Estimates of egg deposition, and compliance with conservation limit



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 (2014-2023).

- Current number of eggs being deposited puts stocks **at risk**
- In five years' time the predicted status of sea trout stocks will be **at risk**

- Based on current data, and the projection of the graph, the stocks of sea trout on the Conwy will continue to **decline (downward trend)**

Juvenile Salmonid Monitoring Programme

In 2024 the temporal (annual) programme consisted of four sites on the Conwy. 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 following table/maps present the results of the routine juvenile salmonid population surveys from 2024 on the Conwy.

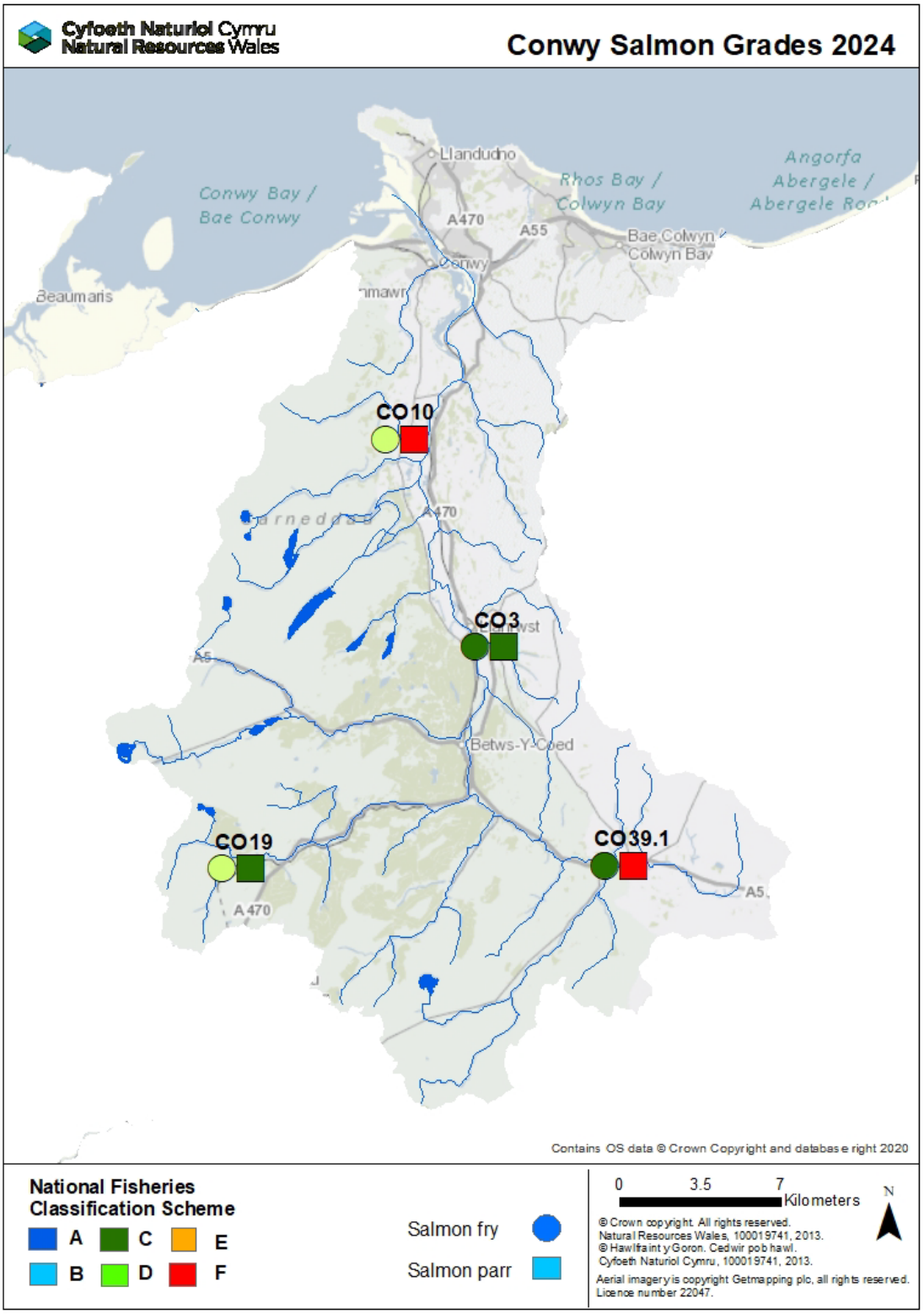
The symbols display the National Fish Classification Scheme (NFCS) grades which have been developed to evaluate and compare the results of fish population surveys in a consistent manner. The NFCS ranks survey data by comparing fish abundance at the survey sites with sites across Wales and England where 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

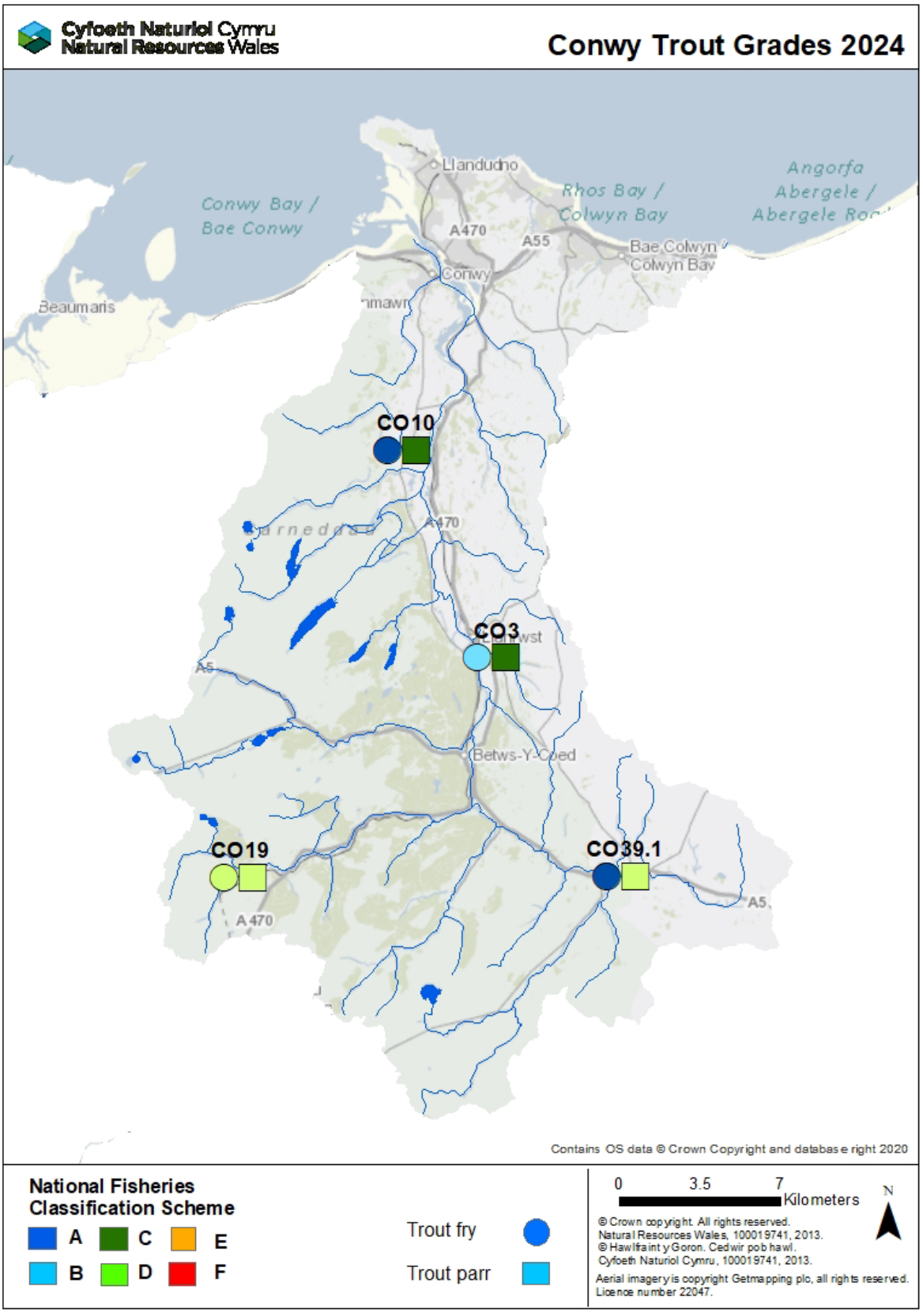
Catchment	Site code	Year	Salmon fry grade	Salmon parr grade	Trout fry grade	Trout parr grade
Nant Y Goron	3	2024	C	C	B	C
Roe	10	2024	D	F	A	C
Lledr	19	2024	D	C	D	D
Merddwr	39.1	2024	C	F	A	D

Cyfoeth Naturiol Cymru
Natural Resources Wales

Map of Juvenile Salmon Results



Map of Juvenile Trout Results

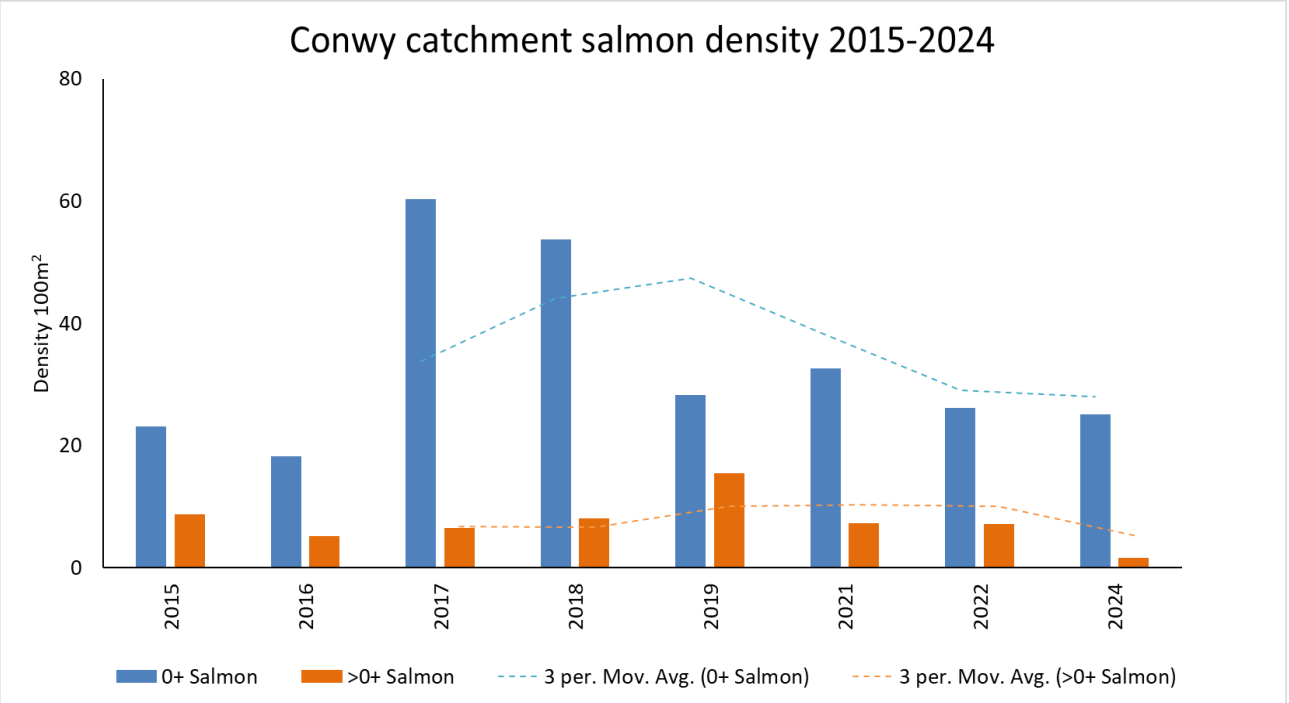


Catchment Population Trends

The tables/graphs below shows the average salmon and trout densities from the temporal sites across the Conwy catchment since 2015. NB – covid restrictions cancelled all surveys in 2020. Furthermore, surveys were also not conducted in 2023 due to high river flows. NA stands for not applicable.

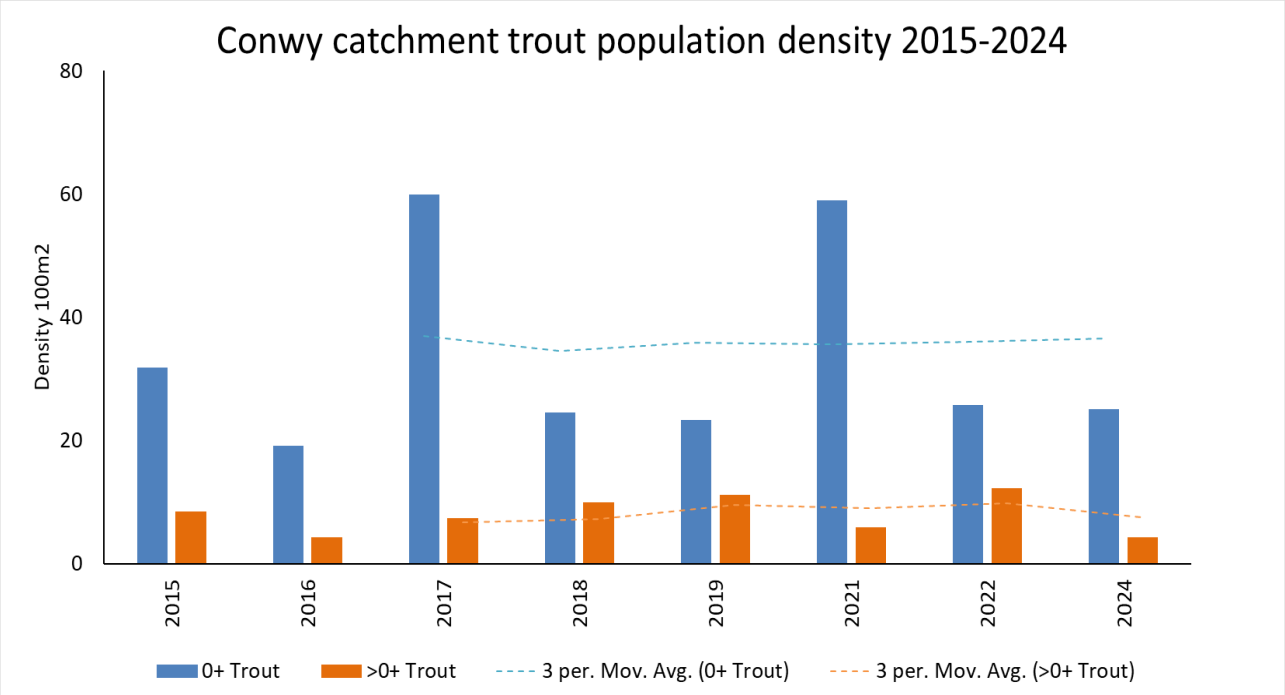
Salmon population trend - Note: Geometric mean has been used to better represent 'normal' densities. One or two high values were making more recent mean values (average) look better than the true picture of low densities. The true picture is now better illustrated.

Year	0+ Salmon	3-year average (0+ salmon)	>0+ Salmon	3-year average (>0+ salmon)
2024	25.0	26.8	1.6	3.4
2022	26.2	27.9	7.2	8.3
2021	32.6	35.7	7.3	8.7
2019	28.2	44.0	15.5	8.3
2018	53.6	37.9	8.1	5.5
2017	60.3	28.3	6.5	5.6
2016	18.2	NA	5.2	NA
2015	23.1	NA	8.7	NA



Trout population trend - Note: Geometric mean has been used to better represent 'normal' densities. One or two high values were making more recent mean values (average) look better than the true picture of low densities. The true picture is now better illustrated.

Year	0+ Trout	3-year average (0+ trout)	>0+ Trout	3-year average (>0+ trout)
2024	25.1	32.6	4.3	5.7
2022	25.8	31.9	12.2	8.3
2021	58.9	31.3	5.9	7.7
2019	23.3	31.4	11.1	8.4
2018	24.5	29.4	10.0	5.8
2017	59.8	32.1	7.4	5.4
2016	19.2	NA	4.2	NA
2015	31.8	NA	8.5	NA



Conwy Fisheries Action Table

Planned actions	Benefits	Lead	Partner(s)	Timescale for delivery
Conwy Falls fish pass - refurbishment and modernization update	Improved operation and safety of the fish pass, improving fish passage to the extra 40% of spawning grounds the pass creates.	NRW		2023-26
Uwch Conwy project – Upper Conwy - improve land management and water quality. Work in 2024 focused on reconnecting the flood plain on the Machno creating flood meadow/ wet woodland, improved in river habitat through boulder introduction - tree planting work will follow. River side fencing on the Machno, Iwrch and Nant y Gwryd, along with tree planting.	More natural river system, reduced siltation, increased flow diversity, improved spawning gravels and juvenile habitat. Improved fish numbers. Reduced nutrient input from livestock, river shading - cooler summer temperatures.	NRW	NRW & National Trust	On-going
Habitat improvements: 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

Planned actions	Benefits	Lead	Partner(s)	Timescale for delivery
Water Framework Directive: 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
Enforcement: 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