Juvenile Salmonid Summary
River Wye 2019

In 2019 we completed the temporal salmonid survey programme, consisting of 24 sites in Wales (annual). We use the Welsh temporal data to look at trends in juvenile salmon and trout densities.

The surveying programme (and responsibility for the catchment) is split between Natural Resources Wales (NRW), who are responsible for the Welsh Wye, and the Environment Agency on the English side.

This document briefly summarises the NRW salmonid survey result for 2019.

Changes to survey method and analyses

Following a statistical review of our data, it has been decided that our temporal sites will now be surveyed on a semi-quantitative (single run) basis, with no loss in quality of the data. In this report, we have reported classifications in the maps using our standard method of estimating populations (and hence densities) and these are comparable to previous years. The temporal analysis of trends has been updated to include the new calculation for estimating populations, which allows us to compare quantitative and semi-quantitative surveys. This has meant we can include more data, filling in gaps in years where only SQ surveys had been done historically, and have more confidence in the results but does mean these graphs may look slightly different to those from previous reports.

Salmon and Trout Classifications

The following maps show the results of the routine juvenile salmonid population surveys from 2019 in Wales (raw data and 2018 maps for comparison are given in the Appendices).

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. The following table shows the values and classification of NFCS.

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

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Salmon

We recorded juvenile salmon at 18 of 24 Wye sites in 2019; this included the upper Lugg and Arrow where (due to historic access issues) salmon are rarely found.

Salmon fry (0+) densities have declines slightly, dropping a grade at some sites. One or two of the regularly excellent sites have notably declined, the Dernol site has recorded the lowest salmon fry density since 1992, dropping from grade A (excellent) to grade C. The normally excellent Marteg and Edw sites have also decline in fry densities, the Marteg dropping a grade to B (good).

Consistently over the years, salmon parr (>0+) densities have been less than good at the Wye temporal survey sites. This likely reflect the habitat at the surveyed sites, initially selected to assess salmon spawning, however densities are lower than our classification would expect.
Parr classifciations have dropped off a little this year, no site being graded better than C (fair), the best site last year, the Marteg, notably dropping from a good status to fair.

Salmon were absent at six of the sites, most of these being the usual suspects. The Lugg and Arrow have multiple barriers (often with fish passes) making access challenging, combining with low returning adult numbers means access up these rivers is often restricted ensuring very limited recruitment. The Honddu once again is a real disappointment at the head of the Monnow catchment, barriers at Crucorney and Osbaston are restricting salmon access. The absence of salmon at the other sites of Einon and Llynfi reflecting the habitat suitability / preferences of salmon, the Einon is a very narrow river reach (2m wide) and the Llyfi site is deep and pooled more suited to the perch that are resident in this site.

Brown Trout

We recorded juvenile brown trout at 20 of 22 Wye sites in 2019; the exceptions being two sites on the Ithon, which have only ever recorded inconsistent or very low numbers of trout.

Once again trout numbers were relatively stable across the catchment, few sites seeing little change. Only two sites classed as excellent and three as good.

The Wye temporal programme was not primarily selected to assess trout, the Ithon sites where no trout were found are more suited to salmon. The two narrow (2m wide) sites in the programme (Llanwrthwl Dulas and the Einon) that are not classic salmon spawning tributaries are the sites where excellent trout classifications were recorded. This temporal programme is perhaps not representative of trout habitat and therefore of trout status around the Wye.

Other notable improvements in grade were on the Arrow and Aran both moving from D to B grades.

The Hindwell site saw a significant decline from excellent fry last year to fair C, this site however saw a marked increase in trout parr densities, probably a knock on from the great fry numbers in 2018 and potentially being the cause of the fry decline in 2019 (perhaps eating the 0+?).

Back in the programme this year was the Llanwrthwl Dulas (excluded for two year for access issues), as well as the excellent trout fry numbers the parr were in good shape too, graded B, a very nice little trout stream.

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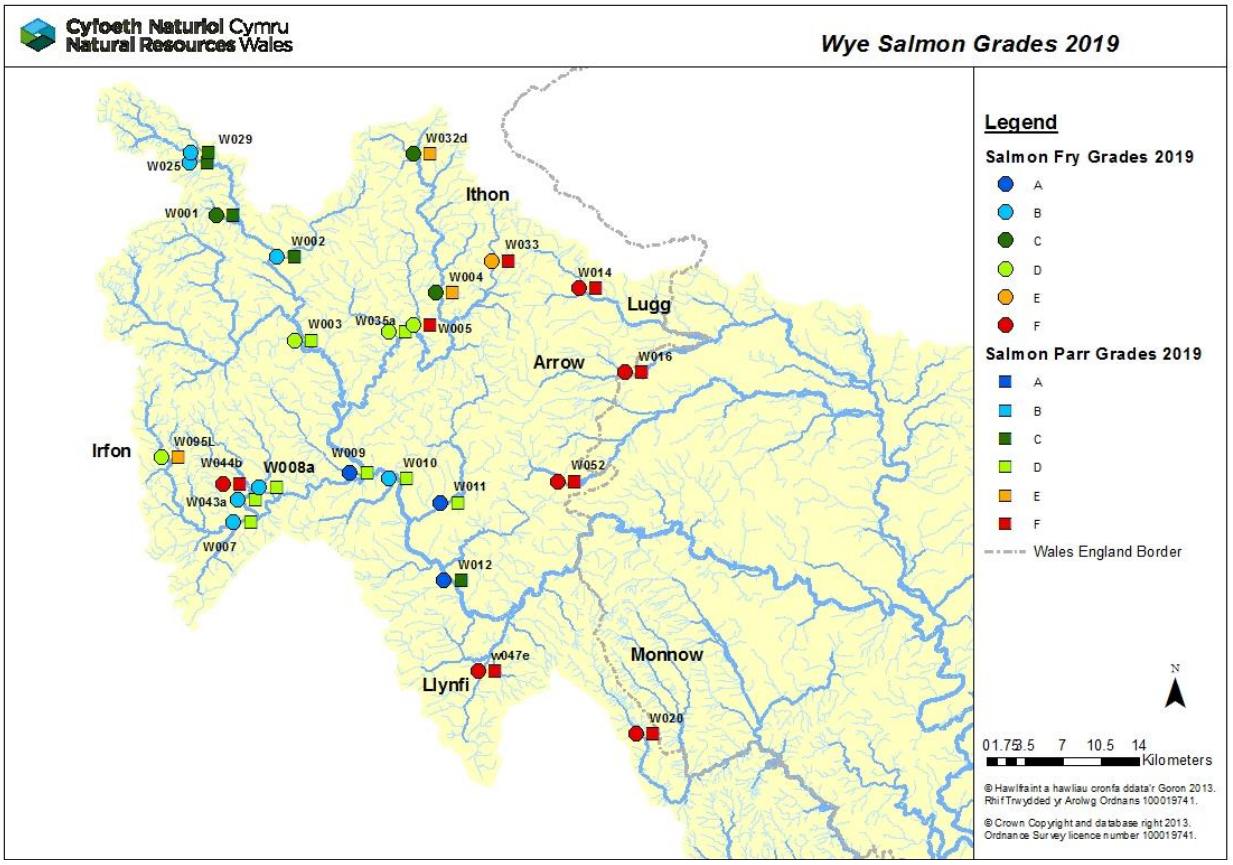
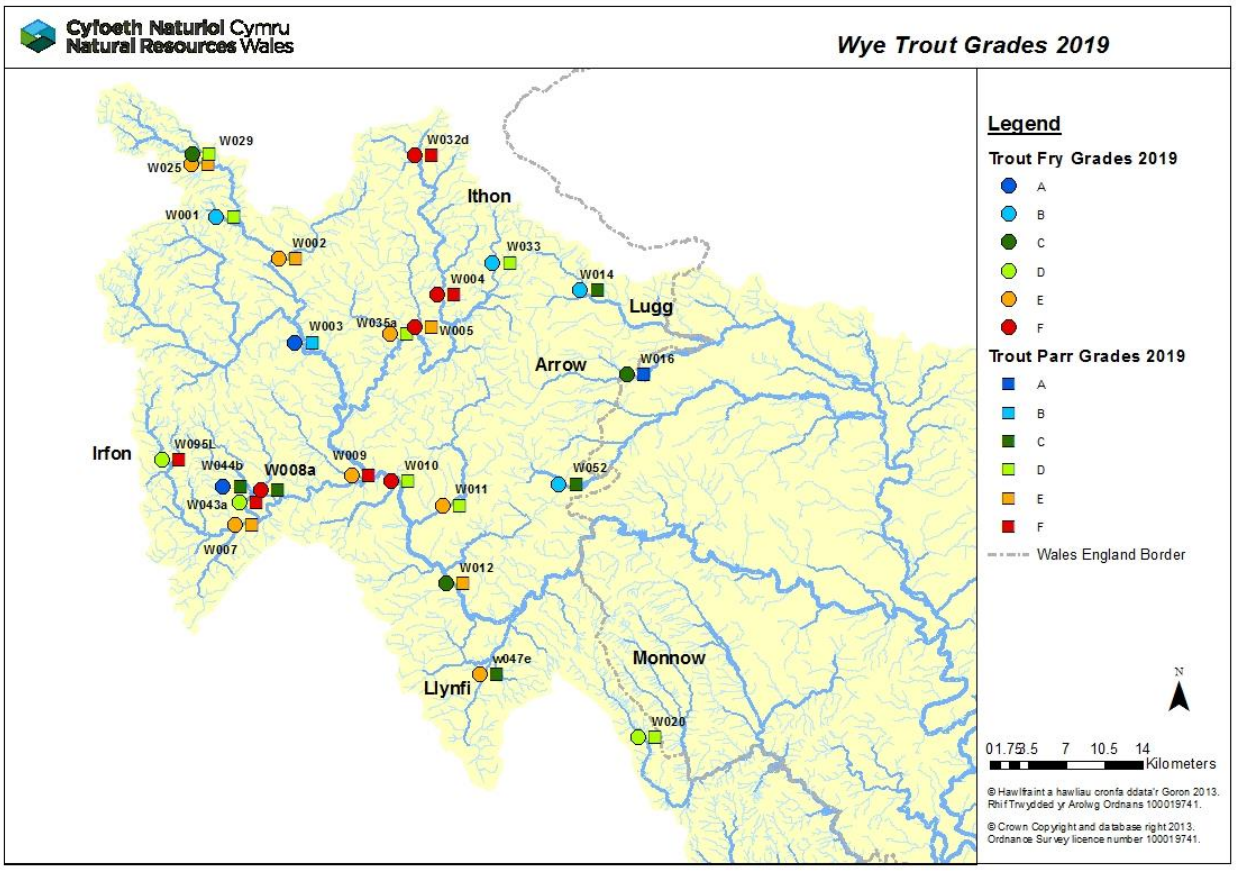
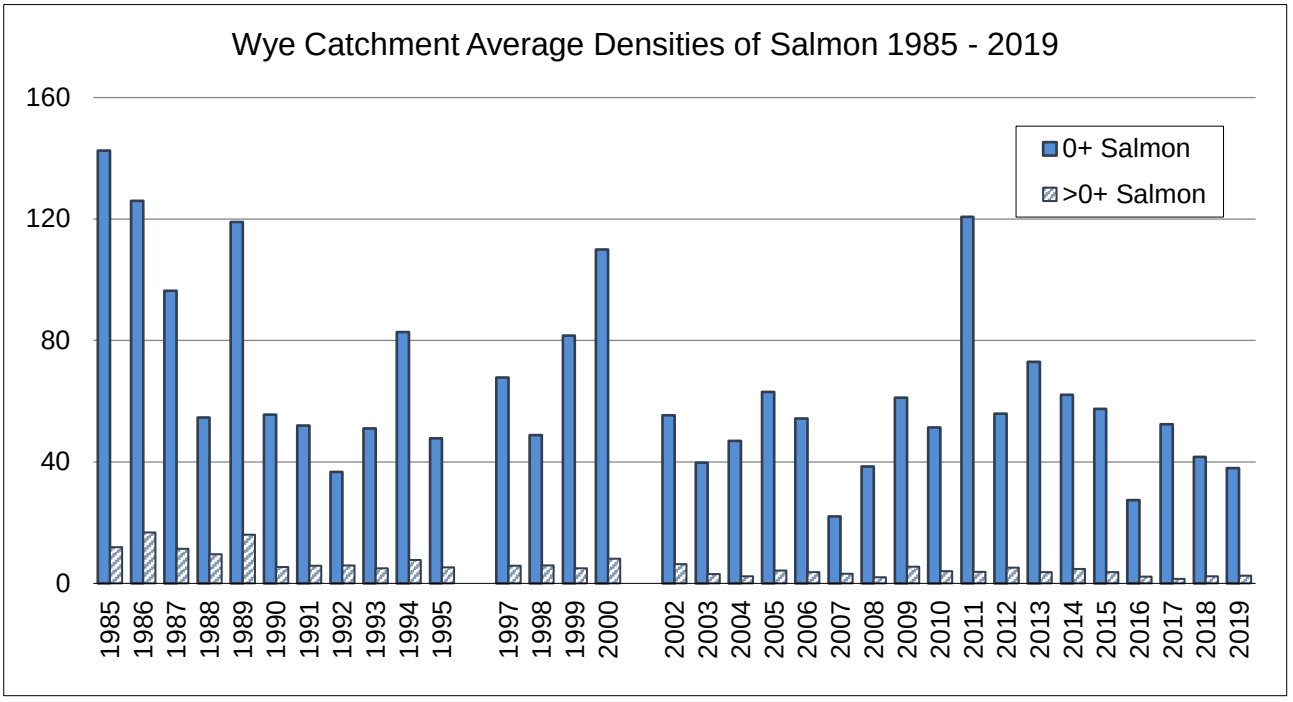


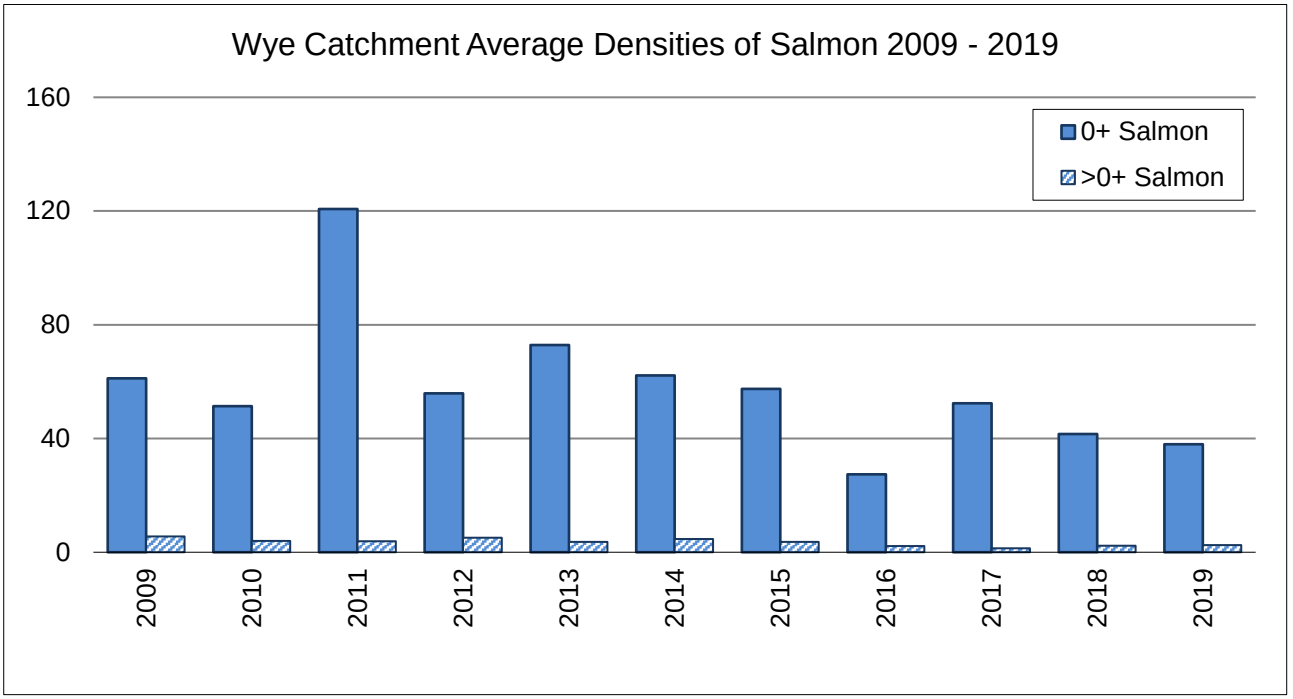


Catchment Population Trends

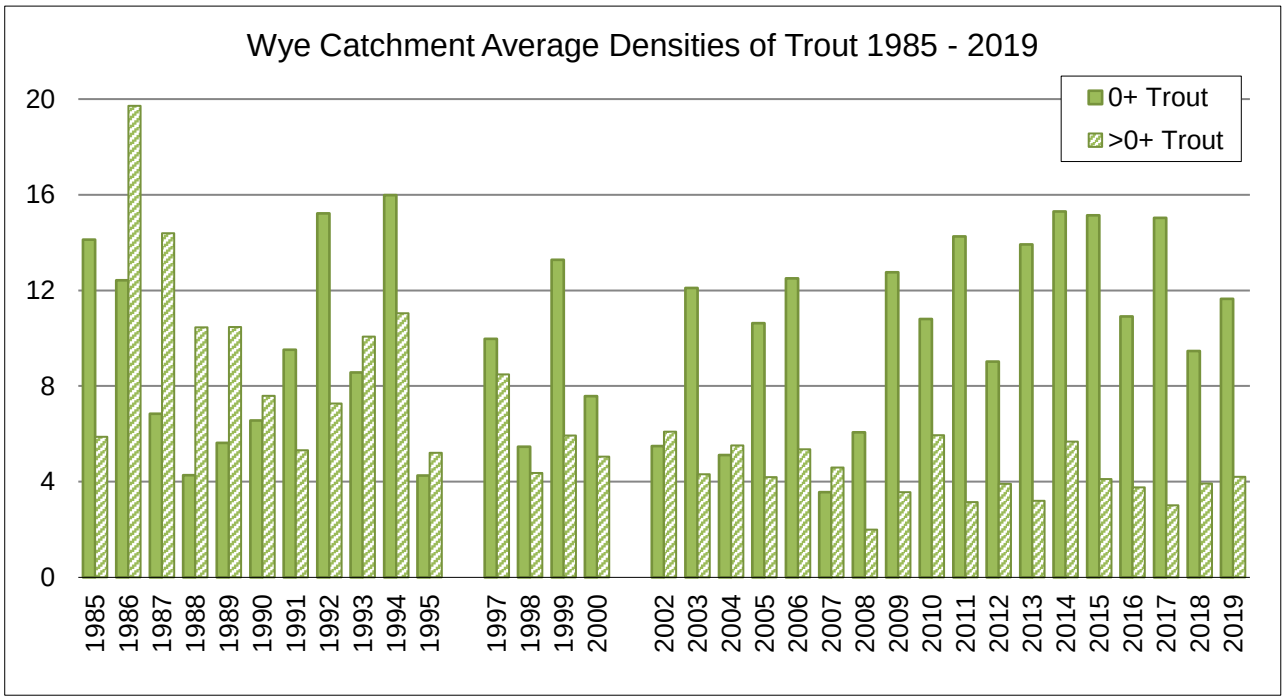
The graphs below show a simple comparison of average salmon and trout densities across the Wye catchment; since surveying began in 1985, and focussed on the last ten years.

NB – the data shown here are only sites in the current Welsh monitoring programme; not every site in the programme was done every year; no surveys were done in 1996 or 2001, and only the Irfon catchment was surveyed in 2011. Quantitative and semi-quantitative density estimates are included in these trends and the catchment averages; the former derived using 2 or 3 run catch depletion survey technique and the Carle and Strub calculations, the latter using an NRW derived multiplier for single run surveys. This means that the graphs, and the catchment averages below will differ to those presented in previous reports.





From the below graphs it can be seen that the trout densities appear stable. This may be a reflection of the status of the trout (it clearly is at these sites) but over the whole catchment it perhaps does not give a good picture, these densities while stable are low. A more targeted assessment of habitat suitability and densities may give a better 'health status' of the wye trout. We will hopefully get a better picture with our next spatial survey which is planned for 2020.



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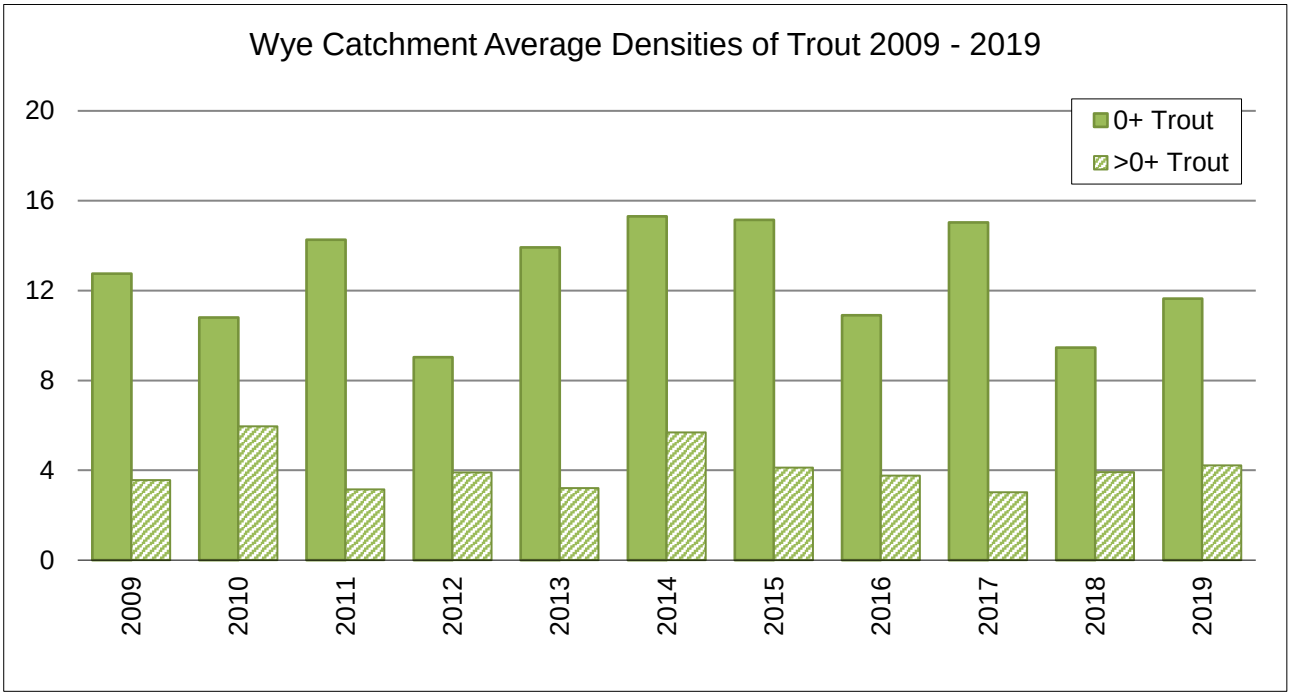
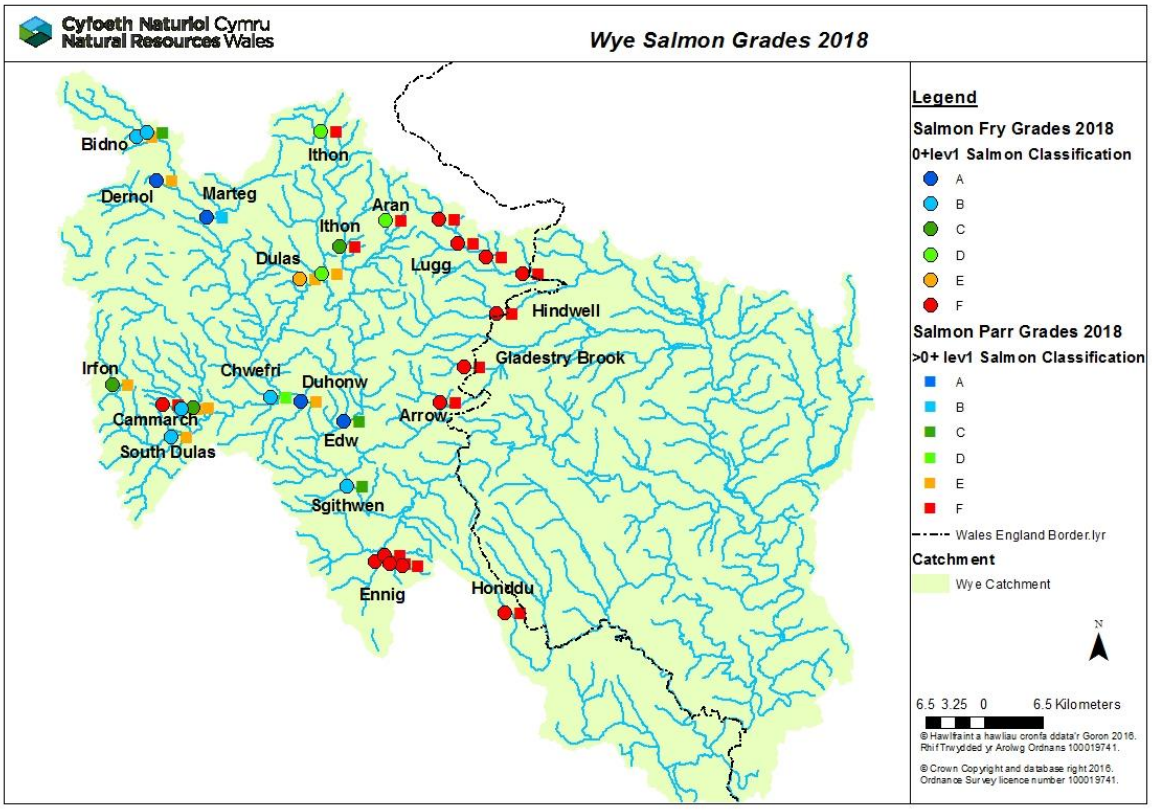
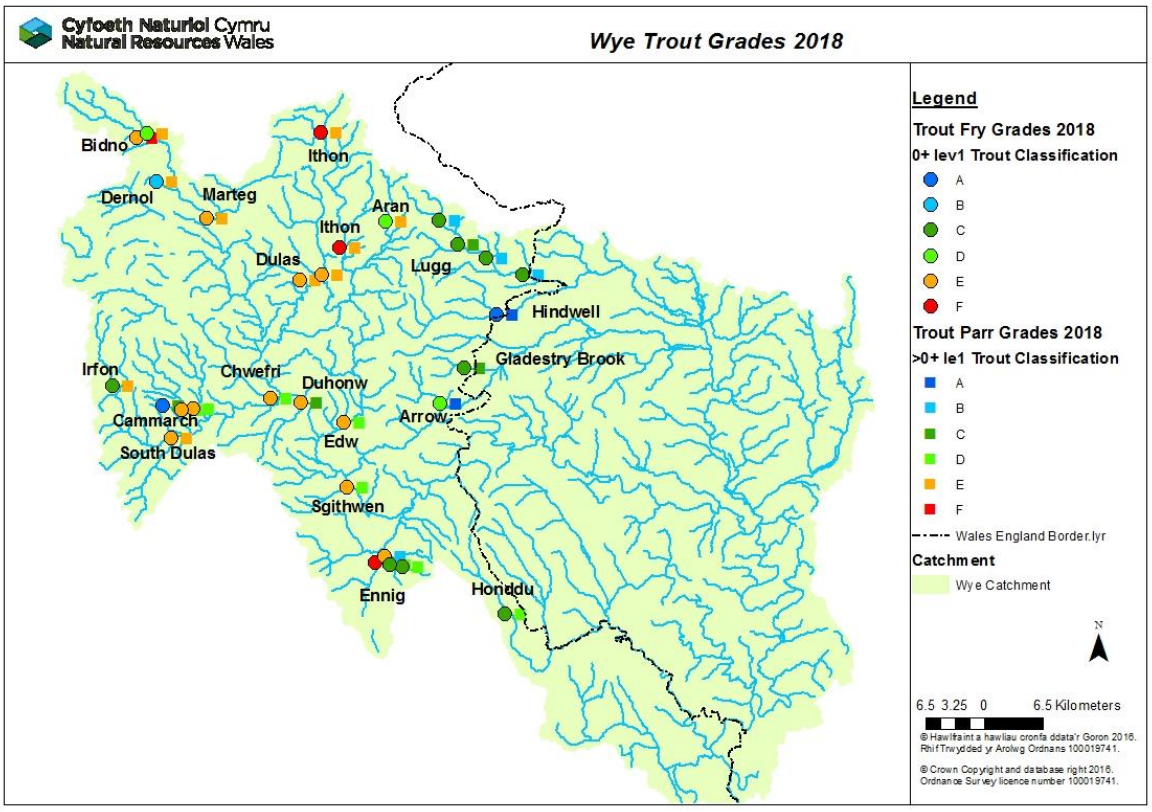


The following table shows a simple comparison of the catchment average density of juvenile salmon and trout from 2019, and compares this to 2018 and a 5-year average. (Please take this as a snapshot for interest only, low numbers of sites and significant changes at one or two sites can alter averages significantly).

	0+ Salmon	>0+ Salmon	0+ Trout	>0+ Trout
2019 average density (per 100m²)	38.0	2.6	11.6	4.2
2018 average density (per 100m²)	41.6	2.3	9.5	3.9
Percentage difference to 2018	-9%	11%	23%	7%
5-yr average density (per 100m²)	48.2	2.9	13.2	4.1
Percentage difference to 5yr average	-21%	-10%	-12%	3%

Appendix 1 – 2018 maps





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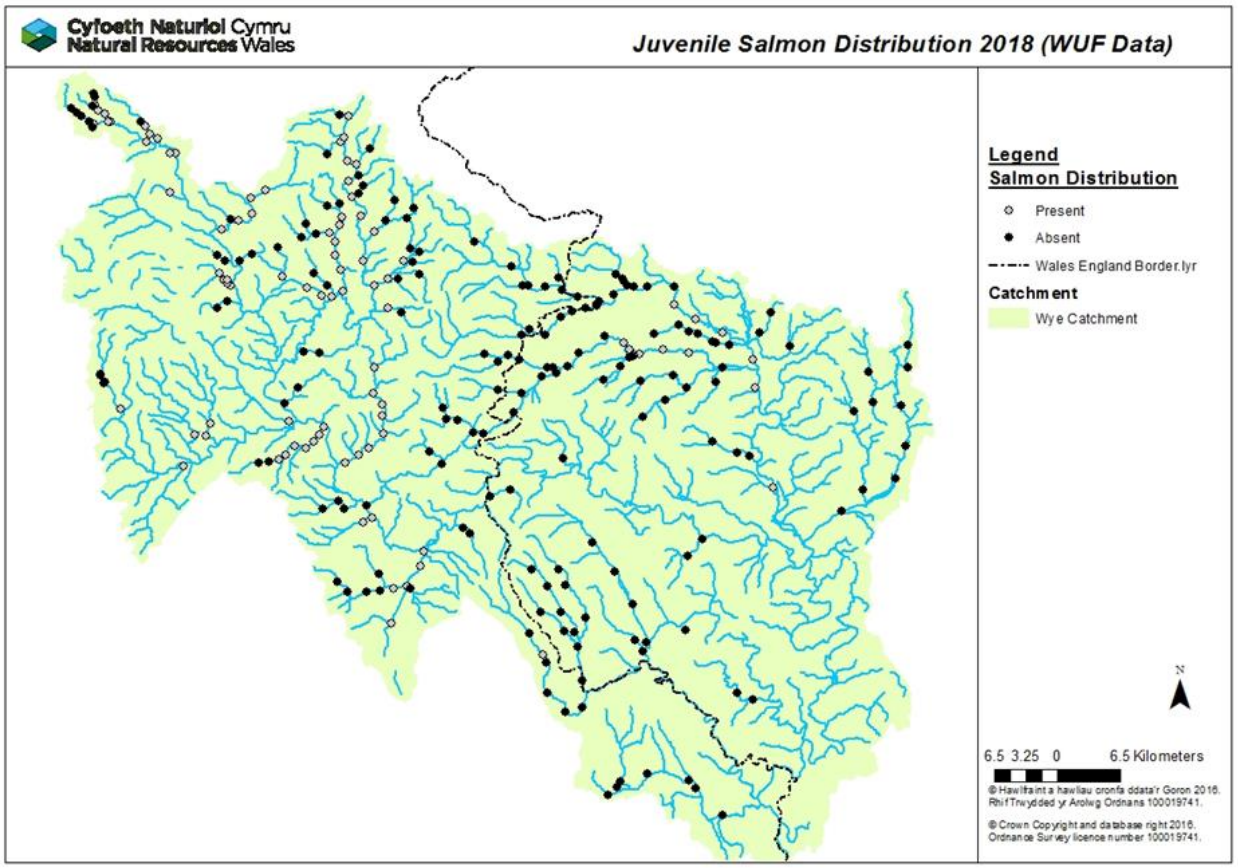

Appendix 2 - Data from 2019 electric fishing surveys in the Wye catchment. Densities given here are raw densities of number / area fished, the classifications are comparable to previous years. The densities are not those used in the long term trend and are not comparable to that data set.

River	NGR	Site Code	Date Fished	Survey Type	0+ Sal No. per 100m^2	0+ Sal Grade	>0+ Sal No. per 100m^2	>0+ Sal Grade	Overall Sal Grade	0+ BT No. per 100m^2	0+ BT Grade	>0+ BT No. per 100m^2	>0+ BT Grade	Overall BT Grade
Dernol	SN 90185 75300	W001	04-Sep-19	SQ	17.5	C	2.3	C	C	10.5	B	2.3	D	C
Marteg	SN 95819 71432	W002	11-Sep-19	SQ	40.3	B	5.4	C	B	0.9	E	0.3	E	E
Llanwrthwl Dulas	SN 97371 63696	W003	05-Sep-19	SQ	4.8	D	1.6	D	D	32.8	A	13.6	B	A
Ithon	SO 10454 68113	W004	20-Aug-19	SQ	17.3	C	0.1	E	D	0	F	0	F	F
Clywedog	SO 08394 65065	W005	21-Aug-19	SQ	6.6	D	0	F	D	0	F	0.2	E	E
South Dulas - Irfon	SN 91822 46916	W007	08-Aug-19	SQ	22.4	B	1.6	D	C	0.4	E	0.4	E	E
Garth Dulas	SN 94231 50110	W008a	08-Aug-19	SQ	33.2	B	1.7	D	C	0	F	3.4	C	D
Chwerfri	SO 02608 51393	W009	07-Aug-19	SQ	90.3	A	1.4	D	A	0.6	E	0	F	E
Duhonw	SO 06195 50899	W010	05-Aug-19	SQ	28.1	B	0.8	D	C	0	F	2.3	D	E
Edw	SO 10952 48673	W011	28-Aug-19	SQ	59.7	A	1.5	D	B	0.5	E	0.8	D	E
Sgithwen	SO 11331 41427	W012	05-Aug-19	SQ	45.2	A	2.8	C	B	7.1	C	0.4	E	D
Lugg	SO 23685 68473	W014	22-Aug-19	SQ	0	F	0	F	F	10.4	B	3.5	C	C
Hindwell	SO 27992 60729	W016	23-Aug-19	SQ	0	F	0	F	F	7.1	C	17.9	A	B
Honddu	SO 29013 27284	W020	19-Aug-19	SQ	0	F	0	F	F	4.1	D	1.3	D	D

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Wye	SN 87945 80366	W025	03-Sep-19	SQ	28.7	B	2.8	C	C	0.5	E	0.2	E	E
Bidno	SN 89096 80823	W029	02-Sep-19	SQ	23.8	B	4.3	C	C	6.1	C	1.7	D	D
Ithon	SO 08351 80941	W032d	20-Aug-19	SQ	16	C	0.7	E	C	0	F	0	F	F
Aran	SO 15603 71044	W033	21-Aug-19	SQ	1	E	0	F	E	13.3	B	1.5	D	C
Dulas - Ithon	SO 06143 64518	W035a	05-Sep-19	SQ	2	D	0.8	D	D	0.4	E	2	D	E
Cammarch	SN 92635 50312	W043a	05-Sep-19	SQ	34.1	B	1.9	D	B	1.5	D	0	F	E
Einon	SN 90800 50434	W044b	06-Aug-19	SQ	0	F	0	F	F	44.1	A	4	C	A
Llynfi	SO 14382 33065	w047e	07-Aug-19	SQ	0	F	0	F	F	0.3	E	3.7	C	D
Arrow	SO 21776 50634	W052	23-Aug-19	SQ	0	F	0	F	F	20.2	B	6.7	C	B
Irfon	SN 85064 52855	W095L	05-Sep-19	SQ	2.1	D	0.6	E	D	1.7	D	0	F	E