

In 2018 we completed the temporal electric fishing programme. This consisted of 22 surveys. These surveys were completed using a fully quantitative (Q) catch depletion technique, fishing between stop nets and with at least 2 sampling runs. As well as the temporal programme, 10 additional sites were completed as semi-quantitative (SQ) and 1 site as a 5-minute riffle survey (ME). One temporal site was not completed in 2018, which was Llanwrthwl Brook which could not be accessed. Also, the site at Gilwern Brook was completely dry and therefore electric fishing could not take place. In England, the Environment Agency completed a further 4 surveys on the Wye catchment.

We use the Welsh temporal data to look at trends in juvenile salmon and trout densities and combine our data with the English data to give an idea of spawning across the whole catchment. The surveying programme (and responsibility for the river) is split between Natural Resources Wales, who are responsible for the Welsh Wye, and the Environment Agency on the English side.

As part of a wide scale juvenile salmonid monitoring programme in 2018, the Wye and Usk Foundation (WUF) surveyed approximately 280 sites in the Wye catchment. These were 5-minute riffle (ME) surveys.

Salmon

We recorded juvenile salmon at 18 of 33 Wye sites in 2018. Salmon fry densities have shown to be down when compared to the 2017 results and the 5-year average. One notable exception was the Duhonw which had a salmon fry classification of Excellent (A) for the first time since 2005.

Salmon parr densities were up on 2017 and slightly above the 5-year average, this is to be expected with the recovery of fry numbers in 2017. Four of the 33 sites had a salmon fry classification of Excellent (A) and seven were Good (B). No sites were Excellent (A) for salmon parr, and only one was Good classification (B) – the Marteg. There were four Fair (C) salmon classifications in 2018 compared to only one in 2017.

Our survey sites on the main stem Ithon have shown fair numbers of salmon fry and low salmon parr number. The Ithon tributaries (Dula, Clwedog and the Aran) have returned result which are relatively poor. All three sites are poor for salmon fry. A possibility for the decrease in salmon densities could be the low flows seen in 2018.

The Irfon sub-catchment saw relatively positive salmon densities, although many saw slight decreases in numbers. The Garth Dulas and Cammarch both saw slight decreases in salmon, but fry densities remain stable. Parr densities at these sites have consistently been poor due to salmon parr habitat preference.

Two survey sites that saw good numbers of salmon fry and parr were the Marteg and Edw. Historically, the Edw has always produced large numbers of salmon but the

Marteg showing over 50 salmon parr was a welcome surprise. This did result in low numbers of trout on the Marteg due to there likely not being enough resources for large numbers of both species in a small area.

Of note from the WUF data are the good numbers of juvenile salmon on the Marteg, Bidno, Duhonw and Dernol. Salmon numbers remained low for the Monnow, Arrow and Lugg.

Brown Trout

We recorded juvenile brown trout at all 33 sites surveyed in 2018. Trout fry densities dipped to their lowest numbers since 2012. Two sites of note are the Bidno and the Arrow which has gone from a classification of Good (B) to a low Fair classification (D). This decrease was not statistically significant and is not currently a cause for concern.

Trout parr densities in 2018 were up on the average density from 2017 but remained below the 5-year average. Just four sites had a classification of Excellent (A) or Good (B). Only the Hindwell had a classification of Excellent (A) for both trout fry and parr. There was only one other site with an Excellent (A) classification for trout parr and that was the Arrow.

Trout parr numbers at the temporal site (W047e) on the Llynfi were fair to good this year but the site was absent of trout fry.

We also carried out a post pollution survey to assess recovery of the lower river Llynfi (sites not shown on map). The river has recovered to some extent, ten species of fish were recorded with low numbers of trout and salmon at all sites. Salmon were present in small numbers (10 fry and 9 parr over 7 sites surveyed). While salmon fry and parr were present, only older trout were found. Trout fry were not found, perhaps indicating that the river has not fully recovered, and adult trout have not moved back into the river to spawn post pollution.

Overall, trout densities throughout the Wye catchment did not fluctuate in any notable direction. Although the Ithon and Ifron sub-catchments showed low densities, this was expected from looking over previous years' surveys.

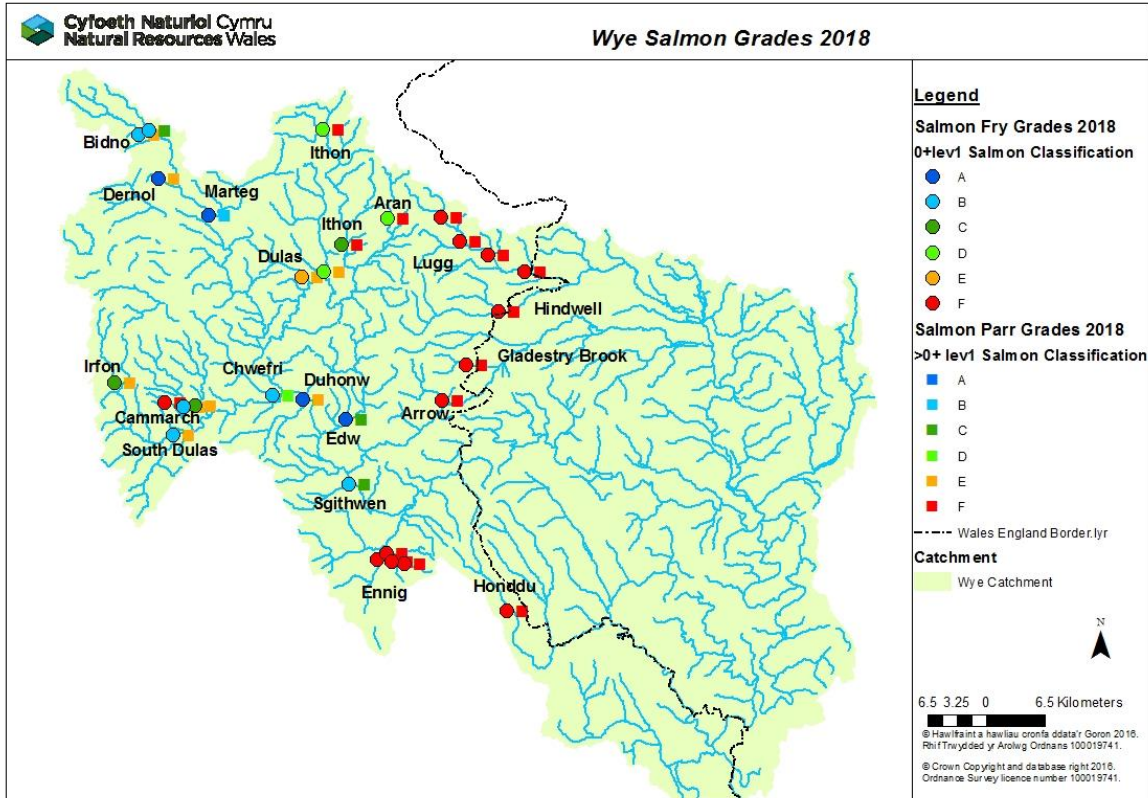
Salmon and Trout Classifications

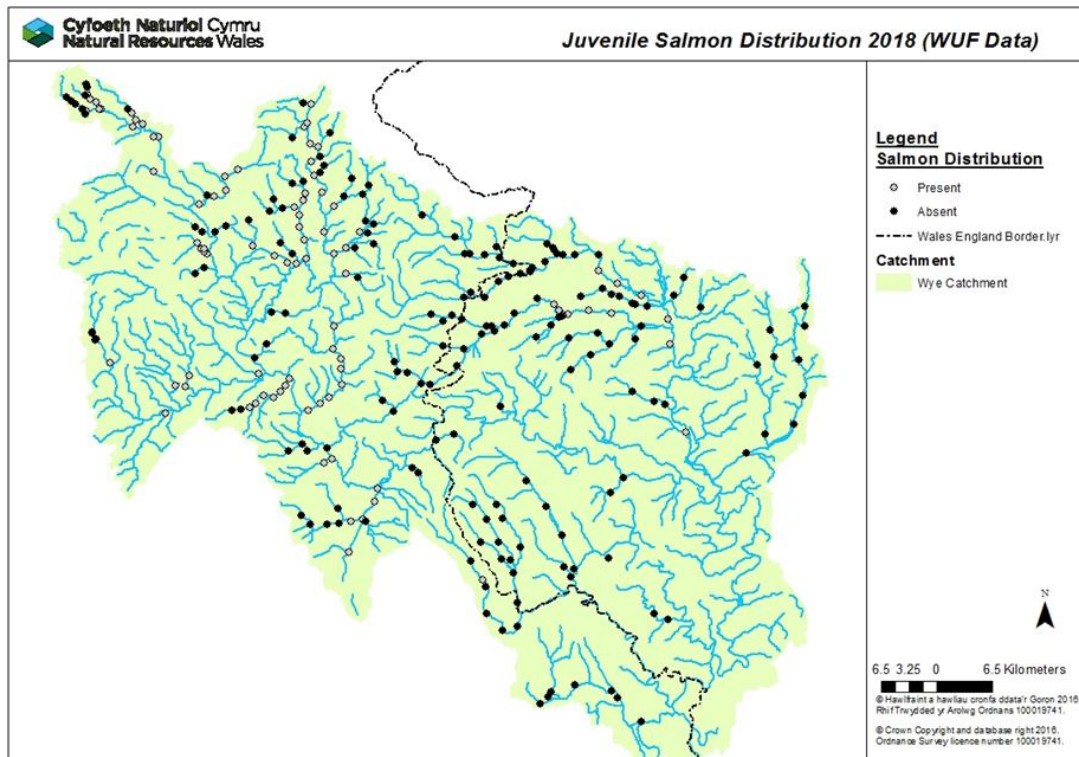
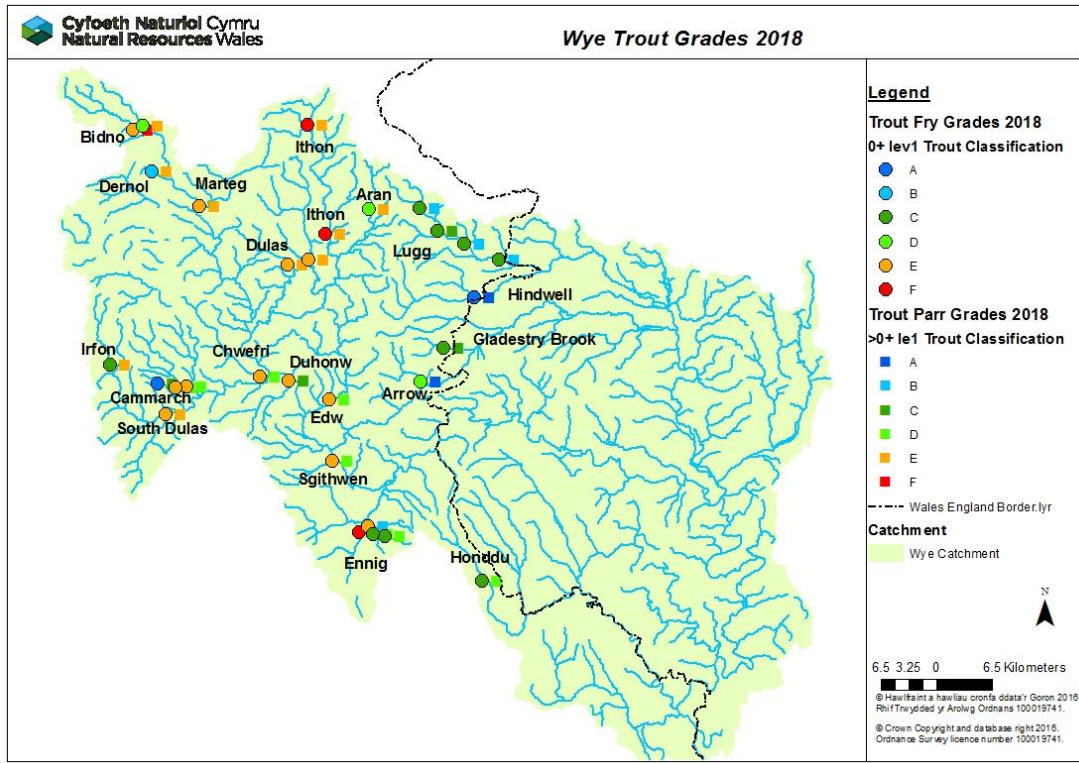
The following maps show the results of the routine juvenile salmonid population surveys from 2018 in Wales and England (raw data and 2017 maps for comparison are given in the Appendix).

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

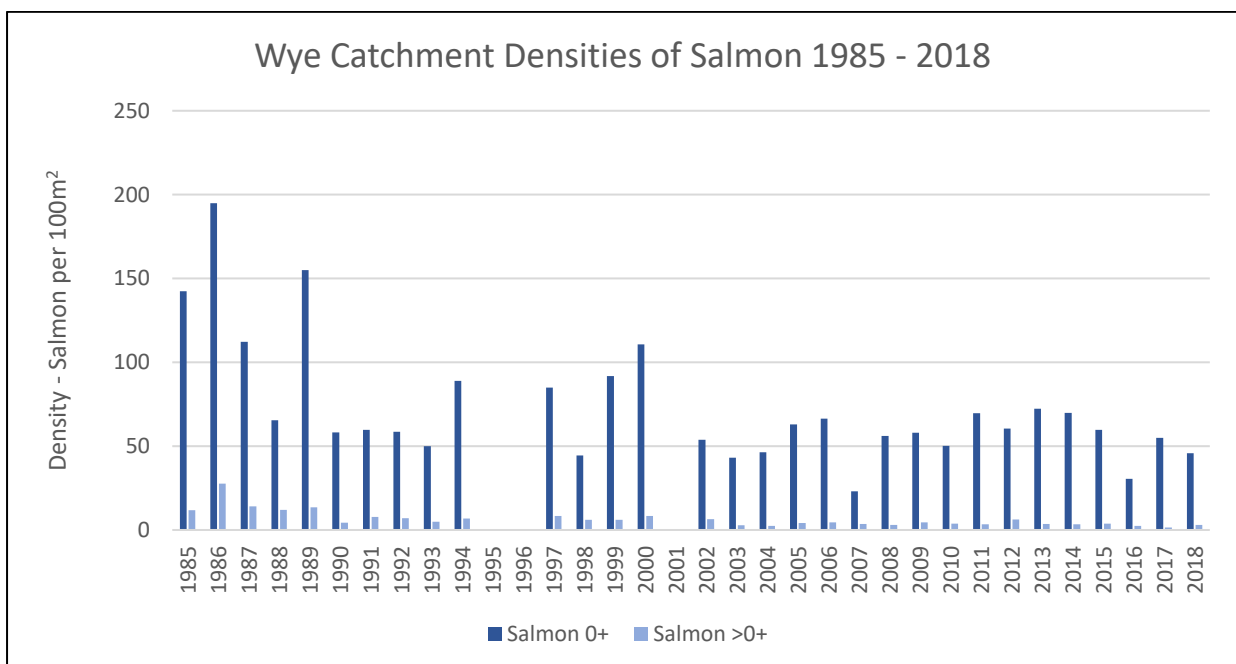




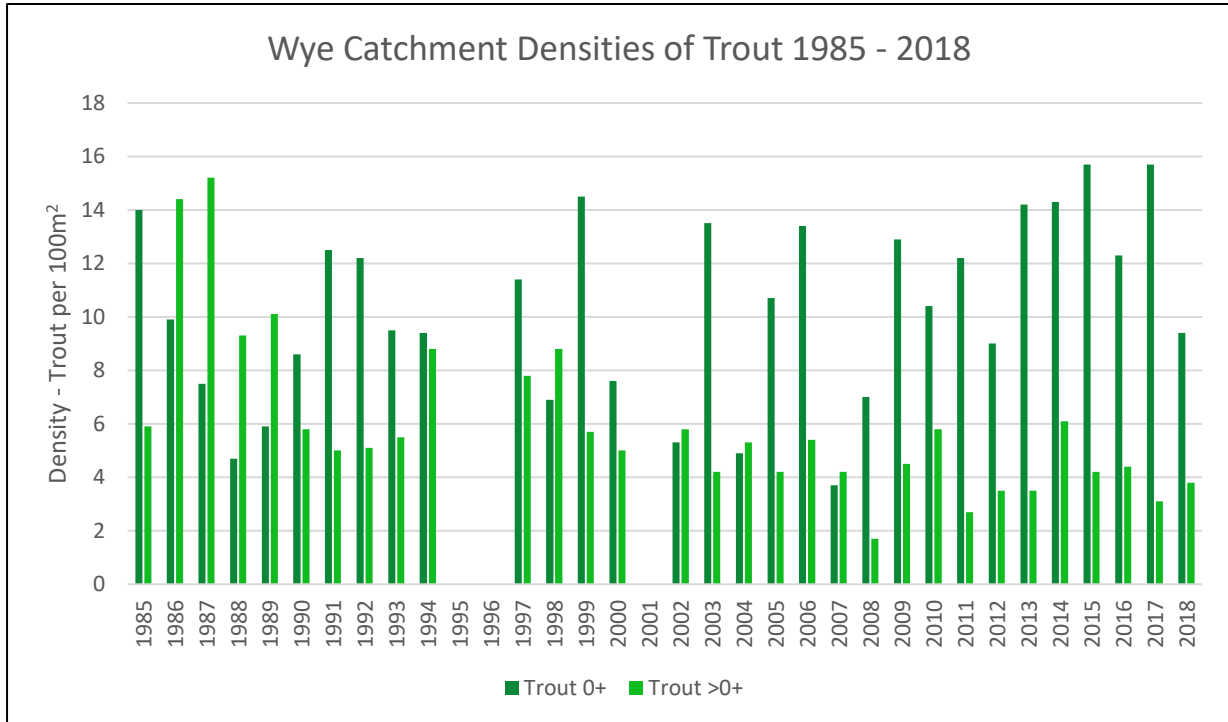
Catchment Population Trends

The graphs below show a simple comparison of average salmon and trout densities across the Wye catchment since surveying began in 1985. NB - data shown here are only from fully quantitative surveys of sites in the current Welsh monitoring programme; this traditionally focussed on good salmon spawning habitat and the Lugg, Arrow and Monnow were only included from 1987. Not every site in the programme was done every year; no surveys were done in 1995, 1996 or 2001, and only the Irfon catchment was surveyed in 2011.

Salmon fry and parr densities have shown a statistically significant decline over this time. Analysis of the data from 2003 onwards, showed an increasing trend until the inclusion of 2016 survey data. Although the fry populations have recovered somewhat in 2017, 2018 showed the second lowest numbers since 2007. The poor parr results continue to be seen and even though 2018 saw parr numbers doubling from 2017, numbers are still very low.



Brown trout densities in the Wye catchment have shown a contrasting picture since 1985, with fry densities remaining relatively stable but parr and adult (>0+) densities declining. It should be noted that adult densities are always low and variable in these surveys, which are targeting juvenile populations. Analysis of the data since 2003 suggests a more hopeful picture for trout fry with the trend upwards and close to being statistically significant. The parr and adult (>0+) trend however is still downwards, and data from 2018 has not shown a significant difference that may indicate a change in this trend.



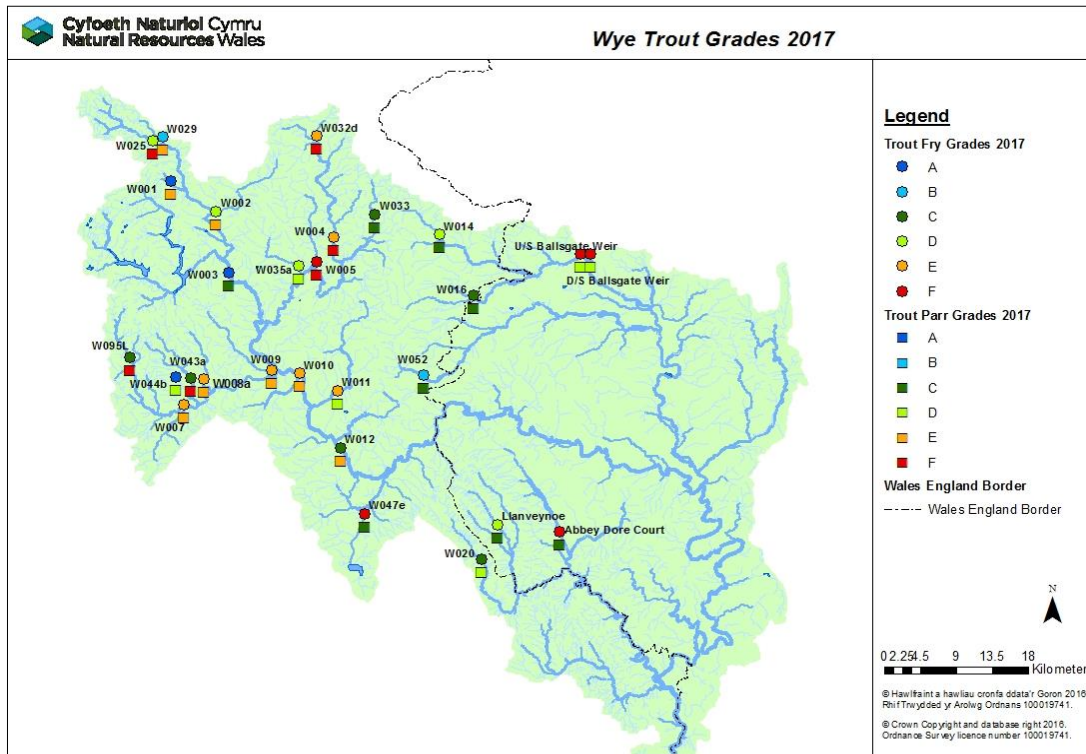
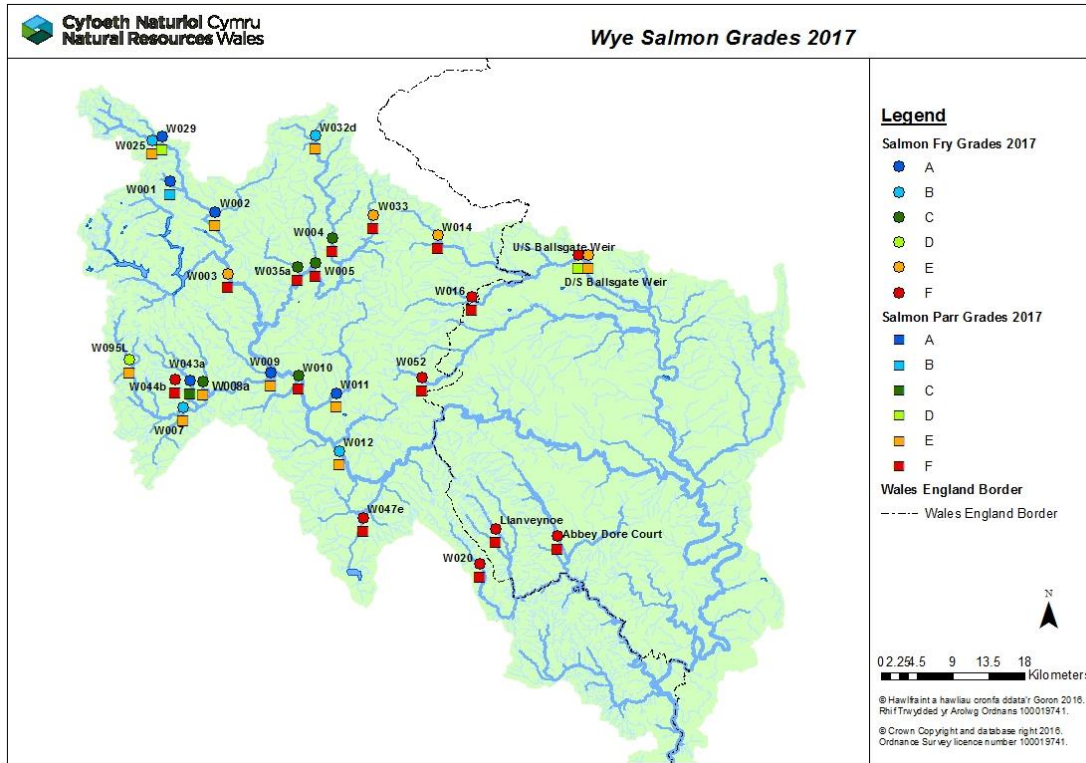
The following table shows a simple comparison of the catchment average density of juvenile salmon and trout from 2018 and compares this to 2017 and a 5-year average. NB – these densities are calculated using only the fully quantitative sites.

	0+ Salmon	>0+ Salmon	0+ Trout	>0+ Trout
2018 average density (per 100m²)	45.7	3	9.4	3.8
2017 average density (per 100m²)	55	1.5	12.3	3.1
5-yr average density (per 100m²)	57.5	2.9	14.4	4.3

The average catchment density for salmon fry was far lower than the 5-year average (11.8 salmon per 100m² lower) and the numbers seen in 2017 (9.3 salmon per 100m² lower). The fewer number of salmon fry did not equate to lower salmon parr populations. Salmon parr average density doubled from 1.5 salmon per 100m² to 3.0 salmon per 100m². However, the average density for 2018 was still the third lowest in the last 10 years.

Trout numbers displayed the same pattern as seen in the salmon populations, with fry numbers decreasing and being well below the 5-year average (2.9 less trout per 100m² than 2017 and 5 less trout per 100m² than the 5-year average). The trout parr saw a slight increase from the average density in 2017 (0.7 more trout per 100m²) but was still below the 5-year average (0.5 trout per 100m² lower).

Appendix 1 – 2017 maps



Appendix 2 – Data from electrofishing surveys in the Wye catchment 2018

RiverName	10 Digit NGR	SiteCode	DateFished	Survey Type	0+ Salmon	0+lev1 Salmon Classification	>0+ Salmon	>0+ lev1 Salmon Classification	0+ Trout	0+ lev1 Trout Classification	>0+ Trout	>0+ le1 Trout Classification
Dernol	SN9011775355	W001	06-Sep-18	Q	128.3	A	1.7	E	18.7	B	1.7	E
Marteg	SN9581971432	W002	06-Sep-18	Q	86.3	A	15.9	B	1.3	E	0.8	E
Ithon	SO1045468113	W004	19-Sep-18	SQ	16	C	0	F	0	F	0.1	E
Clywedog	SO0839465065	W005	10-Oct-18	Q	10.1	D	0.8	E	0.3	E	0.3	E
South Dulas - Irfon	SN9182246916	W007	15-Aug-18	Q	53.9	B	1.3	E	0.8	E	0.8	E
Garth Dulas	SN9423150110	W008a	14-Aug-18	Q	28.2	C	2	E	2	E	5	D
Chwerfri	SO0260851393	W009	13-Aug-18	Q	47.3	B	3.7	D	0.5	E	2.9	D
Duhonw	SO0619550899	W010	14-Aug-18	Q	132.9	A	0.4	E	3	E	7.9	C
Edw	SO1095248673	W011	17-Aug-18	Q	149.3	A	7.9	C	2.6	E	2.9	D
Sgithwen	SO1133141427	W012	13-Aug-18	Q	47.1	B	6.1	C	1.3	E	2.2	D

Lugg	SO236856847 3	W014	03-Sep-18	Q	0	F	0	F	10	C	6.2	C
Lugg	SO214067112 5	W014a	12-Sep-18	SQ	0	F	0	F	6.13	C	11.1 8	B
Lugg	SO268476687 1	W014c	12-Sep-18	SQ	0	F	0	F	5.3	C	8	B
Hindwell	SO279926072 9	W016	20-Aug-18	Q	0	F	0	F	37.7	B	10.3	C
Honddu	SO290132728 4	W020	16-Aug-18	Q	0	F	0	F	8.5	C	2.7	D
Wye	SN878788045 0	W025	07-Sep-18	Q	59.7	B	2.1	E	1.3	E	0	F
Bidno	SN890968082 3	W029	10-Sep-18	Q	72.3	B	7.2	C	5.7	D	1.9	E
Ithon	SO083518094 1	W032d	11-Sep-18	Q	14.8	D	0	F	0	F	0.9	E
Aran	SO156037104 4	W033	05-Sep-18	Q	13.3	D	0	F	7.3	D	1.8	E
Dulas - Ithon	SO061436451 8	W035a	29-Aug-18	Q	2.1	E	0.9	E	1.7	E	1.7	E
Cammarc h	SN926355031 2	W043a	31-Aug-18	Q	51.9	B	0.8	E	2.7	E	2.7	D
Einon	SN908005043 4	W044b	14-Aug-18	Q	0	F	0	F	96.2	A	6	C
Llynfi	SO143823306 5	W047e	21-Aug-18	Q	0	F	0	F	0	F	6.9	C
Lugg	SO310106507 7	W049	12-Sep-18	SQ	0	F	0	F	4.6	C	10.1	B

Arrow	SO2177650634	W052	30-Aug-18	Q	0	F	0	F	8	D	23.2	A
Gladestry Brook	SO2442354679	W053d	18-Sep-18	SQ	0	F	0	F	9	C	2.7	C
Gilwern Brook	SO2658457943	W053j	18-Sep-18	SQ	0	F	0	F	0	F	0	F
Irfon	SN8506452855	W095L	04-Sep-18	Q	28.4	C	2.2	E	8.1	C	1.2	E
Hindwell	SO2799260729	W111h	19-Sep-18	SQ	0	F	0	F	28.4	A	21.3	A
Ennig	SO1736432562	W128g	02-Aug-18	SQ	0	F	0	F	5.8	C	1.3	D
Ennig	SO1554833500	W184p	02-Aug-18	SQ	0	F	0	F	1.2	E	12.8	B
Ennig	SO1602432916	W184r	02-Aug-18	SQ	0	F	0	F	6.6	C	0.8	D

RiverName	10 Digit NGR	SiteCode	DateFished	Survey Type	0+ Salmon	>0+ Salmon	0+ Trout	>0+ Trout
Bidno	SN8909680823	w029	10-Sep-18	ME	33	2	3	0

