

Annex 3

Juvenile salmon and trout data

This annex presents a summary of the juvenile salmon and sea trout populations on the Usk and Wye. Details of how these data are collected are given below.

Juvenile salmonid classifications

The monitoring programme comprises

- Temporal surveys - a number of fixed sites surveyed annually;
- and Spatial surveys – considerable more sites spread across the catchment and surveyed every 6 years as a “snapshot” of fish populations.

The number of sites in the temporal and spatial programmes varies between catchments and is related to the size of the catchment. The Usk has 13 temporal and 85 spatial sites; the Wye has 24 temporal and 121 spatial sites (carried out by NRW). The Environment Agency have 5 temporal sites and 31 spatial sites on the Wye in England.

A quantitative survey involves the use of 2 stop nets across the river (top and bottom), so that a specific area of the river is being fished to calculate population densities. Three runs are carried out, with the number of fish caught depleting with each run. A semi-quantitative survey involves just one run of a measured stretch of river, which may or may not use a stop net at the top of the stretch of river, depending on the site. A minimum estimate survey or catch per unit effort, is a timed 5 minute riffle survey, usually located on a wider stretch of river, and is a simple method of understanding the presence or absence of salmon along the catchment.

Following a statistical review of our data, it has been decided that our temporal sites can 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 they 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.

Densities calculated from quantitative (3 run catch depletion) and semi-quantitative (single run) surveys are used to assign a classification for salmon fry (0+) and parr (>0+) and for trout fry (0+) and >0+ (parr and adults combined) at each site, from A – Excellent through to F – Fishless. The National Fish Classification (NFC) evaluates and compares the results of fish population surveys in a consistent manner; ranking survey data by comparing fish abundance at the survey sites with sites nationally

where juvenile salmonids are present. The following table shows the values and classification of NFC.

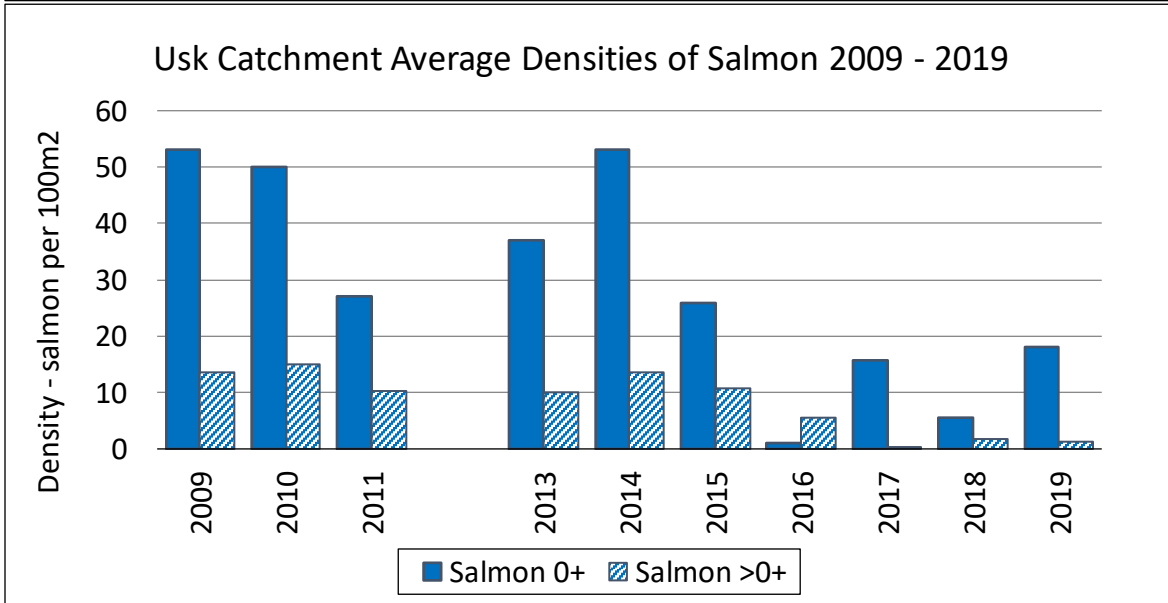
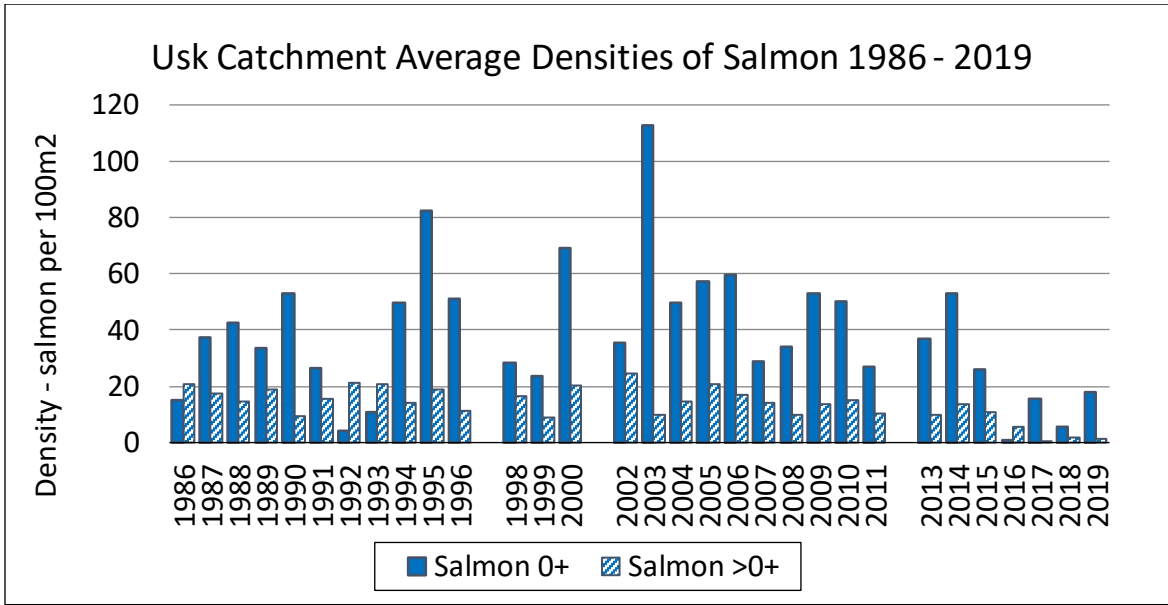
Grade	Descriptor	Interpretation
A	Excellent	In the top 20% for a fishery of this type
B	Good	In the top 40% for a fishery of this type
C	Fair	In the middle 20% for a fishery of this type
D	Fair	In the bottom 40% for a fishery of this type
E	Poor	In the bottom 20% for a fishery of this type
F	Fishless	No fish of this type present

The maps below show the results of the routine juvenile salmonid population surveys from 2019. No surveys were carried out in 2020 due to movement restrictions during the Covid-19 pandemic.

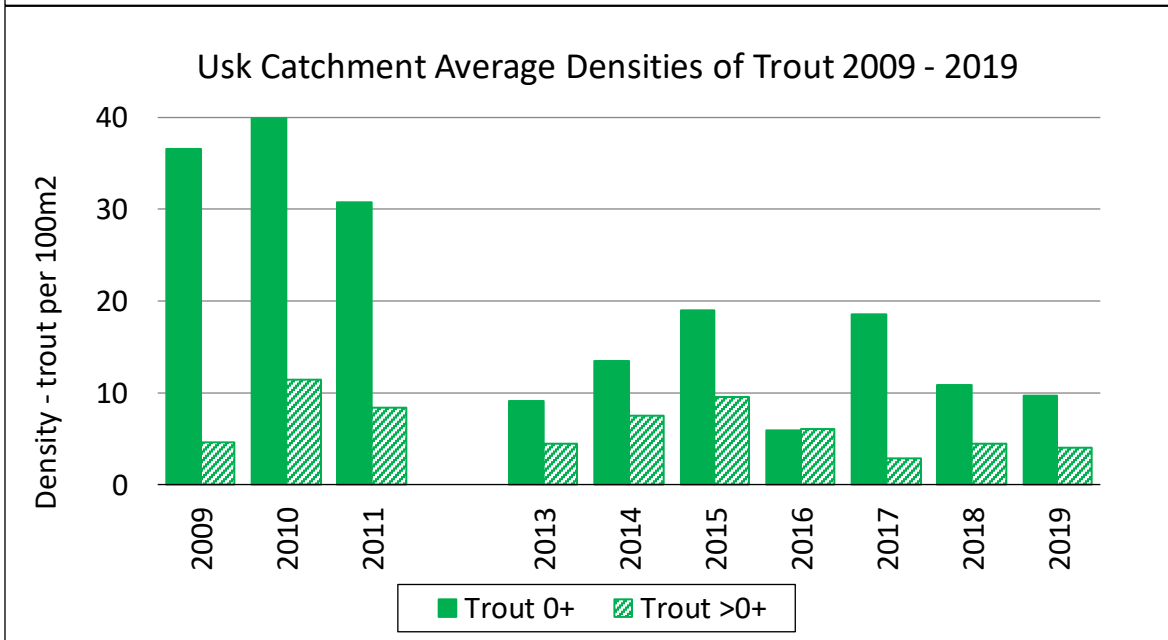
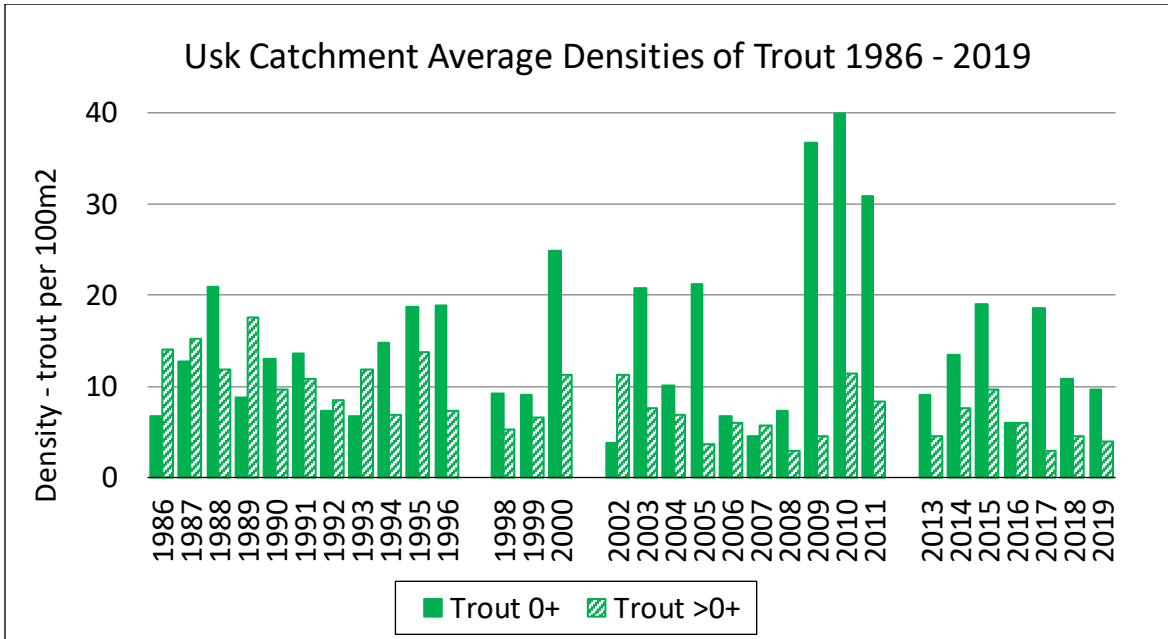
Catchment population trends

The graphs show a simple comparison of average salmon and trout densities across the catchments since 1985. The data used are only from temporal surveys in the current Welsh monitoring programme – the English sites are not included in the Wye trend. It is not necessarily the case that every site in the programme was done every year.

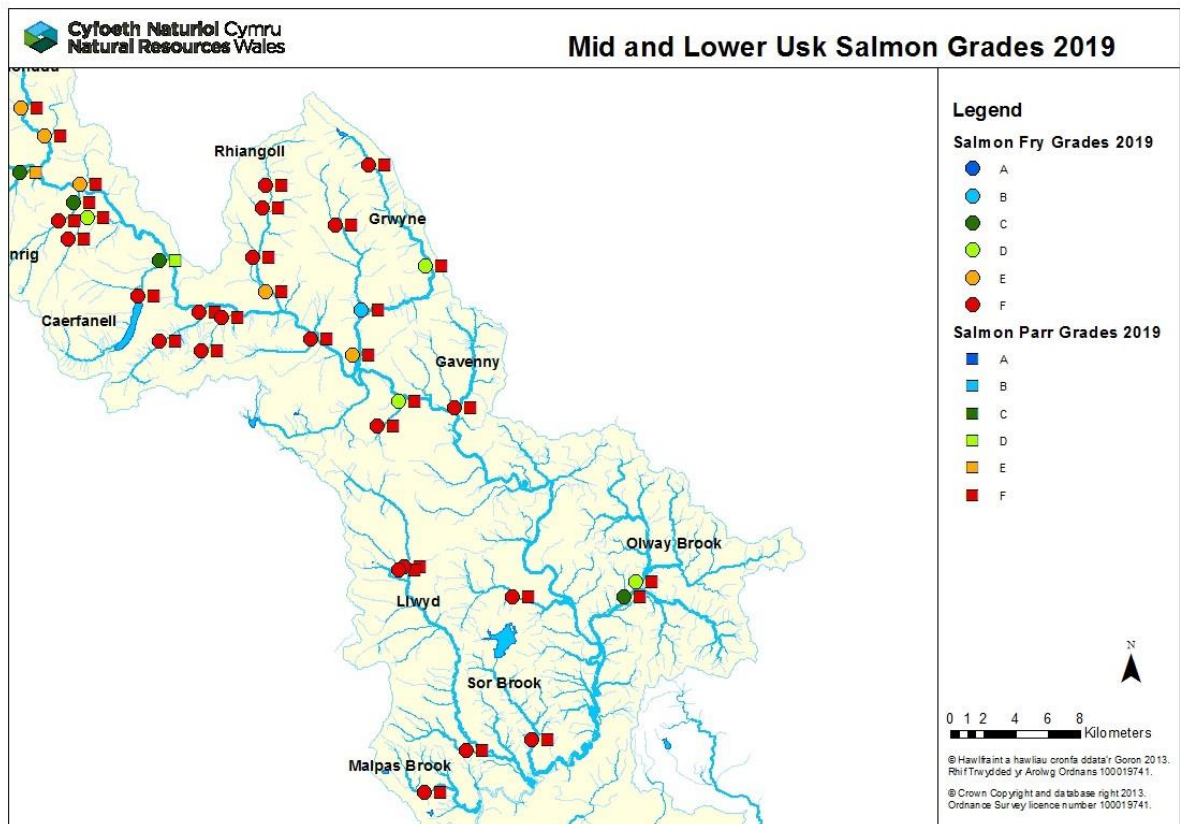
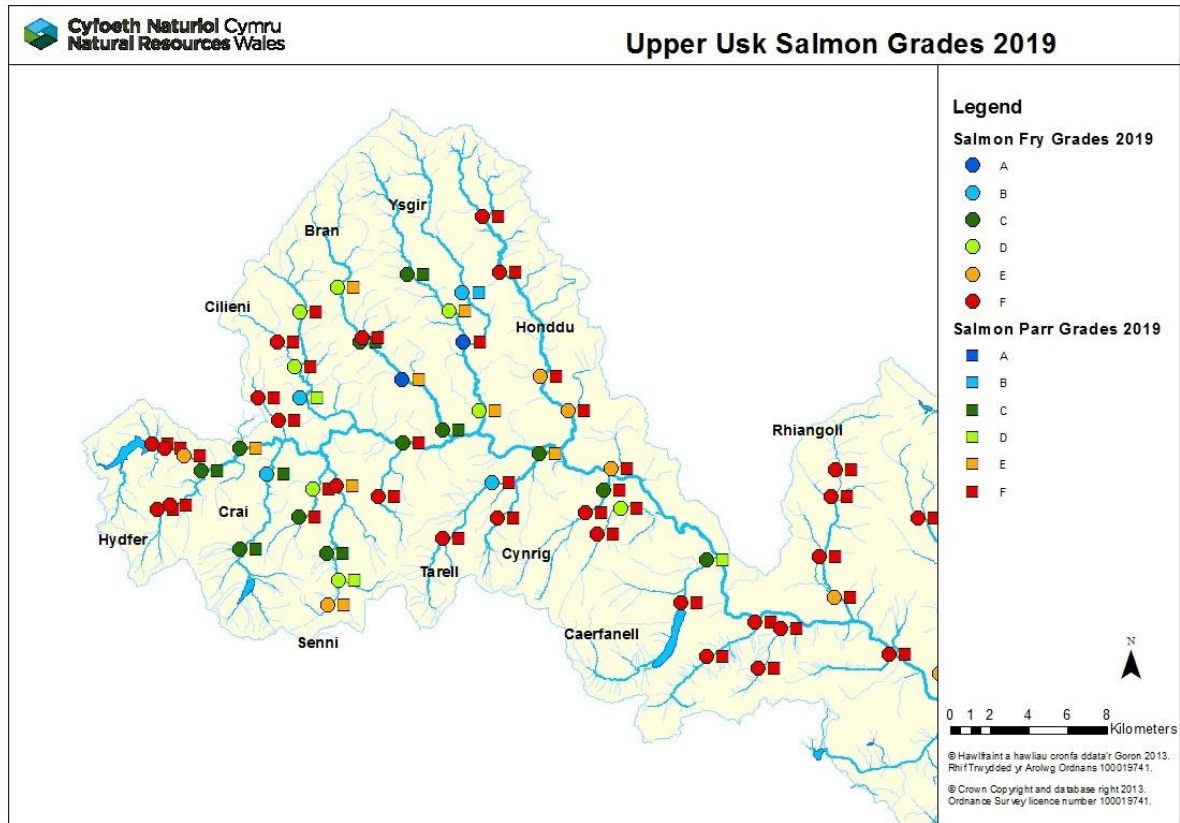
River Usk



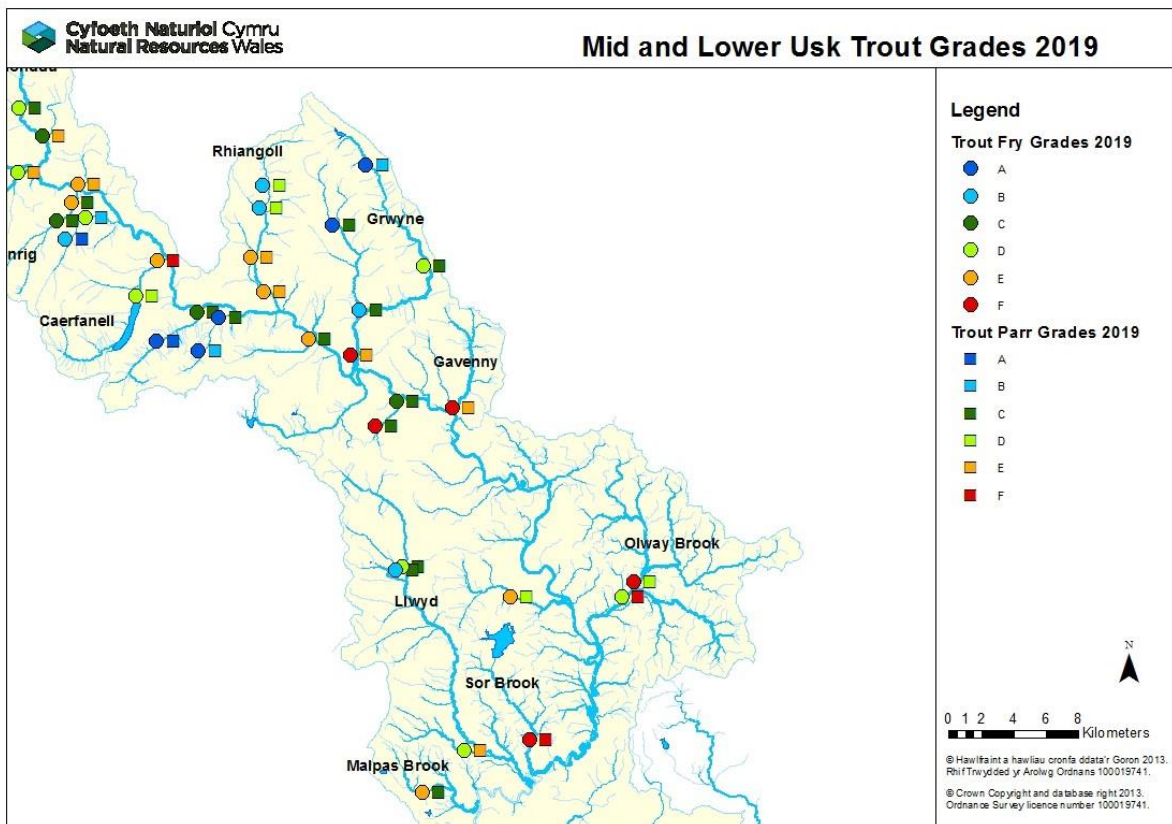
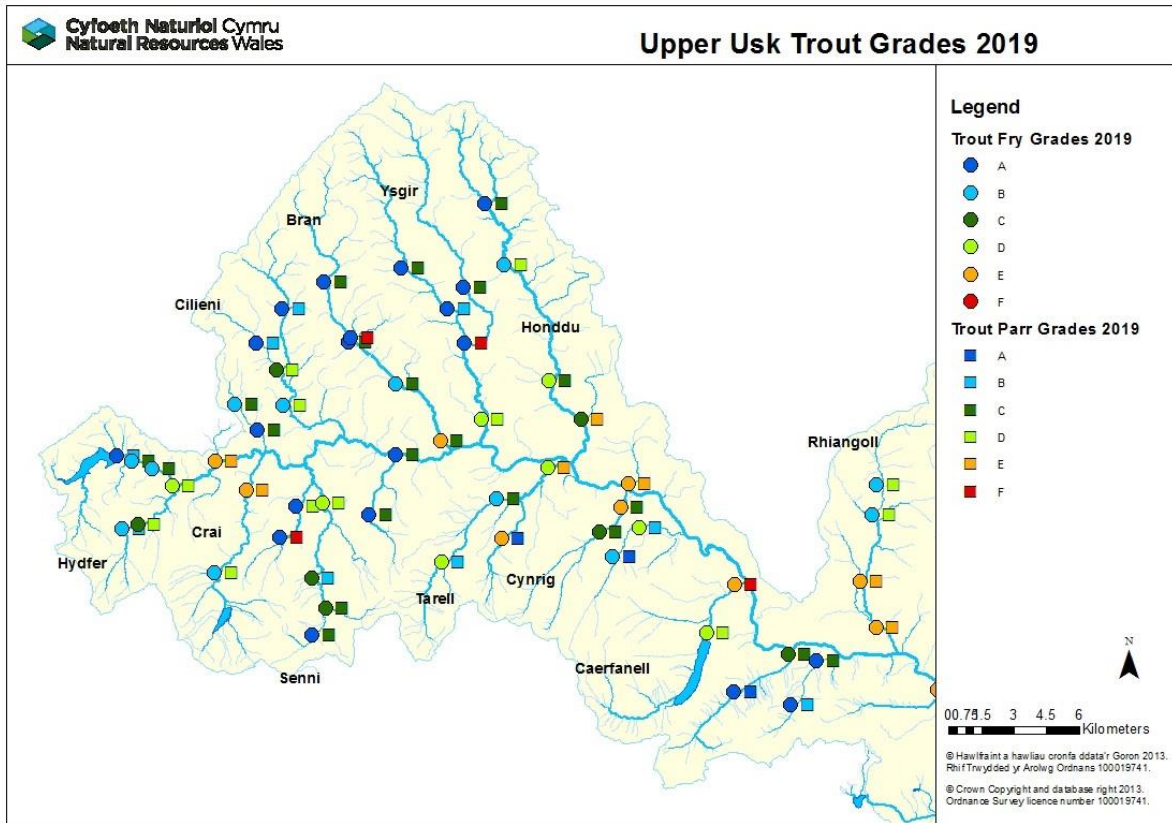
River Usk



River Usk



River Usk



River Usk

Juvenile salmon densities 2014 to 2019 (fish per 100m²)

River - Site Name		2014		2015		2016		2017		2018		2019		5 Year Average (2014-2018)		% Change from 2018		% Change from 5 year average	
		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon	
		0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+
Usk	U001	0.8	11.7	9.6	5.3	0	4.5	0.3	0	0	0	0.7	0	2.1	4.3	+	0%	-68%	-100%
Hydfer	U002	21.3	10.2	42.8	7.5	0	6.5	7.6	0	9	4.2	14.6	6.5	16.1	5.7	62%	55%	-10%	15%
Crai	U003	162	13.4	41.8	11	3.3	8.8	66.3	0	17.1	1.6	37.1	5.8	58.1	7	117%	260%	-36%	-17%
Senni	U004	30.4	22.1	27.5	10.1	0.3	9.2	15.8	0.4	0.9	5.6	0	0.7	15	9.5	-100%	-87%	-100%	-92%
Cilieni	U005	162	24	74.7	25.8	0.9	16.2	6.1	1.3	2	3.3	12.5	0	49.1	14.1	525%	-100%	-75%	-100%
Bran	U006	157.1	6.6	82.3	3.1	0	4.5	26	0.3	32.3	2.1	89.6	0.8	59.5	3.3	177%	-63%	51%	-77%
Ysgir	U007	63.3	48.4	3.5	35.5	0.4	9.9	9.4	0.4	0	3.8	13.2	1.2	15.3	19.6	+	-68%	-14%	-94%
Honddu	U009	12.7	0.3	14.4	1.4	0	0.6	0	0	0	0	0	0	5.4	0.5	0%	0%	-100%	-100%
Menasgin	U010	0	8.8	0	1.6	0	0.8	0.4	0	0	0	3.8	0	0.1	2.2	+	0%	4593%	-100%
Rhiangoll	U011	0	2.8	2.3	0	0	0.4	0	0	0	0	0	0	0.5	0.6	0%	0%	-100%	-100%
Grwyne Fawr	U012	9.9	6	0.6	9.4	0	3.6	0	0.4	0	0	4.8	0	2.1	3.9	+	0%	127%	-100%
Grwyne Fechan	U013	27.2	10.3	1.1	22.9	0	3.9	0	0.3	0	0	36.9	0	5.7	7.5	+	0%	552%	-100%
Tarell	U022	44.7	11.3	37.1	6	7.9	2.1	72.5	0.9	11.3	3	22.5	0.9	34.7	4.7	99%	-70%	-35%	-81%
Average		53.2	13.5	26	10.7	1	5.5	15.7	0.3	5.6	1.8	18.1	1.2	20.3	6.4	225%	-33%	-11%	-81%

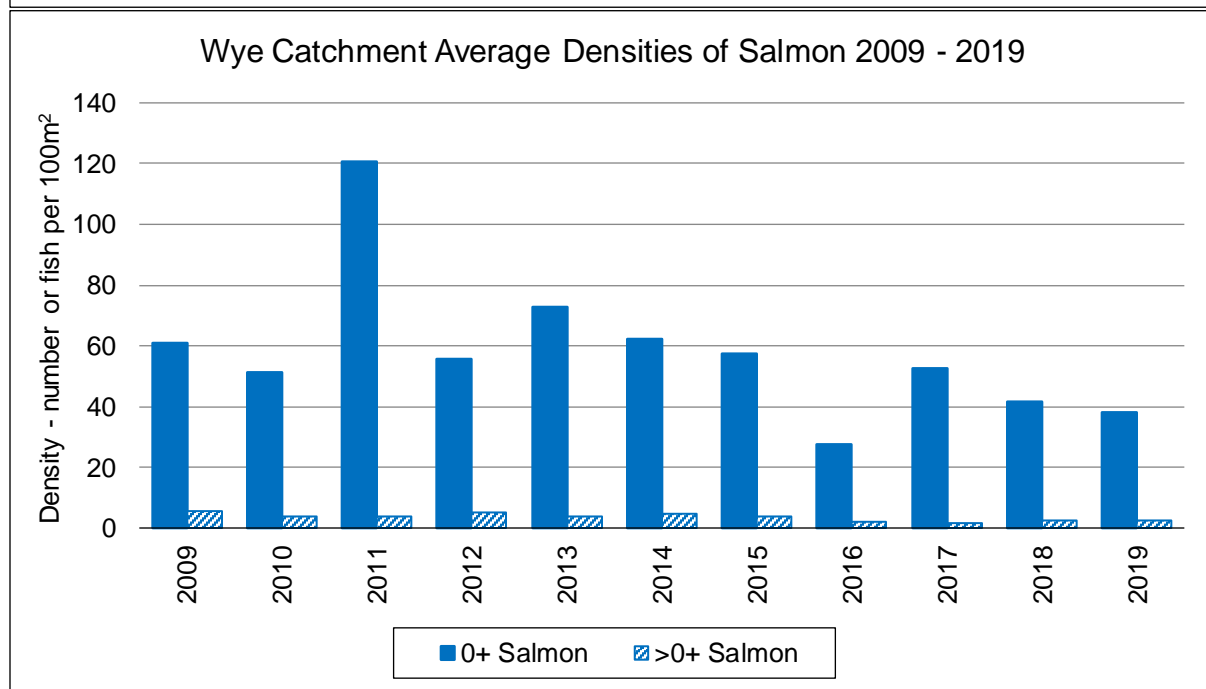
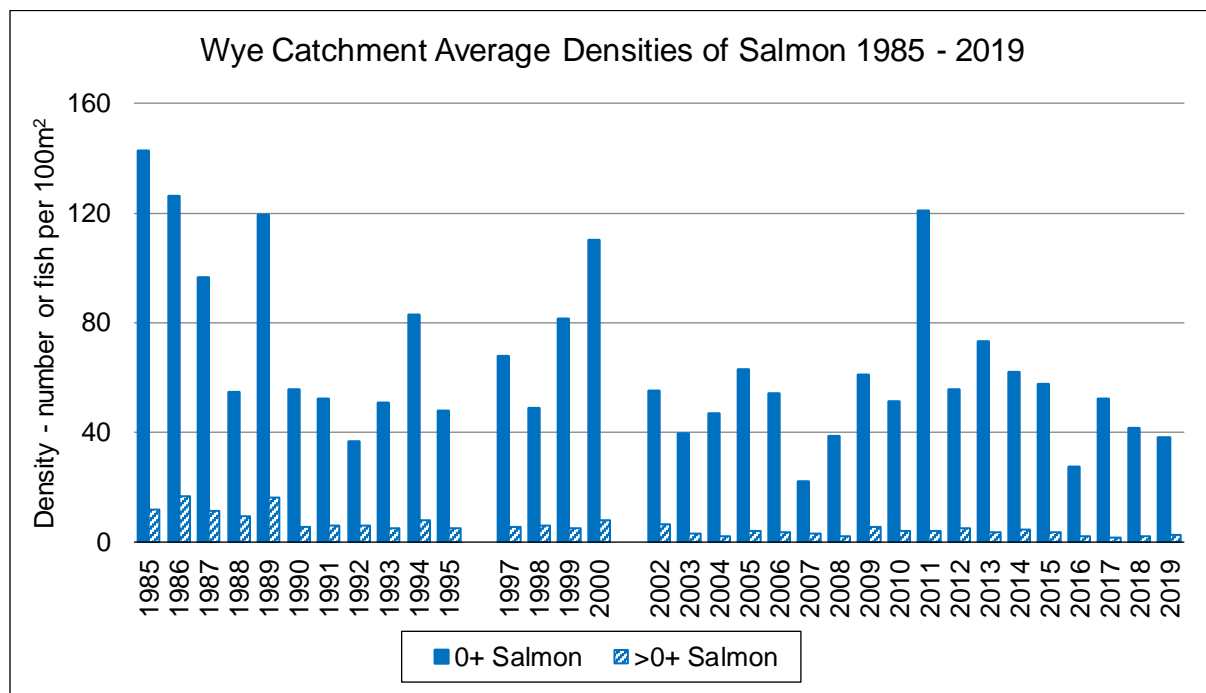
River Usk

Juvenile trout densities 2014 to 2019 (fish per 100m²)

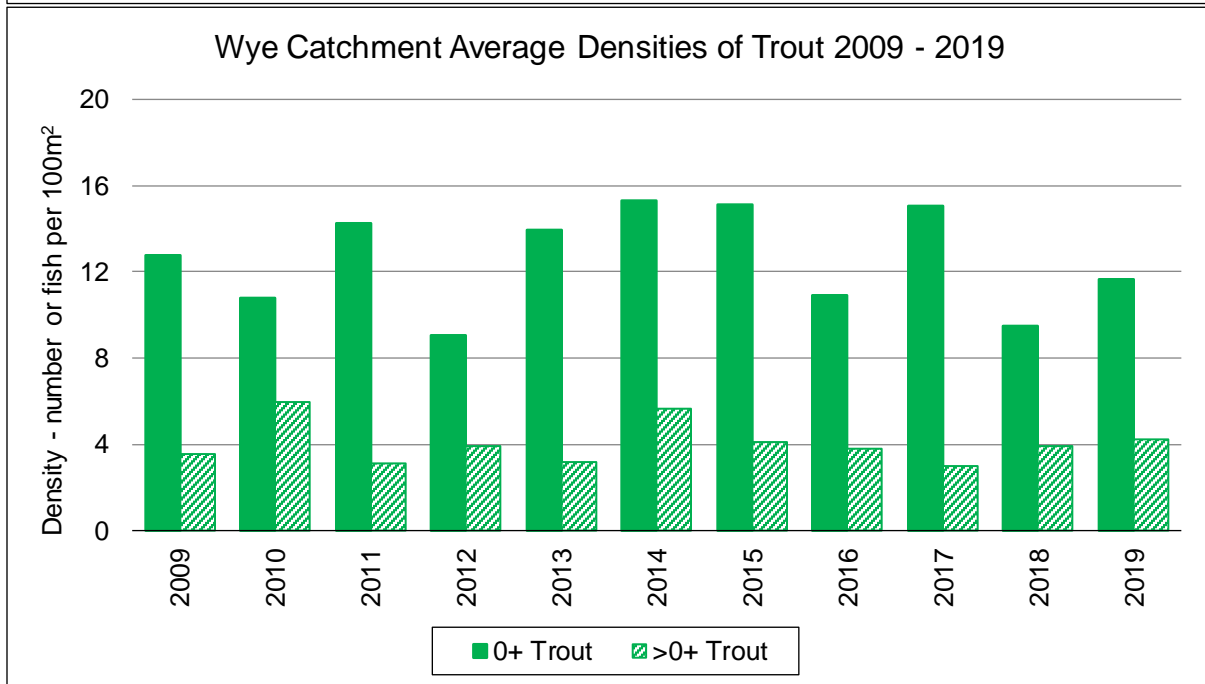
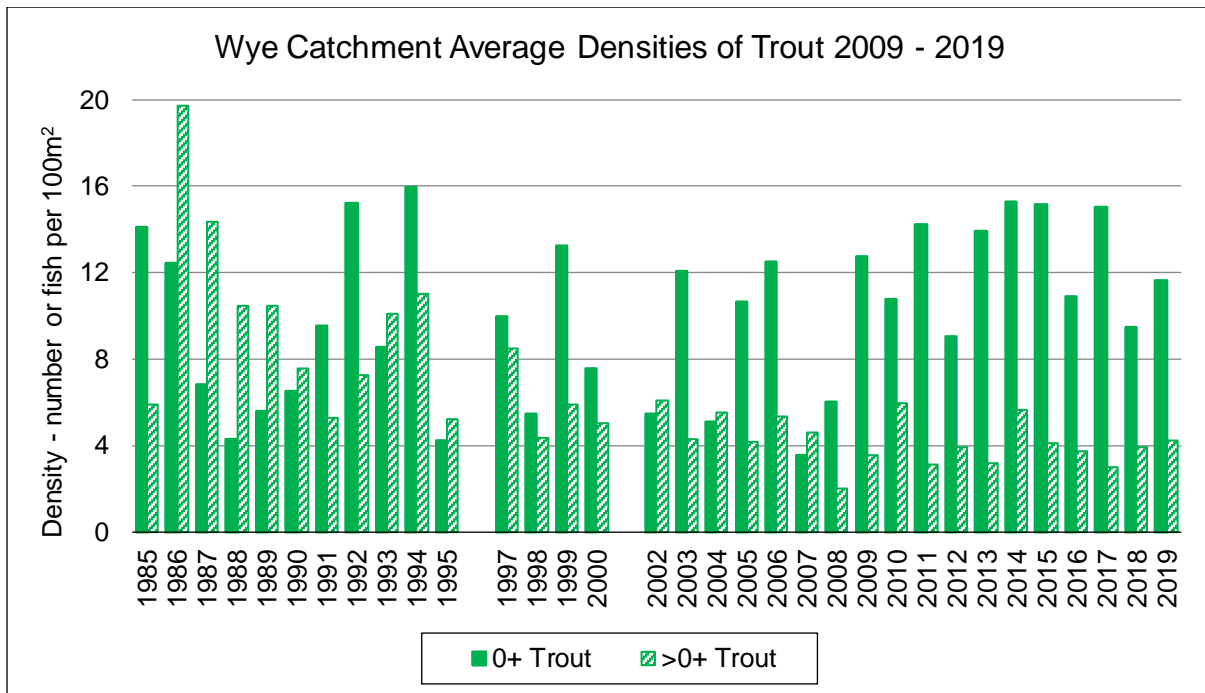
River - Site Name		2014		2015		2016		2017		2018		2019		5 Year Average (2014-2018)		% Change from 2018		% Change from 5 year average	
		Trout		Trout		Trout		Trout		Trout		Trout		Trout		Trout		Trout	
		0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+
Usk	U001	32.9	13.3	38.7	13.5	5.8	9.6	31.9	3.8	13.4	8.6	21.3	6.5	24.5	9.8	59%	-24%	-13%	-33%
Hydfer	U002	20.5	7.8	16.4	5.8	6.5	3	16.6	3.2	4.5	2.4	5.6	1.8	12.9	4.4	25%	-25%	-56%	-60%
Crai	U003	0	0.5	0	0.5	0.3	1	0.7	1.1	1.6	0	0.6	0.6	0.5	0.6	-60%	+	23%	3%
Senni	U004	0.8	4.3	2.9	7.2	2.7	4.1	34.8	2	7.8	3	4	2.9	9.8	4.1	-49%	-3%	-59%	-30%
Cilieni	U005	32	17.5	45.3	20.5	19.7	15.8	47.8	6.1	42.7	13.3	13.2	0.7	37.5	14.6	-69%	-95%	-65%	-96%
Bran	U006	6.6	2.9	9.4	7.3	2.8	0.3	4.2	0.7	5.9	1.4	16.9	6.9	5.8	2.5	187%	395%	193%	174%
Ysgir	U007	3.9	5.1	12.1	4.3	0.4	4.4	32.8	2.3	4.2	4.2	4.3	3.4	10.7	4.1	2%	-20%	-60%	-17%
Honddu	U009	37.4	5.5	75.8	11.3	14.1	2.6	32.9	0	22.6	2.4	22.2	2.8	36.6	4.4	-2%	17%	-39%	-35%
Menasgin	U010	2	26.5	17.3	30.6	9.4	13.2	5.8	5.5	15.2	8.3	2.9	15	9.9	16.8	-81%	81%	-71%	-11%
Rhiangoll	U011	2.8	0	0.6	0	1.5	0.8	12.3	0	4.6	1.1	0.7	0.7	4.4	0.4	-84%	-34%	-83%	94%
Grwyne Fawr	U012	12.5	7.5	15.4	12.8	9.5	10.9	3.2	7.5	4.1	6.2	4.2	3.7	8.9	9	3%	-40%	-53%	-59%
Grwyne Fechan	U013	24.1	3.4	13.4	8.6	6.3	10.6	16.3	5	13.5	7.3	25.7	6.5	14.7	7	90%	-11%	75%	-7%
Tarell	U022	0	3.6	0.2	2.4	0.4	2.1	2	0.4	0.7	0.2	4	0.4	0.7	1.7	478%	125%	509%	-74%
Average		13.5	7.5	19	9.6	6.1	6	18.6	2.9	10.8	4.5	9.7	4	13.6	6.1	-11%	-11%	-29%	-34%

River Wye

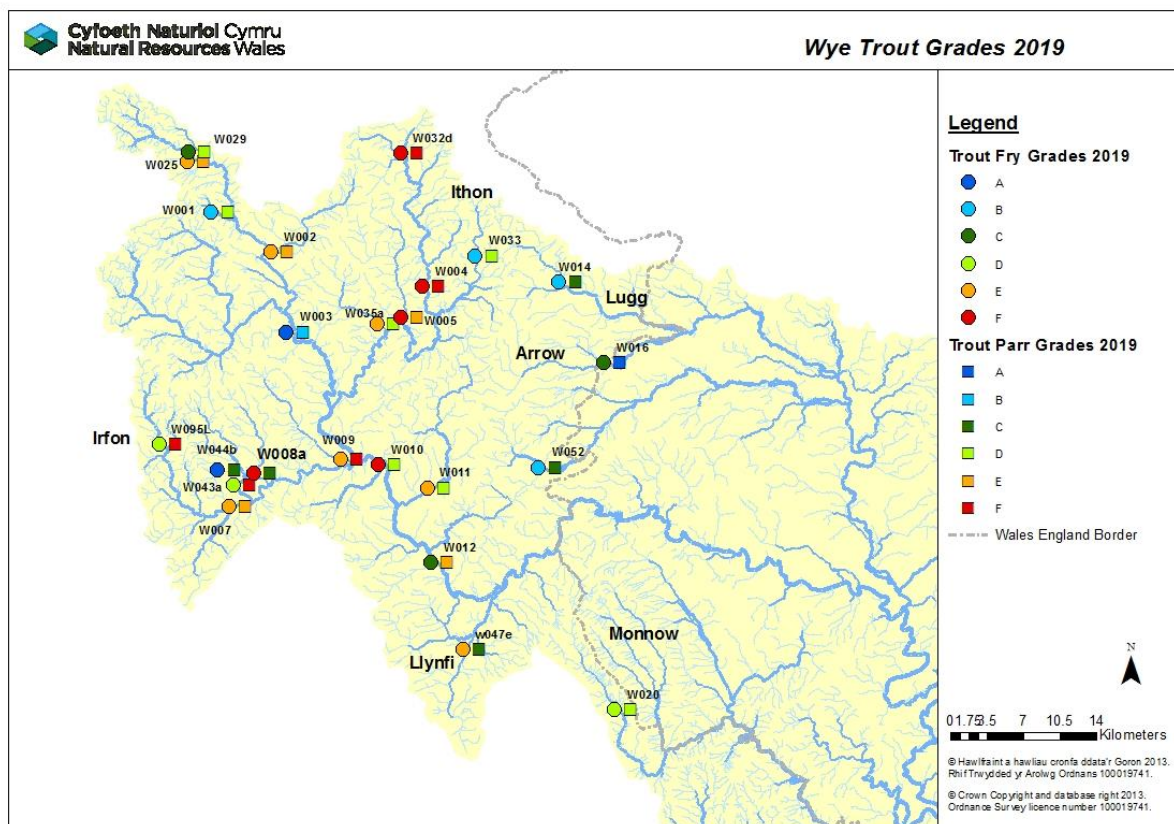
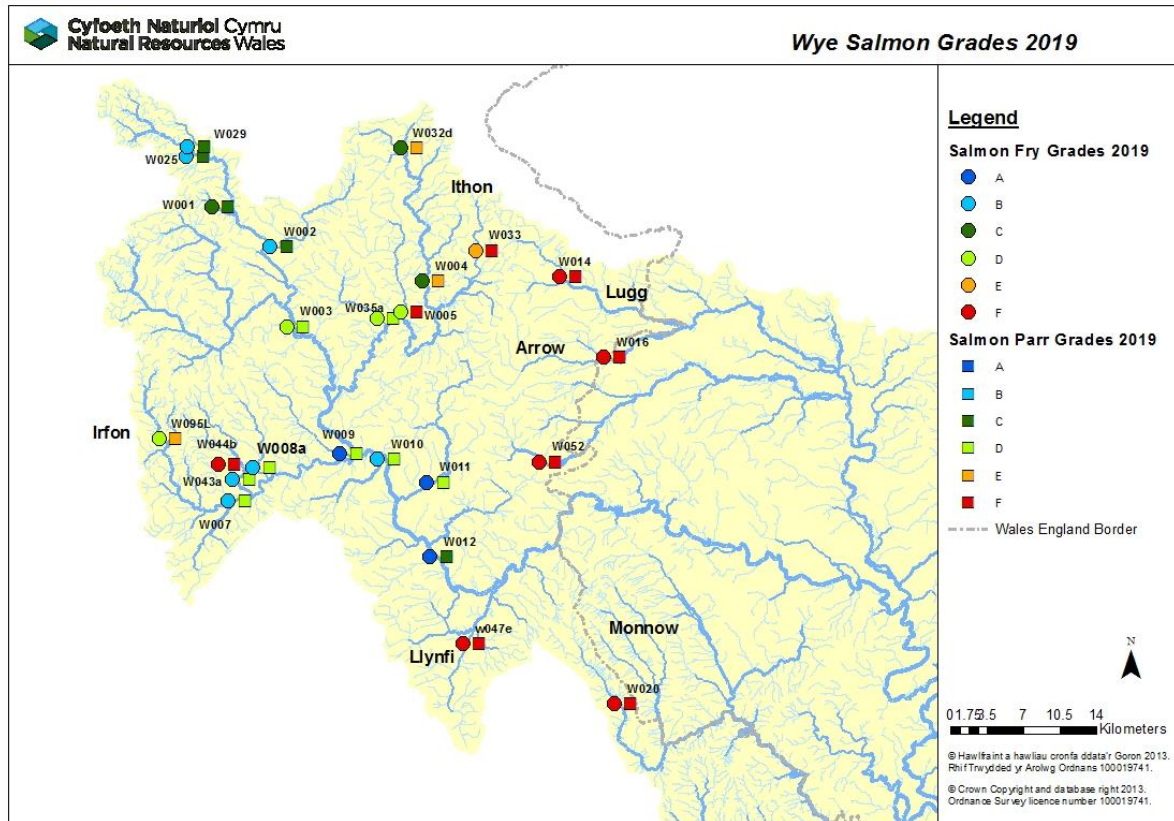
The data shown here are only sites in the current Welsh monitoring programme; not every site in the programme was done every year; no surveys were done in 1996 or 2001, and only the Irfon catchment was surveyed in 2011.



River Wye



River Wye



River Wye

Juvenile salmon densities 2014 to 2019 (fish per 100m²)

River - Site Name		2014		2015		2016		2017		2018		2019		5 Year Average (2014-2018)		% Change from 2018		% Change from 5 year average	
		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon	
		0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+
Dernol	W001	66.0	24.3	86.2	15.4	117.7	6.2	93.6	11.7	128.3	1.7	25.1	9.9	98.4	11.9	-80%	483%	-75%	-16%
Marteg	W002	156.6	11.3	257.1	6.3	28.4	5.3	97.2	2.5	86.3	15.9	79.1	9.8	125.1	8.3	-8%	-39%	-37%	18%
Llanwrthyl Dulas	W003	30.4	8.1	41.5	1.5	13.8	0.0	7.1	0.0			8.8	2.4	23.2	2.4			-62%	0%
Ithon	W004	26.3	0.6	10.2	0.0	8.9	0.5	40.4	0.0	31.4	0.0	33.9	0.2	23.4	0.2	8%	+	45%	6%
Clywedog	W005			36.8	0.5	31.2	0.9	38.3	0.0	10.1	0.8	13.0	0.0	29.1	0.6	29%	-100	-55%	-100%
South Dulas -Irfon	W007	95.9	3.6	25.6	0.8	23.0	1.8	59.0	0.2	53.9	1.3	44.0	2.8	51.5	1.5	-18%	115%	-15%	81%
Garth Dulas	W008a	99.0	6.6	173.3	4.6	36.4	4.2	27.2	1.3	28.2	2.0	65.2	2.9	72.8	3.7	131%	47%	-10%	-21%
Chwerfri	W009	399.0	8.5	165.6	9.7	83.4	0.5	156.3	1.0	47.3	3.7	176.9	2.6	170.3	4.7	274%	-31%	4%	-45%
Duhonw	W010	10.9	0.3	52.3	4.6	28.7	1.2	43.3	0.0	132.9	0.4	55.0	1.3	53.6	1.3	-59%	230%	3%	1%
Edw	W011	69.3	6.4	82.9	14.7	32.3	4.0	210.3	2.9	149.3	7.9	116.8	2.8	108.8	7.2	-22%	-64%	7%	-61%
Sgithwen	W012	88.0	9.7	46.9	6.9	6.6	1.5	46.9	0.8	47.1	6.1	88.5	5.2	47.1	5.0	88%	-15%	88%	3%
Lugg	W014	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0%	0%	-100	0%
Hindwell Brook	W016	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%	0%	0%
Honddu	W020	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0%	0%	0%	0%
Wye	W025	38.2	3.6	44.5	1.8	7.0	1.0	64.5	0.7	59.7	2.1	53.4	7.5	42.8	1.8	-11%	259%	25%	308%
Bidno	W029	42.8	9.3	90.5	10.6	67.8	12.9	112.7	3.2	72.3	7.2	44.2	6.5	77.2	8.6	-39%	-10%	-43%	-25%
Ithon	W032d	57.8	3.2	65.6	0.0	66.7	2.5	70.4	0.9	14.8	0.0	31.2	1.5	55.1	1.3	111%	+	-43%	10%
Aran	W033	2.6	0.0	6.6	0.0	1.4	0.9	3.3	0.0	13.3	0.0	2.0	0.0	5.4	0.2	-85%	0%	-64%	-100%
Nantmel Dulas	W035a	28.5	4.2	8.8	2.6	3.6	1.0	32.0	0.0	2.1	0.9	4.0	1.6	15.0	1.7	90%	78%	-73%	-8%
Cammarch	W043a	143.5	6.9	124.3	3.7	69.3	6.0	139.2	8.0	51.9	0.8	66.7	3.4	105.6	5.1	28%	326%	-37%	-33%

River Wye

Juvenile salmon densities 2014 to 2019 (fish per 100m²)

River - Site Name		2014		2015		2016		2017		2018		2019		5 Year Average (2014-2018)		% Change from 2018		% Change from 5 year average	
		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon		Salmon	
		0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+
Einon	W044b	2.4	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.2	0%	0%	-100	-100%
Llynfi	W047e	0.0	0.0	3.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0%	0%	-100	0%
Arrow	W052	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0%	0%	0%	-100%
Irfon	W095L	72.5	0.0			31.6	2.1	15.4	1.2	28.4	2.2	4.3	1.1	37.0	1.4	-85%	-52%	-88%	-22%
Average		62.2	4.7	57.5	3.7	27.4	2.2	52.4	1.4	41.6	2.3	38.0	2.6	48.2	2.9	-9%	11%	-21%	-10%

River Wye

Juvenile trout densities 2014 to 2019 (fish per 100m²)

River - Site Name		2014		2015		2016		2017		2018		2019		5 Year Average (2014-2018)		% Change from 2018		% Change from 5 year average	
		Trout		Trout		Trout		Trout		Trout		Trout		Trout		Trout		Trout	
		0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+
Dernol	W001	27.1	11.1	60.0	10.8	25.4	6.2	57.4	1.1	18.7	1.7	17.5	3.5	37.7	6.2	-6%	106%	-54%	-43%
Marteg	W002	1.3	1.0	4.3	1.3	1.8	1.0	8.0	1.0	1.3	0.8	1.6	0.6	3.3	1.0	21%	-21%	-53%	-38%
Llanwrthyl Dulas	W003	121.5	34.1	86.2	13.1	46.9	7.7	75.3	8.6			55.2	20.0	82.5	15.9			-33%	26%
Ithon	W004	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0	0.0	0.1	0.0	0%	-100%	-100%	-100%
Clywedog	W005			0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.5	0.1	0.2	-100%	58%	-100%	215%
South Dulas - Irfon	W007	0.4	0.2	1.7	0.0	0.5	0.2	1.6	0.4	0.8	0.8	0.8	0.8	1.0	0.3	0%	0%	-19%	145%
Garth Dulas	W008a	0.7	3.6	2.1	7.9	0.4	4.9	2.0	0.7	2.0	5.0	0.0	5.5	1.4	4.4	-100%	9%	-100%	24%
Chwerfri	W009	1.5	4.4	2.7	3.2	1.0	1.0	0.5	0.7	0.5	2.9	1.1	0.0	1.2	2.4	129%	-100%	-8%	-100%
Duhonw	W010	1.6	6.6	3.6	12.2	1.2	7.7	0.9	1.4	3.0	7.9	0.0	3.6	2.1	7.2	-100%	-55%	-100%	-50%
Edw	W011	0.2	2.8	3.9	7.8	1.8	3.7	2.7	3.5	2.6	2.9	1.0	1.3	2.2	4.1	-61%	-56%	-54%	-69%
Sgithwen	W012	0.0	1.7	4.4	0.6	5.1	0.0	8.4	0.4	1.3	2.2	12.7	0.8	3.8	1.0	877%	-64%	232%	-19%
Lugg	W014	2.6	12.4	37.6	4.0	16.1	5.1	6.8	7.2	10.0	6.2	18.5	5.4	14.6	7.0	85%	-13%	26%	-23%
Hindwell Brook	W016	14.5	16.1	34.5	7.5	31.9	20.4	14.9	11.5	37.7	10.3	11.9	26.6	26.7	13.2	-68%	158%	-55%	102%
Honddu	W020	3.6	5.9	13.3	3.6	4.1	7.8	9.8	4.1	8.5	2.7	7.4	2.0	7.9	4.8	-13%	-27%	-6%	-59%
Wye	W025	1.4	0.5	1.4	0.0	1.5	0.0	3.1	0.0	1.3	0.0	0.9	0.5	1.7	0.1	-28%	+	-46%	371%
Bidno	W029	3.2	0.4	8.9	1.8	5.8	0.9	22.3	1.4	5.7	1.9	10.4	2.6	9.2	1.3	82%	37%	13%	103%
Ithon	W032d	0.0	0.0	2.8	0.0	1.7	0.8	2.8	0.0	0.0	0.9	0.0	0.0	1.5	0.3	0%	-100%	-100%	-100%
Aran	W033	5.1	0.4	9.2	0.0	16.3	2.3	16.5	5.8	7.3	1.8	22.6	2.0	10.9	2.1	210%	9%	108%	-5%
Nantmel Dulas	W035a	0.0	3.8	2.1	1.6	1.0	1.5	5.2	3.6	1.7	1.7	0.8	3.2	2.0	2.4	-53%	88%	-60%	31%
Camrarch	W043a	4.8	1.1	15.3	0.5	4.2	1.8	11.9	0.0	2.7	2.7	3.4	0.0	7.8	1.2	26%	-100%	-56%	-100%
Einon	W044b	147.8	10.6	32.5	6.7	69.5	3.2	75.8	2.1	96.2	6.0	74.1	6.0	84.4	5.7	-23%	0%	-12%	5%

River Wye

Juvenile trout densities 2014 to 2019 (fish per 100m²)

River - Site Name		2014		2015		2016		2017		2018		2019		5 Year Average (2014-2018)		% Change from 2018		% Change from 5 year average	
		Trout		Trout		Trout		Trout		Trout		Trout		Trout		Trout		Trout	
		0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+	0+	>0+
Llynfi	W047e	0.0	2.8	2.1	6.3	2.4	6.3	0.0	9.1	0.0	6.9	0.7	5.4	0.9	6.3	+	-22%	-25%	-14%
Arrow	W052	7.7	10.7	19.7	5.5	14.5	8.0	25.1	9.8	8.0	23.2	35.8	10.9	15.0	11.4	347%	-53%	139%	-4%
Irfon	W095L	6.8	0.5			8.9	0.0	9.5	0.0	8.1	1.2	3.0	0.0	8.3	0.4	-63%	-100%	-64%	-100%
	Average	15.3	5.7	15.1	4.1	10.9	3.8	15.0	3.0	9.5	3.9	11.6	4.2	13.2	4.1	23%	7%	-12%	3%