

This report summarises the findings of the 2017 juvenile salmonid monitoring on the Dee catchment. A more detailed assessment of the stocks will be available later in 2018 when the Know Your Rivers reports are published.

### **Juvenile Salmonid Monitoring Programme**

In 2017 the temporal (annual) programme consists of 13 sites on the Dee. The temporal data is used to look at trends in juvenile salmon and trout densities giving an idea of spawning across the whole catchment.

### **Key Points**

The monitoring season was hindered in 2017 by wet weather. This led to a couple of the sites on the Dee not being completed due to high flows. Sites were not fished on the Ceirw and Merddwr, which are both on the Alwen catchment.

Salmon fry densities on the Dee have generally improved in 2017 compared to 2016, however 2016 was exceptionally poor. In 2016 there was an obvious distinction between salmon fry densities, with the upper Dee being good, and lower Dee poor. In 2017 the salmon fry densities in the upper Dee have remained good, with densities equal to the historic averages. Lower down the catchment spawning on the Ceiriog and Abbey Brook improved compared to 2016, however compared to the historic averages the salmon fry densities are low.

Salmon parr densities across the catchment have generally declined in 2017 and this links directly to the poor salmon fry results in 2016. The Hirnant on the upper Dee bucked the trend with the highest density on record, and this links directly to the excellent salmon fry numbers on the Hirnant in 2016, which again did not follow the catchment trend.

Work at the Chester trap has highlighted that the grilse run on the Dee has declined. This gives some explanation to the varied juvenile numbers across the catchment. Multi sea winter (MSW) salmon would spawn in the Bala area, where as grilse would spawn on the lower catchment. This explains the lower salmon fry numbers on the Ceiriog & Abbey Brook.

Trout fry densities across the catchment were good in 2017, with the Hirnant, Mynach, and Morwynion having their highest densities on record. Trout parr densities have fluctuated across the catchment but the general picture is consistent with the historic data. The only tributary that stands out is the Morwynion that recorded its lowest trout parr density on record. Trout fry densities are consistently good on this catchment so it seems strange that trout parr densities are poor. There will be further investigation in 2018. Sea trout rod catch improved in 2016, and was one of the better results on record, so this would link to the improvements in trout fry numbers.

The improved densities of both salmon and trout fry are due to an increase in migratory fish on the catchment, and a more settled winter between 2016/17. This will have led to a high level of spawning and increased survival.

The Clywedog, Alyn, & Worthenbury Brook are reported separately as they are not classed as major spawning rivers. The Clywedog was exceptionally good compared to 2016, when no salmon fry were caught. The density of salmon fry on the Clywedog was the highest on

record in 2017. No salmon parr were caught, but this links directly to the salmon fry results in 2016. Trout fry densities were also very good compared to 2016, and up there with some of the best results on record. Trout parr densities remained consistent with the historic data.

Salmon and trout numbers were once again exceptionally poor on the Alyn. This follows the historic trend; however, we would have hoped to see some improvement. Works have been completed on several sewage treatment works, to improve water quality, and the construction of easements on weirs across the catchment should have led to increased numbers of migratory species throughout the waterbody.

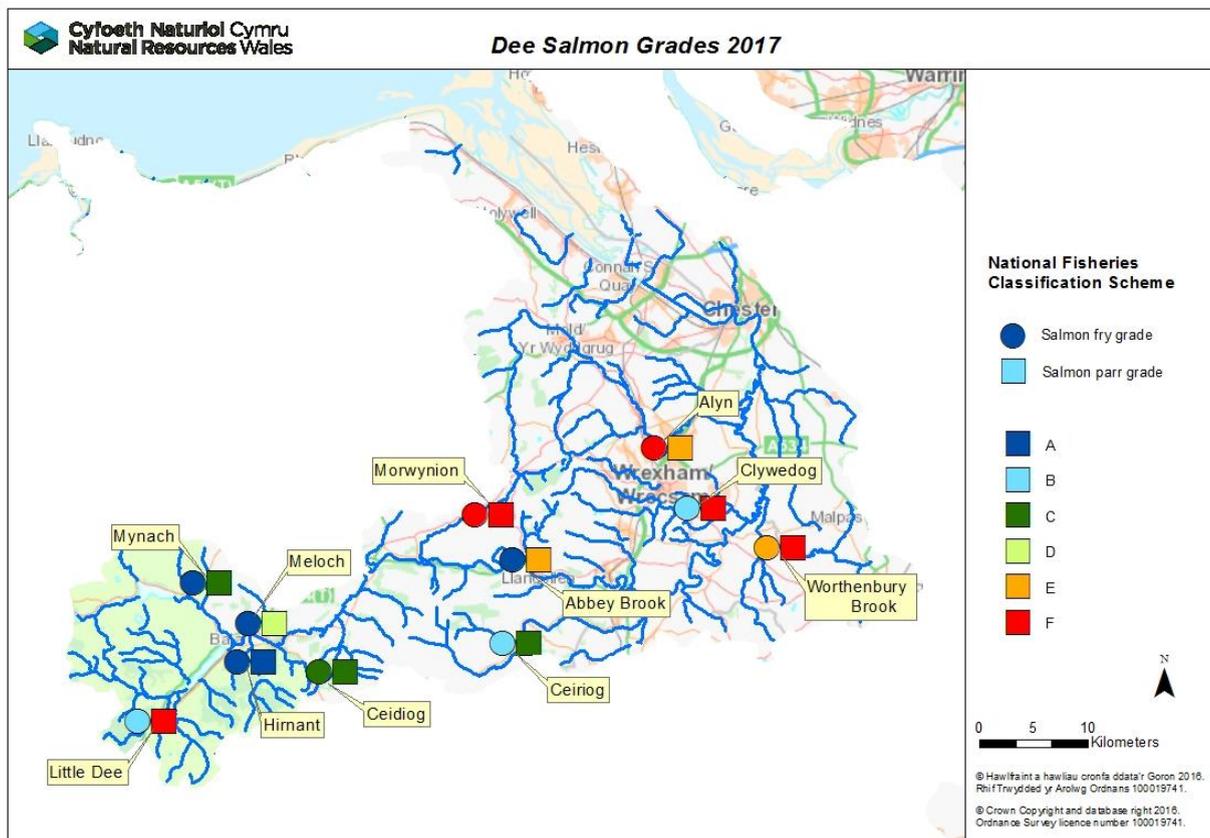
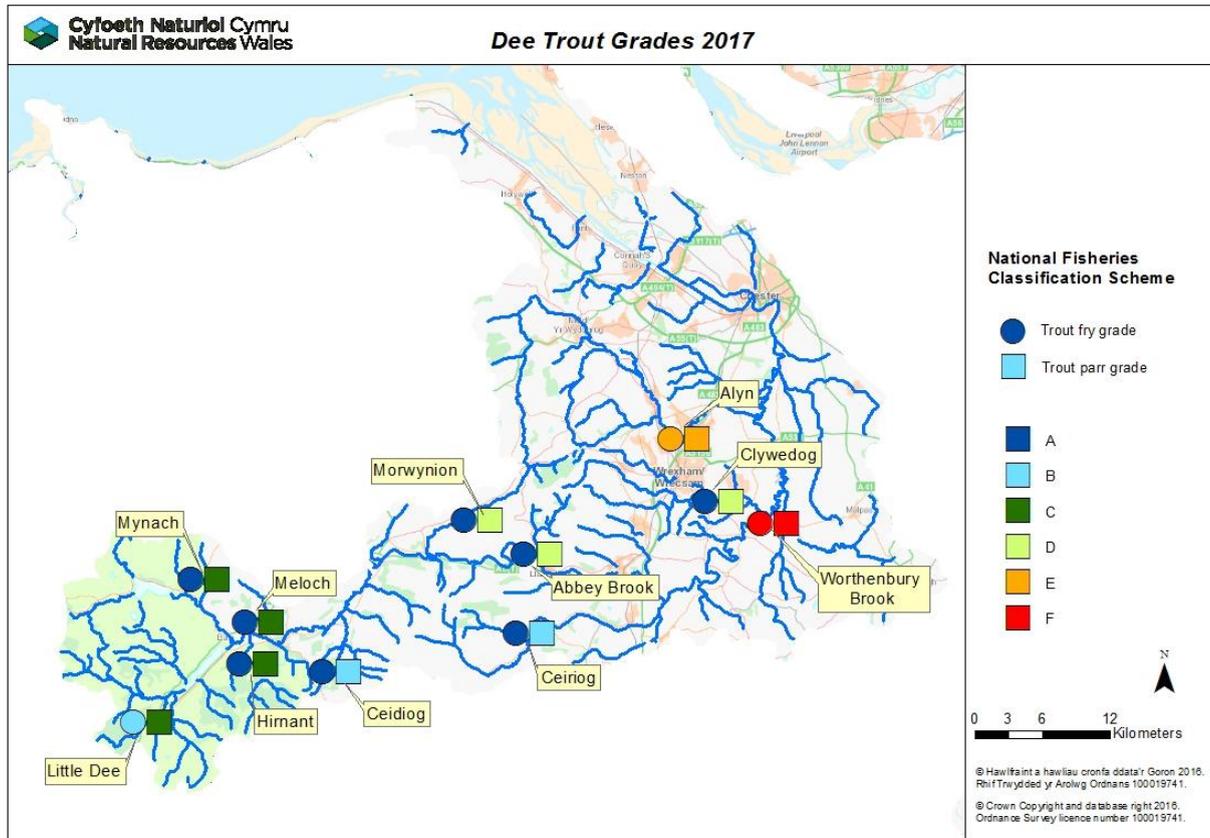
Worthenbury brook was also exceptionally poor. This also follows the historic trend, however there has also been a change in the species composition. Less bullheads are now caught at this site and this would indicate that the water quality is deteriorating. An investigation is currently being carried out on this catchment.

### **Salmon and Trout Classifications**

The following maps show the results of the routine juvenile salmonid population surveys from 2017 on the Dee.

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

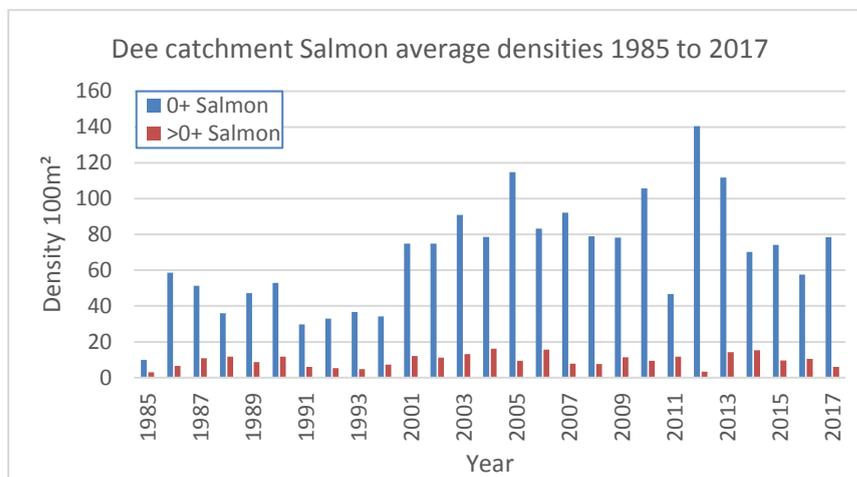
The symbols display the National Fish Classification Scheme (NFCS) grades which have been developed to evaluate and compare the results of fish population surveys in a consistent manner. The NFCS ranks survey data by comparing fish abundance at the survey sites with sites across Wales and England where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



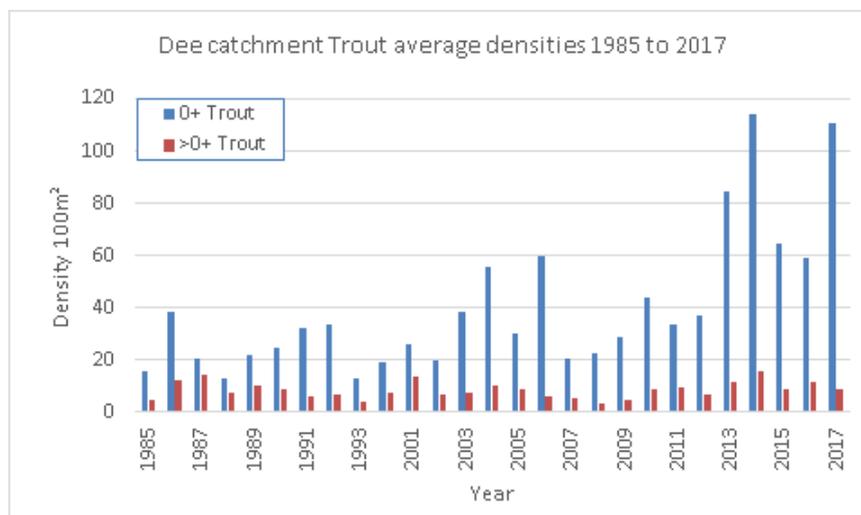
### Catchment Population Trends

The graphs below show a simple comparison of average salmon and trout densities across the Dee catchment since surveying began in 1985. NB – the data shown here are only from fully quantitative surveys of sites in the current Welsh monitoring programme, not every site in the programme was done every year, and no surveys were done from 1995 to 2000. The Alyn, Clywedog and Worthenbury are not included in this analysis.

The salmon fry densities across the Dee catchment have improved compared to 2016, and are following the historic trend. The difference in the catchment is that the higher densities are now in the upper catchment rather than tributaries such as the Ceiriog and Eglwyseg. This is due to the decline in grilse run. The salmon run improved in 2016, which is highlighted by the rod catch, and this will have led to improved salmon fry densities. Salmon parr densities have declined in 2017 which is due to the lower salmon fry densities in 2016.



Brown trout fry densities were excellent in 2017. This is due to the improved sea trout run in 2016, that is highlighted by the rod catch. Historically around 250 sea trout were caught each season. From 2010 to 2016 the average number has improved to around 500 sea trout per season. This is a 100% improvement, and this is mirrored by the juvenile data. The parr densities however have remained consistent compared to the historic data.



The following table shows a simple comparison of the catchment average density of juvenile salmon and trout from 2017, and compares this to 2016 and a 5-year average. NB – The five year average has been set from 2011 to 2015 as 2016 was an exceptionally poor year.

	0+ Salmon	>0+ Salmon	0+ Trout	>0+ Trout
2017 average density	78.4	6.0	110.5	9.0
2016 average density	57.6	10.4	58.8	11.8
<b>Percentage difference to 2016</b>	<b>36%</b>	<b>-42%</b>	<b>88%</b>	<b>-24%</b>
5-yr average (2011-15)	88.7	10.8	67.0	10.4
<b>Percentage difference to 5-yr average</b>	<b>-12%</b>	<b>-44%</b>	<b>65%</b>	<b>-14%</b>

Salmon fry densities have improved since 2016, but are still not as high as the five-year average. This can be explained by the decline in the grilse run. The decline in salmon parr densities can be explained by the poor salmon fry densities in 2016.

Trout fry densities are much improved compared to 2016 and are way above the five-year average. This links directly to the improvement in sea trout rod catch. Trout parr densities have declined slightly and this would link to the lower trout fry densities recorded in 2016.

### Further investigation

Additional redd monitoring is being carried out to highlight where salmon/sea trout have spawned this winter. Juvenile surveys in these areas will then provide evidence regarding egg survival.