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Know Your River – River Afan Salmon and Sea Trout Catchment Summary

Introduction

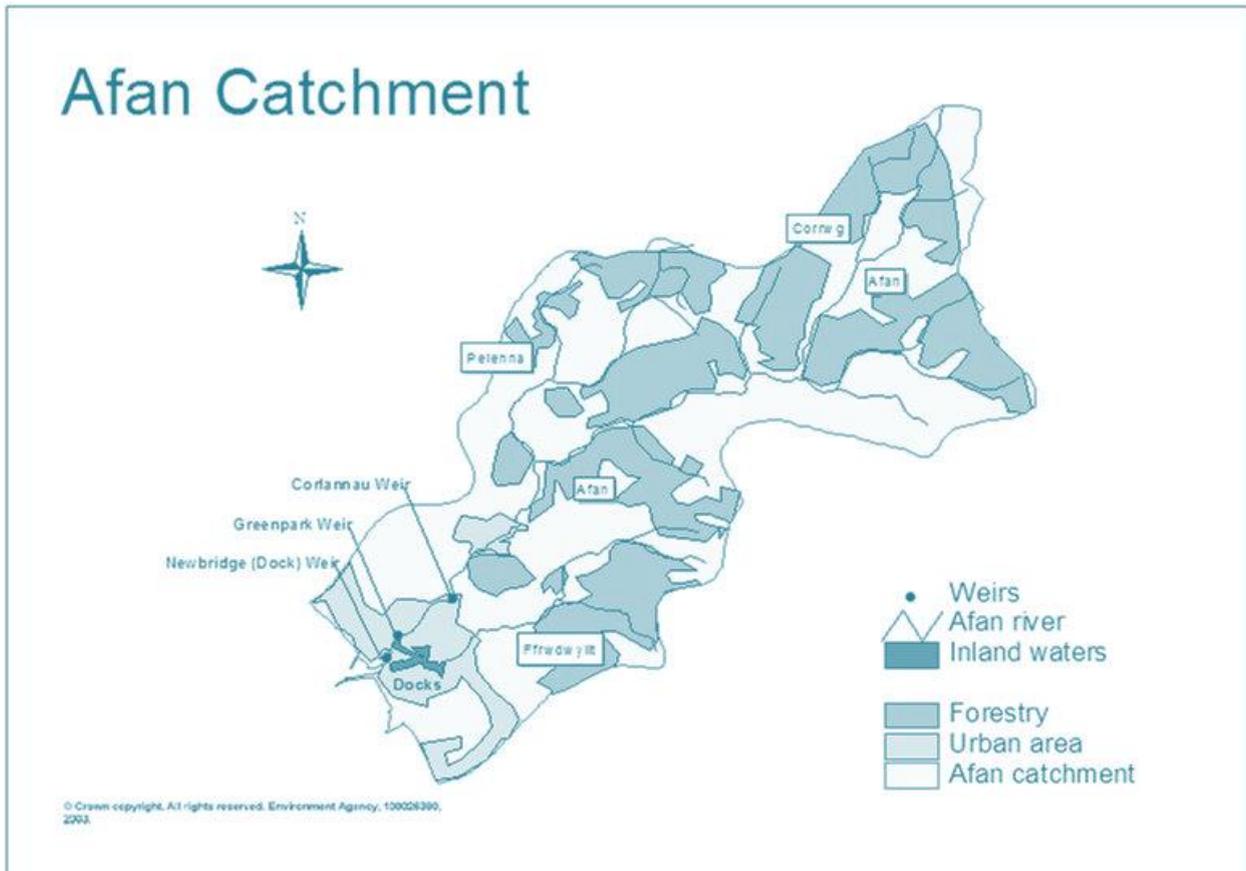
This report describes the status of the salmon and sea trout populations in the Afan catchment. Bringing together data from rod catches, stock assessments and juvenile monitoring, it will describe the factors limiting the populations and set out the challenges that are faced in the catchment.

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 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 our principal salmon rivers for the Salmon Action Plans, Habitats Directive condition assessments in selected SAC rivers, and the international ICES salmon status. In addition, the majority of fish species in all our rivers are reported for the Water Framework Directive (WFD). This report contributes towards these commitments and provides an informative and useful summary of stock status and remedial work planned, for our customers, specifically anglers, fishery and land owners; as well as our partners.

River Afan



Rising at 500m above OD, the River Afan has a catchment area of 115km², and flows 26 km into Swansea Bay at Port Talbot. The majority of the Afan catchment is used for coniferous forestry, with some rearing of sheep and cattle on the high ground in the headwaters. The mid and upper reaches of the catchment are affected by a legacy of coal mining, reflected by abandoned mine sites and associated discharges of acidified, iron rich water. The Afan valley also has a history of metal smelting.

The quality of salmon and sea trout fisheries in the Afan has dramatically improved in recent years, following virtual elimination of the fishery in the early 19th century. Improvements have been brought about by a number of factors, including the alleviation of several man-made obstructions to fish migration, restocking, and improvements to water quality throughout much of the catchment.

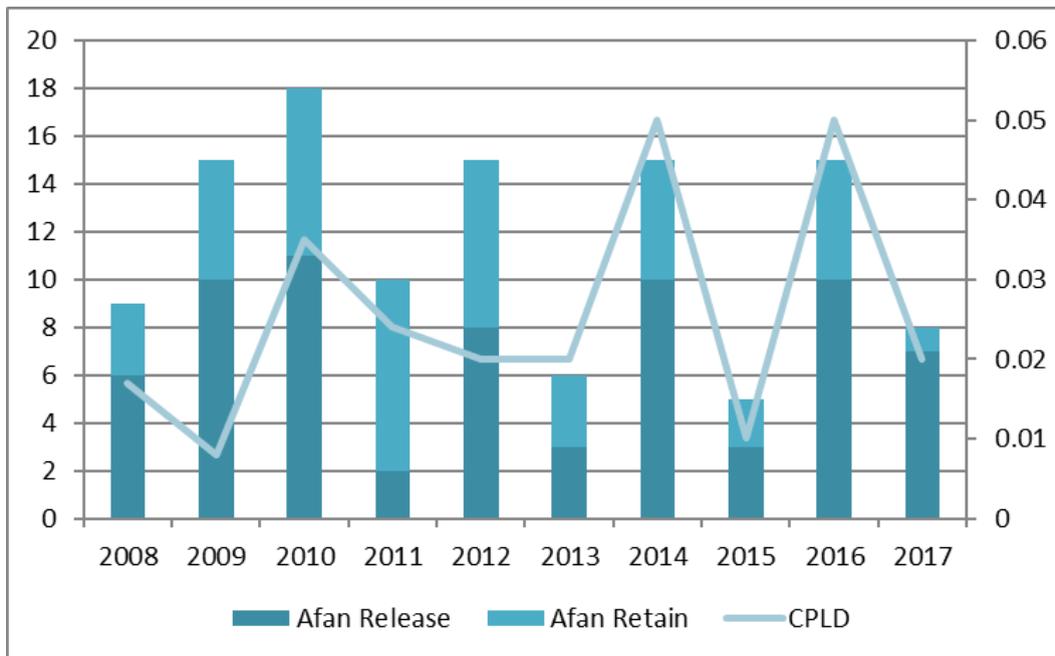
The Afan now supports a locally important salmon and sea trout (sewin) fishery. Sea trout are the principal salmonid, with a limited number of salmon also present.

Rod Catches

The following graphs show the total declared rod catches, including numbers released or killed for salmon and sea trout on the Afan. The catch per licence day (CPLD) has also been included to show the ratio of fish caught per licences sold.

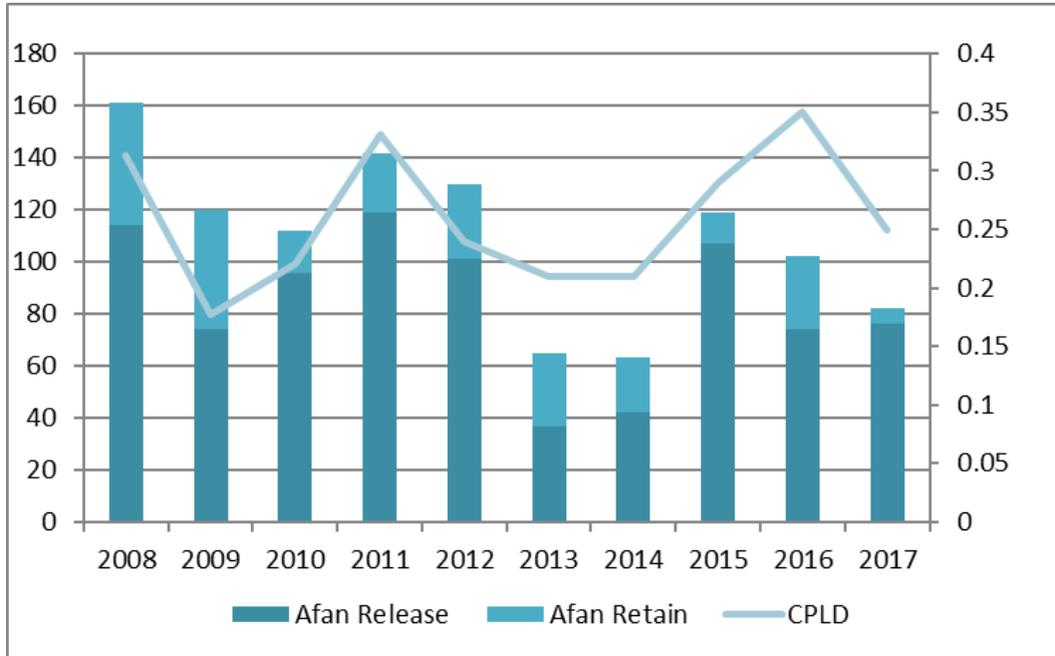
The declared salmon rod catches are variable over the period, with the highest catches recorded in 2009, 2010, 2012, 2014 & 2016. The average proportion of the salmon catch returned alive for the period shown is 54.9% while, the release rate in 2017 was 87.5% which, is slightly higher than the Wales average of 86%. The CPLD trend is similar to that of the total catch from 2013 to 2017 however, during 2009 and 2012 the CPLD has decreased while the total catch has increased which, will likely be as a result of a rise in the number of days spent fishing and fewer fish being caught per day.

River Afan Declared Salmon Rod Catch



The declared rod catches for sea trout are also variable over the period, however reported catches exceed those of salmon in all years with, the lowest recorded catches recorded in 2013 & 2014. The average proportion of sea trout catch returned alive for the period shown is 75.8% while, the release rate in 2017 was 92.7% which, is above the average figure for Wales of 77%. The CPLD trend follows the total catch trend closely, apart from in 2010 and 2016. In 2010 the CPLD decreased while the total catch increased which, could be because of an increase in days spent fishing and fewer fish being caught per day. Whereas, in 2016 the CPLD has increased and the total catch has decreased, this is likely due to few days being fished per licence.

River Afan Sea Trout Rod Catch



Stock Status

Conservation of Salmon

Salmon stock status is assessed through the use of 'Conservation Limits' which provide an objective reference point against which to assess the status of salmon stocks in individual rivers. 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. This is why, 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 CL seeks to protect. The conservation limit represents the number of eggs that must be deposited each year within a given catchment in order to conserve salmon stocks in the future.

In the case of the Afan, a conservation limit has been set simply to give an idea of potential productivity. The low reported rod catches of salmon for the Afan mean that it is not possible to obtain an accurate estimation of egg deposition for the river, due to the potential errors involved. Assessment of compliance against the conservation limit has therefore not been attempted.

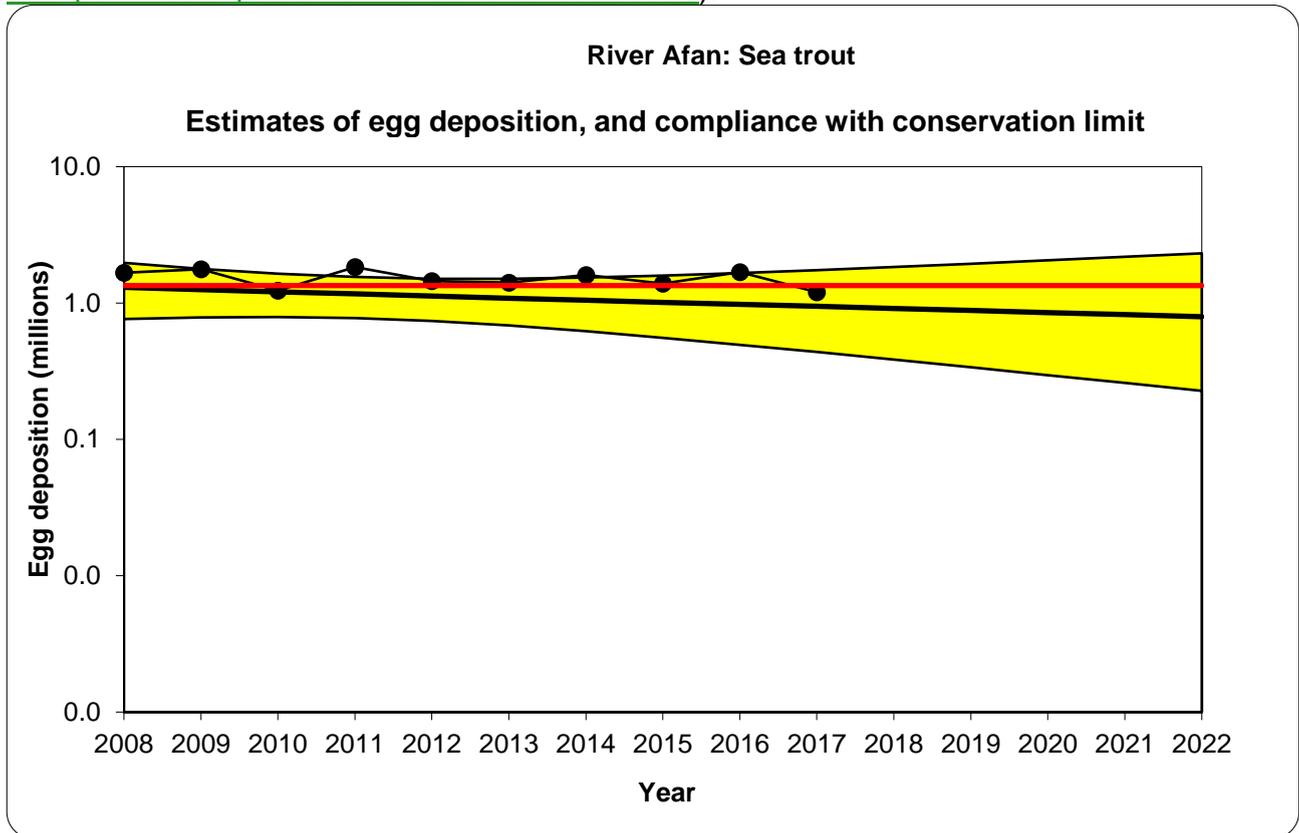
Conservation of Sea Trout

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:

<https://cdn.naturalresources.wales/media/684367/technical-case-structure-final.pdf?mode=pad&rnd=131654078130000000>).



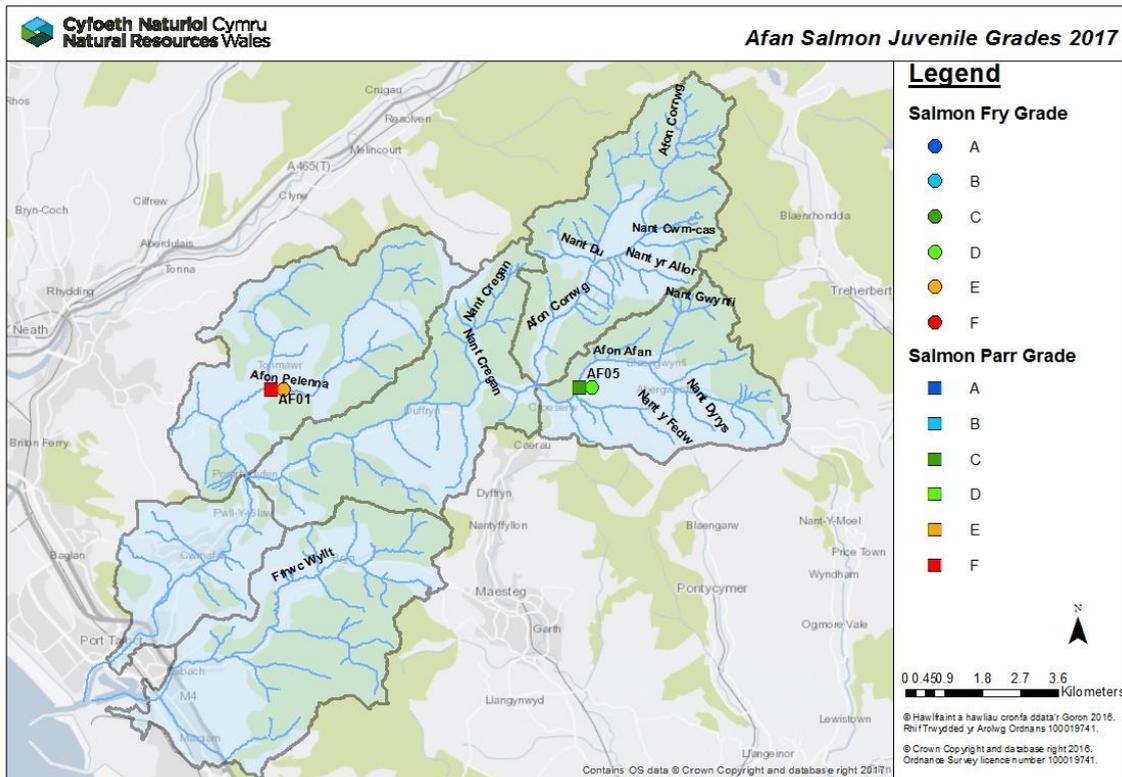
Are enough sea trout eggs being deposited to conserve sea trout stocks in the catchment?
The red line represents the number of eggs required to be deposited to sustain a healthy sea trout stock. The black trend line and its confidence limits (the yellow band) is fitted to the most recent 10-year series of egg deposition estimates (2008-2017).

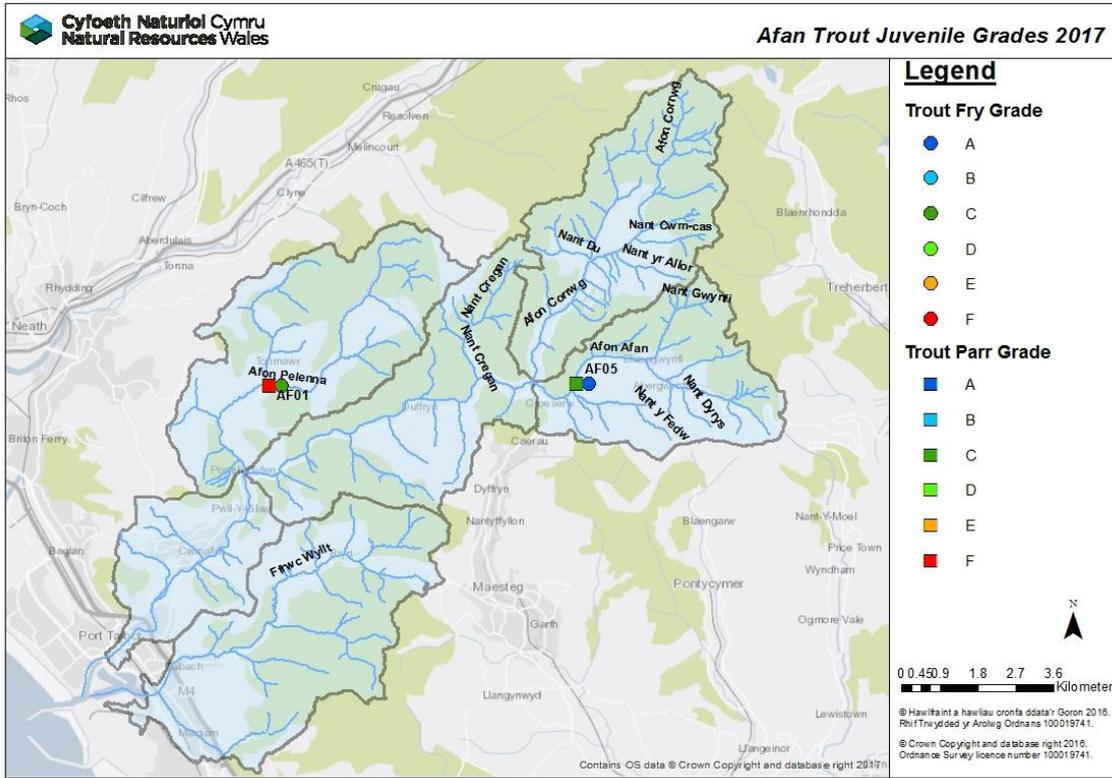
- Current number of eggs being deposited puts stocks **probably at risk**
- In 5 years' time the predicted status of salmon stocks will be **probably at risk**
- Based on current data, and the projection of the graph, sea trout stocks will continue to **decline on the Afan (uncertain)**.

Juvenile Monitoring

The following maps show results of the 2017 juvenile salmonid populations gathered from electro fishing surveys. They display the National Fish Classification (NFC) grades which have been developed to evaluate and compare the results of fish population surveys in a consistent manner. The NFC ranks survey data by comparing fish abundance at the survey sites with sites nationally 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 NFC.

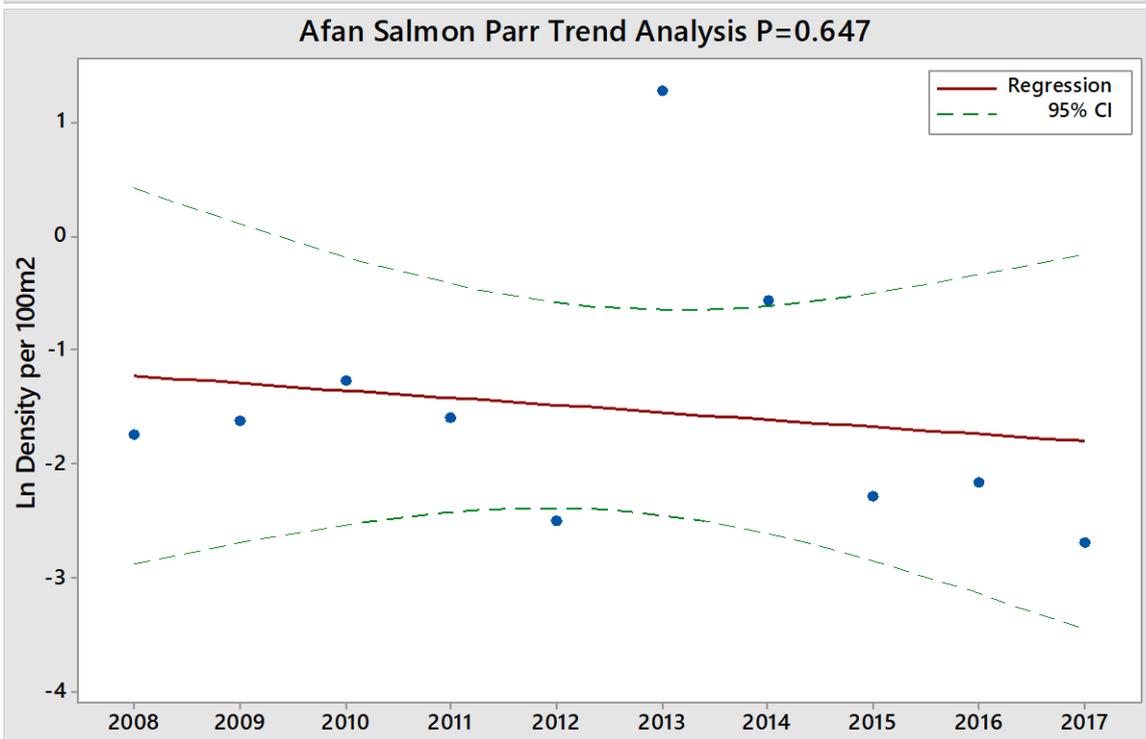
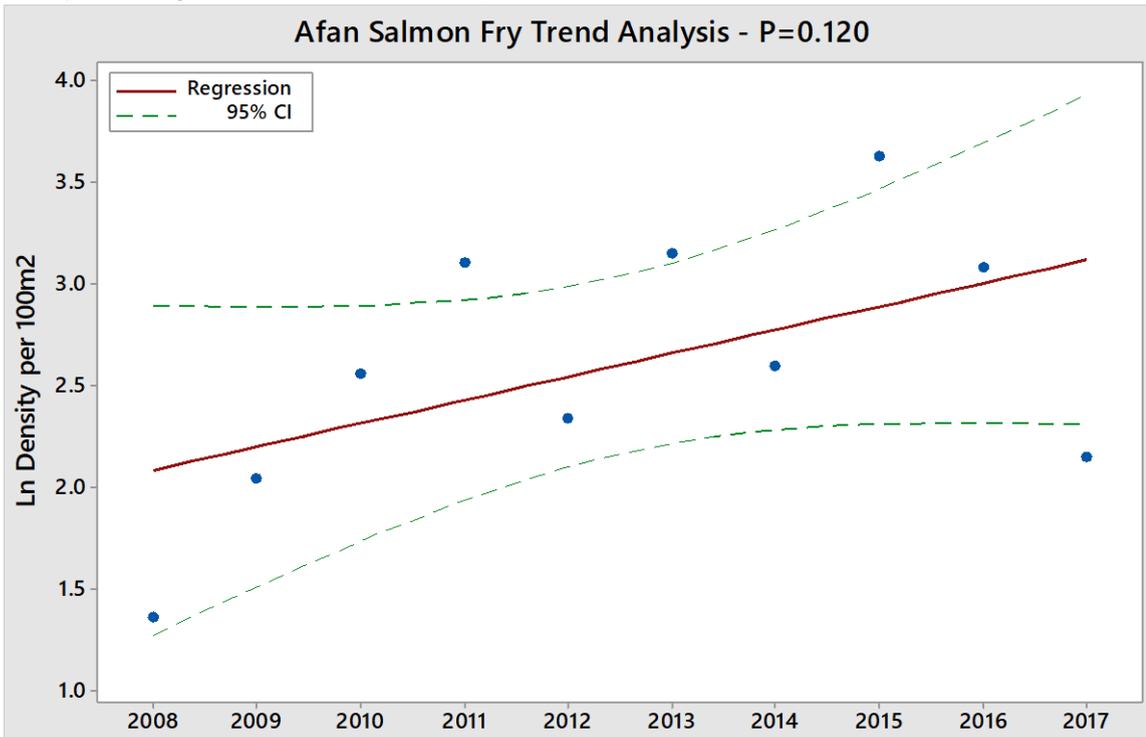
GRADE	Descriptor	Interpretation
A	Excellent	In the top 20% for a fishery of this type
B	Good	In the top 40% for a fishery of this type
C	Fair	In the middle 20% for a fishery of this type
D	Fair	In the bottom 40% for a fishery of this type
E	Poor	In the bottom 20% for a fishery of this type
F	Fishless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



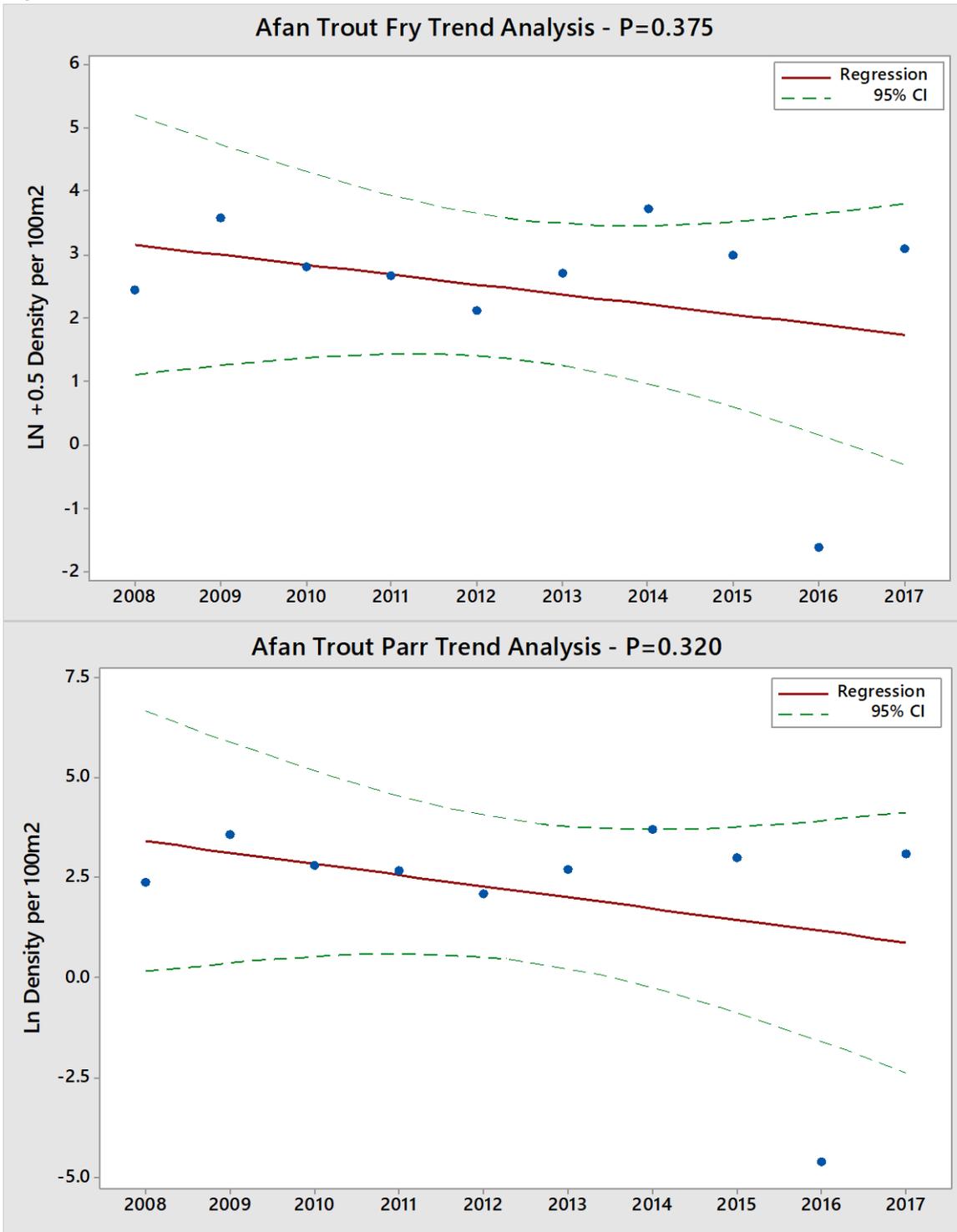


Juvenile Trend Analysis

Juvenile salmon have shown high levels of variation in the last 5 years. There is an upward trend for fry and slight downward trend for parr.



Juvenile trout numbers recorded at the two annual monitoring sites in the River Afan have shown a slight downward trend over the last 10 years. However, neither of these trends are statistically significant.



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Fisheries Mitigation Plan

Site	Planned action	Benefits	Lead	Partner(s)	Timescales for delivery
Afan	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		Ongoing
	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.	<ul style="list-style-type: none"> Waterbodies protected and improved WFD waterbodies achieving Good Status/Potential 	NRW	NRW Wildlife trusts Local Authorities Landowners DCWW	Ongoing
	Enforcement: Action to reduce illegal activity on information provided and investigations.	Reduce illegal activity, more fish remain in the system.	NRW	Stakeholders SW Wales Police	Ongoing