

Catchment

The Dwyfor catchment is divided into two main rivers, the Afon Dwyfawr and the Afon Dwyfach. The Dwyfawr subcatchment is mountainous. It rises in Cwm Pennant and has one main tributary, the Afon Cwm Ystradllyn (also known as the Afon Henwy). The Cwm Pennant streams in the upper reaches of the Dwyfawr are acidic. They drain unafforested mountains of base-poor Ordovician rocks overlain by acidic, often waterlogged soils with low buffering capacity. The Afon Dwyfach has a moorland catchment and is less acidic.

Naturally elevated levels of zinc are characteristic in the catchment. This is evidenced by the presence of disused zinc mines dotted throughout the area. Disused copper mines and slate quarries are also found. Current industries in the catchment include a sand and gravel quarry and a cement works.

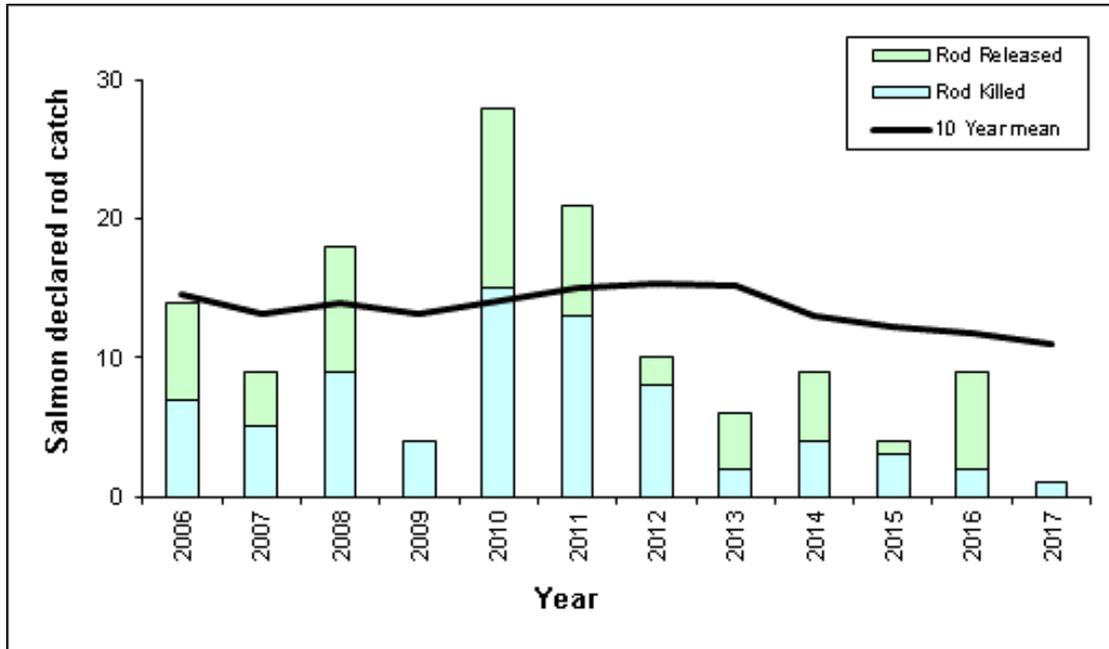
There is a major water abstraction scheme in the catchment, involving Llyn Ystradllyn and the Afon Dwyfawr, known as the Garndolbenmaen scheme. Under this scheme Welsh Water/D_r Cymru are licenced to abstract a combined total of 5 million m³ of water per calendar year from Llyn Cwmystradllyn and the Afon Dwyfawr at Dolbenmaen. Welsh Water/D_r Cymru are required to maintain a uniform continuous compensation water discharge of 3010 m³ per day for the general benefit of riparian river interests. Freshet releases must be made for fisheries management and angling purposes.

A high proportion of the Dwyfor catchment is available for spawning. However impassable waterfalls in the upper reaches of some of the tributaries of the Dwyfawr restrict salmonid access.

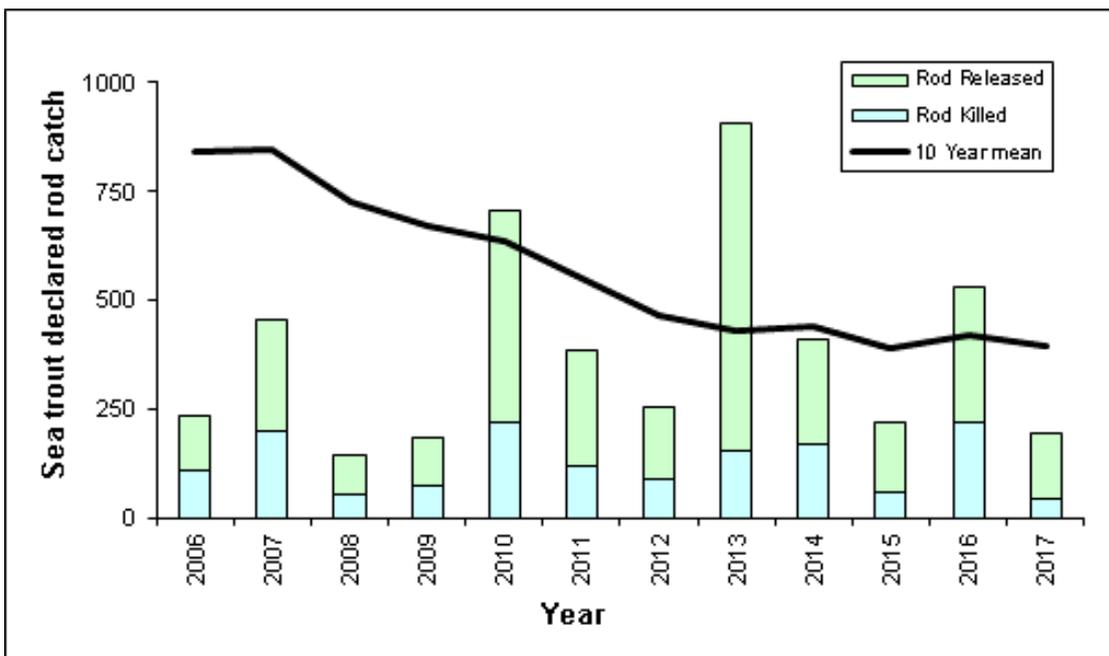
Rod catches

The following graphs show the total declared rod catches of salmon and sea trout on the Dwyfor.

Salmon rod catch –was really poor in 2017 and considerably lower than it’s been in the last 10 years. The only salmon that was caught was killed, giving a catch and release rate of 0%. The release rate needs to improve urgently to conserve the dwindling stock.



Sea trout rod catch –rod catch in 2017 was much lower than the 10 year average, However, the release rate has improved compared to last year to 77% and this needs to be maintained.

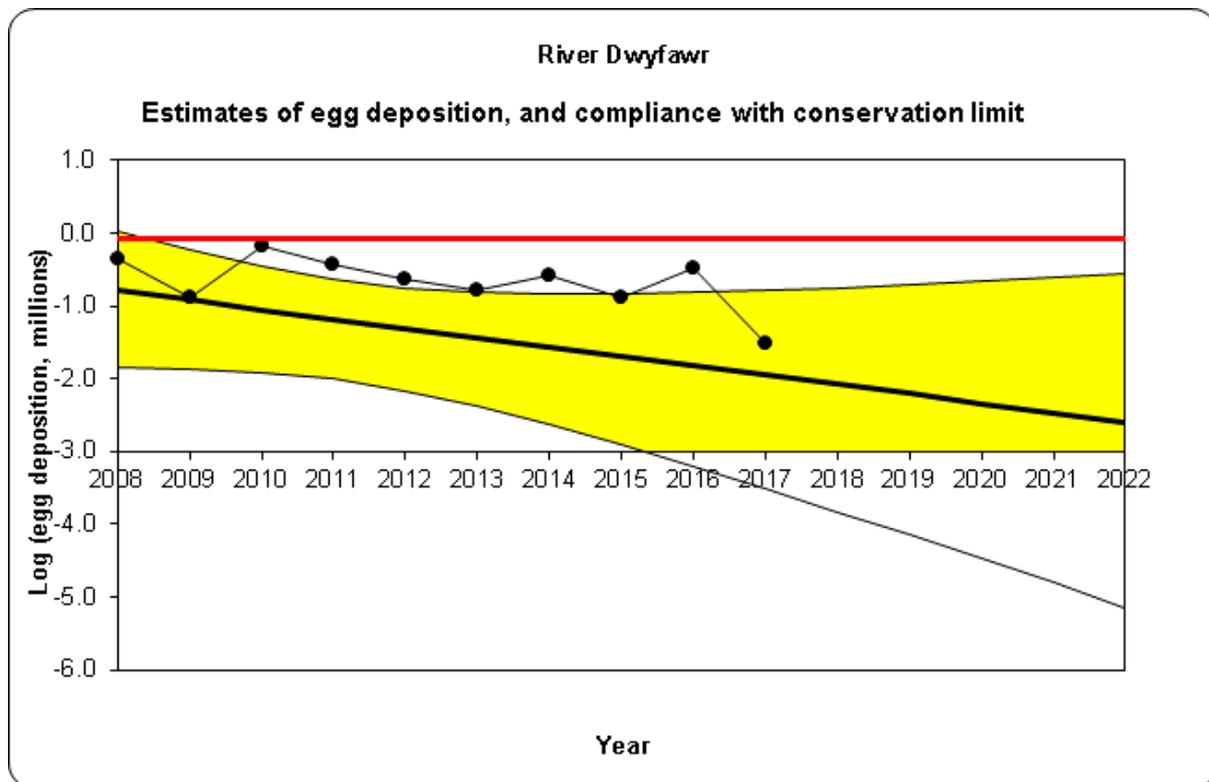


Stock status

Conservation of Salmon

Salmon stock status is assessed using 'Conservation Limits' which provide an objective reference point against which to assess the status of salmon stocks in individual rivers.

This is calculated by applying assumed angling exploitation rates to catch data to derive run estimates; adopting standard sex ratios and weight-fecundity relationships to generate egg deposition figures. 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. Therefore, 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 conservation limit 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.



Are enough salmon eggs being deposited to conserve salmon stocks in the catchment?

The red line represents the number of eggs required to be deposited to sustain a healthy salmon 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 (2007-2016).

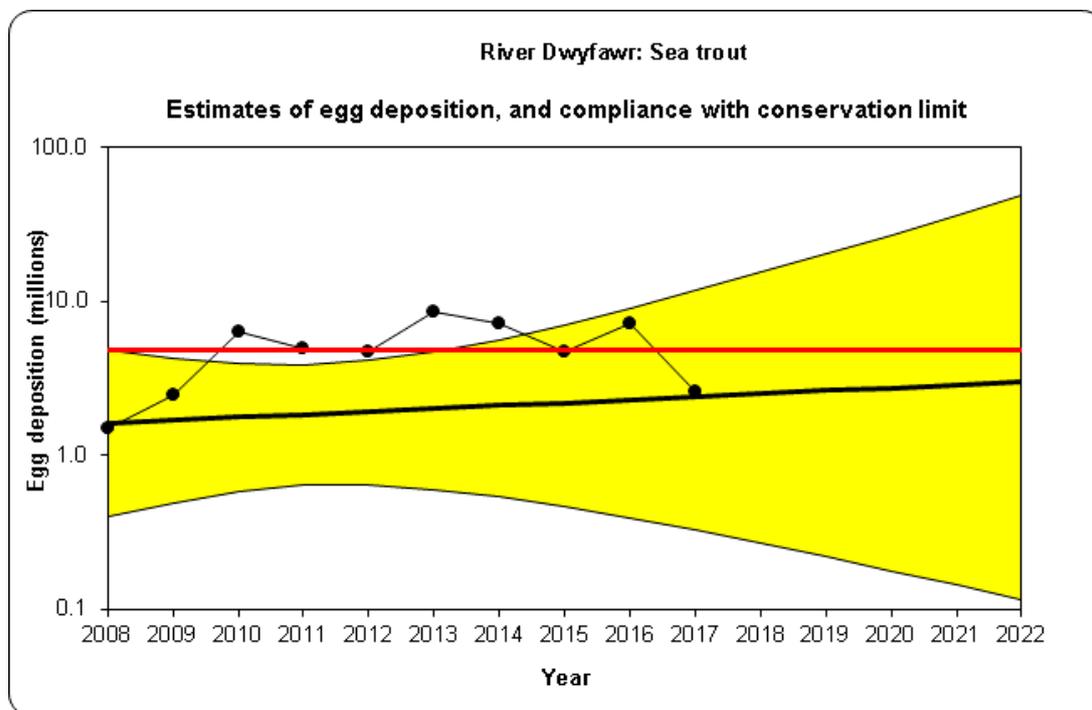
- Current number of eggs being deposited puts stocks **at risk**
- In 5 years' time the predicted status of salmon stocks will be **at risk**
- Based on current data, and the projection of the graph, the stocks of salmon on the Dwyfor will continue to **decline (uncertain)**

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: <http://naturalresourceswales.gov.uk/media/682258/technical-case-structure-final.pdf>)



Are enough sea trout eggs being deposited to conserve salmon 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 (2007-2016).

- 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 **improve (uncertain)** on the Dwyfor

Juvenile Monitoring

The monitoring season was hindered in 2017 by wet weather and high flows. This led to the temporal site on the Dwyfor not being completed. This was also the case for most temporal sites in Gwynedd.