



# Know Your River - Dysynni

## Salmon & Sea Trout Catchment Summary

### Introduction

This report describes the status of the salmon and sea trout populations in the Dysynni 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 faced in the catchment.

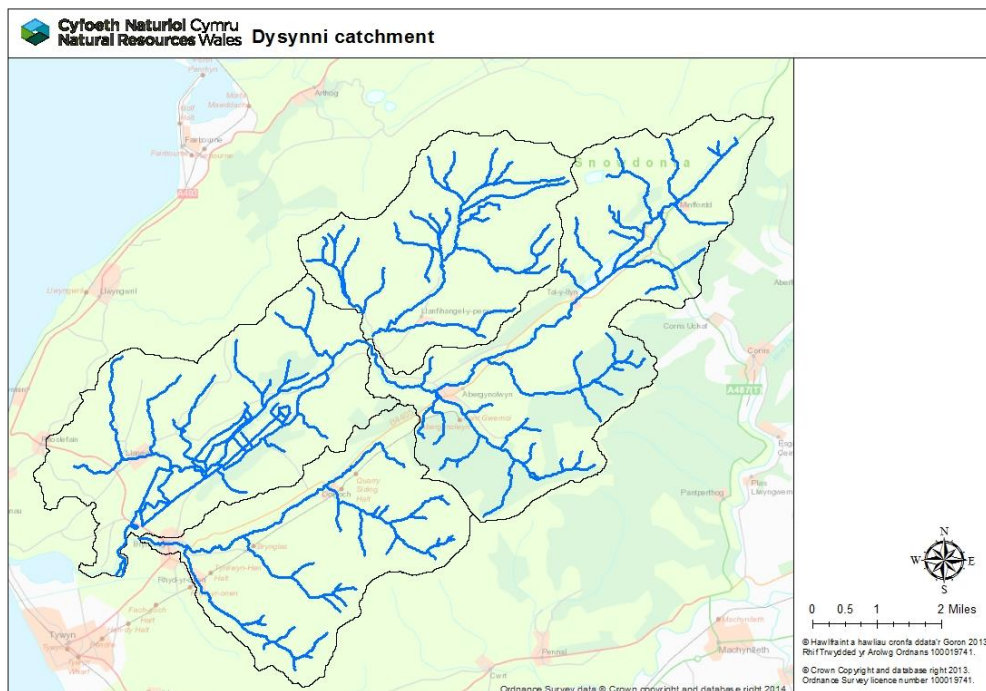
Action tables set out habitat improvements to restore freshwater productivity of salmon and sea trout populations. These tables also include some work which will be carried out by our partner organisations, not just Natural Resources Wales (NRW).

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 of 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 principal salmon rivers where, in the past, Salmon Action Plans have been produced, and/or, in SAC rivers, where condition assessments have been undertaken under the Habitats Directive. In addition, the status of various fish species in all our rivers is reported as part of Water Framework Directive (WFD) assessments. This report refers to these commitments. Its purpose is to provide, for our customers, an informative and useful summary of stock status and remedial work planned - specifically for anglers, fishery and land owners; as well as other partners.

### Catchment

The Afon Dysynni rises on the slopes of Cadair Idris, draining a predominantly upland catchment (72.2 km<sup>2</sup>) into Cardigan Bay, north of Tywyn after flowing a distance of 30.1km. The largest populated area within the catchment is the small town of Tywyn with a population of 2,995 (1991 Census). The catchment is in a predominantly rural area incorporating the Cadir Idris National Nature Reserve and areas of the Dyfi Forest. The main land use within the catchment is upland area sheep grazing, whilst on the lower flood plain the land is



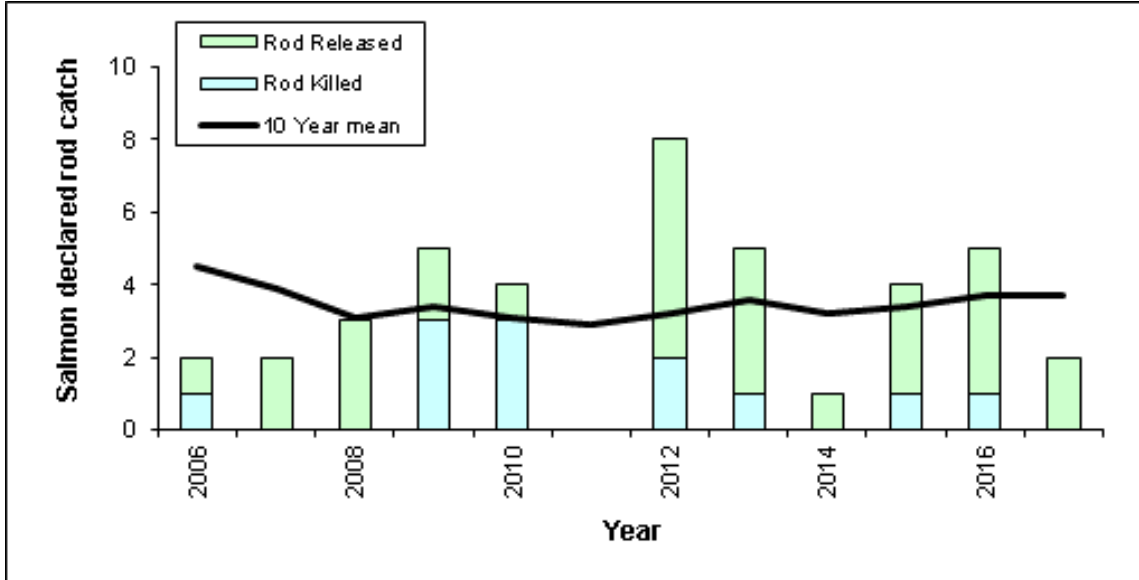
predominantly improved pasture. This area requires an enhanced level of drainage and is designated as an Internal Drainage District (IDD).

The Dysynni catchment lies on a base of Silurian and Ordovician rocks, resulting in rounded hills and plateaux country much less rugged than that of the Snowdonia National Park that lies to the North. Water quality is poor on a number of river stretches, suffering from low pH values due to acidification that can lead to elevated metal concentrations. Contributing factors to the low pH are the predominance of base poor soils in the catchment with low buffering capabilities and coniferous afforestation.

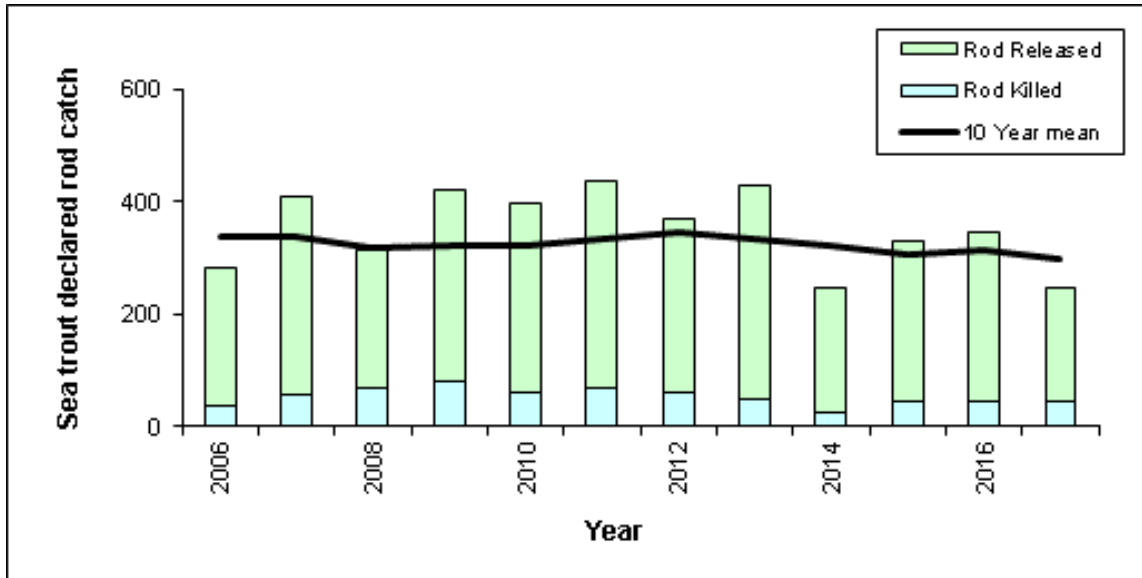
**Rod catches**

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

**Salmon rod catch** – decreased in 2017 to below the 10 year mean, but the river is predominantly a sea trout river. The release rate in 2017 was 100% which is an excellent result and needs to continue.



**Sea trout rod catch** – remains consistent. The release rate in 2017 was 81%. This is good and may it continue to improve.

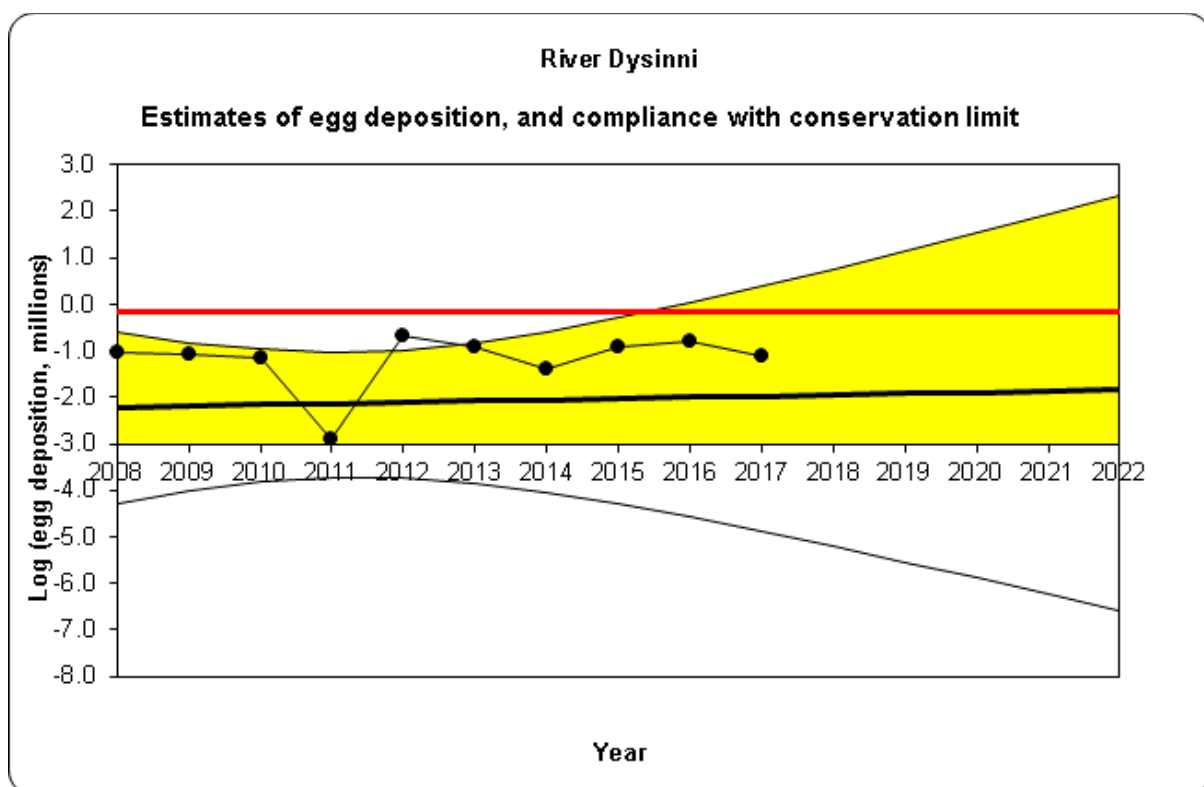


## Stock status

### 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 (2008-2017).

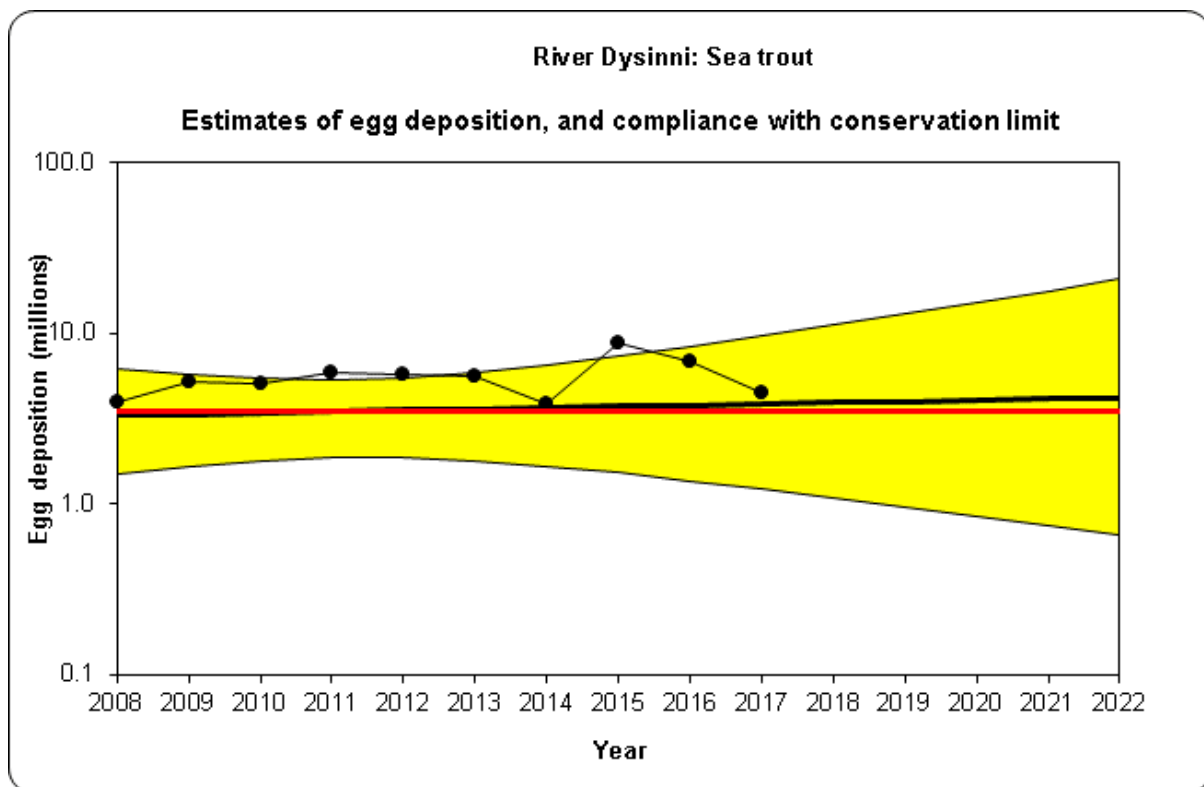
- Current number of eggs being deposited puts stocks **probably at risk**
- In 5 years' time the predicted status of salmon stocks will be **probably at risk**
- Based on current data, and the projection of the graph, the stocks of salmon on the Dysynni will continue to **improve (uncertain)**

## 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 (2008-2017).

- Current number of eggs being deposited puts stocks **probably not at risk**
- In 5 years' time the predicted status of salmon stocks will be **probably not at risk**
- Based on current data, and the projection of the graph, sea trout stocks will continue to **improve (uncertain)** on the Dysynni



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### **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 and Meirionydd.