

Executive Summary

- This Dysynni Salmon Action Plan (SAP) review is to fulfil part of the requirements of the 1996 ministerial directive, "A Strategy for Management of Salmon in England and Wales". The Dysynni Salmon Action Plan was originally produced in 1997.
- The Dysynni (SAP) review has undergone a Strategic Environmental Assessment (SEA) to ensure that the future implementation of the actions it contains do not impact the environment negatively.
- The Dysynni (SAP) underwent a consultation process with Dysynni anglers, Countryside Council Wales (CCW), Gwynedd County Council and Snowdonia National Park to ensure that other interests were included into the plan.
- The main factors limiting fish stocks in the Dysynni are similar to those outlined in the first salmon action plan document, these include: weed growth, restricted access, water quality, physical habitat and exploitation.
- The actions contained in this document aim to improve the Dysynni fish stocks over five years. Any actions in this plan that are highlighted in yellow may not be achieved in the next five years but possibly within the next ten years.
- A programme to monitor this review document and the actions it contains has been completed and has been included.

Introduction

General

The Environment Agency's strategy for the management of salmon fisheries in England and Wales requires the production of an individual Salmon Action Plan (SAP) for each principal salmon river. As well as updating these plans at regular intervals, they will be progressively integrated to the 6-yearly Water Framework Directive Planning Cycle.

Whilst the strategy recognises the need to maintain a national overview of salmon conservation, the key component requires individual stocks to be managed effectively.

Government has instructed the Agency to set Conservation Limits (CLs) for individual rivers and to refine these limits and the way they are used to take account of improvements in methodologies and new data.

This approach is endorsed by the North Atlantic Salmon Conservation Organisation which is an inter-governmental body concerned with salmon conservation at an international level. The UK is linked to its recommendations and advice via the European Union. SAPs form part of our NASCO Implementation Plan for England and Wales which shows what we will be doing to manage and conserve salmon stocks in the coming 5 years, with particular reference to some of the key NASCO agreements.

This review of the Salmon Action Plan for the river Dysynni seeks to ensure that actions which are taken to control exploitation and address the underlying reasons for under-performance of the fishery will make a real difference to the fishery in the future.

Special Area of Conservation (SAC)

The coastline of the Dysynni catchment falls within the Pen Llyn a'r Sarnau SAC. The northern area of the catchment falls partly within the Cadair Idris SAC.

Dysynni Catchment

The Afon Dysynni rises on the slopes of Cadair Idris, draining a predominantly upland catchment (72.2km²) into Cardigan Bay, north of Tywyn after flowing a distance of 30.1 kilometers.

The largest populated area within the catchment is the small town of Tywyn with a population of 3,085 (2001 Census). The catchment is in a predominantly rural area incorporating the Cadair Idris National Nature Reserve and areas of the Dyfi Forest. The main land use within the catchment is upland sheep grazing, whilst on the lower flood plain the land is predominantly improved pasture. The area requires an enhanced level of drainage and is designated as an Internal Drainage District (IDD).

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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 within the Dysynni catchment is generally classified A – Very Good as part of the GQA/HI survey carried out by the Environment Agency. There have been no significant changes in water quality since 1995. The Afon Cadair, Lower Afon Fathew and Afon Dysynni all have stretches which fail their River Ecosystem Water quality class requirements due to pH failures due to acidification. Contributing factors to the low pH are the predominance of base poor soils in the catchment with low buffering capabilities and coniferous afforestation. Biological assessment of water quality within the catchment was rated b – good throughout the catchment using the Biological Monitoring Working Party (BMWP) scoring system (Table 1). All main river stretches and tributaries within the catchment were assessed as part of the Headline Indicator survey 2004-2006. The only site to have shown a decline in biological water quality is the Afon Cadair which was rated a – very good in 2003 but b-good in 2006.

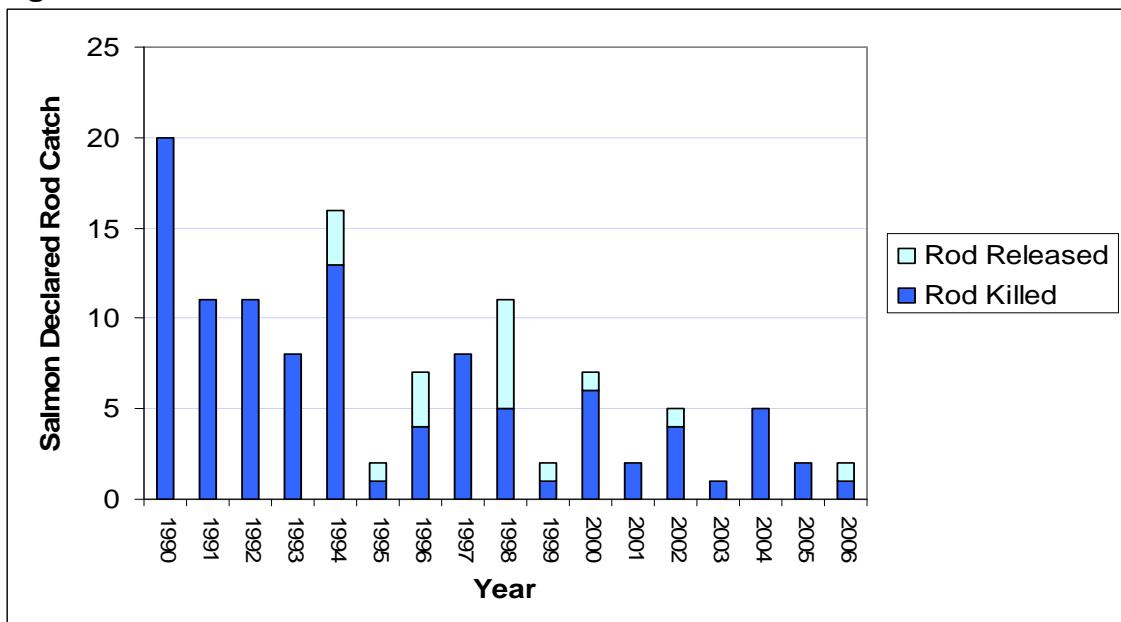
Table 1. BMWP score for the Dysynni

RNAME	Biology Site Name	Reg Ref	LENGTH	RE Water Quality Class	Bio90	Bio95	Bio00	Bio02	Bio03	Bio04	Bio05	Bio06	Last Samp
DYSYNNI	PONT-Y-GARTH	N22	22.5	RE1 (marginal failure pH)	b	b	b	b	b	b	b	b	2006
FATHEW	D/S BRYNCRUG STW	N25	1	RE1 (marginal failure pH)	na	b	d	d	d	b	b	b	2004
FATHEW	U/S BRYNCRUG STW	N26	5.3	RE1 (pass)	b	b	b	b	b	b	b	b	2004
CADAIR	U/S DYSYNNI	N216	3.9	RE5 (significant failure due to pH)	na	b	b	b	a	a	a	b	2006

Stock – Adult salmon and Sea trout

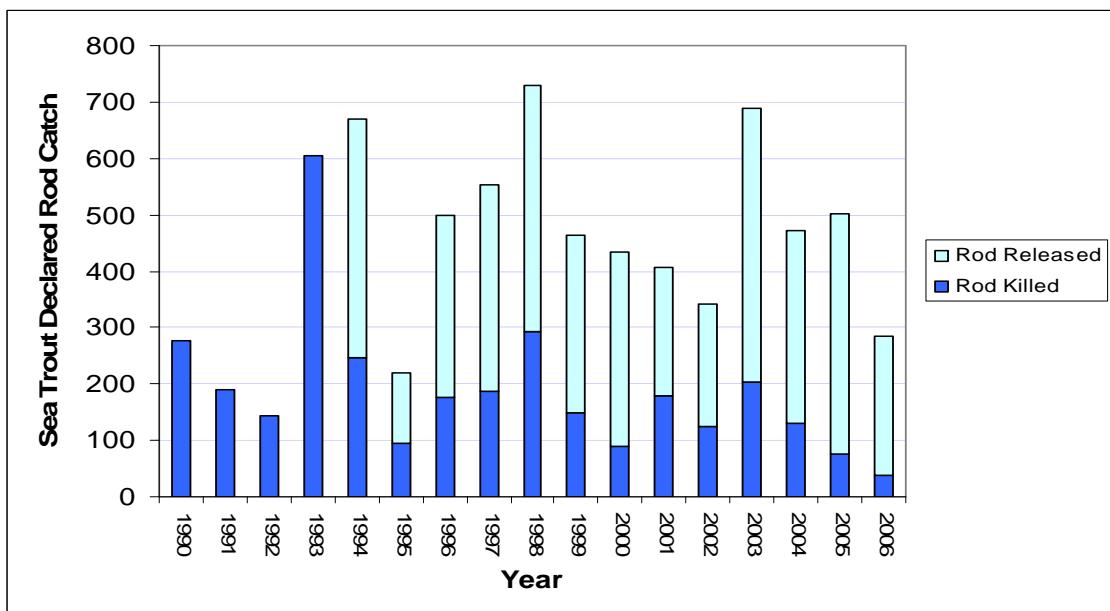
In figure 1 The number of rod caught salmon on the Dysynni was 2 in 2006 and of these 1 was released.

Figure 1 Salmon rod catch



In figure 2 The number of rod caught sea trout on the Dysynni was 284 in 2006 of which 245 were released.

Figure 2 Sea trout rod catch



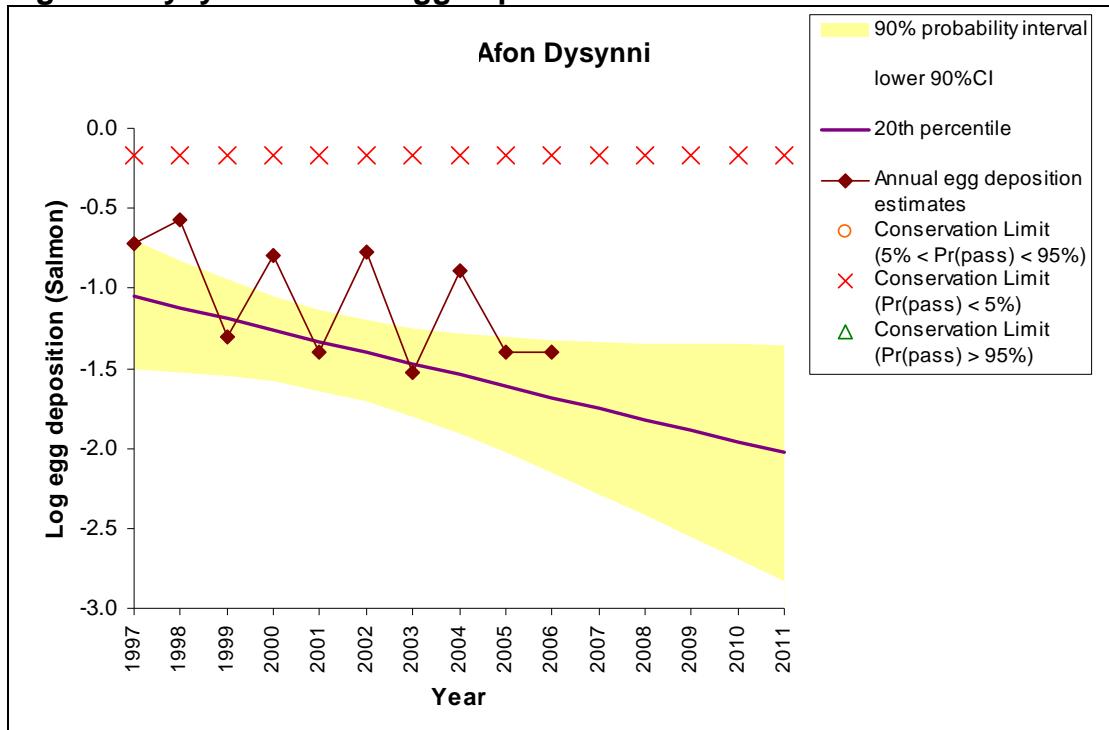
NB No reminder sent out in 1992 to collect data on released sea trout

Stock – Conservation Limit

The Dwyfor Conservation limit is a measure of the number of salmon eggs needed to be deposited on the river to sustain a healthy salmon stock. Rod catch data is used to help calculate the egg deposition annually. We can then compare our annual deposition estimate against the conservation limit (red crosses) to see how the river is performing (Shown in figure 3).

If the yellow shaded area is below the conservation limit, we can be fairly certain that the stock status is failing in that year. If the yellow shaded area is above the conservation limit, we can be fairly certain that the stock status is passing in that year. If the yellow shaded area encloses the conservation limit (as it does in Figure 3 for the Dwyfor) we cannot be certain of the stock status in that year and there is also uncertainty on whether the river will meet the conservation limit set for it in the future.

Figure 3 Dysynni salmon egg deposition



The setting of the Dysynni conservation limit is refined and updated when new methodologies and data become available, which is an approach recommended by The North Atlantic Salmon Conservation Organisation (NASCO) an inter-governmental body concerned with salmon conservation at an international level. The UK is linked to its recommendations and advice via membership of the European Union.

Figure 4. Juvenile Salmonid Abundance (2002)

Figures 4 and 5 show juvenile salmon and trout abundance data from the last major Dysynni survey in 2002. An explanation of the grades can be found in Appendix 2.

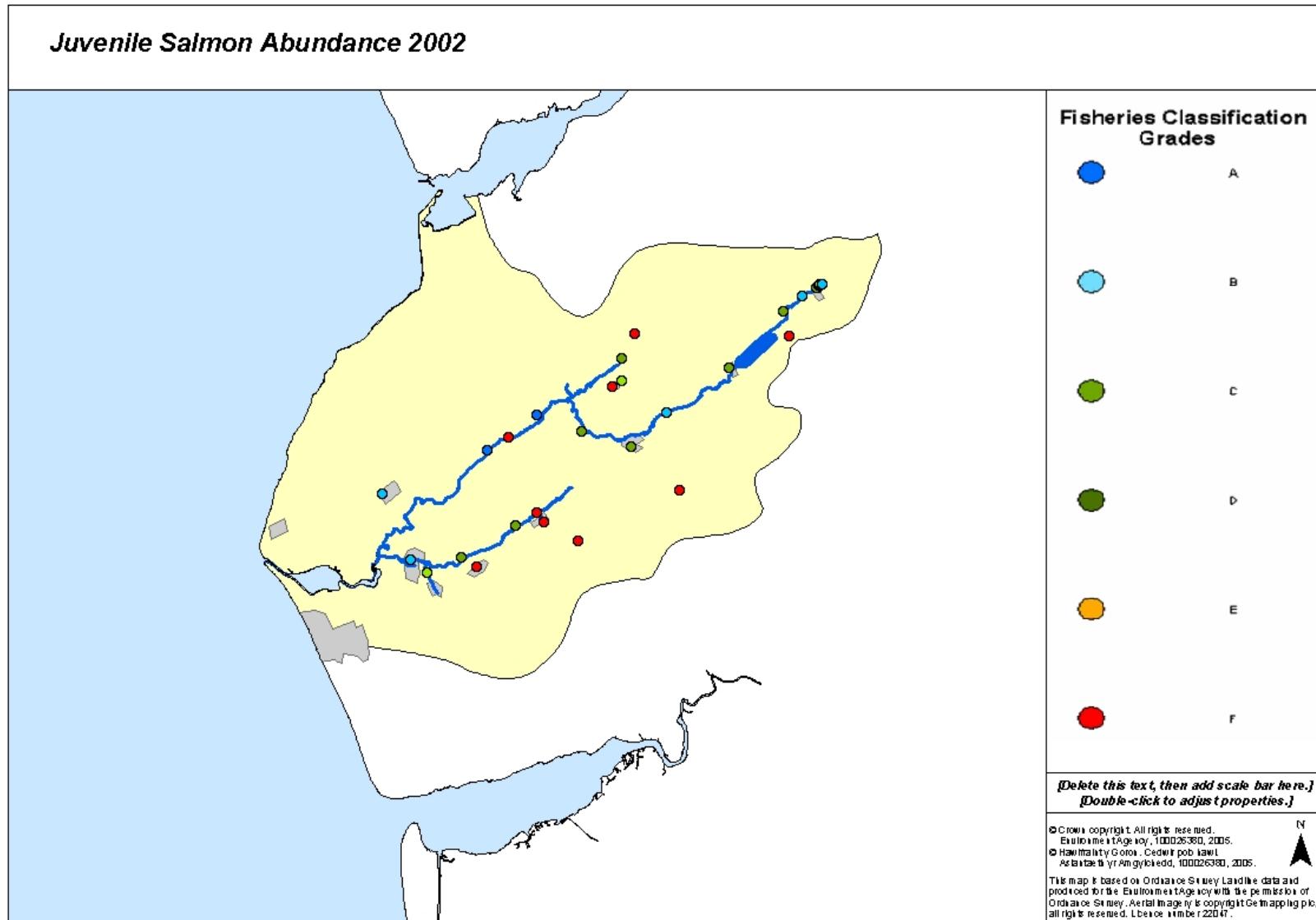
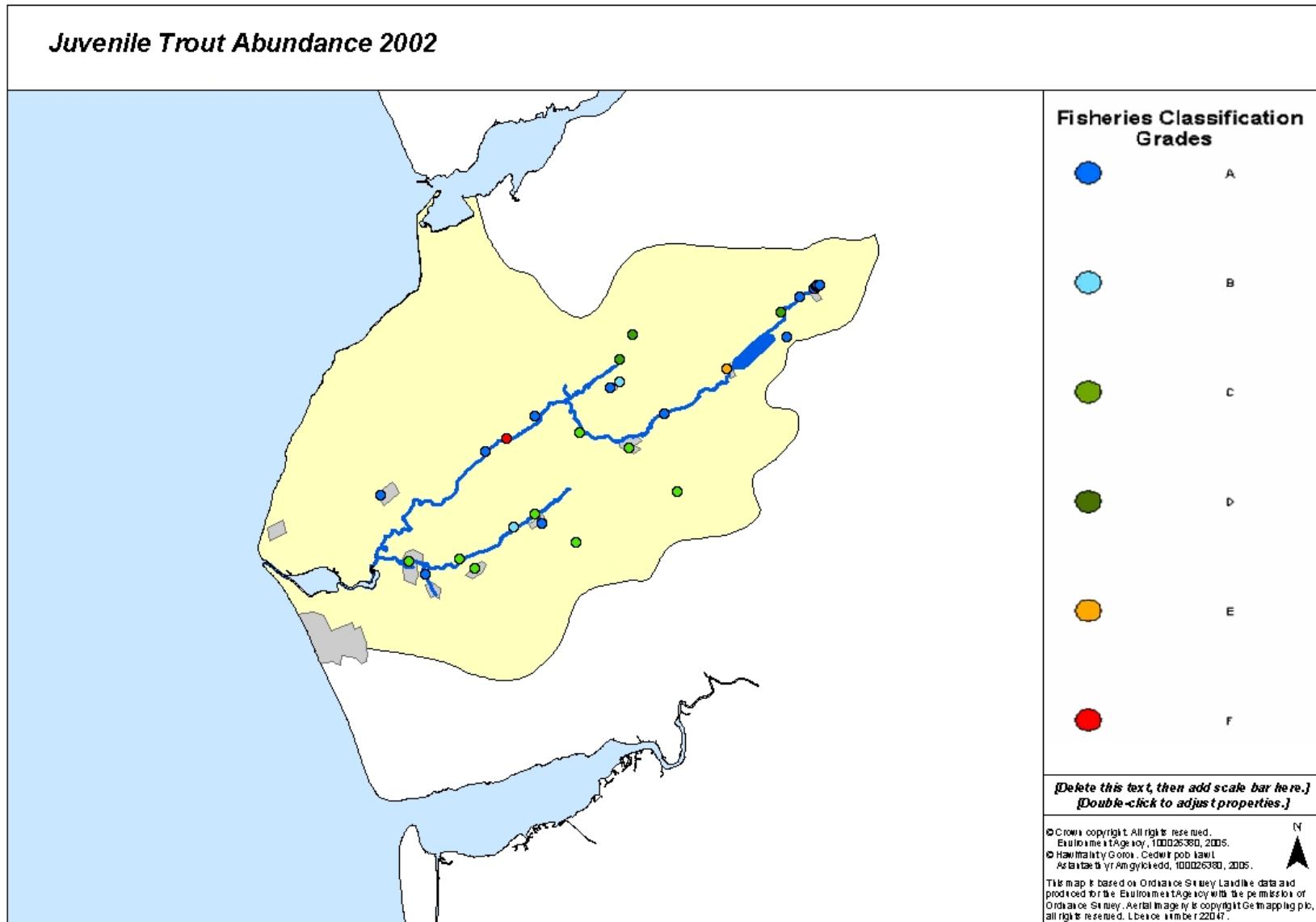


Figure 5. Juvenile Trout Abundance (2002)



Limiting Factors and Action notes

This section of the document deals with the main factors that limit fish abundance in the Dysynni catchment, also included are actions that will help enhance and protect fish stocks on the Dysynni, but also the wider environment. The decision structure laid out in the Environment Agency's Salmon Action Plan review document has been used to influence the actions chosen.

1 Restricted Access

Fish production depends on various types of habitat for success, if access to this habitat is limited by obstructions, this will inhibit fish movement to spawning / nursery habitats, which can reduce overall fish production.

Action 1.1 – Improve access at Dol-y-Cae. It is known that there are restricted access issues at Dol-y-Cae, the EA will endeavour to negotiate with SNP to improve on the current situation.

Action 1.2 – Fallen trees within watercourse. One comment stated in the pre-review consultation process was that at times fishing along the river was made very difficult due to fallen trees within the river. The Environment Agency is responsible for removing fallen trees and debris from rivers if they pose a flood risk only.

2 Water Quality

Diffuse or point sources of pollution within a catchment can have a considerable cumulative negative effect on fish stocks. The types of pollution involved are diverse and include; Sewage from storm overflow systems at sewage treatment works, agricultural waste from poor farming practices, acidification effects from forestry land around watercourses and pesticide / herbicide inputs from poor dipping / crop spraying practices.

Action 2.1 – Several areas of the Dysynni catchment (Dysynni downstream of Cadair, lower Cadair and Fathew downstream Nant Braich-y-Rhiw) are sensitive to acid deposition due to the base-poor geology and the water quality in these areas reflects this. For much of the year this may not affect juvenile salmonid survival. However, during spate conditions increased acidity could limit juvenile survival in some stretches. Liming could be used to negate these effects and funding for such projects is available. Angling associations would be encouraged to join or create a Rivers Trust to be eligible for such funding.

Action 2.2 – Disused mines at the head of the Nant Iago could be having an adverse effect on the water quality of the area resulting in reduced juvenile survival. An ecological survey in conjunction with a review of existing data will identify the current situation with recommendations for future monitoring and management options if applicable.

Action 2.3 - Sheep dip and herbicides have the potential to impact negatively on fish and invertebrate communities. Targeted monitoring by passive monitoring and biology by the Ecological Appraisal Team and the Environment Management team should continue in the catchment. A summary of all work should be produced in 2008 and 2011.

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Action 2.4 –In 2006, a report was produced by the EA documenting an investigation into diffuse pollution within the Dysynni catchment. This involved visiting every farm and caravan site within the catchments as part of a pollution prevention campaign. A river walk was also completed to highlight point source pollution. Where issues were found the nature of the problem was discussed with the landowner and solutions identified. Improvement plans were then agreed upon as well as a timescale and revisits were undertaken to inspect the works. The project continues to be monitored by the EA's Agricultural team.

3 Physical habitat

Physical habitat can be a major factor, limiting fish abundance. If suitable habitat is not available then adult fish are unable to spawn and juvenile fish are unable to have enough areas where they can find food, and find cover to evade predation. Below are some of the issues to be resolved on the Dysynni.

Action 3.1 An issue raised in the pre-review consultation was the loss of pools downstream of Pont-y Garth, thought to be due to gravel removal from the bridge which is carried out to ensure the gauging station can function properly and to reduce the risk of flooding on nearby farmland. A geomorphological survey was carried out in 2005 but no specific conclusions were drawn with relation to this issue. As a counter measure to the filling of these pools with gravel, it is suggested that a series of upstream facing V-weirs could be installed to stop the siltation of the pools.

Action 3.2 Overgrazing, poaching and lack of bankside vegetation is a common problem within the Dysynni catchment. This leads to a lack of suitable cover, and in-stream habitat required for juvenile salmonid fish. The installation of fencing and or tree planting can greatly reduce this problem. Works carried out at Pont Cedris on the Afon Dysynni provide a good example of how rapidly bank side vegetation can re-colonise and help to stabilise banks when fencing is introduced.



Pont Cedris, Dysynni habitat improvements

Action 3.3 Continued reports of excessive weed growth within Tal-y-Llyn were reported in the pre-review consultation. A macrophyte survey was carried out by EAT in 2004 which produced no conclusive reasons for the excessive growth, this was a marginal survey only however. As part of the Water Framework Directive programme, a more detailed boat macrophyte survey was carried out on the lake. Results of this survey are not yet available but when they are they could be used in conjunction with existing water quality data to identify the current situation in relation to nutrient status of the lake with recommendations for future monitoring and management options if applicable.

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4 Exploitation

Exploitation within the Dysynni catchment ranges from licensed esturine netting, illegal exploitation and legally caught fish.

Action 4.1 To combat the loss of fish due to the licensed esturine netting, AA are encourage to approach the netsman with a view to buying out the license or pay the netsman not to fish.

Action 4.2 The use of catch and release can help maximise the spawning effort of the fish within the Dysynni. Sea Trout catch and release is widely used by anglers within the catchment but the salmon catch and release rates are much lower. Increased use of catch and release for salmon would help maximise salmon spawning effort.

5 Predation

Fish eating birds and predation by mink are an added pressure on salmonid populations.

Action 5.1 For birds to be culled anglers are to put forward applications to the Welsh Assembly Government, The Environment Agency can help in the process by supplying information on fish abundance. It is advised that anglers should keep detailed records of bird numbers and scaring tactics to help their applications.

Action 5.2 Stated in the pre-review consultation was the continued presence of mink within the catchment. If required, the angling associations may carry out trapping of mink in association with CCW and SNP.

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Proposed actions

Fisheries ACTIONS	COST (£K) AND TIMESCALE					FUNDING SOURCES [BOLD TYPE- LEAD ORGANIZATION]	Action Number
	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013		
Issue 1: Restricted access to spawning/nursery areas							
Improve access at Dol-y-Cae	n/a	n/a	n/a	n/a	n/a	Sustainable Fisheries, SNP	1.1
Fallen trees/ debris in watercourse	na	Na	na	na	na	Anglers, Flood Defence	1.2
Fisheries ACTIONS	COST (£K) AND TIMESCALE					FUNDING SOURCES [BOLD TYPE- LEAD ORGANIZATION]	Action number
	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013		
Issue 2: Water quality							
Liming of certain areas to limit effects of acidification	na	Na	na	na	Na	Anglers	2.1
Disused mines on Nant Iago		0.2K				Ecological appraisal	2.2
Sheep dip and herbicide monitoring	na	Na	na	na	Na	Ecological appraisal	2.3
Diffuse pollution issues	0.2K	0.2K	0.2K	0.2K	0.2K	Agriculture Team, EA	2.4
Fisheries ACTIONS	COST (£K) AND TIMESCALE					FUNDING SOURCES [BOLD TYPE- LEAD ORGANIZATION]	Action number
	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013		
Issue 3: Physical habitat							
Loss of pools downstream of Pont-y-Garth requiring installation of upstream facing V-weirs	n/a	n/a	n/a	n/a	n/a	Anglers	3.1
Installation of fencing to provide bankside stabilisation and improve instream habitat	n/a	n/a	n/a	n/a	n/a	Landowners, Sustainable fisheries	3.2
Tal-y-Llyn weed growth nutrient study and examination of WFD survey results		0.2K				Ecological Appraisal	3.3

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Fisheries ACTIONS	COST (£K) AND TIMESCALE					FUNDING SOURCES [BOLD TYPE- LEAD ORGANIZATION]	Action num ber
	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013		
Issue 4: Exploitation							
Anglers to buy out esturine nets or pay netsman not to fish	na	na	na	na	Na	Anglers	4.1
Continue promotion of Catch and Release, especially for salmon	0.2	0.2	0.2	0.2	0.2	Anglers, EA	4.1

Fisheries ACTIONS	COST (£K) AND TIMESCALE					FUNDING SOURCES [BOLD TYPE- LEAD ORGANIZATION]	Action num ber
	2008/ 2009	2009/ 2010	2010/ 2011	2011/ 2012	2012/ 2013		
Issue 5: Predation							
Environment Agency to provide fisheries data to WAG on receipt of bird culling applications. Anglers are encouraged to keep detailed records of bird numbers and scaring tactics for their applications.	0.2K	0.2K	0.2K	0.2K	0.2K	Anglers, Ecological Appraisal Team	5.1
Anglers encouraged to undertake trapping of mink in association with CCW and SNP	na	na	na	na	Na	Anglers, CCW, SNP	5.2

Monitoring

This document and the actions it contains will run for five years and will then be reviewed at the end of that period, during the document's five year life, it will be monitored through the following ways:

- Key performance indicators (planned milestones or actions) to be achieved for any one year. NB actions from the tables coloured yellow may not be included into KPI targets due to uncertainty of funding and other restrictive issues.
- Annual April reporting to FERAC about the actions completed in the preceding year

The head office reassessment of salmon performance on the Dysynni will take place after ICES have looked at the salmon stock performance information in April of each year. Depending on the comments from ICES, area fisheries teams will be asked to look at their proposed actions and exploitation levels to determine where improvements can be made to help conserve salmon if required.

Appendix 1

For both the Pen Llyn a'r Sarnau and the Cadair Idris SAC the designation was determined by habitat as the primary feature. The sites have the species below listed as Annex II species- qualifying features but not used for site selection.

Pen Llyn a'r Sarnau

Bottlenose dolphin *Tursiops truncatus*

Otter *Lutra lutra*

Grey seal *Halichoerus grypus*

Cadair Idris

Marsh fritillary butterfly *Euphydryas (Eurodryas, Hypodryas) aurinia*

Slender green feather-moss *Drepanocladus (Hamatocaulis) vernicosus*

Appendix 2

National Fishery Classification Scheme (NFCS)

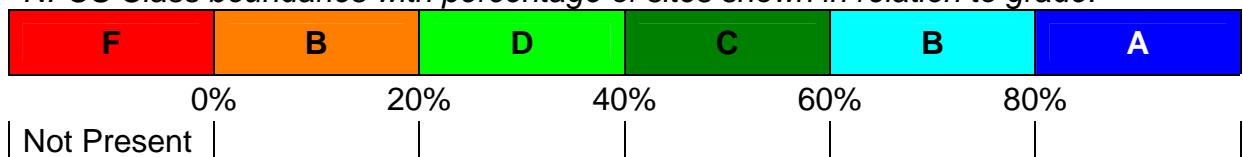
Since 1997, all fishery data collected by the Environment Agency across England and Wales has been classified using the National Fisheries Classification Scheme (NFCS), which superseded all previous classification schemes. The national data set used to devise the system was split into 'quintiles' such that the top 20% of sites from any given data set could be given a grade A, irrespective of fishery type or data collection method. The next 20% could then be given a band B, and so on allowing class boundaries to be defined for all data and fishery types as shown in table 4a and figure 4a. Bullhead and lamprey are not normally surveyed by EA fishery surveys and NFCS grades are therefore not available for these species.

This national system allows comparison of the abundance of different species over a wider geographical area. The data is primarily used to compare data collected by population estimates produced by quantitative electrofishing methods. However, it is possible to convert minimum estimates (semi-quantitative data) using the methodology described by Strange *et al* (1989), so that NFCS classes can be calculated for the use in spatial abundance figures.

National Fishery Classification Scheme Grades.

Grade	Class	Description
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% of fisheries
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

NFCS Class boundaries with percentage of sites shown in relation to grade.



Increasing Fishery Performance (Density, Biomass or CPUE)

Appendix 3 - Summary of actions from previous Dysynni Salmon Action Plan

ACTION IDENTIFIED	PLANNED DATE	ACTION TAKEN TO DATE	ACTUAL DATE	RESPONSIBLE BODY
OBJECTIVE 1 HABITAT IMPROVEMENT PROGRAMME				
Scoping: Undertake scoping meetings with anglers to identify areas suitable for habitat improvement works.	2002 / 2003	Habitat improvements identified	2002 / 2003	Agency (FM, EAT), CCW, SNP, Gwynedd CC, AA's
Survey: Carry out survey to identify and prioritise areas for habitat restoration work.	2002 / 2003	Scoping surveys done	2002 / 2003	Agency (FM / EAT)
Planning: Design schemes, negotiate with landowners and obtain estimates.	2002 / 2003	Plans drawn up	2002 / 2003	Agency (FM, EAT) and landowners
Works: Undertake habitat restoration work to increase juvenile salmonid carrying capacity.	2002 / 2004	Work to take place in 2003 / 2004	2003 / 2004	Agency (FM, EAT)
Maintenance: Maintain restored stretches.	2004 / 2007	Angling club responsibility	2004 / 2007	Angling club
Monitor: Undertake pre and post scheme monitoring	2002 / 2003 2005	Initial monitoring completed, sites will be monitored every five years Monitoring of habitat sites will take place as part of a N wales rolling programme, frequency and timing to be established in 2005 Monitoring site to be done in 2007	2002 / 2003 2005	Agency (FM / EAT)
GRAVEL REMOVAL				
Pont y Garth: Undertake environmental impact assessment (EIA) of gravel removal at this point, considering impact on: 1. Geomorphology 2. Macrophytes (aquatic plants) 3. Juvenile salmonid production	2003 / 2005 2005	No action to date, work is dependant on funding Pre-assessment completed by geomorphologist in 2005, report available on request from EAT northern area. Any actions will be incorporated into the review of the dysynni SAP in 2007.	No action Completed	Agency (WR, FD, FM, Cons, EAT)
ACIDIFICATION				
Liming 1. If liming is considered by AA's, identify suitable sub-catchments as	2003 / 2004	Ongoing	Ongoing	Agency (FM / EAT)

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requested.				
2. Before liming consult with landowners, CCW, SNP and EA (EP).	2002 / 2007	Ongoing	Ongoing	AA's

ACTION IDENTIFIED	PLANNED DATE	ACTION TAKEN TO DATE	ACTUAL DATE	RESPONSIBLE BODY
ACIDIFICATION Contd				
3. Undertake or subsidise liming by land owners on improved land avoiding ecologically sensitive areas.	2003 / 2007	No action to date	No action	AA's and landowners
AGRICULTURAL POLLUTION				
1. Encourage the reporting of all pollution incidents on free phone 0800 80 70 60 (24hrs).	2002 / 2007	Ongoing	Ongoing	AA's
2. Encourage the reporting of any malpractice likely to lead to pollution.	2002 / 2007	Ongoing	Ongoing	AA's
4. Continue targeted pollution prevention work.	2002 / 2007	Ongoing	Ongoing	Agency (EP)
'WEED' GROWTH IN TAL Y LLYN AND DYSYNNI DOWNSTREAM OF LAKE				
'Weed' growth	2002 / 2005	EP to initiate desk study	2003	Agency (Eplan, NEAT)
1. Confirm species and distribution of 'weed'. 2. Identify possible causes of recent increases in growth. 3. Undertake remedial action if necessary.	2003	Survey done by EAT report to be completed in 2004	2004	Agency (EAT)
	2004	Work done by EAT showed that current macrophytes were little different to those that had been found from historical records. Species found were also not as a result of increased nutrients into the lake.	2004	Agency (EAT)

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FORESTRY MANAGEMENT				
Coniferous forestry Ensure that local fishery interests are represented on Forestry panel meetings.	2002 / 2007	To be implemented	Ongoing	AA's
CURRENT STATUS OF STOCKS				
Improve catch/return rate Stress importance of making accurate returns to angling club members.	2002 / 2007	Ongoing promotion in the LFG	Ongoing	Angling clubs, Agency (National)
Conservation Limit Compliance Methodology Revise current methodology to provide more realistic representation of stocks.	2002 / 2007	CL updated annually from catch return data. As new developments arise these will be incorporated into improving the CL	Ongoing	Agency (National salmon and trout centre and EAT)

ACTION IDENTIFIED	PLANNED DATE	ACTION TAKEN TO DATE	ACTUAL DATE	RESPONSIBLE BODY
MIGRATORY SALMONID ACCESS				
Continue use of 'inscale' net to prevent stocked lake trout emigration whilst not impeding the passage of migratory salmonids over summer months.	2002 / 2007	Ongoing	Ongoing	Tyn y Cornel Fishery
STOCKING STRATEGY				
Continue with proposed strategy to stock local strains of brown trout rather than hybrid or excessively large trout.	2002 / 2007	Ongoing	Ongoing	Agency (FM), Tyn y Cornel Fishery
RESTORE MIGRATORY SALMONID FISHERY IN LAKE				
As part of stocking strategy consider pump priming sea trout fishery using lake to 'ranch' smolts from local stock.	2002 / 2007	No action as yet, project dependant on funding and CCW agreement	Ongoing	Tyn y Cornel Fishery, other angling interests, Agency (FM)

Appendix 4 - Climate Change

Climate change is anticipated to manifest itself over the coming decades and this will present biodiversity challenges. Latest global climate assessments show that by 2080, that temperatures in the UK could increase between 2 and 3.5 degrees but as much as by 5° in the South East of England under a high emissions scenario. Summer rainfall could decline by 10-50% and winter rainfall increase by 10-30% depending on greenhouse gas emissions.

A changed climate will generally bring wetter winters, drier summers and more extreme events of flooding and drought. These predictions have considerable implications for salmon survival. For example changes in flow patterns can alter run timing. Extreme flood events can cause increased run off leading to siltation or gravel mobility and wash out of redds. Higher temperatures have implications for time of fry emergence and for growth. Parr will grow quicker and smolt earlier. Altered ocean temperatures have implications for migration speeds, feeding success and vulnerability to predation.

Appendix 5 – Current summary on marine exploitation – June 2006

Greenland Fishery

Agreement was again reached for a ‘commercial’ quota of zero in 2006, meaning that no commercial export of salmon is allowed. A ‘subsistence’ fishery for local sales and for private consumption is permitted, which, in recent years, has resulted in an average total catch of about 20 tonnes.

The recent catch level of about 20 tonnes equates to a loss of about 90 MSW salmon from English and Welsh home waters. The current exploitation rate of the Greenland fishery on English and Welsh salmon is therefore currently insignificant, less than one percent.

This year, following discussion the Parties decided that this measure would also apply for 2007 and 2008 subject to ICES developing, and the Parties agreeing, a Framework of Indicators for use in the interim years to identify any significant change.

Faroës Fishery

There was no salmon fishing during the last five winters to 2005/06, although no quotas were set and nor, apparently, has a buyout operated since 1997.

No quota has been set for 2006/07. The Faroe Islands indicated that it would follow recent policy and manage any fishery in a precautionary manner and following the ICES advice.

As for Greenland, Parties agreed to extend this position by a further two years to 2009 subject to the development and acceptance of a Framework of Indicators.

In practice, it seems unlikely that there will be any commercial fishery for salmon in the next year and probably not for the following two years, though it is possible that there may be some small-scale research fishing.

Irish Fishery

Cefas and the Environment Agency have continued to conduct smolt tagging studies to assess the patterns and levels of exploitation on English and Welsh salmon stocks in the Irish coastal fishery. A working group of scientists from the Irish Marine Institute, Cefas and the Agency has co-ordinated the analysis of the results and provided annual estimates of exploitation rates, including confidence limits and incorporating improved estimates of non-catch fishing mortality for the Irish fisheries.

The results have demonstrated that salmon from all parts of England and Wales are exploited in the Irish coastal fishery. However, the levels of exploitation have varied between stocks from different regions and from year to year, and have also declined following the introduction of management measures in the Irish fishery since 1997. Based on aggregated data for all available years, the extant exploitation rates for the modelled stocks (1SW fish only) are presented in the text table below, for the periods before and after 1997.

River	Pre 1997 management measures			With 1997 management measures		
	Years	Expl. Rate (%)	95% CL (%)	Years	Expl. Rate (%)	95% CL (%)
Tyne - NE England	1986–96	1.3	± 0.4	1997	0.5	± 0.7
Wear - NE England	1986–96	0.9	± 0.2	1997	0	
Dee - N Wales	1992–96	16.8	± 5.7	1997–2004	2.9	± 1.3
Taff - S Wales	1991–96	24.0	± 7.2	1997–2004	11.1	± 4.7
Test - S England	1991–96	28.4	± 5.9	1997–2000	12.0	± 4.2
Tamar - SW England	No data			2003–2004	1.7	± 1.6

Prior to 1997, exploitation rates in the Irish fishery were estimated at about 1% for stocks from the north east of England, higher (17 to 24%) for two rivers in Wales, but highest (28%) for the River Test in southern England. New management measures were introduced in the Irish fishery in 1997 and since 2002 the fishery has been regulated by quotas, which have reduced each year. Exploitation rate estimates since 1997 indicate a reduction in exploitation of English and Welsh stocks, with average values of 0.5% for the Tyne (data for one year only), 3 to 11% for Welsh rivers and 12% for the River Test. While it was not possible to use the modelling approach to estimate exploitation rates for other stocks, the overall pattern of tag recapture rates has been consistent with this regional pattern of exploitation. Recent estimates for the River Tamar in south west England (2003 and 2004 only) indicate a current exploitation rate in Ireland of only about 2% for this stock.

It appears, therefore, that exploitation on salmon from north east England in the Irish fishery is negligible, that exploitation on stocks from north west England and north Wales is currently low, but that levels increase for rivers further south in Wales and in southern England.

At NASCO in June 2006, The EU delegation made a statement acknowledging that its jurisdictions are responsible for fisheries that operate out-with the terms of the ICES advice. It noted that action had been taken to more closely follow that advice including closing or reducing several mixed stock fisheries. Specific mention was made of the Irish coastal fishery, registering the recent announcements by the Government in Ireland on taking steps to align the management of the fishery with scientific advice and with an expectation of early action.

On 1 November 2006, the Irish Government announced that it has adopted the key recommendations of its Independent Working Group on Salmon, which includes the closure of their drift net fishery. It also said that its National Salmon Commission would now bring forward advice to the Minister on measures for management of the wild salmon fishery in 2007. Regulations governing the management of the 2007 season are expected to be published for public consultation before the end of the 2006.

Other homewater fisheries

Few tags of English and Welsh origin have been returned from homewater fisheries in Northern Ireland and Scotland. The exploitation rates of English and Welsh salmon in these fisheries have not been estimated but are thought to be low (Cefas and Environment Agency 2006)

Impact of fisheries for other species

Concern has previously been raised about the possible by-catch of salmon post-smolts in fisheries for pelagic fish, particularly mackerel, in the North East Atlantic. Salmon from Southern European stocks are thought to be most at risk. ICES had been asked to update and refine estimates. However, insufficient new information had been available. ICES concluded that salmon by-catches are likely to have only a low impact on pre-fishery abundance or on returns to home waters (see Cefas and Environment Agency 2006).

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