European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC)

Supporting documentation for the Third Report by the United Kingdom under Article 17

on the implementation of the Directive
from January 2007 to December 2012
Conservation status assessment for

Species:

S1106 - Atlantic salmon. (*Salmo salar*)

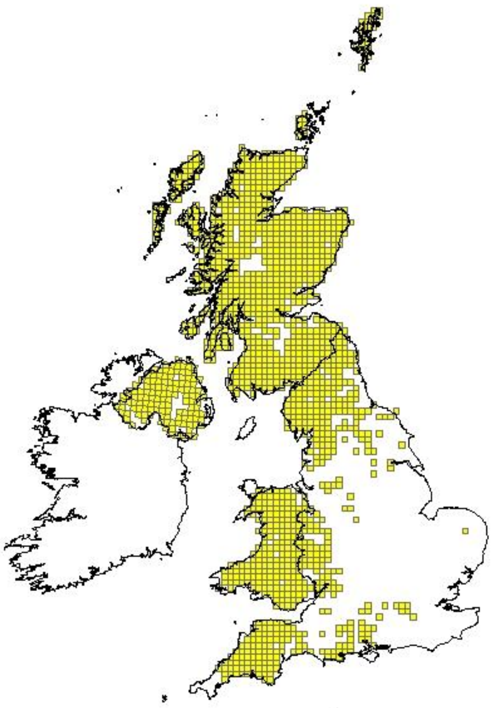
IMPORTANT NOTE – PLEASE READ

- The country-level reporting information contained in this document is a contribution to the Article 17 UK report for the habitat/species concerned.
- It has been provided by **Natural England** and refers only to the state of the habitat/species in **England** - it does not constitute an assessment for the whole of the UK.
- The Article 17 UK Approach document provides details on how this information has been used and, combined with information supplied by other Statutory Nature Conservation Bodies
- The format of the document is closely aligned to that set out by the European Commission for Member State reporting – as a result, some of the fields are not applicable at a country-level and have deliberately been left blank – in addition, the content of most fields is constrained by the EC reporting categories.

Reporting format on the 'main results of the surveillance under Article 11' for Annex II, IV & V species

Field name	*Brief explanations*	
0.2 Species	**0.2.1 Species code**	**S1106**
	0.2.2 Species scientific name	***Salmo salar***
	0.2.3 Alternative species scientific name Optional	
	0.2.4 Common name Optional	**Atlantic salmon**

1.1 Maps			
1.1.1 Distribution map		**Sensitive**	**False**



1.1.2 Method used - map	**Estimate based on partial data with some extrapolation and/or modelling**
	The species is well recorded and the reported distribution is a fair reflection of actual distribution. The species has recovered a good deal of its historical distribution in recent years, including a number of industrial rivers such as the Tyne, Wear, Tees and Mersey that have shown substantial water quality improvements. Initiatives to reintroduce the species to the Thames catchment have been unsuccessful due to environmental conditions along the migration route up the estuary and main river, which are highly challenging to resolve.

1.1.3 Year or period	**1985-2011**
1.1.4 Additional distribution map	**False**
1.1.5 Range map	

2.1 Biogeographical region & marine regions	**ATL**
2.2 Published sources	**"Environment Agency/CEFAS (2012) Annual assessment of salmon stocks and fisheries in England and Wales 2011. Preliminary assessment prepared for ICES, March 2012. Available at: http://www.environment-agency.gov.uk/static/documents/Research/Annual_Assessment_of_EW_salmon_stocks_2011.pdf** **E S THER CLEWS , I S A B E L L E DURANCE, I . P. VAUGHAN and S . J . ORMEROD (2010) Juvenile salmonid populations in a temperate river system track synoptic trends in climate. Global Change Biology (2010), Published on-line doi: 10.1111/j.1365-2486.2010.02211.x** **J. M. Elliott and J. A. Elliott (2010) Temperature requirements of Atlantic salmon Salmo salar, brown trout Salmo trutta and Arctic charr Salvelinus alpinus: predicting the effects of climate change. Journal of Fish Biology (2010) 77, 1793–1817 doi:10.1111/j.1095-8649.2010.02762.x, available online at wileyonlinelibrary.com** **Beck M., Evans R,. Feist S.W., Stebbing P., Longshaw M. and Harris E. 2008. Anisakis simplex sensu lato associated with red vent syndrome in wild Atlantic salmon Salmo salar in England and Wales. Diseases of Aquatic Organisms 82: 61-65.** **Jonsson, B. and Jonsson, N. 2009. A review of the likely effects of climate change on anadromous Atlantic salmon Salmo salar and brown trout Salmo trutta, with particular reference to water temperature and flow. Journal of Fish Biology 75, 2381-2447.** **Todd, C.D., Hughes, S.L., Marshall, C.T., Maclean, J.C., Lonergan, M.E. and Biuw, E.M. 2008. Detrimental effects of recent ocean surface warming on growth condition of Atlantic salmon. Global Change Biology 14: 958-970.** **Mainstone, C.P. (2010) An evidence base for setting nutrient targets to protect river habitat. Natural England Research Reports, Number 034. Available at: http://publications.naturalengland.org.uk/publication/30027?category=440349**

Mainstone, C.P. (2010) An evidence base for setting organic pollution targets to protect river habitat. Natural England Technical Information Note 076. Available at: http://publications.naturalengland.org.uk/publication/33008?category=440349

Mainstone, C.P. (2010) An evidence base for setting flow targets to protect river habitat. Natural England Research Reports, Number 035. Available at: http://publications.naturalengland.org.uk/publication/9025?category=440349

Environment Agency (2012) Summary of outcomes of the Review of Consents on water-related SACs. Excel spreadsheet.

Natural England (2012) England Catchment Sensitive Farming Initiative. Http://www.naturalengland.org.uk/ourwork/farming/csf/default.aspx.

Wheeldon, J (2012) River Restoration Planning and implementation on River Sites of Special Scientific Interest in England. Internal Natural England paper.

Mainstone, C.P., Dils, R.M. and Withers, P.J.A. (2008). Controlling sediment and phosphorus transfer to receiving waters – A strategic management perspective for England and Wales. Journal of Hydrology, 350, 131-143.

Mainstone, C.P. and Holmes, N.T. (2010) Embedding a strategic approach to river restoration in operational management processes – experiences in England. Aquatic Conservation: Marine and Freshwater Ecosystems. Published online in Wiley InterScience (www.interscience.wiley.com). DOI: 10.1002/aqc.1095

Mainstone C.P. (2008) The role of specially designated wildlife sites in freshwater conservation – an English perspective. Freshwater Reviews, 1, 89-98.

Chris Mainstone & Alastair Burn (2011) Relationships between ecological objectives and associated decision-making under the Habitats and Water Framework Directives. Discussion paper, Natural England.

Mainstone, C.P. and Clarke, S.J. (2008) Managing multiple stressors on sites with special protection for freshwater wildlife – the concept of Limits of Liability. Freshwater Reviews, 1, 175-187."

2.3 Range		
2.3.1 Surface area Range		
2.3.2 Method used Surface area of Range	**Estimate based on partial data with some extrapolation and/or modelling**	
2.3.3 Short-term trend Period	**2001-2011**	
2.3.4 Short term trend Trend direction	**increase**	
	The species has recolonised some major northern rivers (Tyne, Wear, Tees, Ouse, Mersey) following reductions in industrial pollution, particularly in estuaries, although this happened prior to the short-term period considered here. Natural spawning has resumed in the Trent system in the past decade – it is unclear whether this is a result of natural recolonisation (following water quality and habitat improvements) or the stocking programme that has been undertaken (or a combination of both). There is no natural recovery of spawning in the Thames catchment, and the extent to which this lost range can be recovered is uncertain due to the major modifications that have been made to this system (particularly the main river stem) in the past.	
2.3.5 Short-term trend Magnitude	**a) Minimum**	
	b) Maximum	
2.3.6 Long-term trend Period	**1989-2011**	
2.3.7 Long-term trend Trend direction	**increase**	
	The long-term trend period for range includes the recolonisation of a number of major northern rivers as well as the recolonisation of the Trent.	
2.3.8 Long-term trend Magnitude Optional	**a) Minimum**	
	b) Maximum	
2.3.9 Favourable reference range	**a) Value in km²**	
	The species has been absent from a number of major rivers for many decades (the Thames, Trent, Ouse and a number of north east rivers) due to a combination of industrial pollution, agricultural intensification and associated physical modifications to river channels (including barriers to access). In recent years the species has reoccupied some of	

	this lost range (see note on 2.3.7). The current distribution should therefore be considered as a minimum estimate of favourable reference range.	
	b) Operator for FRR	**more than**
	c) FRR is unknown (indicated by "true")	**False**
	d) Method used to set FRR	**Consideration of historical range**
2.3.10 Reason for change Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to…	**a) Genuine change?**	**False**
	b) Improved knowledge/more accurate data?	**False**
	c) Use of different method (e.g. "Range tool")?	**False**

2.4 Population		
2.4.1 Population size estimation (using individuals or agreed exceptions where possible)	**a) Unit**	
	b) Minimum	
	c) Maximum	
2.4.2 Population size estimation (using population unit other than individuals) Optional *(if 2.4.1 filled in)*	**a) Unit**	**number of adults**
	Number of spawning adults per year (i.e. those escaping exploitation and reaching spawning grounds).	
	b) Minimum	**61522**
	c) Maximum	**90213**

2.4.3 Additional information on population estimates / conversion Optional	**a) Definition of "locality"**	
	b) Method to convert data	
	c) Problems encountered to provide population size estimation	
2.4.4 Year or period	**2007-2011**	
	Due to inter-annual variation, a five-year period is used.	
2.4.5 Method used Population size	**Complete survey/Complete survey or a statistically robust estimate**	
	Figures are taken from the UK's reporting to ICES - see Environment Agency/CEFAS (2012) for a full description of the calculation method. In summary, where rivers have salmon counters, figures are based on absolute counts. For rivers where there is no counter, an estimate is made based on rod catch data and estimated exploitation rate - this is being improved by characterising annual variation in exploitation rates. In order to calculate an England-only figure, salmon in the Dee and Wye have been assigned to Wales, salmon in the Severn catchment have been assigned to England, salmon in the Border Esk have been assigned to England, and salmon in the Tweed have been assigned to Scotland.	
2.4.6 Short-term trend Period	**2001-2011**	
2.4.7 Short-term trend Trend direction	**stable**	
	This judgement is based on trend data available only for England and Wales combined (Environment Agency/CEFAS 2012). Numbers of spawning adults have remained broadly stable since 2001 despite reductions in the numbers of returning adults. This has been due to measures to reduce coastal and river exploitation. The combined figures for England and Wales mask increases in population size in the industrial rivers of northern England, due to parallel reductions in spawning numbers in more southerly rivers.	
2.4.8 Short-term trend Magnitude	**a) Minimum**	
	b) Maximum	
	c) Confidence interval	

2.4.9 Short-term trend Method used	**Estimate based on partial data with some extrapolation and/or modelling**	
2.4.10 Long-term trend – Period	**1989-2011**	
2.4.11 Long-term trend Trend direction	**stable**	
	As for 2.4.7	
2.4.12 Long-term trend Magnitude Optional	**a) Minimum**	
	b) Maximum	
	c) Confidence interval	
2.4.13 Long term trend Method used	**2**	
2.4.14 Favourable reference population	**a) Number of individuals/agreed exceptions/other units**	**74000**
	b) Operator	**more than**
	c) FRP is unknown indicated by "true"	**False**
	d) Method used to set FRP	**This is an estimate (based on 2002-2011 data) of the total number of spawning adults in England broadly equivalent to all principal salmon rivers meeting their management objective to exceed the Conservation Limit in 4 years out of 5 on average. It can be taken as a minimum estimate of the favourable reference population but, as a national total, exceedence does not necessarily mean that all contributing individual river**

		stocks are meeting their management objective. The Conservation Limit (CL) for a river is set at a stock size below which further reductions in spawner numbers are likely to result in significant reductions in the number of juvenile fish produced in the next generation. Conservation Limits are derived from estimates of the productivity of individual river catchments (i.e the likely relationship between numbers of eggs laid and smolts produced) and the survival of fish in the sea (from smolt output back to adult return). In 2003, assumed default estimates for marine survival were reduced to reflect long-term decline in this factor evident across the North Atlantic. This change resulted in a fall in CLs (by an average of 26%) but meant that, by including more realistic measures of sea survival in CL calculations, reasons for compliance failure were more likely to lie 'in-river' (e.g. exploitation by the fisheries; issues of environmental quality, etc.) providing a more focussed assessment in an area where managers are best equipped to bring about improvements.
2.4.15 Reason for change Is the difference between the value reported at 2.4.1 or 2.4.2 and the previous reporting round mainly due to:	**a) Genuine change?**	**False**
	b) Improved knowledge/more accurate data?	**False**
	c) Use of different method (e.g. "Range tool")?	**True**
	No English estimate of population size was provided in the last reporting round.	

2.5 Habitat for the species	
2.5.1 Area estimation	**73**
2.5.2 Year or period	**2012-**

2.5.3 Method used Habitat for the species	**Estimate based on partial data with some extrapolation and/or modelling**	
	This estimate based on the same division of cross-border catchments between England, Wales and Scotland as used for estimating population size (2.4.5). The upstream limit of access to salmon in each river system is known and the habitat area estimate is the sum of all wetted area of river below this.	
2.5.4 Quality of the habitat	**a) Habitat quality**	**Moderate**
	The salmon is a species of cool, swift-flowing, gravel-bed streams and rivers (although it can also occur in lakes), with good water quality, clean gravels, physical habitat complexity that provides shallow water and flow refuges for juveniles and deeper water for adults, and unimpeded access along the river for adult and smolt migrations. A large number of pressures impinge upon the provision of these conditions in England. The Article 17 report on H3260 provides a reasonable basis for characterising habitat quality for Atlantic salmon, since H3260 is a widespread habitat in England and the natural range of salmon is also wide. Key points from that report are provided below. Assessment of the condition of rivers designated SAC for H3260 (which is the majority of the SAC river network in England) is based on evaluation of the environmental integrity of the habitat (in relation to water quality, hydrology, morphology, non-native species and some aspects of the status of the characteristic biological community. By habitat area, around 11% is recorded as favourable, 45% as Unfavourable recovering, and 43% as Unfavourable no change. There are typically multiple reasons for Unfavourable condition, which need to be addressed in a coordinated way to move SACs to Unfavourable recovering and ultimately Favourable condition. The large percentage of area recorded as Unfavourable recovering reflects the complex planning and lengthy timescales needed to resolve many of the key pressures on river systems. Within the wider network of nationally designated (SSSI) rivers designated for their river habitat, some 42% is recorded as Favourable, 33.5% as Unfavourable recovering, and 21% as Unfavourable no change. The higher proportion of area in Favourable condition relative to SACs is likely to be an artefact of the data, partly due to the inclusion of adjacent floodplain habitat in the figures which is often recorded as being in Favourable condition even though the adjacent river channel and its banks are not. Beyond SACs and nationally designated sites, the main source of data on habitat condition is the Water Framework Directive (WFD). The WFD reports on the ecological status of rivers that form part of defined 'waterbodies'. Ecological status is defined in terms of a number of biological quality elements: the phytobenthos (algae and submerged higher plants), macroinvertebrates and fish, as well as the nutrient status of waterbodies. A number of environmental standards are also defined that support ecological status. Status categories are high, good, moderate, poor and bad. Where significant anthropogenic modifications are present in a waterbody, which cannot be removed to restore good	

	ecological status, the waterbody is designated as heavily modified under the WFD and an objective is assigned in terms of ecological potential. There is no simple relationship between favourable condition of SAC/SSSI river habitat and ecological status classes. However, for most biological and environmental indicators that both assessment methods use, favourable condition is most closely associated with high ecological status. See Mainstone and Burn, (2011) in 2.2 for further explanation. Levels of habitat condition consistent with ecological potential objectives are set in relation to site-specific constraints and cost-benefit considerations and are not amenable to general comparison with favourable condition as defined for SACs and SSSIs. Mainstone (2011) provides summary statistics of WFD ecological status data across the English river network. About a third (30.3%) of all WFD river waterbodies in England have been designated as heavily modified and therefore have objectives relating to ecological potential rather than ecological status. Of those waterbodies not designated as heavily modified, around 70% were at less than good ecological status (ges) in the 2009 WFD baseline assessment, and only 4 waterbodies were at high ecological status (hes). This assessment is based on the worst performing quality element making up the assessment (biological quality elements and nutrient levels).	
	b) Assessment method	**Condition assessment of SAC rivers, ecological status assessment of the wider river network under the Water Framework Directive. See Article 17 report on H3260 habitat.**
2.5.5 Short-term trend Period	**2001-2011**	
2.5.6 Short-term trend Trend direction	**increase**	
	The picture is complex but there has been significant progress with alleviating a number of of pressures, including nutrient enrichment, organic pollution, acidification, industrial pollution, exploitation and artificial barriers to accessing spawning grounds.	
2.5.7 Long-term trend Period	**1989-2011**	
2.5.8 Long-term trend Trend direction	**increase**	
	The improvements noted in 2.5.6 are also apparent over this longer time period	
2.5.9 Area of suitable habitat for the species	**a) Value in km²**	
	No estimate is available.	
	b) Absence of data indicated as '0'	
2.5.10 Reason for change Is the difference between the value reported at 2.5.1 and the previous reporting round mainly due to	**a) Genuine change?**	**True**
	A number of artificial barriers to accessing historical spawning habitat have been mitigated since the last reporting round, so there has been	

	an increase in habitat area. However, no numerical estimate of the scale of change is available.	
	b) Improved knowledge/more accurate data?	**False**
	c) Use of different method (e.g. "Range tool")?	**False**

2.6 Main pressures		
a) Pressure	**b) Ranking**	**c) Pollution qualifier**
	H = high importance M = medium importance L = low importance	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	H	X
J02: human induced changes in hydraulic conditions	H	
J03: Other ecosystem modifications	H	
M01: Changes in abiotic conditions	H	
A02: modification of cultivation practices	M	
F02: Fishing and harvesting aquatic resources	M	

A02/H01 - Many English rivers suffer from enhanced loads of fine sediment and nutrients, with fine sediments generated largely from the catchment and nutrients generated from both catchment sources and effluents. Other pollutants of concern include organic pollution from agriculture, biocides and oestrogenic substances.

F02 - English populations of Atlantic salmon have historically been heavily exploited on marine feeding grounds, in coastal areas during spawning migration, and in their up-river migrations. However, conservation measures taken in recent years in the face of declining numbers of returning adults have greatly reduced this pressure.

J02 - The English river network is subjected to considerable amounts of flow regime modification, including headwater impoundment and flow regulation, and groundwater and direct river abstraction. Flow modification can reduce both current velocities (with consequences for substrate conditions and water quality) and habitat extent.

J03 - The English river network has been extensively physically modified. Simplification of physical habitat provision has a range of impacts including reducing the availability of shallow water and flow refugia for juveniles, and water depth for adults. Impounding structures can reduce current velocities and enhance siltation of coarse substrates. A particular issue for salmon is the presence of many weirs that impede or block access to spawning grounds. Partial barriers (even those with fish passes) are known to have a cumulative effect on salmon passage to spawning grounds.

M01 - In the river environment, climate change predictions are for greater variability in flow regimes, wetter winters, driers summers and higher water temperatures, and such changes have already been observed in recent years. All of these changes create added pressure on salmon populations. Temperature predictions in southern England call into the question the long-term viability of salmon populations in southern chalkstreams. At sea, the increased natural mortality rates of recent years may well be due to climatic change.

2.6.1 Method used – Pressures	**based exclusively or to a larger extent on real data from sites/occurrences or other data sources**

2.7 Threats

a) Threat	b) Ranking	c) Pollution qualifier
	H = high importance M = medium importance L = low importance	
H01: Pollution to surface waters (limnic & terrestrial, marine & brackish)	H	X
J02: human induced changes in hydraulic conditions	H	
J03: Other ecosystem modifications	H	
M01: Changes in abiotic conditions	H	
A02: modification of cultivation practices	M	
C03: Renewable abiotic energy use	M	
F02: Fishing and harvesting aquatic resources	M	

All of the pressures listed in 2.6 are set to continue in the future. Measures in place or being planned will reduce some of these further, although the new momentum behind hydropower generation is threatening to create further pressure on salmon populations. Whilst significant new impounding structures are unlikely in England, small-scale hydropower generating is creating a potential new use for many structures that were being earmarked for removal to restore natural river processes and access. Water resource demands are also set to increase as a result of increased probabilities of drought and a rising human population. Overall, climate change is probably the greatest threat to English salmon populations, and restoring natural river processes and habitat heterogeneity (including restoration of patchy riparian tree cover) has been identified

as the most important adaptation measure for river habitats and their biological communities.	
2.7.1 Method used – Threats	**modelling**

2.8 Complementary information	
2.8.1 Justification of % thresholds for trends	
2.8.2 Other relevant information	
2.8.3 Trans-boundary assessment	

2.9 Conclusions ***(assessment of conservation status at end of reporting period)***
Please refer to the United Kingdom assessment for this species.

3 Natura 2000 coverage & conservation measures - Annex II species ***(only applies to species listed under Annex II of the Directive)***

3.1 Population		
3.1.1 Population size Estimation of population size included in the SAC network	**a) Unit**	**number of adults**
	The unit is the number of returning adults surviving to spawn, as used in 2.4	
	b) Minimum	**10308**
	c) Maximum	**17048**
3.1.2 Method used	**Estimate based on partial data with some extrapolation and/or modelling**	
	These estimates are based on the total number of spawning adults in the Rivers Itchen, Avon (Hampshire), Camel, Eden, Cumbrian Derwent, Ehen, all of which are SACs. Rivers that are shared with Wales (the Rivers Wye and Dee SACs) and Scotland (the River Tweed/Till SAC) are not included (the Wye and Dee are included in the report for Wales). The River Axe SAC is not included as the SAC only covers the lower section of the river. The headwater streams of Dartmoor SAC are also not included as it is unclear what proportion of the adult population of the River Dart spawn in the headwaters. Figures are the minimum and	

	maximum from the years 2007 to 2011. Considering the widespread nature of the species in England, the river SAC network contains a substantial component of the English population.
3.1.3 Trend of population size within the network (short-term trend)	**stable**

3.2 Conservation measures

Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.

3.2.1 Measure	**3.2.2 Type**					**3.2.3 Ranking** H = high importance M = medium importance L = low importance	**3.2.4 Location** where the measure is PRIMARILY applied			**3.2.5 Broad evaluation of the measure**					
	a) Legal/statutory	**b) Administrative**	**c) Contractual**	**d) Recurrent**	**e) One-off**		**a) Inside**	**b) Outside**	**c) Both inside & outside**	**a) Maintain**	**b) Enhance**	**c) Long term**	**d) No effect**	**e) Unknown**	**f) Not evaluated**
2.2: Adapting crop production		Y	Y	Y		H			Y		Y	Y			
4.0: Other wetland-related measures		Y	Y	Y	Y	H			Y		Y	Y			
4.1: Restoring/improving water quality	Y				Y	H			Y		Y	Y			
4.2: Restoring/improving the hydrological regime		Y	Y	Y	Y	H			Y		Y	Y			
4.3: Managing water abstraction	Y				Y	H			Y		Y	Y			

7.2: Regulation/ Management of fishery in limnic systems	Y			Y	Y	M			Y		Y	Y			
7.3: Regulation/ Management of fishery in marine and brackish systems	Y		Y	Y	Y	M		Y			Y	Y			

Within the English river SAC network, and to a lesser extent the wider network of nationally designated rivers, considerable effort has been expended on the development and implementation of strategic plans aimed at restoring the condition of the river habitat (see Mainstone and Clarke 2008 in 2.2 for an explanation of the strategy adopted). More widely, management measures for salmon across the English river network are developed and implemented through Sea Trout and Salmon Catchment Summaries for each river, which are incorporated into river basin management planning under the Water Framework Directive. Within the first round of river basin management planning, a considerable amount of WFD-related effort is being expended on confirming, and investigating the causes of problems with, ecological status. Better harmonisation of plans and activities under the WFD and Habitats Directive is needed (see Mainstone 2008 for further discussion of harmonisation issues).

An account of each type of conservation measure is given below.

2.2 The England Catchment Sensitive Farming Initiative is continuing to promote a range of best agricultural practices to reduce pollution loads to priority aquatic sites, including a range of river SACs and nationally designated rivers (see link in 2.2 for further details). The initiative is voluntary and uses awareness-raising and incentives to bring about management change. Modelling has predicted benefits in terms of reduced pollution loads, but it is still unclear how far a voluntary approach will go towards achieving favourable conditions for the habitat.

4.0 Since the last Article 17 report, a major programme of physical restoration has been implemented on the designated river network, involving the development of a long-term strategic plan for each river and its programmed implementation over suitable timescales (see references in 2.2 for details of the programme). These plans address key issues such as dams and weirs, channelisation, flood embankments, bank reinforcements, lack of riparian habitat, lack of riparian trees and lack of woody debris in the channel. The development and implementation of these plans is providing an important strategic focus for river restoration on the designated river network, and is valuable in promoting a strategic approach on the wider river network. Outside of the designated site network, practical measures have focused on addressing the many weirs and dams on the river network in England. The general WFD aim is to remove problem structures where possible, or to reduce their impacts on fish migration.

4.1 In addition to Catchment Sensitive Farming, work has continued to implement the review of discharge consents affecting the Natura network in England. Further phosphorus removal processes have been fitted to sewage effluents under the water industry's programme of strategic improvements. In respect of discharge consents affecting SAC rivers, 108 are being modified, 7 are being revoked and one is being surrendered. However, further investigations are needed into the application of new best available technology for phosphorus removal, as well as the need for action on rural unsewered populations. Plans are being drawn up for addressing these issues in relation to SACs and nationally designated sites.

4.2/4.3 The review of abstraction licences affecting the Natura network in England has been completed. In respect of those licences affecting SAC rivers, 10 are being served closure notices, 111 are being modified, 15 are being revoked and 9 are being surrendered. However, agreement is needed on further action on abstraction to ensure that the flow regime of SAC rivers and other nationally designated rivers are properly protected.

7.2/7.3 Measures taken to control salmon exploitation in coastal nets and by rods in rivers have proved successful in maintaining total numbers of spawning adults in the face of declining numbers of returning adults. Measures have included: phasing out drift netting and reducing the numbers of net licences in the north east coastal fishery; byelaws to prohibit netting before the end of June (to protect multi-sea winter spawners); and voluntary catch-and-release initiatives in rod fisheries [Liz, is there any regulatory component to C&R?]