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Photo 1. Yealm Bridge and weirs

EXECUTIVE SUMMARY

This Final Salmon Action Plan (SAP) for the River Yealm catchment has been produced after consideration of feedback from external consultation. It provides a list of the agreed issues and actions for the next five years to maintain and improve the River Yealm salmon stock. These issues and actions follow on from the detailed analysis of the catchment, which is presented in the River Yealm SAP Consultation document (available from the Cornwall Area Environment Agency office, Sir John Moore House, Victoria Square, Bodmin PL31 1EB. Telephone Number 01208 78301).

The main objective of the River Yealm SAP is to maintain, improve and develop the River Yealm salmon stocks to a sustainable level, that, on the basis of historic catch records, the catchment can clearly support.

The actions presented within this Final SAP document clarify the important issues and factors currently limiting the salmon stock on the river. The resolution of these issues should ensure that a sustainable salmon population will be maintained for future generations. These issues have been costed and sources of funding and partners identified where possible.

The salmon egg deposition Conservation Limit (CL) for the River Yealm was calculated as 193 eggs per 100 m² of the available wetted area. This is the minimum number of eggs required to maintain the River Yealm salmon population in a favourable status. Failures of the CL necessitate the Agency taking action to reduce exploitation (through voluntary or mandatory methods) to maximise salmon spawning escapement. A detailed explanation of the CLs can be found in the consultation document.

The River Yealm has had two egg deposition CL failure episodes. These were in 1993 to 1995 and 1997 to 1999, with a “near miss” in 2000 to 2003. Electric-fishing surveys carried out since the mid 1990’s have indicated a significant reduction in salmon fry abundance within the main salmon producing areas of the River Yealm in comparison to historic data.

The consultees felt very strongly that there were four major local factors limiting the salmon stock of the River Yealm. These factors were the use of the catchment for water supply by South West Water, the effects of illegal fishing, the impact of industry (including china clay) and obstructions to fish migration. Consultees felt that these issues should be actively managed by the Agency, South West Water (SWW), the Department for Environment Food and Rural Affairs (DEFRA), English Nature (EN) and where necessary supported by the influence of other partners.

In addition the plan identifies a number of other issues which were also considered by the consultees to be important and require action. These will be progressed according to the priorities identified in this plan.

This plan is designed to be the starting point to encourage the active involvement of all interested parties so as to maximise the opportunities for generating new funding sources and facilitating a co-ordinated approach to the resolution of issues. The Agency’s primary role is the development of the plan and targeting of resources at key areas on a priority basis. A key aspect is that the plan represents a potential opportunity for all parties with an interest in the River Yealm salmon stock to become actively engaged in undertaking or contributing to actions, which will benefit the stock and the river system.

River Yealm Final Salmon Action Plan

It is intended that a consultee forum will meet regularly to discuss the progress on issues and actions.

In summary, the highest scoring actions were:

	Action	Average Points
1	Review water usage and prescribed flow as part of CAMS (Catchment Abstraction Management Strategy).	4.75
2	Carry out regular multi-agency enforcement operations. Publicise regulations, enforcement cases and encourage reports from the public.	4.25
3	Investigate and take action over 'in-river' fly tipping downstream of Lee Mill.	4.2
4	Continue high profile visits to Lee Mill industrial estate and ensure correct sewerage connections.	4.0
5	Investigate reason for deprived stretch below abstraction points and explore options.	3.5
6	Review fisheries survey information collected and report with recommendations for CAMS process.	3.5
7	Continue liaison with abstractors to ensure the environmental impact of abstractions is limited.	3.5
8	Initiate 'streamside' clearance projects to reduce overshadowing, where appropriate.	3.5
9	Continue to progress improvements to weirs as per prioritised list. Progress improvements to Blachford weirs.	3.5
10	Undertake fencing projects where possible.	3.5
11	Identify and protect spawning areas.	3.5
12	Initiate River Piall salmon restoration project.	3.0
13	Initiate discussions to reintroduce gravel dredged at Dendles Wood. Investigate options re. Lack of gravel below Blachford Lake.	3.0
14	Sensitive removal of trash dams.	3.0



Photo 2. Main River Yealm South West Water abstraction point within Dendles Wood.

PART 1 INTRODUCTION

1.1 Background

In 1996, the National Rivers Authority published “A Strategy for the Management of Salmon in England and Wales”. This national strategy identifies clear objectives that allow resources to be focused on priority activities. It provides consistent policies and a framework to manage stocks. The objectives for the future management of this resource are given as:

- (i) *To optimise the number of salmon returning to home water fisheries;*
- (ii) *To maintain and improve the fitness and diversity of salmon stocks;*
- (iii) *To optimise the total economic value of surplus stocks;*
- (iv) *To meet the necessary costs of managing the resource.*

The strategy document outlines how these could be achieved in practice to ensure the sustainable exploitation of our salmon, so conserving this species for future generations.

The Agency is committed to implementing this strategy by means of local Salmon Action Plans (SAPs) drawn up by the year 2003 for all our principal salmon rivers, after consultation with local interest groups. This is now a statutory requirement for the Environment Agency.

The River Yealm Salmon Action Plan consultation document aims to:

- Introduce and subsequently identify river-specific salmon conservation limits;
- Identify existing and future fishing controls to protect salmon stocks and the fisheries that they support;
- Identify factors limiting salmon survival and production in both the marine and freshwater phase of the life cycle;
- Identify programmes of works based upon the limiting factors that will enable remedial and development measures to be undertaken.

Using feedback from external consultation to the River Yealm SAP consultation document leads to production of the final Yealm SAP document. This provides a clear statement of the issues and costed actions that should be undertaken to bring about desired benefits to the salmon fishery. A key purpose of the final SAP is to be the reference document for monitoring progress.

The River Yealm Salmon Action Plan is the last of seven Salmon Action Plans to be drawn up by the Cornwall Area Fisheries, Recreation and Biodiversity Technical Team, South West Region.

1.2 The River Yealm Salmon Action Plan

The River Yealm is an important migratory salmonid rod and line fishery (see Map Figure 1).

Global climatic and oceanographic changes, unsustainable high seas exploitation and factors specific to the freshwater phase of the life cycle have been associated with a national decline in salmon stocks. The River Yealm salmon stock has come under a number of local pressures within the freshwater environment which this plan aims to address.

The River Yealm SAP consultation process sought to identify factors limiting the salmon population within the River Yealm. Issues identified as affecting the marine phase of the salmon life cycle are being dealt with on a national and international level although they are included here for completeness. Therefore, the SAP process has the greatest potential to address local issues so as to ensure that the exploitation of the salmon population is maintained at a sustainable level and that juvenile production is maximised.

The consultees considered that water resource management associated with abstraction for public water supply at three locations in Dendles Wood has impacted greatly on the catchment. Consultees felt strongly that the Agency should ensure that the prescribed flow was adequate and also that the abstractions were managed in an environmentally sensitive manner. Data collected to date should be reviewed and discussed with South West Water and changes made to the existing abstraction sites if necessary.

In addition, the consultees welcomed the improvements made in recent years by the China Clay companies and South West Water sewage treatment works and wished this to continue. The Lee Mill Industrial Estate was also of concern considering its potential to cause pollution. Within the catchment it was felt that significant improvements to fish migration were possible and that targeted habitat improvement works would be beneficial.

This Final Salmon Action Plan sets out the agreed issues and actions that the Environment Agency, working with other interested parties, will seek to use to maintain, improve and develop the stock of wild breeding, indigenous River Yealm salmon.

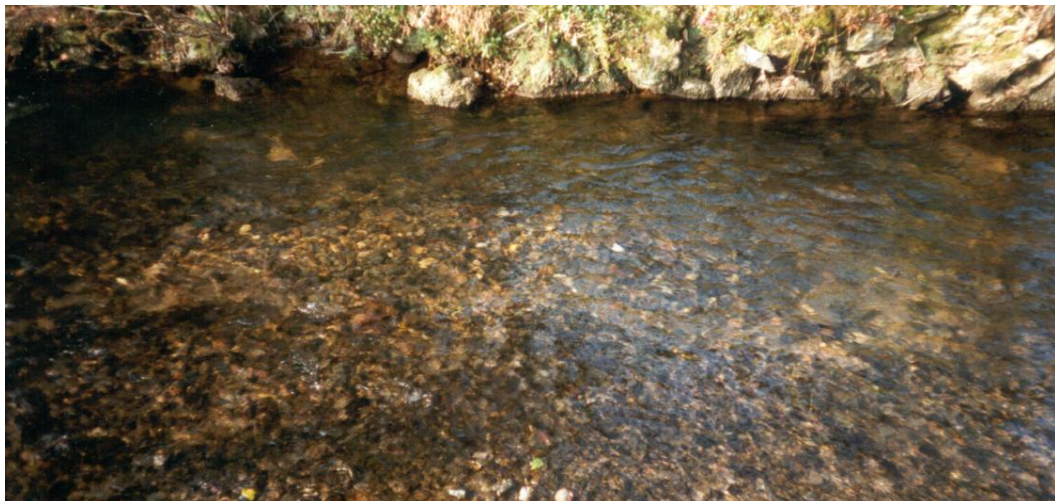


Photo 3. Large late-run salmon redd on the River Yealm just upstream of the tidal limit, January 1997.

PART 2 PUBLIC CONSULTATION

The River Yealm Salmon Action Plan Consultation document was published in November 2003. Within the consultation document, the Agency highlighted the current status of the salmon stock and identified the major constraints limiting the resource. The consultation plan also outlined the Agency's proposals for addressing these limitations.

95 copies were distributed to organisations and individuals that were considered to be interested in the River Yealm and its salmon population. In total, 4 formal written responses were received from the consultees along with several telephone calls providing further information. Many of these were made for and on behalf of other individuals and groups with an interest in the River Yealm salmon stock that had received copies of the consultation document.

The responses from the consultees generally considered that the consultation document provided a good description of the River Yealm and the historic and current status of its salmon stock. Most responses agreed with the issues identified and actions required to progress them, although their views on priorities varied. Many of these were indicative of a high level of awareness and interest in the work that the Agency and its collaborative partners are attempting to undertake on the River Yealm. A different emphasis was placed on some issues and several new issues were raised in formal responses and at the consultation meeting. These have now been added to the issues table.

It is the purpose of the Salmon Action Plan (SAP) to identify and prioritise the issues and actions needed. Without adequate funding and support from partners, these actions will not all be carried out. The SAP is specifically written for the future management of salmon. However, the actions proposed will also protect other important species.

All recipients of the consultation document were invited to attend a public meeting held on 1st December to discuss the issues and ways of further investigation or resolution of these issues. This useful meeting led to the prioritisation of the actions listed in this SAP for the River Yealm.

At the consultation meeting consultees were asked to score each issue and action according to their perception of importance and priority ranging from Very High to Low. These scores were then averaged to give a score for each issue. It was felt that this would be a useful way to help the Environment Agency target limited resources more efficiently in line with the agreed priorities.

The following table explains how the priorities were converted into scores.

PRIORITY	AVERAGE SCORE
Very High (VH)	5
High (H)	4
Medium (M)	3
Low (L)	2
Very Low (VL)	1

PART 3 ISSUES AND ACTIONS**3.1 Summary of Highest Scoring Actions**

In summary the highest scoring actions are detailed in **Table 1**. The full results of this prioritisation by the consultees are shown in **Table 2** Issues and Actions.

The Agency wishes to express thanks to all consultees who made comments and attended the meeting.

Table 1 Highest Scoring Actions

	Action	Average Points
1	Review water usage and prescribed flow as part of CAMS (Catchment Abstraction Management Strategy).	4.75
2	Carry out regular multi-agency enforcement operations. Publicise regulations, enforcement cases and encourage reports from the public.	4.25
3	Investigate and take action over ‘in-river’ fly tipping downstream of Lee Mill.	4.2
4	Continue high profile visits to Lee Mill industrial estate and ensure correct sewerage connections.	4.0
5	Investigate reason for deprived stretch below abstraction points and explore options.	3.5
6	Review fisheries survey information collected and report with recommendations for CAMS process.	3.5
7	Continue liaison with abstractors to ensure the environmental impact of abstractions is limited.	3.5
8	Initiate ‘streamside’ clearance projects to reduce overshadowing, where appropriate.	3.5
9	Continue to progress improvements to weirs as per prioritised list. Progress improvements to Blachford weirs.	3.5
10	Undertake fencing projects where possible.	3.5
11	Identify and protect spawning areas.	3.5
12	Initiate River Piall salmon restoration project.	3.0
13	Initiate discussions to reintroduce gravel dredged at Dendles Wood. Investigate options re. Lack of gravel below Blachford Lake.	3.0
14	Sensitive removal of trash dams.	3.0

3.2 Full List of Actions and Tasks

Table 2 Full List of Issues and Actions

Note: The Actions are shown in bold, with more specific tasks relating to those actions shown in normal font.

ISSUE	ACTION	TIMESCALE					COST AND FUNDING SOURCES	PRIORITY
		03/04	04/05	05/06	06/07	07/08		
Water Resources								
Impact of Dendles Wood Abstractions	Y1. Review water usage and prescribed flow as part of CAMs process		*	*	*	*	Agency-core work	VERY HIGH
	Y1.1 Review fisheries survey information collected and report with recommendations for CAMS process	*	*				Agency £3K	HIGH
	Y2.Investigate reason for deprived stretch below abstraction points and explore options	*	*	*			Agency/ SWW	HIGH
	Y3.Discuss usage of abstractions with SWW	*	*	*			Agency/ SWW	VERY HIGH
	Y4.Investigate source of 'detritus' on the upper River Yealm	*					Agency	New Issue HIGH
Other Water Resource Usage	Y5.Produce CAMs		*	*	*	*	Agency	MEDIUM
	Y5.1Continue liaison with abstractors to ensure the environmental impact of abstractions is minimised.	*	*	*	*	*	Agency	HIGH
Habitat Degradation and Water Quality Issues								
Overgrazing	Y6.Influence CAP reform to reduce grazing on Dartmoor	*	*	*	*	*	National Agency/ WRT/ DEFRA	MEDIUM
	Y6.1Initiate discussions with DNP regarding Action for Wildlife	*	*	*	*	*	Agency	HIGH
Bank erosion	Y7.Undertake fencing projects initially targeting areas highlighted in WRT report. Agency can provide materials.	*	*	*	*	*	Agency/ WRT/ DEFRA £15k per year	HIGH
	Y7.1All to provide contact details for possible sites to Agency	*	*	*	*	*	Angling clubs	HIGH
	Y8. Investigate erosion downstream of Lee Mill and take appropriate action		*				Agency /Angling club/ landowner £3k	HIGH
	Y9. Investigate inappropriate bank reinforcement downstream Lotherton Bridge.	*	*				Agency/ Angling Clubs	HIGH

ISSUE	ACTION	TIMESCALE					COST AND FUNDING SOURCES	PRIORITY
		03/04	04/05	05/06	06/07	07/08		
Poor farming practice	Y10. Continue promotion of best practice re livestock farming.	*	*	*	*	*	Agency/ Angling Clubs/WRT/ DEFRA	MEDIUM
	Y10.1 Distribute Best Farming Practice booklet to all farms	*	*	*	*	*	Agency/ Angling clubs £10k	MEDIUM
	Y10.2 Influence DEFRA to ensure promotion of EIA regulations relating to agricultural land development	*	*	*	*	*	Agency	MEDIUM
Forestry	Y11. Influence forestry practices to minimise impact on habitat and water quality	*	*	*	*	*	Agency/ WRT/ Forestry Owners	HIGH
Gravel starvation	Y12. Investigate lack of gravel in key areas below Blachford Lake		*				Agency	HIGH
	Y12.1 Investigate lack of gravel below Blachford Lake		*				Agency/ Angling clubs/ EN	HIGH
	Y12.2 Initiate discussions to reintroduce gravel dredged at main River Yealm abstraction point		*				Agency/ SWW	HIGH
Overshading	Y13. Initiate 'Streamside' clearance projects to reduce overshading, where appropriate. 1 area per year	*	*				Agency/ Forestry owners £5K per year	HIGH
Pollution	Y14. Investigate causes of poor water quality and carry out walkover survey of Ridgectott Lake Stream	*	*				Agency	VERY HIGH
	Y15. Carry out pollution prevention advisory visits in the Yealm catchment	*					Agency	HIGH
	Y16. Continue to enforce regulations regarding sheep dip and continue water quality monitoring.	*	*	*	*	*	Agency	New Issue HIGH
	Y17. Investigate and take action over 'in-river' flytipping downstream of Lee Mill	*					SHDC/ Agency	HIGH
pH on Upper Yealm	Y18. Investigation into salmon survival and pH in Yealm catchment.		*				Agency/ WRT £6K	HIGH
Lee Mill Industrial Estate	Y19. Continue high profile visits and ensure correct sewerage connections.	*	*	*	*	*	Agency/ SWW	VERY HIGH
China Clay industry impacts on water quality e.g. suspended solid loadings	Y20. Continue to work on improvements with the China clay companies.	*	*	*	*	*	Agency	HIGH
	Y21. Undertake analysis of composition and source of sand/gravel at Head Weir. Analyse existing silt trap data.		*				Agency/ Angling Clubs/ Imerys/ WBB	HIGH

ISSUE	ACTION	TIMESCALE					COST AND FUNDING SOURCES	PRIORITY
		03/ 04	04/ 05	05/ 06	06/ 07	07/ 08		
China Clay industry impacts on water quality <i>e.g.</i> suspended solid loadings (contd)	Y22. Investigate potential for improvement in River Yealm & tributaries and monitor		*				Agency/ WRT/ Angling Club £5K for assessment	HIGH
	Y22.1 Initiate River Piall Salmon Restoration Project		*	*	*		Agency/ Imerys/ WBB/ Angling clubs £15k per year	HIGH
Sewage Treatment Works (STWs)	Y23. Continue to enforce consents and drive improvements at all STW and pump stations including Lee Mill STW, Lutton STW and Dunstone.	*	*	*	*	*	Agency/ SWW	HIGH
Obstructions to Upstream Salmon Migration								
Restricted access within main Yealm and tributaries (including estuarine tributaries)	Y24. Continue to progress improvements to weirs as per the prioritised list	*	*	*	*	*	Agency/ WRT/ Angling clubs	HIGH
	Y24.1 Discuss potential options and funding with landowner and relevant authorities <i>e.g.</i> to enable salmon access into the upper River Yealm past Blachford Lake.	*	*				Agency/ WRT/ EN	VERY HIGH
	Y24.2 Investigate ownership of Puslinch weir and take advice on poor condition.	*					Agency	New Issue HIGH
Assess the impacts of natural and manmade temporary structures and remove where necessary and appropriate.	Y25. Sensitive removal of trash dams where they cause barriers to fish movement	*	*	*	*	*	Agency – Core Work	HIGH
	Y26. Carry out full habitat survey to aid management decisions.	*	*	*			£2k Funding Agency/ WRT/ Angling Clubs	HIGH
Exploitation of Salmon								
Lack of information on salmon run size and population dynamics	Y27. Continue to look for opportunities to develop fish counter	*	*	*	*	*	Agency/ SWW/ EN/ Angling Clubs High cost!	VERY LOW
	Y28. Collect scale samples from dead kelts.	*	*	*	*	*	Agency/ Riparian owners/ Angling clubs	New action MEDIUM

ISSUE	ACTION	TIMESCALE					COST AND FUNDING SOURCES	PRIORITY
		03/04	04/05	05/06	06/07	07/08		
Rod exploitation of salmon	Y29. Keep exploitation levels low.	*	*	*	*	*	Agency/ DEFRA	VERY HIGH
	Y29.1 Consider byelaw to change season or other restrictions only if catch and release rates fall significantly.	*	*	*	*	*	Agency	LOW
	Y29.2 Continue current very high level of catch and release.	*	*	*	*	*	Agency/ Riparian Owners/ Fishing Clubs	VERY HIGH
	Y29.3 Promote use of barbless hooks to aid survival after release	*	*	*	*	*	Agency/ Riparian Owners/ Angling clubs	HIGH
	Y29.4 Encourage voluntary restrictions to fishing methods. e.g. restriction on use of worms/ prawn in Nov/Dec on entire River Yealm	*	*	*	*	*	Riparian owners /Fishing clubs	HIGH
	Y29.5 Look for opportunities for more spawning sanctuary areas	*	*	*	*	*	Riparian owners /Fishing clubs	VERY HIGH
	Y30. Facilitate and co-ordinate Cornwall Area egg box project. Assessment of costs and benefits required	*	*	*	*	*	Riparian Owners/ Agency £3K per year	HIGH
Fishing for salmon amongst spawning sea trout and disturbance to salmon on their spawning grounds.	Y31. Identify and protect spawning sanctuary areas.	*	*	*	*	*	Riparian Owners/ fishing clubs/ Agency/ £10K	VERY HIGH
Predation by cormorants and herons	Y32. Collect evidence of activity/losses on proforma supplied by Agency		*	*	*	*	Angling clubs/ Agency	MEDIUM
Illegal exploitation in freshwater, estuary and coastal areas.	Y33. Carry out regular multi –agency enforcement operations within these areas	*	*	*	*	*	Agency	VERY HIGH
	Y34. Optimise effectiveness of enforcement patrols and use of new technology	*	*	*	*	*	Agency - Core work	HIGH
	Y35. Publicise regulations, enforcement cases and encourage reports from the public	*	*	*	*	*	Agency/ Angling clubs	VERY HIGH
Exploitation by Irish Drift Nets	Y36. Assess the significance of the Irish fishery to exploitation on SW rivers	*	*	*	*	*	NASCO / ICES Agency Index River Projects	HIGH

EN: English Nature; **DNP:** Dartmoor National Park; **WBB:** Watts Blake and Bearne; **WRT:** Westcountry Rivers Trust; **DEFRA:** Dept. for Environment, Food and Rural Affairs; **SHDC:** South Hams District Council and **SWW:** South West Water.

PART 4 MANAGEMENT OF THE PLAN

The Salmon Action Plan process operates at three levels:

- The Consultation document.
- The Final plan.
- The annual review process.

The local Area Environment Agency Fisheries, Recreation and Biodiversity Technical Team produces the consultation document and the final plan.

The Environment Agency Cornwall Area Manager ensures implementation and delivery of this plan.

An implementation group will be set up to manage, review and report progress on the actions. This will consist of Agency staff from both Fisheries and Environment Management teams, together with external partners.

A review will be published in five years time in a similar format to this plan. It will report on progress over the past five years and examine the need to update actions in the light of changes within the River Yealm catchment and advances in our knowledge.

A regional report (for the South West Region) will be produced annually. This will consist of an overview of the key points in the region, and, for individual rivers having a SAP, there will be reference to significant local events and tabular summaries of:

- The performance of rod and net fisheries.
- Participation in the rod and net fisheries
- Status of the salmon stock with respect to the spawning conservation limit.
- Planned action and progress against the plans.

The regional plan will be reported at the April meeting of the Regional Fisheries, Ecology and Recreation Advisory Committee (RFERAC). A national report will be produced to provide an overview and collate the tables from the regional plans. This will be produced annually, by March of each following year.

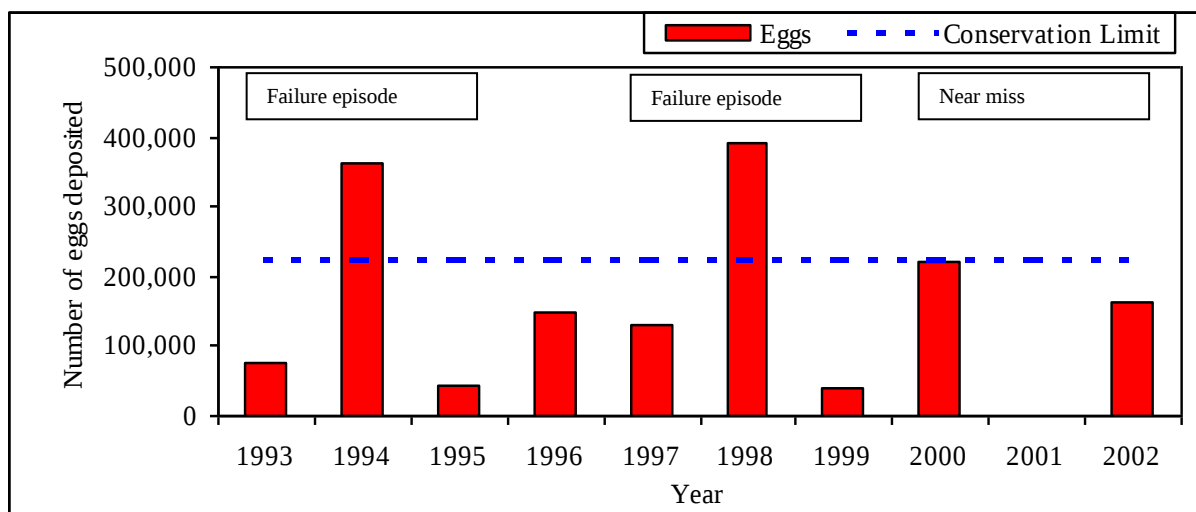


Photo 4. Lotherton Bridge

PART 5 MINIMUM ACCEPTABLE SPAWNING LEVELS

A primary component of the Action Plan is the determination of a minimum acceptable conservation limit below which the River Yealm salmon stock should not fall. The River Yealm salmon egg conservation limit was calculated to be equivalent to 193 eggs per 100m² of the available wetted area, which is equivalent to 71 female spawning adults. Conservation limit compliance using historic rod catch data indicated that the target was not achieved between 1993 to 1995 and 1997 to 1999, with a near miss in the period 2000 to 2002.

River Yealm Historic egg deposition compliance



The minimum acceptable conservation limit will be subject to refinement as methodologies for its determination develop in this country. It should be remembered that it is the first time that a conservation limit equated with the best possible sustainable yields of salmon has been estimated for the River Yealm.

The setting of objectively derived minimum acceptable spawning levels for Atlantic Salmon is now being actively promoted by the North Atlantic Salmon Conservation Organisation (NASCO), and has been used successfully in North America for several years. It is understood that many other factors are likely to contribute to the success of spawning and should be included in the calculation of egg deposition. Research is currently being undertaken to ensure that all factors are taken into account when calculating Conservation Limits.

The actions proposed within the plan are intended to facilitate an increase in stock abundance to a level that will enable an optimum yield to both rod and net fisheries for present and future generations of fishermen. This in turn should encourage economic as well as ecological benefits to the River Yealm catchment.

REFERENCES

Environment Agency (2003) – River Yealm Salmon Action Plan – Consultation Document.

National Rivers Authority (1996) – A Strategy for the Management of Salmon in England and Wales.