Fish population survey report

Upper River Avon Catchment

This report provides a summary of results from recent fish population surveys on the Tetbury Avon, Sherston Avon and River Marden The surveys were carried out to assess the health of the river and enable successful management of our principal fisheries.

Originating team	Sampling and Collecting Team
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Date	23/03/2017
Checked by	Matt Pang
Sign-off date	6th April 2017

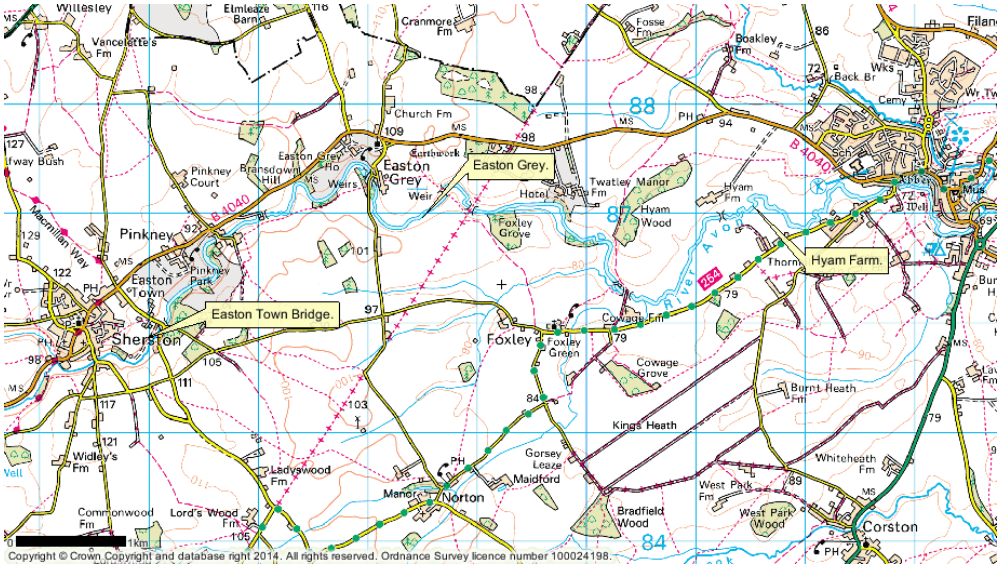
Summary

- 6 sites on the upper Bristol Avon were surveyed by electric fishing during September and October 2016;
- Brown trout were recorded at all sites.

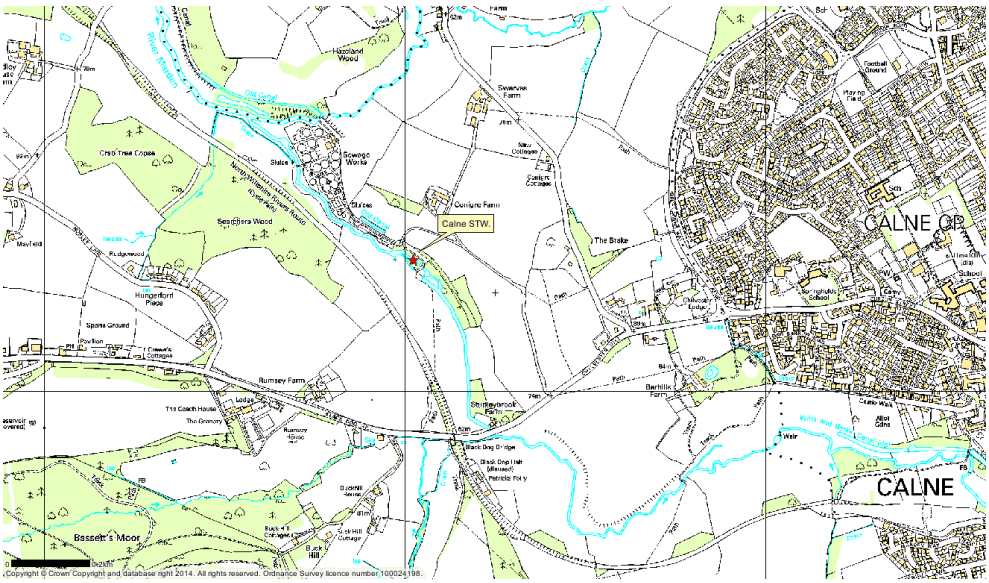
Site locations

Tetbury Avon

Sherston Avon



River Marden



Survey results

The sites were surveyed as part of the Core Fish Monitoring Programme to monitor and assess the health of wild brown trout populations. Surveys were conducted by electric fishing over distances varying from 77m to 140m depending on site accessibility. Apart from ‘minor species’ such as minnow, stone loach and bullhead, all fish were identified and measured.

Tetbury Avon

Merchants Farm (Front Field)

Finding a suitable survey site for electric fishing proved difficult due to the 'wild' nature of the river at this location. However, conditions well suited the brown trout population which appeared to be thriving at this site. The site measuring 77m in length by 6.6m in width, consisted mainly of a cobble and boulder substrate with gravel, sand and silt to the margins. River characteristics consisted a long glide of varying depths, a riffle at the top and bottom of the site with a low tree canopy covering over 90% of the total length. The high catch of 79 brown trout provided an estimated density of 21.4 fish per 100m² and an estimated standing crop of 1,867grams per 100m².

Catch results

Merchants Fm (Front Field) ST9118691046 29/09/2016	Minimum Length (IF)	Maximum Length (IF)	Mean Length (IF)	Numbers Caught	% of Catch by Number	Weight Caught	% of Catch by Weight
Brown / sea trout [Salmo trutta]	57	367	193	79	87.78	9488.74	100
Lamprey sp. > ammocoete [Petromyzontidae]	135	135	135	1	1.11		
Lamprey sp. ammocoetes [Petromyzontidae]	70	160	111	10	11.11		
3-Spined stickleback				Present			
Bullhead				100-999			
Minnow				100-999			
Stone loach				100-999			

All weights estimated and calculated in grams.

Back Bridge

The largely exposed survey site below Back Bridge covered a distance of 139m. The wide shallow nature of the watercourse offered little in the way of cover for brown trout for much of its length other than marginal vegetation overhang. To the lower end of the site there was increased cover from a low tree canopy spanning most of the river. One deep glide in the middle of the survey site provided the majority of the brown trout catch which mirrored that of the previous 1999 survey. Minor species such as minnow, bullhead and stone loach were found in abundance throughout.

Catch results

Back Bridge ST9227988191 27/09/2016	Minimum Length (lF)	Maximum Length (lF)	Mean Length (lF)	Numbers Caught	% of Catch by Number	Weight Caught	% of Catch by Weight
Brown / sea trout [Salmo trutta]	82	314	222	21	91.3	3619.03	100
Lamprey sp. > ammocoete [Petromyzontidae]	120	160	140	2	8.7		
3-spined stickleback [Gasterosteus aculeatus]				.1-9			
Bullhead [Cottus gobio]				100-999			
Minnow [Phoxinus phoxinus]				100-999			
Stone loach [Barbatula barbatula]				100-999			

All weights estimated and calculated in grams.

Sherston Avon

Easton Town Bridge

This is the uppermost of the three Sherston Avon sites and was heavily congested with macrophyte growth, this restricts flow and causes a high level of marginal silt deposition. Areas exposed to higher flow revealed the substrate to be mainly of cobble and gravel and occasional small boulders. The site measured 116.5m in length and 6.1m wide and was moderately shaded from the tree lined right bank, the left bank was open field with no shading and so encouraging macrophyte growth. A total of 24 brown trout were recorded in the 2016 survey and similar to historical catches however, the standing crop (grams /100m²) indicates a smaller size range.

Catch results

Easton Town Bridge ST8609085950 29/09/2016	Minimum Length (IF)	Maximum Length (IF)	Mean Length (IF)	Numbers Caught	% of Catch by Number	Weight Caught	% of Catch by Weight
Brown / sea trout [Salmo trutta]	164	320	235	24	85.71	4581.83	100
Lamprey sp. > ammocoete [Petromyzontidae]	135	140	139	4	14.29		
3-spined stickleback [Gasterosteus aculeatus]				.1-9			
Bullhead [Cottus gobio]				100-999			
Minnow [Phoxinus phoxinus]				100-999			
Stone loach [Barbatula barbatula]				100-999			

All weights estimated and calculated in grams.

Easton Grey

Habitat improvement work was carried out at Easton Grey in the late 1990's for the purpose of improving brown trout recruitment in an existing impounded stretch. This involved the installation of boulder weirs and gravel replenishment over a distance of approximately 400m. The reach has developed well over the intervening years and this was our first visit to the site since 2000 where juvenile brown trout were found following the first winter spawning season. The now 'mature' site proved difficult to electric fish by wading due to water depth and heavy macrophyte growth however, a high catch of brown trout was recorded. At this location the river is stocked annually with brown trout (greater than 300mm in length) by the local angling syndicate and this was reflected in the catch results.

Catch results

Easton Grey ST8858987067 27/09/2016	Minimum Length (IF)	Maximum Length (IF)	Mean Length (IF)	Numbers Caught	% of Catch by Number	Weight Caught	% of Catch by Weight
Brown / sea trout [Salmo trutta]	70	375	259	51	100	14089.95	100
3-spined stickleback [Gasterosteus aculeatus]				.1-9			
Bullhead [Cottus gobio]				.10-99			
Minnow [Phoxinus phoxinus]				100-999			
Stone loach [Barbatula barbatula]				.1-9			

All weights estimated and calculated in grams.

Hyam Farm

A narrow and swift site at Hyam Farm was less affected by the macrophyte growth experienced at the other Sherston Avon sites. Conducted over a distance of 78m the site consisted mainly of riffle and glide over gravel and cobble substrate. Cover was limited to marginal overhanging vegetation and low tree cover to the lower end of the site. Submerged beds of *Ranunculus* provided much of the cover within the watercourse. A good catch of 22 brown trout over a single run survey was encountered at a location formerly having a high coarse fish population and few trout.

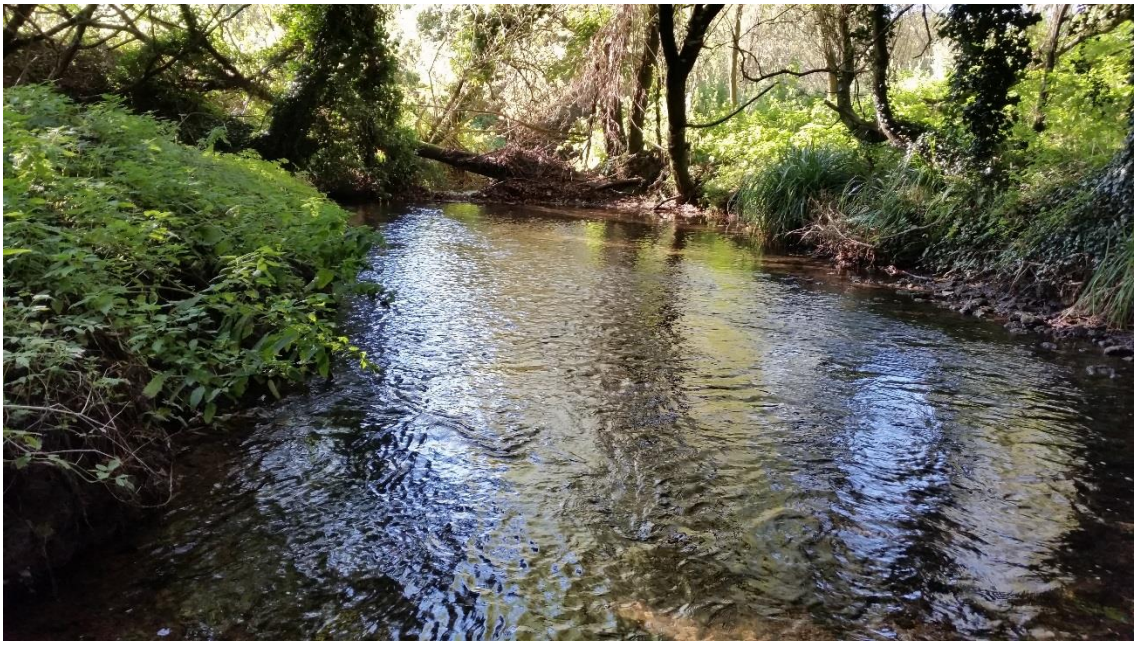
Catch results

D/s Hyam Farm ST9228587270 11/10/2016	Minimum Length (IF)	Maximum Length (IF)	Mean Length (IF)	Numbers Caught	% of Catch by Number	Weight Caught	% of Catch by Weight
Brown / sea trout [Salmo trutta]	66	333	166	22	9.17	2549.23	98.17
Dace [Leuciscus leuciscus]	157	157	157	1	0.42	47.47	1.83
3-spined stickleback [Gasterosteus aculeatus]	22	30	26	2	0.83		
Bullhead [Cottus gobio]	28	90	53	42	17.5		
Minnow [Phoxinus phoxinus]	38	72	55	166	69.17		
Stone loach [Barbatula barbatula]	55	109	90	7	2.92		

All weights estimated and calculated in grams.

River Marden

Calne Sewage Treatment Works (above)



A single site on the River Marden was surveyed in early October 2016 upstream of Calne sewage treatment works. The site, 140m in length, consisted of wide shallow riffles and long shallow glides throughout with a deep, wide pool at the head. A high tree canopy covered most of the survey site providing shading and restricting macrophyte growth. The substrate was largely cobble, gravel and sand over bedrock outcrops. The 2016 catch of 56 brown trout was the highest recorded of the 5 surveys carried out since 2004.

Catch results

Calne STW	Minimum Length (IF)	Maximum Length (IF)	Mean Length (IF)	Numbers Caught	% of Catch by Number	Weight Caught	% of Catch by Weight
Brown / sea trout [Salmo trutta]	76	303	191	56	90.32	6338.51	95.28
Dace [Leuciscus leuciscus]	99	121	107	3	4.84	44.44	0.67
Feral [brown] goldfish [Carassius auratus]	140	140	140	1	1.61	63.93	0.96
Perch [Perca fluviatilis]	181	196	189	2	3.23	205.62	3.09
3-spined stickleback [Gasterosteus aculeatus]							
Bullhead [Cottus gobio]				100 - 999			
Minnow [Phoxinus phoxinus]							
Stone loach [Barbatula barbatula]				.10 - 99			

All weights estimated and calculated in grams.

Population density estimates (number of fish per 100m^2) and size range (min – max, mm) recorded during the survey for key species.

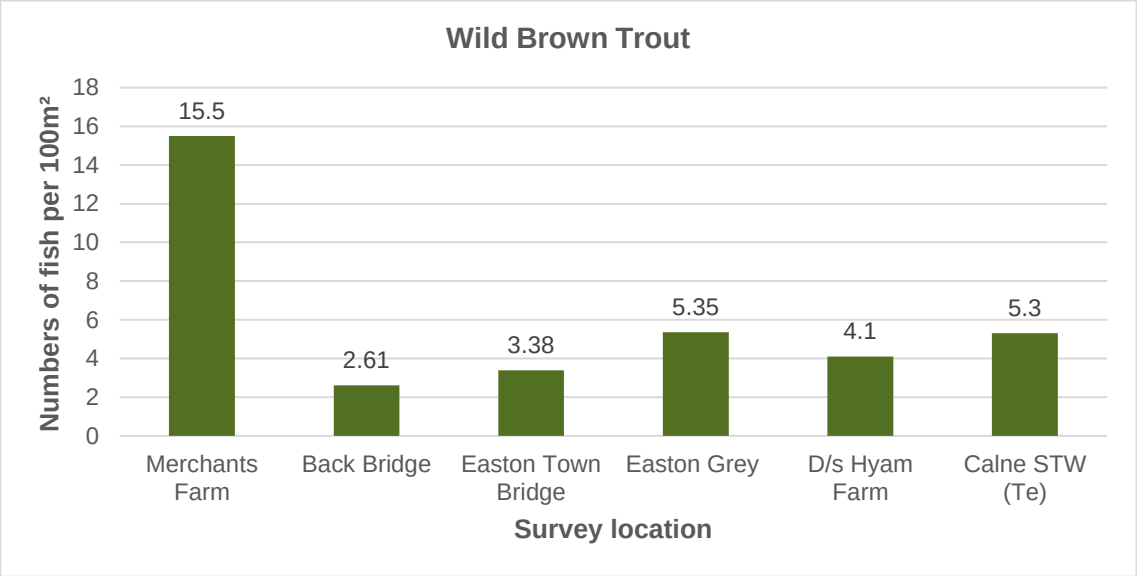
		Merchants Farm	Back Bridge	EastonTown Bridge	Easton Grey	Hyam Farm	Calne STW
Brown Trout	Density	**15.55**	**2.6**	**3.66**	**5.46**	**4.09**	**5.5**
	Size range	**57 - 367**	**82 - 314**	**164 - 320**	**70 - 375**	**66 - 333**	**76 – 303**
Dace	Density					**0.19**	**0.29**
	Size range					**157**	**99 - 121**
Lamprey	Density	**5.9**	**0.25**	**0.56**			
	Size range	**70 - 160**	**120 - 160**	**135 - 140**			
Perch	Density						**0.19**
	Size range						**181 - 196**

Minor species

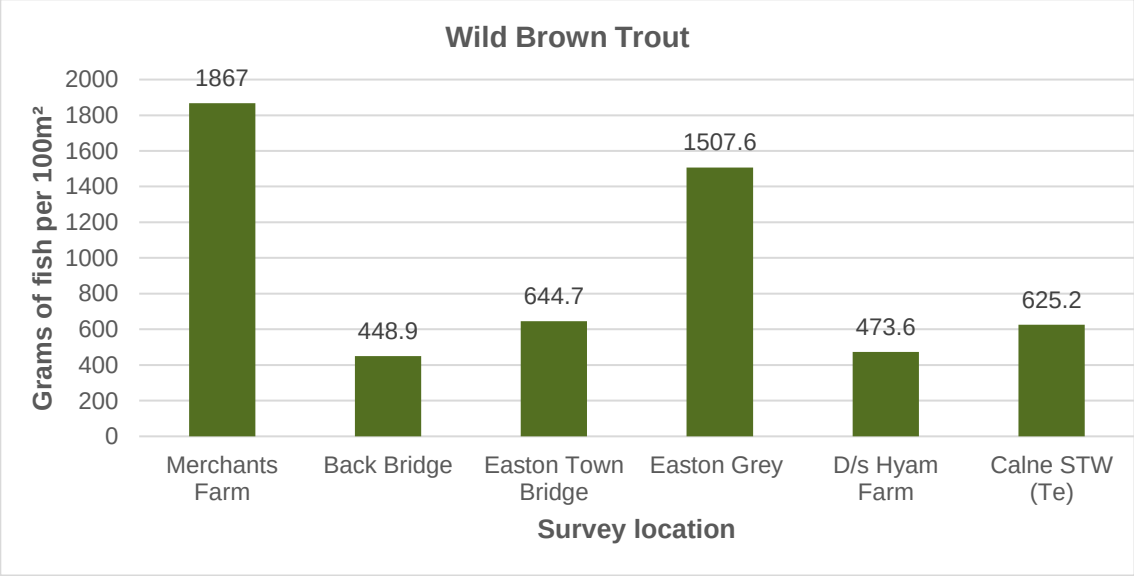
		Merchants Farm	Back Bridge	EastonTown Bridge	Easton Grey	Hyam Farm	Calne STW
3-Spined Stickleback		**Present**	**1 - 9**	**1 - 9**	**1 - 9**	**1 - 9**	
Bullhead		**100 - 999**	**100 - 999**	**100 - 999**	**10 - 99**	**10 - 99**	**100 - 999**
Minnow		**100 - 999**	**100 - 999**	**100 - 999**	**100 - 999**	**100 - 999**	
Stone Loach		**100 - 999**	**100 - 999**	**100 - 999**	**1 - 9**	**1 - 9**	**10 - 99**

Charts

Population density estimates (number of fish per 100m^2) across all survey sites.



Population biomass estimates (grams of fish per 100m^2) across all survey sites.



Health of fish population

Many of the sites mentioned in this report have not been surveyed for over 16 years therefore, comparisons between surveys can only be an indication of interim performance.

Merchants Farm (Front Field) produced excellent results improving on the previous survey in 1999. The upper most part of the river occasionally suffers from low flow conditions during dry periods with some upper reaches drying completely. The dense shade present at the site will help to reduce influences of warm and dry periods in the upper reaches and help the resilience of the trout stocks through this reach.

Numbers of brown trout caught were equal to the previous survey at **Back Bridge** however, a near doubling of the biomass shows a population generally consisting of larger fish by weight on this occasion. This is to be expected given the lack of good juvenile salmonid habitat at this site.

Easton Town Bridge although impacted by macrophyte growth still maintains a healthy brown trout population with little change in numbers over the three historical surveys.

Previous surveys at **Easton Grey** were for the detection of brown trout fry post habitat improvement and until 2016 no further surveys have been carried out. This survey returned a catch of 51 brown trout many of which were stock fish. Although juvenile brown trout were included in the catch this site may not be suitable for future 'wild' brown trout surveys due to the high numbers of stocked fish caught.

Hyam Farm was once noted for its high coarse fish populations. Anecdotal evidence suggests that, following work carried out on a local sluice structure, a decline in coarse fish was observed thereafter. Subsequently, a rise in the brown trout population has occurred with survey results showing an increase from 3 brown trout in 1999 to 24 in 2016.

Since 1998 there have been 8 surveys carried out at the **Calne STW** site and on virtually every occasion the population of brown trout has risen. Although surveys can vary in the number of electric fishing runs performed (between 1 and 3 runs) the overall trend continues to rise. This trend has also been reported by the local angling club who have seen increasing numbers of brown trout caught, but fewer coarse fish.

Planned actions

- Catchment walkovers are needed on both the Sherston and Tetbury branches of the River Avon in order to understand the pressures on wild brown trout stocks. It is known that there are several barriers to fish migration on the upper Bristol Avon catchment and these need assessing to understand the impact on wild fish stocks. The survey sites have revealed areas where the habitat is not optimal for brown trout, either through over-widening and straightening of the river channel, livestock poaching of the banks and lack of shading by bankside trees that is encouraging dense macrophyte growth. Walkovers will help to determine where the pressures are and identify potential project areas for future partnership involvement, either with local angling clubs, land owners or other interested organisations.
- Two of the sites in 2016 will need to be re-assessed and potentially re-located due to the on-going stocking activity by a local angling club (Easton Grey) and sub-optimal habitat for wild brown trout, in particular juvenile trout (Back Bridge).

Next survey

Autumn 2022.

If you would like to discuss the information presented in this report, please contact:

- Geoff Way, Analysis and Reporting
- 03708 506 506
- enquiries@environment-agency.gov.uk

If you would like to discuss future management of this fishery, please contact:

- Jody Amitage, Fisheries, Biodiversity and Geomorphology
- 03708 506 506
- enquiries@environment-agency.gov.uk

Before you go fishing don't forget:

- You must have a valid Environment Agency rod licence and permission from the fishery owner;
- You must comply with the fisheries byelaws;
- The coarse fish close season (15th March to 15th June inclusive) applies to all rivers, streams and drains in England and Wales but not most stillwaters. Stillwater fishery owners can still have their own close season and rules, so please check with them before setting out.

Report illegal fishing:

If you see any fishing, netting or trapping you think may be illegal, please do not tackle it yourself. Call us immediately on 0800 80 70 60 and tell us:

- Exactly where the alleged offence is taking place;
- What is happening;
- How many people are involved and their descriptions;
- The registration numbers of any vehicles involved.

If you prefer to remain report an environmental crime anonymously call Crimestoppers on 0800 555 111 or https://crimestoppers-uk.org/give-information/give-information-online/.