

EA- NORTH WEST BOX 7

**ENVIRONMENT AGENCY  
NORTH WEST REGION**

**Savick Brook Electrofishing Survey 2001**

**Rebecca Oldfield and David Charlesworth**

**March 2002**

**Environment Agency  
Lutra House  
Dodd Way  
Walton Summit  
Bamber Bridge  
Preston  
PR5 8BX**

1  
A0



ENVIRONMENT AGENCY

## Information Services Unit

Please return or renew this item by the due date

Due Date

Vertical line for due date entry

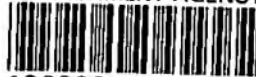
## Summary

A total of 8 sites were electrofished in Savick Brook on 29<sup>th</sup> & 30<sup>th</sup> May 2001. Savick Brook was surveyed to determine fish species and abundance as part of the Ribble Link Project.

The electrofishing procedure consisted of a single upstream sweep of the electrode at each site. The fish densities (expressed as numbers per 100m<sup>2</sup>) calculated from this method and presented in this report are semi-quantitative, or minimum estimates and therefore do not represent the complete population in survey sites.

The majority of the sites had excellent fish populations, with only one fishless site. Linnophilic (stillwater) (roach and gudgeon) coarse fish were present at 38% of the 8 sites surveyed. Rheophilic (flowing water) (chub and dace) coarse fish were present at 87.5% of the sites with a couple showing high densities. Excellent numbers of juvenile flounder were also present at 7 of the sites.

The present water quality is suitable for coarse fish species. This is reflected in the densities of coarse fish found in Savick Brook. The length frequency analysis showed that the populations of coarse fish were established and self-sustaining and reproducing naturally.



## CONTENTS

	<b>Page No</b>
<b>Summary</b>	<b>2</b>
<b>Contents</b>	<b>3</b>
<b>1 Introduction</b>	<b>4</b>
<b>2 Methodology</b>	<b>5</b>
<b>3 Results</b>	<b>7</b>
<b>3.1 Overview</b>	<b>7</b>
<b>3.2 Coarse Fish Densities</b>	<b>7</b>
<b>3.2.1 Rheohilic Fish Densities 2001</b>	<b>8</b>
<b>3.2.2 Limnophilic Fish Densities 2001</b>	<b>8</b>
<b>3.2.3 Flounder</b>	<b>8</b>
<b>4 Discussion</b>	<b>10</b>
<b>1.1 Species Composition</b>	<b>10</b>
<b>1.2 Water Quality</b>	<b>10</b>
<b>1.3 Savick Brook Description</b>	<b>11</b>
<b>5 Conclusions</b>	<b>12</b>
<b>6 Recommendations</b>	<b>13</b>
<b>7 Appendices</b>	<b>14</b>

## 1 INTRODUCTION

This report aims to find the distribution and abundance of fish in Savick Brook. Parts of Savick Brook (below Haslam Park NGR SD 517 311) are to be transformed into the new Ribble Link Canal connection. The Ribble Link will create a navigable connection between the Ribble estuary and the Lancaster Canal and it will also allow boats to enter the Leeds/Liverpool Canal. This increases the length of navigable watercourse in the area and could result in increased tourism in the region.

Savick brook is a small tributary of the lower River Ribble. It rises to the North East of Preston and drains North Preston. The brook has not been surveyed before and 2001 is the start of the Ribble link project. This is an investigational survey to ascertain the populations of fish present so that we can better formulate an impact assessment of the proposed works.

Savick Brook runs through Preston so is in an urban catchment, this is reflected in the poor water quality (River Ecosystem Classification 3 and 4 and General Quality Assessment (GQA) grades D and E)(section 4.2). United Utilities are committed to carrying out a series of improvements to the Preston Sewerage System over the next couple of years, which will result in fewer discharges from combined sewer overflows.

Most of the underlying geology is Triassic rock consisting of red Sherwood sandstone, which have a faulted boundary with the carboniferous rocks to the East of Preston. The upper part of Savick Brook lies in this carboniferous area in Millstone Grit. Glacial drift deposits, principally till (boulder clay) also cover much of the area.

## 2 METHOD

A total of eight survey sites were electricfished on Savick Brook. Sites were selected in shallow, wadeable areas to be representative of the available habitat.

The survey commenced on 29<sup>th</sup> May 2001 and was completed the following day. All sites were sampled using pulsed DC electricfishing, powered by a 2.5 KVA Honda generator. All sites were electricfished once in an upstream direction using 1 anode for sites less than 4m wide or 2 anodes for sites greater than 4 m wide. Sites ranged in length from 35m to 70m and the total area surveyed at each site ranged from 133m<sup>2</sup> to 324m<sup>2</sup>.

All major coarse fish species and eels were collected for measurement. The fork length of major coarse species was measured to the nearest 0.5cm below. In addition, the total wet weight of each major coarse species and eels was measured. Coarse fish species were grouped into predator species, rheophilic (flowing water) species and limnophilic (stillwater) species for the purposes of analysis and classification. The definitions of predator, rheophilic and limnophilic coarse fish species are detailed in Table 1. Minimum densities per 100m<sup>2</sup> were calculated for each species caught (the number of fish caught divided by the area fished and multiplied by 100). Minor coarse species such as bullheads, minnows and stone loach were not collected but their approximate numbers were estimated as tens, hundreds or thousands per 100m<sup>2</sup>.

The fish data and physical habitat data were used to classify each site according to the National Fisheries Classification Scheme (NFCS) (Table 1). The NFCS compares the species/age class abundance data for each site with a national database of fish abundance, allocating each site with one of five abundance categories. Each represents one fifth of the national data set for that species/age. For example, if the density of chub and dace for a particular site falls within the top fifth of rheophilic fish densities for national sites, then it will be classified as category A for rheophilic coarse species; a density in the bottom fifth will classify the site as category E. Where the species is absent, the site is classified as category F (absent).

The actual densities of each species and age class that correspond to the NFCS grades are defined in Table 2.

**Table 1      Composition of Coarse Fish Species Groups used in the National Fisheries Classification Scheme.**

<b>Limnophilic Species</b>	<b>Rheophilic Species</b>	<b>Predator Species</b>
Common Bream	Chub	Pike
Silver Bream	Dace	Perch
Roach	Barbel	Zander
Tench	Grayling	
Rudd		
Bleak		
Common Carp		
Crucian Carp		
Gudgeon		
Ruffe		

**Table 2      The densities (g per 100m<sup>2</sup>) of coarse fish and corresponding NFCS grades.**

<b>NFCS Grade (Level 1 classification)</b>	<b>Coarse Fish Densities (g/100m<sup>2</sup>)</b>	
	<b>Rheophilic</b>	<b>Limnophilic</b>
<b>A</b>	>1514	>1287
<b>B</b>	653-1514	463-1287
<b>C</b>	269-653	137-463
<b>D</b>	64-269	24-137
<b>E</b>	0-64	0-24
<b>F</b>	0	0



### 3 RESULTS

#### 3.1 Overview

Eleven species of fish were recorded in this survey, namely;

chub	( <i>Leuciscus cephalus</i> ),
dace	( <i>Leuciscus leuciscus</i> ),
roach	( <i>Rutilus rutilus</i> ),
eel	( <i>Anguilla anguilla</i> ),
stoneloach	( <i>Barbatula barbatula</i> ),
minnow	( <i>Phoxinus phoxinus</i> ),
stickleback	( <i>Gasterosteus aculeatus</i> ),
perch	( <i>Perca fluviatilis</i> ),
gudgeon	( <i>Gobio gobio</i> ),
barbel	( <i>Barbus barbus</i> ),
and flounder	( <i>Platichthys flesus</i> ).

Chub and dace were present at 87.5% of the 8 sites surveyed with Migery Lane (NGR SD 551 327) and Barry Avenue (NGR SD 511 312) showing high densities. Roach and gudgeon were present at 3 of the 8 sites.

#### 3.2 Coarse Fish Densities

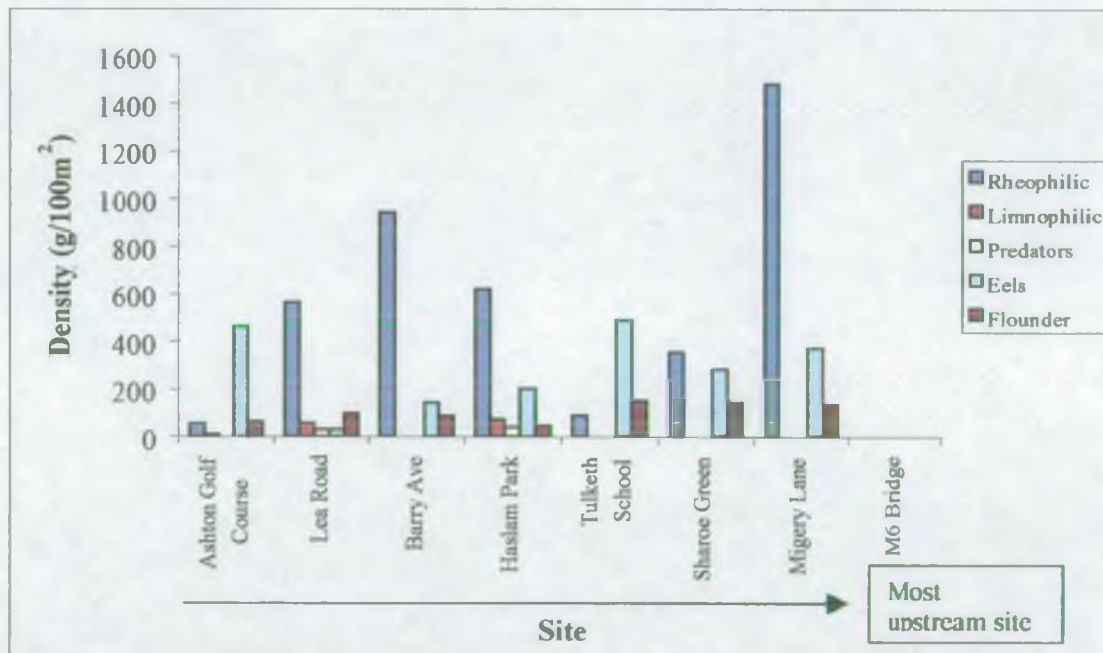


Figure 1 – Coarse Fish Distribution in Savick Brook 2001 (sites moving upstream to the right of the graph)

Figure 1 identifies the areas where the coarse fish population is diverse and sustainable. Rheophilic species and Flounder are particularly dense at the majority of sites in Savick Brook. Limnophilic species are fairly limited in their distribution throughout Savick Brook.



### 3.2.1 Rheophilic Species

There is a wide variation in the density (biomass) of rheophilic coarse fish in Savick Brook. The most productive sites are Migery Lane SD 551 327 and Barry Avenue SD 511 312. The rest of the sites are fairly productive with densities ranging from 90.22g/100m<sup>2</sup> to 621.39g/100m<sup>2</sup>. Only 1 site is fishless, this is the uppermost site on Savick Brook at M6 Bridge. Foot and Mouth restrictions prevented additional sites being surveyed further upstream. From Figure 2, it can be seen that chub are more abundant than Dace. Chub also have a wider length range showing that this species is self-sustaining and reproductive.

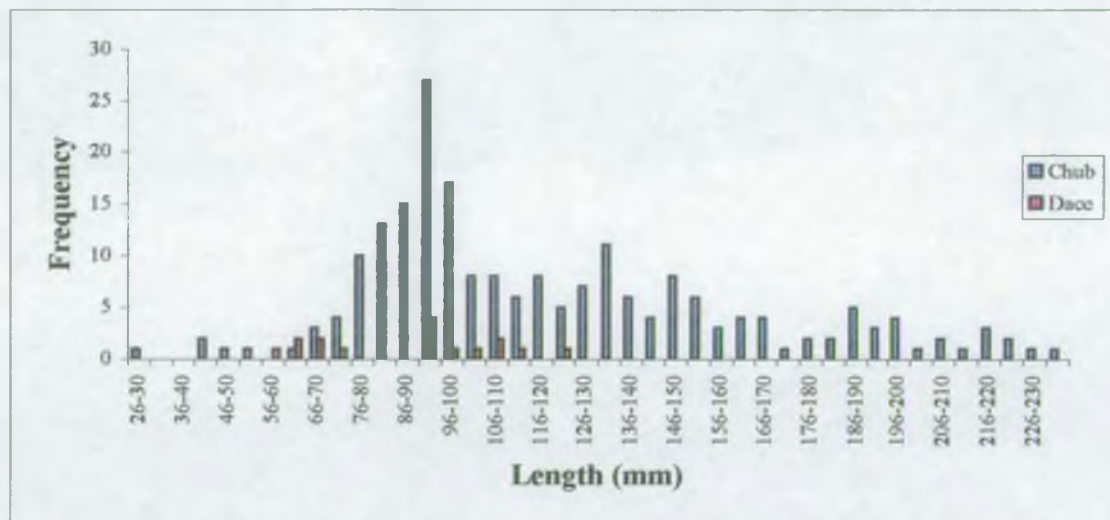


Figure 2 – Rheophilic Length Frequency Distribution throughout Savick Brook

### 3.2.2 Limnophilic Species

Limnophilic coarse fish are in low densities compared to rheophilic coarse fish and were only present at 37% of the sites surveyed. The most productive sites were Haslam Park (NGR SD 173 311) and Lea Road (NGR SD 499 309) where 72.01g/100m<sup>2</sup> and 58.02g/100m<sup>2</sup> were recorded respectively. The rest of the sites were fishless for limnophilic coarse fish.

### 3.2.3 Flounder

Considerable densities of Flounder were found at all sites. There were a variety of lengths caught with a significant amount of juveniles (Figure 3). The sand/silt substrate present in Savick Brook therefore provides adequate spawning and juvenile habitat for the survival of Flounder.

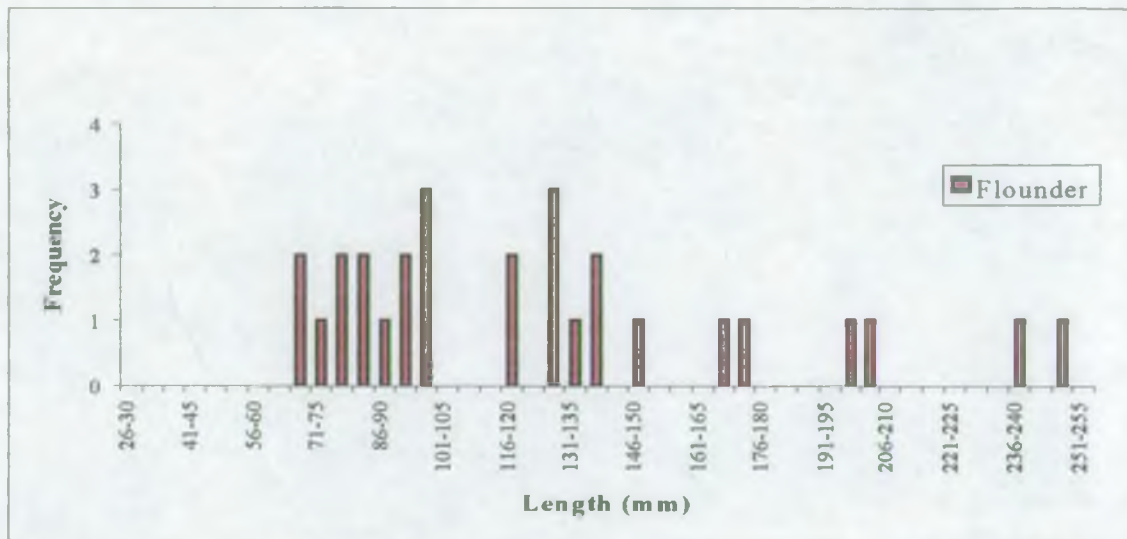


Figure 3 – Flounder length frequency distribution in Savick Brook

## 4 DISCUSSION

### 4.1 Species Composition

Foot and mouth Disease restricted surveying at some of the planned uppermost sites. These sites have not been included in this report. The survey however does provide a minimum estimate of the total coarse fish populations present within sites surveyed on Savick Brook.

### 4.2 Water Quality

There are two principal schemes for the reporting and management of river water quality; the General Quality Assessment (GQA) scheme and the Water Quality Objectives (WQO) scheme. The GQA scheme is used to make periodic assessments of the quality of river water in terms of general chemistry and biology, in order to monitor geographical and temporal trends. GQA chemistry and biology are defined by six grades ranging from A (Very Good) to F (Bad). In terms of GQA chemistry from 1998 to 2000, Savick Brook is described as poor (GQA classes D to E).

The WQO scheme establishes clear quality targets to provide an agreed planning framework for regulatory bodies. This scheme is based upon the recognised uses to which a stretch of river may be put. Standards defining the five-tiered River Ecosystem (RE) use classes (Table 1), which address the chemical quality requirements of different types of aquatic ecosystems, were introduced by "The Surface Waters (River Ecosystem) Classification Regulations 1994".

River Ecosystem objectives are set for all of the specified reaches of the river system, on short, medium and long term basis. Short to medium term objectives are set where investment or campaigns are likely to result in a rapid improvement in water quality, and long term objectives are set where short term investment is not planned but an improvement in water quality is sought. The long term River Ecosystem objectives for Savick Brook are set at RE3 and RE4 which are the levels that are capable of sustaining coarse fish

**Table 1 – General descriptions of the five River Ecosystems classes**

<b>River Ecosystem Class</b>	<b>Description</b>
RE1	Water of very good quality suitable for all fish species
RE2	Water of good quality suitable for all fish species
RE3	Water of fair quality suitable for high class coarse fish populations
RE4	Water of fair quality suitable for coarse fish populations
RE5	Water of poor quality which is likely to limit coarse fish populations
Waters that do not achieve RE5 are of bad quality in which fish are unlikely to survive	

### **4.3 Savick Brook Description**

Savick brook has healthy populations of fish throughout its reach with the exception M6 Bridge (NGR SD 556 332). The size distribution of all species present suggests that populations are both established and self-sustaining. It seems that the brook is particularly well suited to sustain chub throughout its length even despite a visual lack of habitat in some areas.

Flounder, which are a marine species, utilise Savick Brook extensively and is an ideal nursery area for this species.

## 5 CONCLUSION

Savick brook and its tributaries are surprisingly productive considering they drain such an urban area as North Preston. This may be due improvements in waste water treatment and storm overflow systems in the local area. There are still minor water quality problems, which have been highlighted recently by isolated fish kills, but these have been isolated and generally the water quality is not a limiting factor to coarse fish. Therefore populations should be improving all the time assuming no other limiting factors have an impact on water quality. The fish present represent a recreational resource in the area, with people regularly fishing areas such as Haslam Park and Migery Lane.

The proposed works attached to the Ribble Link project will considerably alter the characteristics of this brook from Haslem Park down to the confluence with the River Ribble. Construction of a navigable channel will threaten the populations of fish present by increasing silt production due to wet digs designed to re-profile the brook. The numerous canal locks may inhibit migration of flounder and other anadromous species such as salmonids in the future. British Waterways are aware of their responsibilities for the well being of fish stocks both present and future and should be persuaded to use best practice techniques.

The most productive area for rheophilic coarse fish within Savick Brook is Migery Lane (NGR SD 551 327) where a density of 1481.48g/100m<sup>2</sup> was found. The most productive area for limnophilic coarse fish is Haslam Park (NGR SD 517 311) where 72g/100m<sup>2</sup> was found.

Savick Brook gave surprising results with high densities of chub and lots of juvenile flounder being found, therefore close monitoring of the Ribble Link Project will be essential if these populations are to continue with high densities.

The Ribble Link project may not be all bad news for the fish species within Savick Brook. If sufficient numbers of fish do survive the upheaval, with appropriate fisheries management and diplomacy with British Waterways then the end result could be an improved Urban Fishery for the people of Preston.

## 6 RECOMMENDATIONS

Once the proposed works have been completed a follow up survey would be beneficial to ascertain the impacts, if any, on the populations contained within Savick Brook.

Savick Brook should be added to the Monitoring Programme to monitor any improvements/declines in future years. It is only here that we will know if the Ribble Link Project has been beneficial or detrimental to the existing fishery.

Habitat restoration may be necessary in certain areas in order to improve available habitat in the non-canalised parts of Savick Brook.

A continued improvement in water quality within Savick Brook will allow a more diverse fishery to be developed assuming no other limiting factors. With an improvement in water quality more fishless sites/low densities can be stocked with suitable species for example dace.





Sharoe Brook

Savick Brook

Savick Brook Survey 2001

Distribution of *Rheophilic* Linnæophilic Coarse fish  
(minimum density estimates)

National Fisheries Classification  
Absolute Grades (Level 1)

Rheophilic Coarse Fish.shp

- A
- B
- C
- D
- E
- F





Savick Brook Survey 2001  
Distribution of Limnophilic Coarse fish  
(minimum density estimates)  
National Fisheries Classification  
Absolute Grades (Level 1)

- Limnophilic Coarse Fish.shp
- A
  - B
  - C
  - D
  - E
  - F

**7 APPENDICES**

**SITE REPORT SHEETS**

# SITE REPORT

## Site Details

River System:- Ribble Site Code:- Sv08  
Watercourse:- Savick Brook Date Fished:- 29-May-01  
Location:- Ashton and Lea Golf Club NGR:- SD 494 307

## Habitat Features

Length (m):- 60 Mean width (m):- 5.4  
Area (m<sup>2</sup>):- 324 Mean depth (m):- 0.2  
Gradient (m/km) 4 Max. depth (m):- 0.75  
Water level:- Normal  
Site description:- 10 % Pool 60 % Glide 30 % Riffle  
Adjacent land use:- Golf Course  
Method:- Upstream electric-fishing, 2 anodes, pulsed DC, wading, no stopnets

## Fishery Classification (level 1)

	Rheophilic	Limnophilic
2001 Classification	E	E

## Comments

Species Caught: Chub, Dace, Roach, Eel, Minnow, Stickleback, Stoneloach, Flounder  
Stocking: None

Species	Density (g per 100m <sup>2</sup> )
	2001
Rheophilic	54
Limnophilic	7.71
Total	61.71

# SITE REPORT

## Site Details

River System:- Ribble Site Code:- Sv07  
Watercourse:- Savick Brook Date Fished:- 29-May-01  
Location:- Lea Road NGR:- SD 499 309

## Habitat Features

Length (m):- 47 Mean width (m):- 5.5  
Area (m<sup>2</sup>):- 258.5 Mean depth (m):- 0.75  
Gradient (m/km) 4 Max. depth (m):- 1.3  
Water level:- Normal  
Site description:- 80 % Pool 10 % Glide 10 % Riffle  
Adjacent land use:- Industrial, rough land  
Method:- Upstream electric-fishing, 2 anodes, pulsed DC, wading, upstream stopnet

## Fishery Classification (level 1)

	Rheophilic	Limnophilic
2001 Classification	C	D

## Comments

Species Caught: Chub, Dace, Roach, Eel, Stickleback, Perch, Flounder  
Stocking: None

Species	Density (g per 100m <sup>2</sup> )
	2001
Rheophilic	564.79
Limnophilic	58.02
Total	622.81



# SITE REPORT

## Site Details

River System:- Ribble Site Code:- Sv06  
Watercourse:- Savick Brook Date Fished:- 29-May-01  
Location:- Barry Ave off Cottam Ave NGR:- SD 511 312

## Habitat Features

Length (m):- 35 Mean width (m):- 5  
Area (m<sup>2</sup>):- 175 Mean depth (m):- 0.6  
Gradient (m/km) 4.5 Max. depth (m):- 1  
Water level:- Normal  
Site description:- 80 % Pool 10 % Glide 10 % Riffle  
Adjacent land use:- Rough Land  
Method:- Upstream electric-fishing, 1 anode, pulsed DC, wading, no stopnets

## Fishery Classification (level 1)

	Rheophilic	Limnophilic
2001 Classification	B	F

## Comments

Species Caught: Chub, Dace, Eel, Flounder, Stoneloach, Stickleback  
Stocking: None

Species	Density (g per 100m <sup>2</sup> )
	2001
Rheophilic	942.85
Limnophilic	0
Total	942.85

# SITE REPORT

## Site Details

River System:- Ribble Site Code:- Sv05  
Watercourse:- Savick Brook Date Fished:- 29-May-01  
Location:- Haslam Park NGR:- SD 517 311

## Habitat Features

Length (m):- 54 Mean width (m):- 4.5  
Area (m<sup>2</sup>):- 243 Mean depth (m):- 0.5  
Gradient (m/km) 4.5 Max. depth (m):- 1.3  
Water level:- Normal  
Site description:- 45 % Pool 50 % Glide 5 % Riffle  
Adjacent land use:- Parkland  
Method:- Upstream electric-fishing, 2 anodes, pulsed DC, wading, upstream stopnet

## Fishery Classification (level 1)

	Rheophilic	Limnophilic
2001 Classification	C	D

## Comments

Species Caught: Chub, Dace, Roach, Eel, Stoneloach, Stickleback, Gudgeon, Flounder, Barbel, Perch  
Stocking: None

Species	Density (g per 100m <sup>2</sup> )
	2001
Rheophilic	621.39
Limnophilic	72.01
Total	693.40

# SITE REPORT

## Site Details

River System:- Ribble Site Code:- Sv04  
Watercourse:- Sharoe Brook Date Fished:- 29-May-01  
Location:- Tulketh High School NGR:- SD 518 316

## Habitat Features

Length (m):- 70 Mean width (m):- 1.9  
Area (m<sup>2</sup>):- 133 Mean depth (m):- 0.55  
Gradient (m/km) 4 Max. depth (m):- 0.55  
Water level:- Normal  
Site description:- 100 % Pool 0 % Glide 0 % Riffle  
Adjacent land use:- Playing Fields, overgrown  
Method:- Upstream electric-fishing, 1 anode, pulsed DC, wading, upstream stopnet

## Fishery Classification (level 1)

	Rheophilic	Limnophilic
2001 Classification	D	F

## Comments

Species Caught: Chub, Eel, Stoneloach, Stickleback, Flounder  
Stocking: None

Species	Density (g per 100m <sup>4</sup> )
	2001
Rheophilic	90.22
Limnophilic	0
Total	90.22

# SITE REPORT

## Site Details

River System:- Ribble Site Code:- Sv03  
Watercourse:- Savick Brook Date Fished:- 29-May-01  
Location:- Sharoe Green nr college NGR:- SD 542 321

## Habitat Features

Length (m):- 45.5 Mean width (m):- 3.1  
Area (m<sup>2</sup>):- 141.05 Mean depth (m):- 0.4  
Gradient (m/km) 4 Max. depth (m):- 0.6  
Water level:- Normal  
Site description:- 65 % Pool 20 % Glide 15 % Riffle  
Adjacent land use:- Rough pasture, mown field  
Method:- Upstream electric-fishing, 1 anode, pulsed DC, wading, upstream stopnet

## Fishery Classification (level 1)

	Rheophilic	Limnophilic
2001 Classification	C	F

## Comments

Species Caught: Chub, Eel, Stoneloach, Stickleback, Flounder  
Stocking: None

Species	Density (g per 100m <sup>2</sup> )
	2001
Rheophilic	354.48
Limnophilic	0
Total	354.48



## SITE REPORT

### Site Details

River System:-	Ribble	Site Code:-	Sv01
Watercourse:-	Savick Brook	Date Fished:-	30-May-01
Location:-	M6 Bridge	NGR:-	SD 556 332

### Habitat Features

Length (m):-	48	Mean width (m):-	3.68
Area (m <sup>2</sup> ):-	176.64	Mean depth (m):-	0.1
Gradient (m/km)	8.3	Max. depth (m):-	0.7
Water level:-	Normal		
Site description:-	20 % Pool	0 % Glide	80 % Riffle
Adjacent land use:-	Woodland, Scrub		
Method:-	Upstream electric-fishing, 1 anode, pulsed DC, wading, no stopnets		

### Fishery Classification (level 1)

	Rheophilic	Limnophilic
2001 Classification	F	F

### Comments

Species Caught: Stickleback, Stoneloach  
 Stocking: None

Species	Density (g per 100m <sup>2</sup> )
	2001
Rheophilic	0
Limnophilic	0
Total	0