

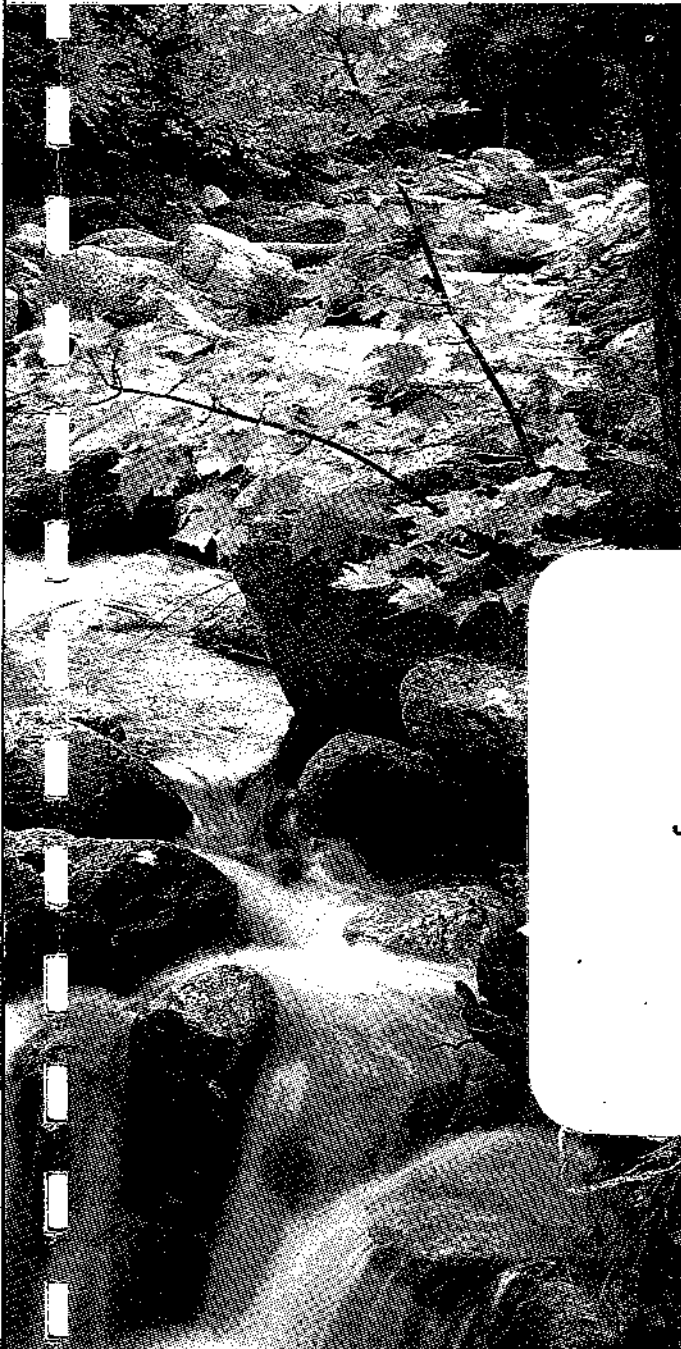
DS. 326  
(48)

D



# NRA

*National Rivers Authority  
North West Region*



Report On The 1994  
Juvenile Salmon Stocking  
Study In Foxhouses And  
Grizedale Becks,  
River Wyre.

**GUARDIANS OF THE WATER  
ENVIRONMENT**

**Report On The 1994 Juvenile Salmon  
Stocking Study  
Of Foxhouses And Grizedale Becks,  
River Wyre.**

**Mark V Walsingham.  
and  
Darryl Clifton-Dey.**

**Lutra House,  
Dodd Way,  
Walton Summit,  
Bamber Bridge,  
Preston. PR5 8BX.**



**January, 1995.**

## Contents.

1. Summary and recommendations.	1
2. Introduction.	2
2.1. The Wyre catchment.	2
2.2. The Fisheries of the River Wyre.	2
2.3. Foxhouses and Grizedale Becks.	2
2.4. Water quality.	4
2.5. Water quantity.	4
3. Methods.	9
4. Results.	11
4.1. Pre-stocking survey.	11
4.1.1. Species diversity.	11
4.1.2. Salmonid densities.	11
4.2. Post-stocking survey.	11
4.2.1. Species diversity.	11
4.2.2. Salmonid densities.	11
5. Discussion.	19
5.1. Natural juvenile salmon populations.	19
5.1.1. Foxhouses Beck.	19
5.1.2. Grizedale Beck.	19
5.2. Survival of stocked parr.	19
5.2.1. Foxhouses Beck.	19
5.2.2. Grizedale Beck.	20
References.	21

## **1. Summary and recommendations.**

1. Natural production of juvenile migratory salmonids in both Foxhouses and Grizedale Becks takes place only at very low densities and is both sporadic and patchy in its distribution.

2. In Grizedale Beck, the main factors limiting natural salmonid production appear likely to be one or more of the following:

- i. The availability of suitable spawning substrate.
- ii. Access to the upper reaches of the beck by returning adults.
- iii. A lack of returning spawners.

3. In Foxhouses Beck the factors limiting natural salmonid production appear to be related to water quality in the beck and the compaction of the available spawning gravel. Siltation appears to be a major problem in the lower reaches of the beck. Sporadic farm pollution events may also be having an adverse impact on juvenile salmonid survival.

### **Recommendation 1.**

A full habitat audit of both becks should be carried out. This should identify:

- i. Barriers to fish migration.
- ii. The spawning substrate quality present in different areas of the catchment.
- iii. Possible sources of adverse impact on water quality.

4. The survival of stocked 0+ salmon parr in Grizedale Beck was good. This indicated that water quality was unlikely to be limiting to the natural production of juvenile salmonids in this beck.

### **Recommendation 2.**

A further survey of the stocked sites should be carried out in the spring of 1995, to monitor the over winter survival of the stocked parr.

If the results of this survey are good, a detailed stocking strategy should be produced for Grizedale Beck, as stocking appears likely to result in higher densities of juvenile migratory salmonid production in this beck.

5. The survival of stocked 0+ salmon parr in Foxhouses Beck was poor. This indicated that water quality was likely to be limiting to the natural production of juvenile salmonids in this beck.

### **Recommendation 3.**

No further stocking of Foxhouses Beck should be carried out until the factors limiting parr survival have been identified and removed. (See recommendation 1.).

## **2. Introduction.**

The aim of this study was to assess the suitability of Foxhouses and Grizedale Becks as nursery habitat for juvenile salmon.

A comprehensive fish stock assessment survey of the Wyre catchment was carried out by the NRA in 1992. This survey found that juvenile salmon were absent from two sites studied in Foxhouses Beck. In one site in Grizedale Beck, 0+ salmon were found at very low densities. Juvenile trout were found in all three sites studied in 1992. (Walsingham, M.V., 1993). (See appendix 2.)

On the basis of the results of the 1992 survey, these two becks were stocked in 1994 with 0+ salmon reared from Lune broodstock at the NRA's Witcherwell Hatchery. These salmon were stocked at a known density, following a pre-stocking survey.

This report examines and compares the results of the pre-stocking survey consisting of fourteen sites in the two becks, carried out between 12/04/94 and 27/04/94 and a post-stocking survey of six sites, carried out between 12/10/94 and 19/10/94. (Figure 1).

Flow, habitat and in-river obstructions have been shown to affect juvenile salmonid densities (Elliot, 1984; Gardiner, 1989). A habitat description is provided for each site surveyed during the course of this study.

### **2.1. The Wyre catchment.**

The Wyre catchment drains the western side of the Bowland Fells in Lancashire. The river is approximately 38km in length from the source of its longest tributary (The Tarnbrook Wyre), downstream to the tidal limit at Great Ecclestone. The Wyre estuary is approximately 15km in length from the tidal limit downstream to where the river flows into Morcambe Bay at Fleetwood.

### **2.2. The Fisheries of the River Wyre.**

The Wyre supports recreational fisheries for both coarse and game fish. Within the Wyre estuary there are commercial net fisheries for marine species such as mullet and bass. A commercial elver fishery also exists downstream of St Michaels.

### **2.3. Foxhouses and Grizedale Becks.**

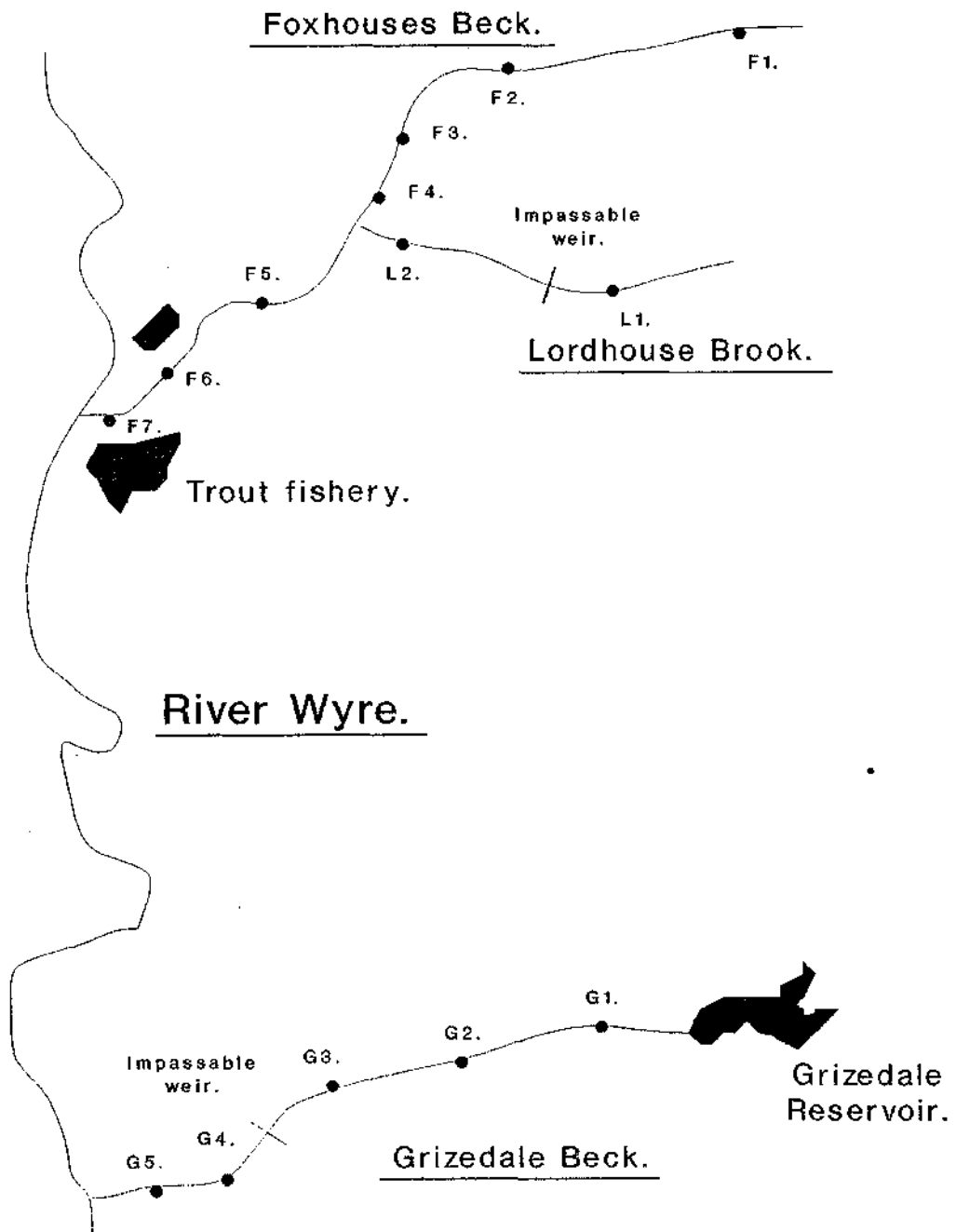
Foxhouses and Grizedale Becks both originate on the Bowland fells to the east of Scorton and flow into the main River Wyre at National Grid References SD. 508512 and SD. 498465 respectively.

The major part of the study area is agricultural. The moorland surrounding the upper reaches of both becks is used for rough shooting of grouse and pheasant.

Grizedale Beck is bordered for much of its length by mature deciduous woodland, although the lower three kilometers of beck pass through improved pasture.

Foxhouses beck lies within an area of quite intensive cattle farming and passes through improved pasture for the majority of its length. A gravel quarry existed at the confluence of Foxhouses Beck and the River Wyre. At the time of this survey the quarry was no longer operational and it has now been dismantled. Extensive settlement lagoons from the quarry still exist next to Foxhouses Beck.

# Foxhouses and Grizedale Becks: Site locations.



### **2.5. Water quality.**

The water quality in the study area is of a generally high standard. Farm pollution through sporadic inputs has been recorded in Foxhouses Beck in the past and may have adversely affected the survival of fish in this watercourse.

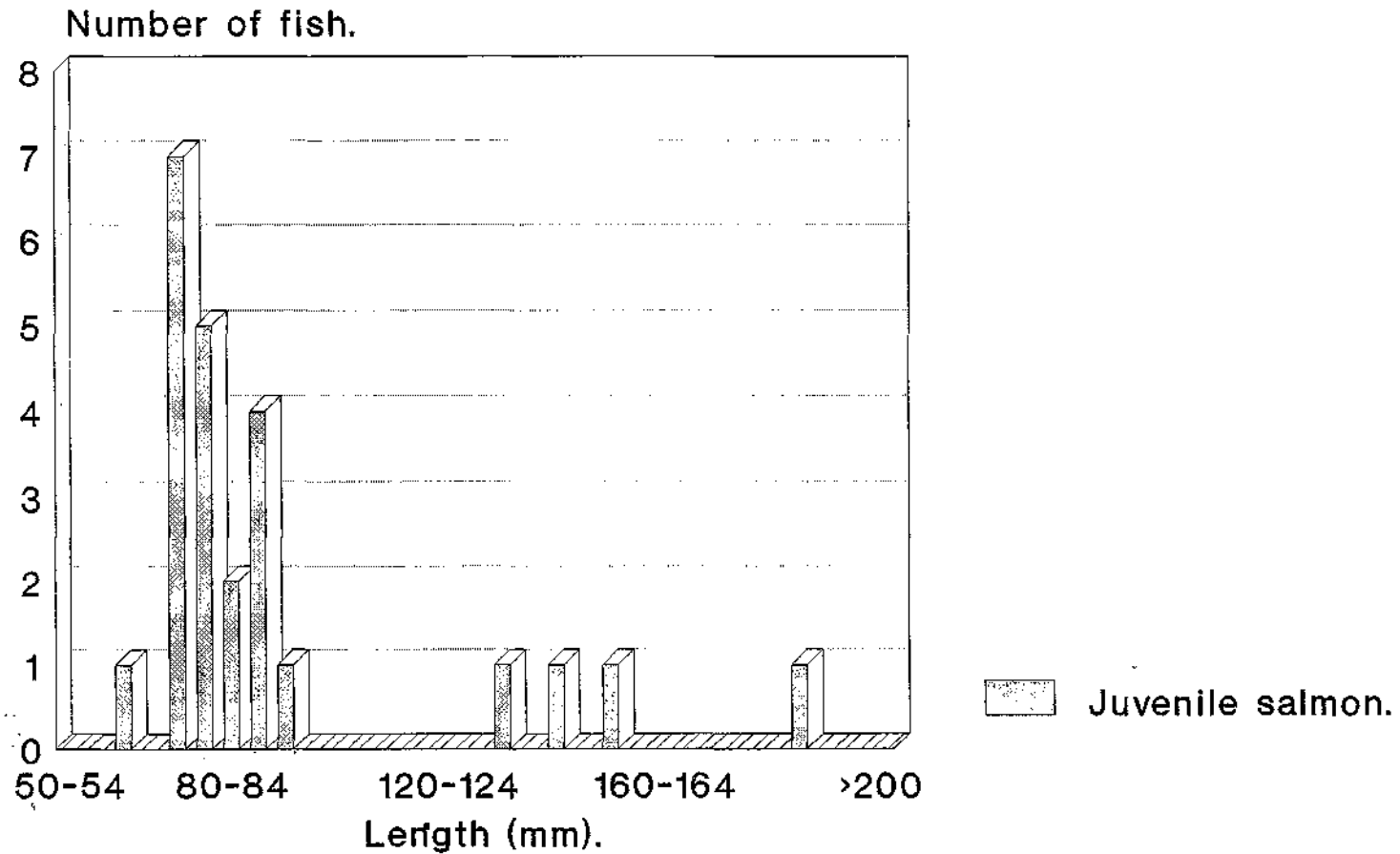
### **2.6. Water quantity.**

Water quantity and flow regimes in the Wyre catchment are adversely effected by abstraction from the river, from groundwater via boreholes and by water transfer schemes.

All of the water from the upper reaches of Grizedale Beck is transferred to Grizedale Reservoir. This results in reduced flows in this watercourse during the summer months.

# Wyre juvenile salmon.

Length frequency distribution.

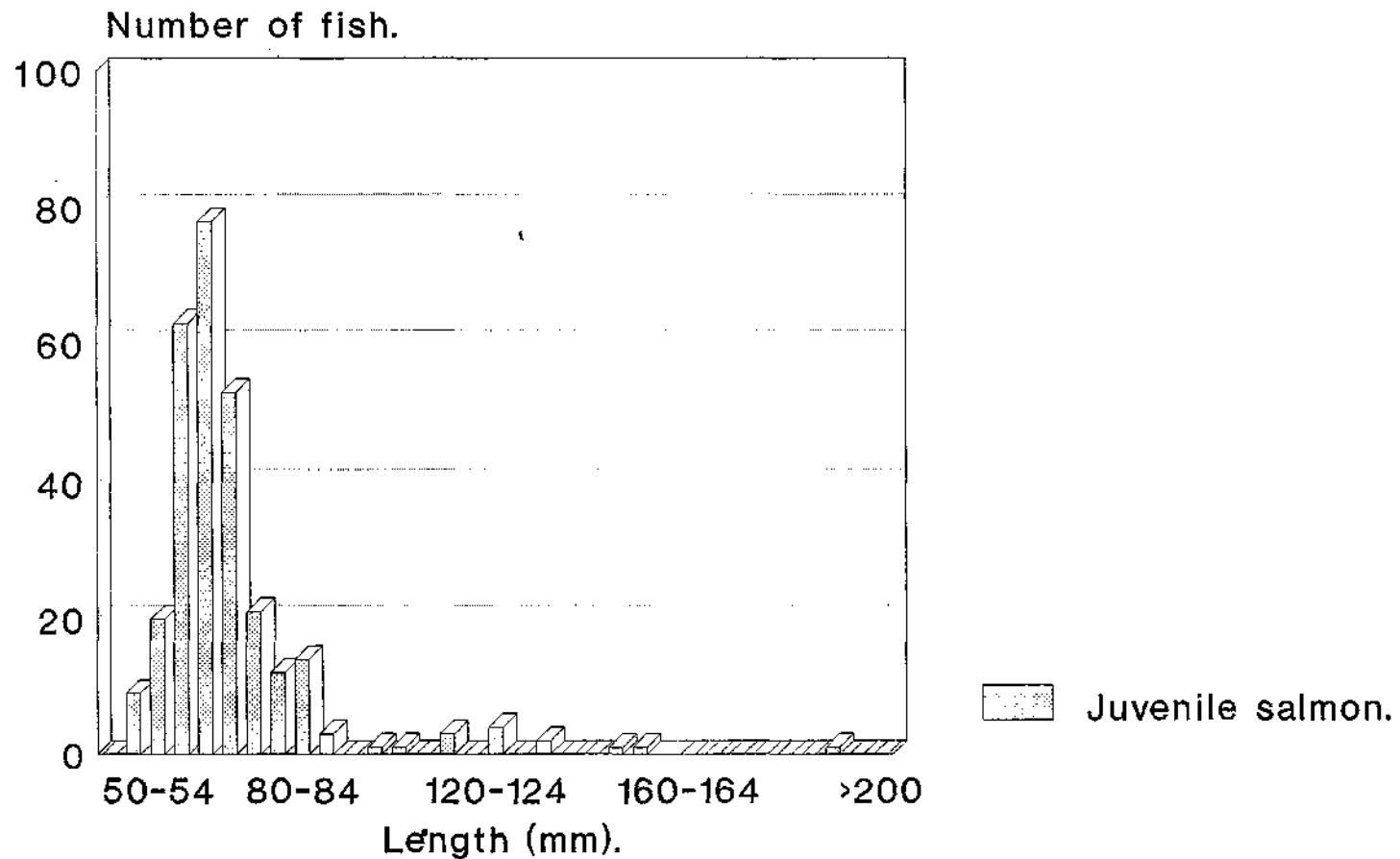


Foxhouses and Grizedale Becks, April '94



# Wyre juvenile salmon.

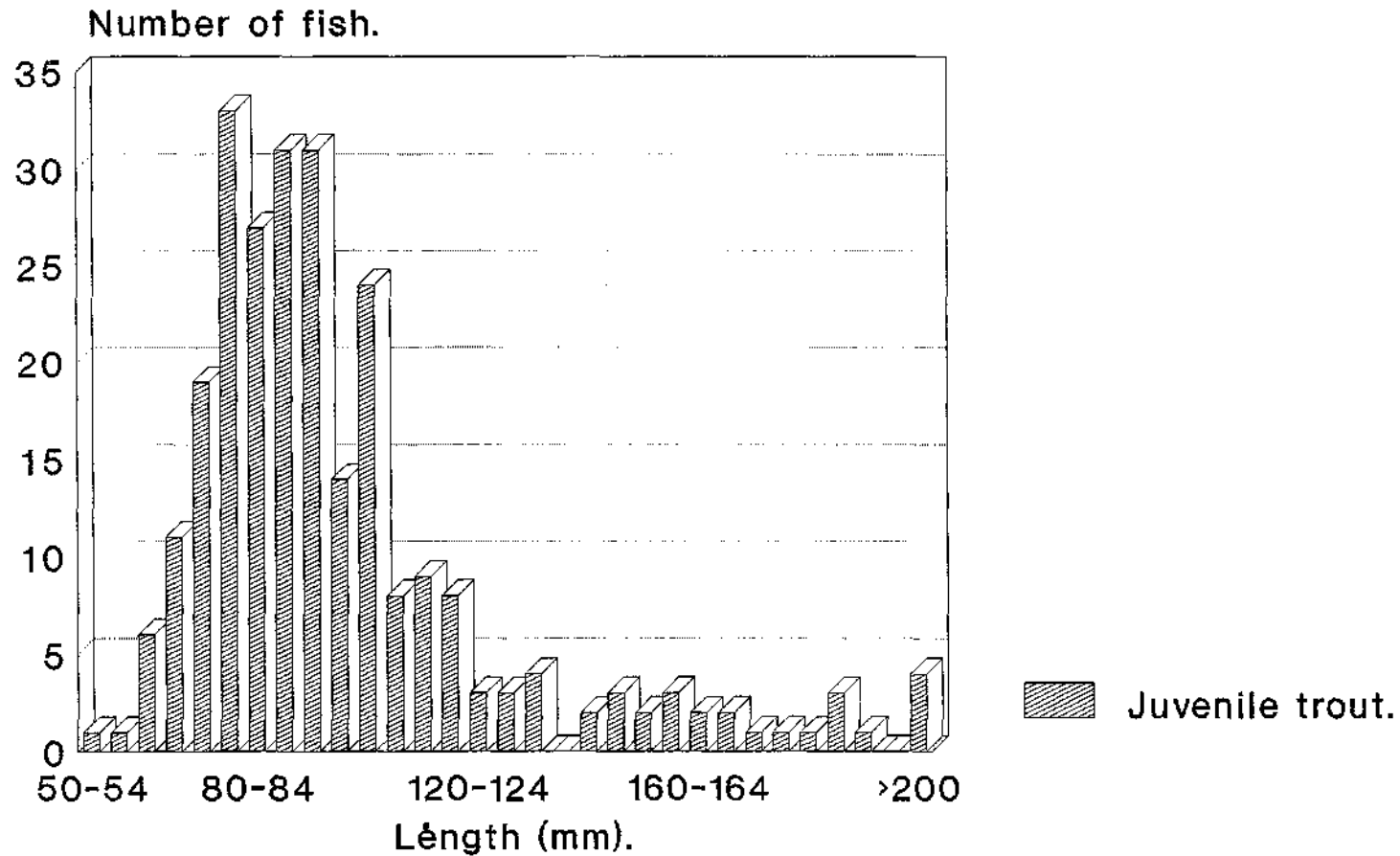
## Length frequency distribution.



Foxhouses & Grizedale Becks, October '94

# Wyre juvenile trout.

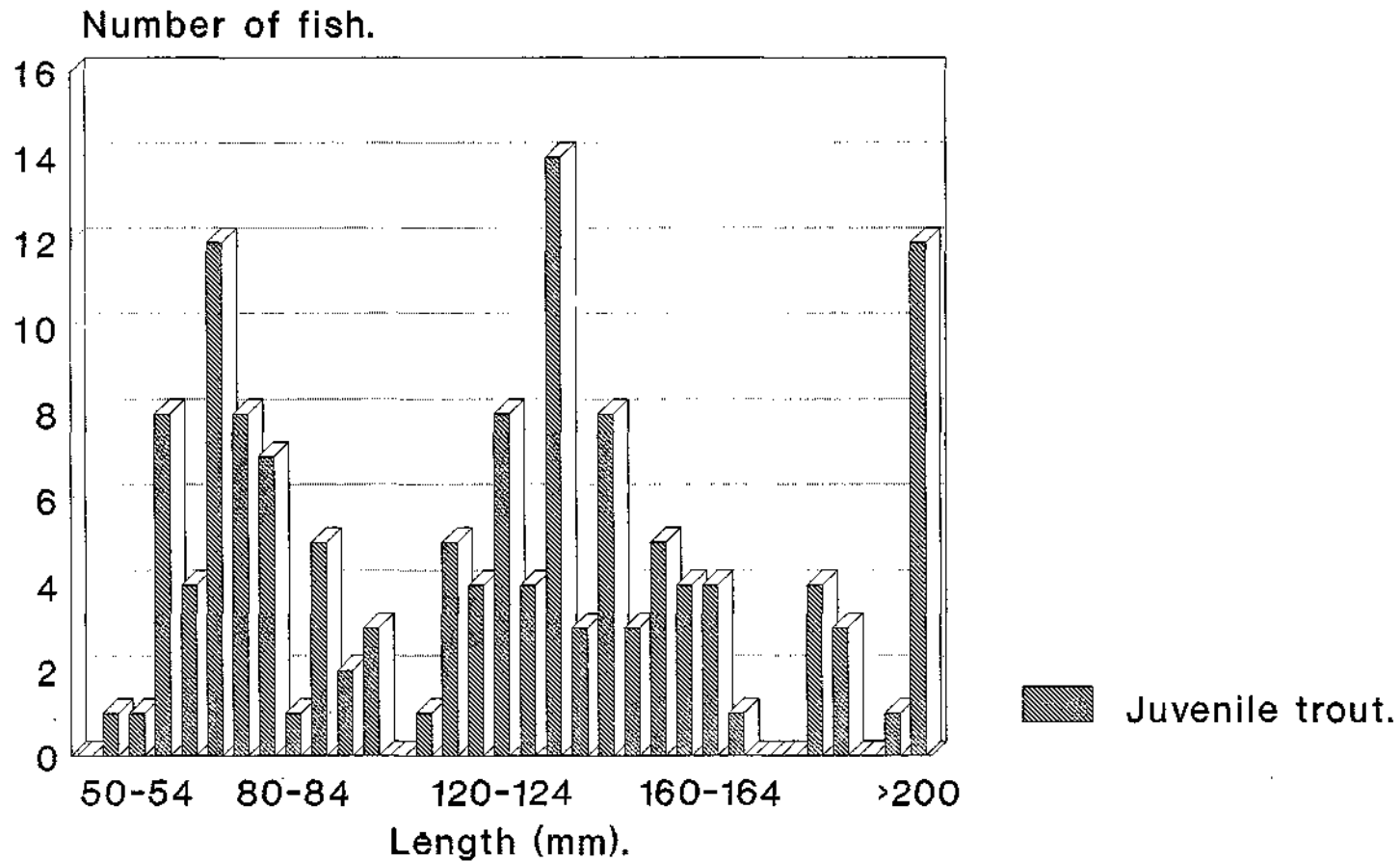
## Length frequency distribution.



Foxhouses and Grizedale Becks, April '94

# Wyre juvenile trout.

## Length frequency distribution.



Foxhouses & Grizedale Becks, October '94

### 3. Methods.

Following the pre-stocking survey, carried out between 12/04/94 and 27/04/94, both Foxhouses Beck from Taylors Farm (SD.527517) and Grizedale Beck from Grizedale Reservoir (SD. 521483), downstream to their confluences with the River Wyre, were stocked with 0+ salmon parr from the NRA's Witcherwell Hatchery.

The parr were stocked at a density of approximately 5 fish per metre squared. The parr were of Lune broodstock origin and were stocked out at an average weight of 0.7 grammes on 4th August 1995. A total of 6,179 0+ parr were stocked into the two becks.

Sampling in the pre-stocking surveys was by electric fishing. Fourteen sites were studied; 9 were studied in the Foxhouses Beck catchment, between its source and confluence with the Wyre, and five in the Grizedale Beck catchment, between Grizedale Reservoir and the Wyre confluence. In the post-stocking survey, the lower three sites in each of the becks were re-surveyed (F5b-F7b and G3b-G5b).

All sites were surveyed using pulsed D.C. and either one or two hand-held anodes.

At all sites, the number of fish of each species and the fork length (to the nearest 5mm) of individual fish was recorded. Examination of the length frequency distribution for juvenile salmon and trout made it possible to separate these species into 0+ and older than 0+ age classes (Figures 2-5). For the purposes of this report, all salmon parr of less than 85mm and all brown trout juveniles of less than 95mm caught in the October surveys, were regarded as being of the 0+ age group.

The three lower sites in Foxhouses Beck (F5a-F7a) in the pre-stocking survey and all six sites in the post-stocking survey were sampled by the successive removal of fish using three fishings between an upstream and downstream stop net. Quantitative estimates of the fish populations present at these sites were calculated using the method of Carle and Strub (1978). Estimates of population density were calculated for 0+ and older than 0+ salmonids, brown trout exceeding the takeable size limit (greater than 200mm) and other species. These were expressed as numbers of fish per 100m<sup>2</sup>.

If the overall probability of capture was greater or equal to 0.3 and was constant for each fishing then the population estimate was considered valid. When this was not the case then a minimum estimate of the population was calculated (number of fish/total area) x 100.

The remaining sites in the pre-stocking survey were sampled semi-quantitatively, using a single fishing of fifty metres of watercourse without the use of stop nets to provide a semi-quantitative estimate of the population structure at the site. Minimum estimates of the densities of the various population components at all of the semi-quantitative survey sites were calculated as outlined above.

The salmonid populations were classified according to the density of fish recorded. The classification system used allocates each site a class ranging from A to E in order of decreasing salmonid density. This classification system was developed by the NRA for use in the rivers of the North West Region (Table 1.)

**Table 1. Abundance categories (N/100m<sup>2</sup>) for juvenile salmon and trout for rivers of the North West Region of the NRA.**

**Quantitative survey**

**Salmon and trout**

	Fry (0+)	Parr (older than 0+)
Class A	More than 100.00	More than 20.00
Class B	50.01 - 100.00	10.01 - 20.00
Class C	25.01 - 50.00	5.01 - 10.00
Class D	0.01 - 25.00	0.01 - 5.00
Class E	0.00	0.00

**Semi-quantitative survey**

**Salmon**

	Fry (0+)	Parr (older than 0+)
Class A	More than 46.30	more than 8.48
Class B	23.16 - 46.30	4.24 - 8.47
Class C	11.58 - 23.15	2.12 - 4.23
Class D	0.005 - 11.57	0.004 - 2.11
Class E	0.00	0.00

**Trout**

	Fry (0+)	Parr (older than 0+)
Class A	More than 51.50	more than 10.78
Class B	25.76 - 51.40	5.39 - 10.77
Class C	12.88 - 25.75	2.70 - 5.38
Class D	0.005 - 12.87	0.005 - 2.69
Class E	0.00	0.00

#### 4. Results.

##### 4.1. Pre-stocking survey.

###### 4.1.1. Species diversity.

Six species of fish were found within the study area. These are listed below.

###### Species list.

Salmon	( <i>Salmo salar</i> )	- Older than 0+ parr.
Brown trout	( <i>Salmo trutta</i> )	- Older than 0+ parr.
Bullhead	( <i>Cottus gobio</i> )	
Stoneloach	( <i>Barbatula barbatula</i> )	
Minnow	( <i>Phoxinus phoxinus</i> )	
Eel	( <i>Anguilla anguilla</i> )	

###### 4.1.2. Salmonid densities.

The number of sites in each density category for salmon and trout is shown in Table 2. The distribution of sites of a particular category, for 0+ salmon, older than 0+ salmon, 0+ trout and older than 0+ trout are shown in Figures 6-7.

##### 4.2. Post-stocking survey.

###### 4.2.1. Species diversity.

The same species were found in the study area during the post-stocking survey as had been found before stocking took place.

###### 4.2.2. Salmonid densities.

The number of sites in each density category for salmon and trout is shown in Table 2. The distribution of sites of a particular category, for 0+ salmon, older than 0+ salmon, 0+ trout and older than 0+ trout are shown in Figures 8-11.

**Table 2. Number of sites in each density category for salmon and trout.**

**1. Foxhouses Beck.**

**Pre-stocking survey (9 sites).**

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class A	-	0	-	4
Class B	-	0	-	4
Class C	-	0	-	1
Class D	-	4	-	0
Class E	-	5	-	0

(No 0+ salmon or trout would be present at the time of year when the pre-stocking surveys were carried out).

**Post-stocking survey (3 sites).**

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class A	0	0	0	0
Class B	0	0	0	2
Class C	0	0	0	0
Class D	3	3	3	1
Class E	0	0	0	0

**2. Grizedale Beck.**

**Pre-stocking survey (5 sites).**

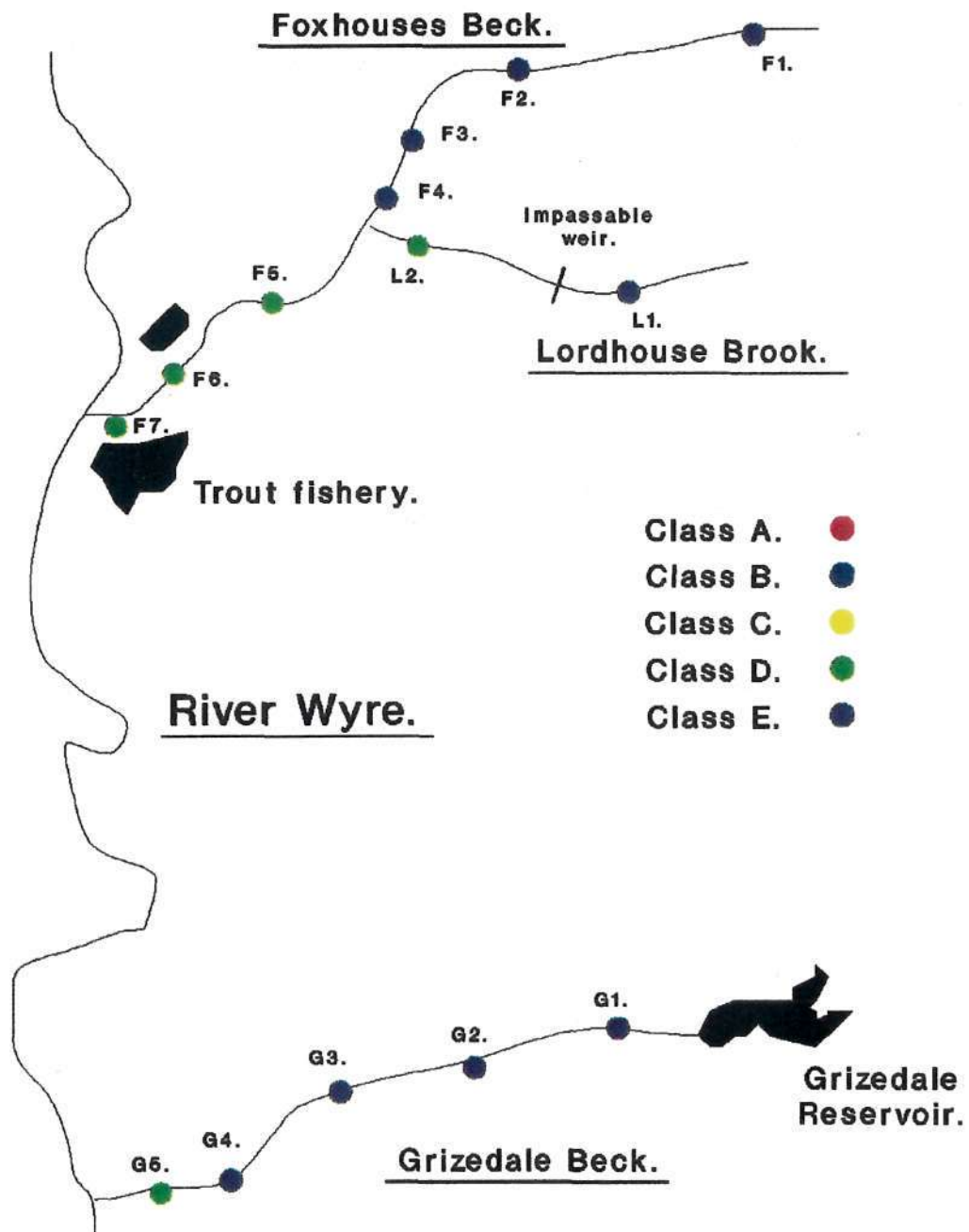
	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class A	-	0	-	4
Class B	-	0	-	1
Class C	-	0	-	0
Class D	-	0	-	0
Class E	-	5	-	0

(No 0+ salmon or trout would be present at the time of year when the pre-stocking surveys were carried out).

**Post-stocking survey (3 sites).**

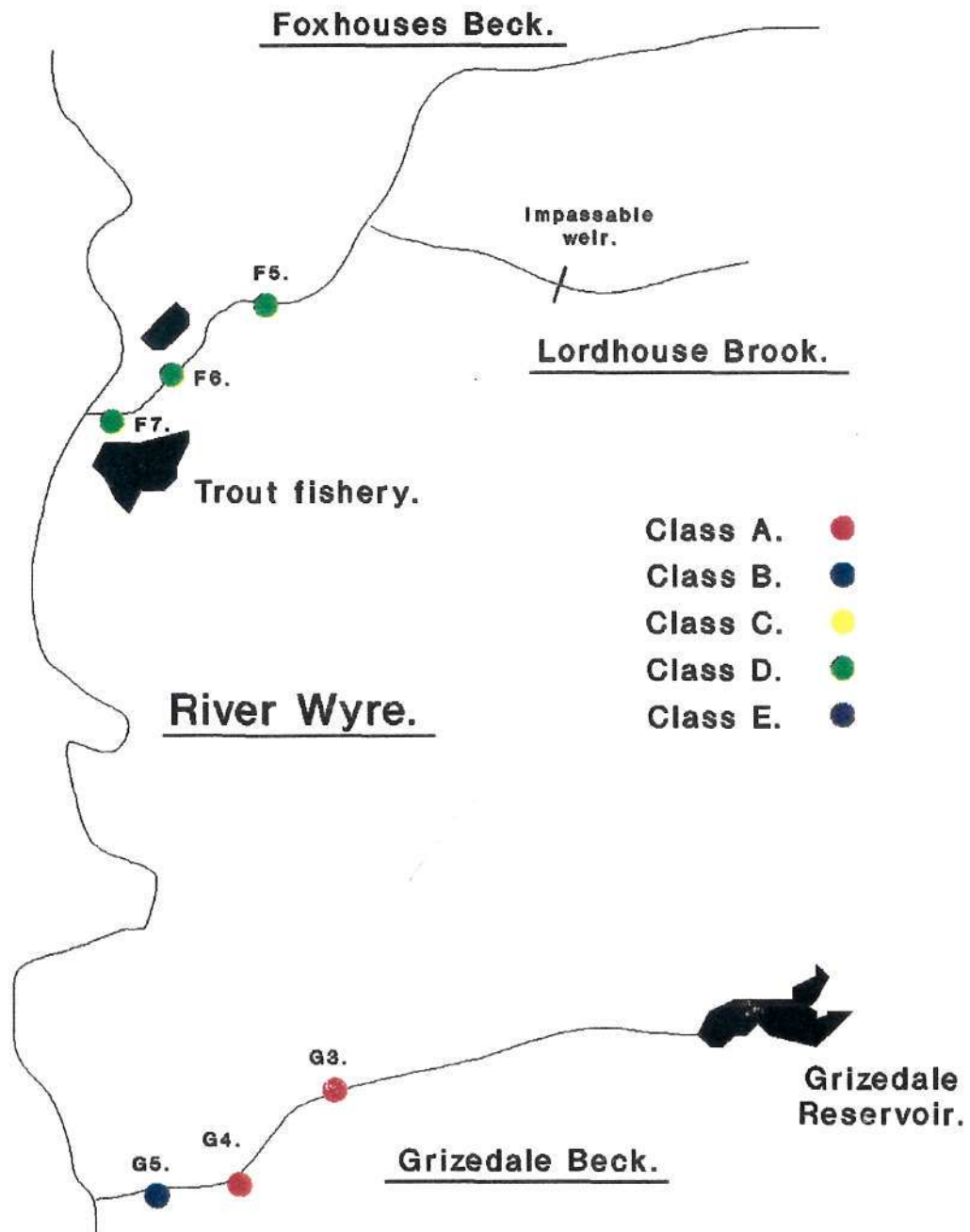
	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class A	2	0	0	0
Class B	1	0	0	2
Class C	0	0	1	1
Class D	0	1	2	0
Class E	0	2	0	0

**Foxhouses and Grizedale Becks:  
Older than 0+ salmon densities.  
Pre-stocking survey, April 1994.**

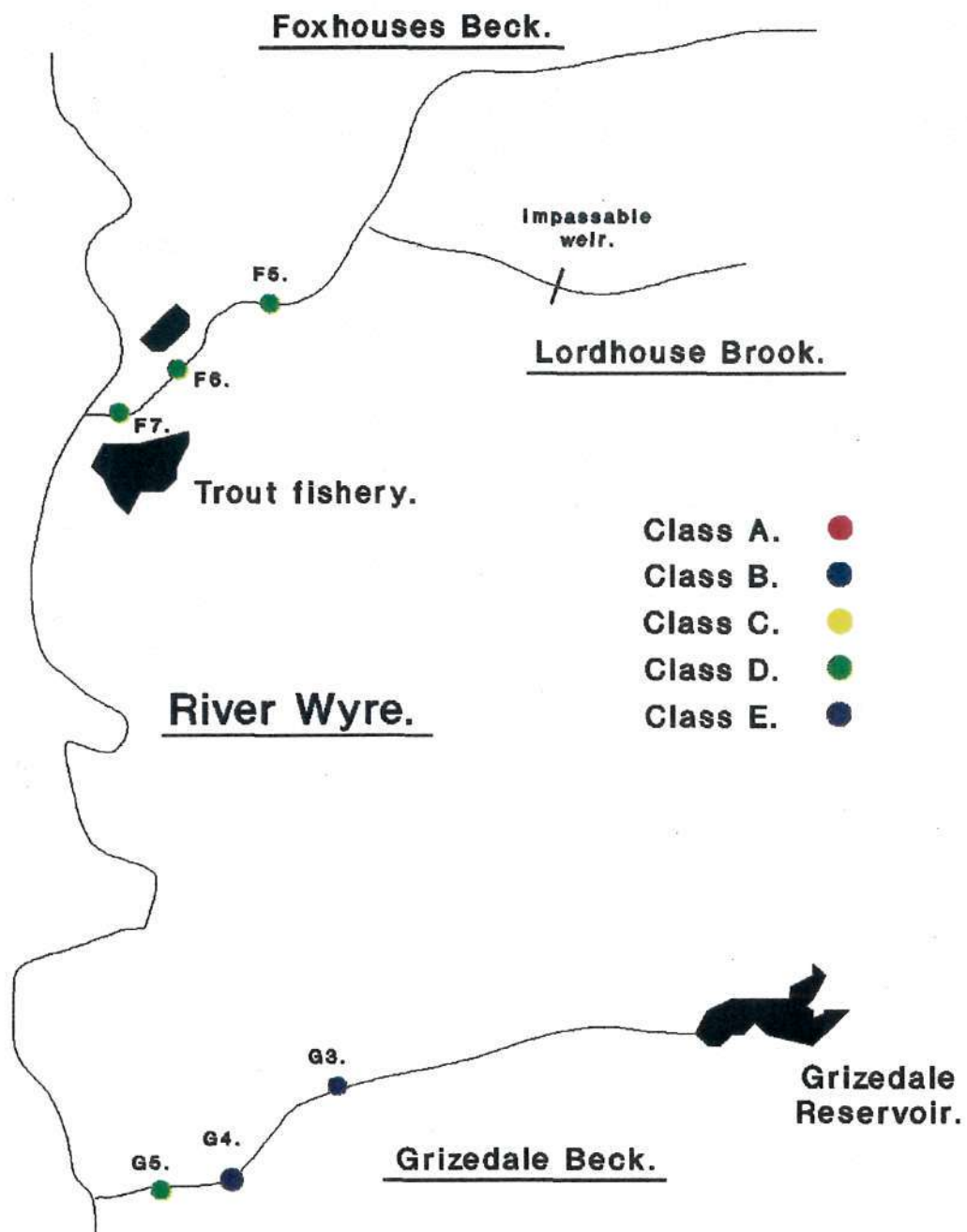




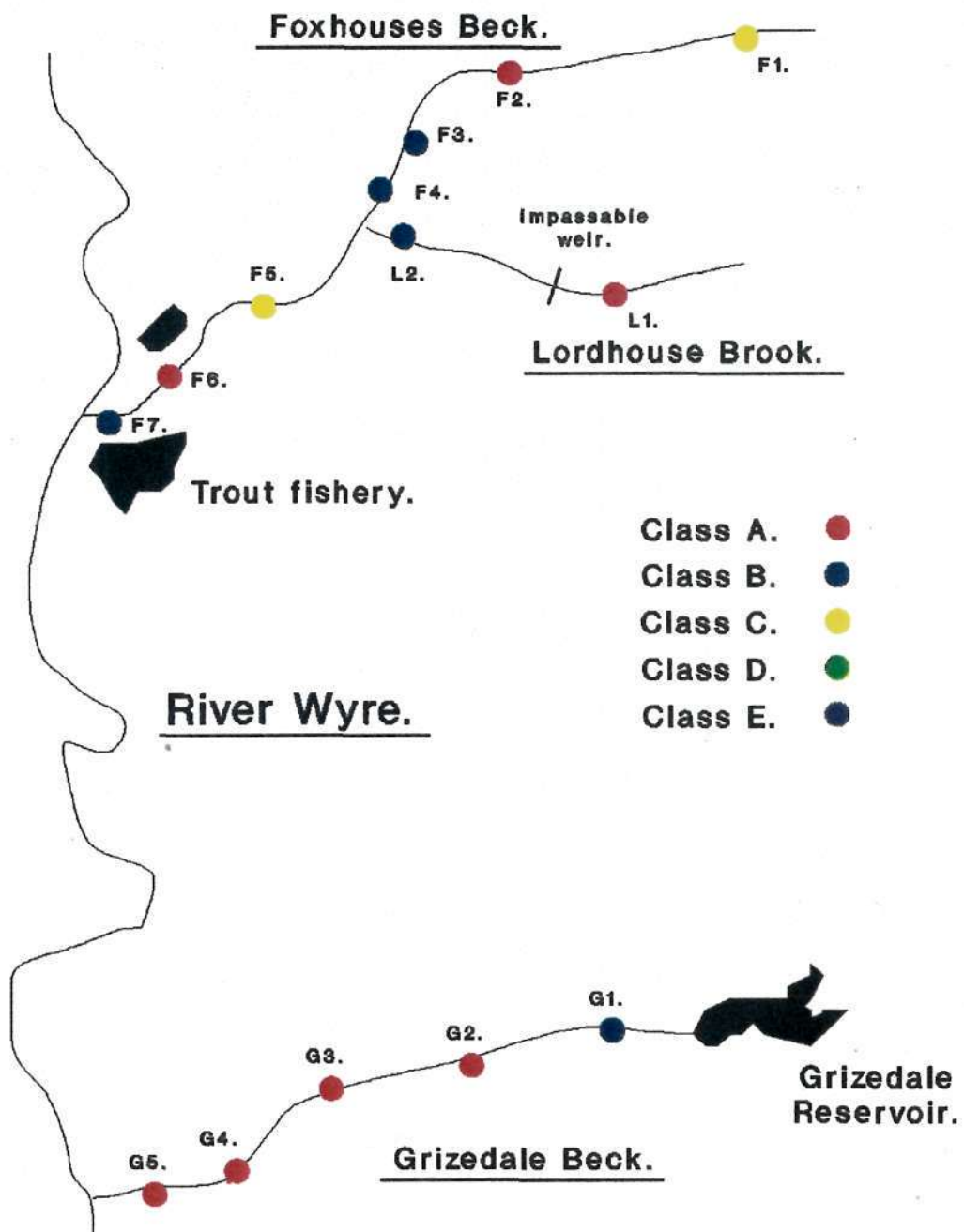
**Foxhouses and Grizedale Becks:**  
**0+ salmon densities.**  
**Post-stocking survey, October 1994.**



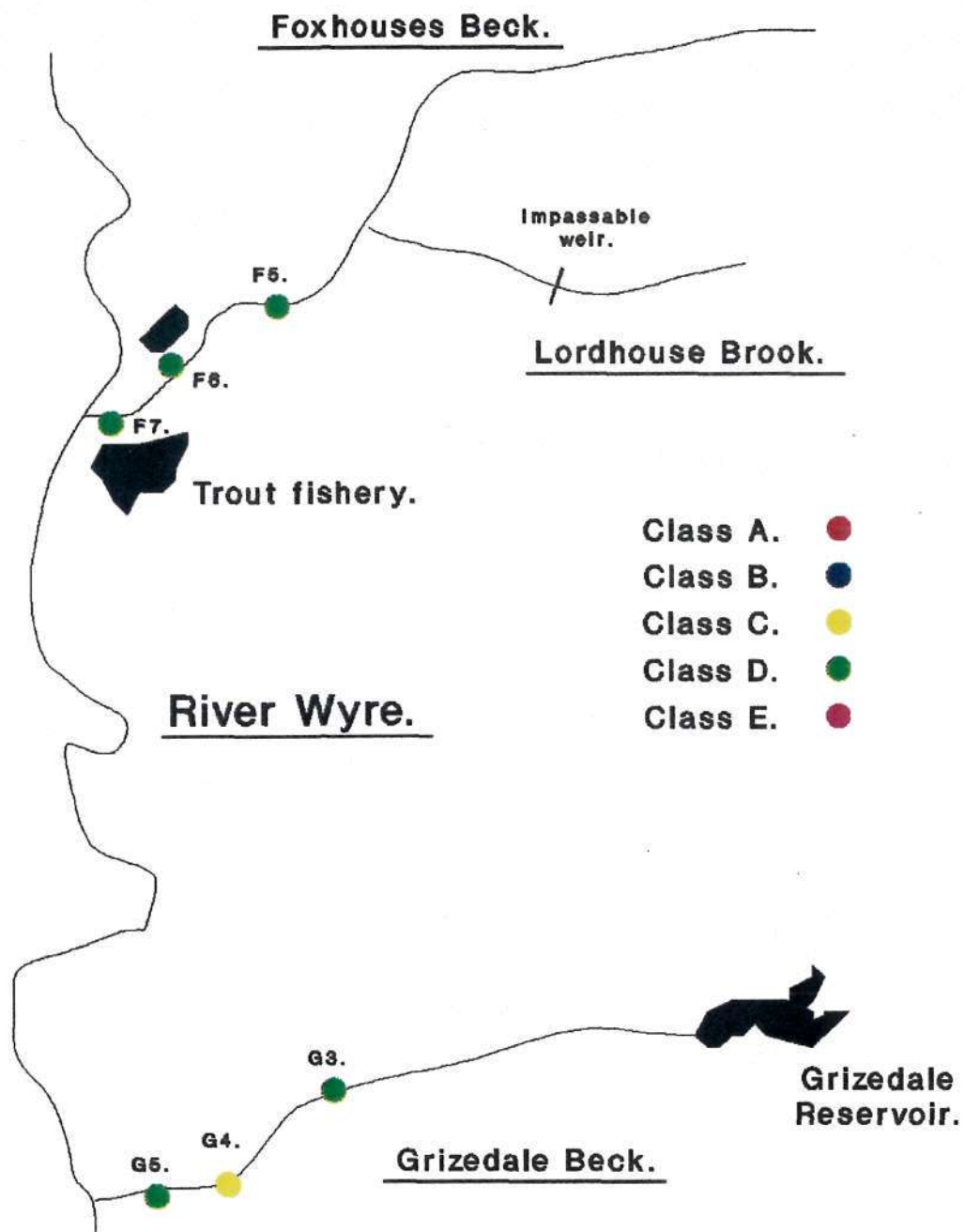
**Foxhouses and Grizedale Becks:**  
**Older than 0+ salmon densities.**  
**Post-stocking survey, October 1994.**



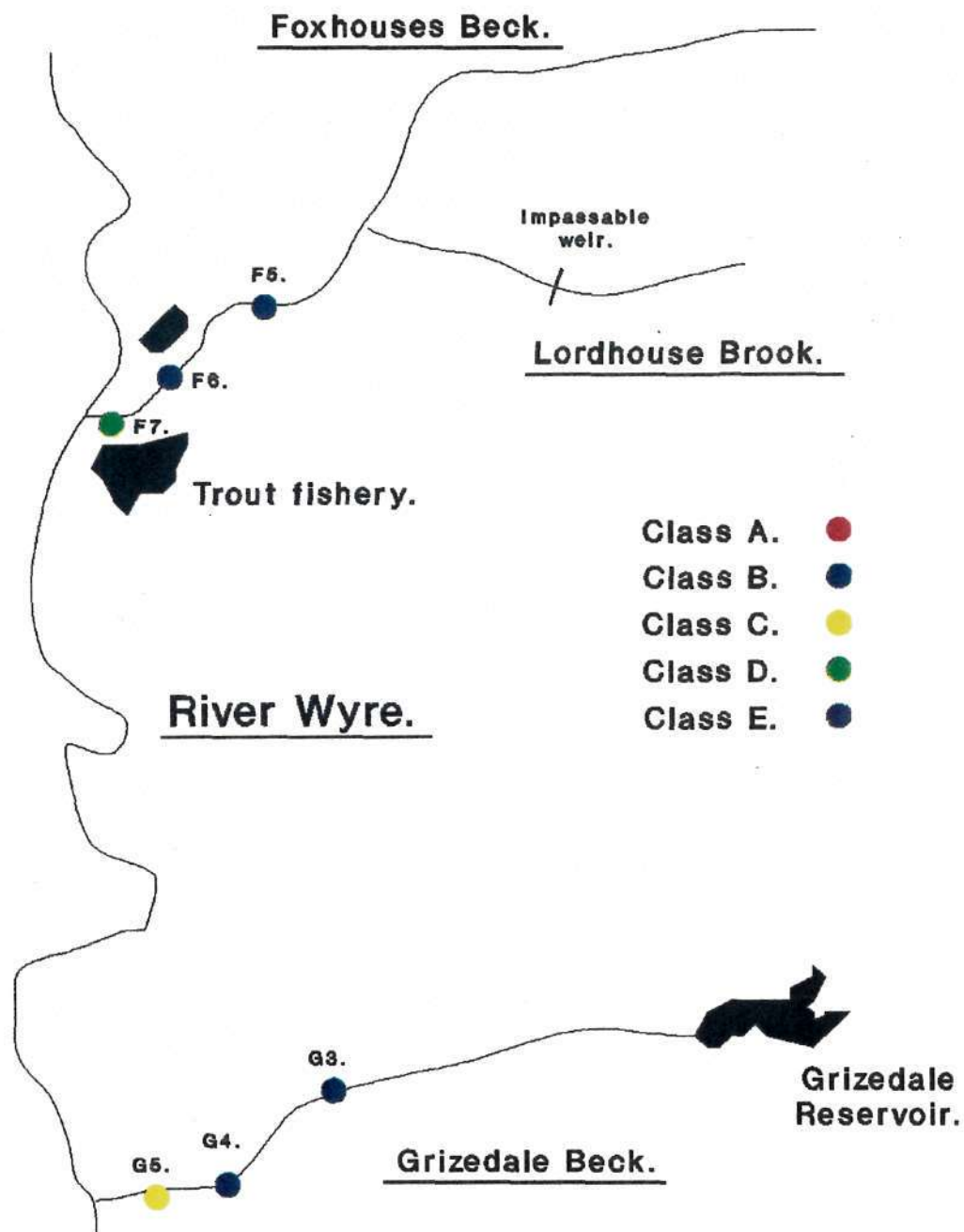
**Foxhouses and Grizedale Becks:**  
**Older than 0+ trout densities.**  
**Pre-stocking survey, April 1994.**



**Foxhouses and Grizedale Becks:**  
**0+ trout densities.**  
**Post-stocking survey, October 1994.**



**Foxhouses and Grizedale Becks:**  
**Older than 0+ trout densities.**  
**Post-stocking survey, October 1994.**



## **5. Discussion.**

### **5.1. Natural juvenile salmon populations.**

The results of both the pre-stocking and post-stocking surveys confirmed the conclusions of the 1992 River Wyre stock assessment survey (see appendix 2.), that natural spawning by migratory salmonids in both Foxhouses and Grizedale Becks is both sporadic and very limited in terms of its distribution. As a result, the populations of juvenile salmonids are patchy in their distribution in these becks and, where present, are of very low densities.

#### **5.1.1. Foxhouses Beck.**

The presence of older than 0+ salmon in low densities in sites F5a-F7a in Foxhouses Beck and in site L2a in Lordhouse Brook during the April 1994 survey and the size of the fish found, indicates that the lower reaches of these becks were used by salmon for spawning during the spawning seasons of 1991/92 and/or 1992/93. However, the densities of parr found suggest that either a very low number of salmon spawned in this area or that subsequent survival of ova and/or juveniles was poor.

#### **5.1.2. Grizedale Beck.**

The presence of low densities of 0+ salmon at Woodacre Hall in 1992 and the presence of older than 0+ salmon at site G5a (April, 1994) indicates that the lower reaches of Grizedale beck are utilised for salmon spawning. However, the absence of older than 0+ salmon parr at Woodacre Hall in the April 1994 survey and the very low densities found in 1992 and in April 1994, indicates that either a very low number of salmon spawned in this area during the spawning seasons of 1991/92 and/or 1992/93, or that subsequent survival of ova and/or juveniles was poor.

The absence of juvenile salmon from sites G1a-G3a (April, 1994), is attributed to the impassable road crossing that exists on Grizedale Beck immediately downstream of site G3.

## **5.2. Survival of stocked parr.**

### **5.2.1. Foxhouses Beck.**

The low densities of 0+ salmon parr found in the three stocked sites F5b-F7b in the post-stocking survey, indicate that the survival of the stocked fish in Foxhouses Beck was poor. Indeed, the densities of 0+ parr found were no higher than might have been expected from the limited amount of natural salmon parr production known to occur in this area (See section 5.1.1. above).

This result indicates that a low level of juvenile survival is likely to be the major limiting factor to juvenile migratory salmonid production in Foxhouses Beck. This conclusion is further supported by the very poor densities of 0+ trout found in the beck during the post-stocking survey.

Poor juvenile survival in Foxhouses Beck is most likely to result from water quality problems in the beck. In the sites surveyed in the lower reaches of the beck (F5-F7), the gravel of the beck bed was found to be compacted and a high silt loading was observed. The presence of large quantities of silt would adversely impact juvenile

salmonid survival both by causing damage to the gills of fish, particularly during periods of high flow, and by reducing the available food supply through smothering effects causing a reduction of invertebrate populations.

Furthermore, the presence of both compacted gravel and a high silt loading would greatly reduce the success of natural juvenile salmonid production by making redds difficult to cut and by reducing water flow through the redd and consequently reducing ova survival.

The origin of the siltation observed is unclear. It may originate from the gravel quarry which was present adjacent to Foxhouses beck throughout its lower reaches. This quarry is now closed, but silt may be present in the beck from when it was operational and may still be entering the beck from old workings and settlement lagoons. If this is the main source of siltation in the beck, the problem should decrease with time, as the quarry workings stabilise now that they are no longer being worked. However, the silt may originate from land drainage or bank erosion, either in addition to any quarry drainage or instead of this more obvious potential source.

The source of the siltation should be identified and, if possible, prevented. In addition, the removal of existing silt from the beck and the breaking up of compacted gravel areas, by traditional raking and hydrostatic flushing techniques, should be considered in order to produce improved spawning and nursery conditions in the short term.

The poor survival of the stocked parr may also be a result of sporadic pollution events such as have been found to occur from farms in the area in the past. NRA Pollution Control staff covering this area should be made aware of the results of this study to help ensure that appropriate action is taken to find and remove any potential sources of pollution which may exist.

### **5.2.2. Grizedale Beck.**

The excellent densities of 0+ salmon parr found in sites G3-G5 during the post-stocking survey indicate that the survival of the stocked parr was very good. Following the stocking of 0+ parr into sites G3, G4 and G5 at approximately 5 fish per metre squared, the densities found at these sites in the subsequent survey indicate survival rates in the region of 25.6%, 22.4% and 11.2% respectively. The reduced density of 0+ parr found at site G5b, in comparison to the other two sites is probably attributable to the less favourable habitat for juvenile salmon found at this site; far less riffle habitat and more pool habitat being present.

The densities of 0+ parr in sites G4 and G5 may in part be due to natural spawning during the 1993/94 spawning season. However, site G3 is inaccessible to adult migratory salmonids as a result of the impassable barrier at the road crossing on Grizedale Beck immediately downstream of this site. The Class A 0+ salmon densities found at this site during the post-stocking survey are therefore attributable directly to the survival of stocked parr.

The high level of parr survival found indicates that water quality is not a limiting factor to juvenile salmon production in Grizedale Beck. The poor densities of juvenile salmon found in the 1992 survey, and pre-stocking survey are probably a result of poor access to the upper reaches of the beck to adult fish, a lack of suitable spawning substrate and a lack of spawning adults.

## References.

Carle, F.L. and Strub, M.R. (1978). A new method for estimating population size from removal data. *Biometrics* 34, 621-630.

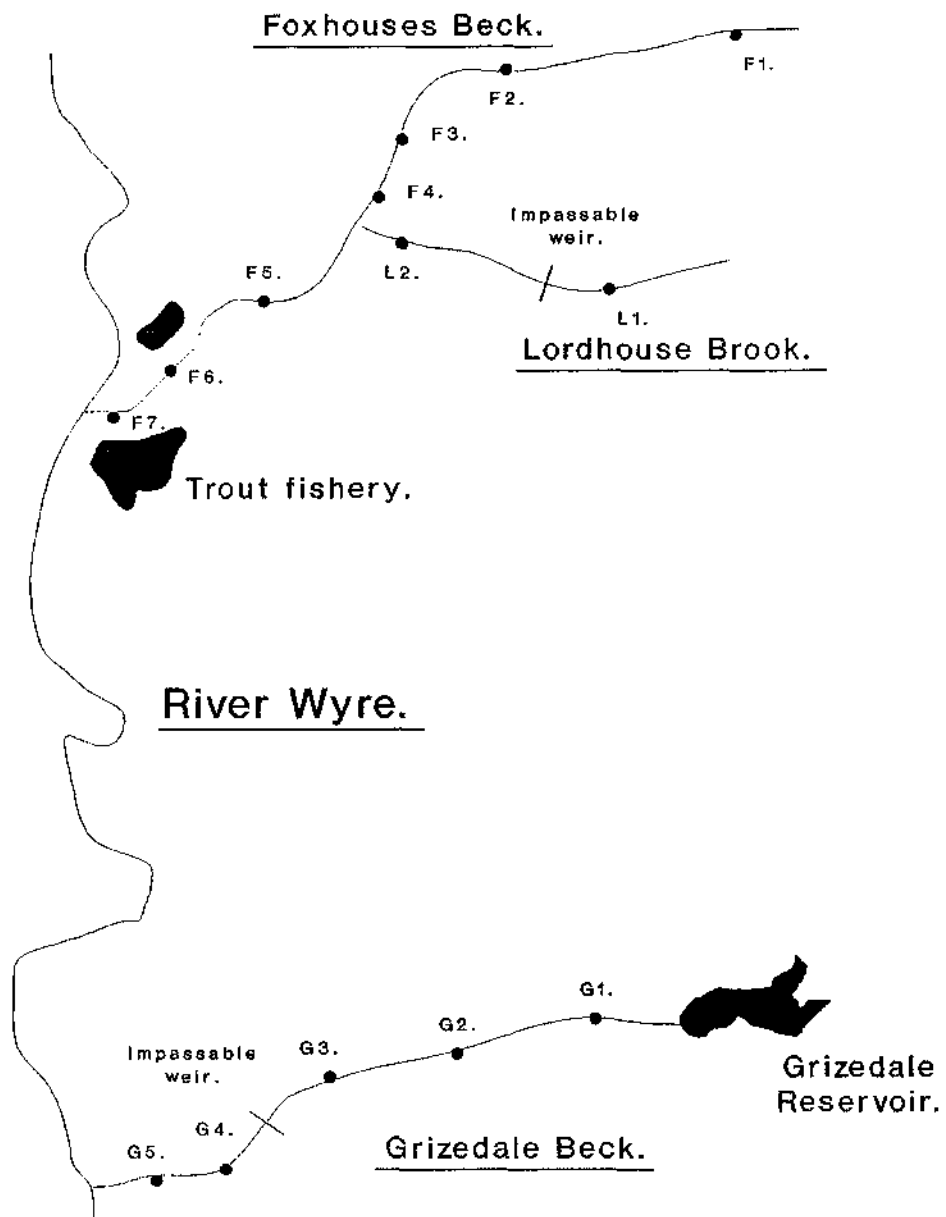
Elliot, J.M. (1992). Variation in the population density of adult sea trout, *Salmo trutta*, in 67 rivers in England and Wales. *Ecol. Freshwat. Fish.* 1, 5-11.

Farooqi, M.A. and Aprahamian, M.W. (1993). The calibration of a semi-quantitative approach to fish stock assessment in the North West Region of the NRA. *NRA Fisheries Report. NRA/NW/FTR/93/4.*

Walsingham, M.V. (1993). Report on the 1992 stock assessment of the Wyre catchment. *NRA Fisheries Report. NRA/NW/FTR/93/14.*



Appendix 1.  
Foxhouses and Grizedale Becks:  
Site summaries, 1994.



Site Report.

Watercourse: Foxhouses Brook.

Site Code: Fla.

Location: Kays Farm.

N.G.R.: 543516

Date Fished: 27/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	E	-	C

Method: Upstream electro-fishing, 1 anode, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m                      Mean Width (Range): 1.0m(0.4-0.9m)

Area: 50m<sup>2</sup>                      Mean Depth (Range): 0.1m (0.05-0.1m)

Substrate Composition:

Gravel 60%    Cobble 5%    Sand 35%

Water Level:

Low, clearing after rain.

Site Description:

Pool 20%    Glide 50%    Riffle 30%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Rough Pasture.

Fishing Rights:

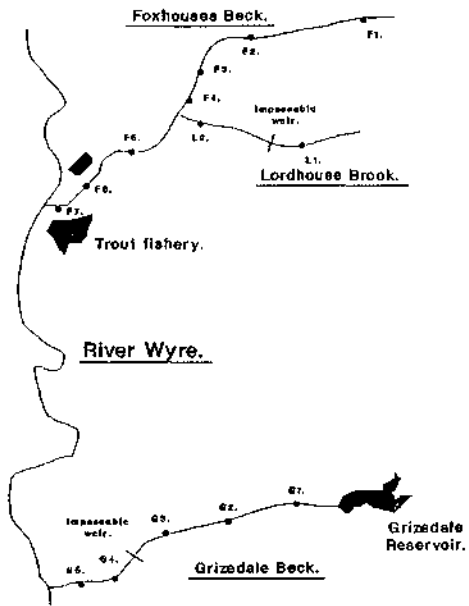
Not known.

Comments:

Only 2 brown trout were caught of 75 and 80mm.

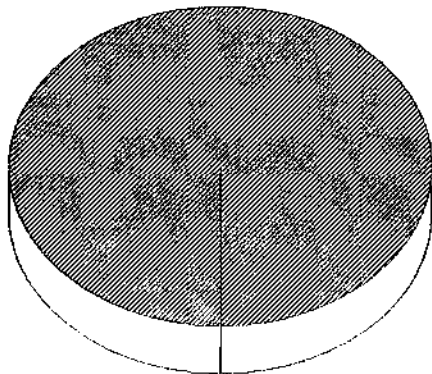
# F1a. NGR. 543516.

## Foxhouses and Grizedale Becks: Site locations.

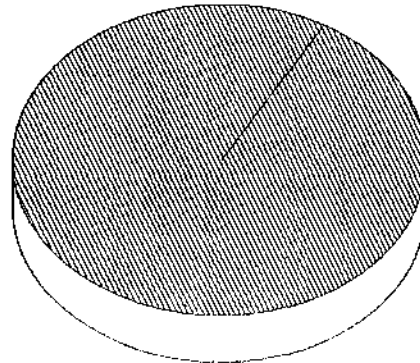


Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	0
Older than 0+ brown trout	4.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	4.00
Other species	0
Total	4.00

Older than 0+ brown trout



Salmonids



Site Report.

Watercourse: Foxhouses Brook.

Site Code:F2a.

Location: Taylors Farm.

N.G.R.: 527517

Date Fished: 20/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	E	-	A

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2m (1-3m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.1m (0.05-0.1m)

Substrate Composition:

Gravel 60% Cobble 30% Sand 10%

Water Level:

Low, clearing after rain.

Site Description:

Pool 20% Glide 50% Riffle 30%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Improved Pasture.

Fishing Rights:

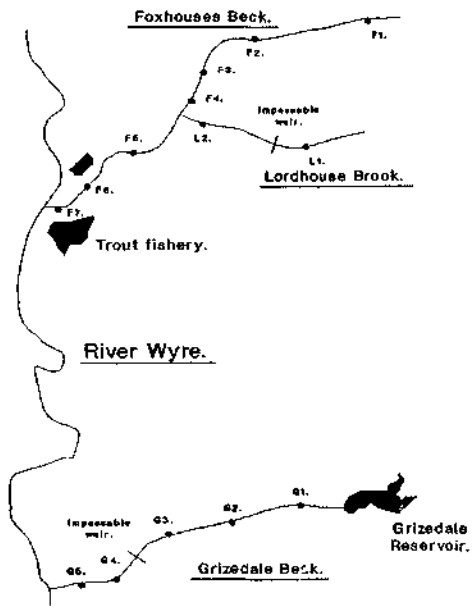
Not known.

Comments:

No salmon were found at this site. 25 brown trout were caught from 65-190mm. 1 eel was also found.

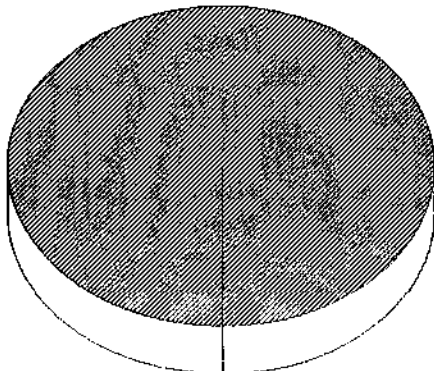
# F2a. NGR. 527517.

## Foxhouses and Grizedale Becks: Site locations.

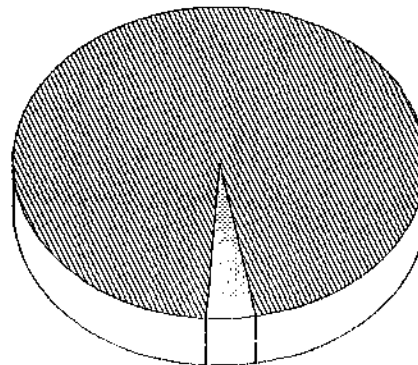


Species.	Density (N/100m <sup>2</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	0
Older than 0+ brown trout	25.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	25.00
Other species	1.00
Total	26.00

Older than 0+ brown trout



Salmonids



Other species

Site Report.

Watercourse: Foxhouses Brook.

Site Code: F3a.

Location: Street.

N.G.R.: 521517

Date Fished: 20/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	E	-	B

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.1m (0.05-0.1m)

Substrate Composition:

Gravel 50% Cobble 30% Sand 20%

Water Level:

Low, clearing after rain.

Site Description:

Pool 40% Glide 40% Riffle 20%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Improved Pasture.

Fishing Rights:

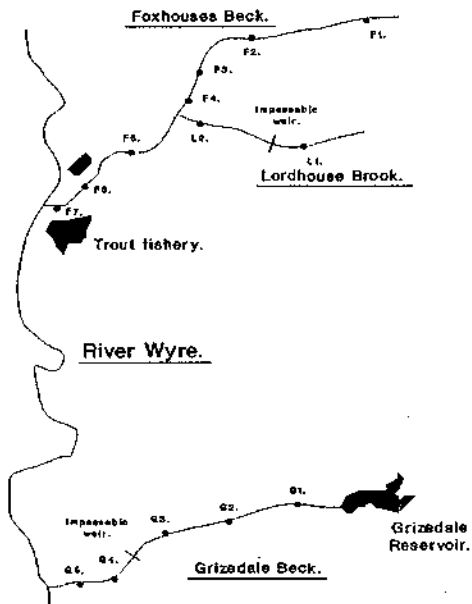
Not known.

Comments:

No salmon were found at this site. 12 brown trout were caught from 75-105mm. 30 bullheads, 3 eels, 1 minnow and 1 stone loach were also found.

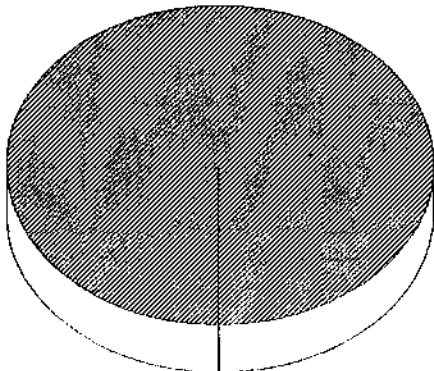
# F3a. NGR. 521517.

## Foxhouses and Grizedale Becks: Site locations.

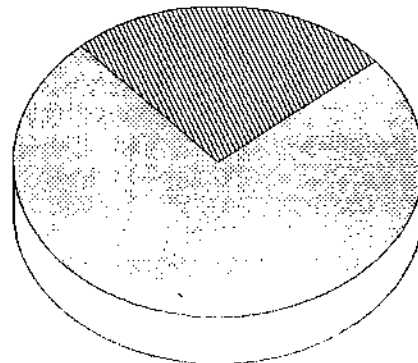


Species.	Density (N/100m <sup>2</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	0
Older than 0+ brown trout	8.00
Brown trout larger than 200mm	0
<b>Total 0+ salmonids</b>	<b>0</b>
<b>Total salmonids</b>	<b>8.00</b>
Other species	23.33
<b>Total</b>	<b>31.33</b>

Older than 0+ brown trout



Salmonids



Other species

Site Report.

Watercourse: Foxhouses Brook.

Site Code:F4a.

Location: U/S Lordhouse Brook.

N.G.R.: 518516

Date Fished: 20/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	E	-	B

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.3m (0.05-0.8m)

Substrate Composition:

Gravel 60% Cobble 30% Sand 10%

Water Level:

Low, clearing after rain.

Site Description:

Pool 20% Glide 50% Riffle 30%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Improved Pasture.

Fishing Rights:

Not known.

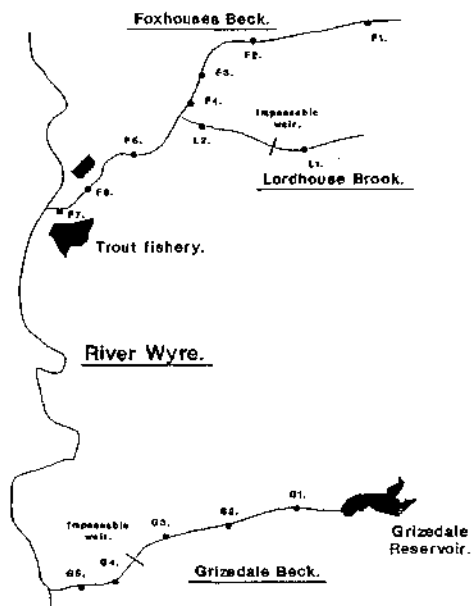
Comments:

No salmon were found at this site. 14 brown trout were caught from 75-125mm. 1 stoneloach and 7 bullhead were also caught.



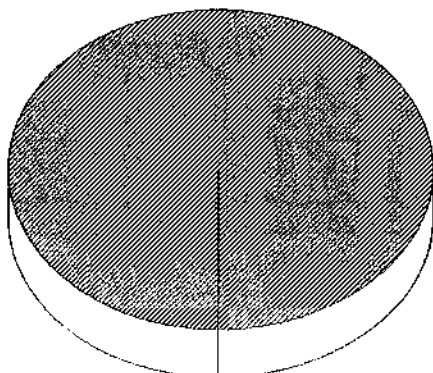
# F4a. NGR. 518516.

## Foxhouses and Grizedale Becks: Site locations.

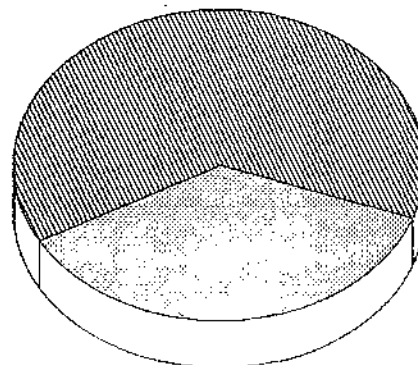


Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	0
Older than 0+ brown trout	9.33
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	9.33
Other species	5.33
Total	14.66

Older than 0+ brown trout



Salmonids



Other species

Site Report.

Watercourse: Lordhouse Brook.

Site Code:L1a.

Location: Lordhouse Brook, upstream of roadbridge.

N.G.R.: 522511

Date Fished: 20/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	E	-	A

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2m (1-3m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.2m (0.05-1.0m)

Substrate Composition:

Gravel 50% Cobble 20% Bedrock 30%

Water Level:

Low, clearing after rain.

Site Description:

Pool 10% Glide 30% Riffle 60%

Area of glide and pool interspersed with riffle.  
Inaccessible to migratory salmonids.

Adjacent Land Use:

Grazing beneath trees.

Fishing Rights:

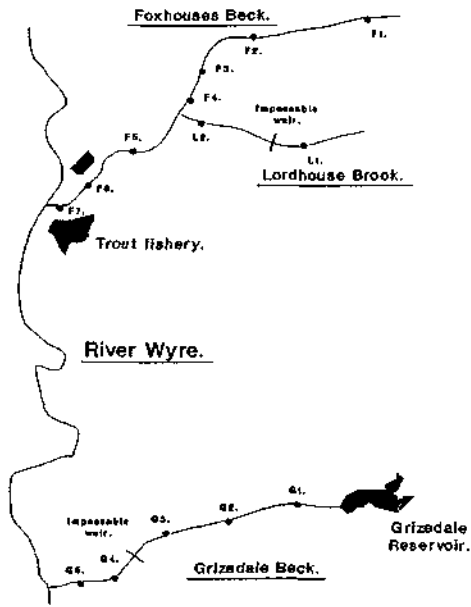
Not known.

Comments:

No salmon were found at this site. 26 brown trout were caught from 60-205mm. 9 bullhead, and 1 eel were also caught.

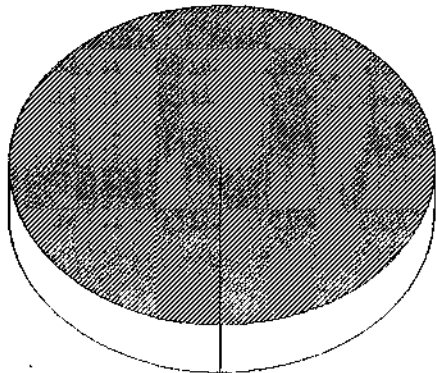
# L1a. NGR. 522511.

## Foxhouses and Grizedale Becks: Site locations.

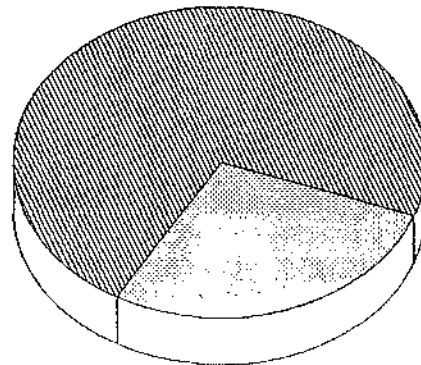


Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	0
Older than 0+ brown trout	26.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	26.00
Other species	10.00
Total	36.00

Older than 0+ brown trout



Salmonids



Other species

Site Report.

Watercourse: Lordhouse Brook.

Site Code:L2a.

Location: Lordhouse Brook, upstream of Foxhouses Beck.

N.G.R.: 519514

Date Fished: 20/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	D	-	B

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2m (1-3m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.2m (0.05-1.0m)

Substrate Composition:

Gravel 50% Cobble 30% silt 20%

Water Level:

Low, clearing after rain.

Site Description:

Pool 10% Glide 60% Riffle 30%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Improved pasture.

Fishing Rights:

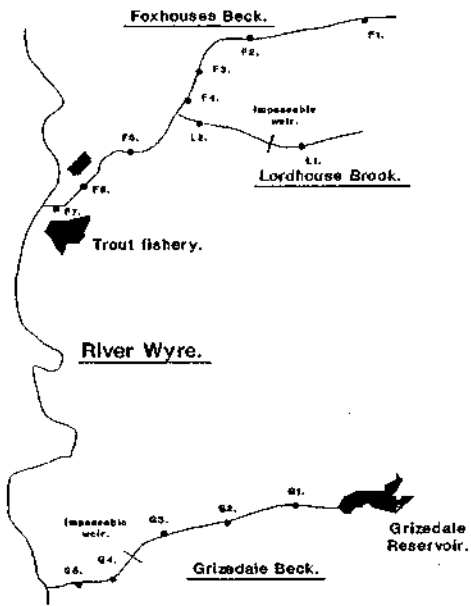
Not known.

Comments:

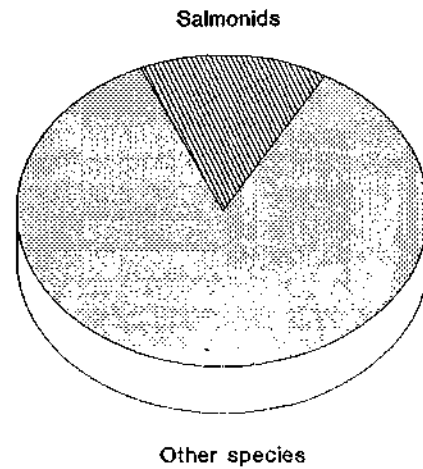
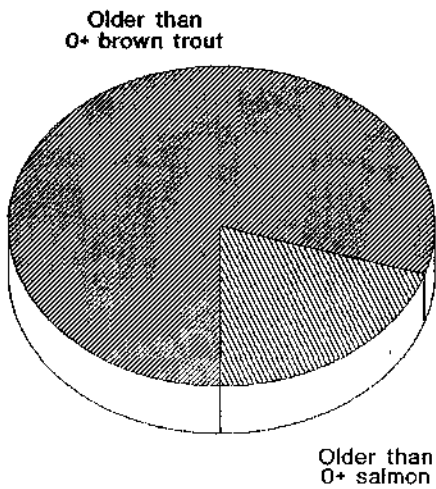
3 salmon were found at this site from 70-80mm. 8 brown trout were caught from 70-90mm. 49 bullhead, 7 stone loach and 7 eels were also caught.

# L2a. NGR. 519514.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>2</sup> )
0+ salmon	0
Older than 0+ salmon	3.00
0+ brown trout	0
Older than 0+ brown trout	8.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	11.00
Other species	63.00
Total	74.00



Site Report.

Watercourse: Foxhouses Brook.

Site Code:F5a.

Location: Scorton Tarmac quarry, adjacent to old settlement lagoons.

N.G.R.: 518514

Date Fished: 19/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	D	-	A

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.3m (0.05-1.1m)

Substrate Composition:

Gravel 60% Cobble 35% Sand 5%

Water Level:

Low, clearing after rain.

Site Description:

Pool 15% Glide 65% Riffle 20%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Gravel quarry site.

Fishing Rights:

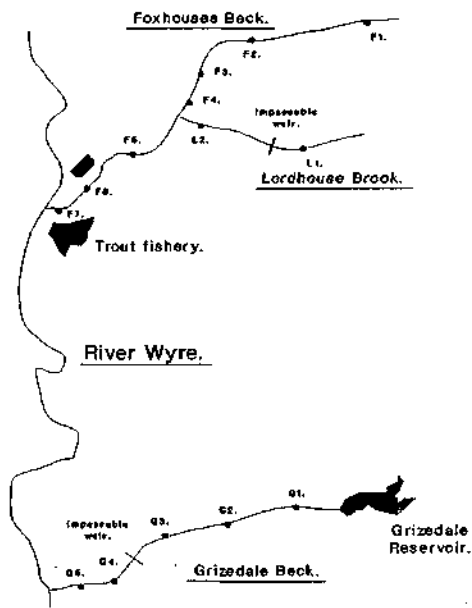
Not known.

Comments:

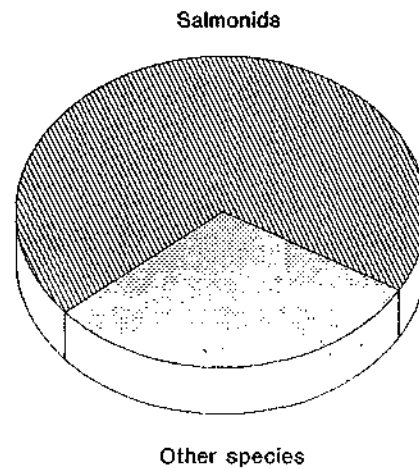
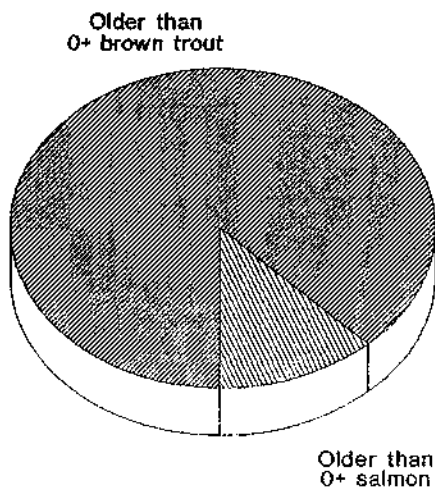
5 salmon were found at this site from 70-85mm. 33 brown trout were caught from 70-185mm. 1 stoneloach, 10 bullhead and 7 eels were also caught.

# F5a. NGR. 518514.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	3.30
0+ brown trout	0
Older than 0+ brown trout	24.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	27.30
Other species	12.00
Total	39.30



Site Report.

Watercourse: Foxhouses Brook.

Site Code:F5b.

Location: Scorton Tarmac quarry, adjacent to old settlement lagoons.

N.G.R.: 518514

Date Fished: 19/10/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	D	D	D	B

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.3m (0.05-1.1m)

Substrate Composition:

Gravel 60% Cobble 35% Sand 5%

Water Level:

Low, clearing after rain.

Site Description:

Pool 15% Glide 65% Riffle 20%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Gravel quarry site.

Fishing Rights:

Not known.

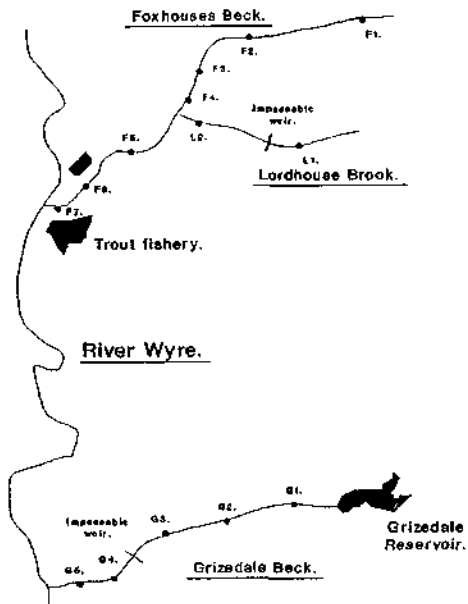
Comments:

9 salmon were found at this site from 55-150mm. Of these, 2 salmon of 100 and 120mm were precocious male parr. 34 brown trout were caught from 55-385mm. The 385mm trout was a sexually mature male in spawning condition. 3 stone loach, 11 bullhead, 13 minnow and 4 eels were also caught.

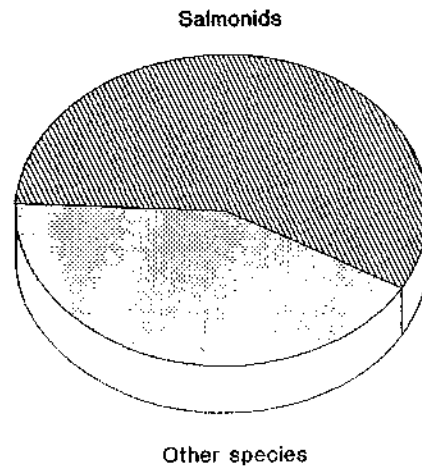
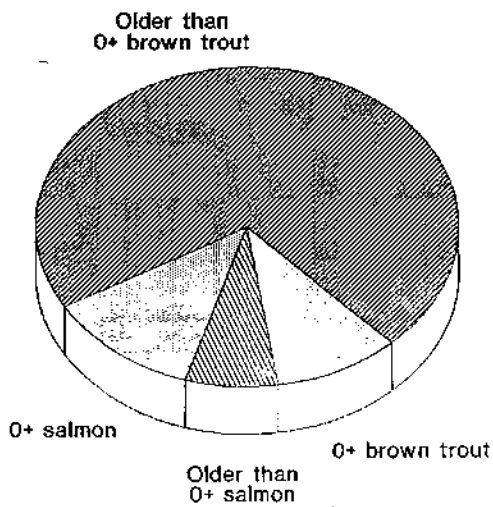


# F5b. NGR. 518514.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>2</sup> )
0+ salmon	3.33
Older than 0+ salmon	2.00
0+ brown trout	2.70
Older than 0+ brown trout	20.00
Brown trout larger than 200mm	4.66
<b>Total 0+ salmonids</b>	<b>6.03</b>
<b>Total salmonids</b>	<b>28.03</b>
Other species	20.66
<b>Total</b>	<b>48.69</b>



Site Report.

Watercourse: Foxhouses Brook.

Site Code:F6a.

Location: Scorton Tarmac quarry, at footbridge.

N.G.R.: 515513

Date Fished: 19/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	D	-	A

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.3m (0.05-0.8m)

Substrate Composition:

Gravel 60% Cobble 35% Sand 5%

Water Level:

Low, clearing after rain.

Site Description:

Pool 10% Glide 50% Riffle 40%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Gravel quarry site.

Fishing Rights:

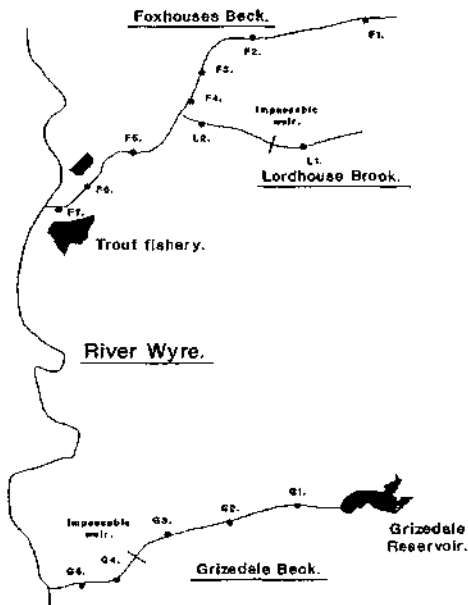
Not known.

Comments:

6 salmon were found at this site from 70-85mm. 33 brown trout were caught from 65-185mm. 3 stone loach, 22 bullhead, 1 minnow and 1 lamprey were also caught.

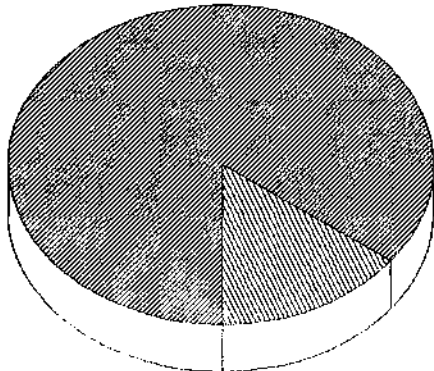
# F6a. NGR. 515513.

## Foxhouses and Grizedale Becks: Site locations.



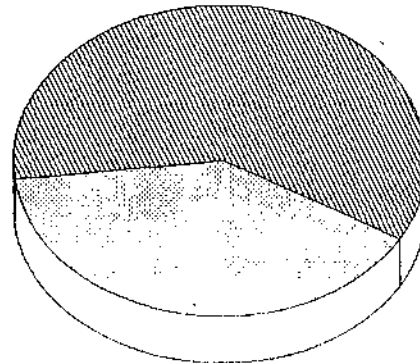
Species.	Density (N/100m <sup>2</sup> )
0+ salmon	0
Older than 0+ salmon	4.00
0+ brown trout	0
Older than 0+ brown trout	23.30
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	27.30
Other species	18.00
Total	45.30

Older than 0+ brown trout



Older than 0+ salmon

Salmonids



Other species

Site Report.

Watercourse: Foxhouses Brook.

Site Code:F6b.

Location: Scorton Tarmac quarry, at footbridge.

N.G.R.: 515513

Date Fished: 19/10/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	D	D	D	B

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.3m (0.05-0.8m)

Substrate Composition:

Gravel 60% Cobble 35% Sand 5%

Water Level:

Low, clearing after rain.

Site Description:

Pool 10% Glide 50% Riffle 40%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Gravel quarry site.

Fishing Rights:

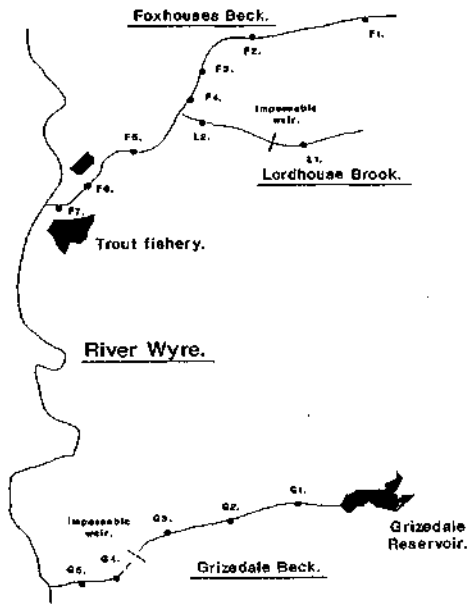
Not known.

Comments:

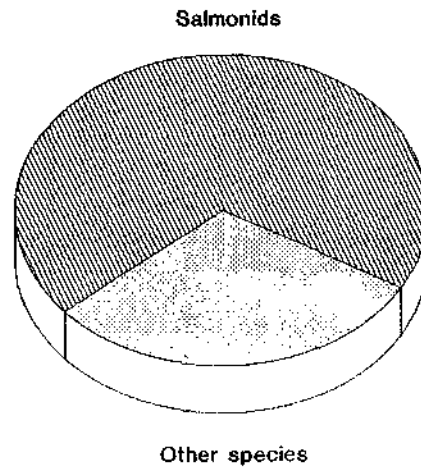
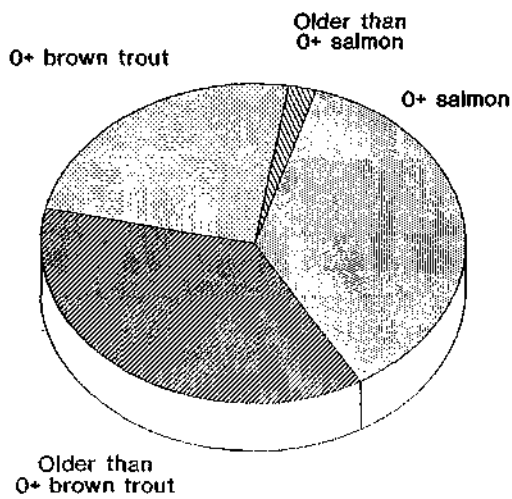
17 salmon were found at this site from 50-110mm. 28 brown trout were caught from 65-230mm. 2 stoneloach, 13 bullhead, 4 minnow and 1 lamprey were also caught.

# F6b. NGR. 515513.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>3</sup> )
0+ salmon	11.30
Older than 0+ salmon	0.66
0+ brown trout	7.30
Older than 0+ brown trout	11.30
Brown trout larger than 200mm	2.00
<b>Total 0+ salmonids</b>	<b>18.60</b>
<b>Total salmonids</b>	<b>30.56</b>
<b>Other species</b>	<b>13.33</b>
<b>Total</b>	<b>43.89</b>



Site Report.

Watercourse: Foxhouses Brook.

Site Code:F7a.

Location: Scorton Tarmac quarry, at trout fishery.

N.G.R.: 510512

Date Fished: 19/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	D	-	B

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.1m (0.05-1.0m)

Substrate Composition:

Gravel 60% (compacted) Cobble 5% Sand 35%

Water Level:

Low, clearing after rain.

Site Description:

Pool 20% Glide 40% Riffle 40%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Gravel quarry site and put and take trout fishery.

Fishing Rights:

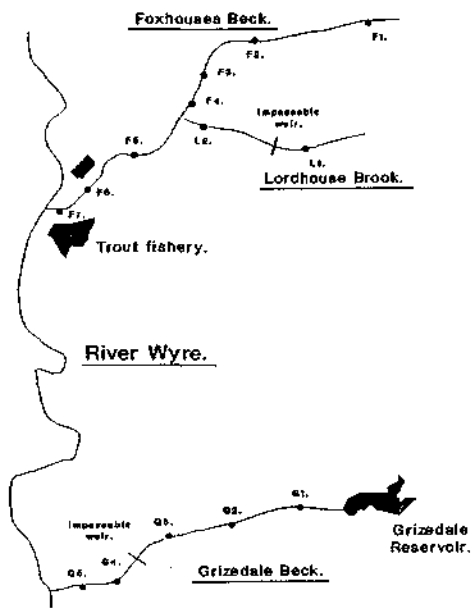
Not known.

Comments:

5 salmon were found at this site from 60-145mm. 17 brown trout were caught from 30-185mm. 4 stone loach, 6 bullhead, 69 minnow and 9 eels were also caught.

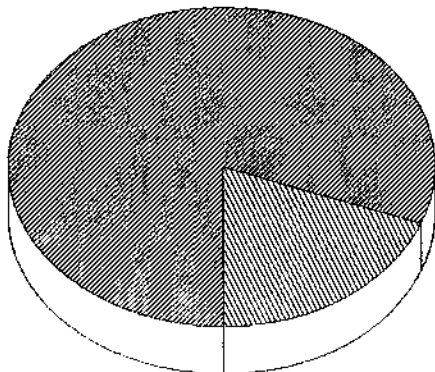
# F7a. NGR. 510512.

## Foxhouses and Grizedale Becks: Site locations.



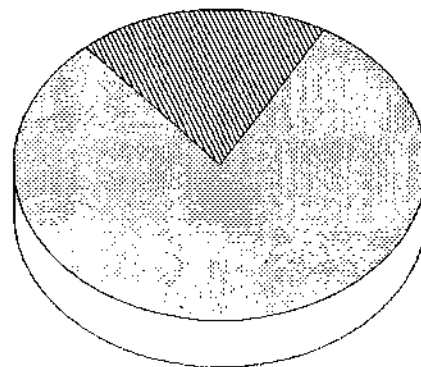
Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	0.33
0+ brown trout	0
Older than 0+ brown trout	14.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	14.33
Other species	58.66
Total	72.99

Older than 0+ brown trout



Older than 0+ salmon

Salmonids



Other species

Site Report.

Watercourse: Foxhouses Brook.

Site Code:F7b.

Location: Scorton Tarmac quarry, at trout fishery.

N.G.R.: 510512

Date Fished: 19/10/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	D	D	D	D

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.1m (0.05-1.0m)

Substrate Composition:

Gravel 60% (compacted) Cobble 5% Sand 35%

Water Level:

Low, clear.

Site Description:

Pool 20% Glide 40% Riffle 40%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Gravel quarry site and put and take trout fishery.

Fishing Rights:

Not known.

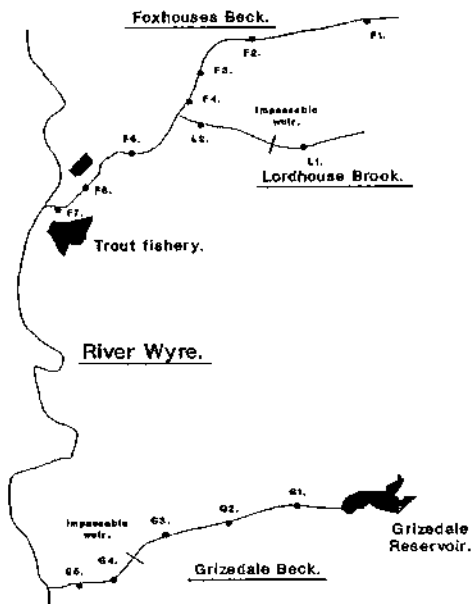
Comments:

14 salmon were found at this site from 50-130mm. 17 brown trout were caught from 50-185mm. 10 stone loach, 11 bullhead, 53 minnow and 3 eels were also caught.

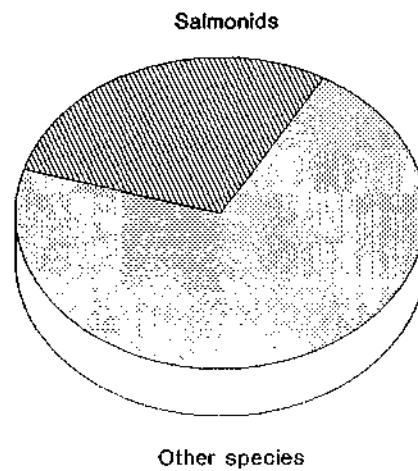
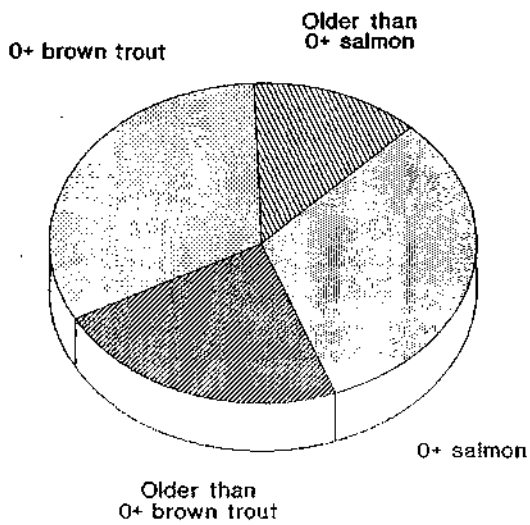


# F7b. NGR. 510512.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>2</sup> )
0+ salmon	6.70
Older than 0+ salmon	2.66
0+ brown trout	6.70
Older than 0+ brown trout	4.70
Brown trout larger than 200mm	0
<b>Total 0+ salmonids</b>	<b>13.40</b>
<b>Total salmonids</b>	<b>20.76</b>
Other species	61.93
<b>Total</b>	<b>72.03</b>



Site Report.

Watercourse: Grizedale Beck.

Site Code:Gla.

Location: Nicky Nook, below reservoir.

N.G.R.: 521483

Date Fished: 27/04/94

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	E	-	B

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2.0m (1-3m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.05m (0.05-0.5m)

Substrate Composition:

Gravel 70% Cobble 30%

Water Level:

Low, summer flow.

Site Description:

Pool 10% Glide 50% Riffle 40%

Area of glide and riffle between two deeper pools.  
Inaccessible to migratory salmonids.

Adjacent Land Use:

Woodland

Fishing Rights:

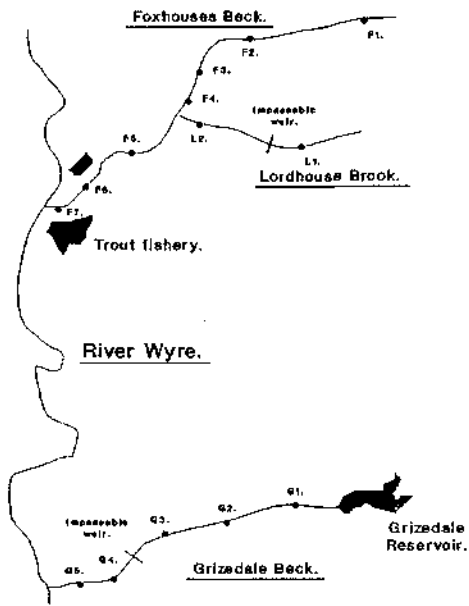
Not Known.

Comments:

No salmon were found at this site. 13 brown trout were caught from 55-180mm. 7 bullhead were also caught.

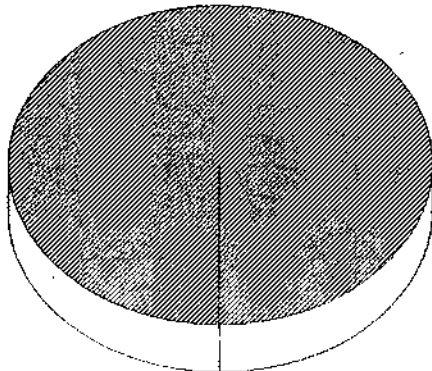
# G1a. NGR. 521483.

## Foxhouses and Grizedale Becks: Site locations.

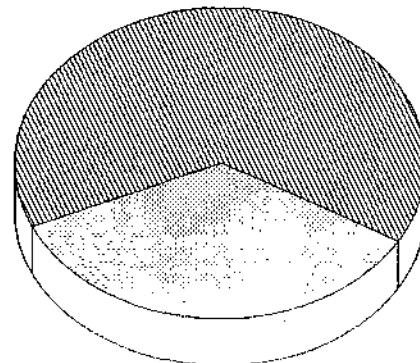


Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	0
Older than 0+ brown trout	13.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	13.00
Other species	7.00
Total	20.00

Older than 0+ brown trout



Salmonids



Other species

Site Report.

Watercourse: Grizedale Beck.

Site Code:G2a.

Location: Nicky Nook.

N.G.R.: 516482

Date Fished: 27/04/94

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	E	-	A

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m                      Mean Width (Range): 2.0m (1-3m)

Area: 100m<sup>2</sup>                      Mean Depth (Range): 0.05m (0.05-0.5m)

Substrate Composition:

Gravel 70%    Cobble 30%

Water Level:

Low, summer flow.

Site Description:

Pool 10%    Glide 60%    Riffle 30%

Area of glide and riffle between two deeper pools.  
Inaccessible to migratory salmonids.

Adjacent Land Use:  
Woodland.

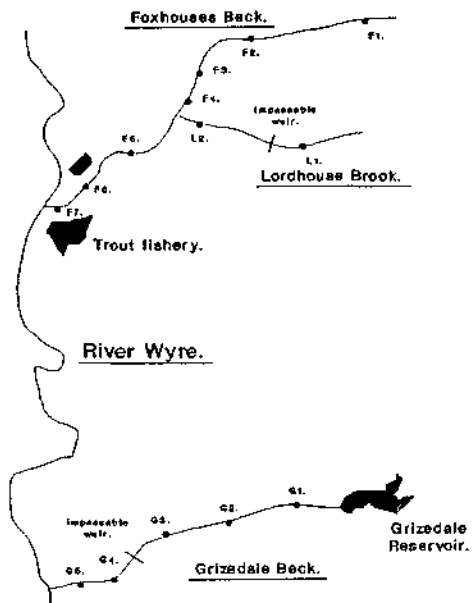
Fishing Rights:  
Not Known.

Comments:

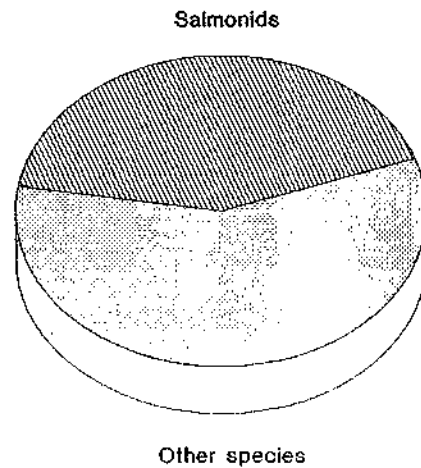
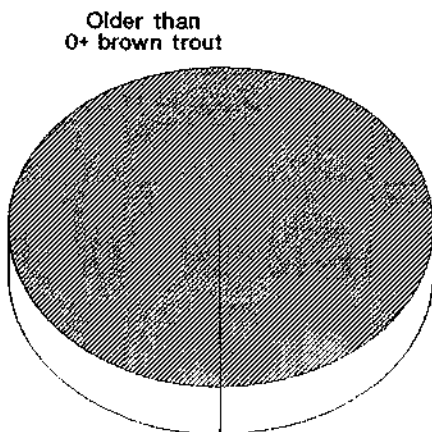
No salmon were found at this site. 28 brown trout were caught from 65-200mm. 30 bullhead and 9 eels were also caught.

# G2a. NGR. 516482.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>2</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	0
Older than 0+ brown trout	28.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	28.00
Other species	39.00
Total	67.00



Site Report.

Watercourse: Grizedale Beck.

Site Code:G3a.

Location: 250m upstream of roadbridge.

N.G.R.: 510475

Date Fished: 27/04/94

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	E	-	A

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2.0m (1-3m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.05m (0.05-0.5m)

Substrate Composition:

Gravel 70% Cobble 30%

Water Level:

Low, summer flow.

Site Description:

Pool 10% Glide 60% Riffle 30%

Area of glide and riffle between two deeper pools.  
Inaccessible to migratory salmonids.

Adjacent Land Use:

Improved pasture.

Fishing Rights:

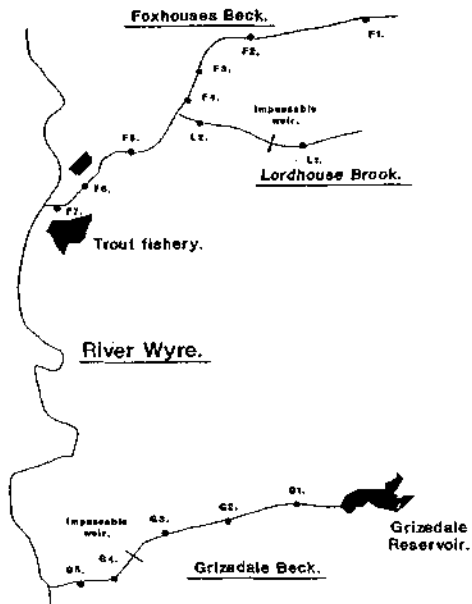
Not Known.

Comments:

No salmon were found at this site. 20 brown trout were caught from 60-130mm. 26 bullhead and 2 eels were also caught.

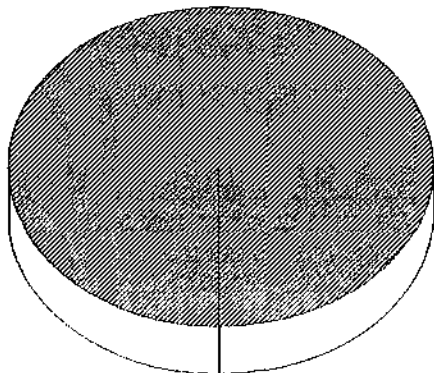
# G3a. NGR. 510475.

## Foxhouses and Grizedale Becks: Site locations.

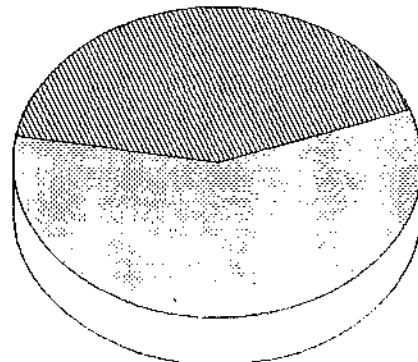


Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	0
Older than 0+ brown trout	20.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	20.00
Other species	28.00
<b>Total</b>	<b>48.00</b>

Older than 0+ brown trout



Salmonids



Other species

Site Report.

Watercourse: Grizedale Beck.

Site Code:G3b.

Location: 250m upstream of roadbridge.

N.G.R.: 510475

Date Fished: 12/10/94

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	A	E	D	B

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2.0m (1-3m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.05m (0.05-0.5m)

Substrate Composition:

Gravel 70% Cobble 30%

Water Level:

Low, summer flow.

Site Description:

Pool 10% Glide 60% Riffle 30%

Area of glide and riffle between two deeper pools.  
Inaccessible to migratory salmonids.

Adjacent Land Use:

Improved pasture.

Fishing Rights:

Not Known.

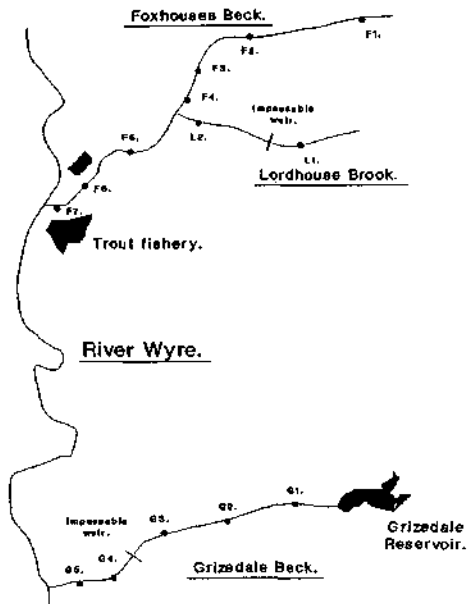
Comments:

93 salmon were found at this site, from 50-70mm. 11 brown trout were caught from 55-155mm. 59 bullhead and 7 eels were also caught.



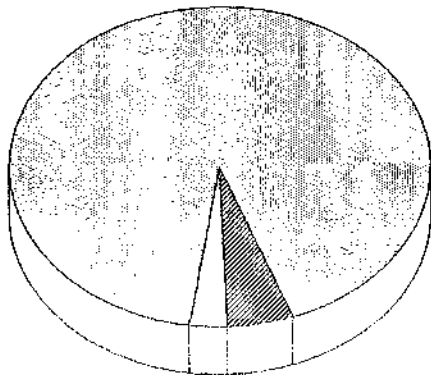
# G3b. NGR. 510475.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>3</sup> )
0+ salmon	128.00
Older than 0+ salmon	0
0+ brown trout	4.00
Older than 0+ brown trout	7.00
Brown trout larger than 200mm	0
Total 0+ salmonids	132.00
Total salmonids	139.00
Other species	66.00
Total	205.00

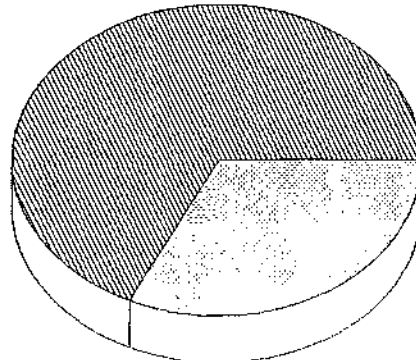
0+ salmon



0+ brown trout

Older than 0+ brown trout

Salmonids



Other species

Site Report.

Watercourse: Grizedale Beck.

Site Code:G4a.

Location: Woodacre Hall.

N.G.R.: 502469

Date Fished: 27/04/94

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	E	-	A

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2.0m (1-3m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.05m (0.05-0.1m)

Substrate Composition:

Gravel 70% Cobble 30%

Water Level:

Low, summer flow.

Site Description:

Pool 10% Glide 60% Riffle 30%

Area of glide and riffle between two deeper pools.  
Accessible to migratory salmonids.

Adjacent Land Use:

Improved pasture with sheep grazing.

Fishing Rights:

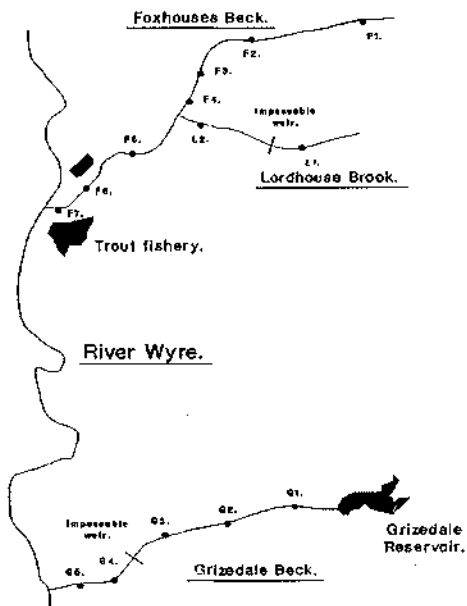
Not Known.

Comments:

No salmon were found at this site. 18 brown trout were caught from 70-110mm. 32 bullhead and 5 eels were also caught.

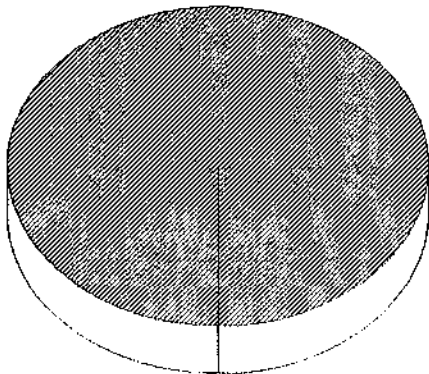
# G4a. NGR. 502469.

## Foxhouses and Grizedale Becks: Site locations.

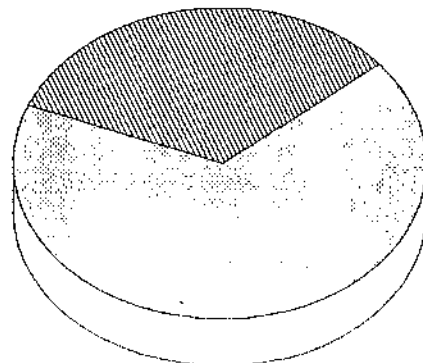


Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	0
Older than 0+ brown trout	18.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	18.00
Other species	37.00
Total	55.00

Older than 0+ brown trout



Salmonids



Other species

Site Report.

Watercourse: Grizedale Beck.

Site Code:G4b.

Location: Woodacre Hall.

N.G.R.: 502469

Date Fished: 12/10/94

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	A	E	C	B

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2.0m (1-3m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.05m (0.05-0.1m)

Substrate Composition:

Gravel 70% Cobble 30%

Water Level:

Low, summer flow.

Site Description:

Pool 10% Glide 60% Riffle 30%

Area of glide and riffle between two deeper pools.  
Accessible to migratory salmonids.

Adjacent Land Use:

Improved pasture with sheep grazing.

Fishing Rights:

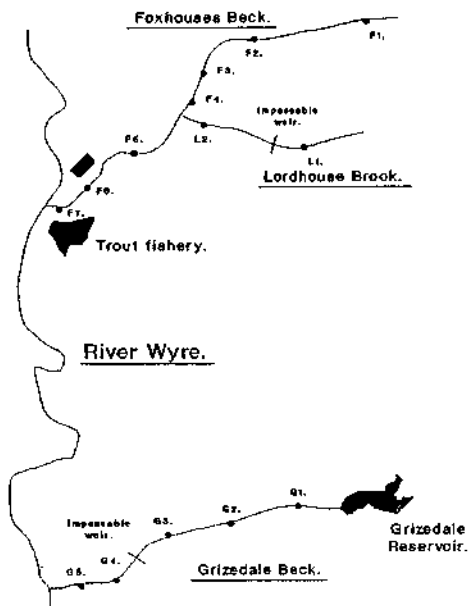
Not Known.

Comments:

92 salmon were found at this site, from 45-95mm. 28 brown trout were caught from 45-180mm. 59 bullhead and 8 eels were also caught.

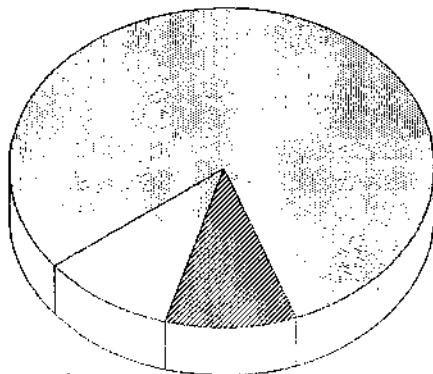
# G4b. NGR. 502469.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>3</sup> )
0+ salmon	112.00
Older than 0+ salmon	0
0+ brown trout	14.00
Older than 0+ brown trout	14.00
Brown trout larger than 200mm	0
Total 0+ salmonids	126.00
Total salmonids	140.00
Other species	67.00
Total	207.00

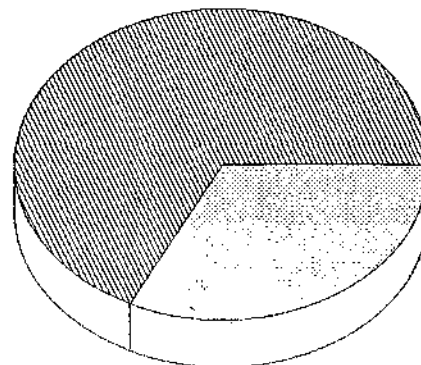
0+ salmon



0+ brown trout

Older than 0+ brown trout

Salmonids



Other species

Site Report.

Watercourse: Foxhouses Brook.

Site Code:F5a.

Location: Scorton Tarmac quarry, adjacent to old settlement lagoons.

N.G.R.: 518514

Date Fished: 19/04/94.

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	-	D	-	A

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.3m (0.05-1.1m)

Substrate Composition:

Gravel 60% Cobble 35% Sand 5%

Water Level:

Low, clearing after rain.

Site Description:

Pool 15% Glide 65% Riffle 20%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Gravel quarry site.

Fishing Rights:

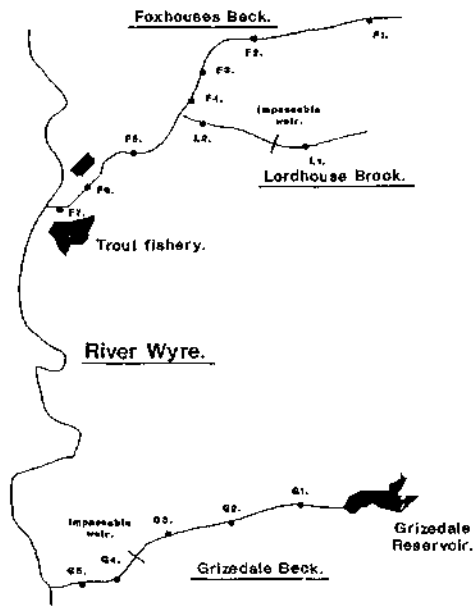
Not known.

Comments:

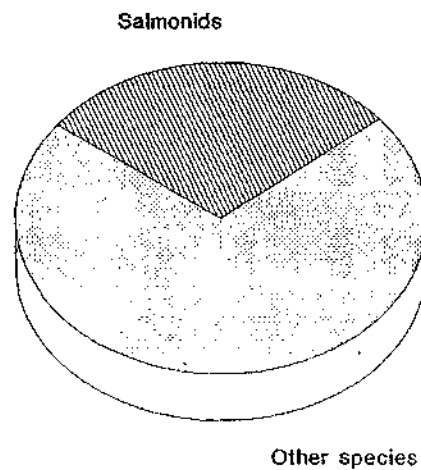
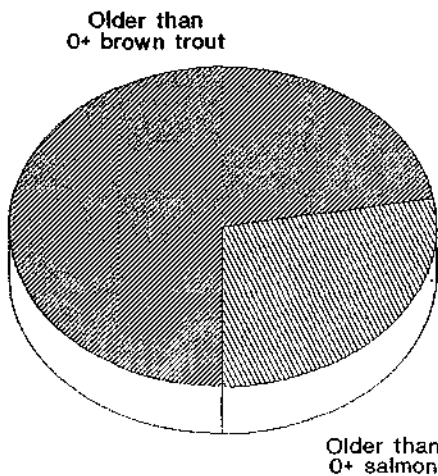
5 salmon were found at this site from 70-85mm. 33 brown trout were caught from 70-185mm. 1 stoneloach, 10 bullhead and 7 eels were also caught.

# G5a. NGR. 502466.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>2</sup> )
0+ salmon	0
Older than 0+ salmon	5.00
0+ brown trout	0
Older than 0+ brown trout	13.00
Brown trout larger than 200mm	0
Total 0+ salmonids	0
Total salmonids	18.00
Other species	45.00
Total	63.00



Site Report.

Watercourse: Grizedale Beck.

Site Code:G5b.

Location: Upstream of confluence.

N.G.R.: 502466

Date Fished: 12/10/94

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	B	D	D	C

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, quantitative survey with upstream and downstream stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2.0m (1-3m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.05m (0.05-0.9m)

Substrate Composition:

Gravel 70% Cobble 30%

Water Level:

Low, summer flow.

Site Description:

Pool 10% Glide 70% Riffle 20%

Area of glide and riffle between two deeper pools.  
Accessible to migratory salmonids.

Adjacent Land Use:

Improved pasture.

Fishing Rights:

Not Known.

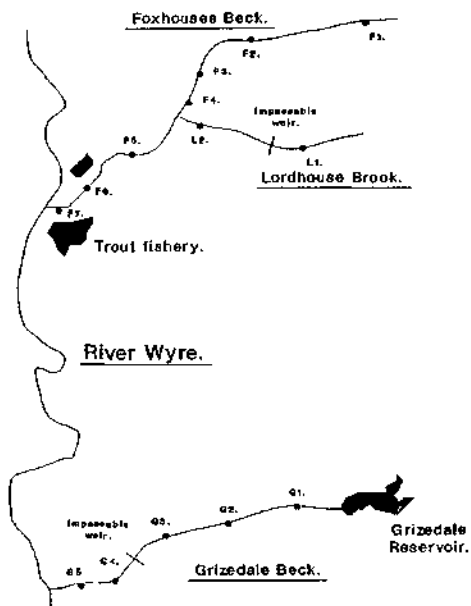
Comments:

51 salmon were found at this site, from 45-145mm. 18 brown trout were caught from 60-200mm. 50 bullhead, 12 stoneloach, 89 minnow and 4 eels were also caught.



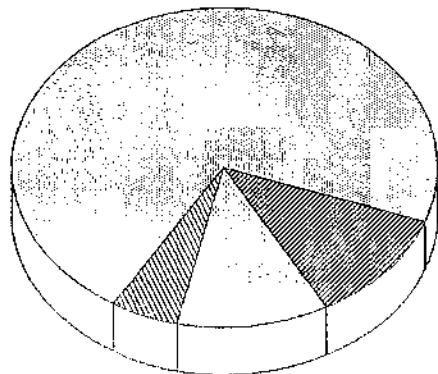
# G5b. NGR. 502466.

## Foxhouses and Grizedale Becks: Site locations.



Species.	Density (N/100m <sup>3</sup> )
0+ salmon	56.00
Older than 0+ salmon	4.00
0+ brown trout	9.00
Older than 0+ brown trout	9.00
Brown trout larger than 200mm	0
<b>Total 0+ salmonids</b>	<b>65.00</b>
<b>Total salmonids</b>	<b>80.00</b>
<b>Other species</b>	<b>155.00</b>
<b>Total</b>	<b>235.00</b>

0+ salmon

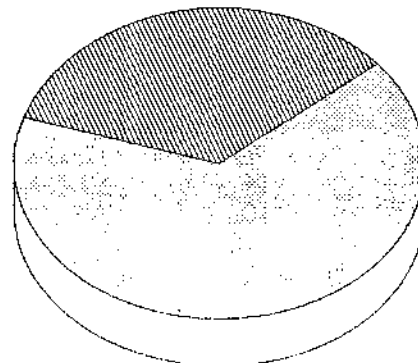


Older than 0+ salmon

0+ brown trout

Older than 0+ brown trout

Salmonids



Other species

Appendix 2.

Foxhouses and Grizedale Becks:

Site summaries, 1992.

Site Report.

Watercourse: Foxhouses Brook.

Site Code: Fo01

Location: Street.

N.G.R.: 521517

Date Fished: 5/08/92

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 3m (1-4m)

Area: 150m<sup>2</sup>

Mean Depth (Range): 0.1m (0.05-0.1m)

Substrate Composition:

Gravel 50% Cobble 30% Sand 20%

Water Level:

Low, summer flow.

Site Description:

Pool 40% Glide 40% Riffle 20%

Area of glide and pool interspersed with riffle.  
Accessible to migratory salmonids.

Adjacent Land Use:

Improved Pasture.

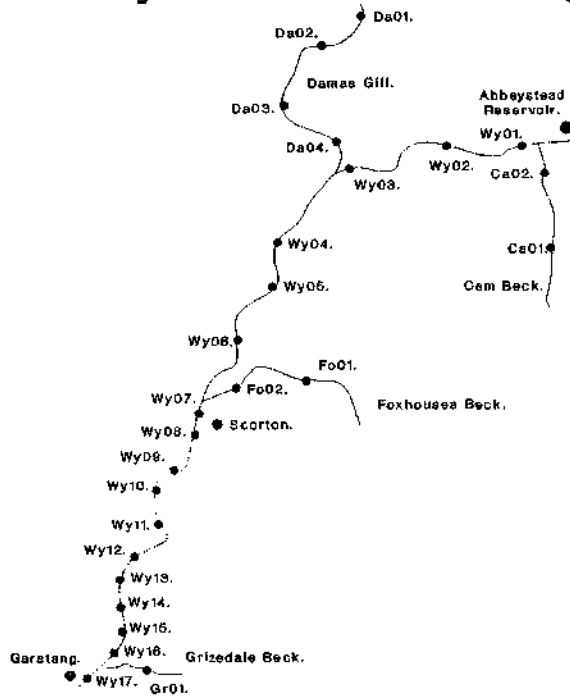
Fishing Rights:

Comments:

No salmon were found at this site. 24 brown trout were caught from 55-155mm. 102 bullheads, 5 eels and 10 stone loach were also found.

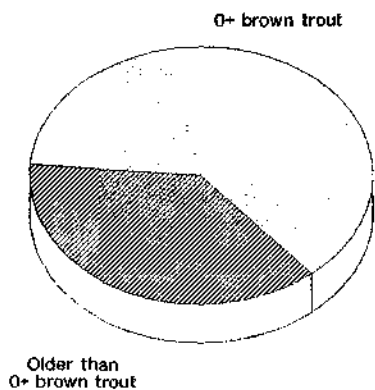
# Fo01. NGR. 521517.

## Abbeystead to Garstang.

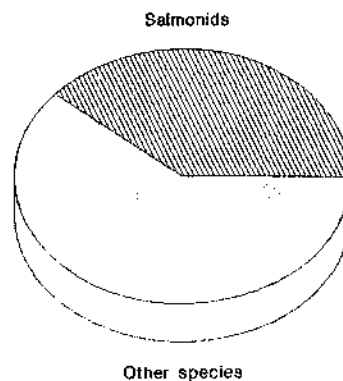


Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	10.00
Older than 0+ brown trout	6.00
Brown trout larger than 200mm	0
<b>Total 0+ salmonids</b>	<b>10.00</b>
<b>Total salmonids</b>	<b>16.00</b>
<b>Other species</b>	<b>25.33</b>
<b>Total</b>	<b>41.33</b>

(Not to scale).



Salmonid population composition.



Total population composition.

Site Report.

Watercourse: Foxhouses Brook.

Site Code: Fo02

Location: Scorton Tarmac Quarry. Beside quarry effluent lagoons.

N.G.R.: 518514

Date Fished: 6/08/92

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 50m

Mean Width (Range): 2m (1-4m)

Area: 100m<sup>2</sup>

Mean Depth (Range): 0.2m (0.05-0.5m)

Substrate Composition:

Gravel 50% Cobble 30% Sand 20%

Water Level:

Low, summer flow.

Site Description:

Pool 60% Glide 20% Riffle 20%

Area of glide and pool interspersed with riffle. Water was a milky white colour.

Accessible to migratory salmonids.

Adjacent Land Use:

Improved Pasture.

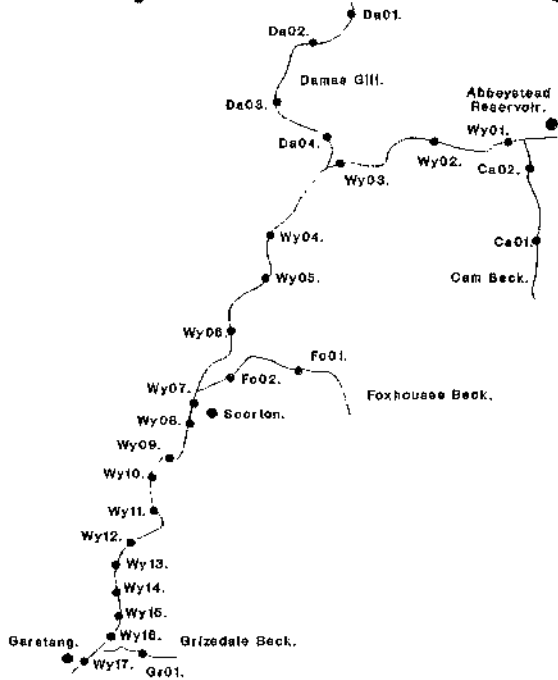
Fishing Rights:

Comments:

No salmon were found at this site. 21 brown trout were caught from 55-260mm. 5 bullheads were also found.

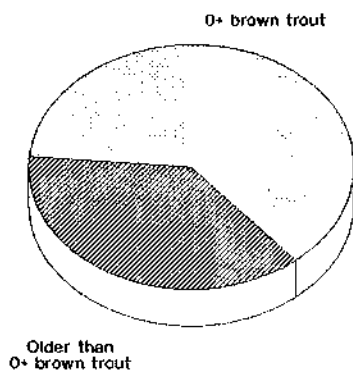
# Fo02. NGR. 518514.

## Abbeystead to Garstang.

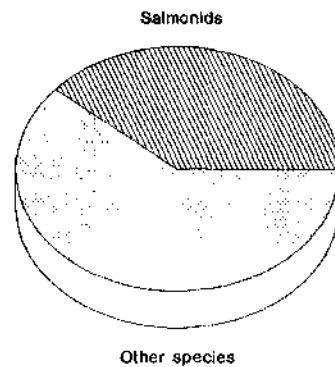


(Not to scale).

Species.	Density (N/100m <sup>3</sup> )
0+ salmon	0
Older than 0+ salmon	0
0+ brown trout	6.00
Older than 0+ brown trout	12.00
Brown trout larger than 200mm	3.00
Total 0+ salmonids	6.00
Total salmonids	21.00
Other species	5.00
Total	26.00



Salmonid population composition.



Total population composition.

Site Report.

Watercourse: Grizedale Beck.

Site Code:Gr01.

Location: Woodacre Hall.

N.G.R.: 502469

Date Fished: 7/07/92

Site classification (salmonids).

	0+ salmon	Older than 0+ salmon	0+ trout	Older than 0+ trout
Class	D	E	C	C

Method: Upstream electro-fishing, 2 anodes, pulsed DC (75V), wading, no stopnets.

Habitat Features

Length: 30m

Mean Width (Range): 2.0m (1-3m)

Area: 60m<sup>2</sup>

Mean Depth (Range): 0.05m (0.05-0.1m)

Substrate Composition:

Gravel 70% Cobble 30%

Water Level:

Low, summer flow.

Site Description:

Pool 10% Glide 60% Riffle 30%

Area of glide and riffle between two deeper pools.  
Accessible to migratory salmonids.

Adjacent Land Use:

Improved pasture with sheep grazing.

Fishing Rights:

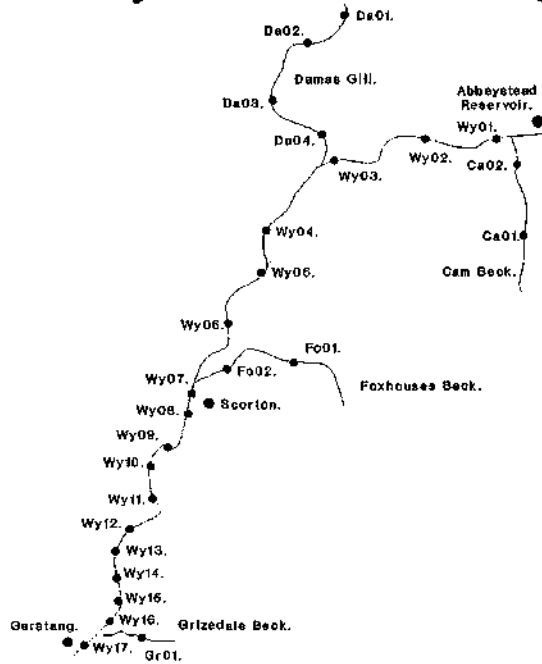
Not Known.

Comments:

4 0+ salmon were found at this site. 5 brown trout were caught from 60-105mm. No other fish species caught.

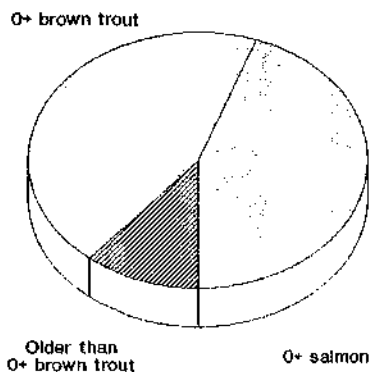
# Gr01. NGR. 502469.

## Abbeystead to Garstang.

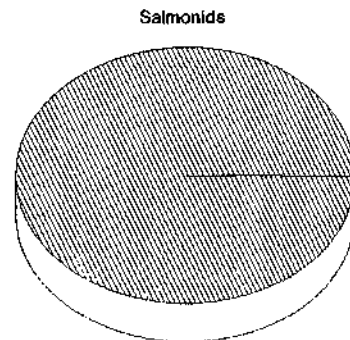


Species.	Density (N/100m <sup>3</sup> )
0+ salmon	13.33
Older than 0+ salmon	0
0+ brown trout	13.33
Older than 0+ brown trout	3.33
Brown trout larger than 200mm	0
Total 0+ salmonids	26.66
Total salmonids	29.99
Other species	0
Total	29.99

(Not to scale).



Salmonid population composition.



Total population composition.