

10 SCALE D3.32C  
(35)

Scientific Investigations Database - NFFT

Unique Document No: 5162

UDC Class No: 597

Keywords: SCALE SAMPLES  
GROWTH RATES

Annotations:

Contact details:

Post:

Ecological Appraisal Team Leader

Name:

Liz Locke

Address:

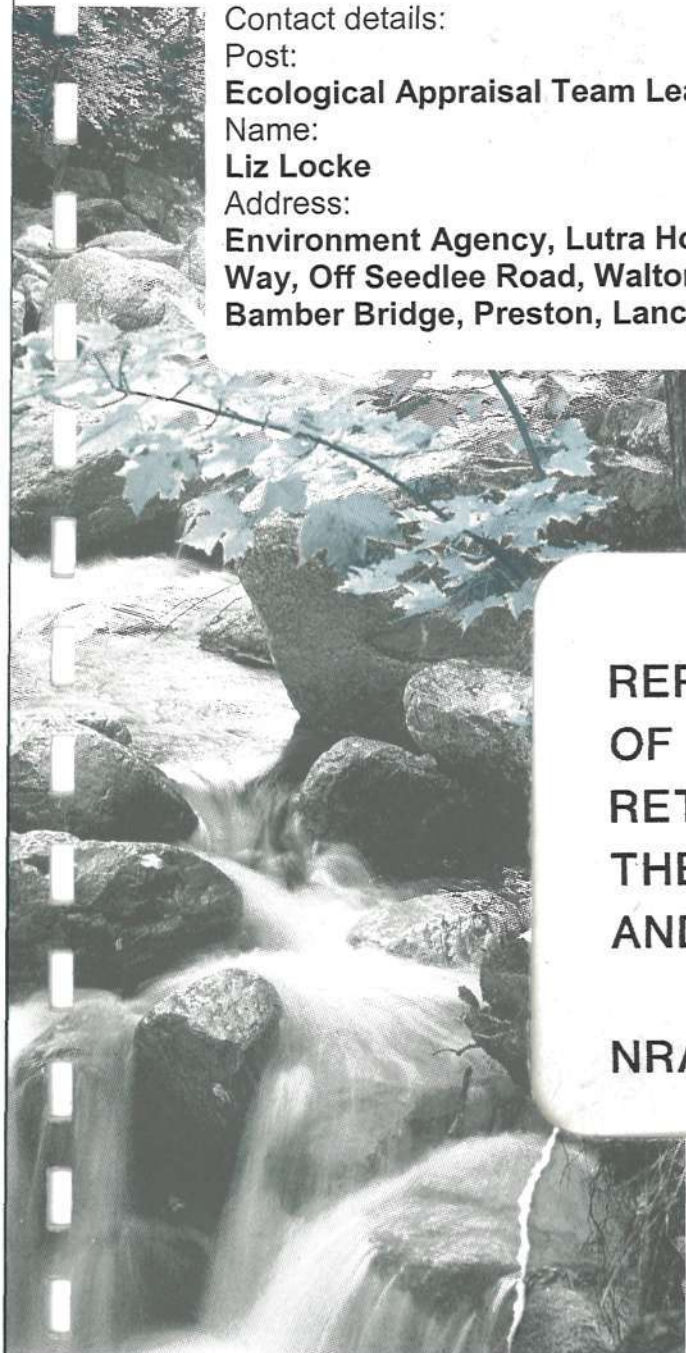
Environment Agency, Lutra House, Dodd  
Way, Off Seedlee Road, Walton Summit,  
Bamber Bridge, Preston, Lancs, PR5 8BX



NRA

*tional Rivers Authority*

*North West Region*



REPORT ON THE ANALYSIS  
OF SALMON SCALE SAMPLES  
RETURNED BY ANGLERS ON  
THE RIVERS RIBBLE  
AND HODDER.

NRA/NW/FTR/95/11

GUARDIANS OF THE WATER  
ENVIRONMENT

**REPORT ON THE ANALYSIS  
OF SALMON SCALE SAMPLES  
RETURNED BY ANGLERS ON  
THE RIVERS RIBBLE  
AND HODDER.**

**NRA/NW/FTR/95/11**

**D. Clifton-Dey  
M. Walsingham  
January 1995.**

## CONTENTS

	Page
1. Summary	1
2. Introduction	2
3. Methods	3
4. Sea-age classes and run timing	4
5. Results	9
5.1 Number of scales received	9
5.2 Sea age	9
5.3 Freshwater age	10
5.4 Salmon weights	11
5.5 Historical scale data	15
6. Discussion	20
6.1 Assumptions and problems	20
6.2 Timing of scale returns	20
6.3 Age classes and run timing	21
6.4 Weight distributions	22
6.5 Mean weight of salmon and grilse	23
7. Recommendations	24

## 1. SUMMARY

1. Salmon scales were received from anglers who had caught fish on the Rivers Ribble and Hodder in 1994. The freshwater and sea ages of these fish was determined by the identification and counting of annuli.

2 The majority (91%) of salmon had spent two years in freshwater prior to their migration to sea. Smaller proportions had spent 1 or 3 years in freshwater (3% and 6% respectively).

3 The majority of salmon caught by anglers were grilse (70%), two sea-winter salmon comprised 26% of the catch, and salmon that had spawned previously 4%.

4 Two sea-winter fish dominated the catch in the months of May, June and July. In August, September and October, grilse dominated. On most other British rivers grilse dominate in early summer. This apparent difference in grilse run timing on the Ribble system may be due to low river flows in the early summer months of 1994. These would not encourage upstream migration of salmon and therefore reduce the opportunities for anglers to catch fish, thereby decreasing angler effort and the influx of scale samples.

5 There are apparent differences in the salmon caught by anglers in the area of the River Ribble upstream of Hodder Foot with those caught on the River Hodder itself. These differences are seen in the proportion of each sea-age class caught and the mean weights of grilse in the two areas. This suggests that a different salmon stock may be present in the River Ribble to that of the River Hodder.

6 Most of the grilse caught by anglers weighed less than 10lb whilst most of the two sea-winter salmon weighed more. This weight appears to be a reasonably accurate means of distinguishing the sea age of salmon from the Ribble catchment.

7 Comparisons were made between samples received in 1994 and those from 1993 and 1992.

## 2. INTRODUCTION

Fisheries technical staff from the North West Central Area currently provide a service for the ageing of salmon scales from fish caught by anglers on the Rivers Ribble and Hodder.

The reasons for this are twofold:

- (i) To gather information on the biological characteristics of the salmon population on the River Ribble system in terms of weight, freshwater age and sea age.
- (ii) To provide a service to salmon anglers.

At the beginning of each fishing season, scale envelopes are distributed by the NRA to angling clubs and some individual anglers. Scales taken from salmon caught on the rivers are returned to the NRA Central Area Office by the anglers, or more often, by NRA bailiffs. The age of each fish caught is then determined by the identification and counting of annuli for both the river and sea zones on the scale. This information is then passed back to the angler in the form of a certificate.

Information is provided by the angler on the scale packet concerning the length and weight of the fish caught, and the date, location and method of capture. Both this information and the age of the fish is recorded on a database. These data can be used to investigate the distribution, and exploitation patterns of the different age classes of the salmon stock within the river system.

This report is principally concerned with the scale samples received in 1994, although comparison is also made with samples from 1993 and 1992. References to data will all relate to that received in 1994 unless an alternate year is stated.

### 3. METHODS

Scale samples of angler caught fish were received sporadically throughout, and after, the game fishing season. The scales were read by technical staff, checked by the Assistant Fisheries Technical Officer, and a random sample of these re-checked by the Fisheries Technical Officer to ensure accuracy and consistency in the analysis. The information on the ages of individual fish was returned to the angler as soon as was practicable. For the purpose of collating the information from these scales, the River Ribble system was divided into three areas:

- Area 1. The River Ribble downstream of its confluence with the River Hodder (Hodder Foot).
- Area 2. The River Ribble upstream of its confluence with the River Hodder.
- Area 3. The River Hodder.

For each area the sea age, weight in pounds, date and method of capture of each salmon was collated. This information was then used to describe components of the salmon run on the Ribble system and to compare fishing methods.

In addition, a selection of scales from each age class of the received sample was imprinted onto acetate strips using a jewellers press. This enables a permanent record of salmon scales to be built up.

#### 4. SEA-AGE CLASSES AND RUN TIMING

All of the salmon caught by anglers on the River Ribble system were Atlantic salmon, *Salmo salar*. This species can be divided into age classes on the basis of the number of years spent by the fish at sea. The information in the following sub sections was taken from the Salmon Advisory Committee Report titled "Run Timing of Salmon".

##### 4.1 One sea-winter fish

Fish returning to fresh water after one winter at sea (1SW) are generally termed *grilse* (see Figures 1 and 3). These are caught in coastal waters as early as March but tend to reach peak abundance in July in most areas. They average 5-7 lbs in weight. Numbers generally decline sharply in August and September, though in some of the small rivers of South-West England there is a strong autumn run.

##### 4.2 Two sea-winter fish

Multiple sea-winter fish (2SW, 3SW, and 4SW) are generally termed salmon (Figure 2). The 2SW year-class shows the most variability in terms of run timing. Fish entering rivers in early spring may weigh as little as 7 lbs or less. Autumn run fish can weigh up to 20lbs or more.

##### 4.3 Three and four sea-winter fish

Three and four sea-winter fish tend to run early in the year, before the 1st of May, and are therefore true Spring fish. They vary in weight from less than 10 lb to more than 40 lb. Four sea-winter fish are now very rare.

##### 4.4 Previous spawners

Previous spawners are fish that have survived spawning in freshwater, returned to sea, and then migrated into the river again (Figure 4). It appears that fish returning to freshwater for a second time show a similar run timing to that of their first migration.

Figure 1.

Length - 660 mm.

Weight - 6.5 lb

Age - 2.1+

Method - Spinner

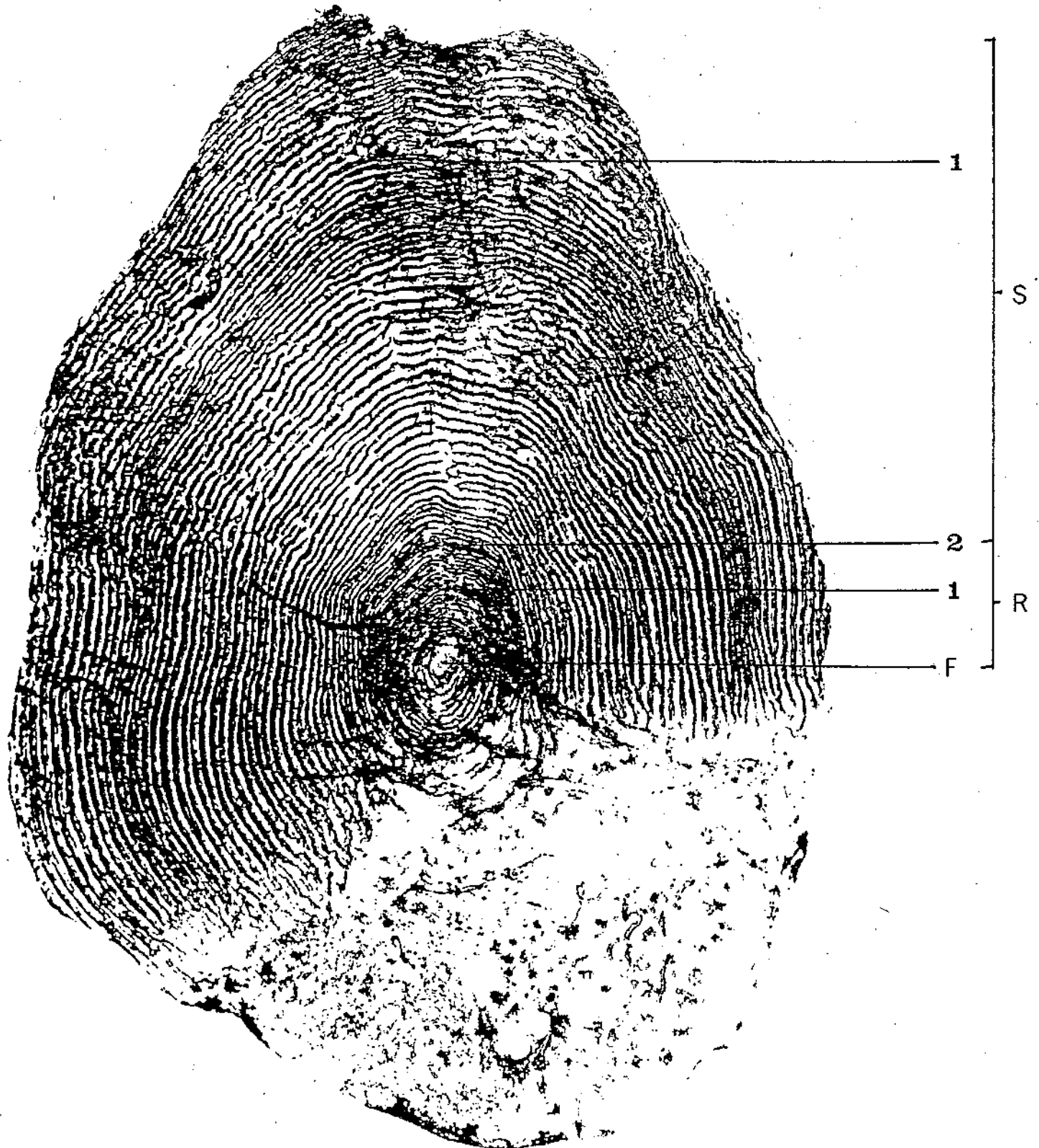




Figure 2.

Length - 930 mm.  
Weight - 21 lb  
Age - 2.2+  
Method - Shrimp

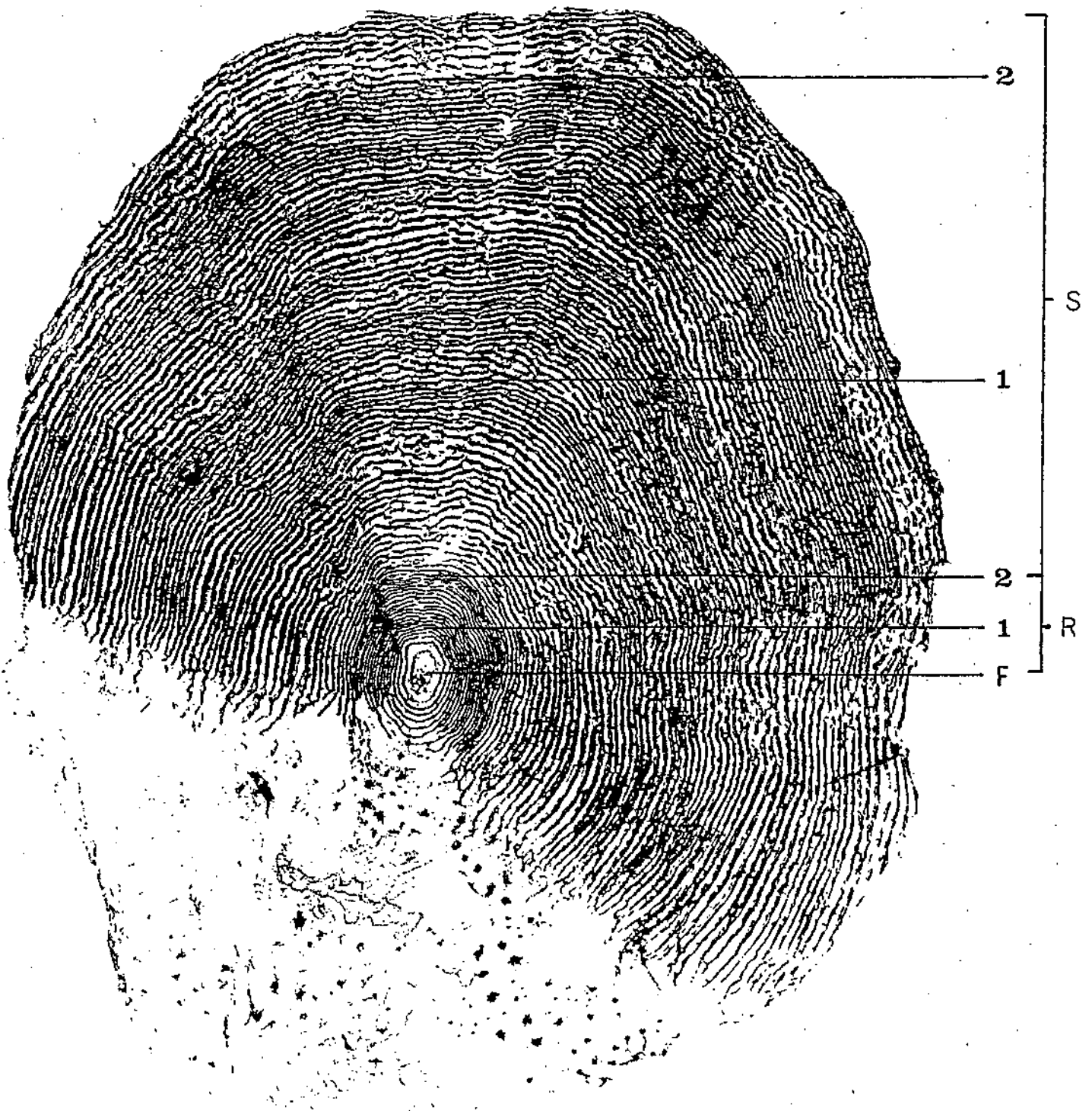


Figure 3.

Length - 660 mm.

Weight - 7.5 lb

Age - 3.1+

Method - Spinner

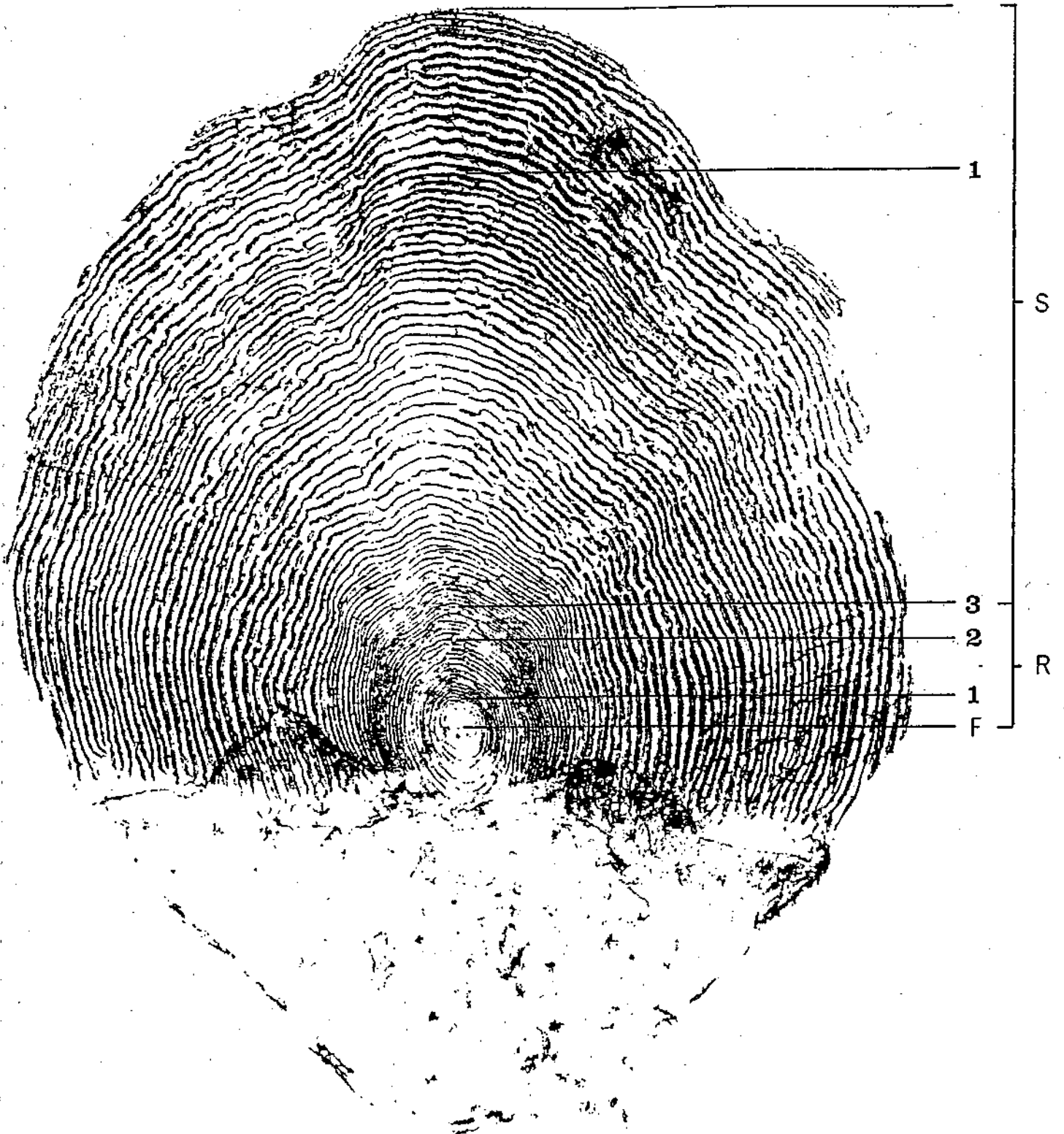
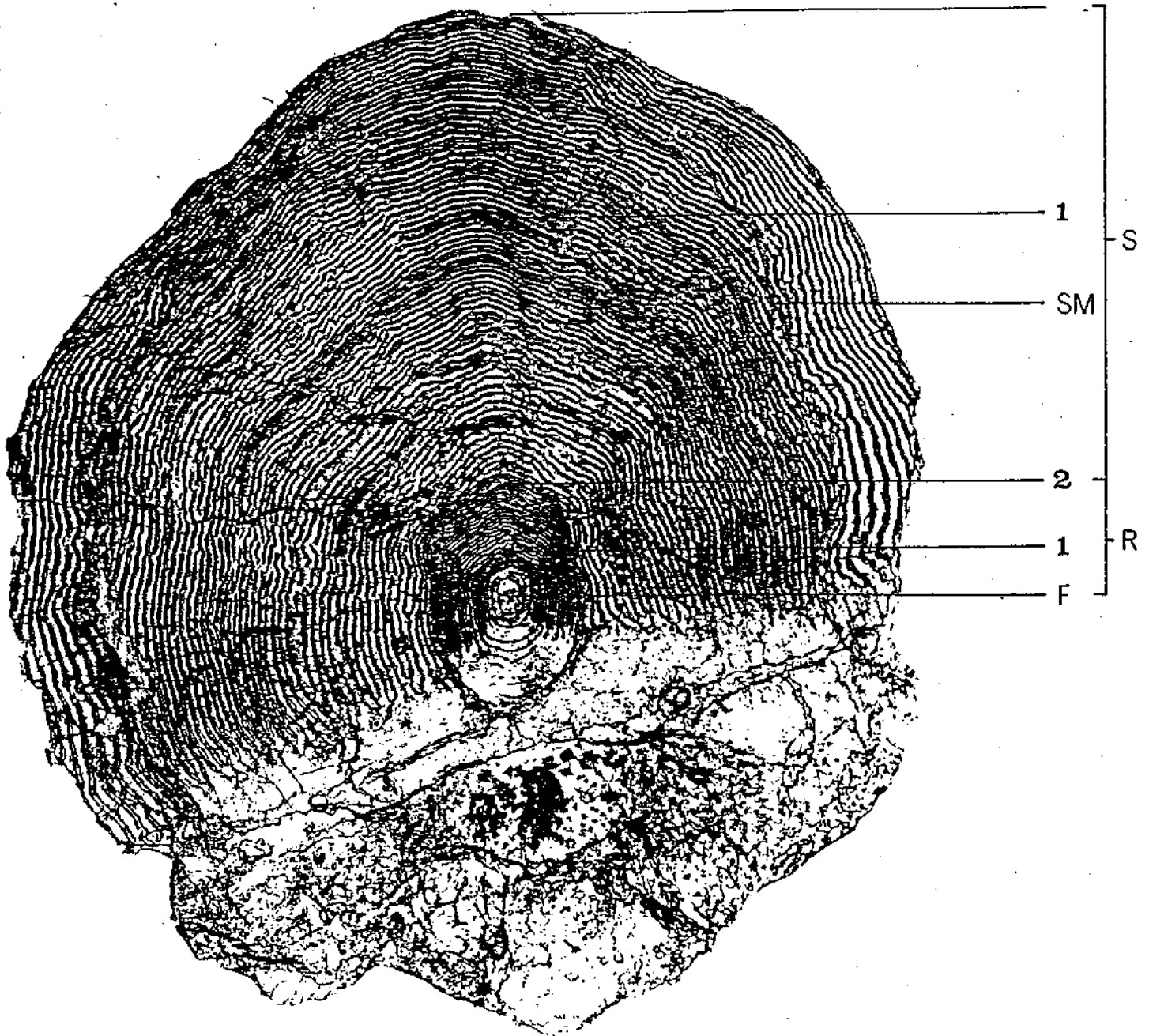


Figure 4.

Length - 840 mm.  
Weight - 13 lb  
Age - 2.1.SM+  
Method - Shrimp



## 5. RESULTS

### 5.1 Number of scales received.

A total of 93 scales was received in 1994 from all three areas of the Ribble catchment (see Table 1). Of these, five were unsuitable for further analysis due to these being either unreadable, taken from kelts, or from not having sufficient additional information on the scale packets. Scales were received from anglers for fish caught in all months from May to October. The majority of scales received, however, were from fish caught in September and October.

The first scales to be received were from fish caught during May and June on the Ribble in the area downstream of Hodder Foot. Few scales were received from the two areas above this until September. In October, fewer scales were received from the area downstream of Hodder Foot (11), than from the areas upstream (23). See Table 1.

Table 1. Number of scales received

MONTH	DOWNSTREAM HODDER FOOT	UPSTREAM HODDER FOOT	RIVER HODDER	TOTAL
MAY	3	-	-	3
JUNE	3	-	-	3
JULY	-	1	-	1
AUGUST	1	3	1	5
SEPTEMBER	27	11	4	42
OCTOBER	11	16	8	34
TOTAL	45	30	13	88

### 5.2. Sea age

Age analysis of the salmon scales received from the three areas, and for the months of May to October are shown in Table 2. All of the scale samples received from salmon caught in the months of May, June, and July were from fish that had spent two winters at sea (2SW).

**Table 2. Sea ages**

MONTH	DOWNSTREAM HODDER FOOT			UPSTREAM HODDER FOOT			RIVER HODDER			TOTAL		
	1SW	2SW	P/S	1SW	2SW	P/S	1SW	2SW	P/S	1SW	2SW	P/S
MAY	-	3	-	-	-	-	-	-	-	-	3	-
JUNE	-	3	-	-	-	-	-	-	-	-	3	-
JULY	-	-	-	-	1	-	-	-	-	-	1	-
AUGUST	-	1	-	3	-	-	-	1	-	3	2	-
SEPTEMBER	23	4	-	9	2	-	4	-	-	36	6	-
OCTOBER	7	2	2	13	1	1	3	5	-	23	8	3
TOTAL	30	13	2	25	4	1	7	6	-	62	23	3

**Key**        1SW = 1 sea-winter grilse  
               2SW = 2 sea-winter salmon  
               P/S = fish which had spawned previously

In September, of the 42 scale samples received, 6 (14%) were from two sea-winter salmon, the remaining 36 (86%) were grilse (1SW).

In October, of the 34 scales received, 23 (68%) were from grilse, 8 (24%) were from two sea-winter fish, and 3 (8%) were from salmon that had previously spawned. October was the first month that any scales from previously spawned salmon were received.

In summary, of all of the scales received in 1994, 70% were from grilse, 26% from two sea-winter salmon, and 4% from salmon that had spawned previously.

### 5.3 Freshwater age

The freshwater ages of the salmon scales received are shown in table 3. Discounting the 14 scales for which the freshwater age could not be read because of scale regeneration, 72 (91%) were salmon that had spent 2 years in freshwater, 2 (3%) had spent 1 year, and 5 (6%) fish that had spent 3 years in freshwater.

**Table 3. Freshwater ages**

AREA	FRESHWATER AGE			
	1 YEAR	2 YEARS	3 YEARS	NOT KNOWN
DOWNSTREAM HODDER FOOT	1	40	1	7
UPSTREAM HODDER FOOT	-	22	4	5
RIVER HODDER	1	10	-	2
TOTAL	2	72	5	14

#### **5.4. Salmon weights**

##### **5.4.1. Weight distributions**

The frequency distributions for the weight of salmon and grilse caught (provided by the anglers on the scale packets) for each of the three areas, are shown in Figures 5 and 6. The weight distributions for the Ribble system as a whole are shown in Figure 7.

Insufficient numbers of scales were received from two sea-winter salmon for the whole Ribble catchment or for grilse on the River Hodder to perform any statistical tests on these components.

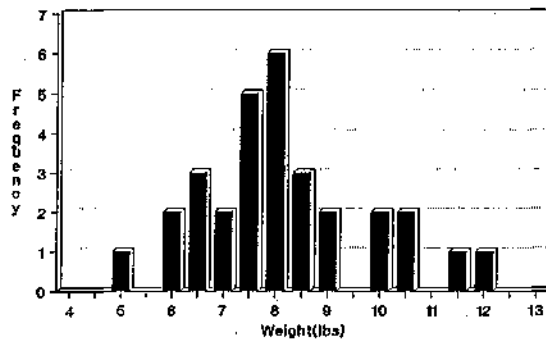
##### **5.4.2. Comparison of grilse weights.**

Comparison of the weight distributions of grilse from the area of the River Ribble downstream of Hodder Foot with the area of the Ribble upstream of Hodder Foot suggests a difference in the frequency distributions. Downstream of Hodder Foot, grilse appear to be heavier (average weight 8.13lb) than those upstream of Hodder Foot on the same river (average weight 6.35lb). A students t-test on this data produces a t value of 9.70, with 54 degrees of freedom. This corresponds to a highly significant difference ( $p = 0.001$ ) between the mean grilse weight in these two areas.

Figure 5.

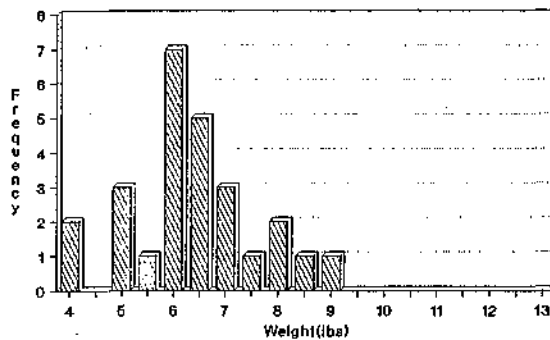
# 1994 Salmon Scale Returns Weight Distribution of Grilse

Downstream of Hodder Foot



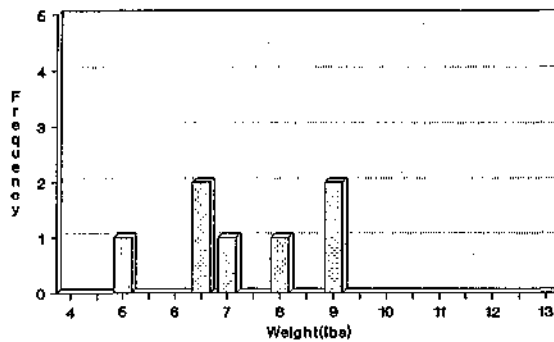
Av. wgt = 8.13lb  
Std. Dev. = 1.64  
Sample Size = 30

Upstream of Hodder Foot



Av. wgt = 6.35lb  
Std. Dev. = 1.23  
Sample Size = 25

River Hodder

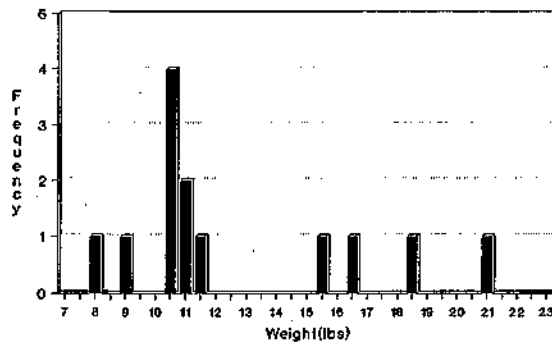


Av. wgt = 7.28lb  
Std. Dev. = 1.47  
Sample Size = 7

Figure 6.

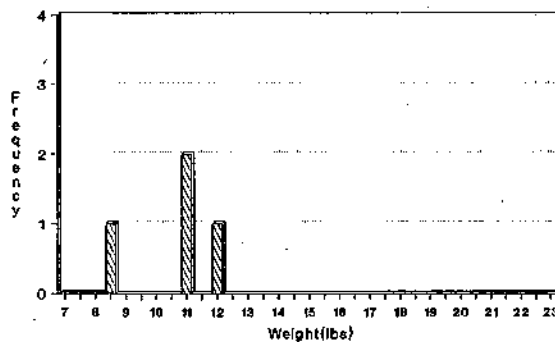
# 1994 Salmon Scale Returns Weight Distribution of Salmon (2SW)

Downstream of Hodder Foot



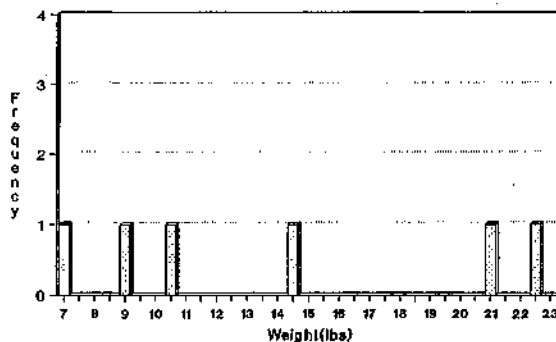
Av. wgt = 12.6lb  
Std. Dev. = 3.95  
Sample Size = 13

Upstream of Hodder Foot



Av. wgt = 10.7lb  
Std. Dev. = 1.49  
Sample Size = 4

River Hodder



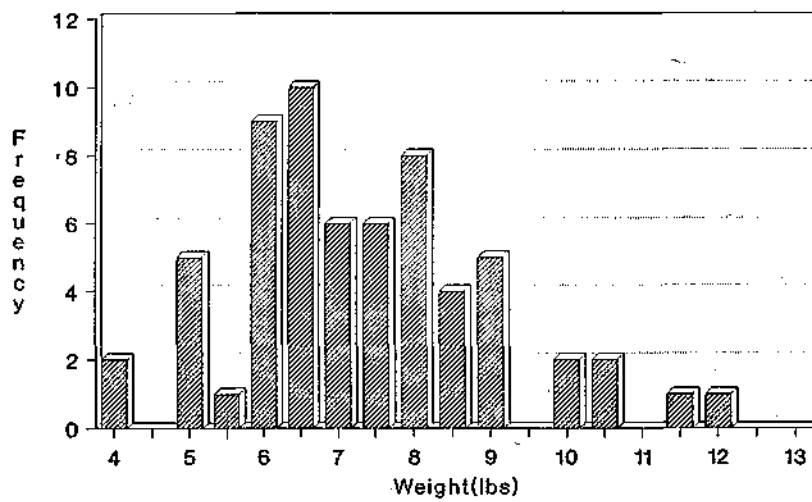
Av. wgt = 14.1lb  
Std. Dev. = 6.45  
Sample Size = 6



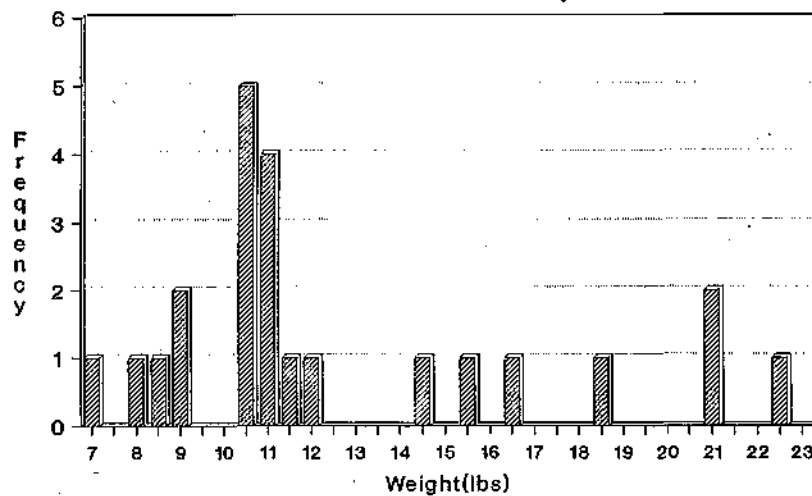
Figure 7.

# 1994 Scale Sample Returns Overall Weight Distribution

Rod caught grilse  
Av. wgt. = 7.29 lb  
Std. Dev. = 1.68  
Sample Size = 62



Rod caught salmon  
Av. wgt. = 12.65 lb  
Std. Dev. = 4.42  
Sample Size = 23



#### 5.4.3. Salmon/grilse weight difference

As might be expected, the weight/frequency distributions of salmon and grilse for the whole Ribble system suggest that an identifiable difference in weight exists between these age groups. For grilse, 90% of the scales received were from fish less than 10lb in weight, whilst 79% of salmon weighed 10lb and above. This indicates an approximate 10lb weight split between one sea-winter grilse and two sea-winter salmon.

#### 5.5. Historical scale data.

The NRA, North West Central Area Fisheries section had also received a number of scale samples from anglers of fish caught in the years 1992 and 1993. Age datum for these scales were returned to the anglers in the years that the fish were caught, but no statistical testing was performed on the results. Whilst compiling this report for the 1994 scale sample returns, results from the previous years samples were also analysed. Some of these findings are given below.

##### 5.5.1. 1993 Scale samples

A total of 153 salmon scales was received in 1993. Fish were caught and scales returned from all three areas of the Ribble catchment and in all months from July to October. Three sets of scales could not be read. The sea ages of the 1993 sample are shown in Table 4., 123 (82%) were grilse, 26 (17%) two sea-winter salmon, and 1 (1%) salmon had spawned previously.

The freshwater ages of twelve of the salmon scales received could not be read because of scale regeneration. Of the remainder, 136 (98%) were from fish that had spent two years in freshwater and 3 (2%) from fish that had spent one year in freshwater.

Three of the grilse scales received were from fish of unknown weight. Of the remainder, 119 (99%) grilse were less than 10lb in weight and 25 (96%) of the two sea-winter salmon greater than 10lb in weight.

A significant difference was found between the mean grilse weights for the River Ribble upstream of Hodder Foot with that for the River Hodder itself ( $p = 0.05$  with 69 degrees of freedom). There was no significant difference found between the mean grilse weights of the River Ribble upstream of Hodder Foot and downstream of Hodder Foot.

**Table 4. Sea ages 1993**

MONTH	DOWNSTREAM HODDER FOOT			UPSTREAM HODDER FOOT			RIVER HODDER			TOTAL		
	1SW	2SW	P/S	1SW	2SW	P/S	1SW	2SW	P/S	1SW	2SW	P/S
MAY	-	-	-	-	-	-	-	-	-	-	-	-
JUNE	-	-	-	-	-	-	-	-	-	-	-	-
JULY	2	1	-	6	-	-	2	2	-	10	3	-
AUGUST	13	4	-	18	1	1	1	-	-	32	5	1
SEPTEM.	22	5	-	16	1	-	4	1	-	42	7	-
OCTOBER	13	3	-	17	7	-	9	1	-	39	11	-
TOTAL	50	13	-	57	9	1	16	4	-	123	26	1

**5.5.2. 1992 Scale samples**

A total of 48 salmon scales was received in 1992. Fish were caught and scales received from all three areas of the Ribble catchment though only in the months of September and October. A single salmon scale was also returned in August. The age of one salmon could not be read. The sea ages of the 1992 sample are shown in Table 5., 30 (64%) were grilse, 16 (34%) two sea-winter salmon, and 1 (2%) salmon had spawned previously.

The freshwater ages of two of the salmon scales could not be read. All of the remaining 46 scales were from salmon that had spent two years in freshwater.

All of the grilse scales received were from fish less than 10lb in weight. All of the two sea-winter salmon scales received were from fish greater than 10lb in weight.

No significant difference was found between the mean grilse weights from any of the three areas of the river.

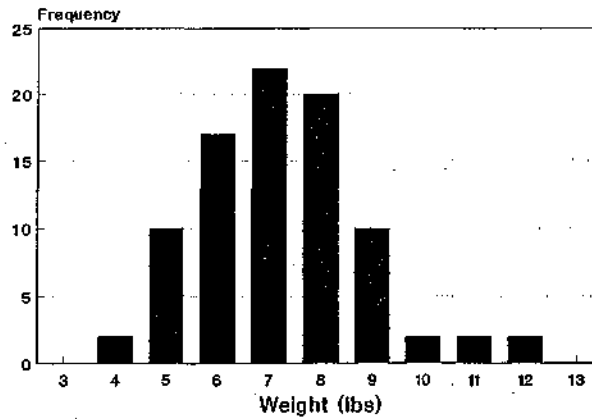
**Table 5. Sea ages 1992**

MONTH	DOWNSTREAM HODDER FOOT			UPSTREAM HODDER FOOT			RIVER HODDER			TOTAL		
	1SW	2SW	P/S	1SW	2SW	P/S	1SW	2SW	P/S	1SW	2SW	P/S
MAY	-	-	-	-	-	-	-	-	-	-	-	-
JUNE	-	-	-	-	-	-	-	-	-	-	-	-
JULY	-	-	-	-	-	-	-	-	-	-	-	-
AUGUST	-	-	-	-	-	-	-	1	-	-	1	-
SEPTEMBER	4	1	-	8	2	-	3	1	-	15	4	-
OCTOBER	2	3	-	10	4	-	3	4	-	15	11	1
TOTAL	6	4	-	18	6	-	6	6	-	30	16	1

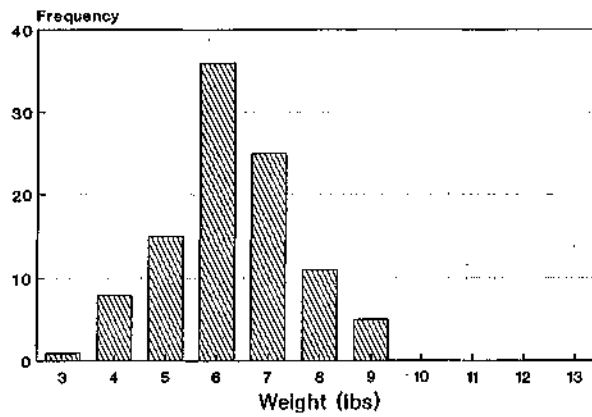
Figure 8.

## Weight of Rod Caught Grilse 1992-1994

### Downstream of Hodder Foot



### Upstream of Hodder Foot



### River Hodder

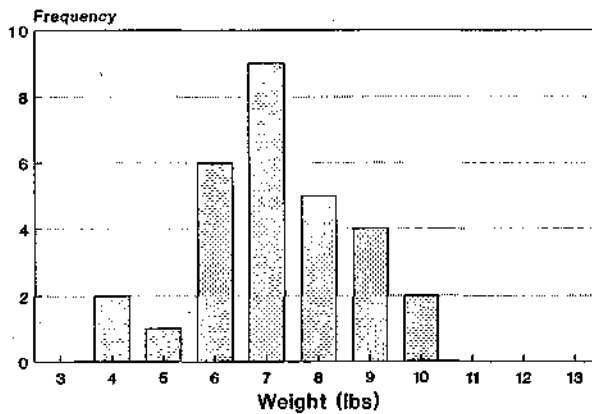
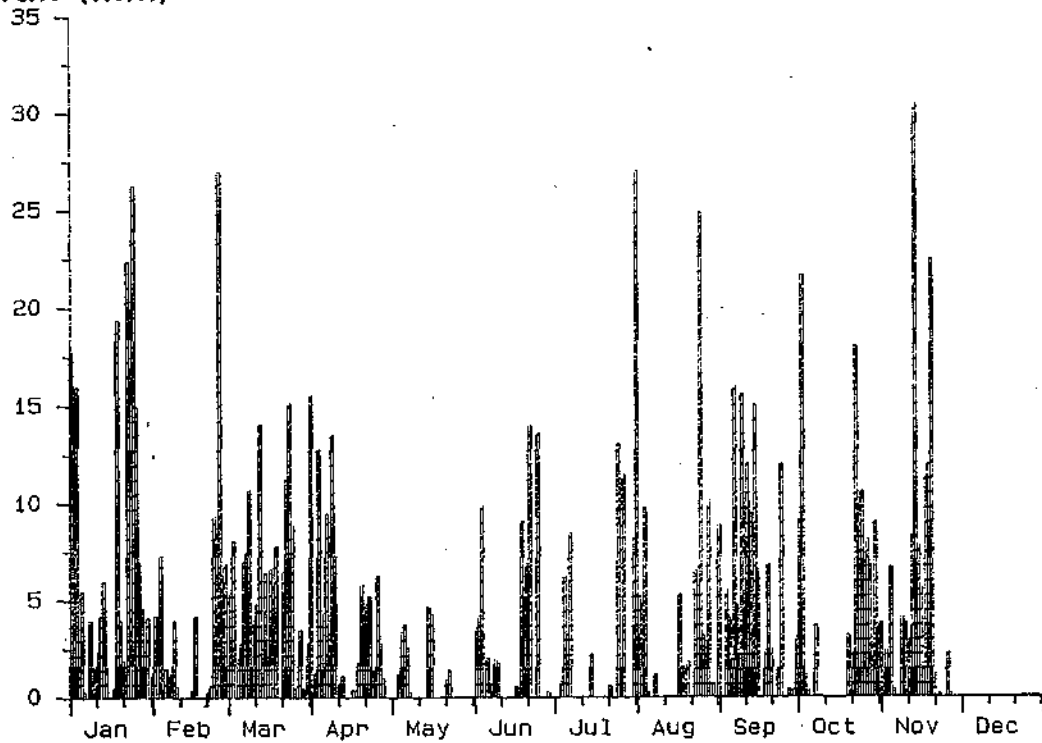


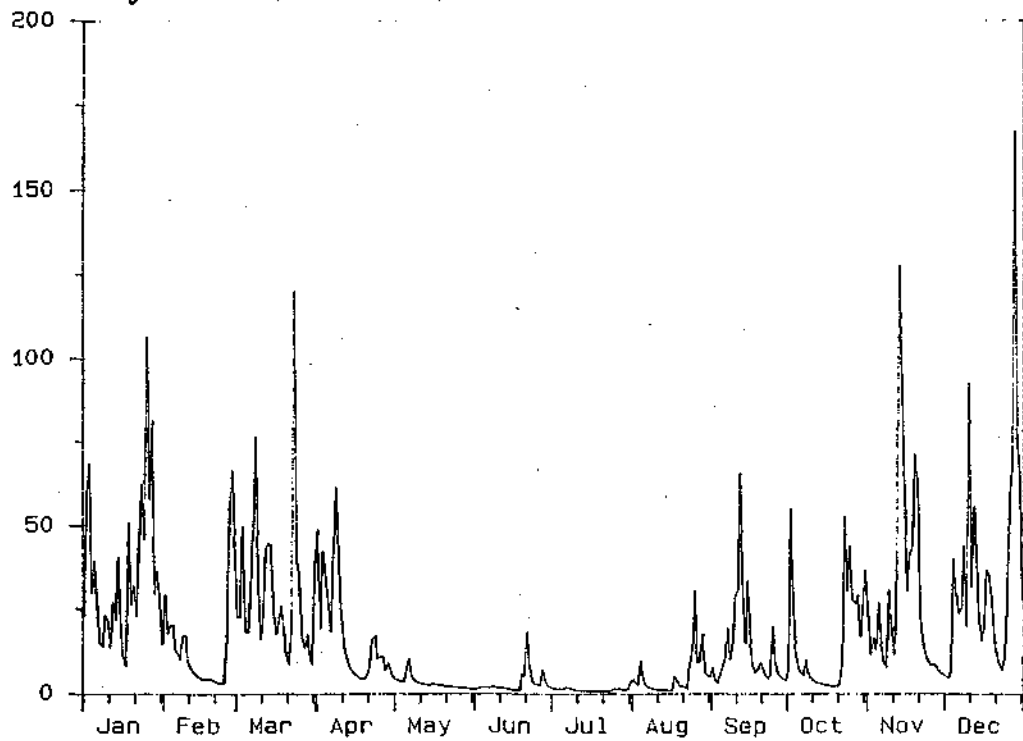
Figure 9.

# RIVER RIBBLE HYDROLOGICAL DATA 1994

Rainfall (mm)



Mean daily flow (cumecs)



## 6. DISCUSSION

### 6.1. Assumptions and problems

In discussing the above results, an assumption is made that scales returned are representative of the salmon stock exploited by anglers in the River Ribble system. This may not be a correct assumption for the following reasons.

- (i) Anglers may only send in scales from fish that they are particularly interested in knowing the ages of. Thus the NRA may receive scales from a disproportionate number of larger and older fish.
- (ii) Biases may arise from seasonal variations in angling conditions, differing catchability of grilse and multi sea-winter fish, and from the number of anglers fishing particular areas or methods.
- (iii) If scale returns from several years are compared, there will also be annual variations in angling conditions and in the numbers of fish in the river available for capture during the fishing season.

By continuing the data set through several fishing seasons and by comparing results between years a better understanding of the stock composition, run timing within the fishing season, and exploitation pattern of Ribble salmon will be gained.

### 6.2. Timing of scale returns

Scales were first received from anglers who had caught fish during the months of May and June in the area downstream of Hodder Foot. This is to be expected since returning salmon must pass through this area before reaching the areas upstream.

No scales were returned from the River Hodder until August but were received from the area of the River Ribble upstream of Hodder Foot in July. This suggests that some salmon destined for the River Ribble (upstream of Hodder Foot) run earlier than into the River Hodder itself.

This apparent difference in run times may be a result of a difference in salmon stocks between the River Ribble and the River Hodder. It may also simply be a product of the low numbers of scales taken from fish caught in May, June, July and August. Alternatively, Hodder salmon may rest in pools on the Lower Ribble until there is sufficient water for them to run the Hodder. Investigation of scale samples from past and future years should help to clarify this observation.

### 6.3. Age classes and run timing

#### 6.3.1 Freshwater age

The freshwater ages of the salmon scales received show that the Ribble system is comprised predominantly of adult salmon that had spent two years in freshwater. Only low numbers of scales were from fish that had spent either 3 years or 1 year in freshwater and this prevented any statistical analyses being carried out.

#### 6.3.2. Timing of grilse and two sea-winter salmon runs.

For the months of May, June, and July, all of the scales received were from two sea-winter salmon. This domination of the early summer run by multi sea-winter fish is somewhat surprising. As was seen in section 4, although in most British rivers the spring run of salmon is dominated by multi sea-winter fish, in the early summer months of June and July grilse normally dominate.

Scales from grilse were not received from anglers until September and October. In these months they constituted the majority of scales returned. This is later than might have been expected. However, this result could simply indicate that the River Ribble has an autumn run of grilse, as is the case in some small rivers of South-West England.

Alternatively, the generally low flows in the early summer months could have discouraged significant numbers of grilse from entering the river and being caught. The annual flow data for the River Ribble (Figure 9) indicates very low flows in June and July. These low flows are likely to discourage the entry of salmon into the river. They will also result in a low total fishing effort, since these conditions are not considered favourable for catching salmon.

Scale analyses from the 1994 trapping programme shows that grilse comprised a large proportion of the total catch in August, September and October. The fish trap is in the area of the River Ribble upstream of Hodder Foot. This indicates that grilse were present in this part of the river at least a month before scales from grilse were returned by anglers. It also confirms that the Ribble had a summer grilse run as well as an Autumn one in 1994.

The scales received in 1993 also corroborate the evidence for an early summer grilse run as they dominated the sample in July. This suggests that the later occurrence of grilse scales in 1994 may have been because of the low flows in early summer preventing and delaying their entry into the river with a concomitant lack of fishing effort.



### 6.3.3. Salmon Sea Age in the Ribble System

Data from age analysis suggests that the Ribble system is predominantly a grilse river (70% of the scale samples received in 1994). This is the case for most rivers in Britain (report of the Salmon Advisory Committee).

The age analysis for 1994 suggests a difference between the stock components of the River Ribble and the River Hodder. Upstream of Hodder Foot on the Ribble, the age composition was: 83% grilse, 13% two sea-winter salmon, and 4% previous spawners. On the River Hodder, the composition was: 53% grilse and 47% two sea-winter salmon confirming that the River Hodder had a greater percentage of two sea-winter fish than the Ribble in 1994.

Downstream of Hodder Foot, where fish that were destined for both areas upstream would be caught, the composition was 67% grilse, 29% two sea-winter salmon and 4% previous spawners. These figures lie between those for the two areas upstream. This suggests a theorem that there is a difference in the age classes of salmon between the two rivers.

This theorem is supported by the scale returns in 1992 but not by those of 1993. Data from future and past years may help to corroborate or refute this hypothesis.

### 6.4. Weight distributions

Further evidence of a difference in the populations of Ribble and Hodder salmon is indicated by the distributions of grilse weights. A significant difference existed between the mean grilse weights in the areas of the River Ribble above and below Hodder Foot in 1994. This suggests that heavier grilse caught below Hodder Foot are not caught on the River Ribble above Hodder Foot. These fish are likely to be grilse destined for the River Hodder.

Unfortunately, too few scale samples of grilse from the River Hodder were received in 1994 to perform any statistical tests comparing the mean weight of grilse in the River Hodder with those from the River Ribble upstream of Hodder Foot. However, the 1993 scale samples indicate a significant difference between the mean grilse weights for the River Ribble upstream of Hodder Foot with those for the River Hodder itself in that year.

Evidence of a variation between the salmon populations of the two rivers in terms of the weight of grilse, the sea age (see 5.3.2.), and the spatial differences between spawning areas suggests that two distinct salmon stocks exist on the River Ribble system. Further consideration of scale returns might help to corroborate or refute this.

#### 6.5. Mean weight of salmon and grilse

From the scale samples examined in 1994, it was apparent that 90% of one sea-winter fish weighed less than 10lb and 79% of two sea-winter fish weighed more. This was corroborated by the samples from 1993 and 1992. Therefore this weight appears to provide a reasonably accurate means of distinguishing the sea age of salmon from the Ribble catchment.

It is not suggested that this "rule of thumb" replace age analysis of scale samples since it could not be used to detect changes in the sea age composition of the Ribble salmon population as a whole. It could, however, be of interest to anglers on the river bank where accurate age analysis is not possible.

The majority of grilse that were 10lb or greater in weight were caught towards the end of the fishing season. These fish had possibly spent longer at the sea feeding grounds, grown larger and entered the river later. Conversely, most of the two sea-winter salmon less than 10lb in weight were caught in the early summer presumably because they had returned from their feeding grounds earlier than the larger, later run fish.

## 7. RECOMMENDATIONS

The total number of scales received from rod caught salmon in 1994 was fewer than received in 1993 (93 compared with 154 in 1993). This reduction in sample size is a source of some concern.

Ideally a sample of between 200 and 500 scales is required to perform meaningful statistics. However, the data that can be obtained from even a smaller sample, and the general goodwill that is generated between the NRA and the angling fraternity by the scale reading service, far outstrips the expenditure in terms of the time spent in reading the scales and preparing the reports for anglers.

This problem of decreasing sample size needs to be addressed and new ways found to increase the number of scales received.

A possible reason for the higher return of scales in 1993 was a large publicity push by the NRA to the clubs in that year. This was not repeated in 1994 and may explain the low returns for this year. Numbers of scale returns may be increased by further publicity of the scale reading service and possibly initiating some type of prize draw using the scale packets received.

## Appendix

### Salmon Scale Returns 1994

#### River Hodder

Date	Location	Method	Weight (lb)	Length (in)	Age
25.08.94	Sandalholme	Spinner	14.5	34	2.2+
01.09.94	Whitewell	Fly	6.5	26	1.1
07.09.94	Bashall Eaves	Spinner	8.25	27	R.1
10.09.94	Bashall Eaves	Spinner	6.75	26.5	2.1+
10.09.94	Paper Mill	Spinner	6.5	?	2.1+
02.10.94	Hodder Foot	Spinner	9	27	2.1+
03.10.94	?	Spinner	9	30	2.2
05.10.94	Black Wheel	Spinner	21	38	2.2+
05.10.94	Whitewell	Fly	9	28	R.1+
11.10.94	Bridge Pool	Fly	10.5	?	2.2
12.10.94	Chaigley	Spinner	5	25.5	2.1+
28.10.94	Chaigley	Spinner	7	28.25	2.2
31.10.94	Black Wheel	Fly	22.5	37	2.2+

## River Ribble

Date	Location	Method	Weight (lb)	Length (in)	Age
20.05.94	Lower Ribble	Shrimp	10.5	?	2+2
21.05.94	Lower Ribble	Shrimp	11	?	2.2
25.05.94	Lower Ribble	Shrimp	10.5	?	2.2+
06.06.94	Balderstone	Shrimp	9	29	2.2
08.06.94	Ribchester	Worm	10.75	30	2.2+
15.06.94	Lower Ribble	Spinner	11.5	31	2.2
13.07.94	Middle Ribble	Spinner	11	32.5	R.2
25.08.94	Clitheroe	Worm	6.25	25.5	2.1+
27.08.94	PDAS	Fly	8	26.5	R.1+
29.08.94	Hurst Green	Fly	10.5	31	2.2
31.08.94	Grindleton	Fly	5.75	23.5	2.1+
04.09.94	Mitton	Fly	6 or 7	?	2.1+
05.09.94	Hodder Foot	Spinner	7.5	26	3.1+
11.09.94	Clitheroe	Worm	4	24	2.1+
13.09.94	Dinckley	Spinner	10.5	32	1+2
13.09.94	Dinckley	Spinner	15.5	?	2+2
13.09.94	Clitheroe	Worm	7	26.5	2+1+
14.09.94	Paythorne	Spinner	8	28	R.1+
14.09.94	Ribchester	Worm	10.5	?	R.1+
14.09.94	Paythorne	Spinner	4	23	2.1+
15.09.94	Paythorne	Spinner	11	32	2.2
17.09.94	Brockholes	Fly	8.5	26.5	2.1+
17.09.94	Balderstone	Shrimp	8.5	27.5	2+1+
17.09.94	Calder Foot	Fly	7.5	26	2.1+
17.09.94	Calder Foot	Shrimp	7	?	R1+
17.09.94	Brockholes	Fly	8	25	2.1+

17.09.94	Clitheroe	Spinner	8.5	28.5	2+2
17.09.94	Grindleton	?	6.5	25	2.1+
17.09.94	Cross Gills	Spinner	9	26	2.1
18.09.94	Middle Ribble	Shrimp	6.5	?	2.1+
18.09.94	Dinckley	Shrimp	21	36.5	2.2+
18.09.94	Balderstone	Shrimp	6	27	2+1+
18.09.94	Dinckley	Shrimp	12	35	2.1+
18.09.94	Balderstone	Shrimp	6.5	27	2.1+
18.09.94	Cross Gills	Spinner	5	24	2+1
19.09.94	Ribchester	Shrimp	8	29	2.1+
19.09.94	Calder Foot	Shrimp	10	32	2+1+
19.09.94	Ribchester	Shrimp	9	29	R.1+
20.09.94	Dinckley	Fly	11.5	33	R.1+
20.09.94	Dinckley	Spinner	8	29	2.1+
20.09.94	Balderstone	Worm	8	28	2.1
20.09.94	Calder Foot	Spinner	7.5	28	2+1+
20.09.94	Dinckley	Spinner	8	29	2+2
20.09.94	Dinckley	Fly	8.5	31	2.1+
21.09.94	Balderstone	?	7.5	28.5	2.1+
22.09.94	Balderstone	Shrimp	6.5	27	R.1+
22.09.94	Witcher Pool	Fly	8.5	27	2+1+
25.09.94	Stainforth Force	Worm	5	27	2+1+
29.09.94	Calder Foot	Fly	6.5	26	2+1+
03.10.94	Clitheroe	Spinner	9	28	3.1+
03.10.94	Cow Bridge	Spinner	7.5	28	2.1+
03.10.94	Long Preston	Spinner	6	24	R+1+
07.10.94	Dinckley	Fly	10	31	2.1+
08.10.94	Hargreaves Corner	Shrimp	7	27	2+1+
09.10.94	Cow Bridge	Worm	6.5	26	3.1
09.10.94	Balderstone	Shrimp	8	29.5	2+1Sm+

10.10.94	Balderstone	Shrimp	6	26	2.1+
15.10.94	Hurst Green	Shrimp	10.5	31	2.1+
16.10.94	Willows	Spinner	6	25	2.1+
16.10.94	Long Preston Deeps	Shrimp	7	28	2.1
17.10.94	Balderstone	Shrimp	8	28.5	2+1+
17.10.94	Sunderland Hall	Shrimp	13	33	2.1.Sm+
24.10.94	Cow Bridge	Worm	4.75	27	2.1
25.10.94	Cow Bridge	Worm	6	27	3.1
25.10.94	Dinckley	Worm	7.5	29	2.1+
25.10.94	Mitton	Worm	6	26	R.1+
26.10.94	Cow Bridge	Spinner	5	26	R.1
26.10.94	Cow Bridge	Spinner	12	35	2.2
26.10.94	Stainforth	Worm	6	25	2.1+
27.10.94	Long Preston	Worm	6	?	2.1
29.10.94	Sunderland Hall	Spinner	8	?	2.1
29.10.94	Dinckley	Spinner	19	34	2.2+
31.10.94	Dinckley	Spinner	16.5	36	2.2
31.10.94	Stainforth	Spinner	16.5	40	2.1.Sm+
31.10.94	Cow Bridge	Spinner	6.5	26	2.1+
31.10.94	Stainforth	Worm	6.5	26	3.1