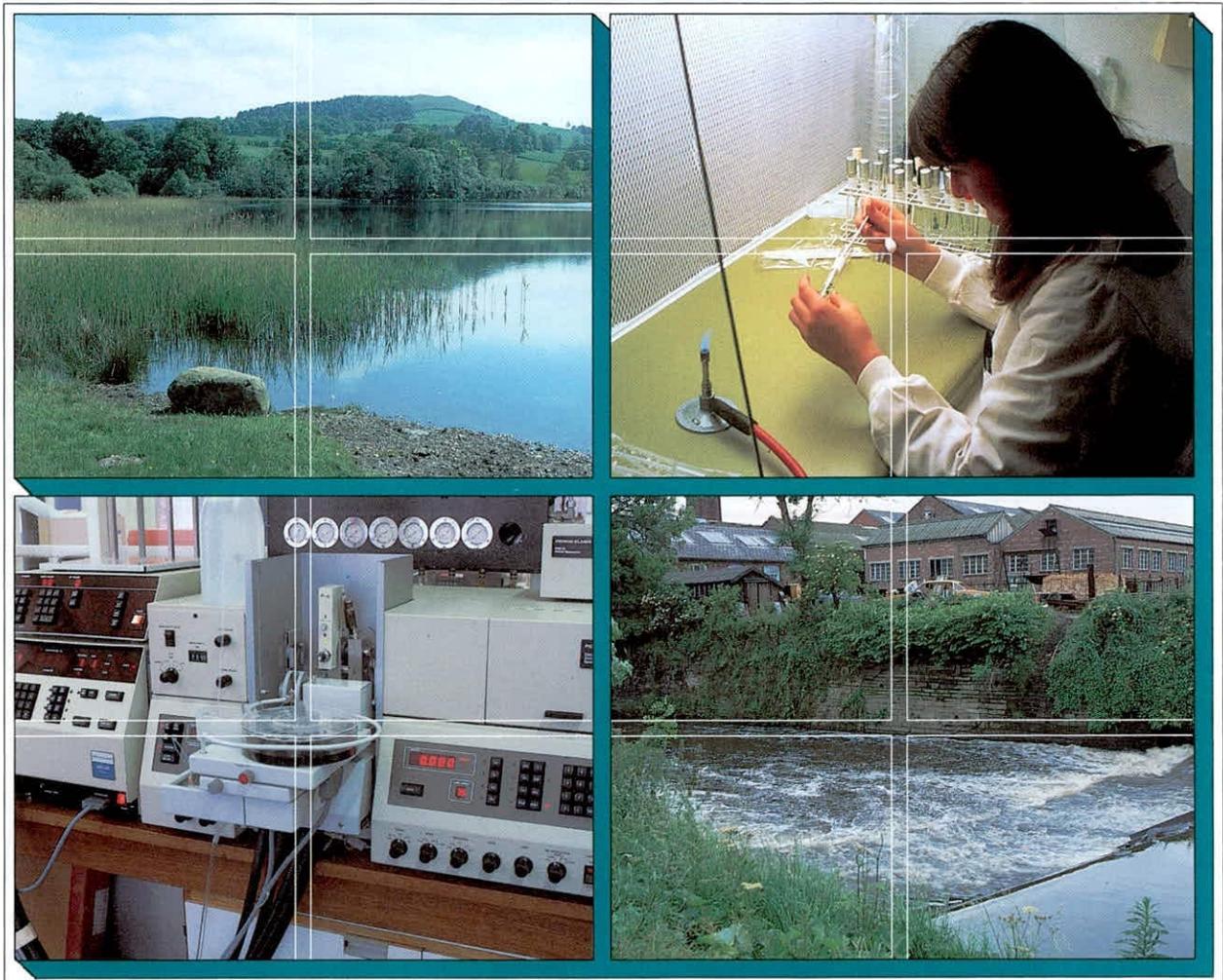


1994 SURVEY OF THE COARSE FISH OF THE RIVER TEES BEFORE CONSTRUCTION OF THE BARRAGE

Progress Report

J S Welton *et al*

Report To: National Rivers Authority, Northumbria & Yorkshire Region
TFS Project No: T11064f1
IFE Report Ref.No: RL/T11064f1/1



T11064 P1/1



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Sub Project Leader:	J S Welton
Report Date:	October 1994
Report To:	National Rivers Authority, Northumbria & Yorkshire Region
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REVIEW OF PROGRESS

This is a progress report for the period April 1994-September 1994. The main objectives of this reporting period were

1. To conduct a survey of the fry of coarse fish to identify spawning sites and species composition and to compare this with the previous year's results.

This was successfully carried out in June and was the fourth annual survey. Over 5000 fry were sampled by micromesh seine and point sampling electrofishing gear.

2. To conduct a survey of the coarse fish of the R. Tees in the area that is expected to be affected by the barrage. Collect data to add to previous years on the species composition, size distribution and age structure of each species prior to the construction of the barrage.

This was successfully carried out in September. Water levels were higher than in 1993 but in general conditions were good for electrofishing. Over 5000 fish were caught mainly by boom boat electrofishing. The length of each fish was recorded, a representative sample of each species was weighed and scales were taken for age determination.

1. FRY SURVEY 1994

1.1 Introduction

The survey was designed to collect information on the fry of all species of angling importance and in particular to concentrate again on determining the main spawning areas of dace. For this reason the survey was brought forward to early June when dace fry would still be in the vicinity of where they were spawned. This was the last opportunity to assess dace spawning sites before the closure of the barrage and as this is central to the anglers claim that the main dace spawning site will be flooded out by the increase in water level, it was felt that, although the survey may not be comparable with previous years, its timing was justified. As the survey was conducted earlier than usual, the species composition in each site cannot be compared with previous year's results.

1.2 Methods

The survey was conducted in early June and covered most of the length of the river to be affected by the barrage and areas above this for comparison. Sections known to contain adult fish (from previous surveys) between Preston Park (Section 4) and Low Dinsdale (Section 25) were sampled. In addition to this, at the NRA project leader's request, effort was concentrated on the lower sections of the river where few adult fish have been found in the past. These areas are difficult to sample by electrofishing, due to their high salinity. Consequently sampling of adults in these areas has been by traps and gill nets. These methods cover very little area and have suffered from the large amount of drifting debris and snags on the bed of the Tees.

A description of each sampling site and its position relative to the sections is given in Appendix 1.

1.2.1 Electrofishing

Electrofishing apparatus designed for fry sampling was used. This is battery powered with the anode ring mounted on a telescopic pole so that it can be extended in front of the boat to sample fry before disturbance. The shape and size of the anode allow point sampling, producing a high intensity field that stuns fry in a small area. At each sampling site, up to 10 point samples were taken over a 25 metre area. The number of point samples depended on the number of fry caught. Point samples were either targeted at concentrations of fry or taken at random.

1.2.2 Netting

In addition to the electrofishing, a micromesh seine was used in areas where large congregations of fry were expected and where no snags were present. These were set and hauled in shallow marginal areas of the river, especially from beach gravel shoals. Fry were also often observed to be in shallow water (<5 cm) and hand netting was often found to be a more effective sampling technique.

1.3 Results

Over 5000 fry were sampled and identified (Table 1). In most cases, all individuals from a sample were measured but where large numbers were caught, a proportion was measured (never less than 50 individuals). Over 4000 of the fry caught were dace. Several hundred chub and roach were also caught. The fry of these species were very small and were considered to be still hatching. The large number of dace caught signifies that the fry were sampled whilst they were still inhabiting the margins of the river. By July, the usual sampling time for fry, dace are large enough to have moved into deeper water making sampling more difficult. This is also true for grayling, another species which hatches early. The number of grayling fry were large compared with previous years. No barbel fry were found possibly because of the early sampling date. The only unusual fry was one specimen of perch found in Section 11. Over 50 stone loach fry were caught which is similar to the number found in 1993 (Table 2).

Table 1. Number of fry of each species of angling interest sampled in the R.Tees in June 1994.

Species	Total
Barbel <i>Barbus barbus</i> (L.)	0
Chub <i>Leuciscus cephalus</i> (L.)	448
Dace <i>Leuciscus leuciscus</i> (L.)	4216
Grayling <i>Thymallus thymallus</i> (L.)	83
Gudgeon <i>Gobio gobio</i> (L.)	2
Roach <i>Rutilus rutilus</i> (L.)	306
Perch <i>Perca fluviatilis</i> L.	1

Table 2. Number of fry of minor species sampled in the R.Tees in July 1994.

Species	Total
Bullhead <i>Cottus gobio</i> L.	3
Flounder <i>Platichthys flesus</i> (L.)	5
Minnow <i>Phoxinus phoxinus</i> (L.)	0
Stone loach <i>Barbatula barbatula</i> (L.)	55
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	2

Table 3. Number of fry of each species found in each section in the R.Tees in June 1994.

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	25	ORSU1	
Barbel																								
Chub	3	2			162	9	18		2	4			22		23						188			15
Dace	1	66	2	56	108	89	170	186	83	311	13	36	138	254	27	173	832	549	184	356	140	299	143	
Gudgeon																								2
Roach	1	1		1	8	13	16	1	24	96	43	10	14					19	9	49	1			
Grayling																			76				7	
Salmon																								
Rudd																								
Stickleback																								2
Flounder	1	2		1																				
Mirnow																								
Stone loach																			4	25	2	1	14	2
Bullhead																								

1.3.1 Distribution of fry

The number of fry of each species in each section is given in Table 3 and length frequency histograms for each section for dace, chub and roach are given in Appendix 3-5.

As in the previous year, fry were found in the lower sections (1-3) with individuals of dace, roach and chub being found in Section 1 along with one flounder fry. Many dead dace fry were found in the new ORSU in this section. Presumably they had entered the ORSU on an ebbing tide and had been killed by incoming salt water as the tide turned. Fry are probably passively carried by the current and drift both upstream and downstream depending on the state of the tide. Dace were present in large numbers in Section 2, more than in previous years although numbers caught depend on effort and this is not standard either between sections or between years.

The number of fry found in ORSU 1 was low (Table 3). Five species were found although due to the early timing of the sampling, many fry may not have found their way into this area. As expected for the time of year, dace fry comprised >90% of the fry present.

A comparison of the distribution of dace in relation to spawning sites will be given in the Annual report in March.

1.3.2 Length frequency distribution

Length frequency histograms are shown for each species (Fig 1). The early time of sampling is reflected in the small sizes of fry of all species. Grayling fry were the largest being on average 2 cm longer than dace. It is likely that in a normal year when sampling is conducted in July, grayling fry will have moved away from the margins.

The size distribution of dace fry in each section is similar. The modal length is 13 or 14 mm showing no differences along the length of the river. In ORSU 1 however, the modal length is 16 mm indicating that there may be a higher growth rate in this refuge (Appendix 3).

Unlike the previous year, no shift in size distribution of chub fry can be seen along the length of the river (Appendix 4). The size distribution in ORSU 1 is similar to those in other sections. It is likely that the chub fry have only just hatched and there has been no time for differential growth.

Roach were also still hatching with fry as small as 4 mm being found (Appendix 5).

2. SURVEY OF COARSE FISH SEPTEMBER 1994

2.1 Introduction

This is the fourth year that a survey of the coarse fish has been undertaken at this time of the year. It is aimed at increasing the data base of fish populations before the completion of the barrage. It will also be possible to compare the distributions of fish along the length of the river in each year. Last year, there was a trial batch marking of dace from the areas upstream of the tidal influence. This was to determine whether dace from these areas migrated to the lower tidal stretches where the main angling effort is concentrated. This year, few dace were caught from these upstream sites and as it was thought that a significant increase in marked fish could not be attained, no fish were marked.

2.2 Methods

2.2.1 Electrofishing

All sites sampled were electrofished in 1994. Sites 19 and 25 were waded (twin anode 200 v, 1.9 KvA), the ORSU was electrofished from a dingy with the same gear and all other sites were electrofished with the boom boat. Due to the water depth, Section 21 was fished in part by twin anode wading and in part with the boom boat.

The boom boat used 200 v at 10 amps from a 7.5 KvA generator. Pulse rate was 100 Htz. Due to generator problems, many sites were fished with a 5 KvA generator at the same voltage and amperage. In certain circumstances especially in shallower reaches, the fishing was operated at 5-8 amps. Each section was fished once along each bank, moving with the flow of the river. Fish from both runs were retained in an oxygenated holding tank and processed as one catch. Fish were released at a distance sufficient to prevent their migration into the next study section before fishing commenced.

2.2.2 Processing

Length measurements were taken from each fish (fork length to the nearest 0.1 cm) and weight measurements (to the nearest gram). Scales for ageing were taken from a representative sample of fish.

2.3 Results

The total number of fish caught in the September survey was 5343. This is two thousand more than in 1993, and 2500 more than in 1992 (Table 4). The vast majority were young of the year dace. The number of fish >8 cm caught this year was 1180. This figure is about 1000 less than the previous year but still more than was caught in 1992. Numbers of gudgeon were substantially lower and roach numbers were only two thirds of the previous year's total. Flounder numbers increased for the second successive year. Two fish species were recorded for the first time in the study. One perch, 35 cm in length, was found in Section 10 and three pike, all around 23 cm were found in Section 21.

Table 4. Species list for the R. Tees and number of each species caught - September 1994.

Species	Totals
Barbel <i>Barbus barbus</i> (L.)	14
Bullhead <i>Cottus gobio</i> L.	2
Chub <i>Leuciscus cephalus</i> (L.)	566
Dace <i>Leuciscus leuciscus</i> (L.)	2362
Eel <i>Anguilla anguilla</i> (L.)	>>100
Flounder <i>Platichthys flesus</i> (L.)	410
Grayling <i>Thymallus thymallus</i> (L.)	6
Gudgeon <i>Gobio gobio</i> (L.)	92
Minnow <i>Phoxinus phoxinus</i> (L.)	391
Perch <i>Perca fluviatilis</i> L.	1
Pike <i>Esox lucius</i> L.	3
River Lamprey <i>Lampetra fluviatilis</i> (L.)	0
Roach <i>Rutilus rutilus</i> (L.)	447
Salmon <i>Salmo salar</i> L.	10
Stone loach <i>Barbatula barbatula</i> (L.)	10
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	8
Trout (brown) <i>Salmo trutta</i> L.	18
Trout (sea) <i>Salmo trutta</i> L.	3

Four adult salmon were caught and two others seen. They came from Sections 5, 11, 13 and 25 and ranged in length from 68-98 cm. Two had sea lice and one fish had net marks. Three were identified as males and the fourth was probably a female. A pre-smolt was found in Section 3, and parr in Sections 10, 12, 13 and 25.

Last year, one sea trout was recorded in Section 14 and anecdotal evidence from an angler suggesting sea trout were caught around Section 4 only in early summer. This year three sea trout, 35-49 cm were recorded in Section 3.

2.3.1 Distribution of fish

Site descriptions, fishing methods, date, state of the tide, species and number of fish caught in each section are given in Appendix 6.

Species compositions at each site are summarised in Fig 2. Pie charts for each section are shown in Appendix 7.

Semi-quantitative information on number of fish per 100 m of river for each section is given in Table 5. Comparisons between sections and between years may be made only after giving due regard to the different efficiencies with which each section is fished. Factors such as the state of the tide, depth and turbidity all have a marked effect on fishing efficiency.

Table 5. Number of fish per 100 m found in each section in September 1994.

Section	Dace	Roach	Chub
3	27.25	7.13	1.75
4	17.28	5.92	0.88
5	0.38	0.16	0.11
6	11.77	0.16	1.37
7	26.05	0.88	1.23
8	160.00	17.50	3.75
10	36.96	3.57	10.36
11	9.76	2.74	4.52
12	71.14	9.32	2.27
13	35.83	3.33	6.50
14	26.92	2.12	7.88
15	34.66	5.69	12.07
16	34.00	2.00	11.75
19	59.50	0.00	11.00
21	35.38	3.85	13.08
25	16.29	4.29	5.71

As in previous years, dace were found in all sections. In general, densities are much higher than in 1993 due mainly to the high numbers of 0+ fish present. Extremely high densities were apparent in Section 8 (between the bridges at Yarm) and in all reaches from Section 12 upstream (Table 5). Unlike 1993, the most downstream section electrofished (Section 3) had a high density of dace, again mainly due to young of the year. Section 5 had few dace compared with other sections and compared with the same section in the previous year.

The distribution of roach was very variable. The largest density was found in Section 8 (the same as for dace) but in the previous year this section had a very low density of roach. No roach were found in Section 19, although the whole section was not fished due to excessive water depth. Densities were also very low in Sections 5-7 and most roach in the lower reaches were found in Sections 3 and 4 (Table 5).

As usual, chub densities were low in the bottom sections and apart from a high density in Section 10, they were concentrated in the upper sections (13 and above). As in the case of roach, the density of chub in Section 11 may have been affected by the inability to fish the whole reach.

2.3.2 Length frequency distribution

The length frequency distribution of each of the major species is given in Fig 3 and for dace, chub, roach and gudgeon this is also given by section fished (Appendices 8-10).

The length frequency distribution showed that young of the year dace were mostly <8 cm and these fish have been excluded from the graph as they occurred in such large numbers that the length frequency of older fish could not be seen. The high numbers of young of the year suggest that the 1994 year class will be strong. The 1993 year class was poor and they are represented by low numbers of fish with a modal length of 9 cm in this year's catch. Last year's modal length class at 9 cm is now seen at 14 cm and similarly last year's 19 cm class can be seen this year at 21 cm (Appendix 8).

In 1993, young of the year were present in low numbers with a maximum of 50 in Section 5 and only three other sections having >10 specimens in the modal length class. Many sections were devoid of these fish. This year young of the year were found in high numbers in almost every section fished.

Chub young of the year were found in very low numbers in the lower sections (below Yarm). They were found in greater numbers in Sections 10, 11, 14 and 15 with ORSU 1 having the greatest number (although it must be remembered that this was fished by a different method and the volume of water was minimal compared with the main river. Numbers of young of the year were greater than those of 1993. The strong 7-8 cm class of 1993 can be seen as modal class 12 cm this year and the larger 27 cm class in 1994 probably corresponds to the strong 23 cm modal class of 1993. Few large chub were found in the lower sections being most abundant in Sections 14 and above (Appendix 9).

Around twice as many young of the year roach were caught this year compared to last year. They were particularly abundant in Sections 3, 4 and 12 and in ORSU 1. Numbers of older fish were significantly lower than last year and were totally absent in sections 7, 19 and 21. Last year Section 7 was one of the best sections for roach especially for fish of 11-16 cm in length (Appendix 10).

Three distinct length groups can be seen in the length frequency histogram for gudgeon. As in the previous year, most young of the year were found in ORSU 1 although this probably suggests that the boom boat is not an efficient method for this age class or that their habitat in the main river is not fished. Numbers were lower than last year but in general follow the same distributional pattern between sections (Appendix 11).

3. FUTURE REPORTING

The 1994 Annual Report will be completed by the end of the financial year and will include data on the length weight relationship and age structure of the main species of coarse fish in the river. Data from the 1994 temperature records will also be detailed. Analysis of angling matches will be given in terms of distribution and abundance along the tidal Tees.

4. FACTORS LIKELY TO AFFECT THE COMPLETION OF FUTURE WORK

1993 saw the start of water sports in the lower river with speed boats and water skiing taking place. Electrofishing had to be suspended each time water skiers passed and speed boat wakes caused disturbance of the water in the electrofishing area. Efficiencies of operating will fall under this constant disruption.

This year, Section 9 was not fished because of constant angler presence. Electrofishing is normally suspended on approaching an angler's swim and the boom boat passes by on the opposite bank. Even this procedure did not prevent one angler hurling abuse at the team. It would be helpful if advance notice could be given to anglers through clubs and tackle shops apologising for any inconvenience and pointing out that the survey is being done for their benefit.

5. ACKNOWLEDGEMENTS

The authors wish to thank Diana Morton for production of the text and Daniel Ladle for his general help.

Fig 1 Length frequency histograms for each species of fry in the R.Tees in June 1994

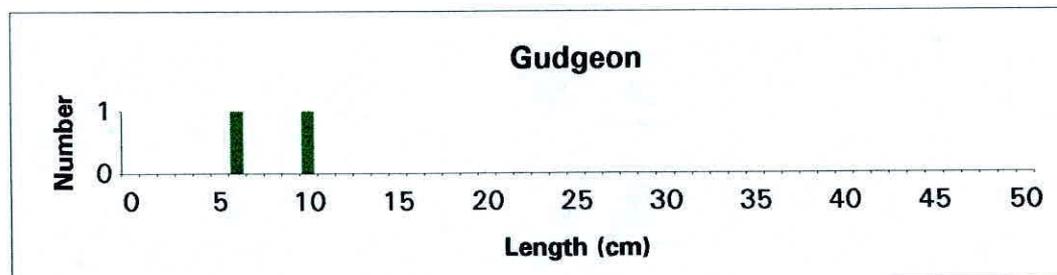
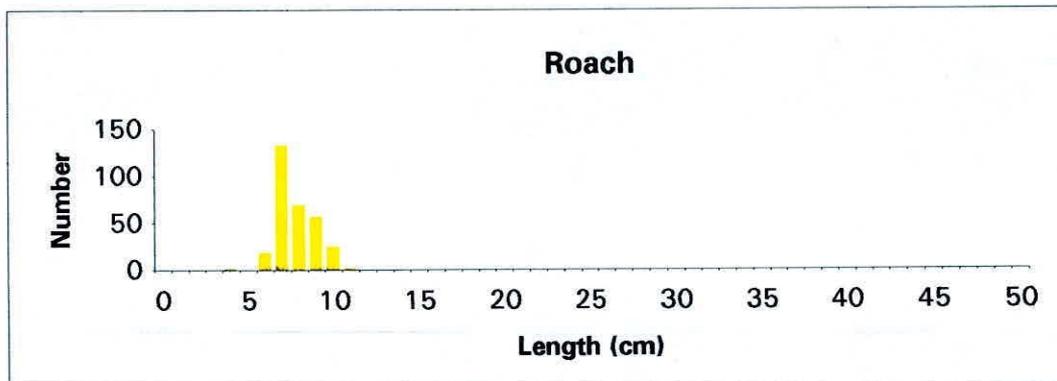
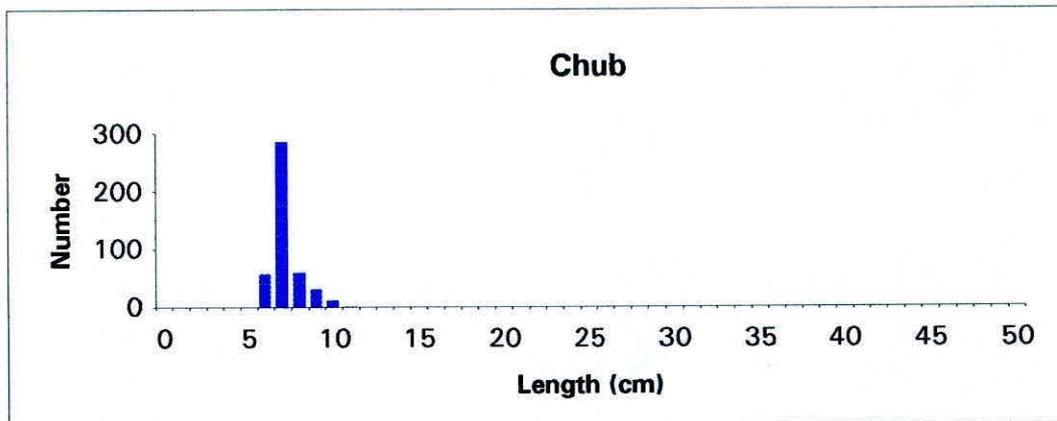
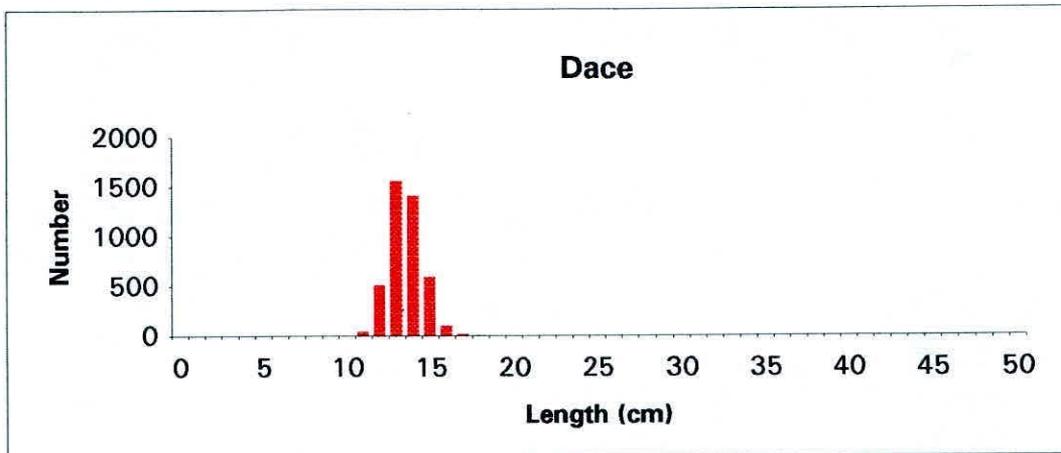


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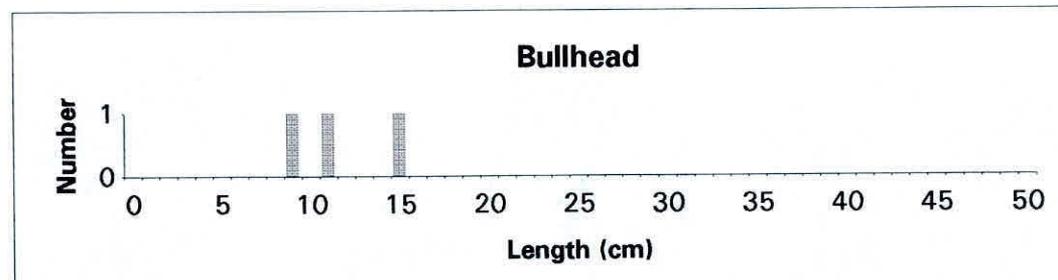
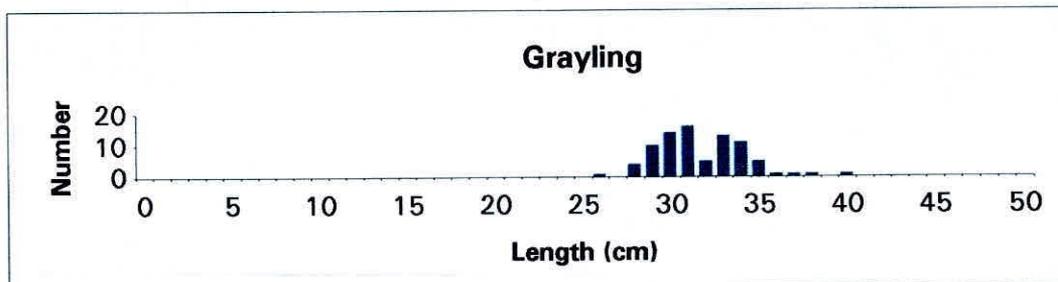
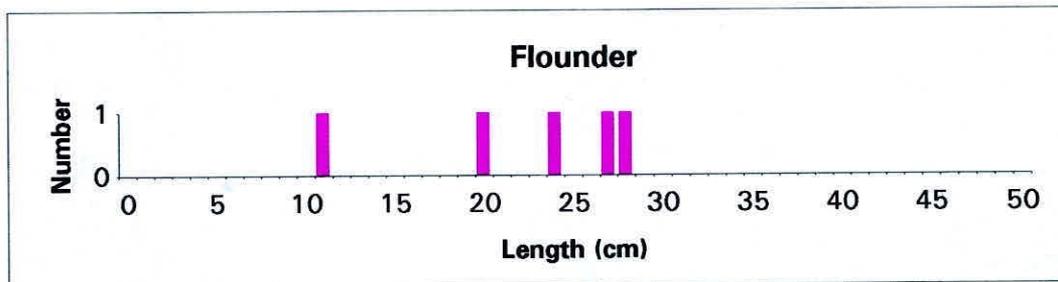
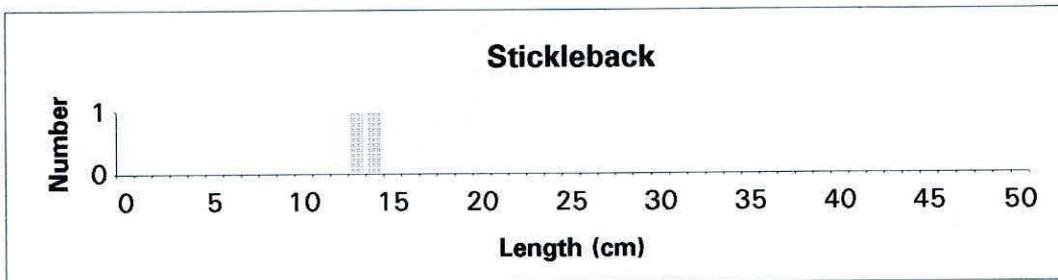
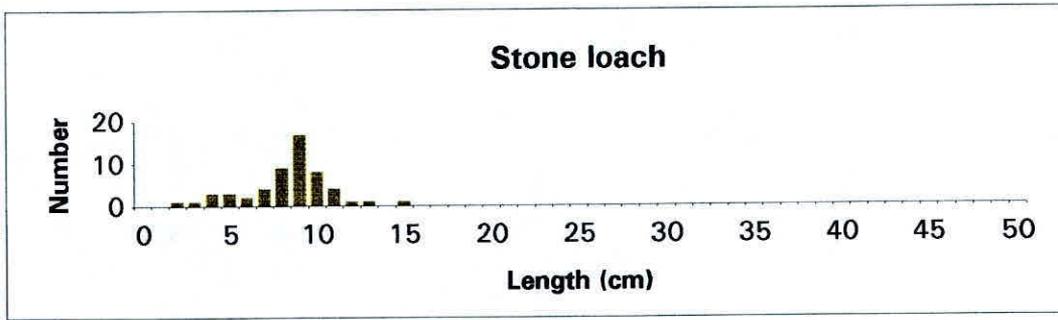


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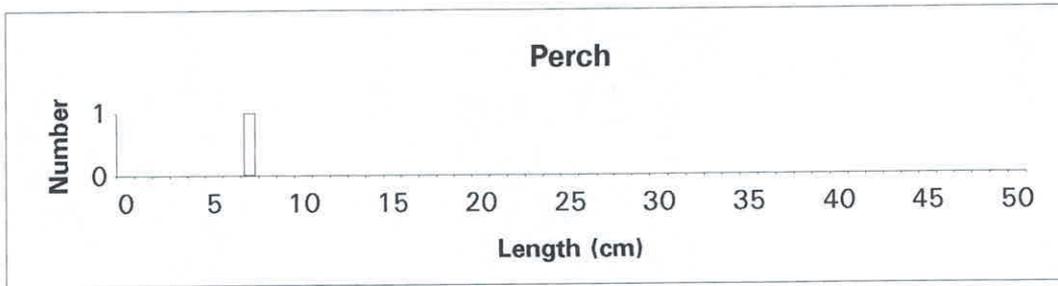


Fig 2 Species composition of fish in the R. Tees in September 1994 at various sites.

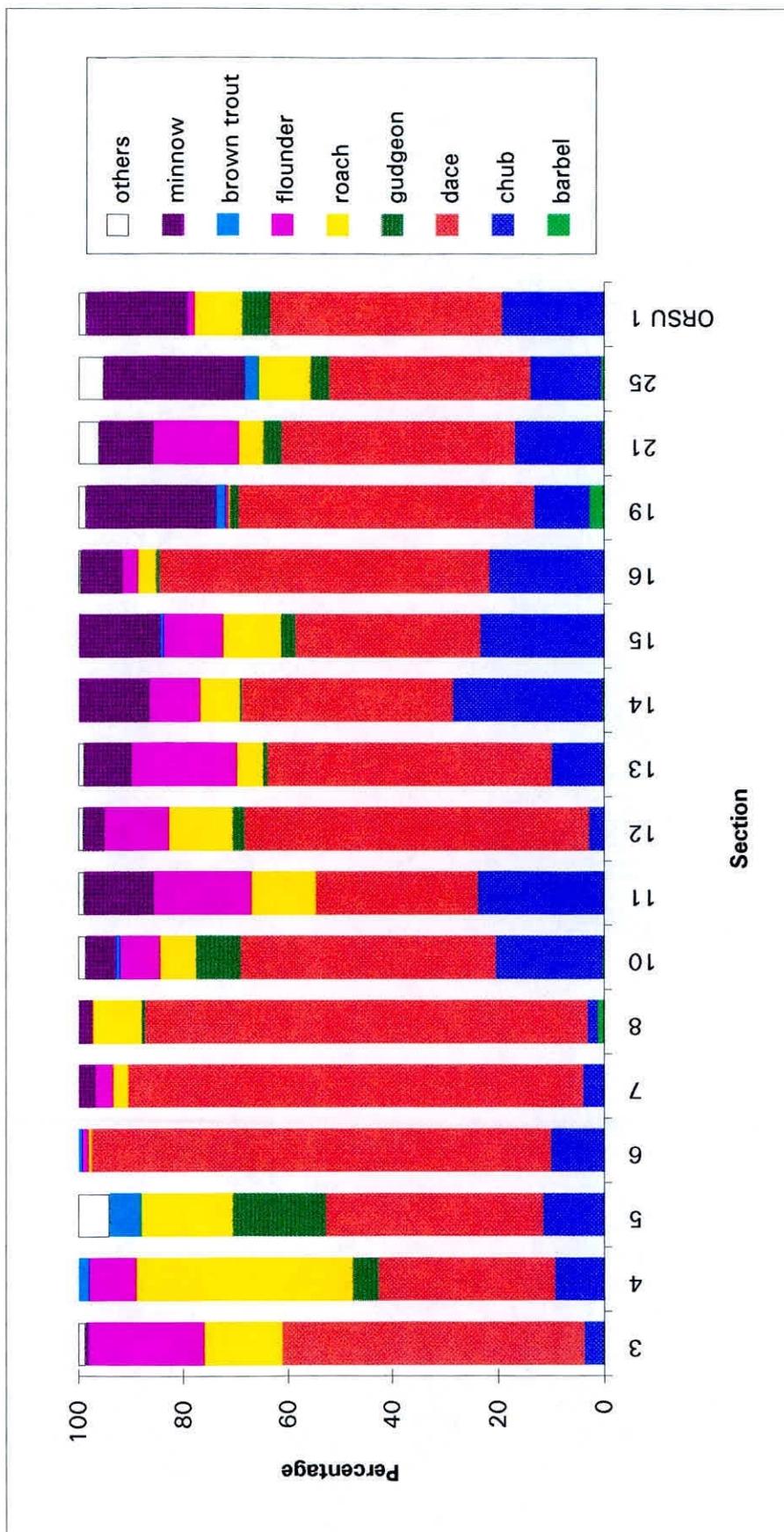


Fig 3 Length frequency histograms for each species of adult fish in the R.Tees in September 1994

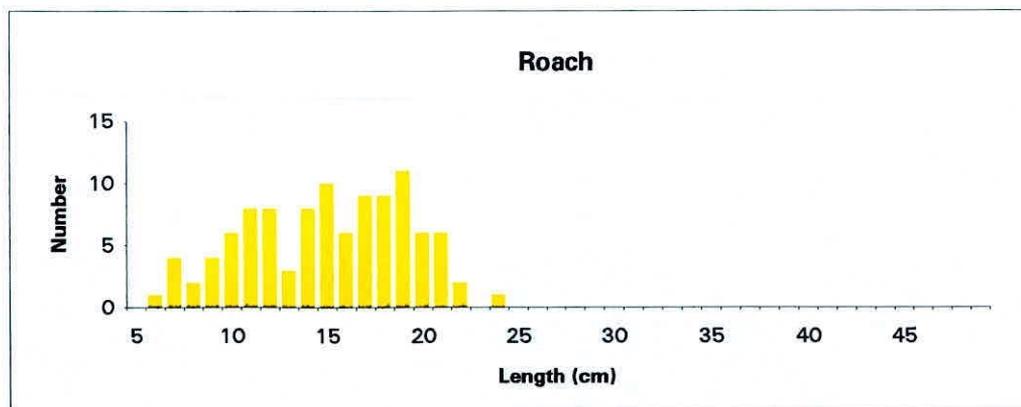
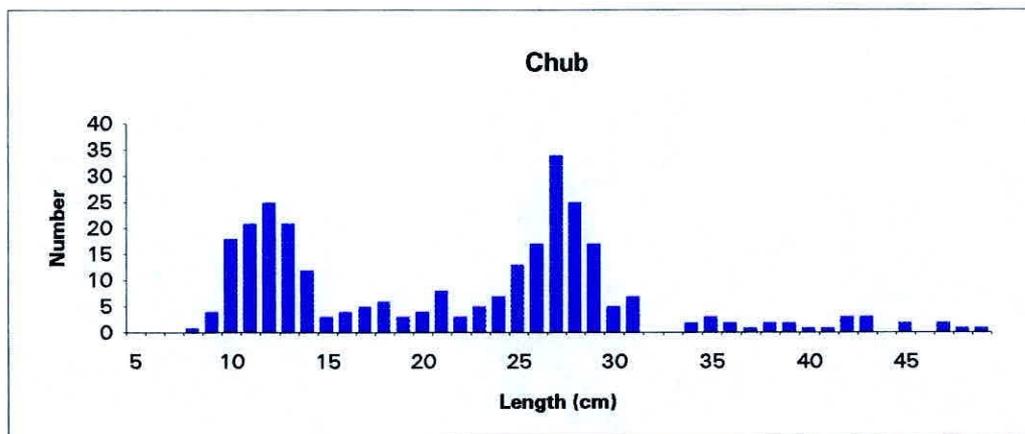
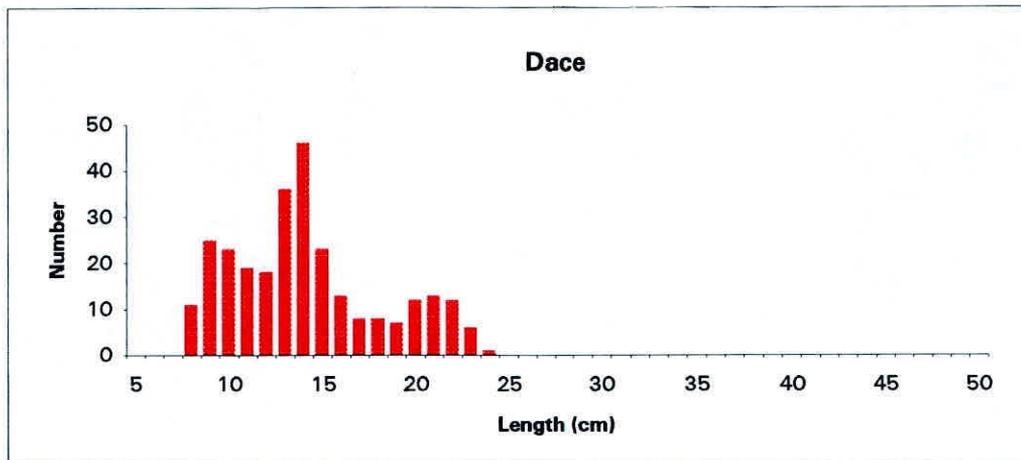
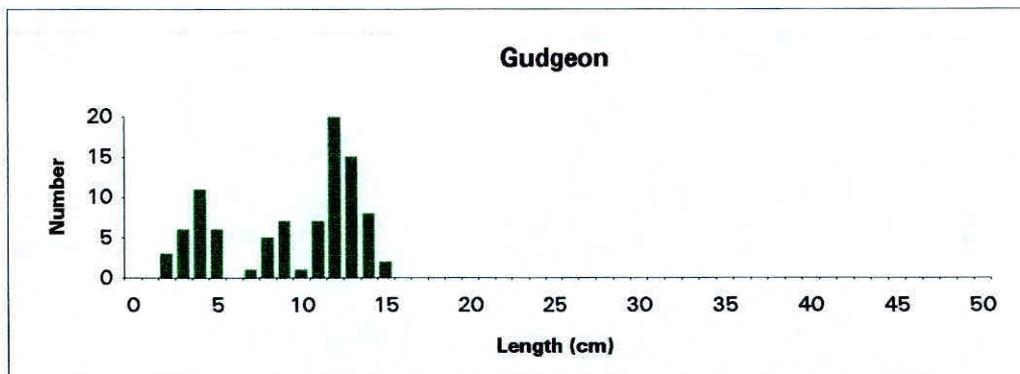
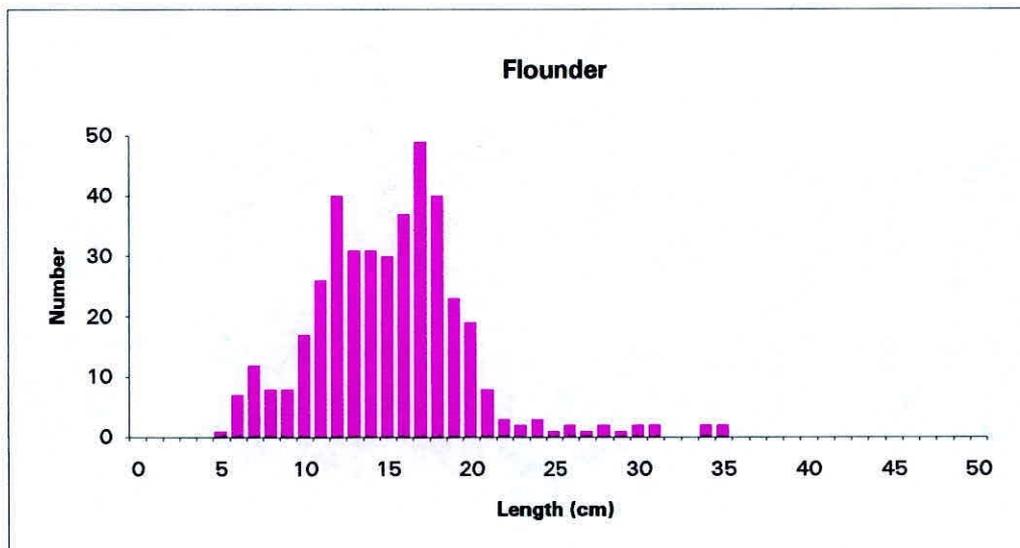
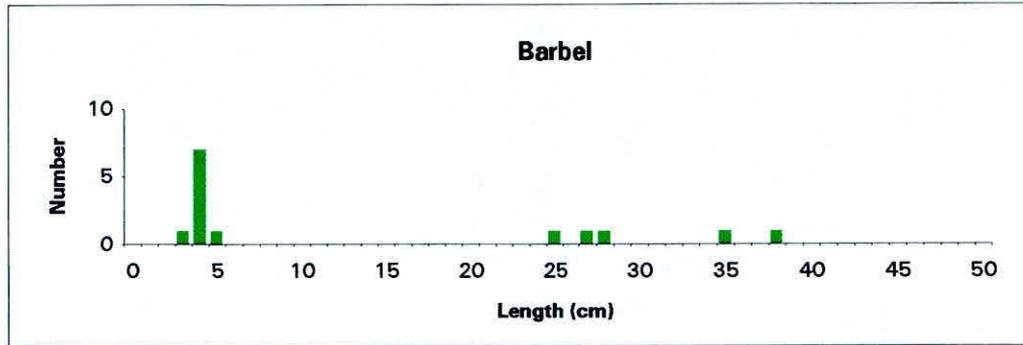


Fig 3 Continued



Appendix 1. Description of sampling sites for fry and distribution of these within sections.

Designations used in the following site descriptions are as follows: S(n)= Micromesh seine sample; P(n)= Point sample; N(n)= Hand net sample; E(n)= Area visually examined.

Section 1 10 June 1994. Tide low slack/flooding.

- S1 Sandy backwater with branches. Very shallow (0.0-0.3 m). Conductivity $760\mu\text{S cm}^{-1}$, tide flooding fast.
- E1 Examined c.50 m of bank. Sandy slope. No fry seen.
- E2 Examined c.50 m of bank downstream from Thornaby ORSU. Substrate large cobble/small boulder. No fry seen.
- N1 Targeted handnet sweep in backwater isolated by low tide. Conductivity $1150\mu\text{S cm}^{-1}$, substrate mud and boulders (conductivity in some pools $>2000\mu\text{S cm}^{-1}$).
- N2 Single targeted sweep in backwater.

Section 2 10 June 1994. Tide low slack.

- S1 3m seine where creek enters the river. Substrate mud/sand and boulders, tide just flooding.
- N1 Single targeted sweep over coarse sand downstream of tree roots and branches. Conductivity $600\mu\text{S cm}^{-1}$.
- N2 Targeted hand net sweeps in the same general area as the seine, conductivity $1700\mu\text{S cm}^{-1}$.
- N3 4 targeted handnet sweeps by creek, tide low slack, substrate mud, sand & boulders, conductivity $580\mu\text{S cm}^{-1}$.

Section 3 10 June 1994. Tide ebbing to low slack. Conductivity $580\mu\text{S cm}^{-1}$.

- S1 5m seine on sand/mud slope.
- N1 150m of bank examined. Shallow water over hard mud and rock.

Section 4 9 June 1994 Tide just flooding from low slack.

- S1 15m seine on shelving sandy beach.
- S2 10m seine on shelving sandy beach downstream of S1. No fry caught.

Section 4 10 June 1994. Tide ebbing. Conductivity $600\mu\text{S cm}^{-1}$.

- S3 8m seine on shelving gravel bank. Slow flow on edge of main current, depth 1.25m.
- N1 5 hand net sweeps along shallow margin. 30 cm water over sandy substrate.
- N2 5 hand net sweeps along shallow margin. Substrate cobbles/sand.

Section 5 9 June 1994. Tide flooding.

- S1 8m seine over bedrock. Water depth 1 m.
- N1 Single targeted hand net sweep in scalloped edge over bedrock.
- P1 10 targeted point samples in backwater (lee of fallen tree). Water depth 1m.
- P2 6 targeted point samples in slack water area with trailing vegetation over silt/sand substrate.

Section 6 9 June 1994. Tide just ebbing.

- N1 5 targeted point samples in bedrock pools and bays.
- P1 4 targeted point samples in scalloped edges of bank with overhanging willows. Tide rising, conductivity $450 \mu\text{S cm}^{-1}$.
- P2 10 targeted point samples in bedrock pools and bays. Tide still ebbing.

Section 7 9 June 1994. Low water.

- S1 Approx 10 seine on gravel beach in slow flowing backwater, depth 0.5 m. Only seinable area in section 7.
- N1 5 targeted point samples in area of scalloped bank (mud substrate) and sparse emergent vegetation. Depth >0.5 m.

Section 8 9 June 1994.

- S1 Gravel beach between bridges. Edge of flow plus backwater area. Depth 0.5 m.
- N1 1 handnet sweep in backwater area too shallow to seine.

Section 9 9 June 1994.

- N1 3 targeted point samples. Mud slope plus some emergent vegetation.
- N2 1 targeted point sample. Edge of river in emergent vegetation.

Section 10 9 June 1994.

- S1 Approx 10 m seines on gravel beach, depth 1 m.
- N1 2 handnet sweeps in same area as S1 to catch very small fry.
- N2 5 targeted point samples in backwater area of emergent vegetation.

Section 11 9 June 1994.

Note: No suitable areas for seine net sampling.

- P1 4 targeted point samples in area of slow flow/backwater. Tide ebbing. Conductivity $460 \mu\text{S cm}^{-1}$.
- P2 4 targeted point samples in deep water area of scalloped bank. Mud substrate.

Section 12 9 June 1994

- P1 5 targeted point samples in bank scallops. Bank steeply sloping mud, depth 0.3m. Ebb tide.
- N1 2 handnet sweeps to catch very small fry in shallows, gravel substrate.
- S1 30 m sweep with seine on gravel beach. Water flowing depth 0.5 m. Only beach in reach.

Section 13 8 June 1994

- S1 Approx 8-10 m seine on gravel/silt shelving beach, depth <0.5 m. Tide flooding.
- P1 4 random point samples. Deep water, substrate mud and overhanging vegetation. Flood tide

Section 14 8 June 1994

- S1 10 m seine on silty gravel beach, depth <0.5 m.
- P1 6 random point samples on shallow (<0.3 m) area of cobble and silt. Overhanging vegetation present. Tide just starting to flood.

Section 15 8 June 1994

- P1 5 random point samples in scallops in steep bank, mud substrate.
- S1 Silty gravel shelving beach, depth <0.5 m. Tide slack/flooding. First suitable site from downstream boundary of section 16.

Section 16 8 June 1994

- S1 Area of gravel/silt beach approx. 20 m length of edge seined, <0.5 m depth.

Section 17 8 June 1994

- S1 Gravel/silt beach, depth 1.0 m. Approximately 20 m of beach netted.
- S2 Shallow backwater embayment, substrate silty gravel. Depth 0.4 m.

Low Worsall ORSU 8 June 1994

- S1 Shallow bay at top of ORSU, soft mud substrate.
- P1 5 targeted point samples in 0.02 m-0.03 m depth of water, soft mud substrate.

Note: No large fish seen in ORSU, connection to main river very thin and shallow, depth ranging between 0.1 m to 0.02 m.

Section 18 7 June 1994

- S1 Area of gravel/detritus in backwater on edge of flow. Depth >0.5 m

Section 18 8 June 1994

- S2 Gravel shallows on edge of flow/backwater, 10 m sweep on edge of river. First seinable area downstream of section 19.
- P1 3 random point samples in silt substrate backwater, depth 0.3 m-0.4 m.

Section 19 7 June 1994

- S1 In slack water area behind upstream island. One full net sweep, substrate gravel / silt, depth >0.3 m.
- S2 In area of slack water on edge of flow behind downstream island. One full net sweep. substrate gravel/silt.
- N1 One net sweep in 0.03 m water downstream of island. Substrate detritus/silt.

Section 20 7 June 1994

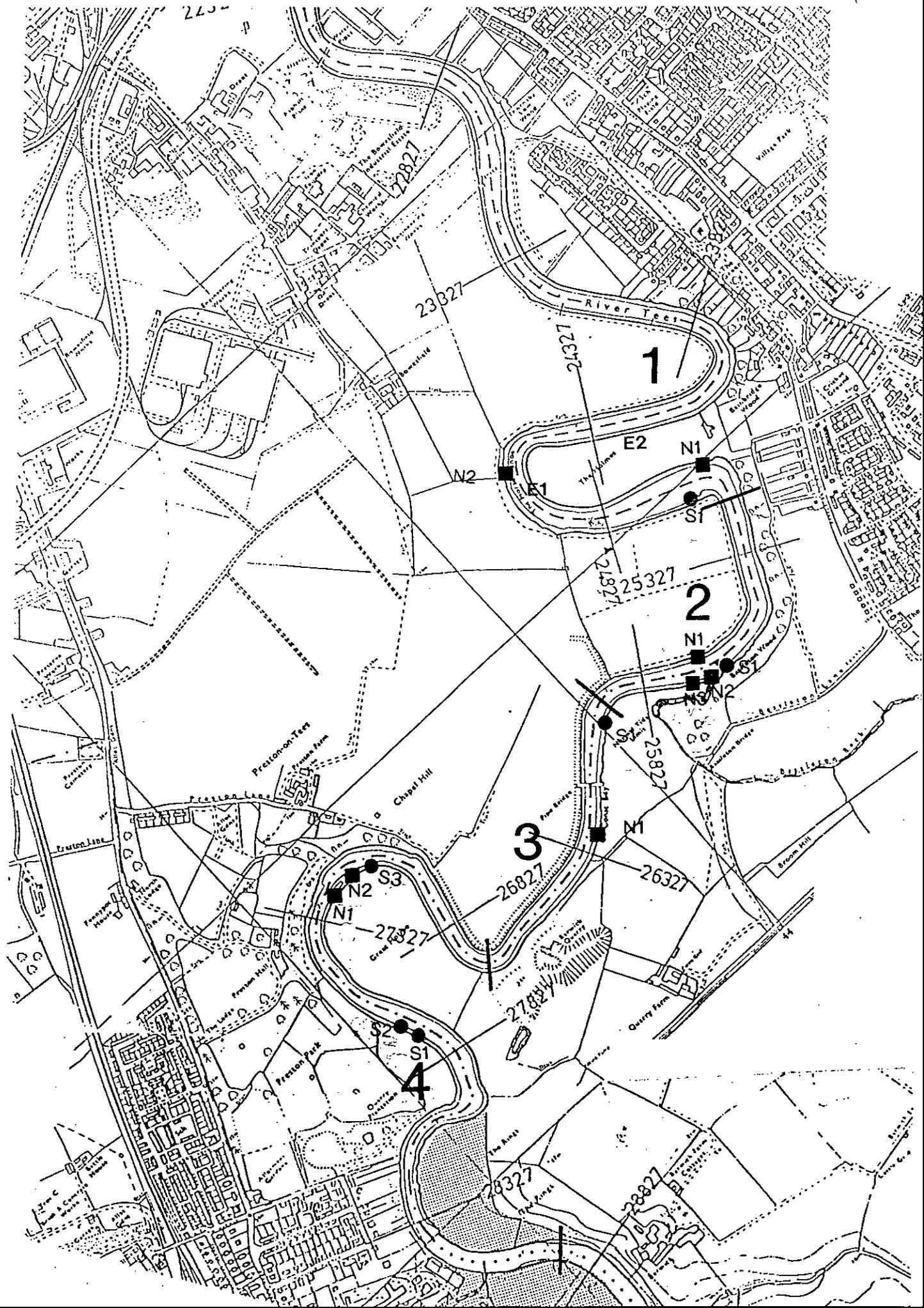
- S1 Backwater on edge of flow, one full net sweep, substrate coarse gravel with some *Ranunculus*. Depth >0.5 m.
- P1 4 targeted point samples in silt/gravel backwater, depth >0.5 m.
- N2 1 net sweep along sandy shelving bank, many thousands of fry seen.

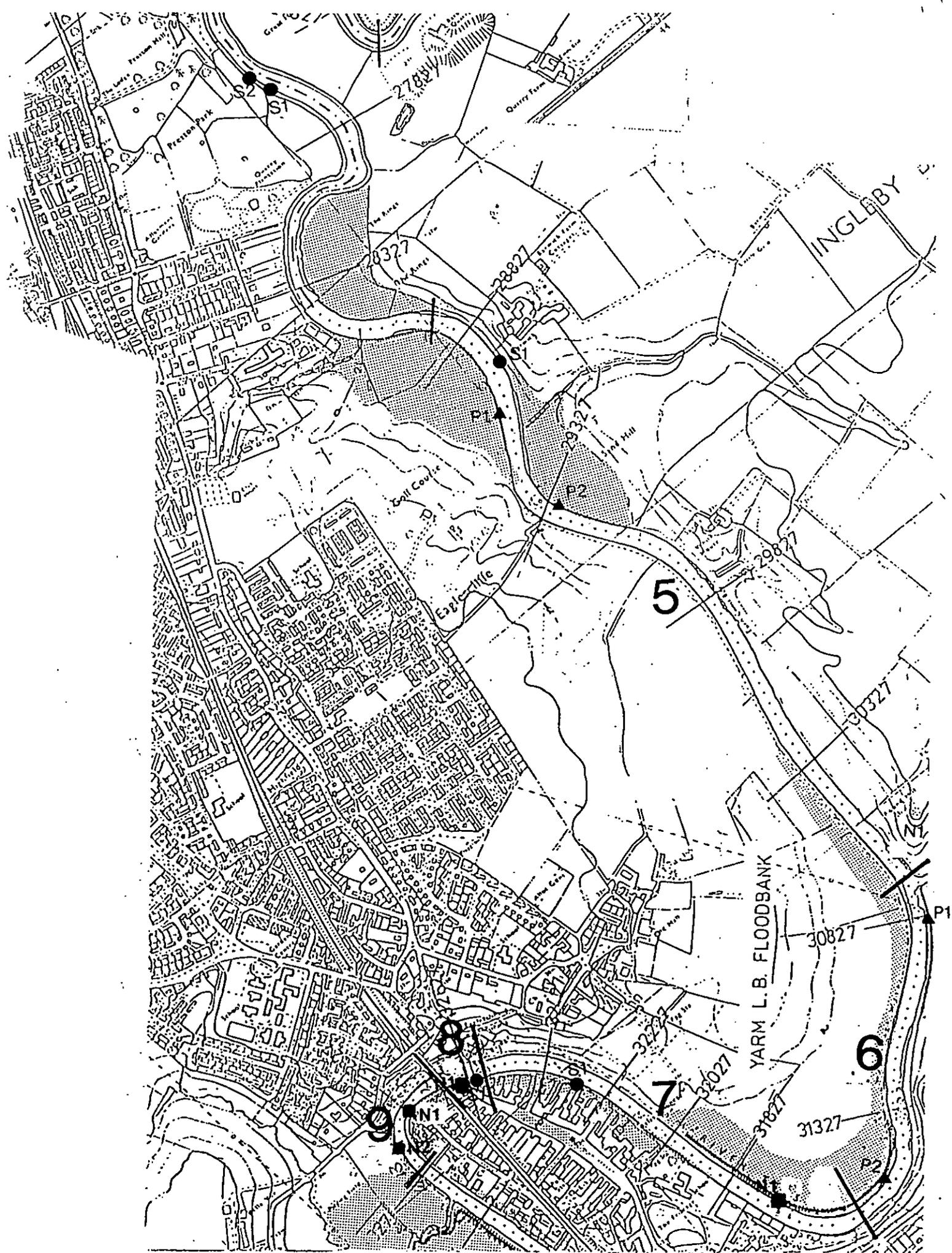
Section 21 Low Moor 7 June 1994

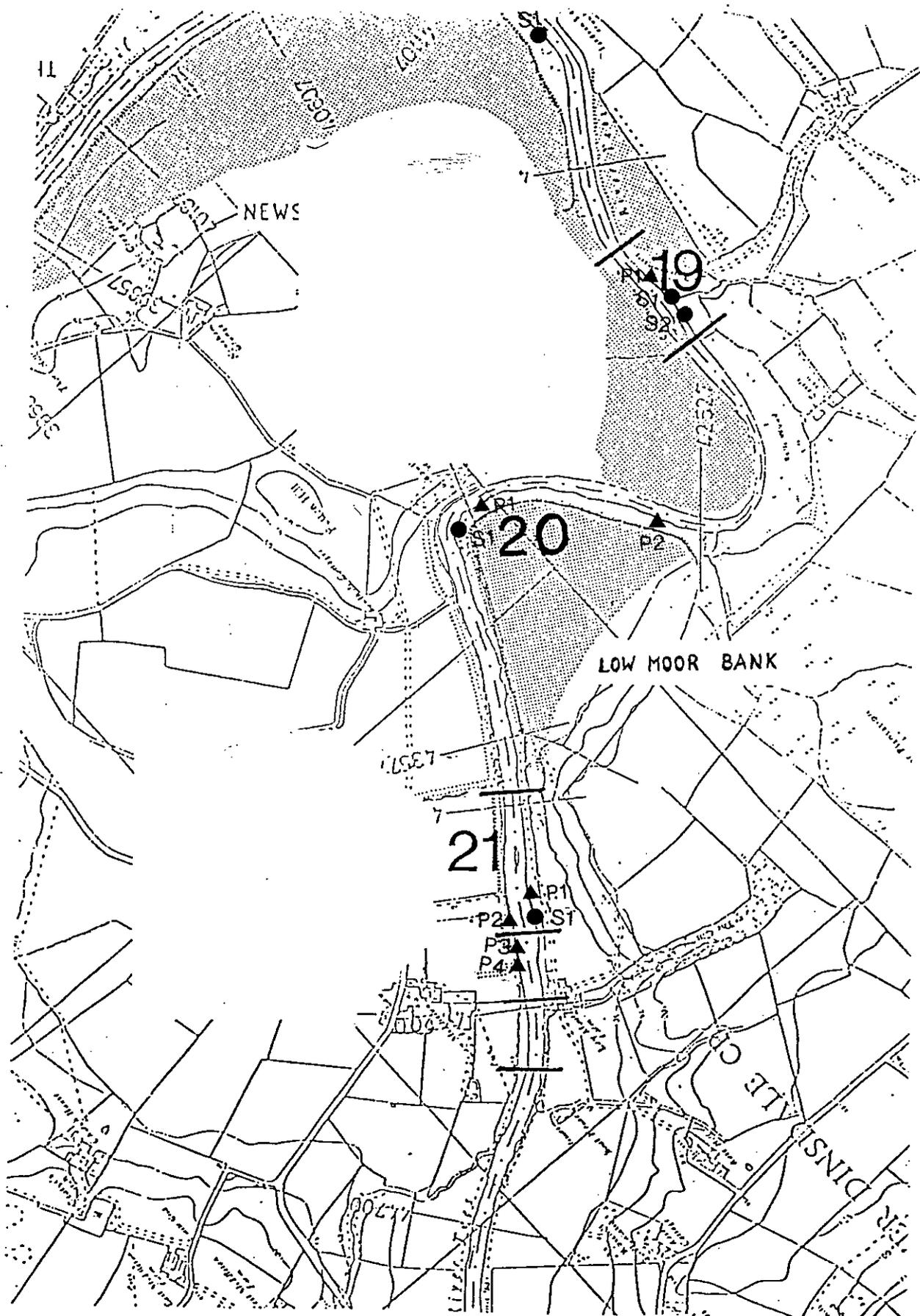
- S1 Approx 20 m length of gravel downstream of the ford netted, flowing water, depth <0.1 m
- P1 5 targeted point samples in silt backwater, depth 0.3 m.
- P2 4 targeted point samples in slack areas in *Ranunculus* beds (gravel substrate). Depth 0.3 m.
- P3 2 targeted point samples in slack water area, silt/detritus substrate, depth 0.3 m.
- P4 3 targeted point samples upstream of weir in slack water areas in marginal and in-river vegetation, depth 0.75 m.

Section 25 Low Dinsdale 7 June 1994

- S1 Approximately 15 m length of beach under bridge netted, gravel/cobble substrate, flowing water, depth <0.35 m.
- S2 One full net sweep in gravel/silt backwater on edge of flow, depth <0.3 m.



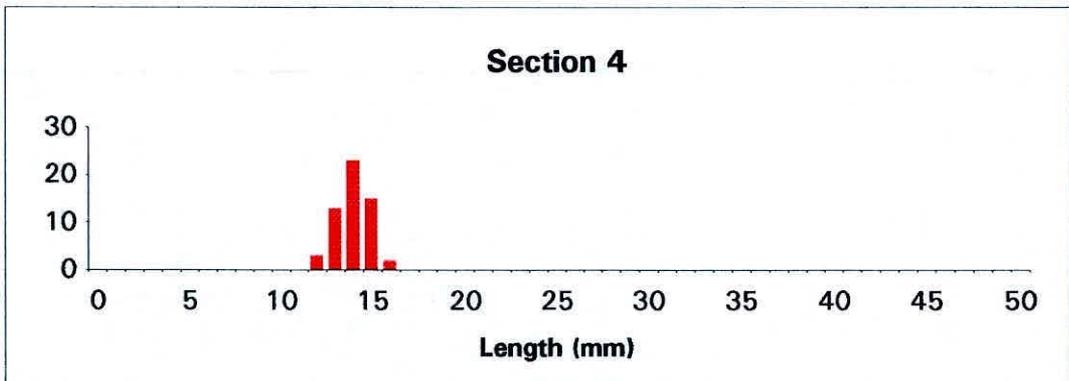
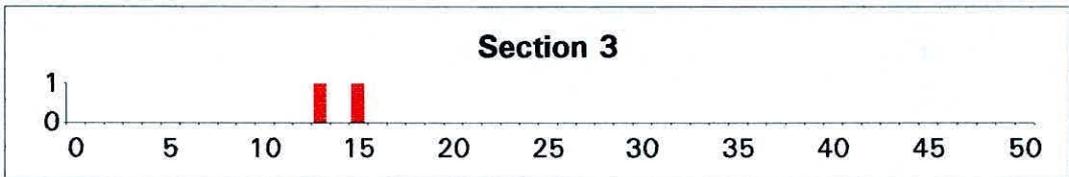
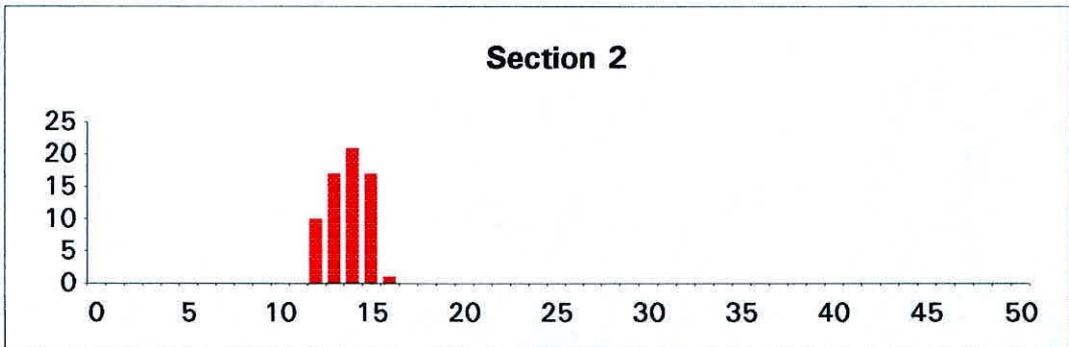
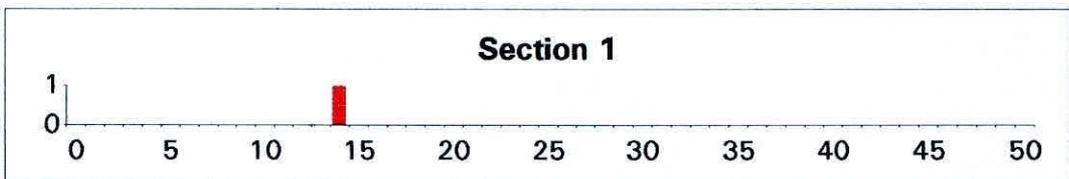
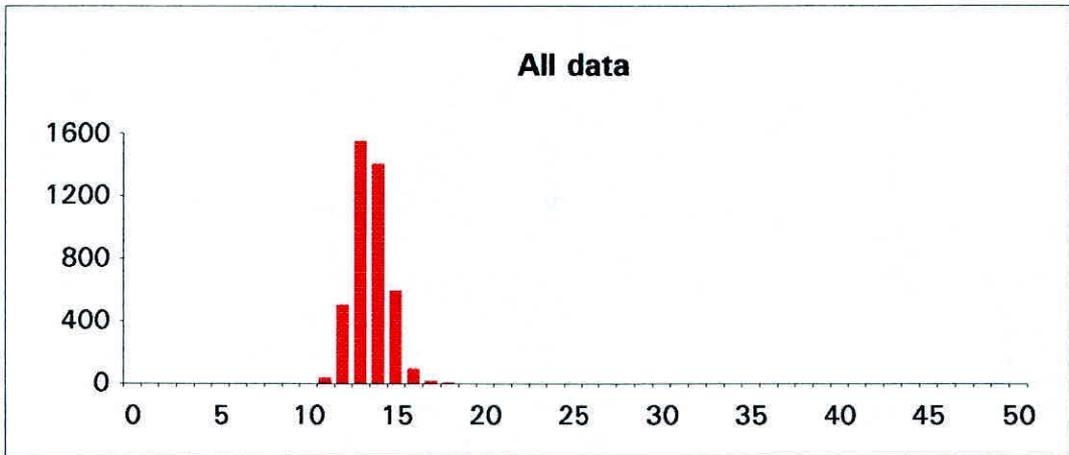




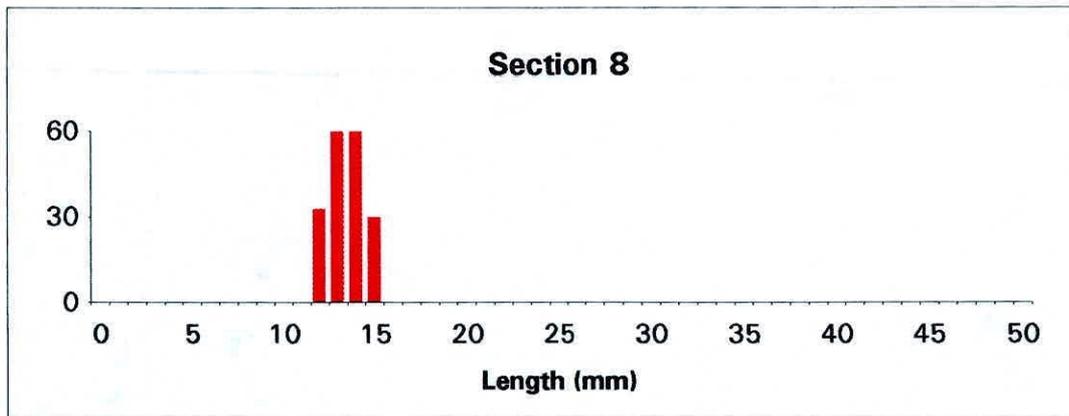
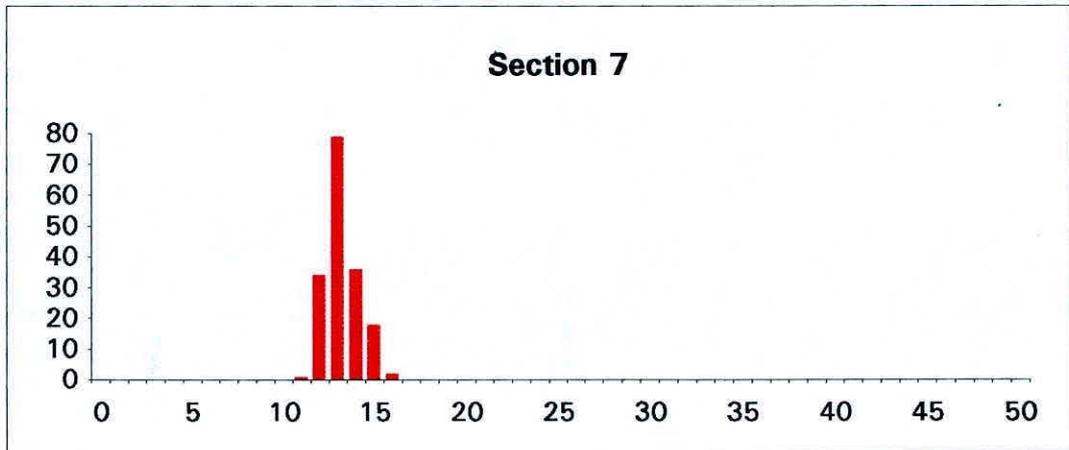
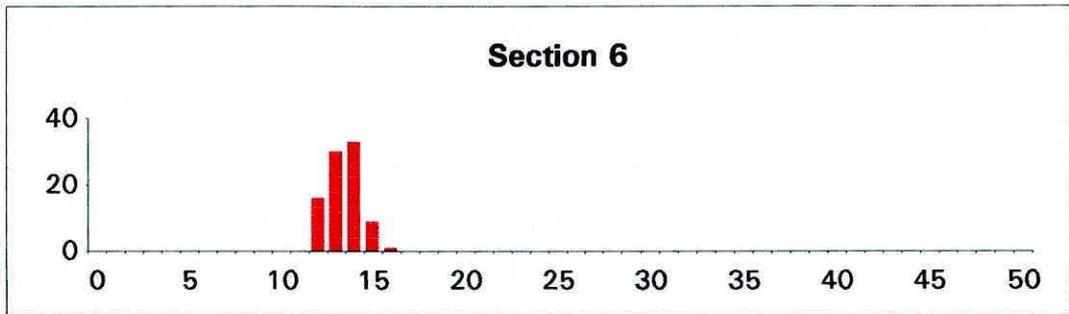
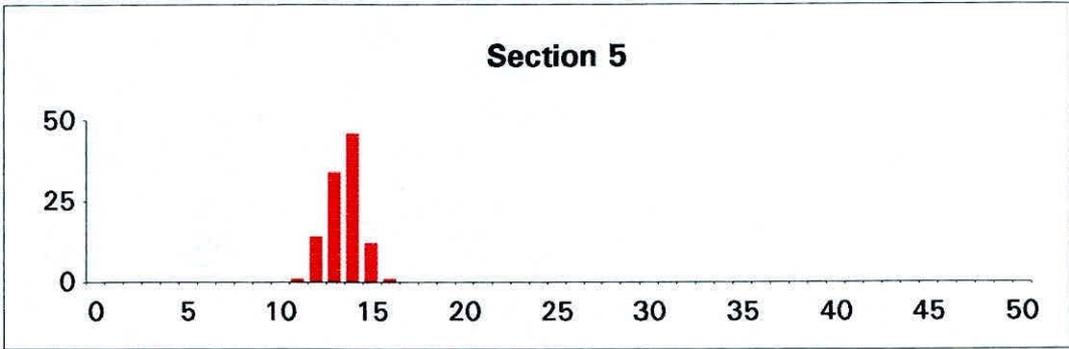
Appendix 2. Number of older fish of each species caught during the fry survey in 1994.

Section	Chub	Roach	Minnow	Gudgeon	Flounder	Dace	Barbel	Stone loach	3 spined stickleback
2									
4						1			
5									
6			2						
7									
8									
9									
10									
12			16			3			
14			1						
15	1		11			1			
16			4	4					
18			1					1	
19			5						3
20			52					1	
21			2					1	
ORSU1									
Total	1	0	94	4	0	5	0	3	3

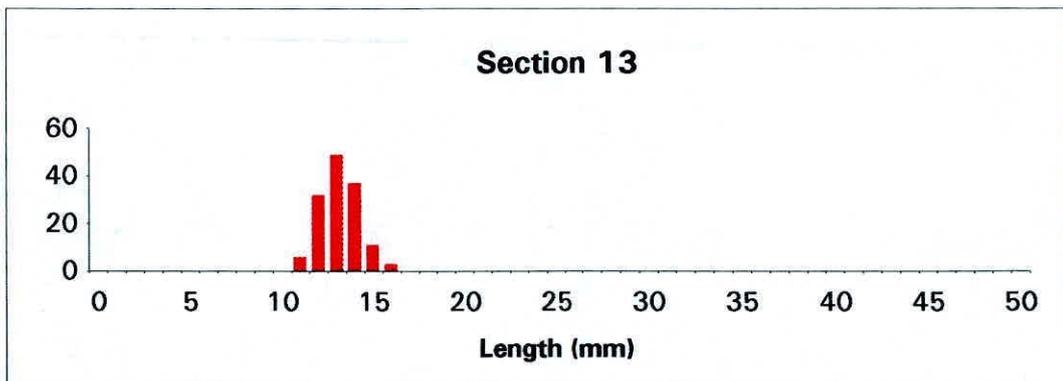
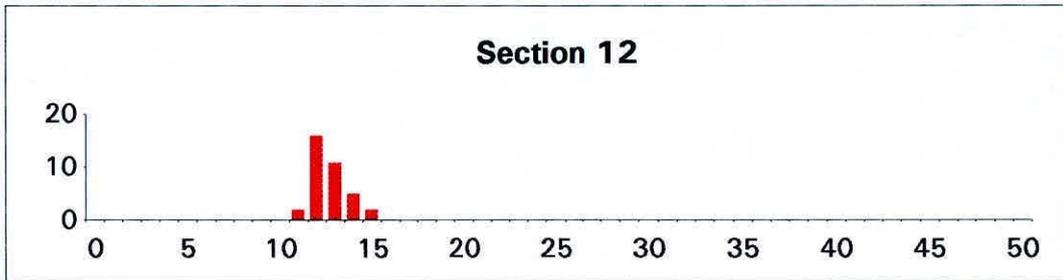
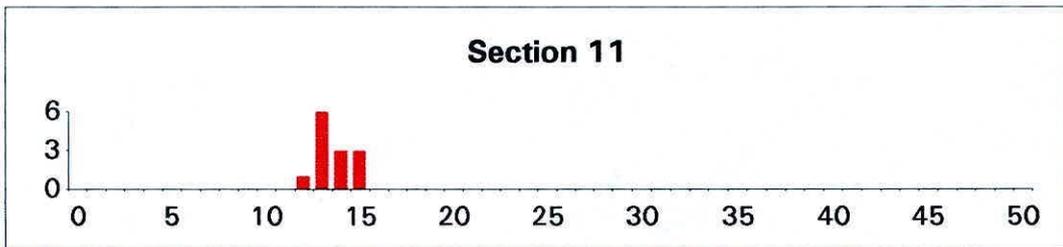
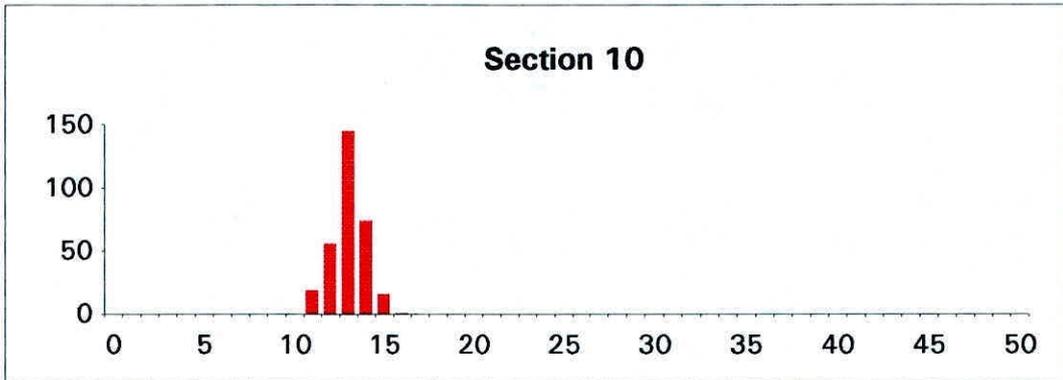
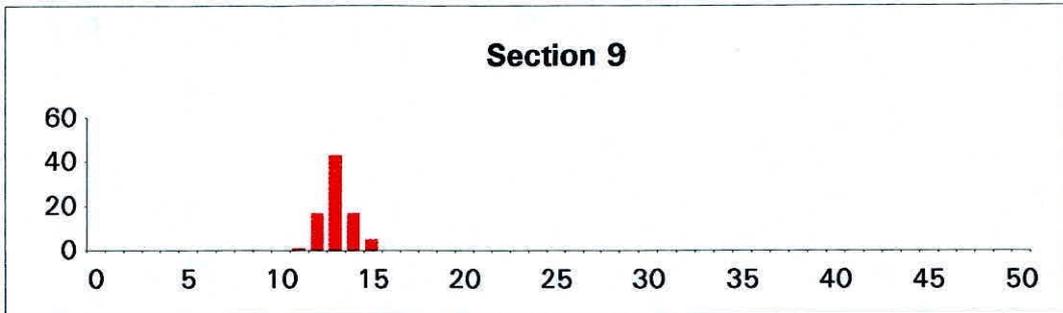
Appendix 3 Length frequency distribution of dace fry in each section of the R.Tees in July 1994.



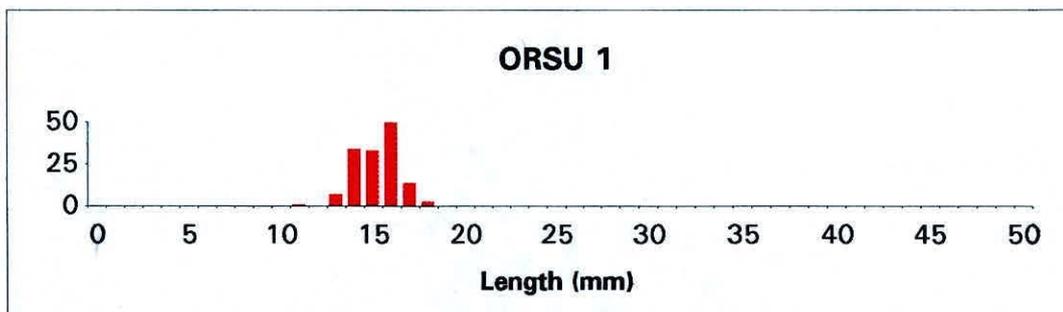
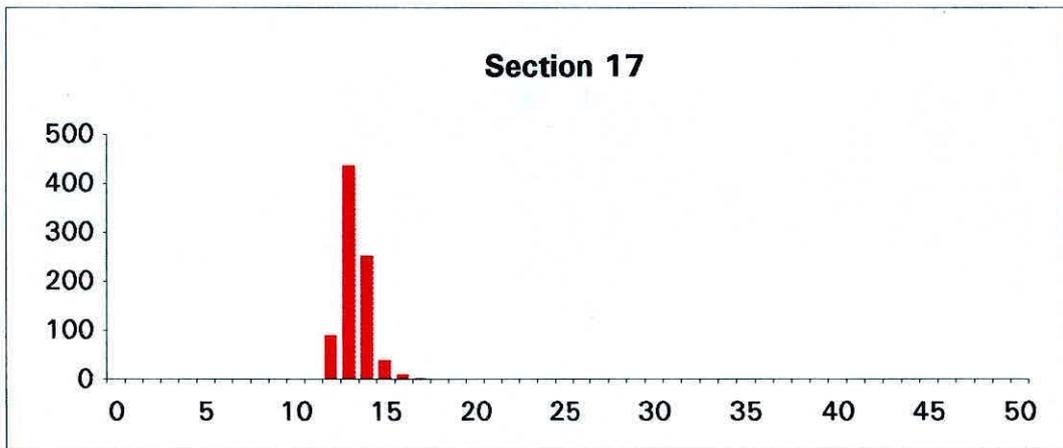
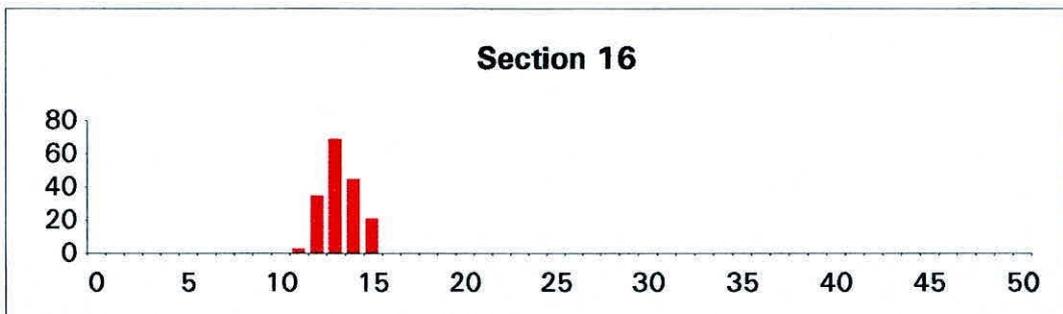
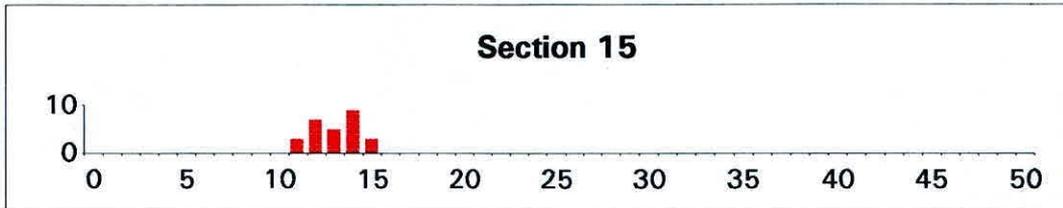
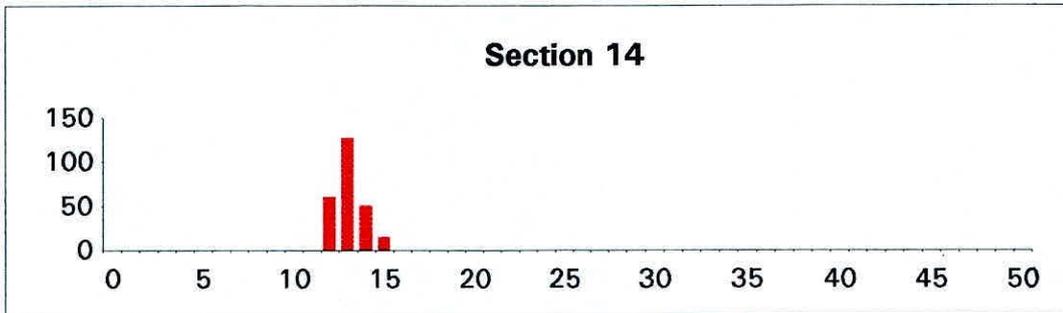
Appendix 3 Continued.



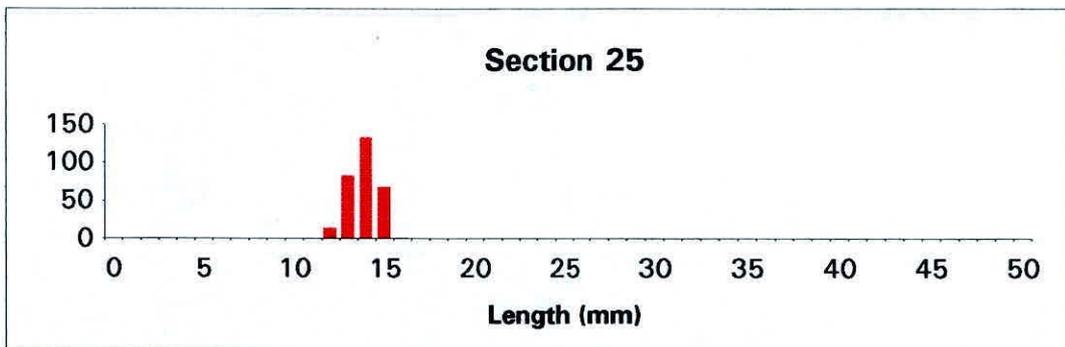
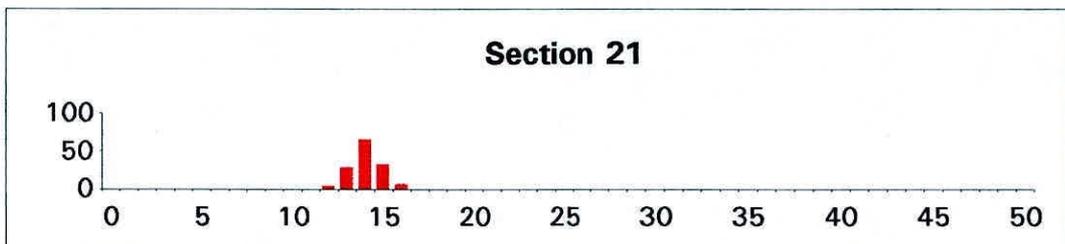
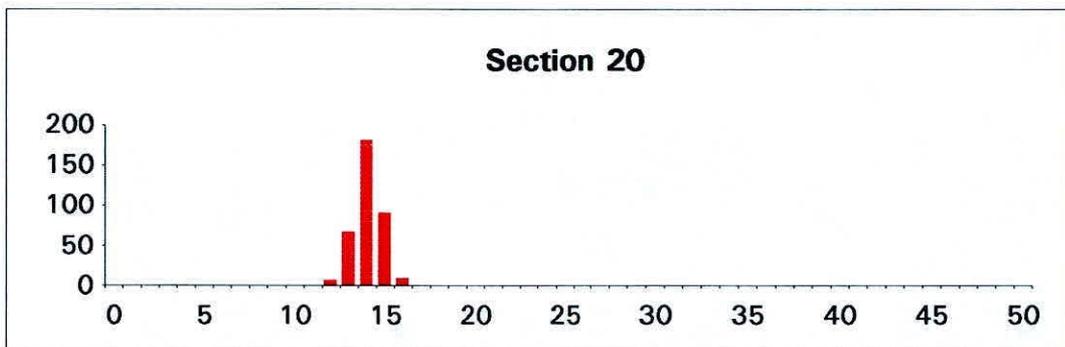
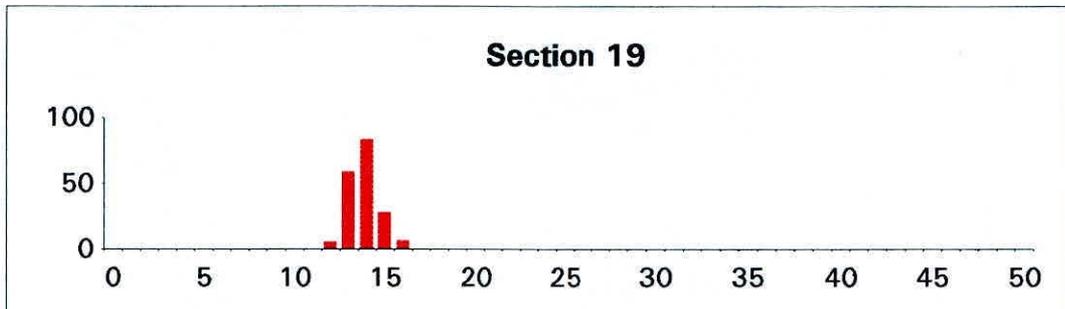
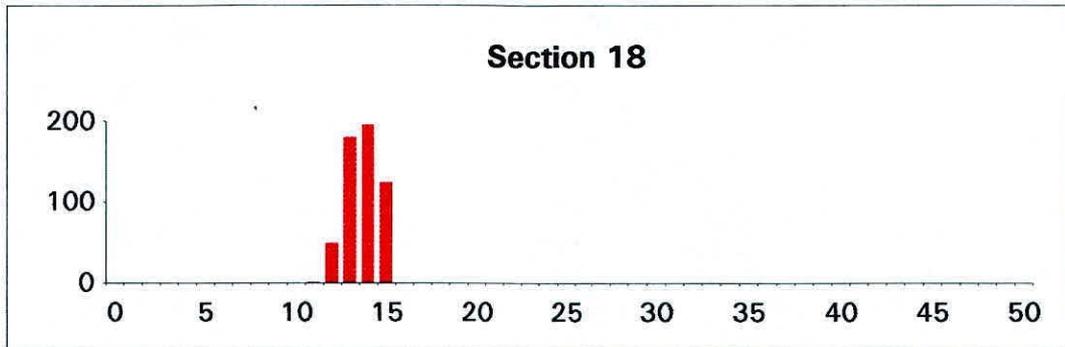
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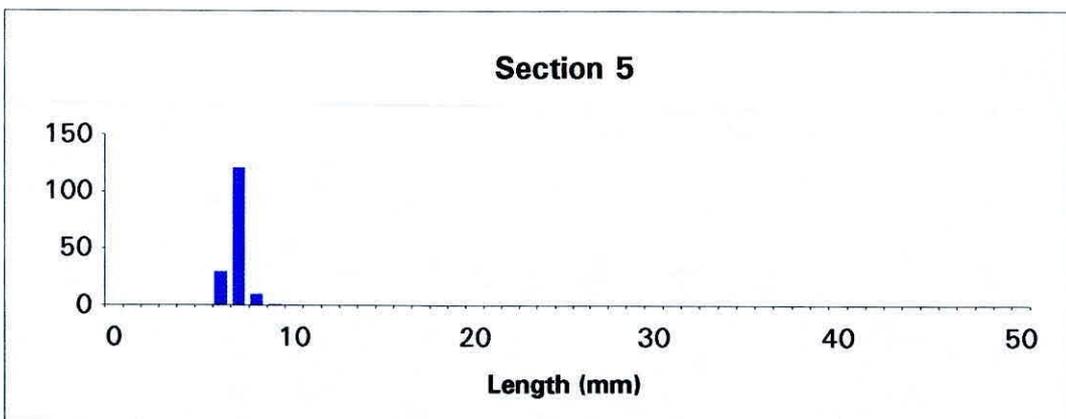
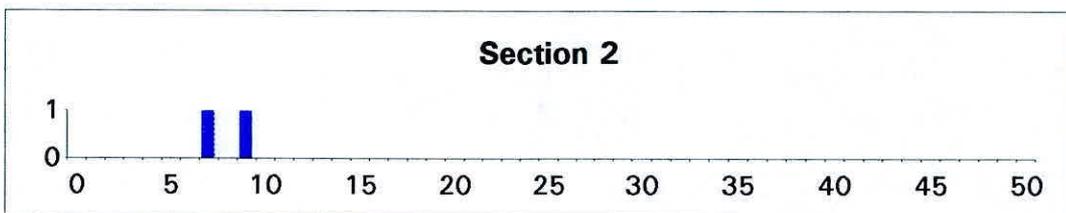
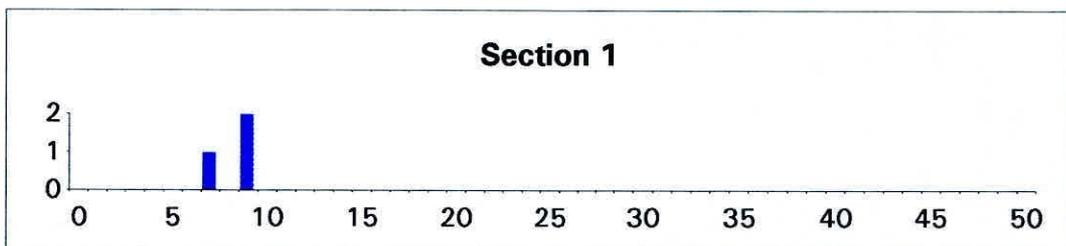
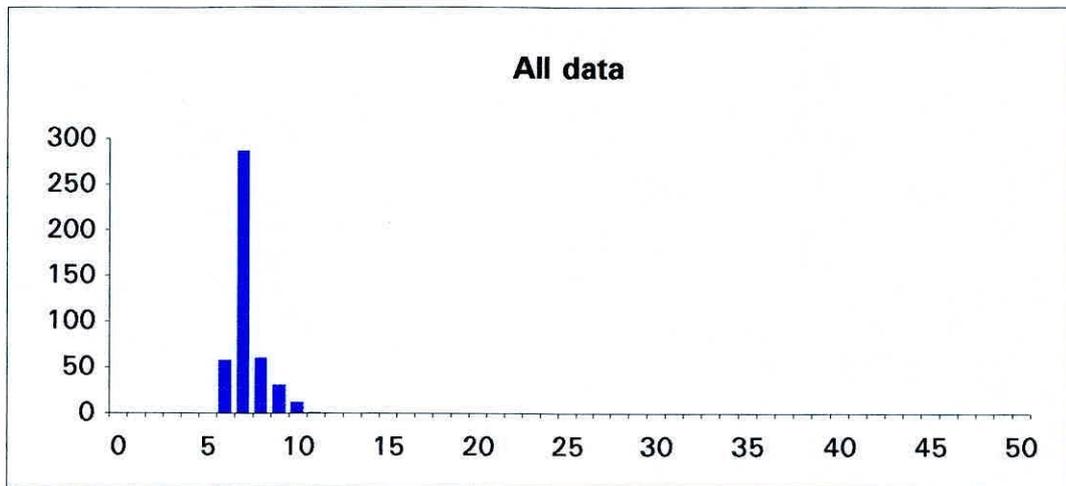
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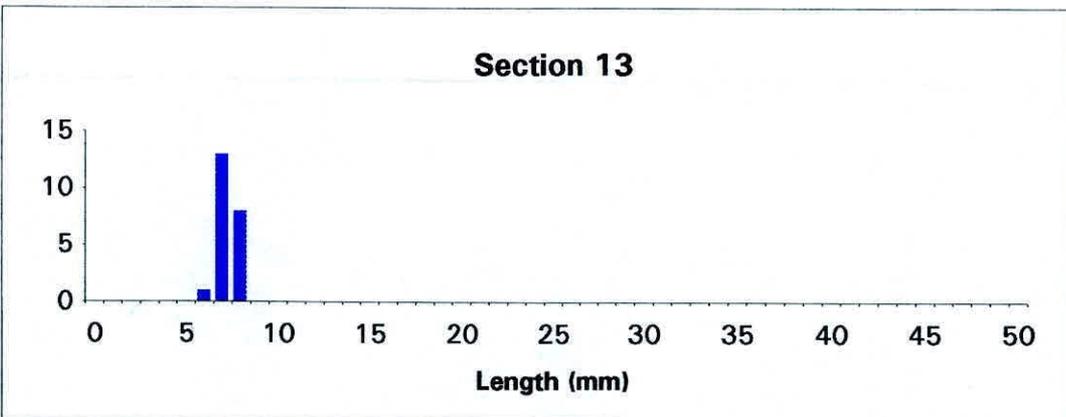
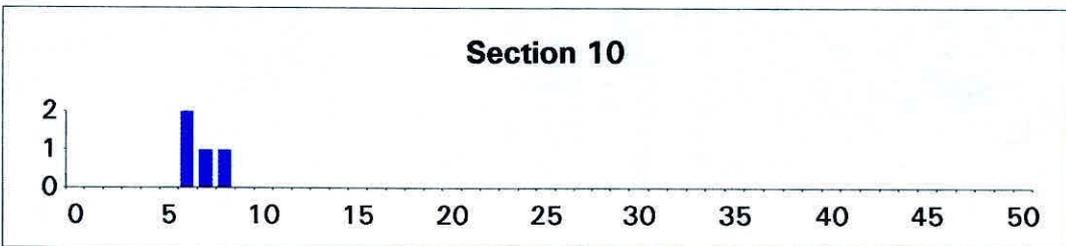
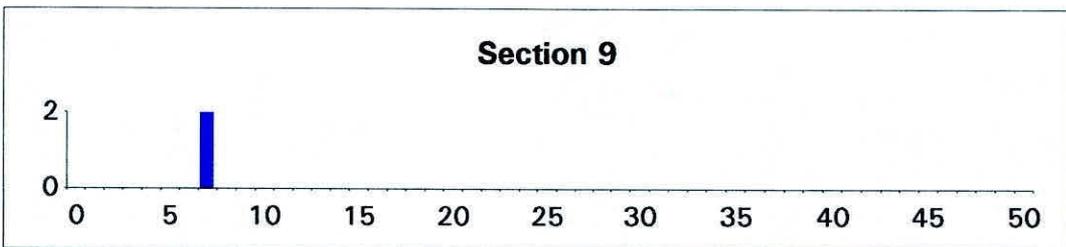
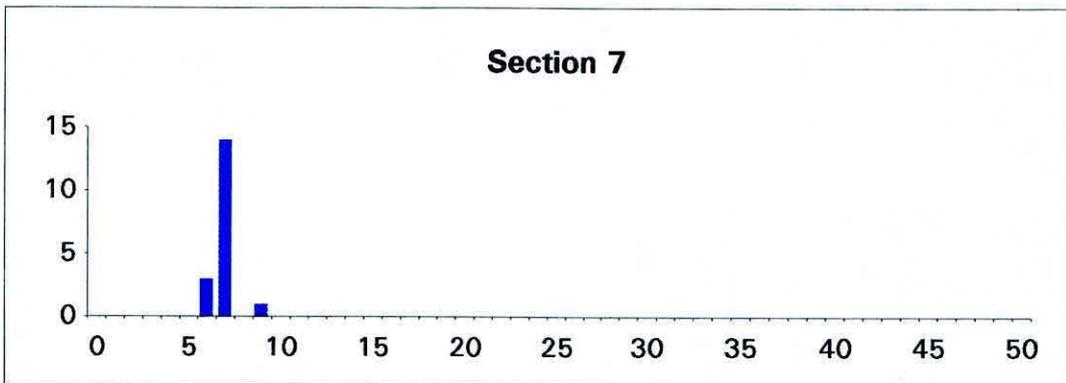
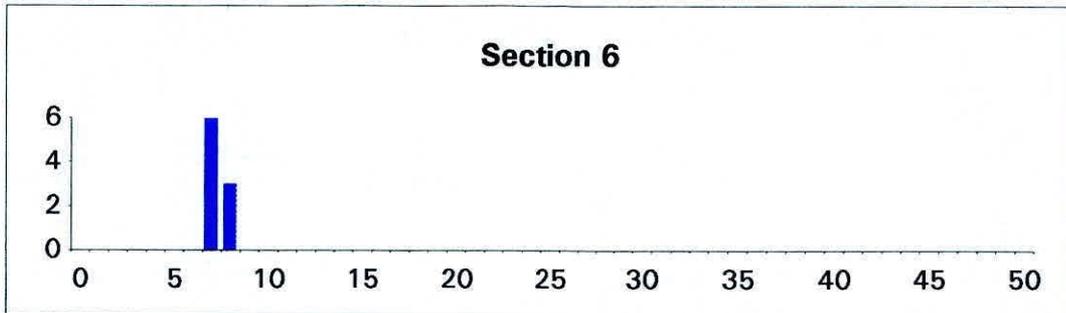
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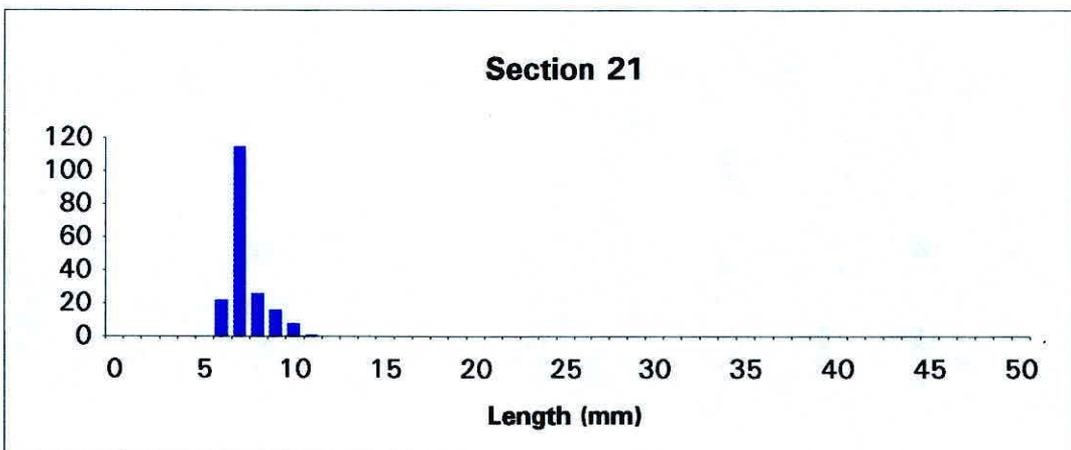
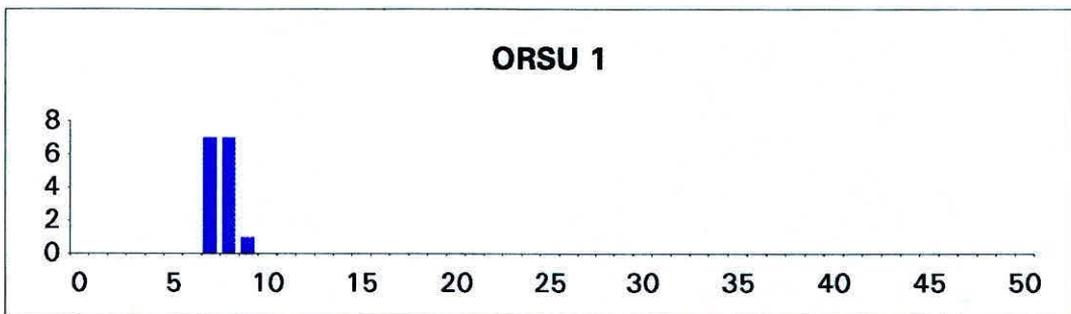
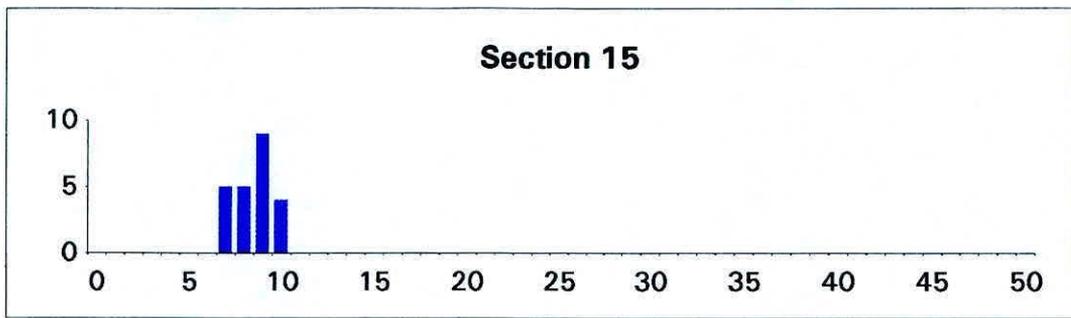
Appendix 4 Length frequency distribution of chub fry in each section of the R. Tees in June 1994.



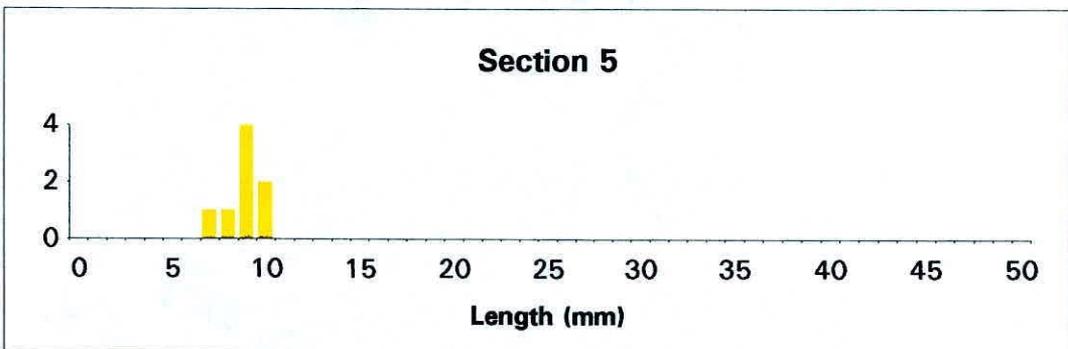
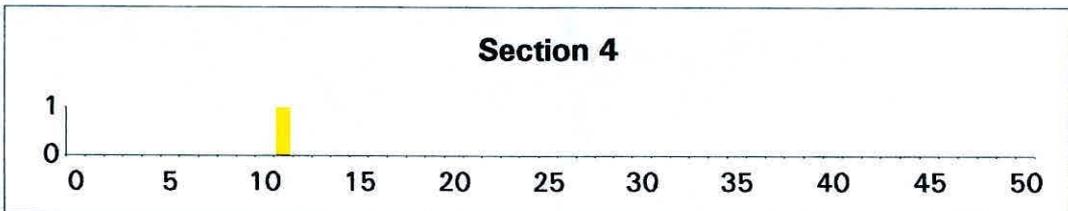
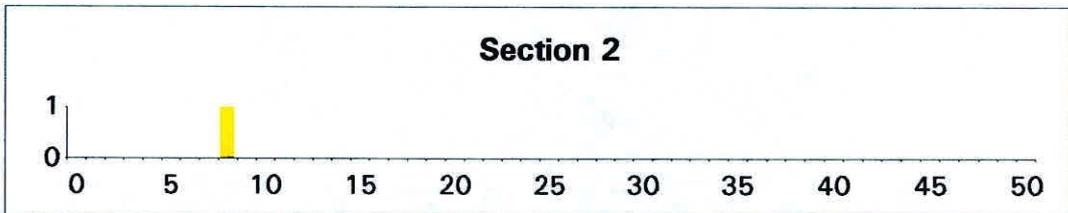
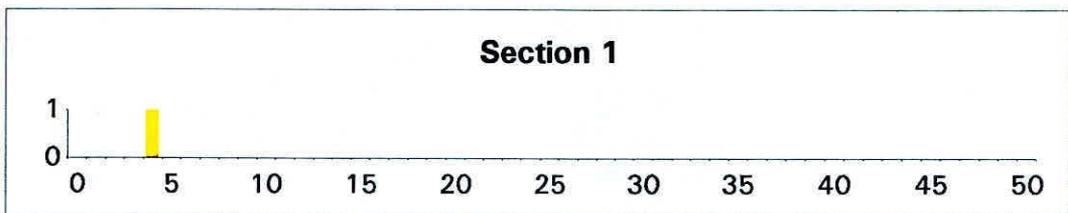
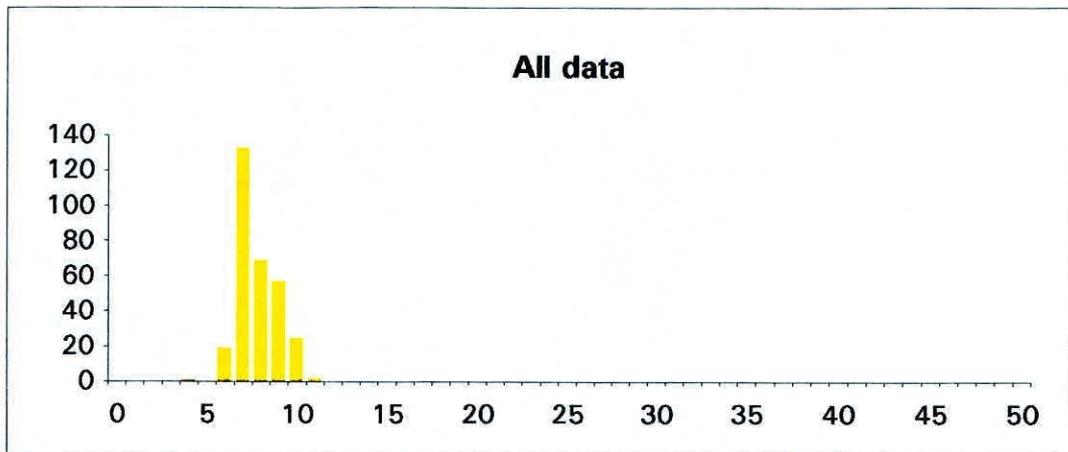
Appendix 4 Continued.



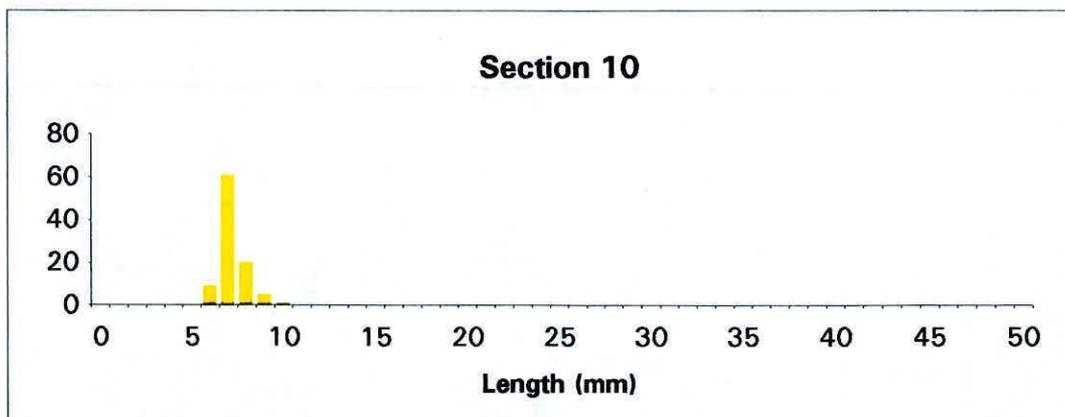
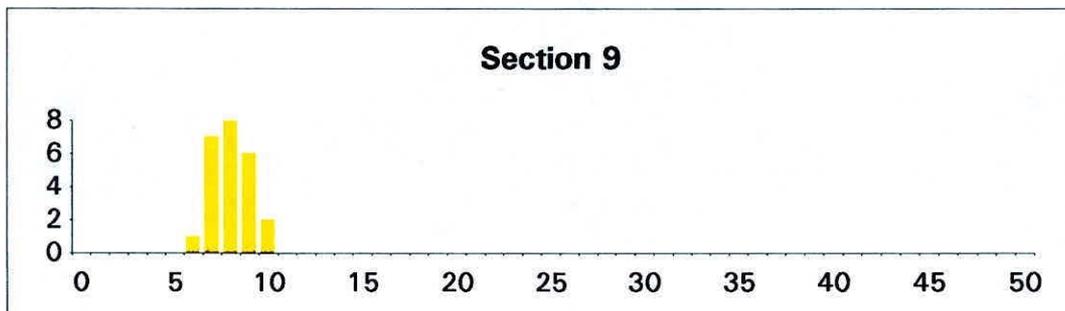
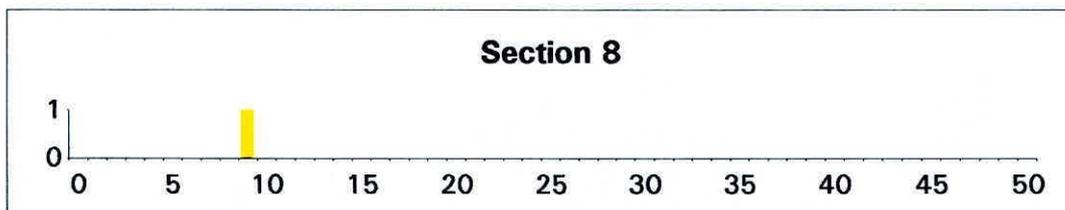
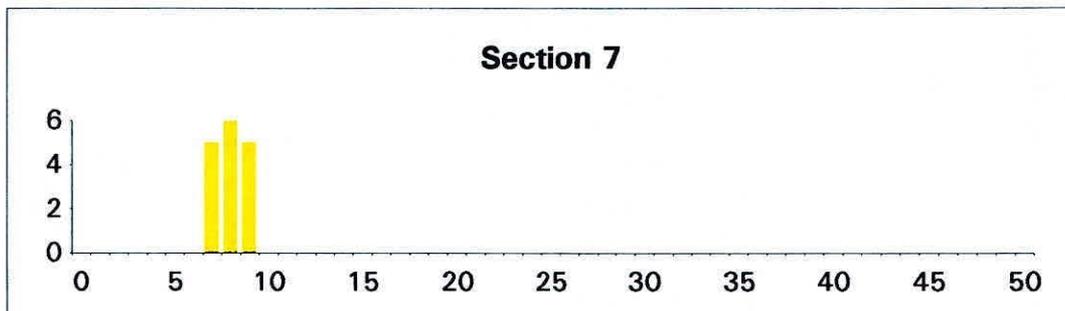
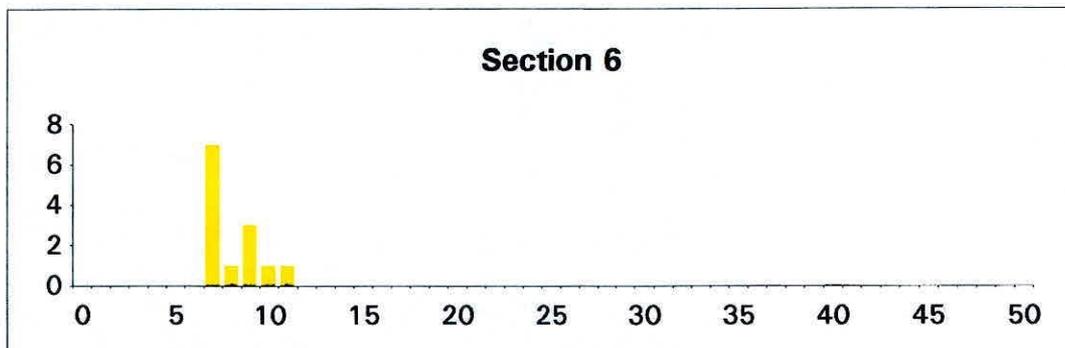
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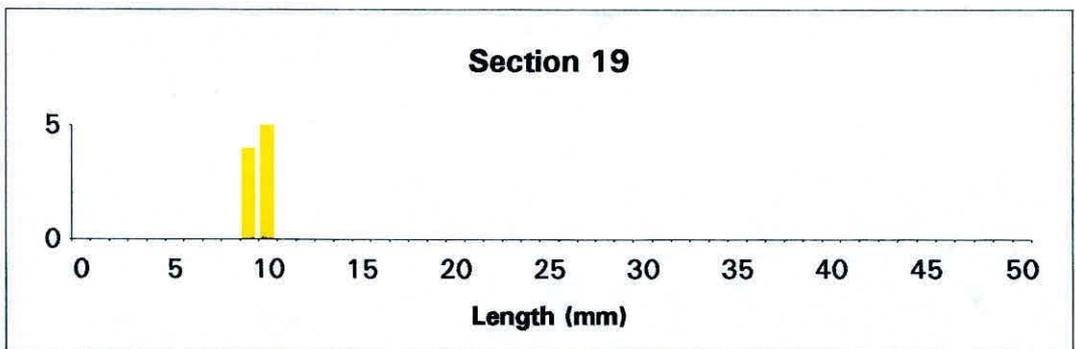
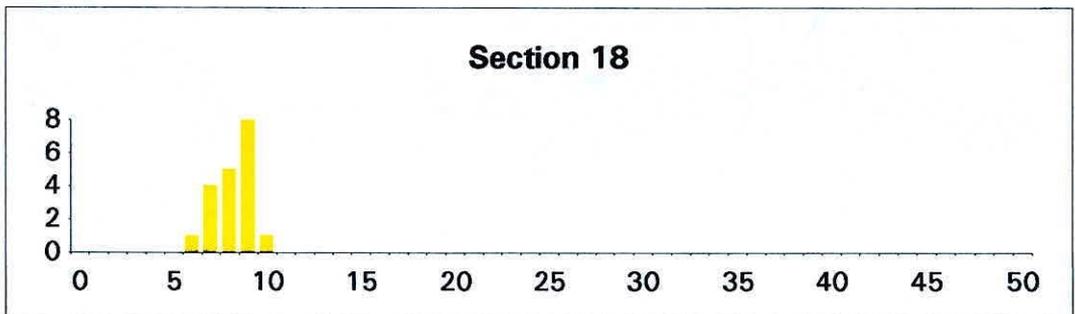
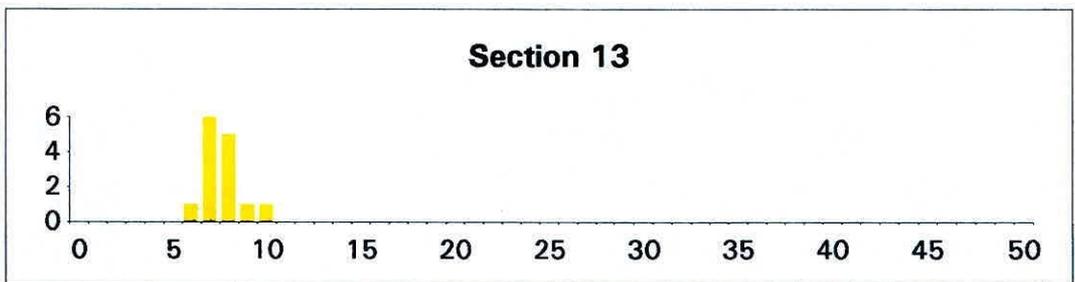
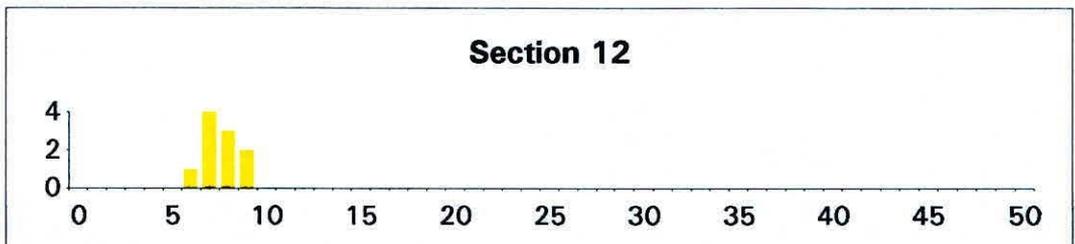
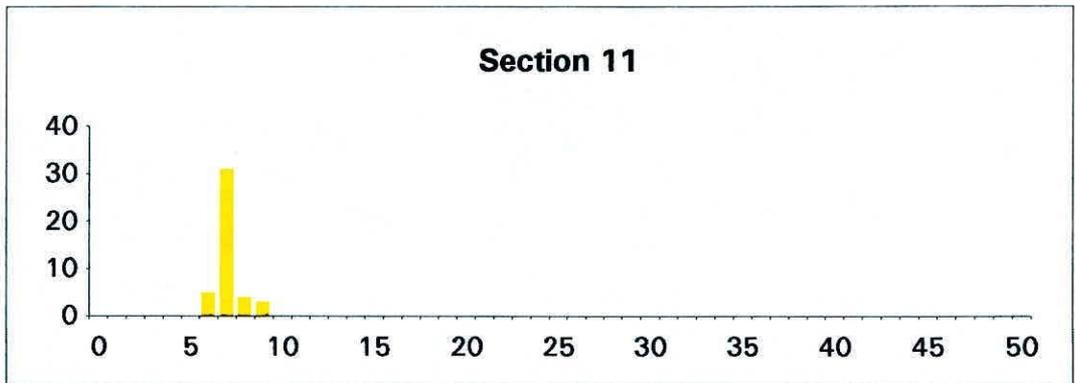
Appendix 5 Length frequency distribution of roach fry in each section of the R. Tees in June 1994.



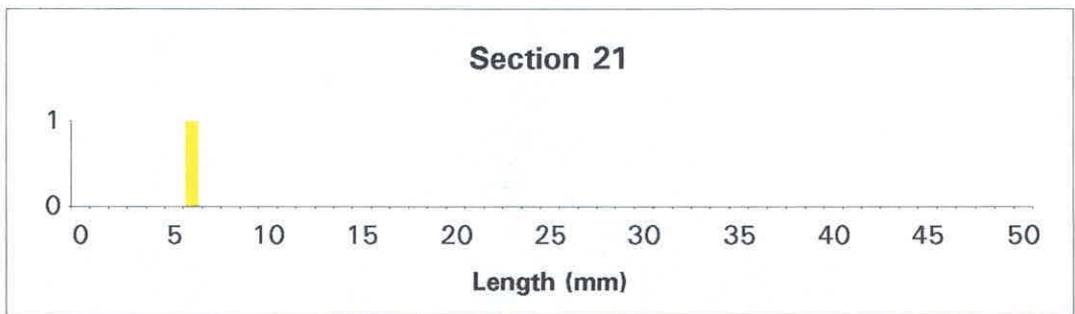
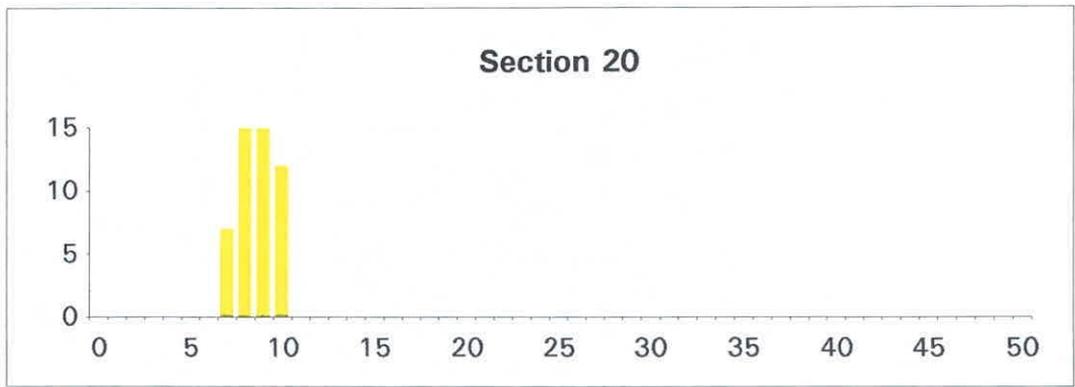
Appendix 5 Continued.



Appendix 5 Continued.



Appendix 5 Continued.



Appendix 6. Site descriptions and details of fish caught.

SECTION 3

Date fished 4 September 1994
 Area Bend below Great Holme to bend below pipe bridge
 Length 800 m
 NGR NZ434154 - NZ441157
 State of tide Ebbing to low water and flooding
 Time 10.45-13.00
 Fishing method Boom boat
 Site description River lined with reeds. Meadows, few trees.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	1	3.2
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	14	4.1-31.9
Dace <i>Leuciscus leuciscus</i> (L.)	218	3.8-24.2
Flounder <i>Platichthys flesus</i> (L.)	84	10.0-35.5
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnow <i>Phoxinus phoxinus</i> (L.)	2	4.7-6.3
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	57	3.5-21.2
Salmon <i>Salmo salar</i> L.	1	18.3
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	12	4.6
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	4	
Sea trout <i>Salmo trutta</i> L.	3	35.2-48.5

SECTION 4

Date fished 4 September 1994
 Area The Rings and Great Holmes
 Length 2280 m
 NGR NZ431147 - NZ434154
 State of tide Flooding to high springs and then ebbing
 Time 14.30-17.30
 Fishing method Boom boat
 Site description High banks with meadows and few trees. River lined with reeds.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbatus</i> (L.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	20	3.0-28.9
Dace <i>Leuciscus leuciscus</i> (L.)	394	4.6-21.5
Flounder <i>Platichthys flèsus</i> (L.)	19	11.7-34.5
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	10	12.0-15.3
Minnnow <i>Phoxinus phoxinus</i> (L.)		
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	135	2.5-20.6
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.	4	17.5-33.0
Eel <i>Anguilla anguilla</i> L.	5	

SECTION 5

Date fished 1 September 1994
 Area Downstream of R. Leven - start of The Rings
 Length 1840 m
 NGR NZ365105 - NZ431147
 State of tide Flooding
 Time 12.00-13.00
 Fishing method Boom boat
 Site description High banks with meadows. Some trees and shrubs on the banks, very few overhanging the water. High wooded banks at the bottom of the section.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	2	14.1-16.0
Dace <i>Leuciscus leuciscus</i> (L.)	7	11.0-22.4
Flounder <i>Platichthys flesus</i> (L.)		
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	3	12.5-14.2
Minnow <i>Phoxinus phoxinus</i> (L.)		
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)		15.8-19.3
Salmon <i>Salmo salar</i> L.	1	97.5
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.	1	19.8
Eel <i>Anguilla anguilla</i> L.	<10	

SECTION 6

Date fished 1 September 1994
 Area River Leven - large bend upstream
 Length 1240 m
 NGR NZ423122 - NZ430130
 State of tide Flooding to high water and ebbing
 Time 13.30-14.10 and 14.20-14.30
 Fishing method Boom boat
 Site description High banks. Overhanging trees on south bank. Open land on north bank.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	17	3.9-28.4
Dace <i>Leuciscus leuciscus</i> (L.)	146	4.3-21.0
Flounder <i>Platichthys flesus</i> (L.)	2	15.0-21.4
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnow <i>Phoxinus phoxinus</i> (L.)		
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	2	3.2-11.5
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L. ---	1	39.5
Eel <i>Anguilla anguilla</i> L.	<10	

SECTION 7

Date fished 1 September 1994
 Area Upstream of Section 6 - Yarm road bridge
 Length 1140 m
 NGR NZ418132 - NZ423122
 State of tide Slow ebb - low water and low slack - flooding
 Time 09.45-10.30 and 10.45-11.40
 Fishing method Boom boat
 Site description High banks. Yarm on south bank. Open meadows on north bank.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	14	3.1-27.1
Dace <i>Leuciscus leuciscus</i> (L.)	297	4.1-21.2
Flounder <i>Platichthys flesus</i> (L.)	11	7.5-27.1
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnow <i>Phoxinus phoxinus</i> (L.)	11	3.8-6.8
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	10	2.9-4.4
Salmon <i>Salmo salar</i> L.		
Sone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	21	

SECTION 8

Date fished 1 September 1994
 Area Yarm road bridge - Yarm railway bridge
 Length 80 m
 NGR NZ417132 - NZ418132
 State of tide Ebbing
 Time 15.30-15.45
 Fishing method Boom boat
 Site description High banks. Gravel bar on south bank. Water otherwise deep.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	2	27.5-28.9
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	3	3.6-8.0
Dace <i>Leuciscus leuciscus</i> (L.)	128	4.2-23.7
Flounder <i>Platichthys flesus</i> (L.)		
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	1	9.2
Minnow <i>Phoxinus phoxinus</i> (L.)	4	3.4-7.2
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	14	3.9-22.2
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	1	

SECTION 9

Date fished	Not fished - too many anglers on each occasion in the vicinity
Area	Yarm railway bridge - upstream to outfall on north bank
Length	300 m
NGR	NZ415131 - NZ417132
State of tide	
Time	
Fishing method	
Site description	Flood defence construction on south bank. On north, high bank with bushes and herbaceous vegetation.

SECTION 10

Date fished 1 September 1994 and 5 September 1994
 Area Upstream of section 9 - downstream of section 11
 Length 560 m
 NGR NZ415122 - NZ415131
 State of tide Ebbing on both occasions
 Time 16.15-16.45 and 09.15-9.50
 Fishing method Boom boat
 Site description High banks. Thin line of trees and shrubs on the north bank, more open on the south bank.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	1	25.2
Bullhead <i>Cottus gobio</i> L.	1	7.2
Chub <i>Leuciscus cephalus</i> (L.)	58	3.0-35.8
Dace <i>Leuciscus leuciscus</i> (L.)	207	4.4-23.1
Flounder <i>Platichthys flesus</i> (L.)	22	11.8-24.3
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	24	8.8-15.5
Minnnow <i>Phoxinus phoxinus</i> (L.)	16	3.3-6.3
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	20	2.6-17.4
Salmon <i>Salmo salar</i> L.	1	12.9
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	1	3.7
Trout (brown) <i>Salmo trutta</i> L. ---	2	17.5-26.7
Eel <i>Anguilla anguilla</i> L.	8	
Perch <i>Perca fluviatilis</i> L.	1	35.2

SECTION 11

Date fished 5 September 1994
 Area Aislaby at The Cabins - bend downstream
 Length 840 m
 NGR NZ407123 - NZ415122
 State of tide Ebbing
 Time 10.45-11.30
 Fishing method Boom boat
 Site description High banks. Wooded area

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	45	2.5-45.7
Dace <i>Leuciscus leuciscus</i> (L.)	82	3.5-10.0
Flounder <i>Platichthys flesus</i> (L.)	35	7.2-20.0
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnow <i>Phoxinus phoxinus</i> (L.)	25	2.8-5.9
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	23	2.8-19.0
Salmon <i>Salmo salar</i> L.	1	68.5
Stone loach <i>Barbatula barbatula</i> (L.)	1	10.0
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	14	

SECTION 12

Date fished 3 September 1994
 Area Aislaby at The Cabins - middle of 1st bend upstream
 Length 440 m
 NGR NZ405120 - NZ407123
 State of tide Ebbing towards low water springs
 Time 09.55-10.45
 Fishing method Boom boat
 Site description High banks, meadows with few overhanging trees

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbatus</i> (L.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	10	3.1-28.0
Dace <i>Leuciscus leuciscus</i> (L.)	313	4.2-20.0
Flounder <i>Platichthys flesus</i> (L.)	41	6.7-21.1
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	7	12.0-13.6
Minnow <i>Phoxinus phoxinus</i> (L.)	13	3.2-6.8
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	41	2.4-14.1
Salmon <i>Salmo salar</i> L.	2	12.5-13.1
Stone loach <i>Barbatula barbatula</i> (L.)	1	7.7
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	46	

SECTION 13

Date fished 3 September 1994
 Area Upstream of Aislaby, end of Section 12 - next bend upstream
 Length 600 m
 NGR NZ404114 - NZ405120
 State of tide Low water springs
 Time 11.30-13.00
 Fishing method Boom boat
 Site description High banks, meadows with few overhanging trees

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	1	4.5
Bullhead <i>Cottus gobio</i> L.	1	6.5
Chub <i>Leuciscus cephalus</i> (L.)	39	2.4-47.2
Dace <i>Leuciscus leuciscus</i> (L.)	215	3.6-23.1
Flounder <i>Platichthys flesus</i> (L.)	80	14.5-30.0
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	3	8.8-14.2
Minnow <i>Phoxinus phoxinus</i> (L.)	36	3.1-6.9
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	20	2.5-21.4
Salmon <i>Salmo salar</i> L.	2	13.2-69.0
Stone loach <i>Barbatula barbatula</i> (L.)	1	8.2
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	73	

SECTION 14

Date fished 3 September 1994
 Area End of Section 13 - next bend upstream
 Length 1040 m
 NGR NZ401105 - NZ404114
 State of tide Flooding from low water springs
 Time 14.15-15.45
 Fishing method Boom boat
 Site description High banks, more wooded than sections 12 and 13. Deep water

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	1	5.0
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	82	2.7-38.0
Dace <i>Leuciscus leuciscus</i> (L.)	280	3.4-19.6
Flounder <i>Platichthys flesus</i> (L.)	28	8.1-29.5
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	1	5.0
Minnow <i>Phoxinus phoxinus</i> (L.)	39	2.7-6.8
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	22	2.6-18.7
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.		
Sea Trout <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	22	

SECTION 15

Date fished 5 September 1994
 Area Pumping station - bend downstream. Lower limit opposite upstream limit of section 14.
 Length 580 m
 NGR NZ395103 - NZ401105
 State of tide Ebbing
 Time 13.20-13.50
 Fishing method Boom boat
 Site description High banks, wooded section. Shallow water with gravel banks

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	70	2.5-29.8
Dace <i>Leuciscus leuciscus</i> (L.)	207	3.7-16.7
Flounder <i>Platichthys flesus</i> (L.)	34	11.9-31.3
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	8	3.3-13.9
Minnow <i>Phoxinus phoxinus</i> (L.)	46	2.5-6.8
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	33	2.6-20.7
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.	2	19.1-22.2
Eel <i>Anguilla anguilla</i> L.	20	

SECTION 16

Date fished 3 September 1994
 Area Lower Worsall - pumping station
 Length 400 m
 NGR NZ392103 - NZ395103
 State of tide Ebbing from high water
 Time 16.40-17.15
 Fishing method Boom boat
 Site description Banks less steep. Open meadows upstream with tree cover increasing downstream. Shallow water.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	47	2.5-49.4
Dace <i>Leuciscus leuciscus</i> (L.)	136	3.6-21.4
Flounder <i>Platichthys flesus</i> (L.)	6	14.4-20.1
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	1	14.6
Minnow <i>Phoxinus phoxinus</i> (L.)	17	2.4-6.5
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	8	11.5-24.1
Salmon <i>Salmo salar</i> L.	1	71.5
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	10	

SECTION 19

Date fished 2 September 1994
 Area Fardeneside Farm to top of second island upstream.
 Length 200 m
 NGR NZ371095 - NZ373095
 State of tide Not affected by the tide.
 Time 09.30-11.30
 Fishing method Twin anode wading
 Site description Very high, steep, wooded banks. Uniform area downstream with little macrophyte cover but dense bushes on the bank overhanging the water.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	6	4.0-4.8
Chub <i>Leuciscus cephalus</i> (L.)	22	3.0-27.5
Dace <i>Leuciscus leuciscus</i> (L.)	119	4.4-19.9
Flounder <i>Platichthys flesus</i> (L.)	1	15.4
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	3	4.2-5.0
Minnnow <i>Phoxinus phoxinus</i> (L.)	52	2.4-9.0
Roach <i>Rutilus rutilus</i> (L.)	1	3.2
Rudd <i>Scardinius erythrophthalmus</i> (L.)		
Salmon <i>Salmo salar</i> L.		
Sea lamprey <i>Petromyzon marinus</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)	3	5.4-6.4
Trout (brown) <i>Salmo trutta</i> L.	4	20.0-28.8
Bullhead <i>Cottus gobio</i> (L.)		
Eel <i>Anguilla anguilla</i> L.	<10	

SECTION 21

Date fished 31 August 1994
 Area Downstream of ford below Low Moor weir
 Length 260 m
 NGR NZ365106 - NZ376104
 State of tide Not affected by the tide
 Time 15.00-16.30
 Fishing method Boom boat and twin anode wading
 Site description High banks with some trees on the south bank. Open meadows. A small number of willows overhanging the water on the north bank. Water generally up to 80 cm with deeper pools under overhanging trees. Substratum cobbles/gravel with fine organic sediment in areas of low flow.

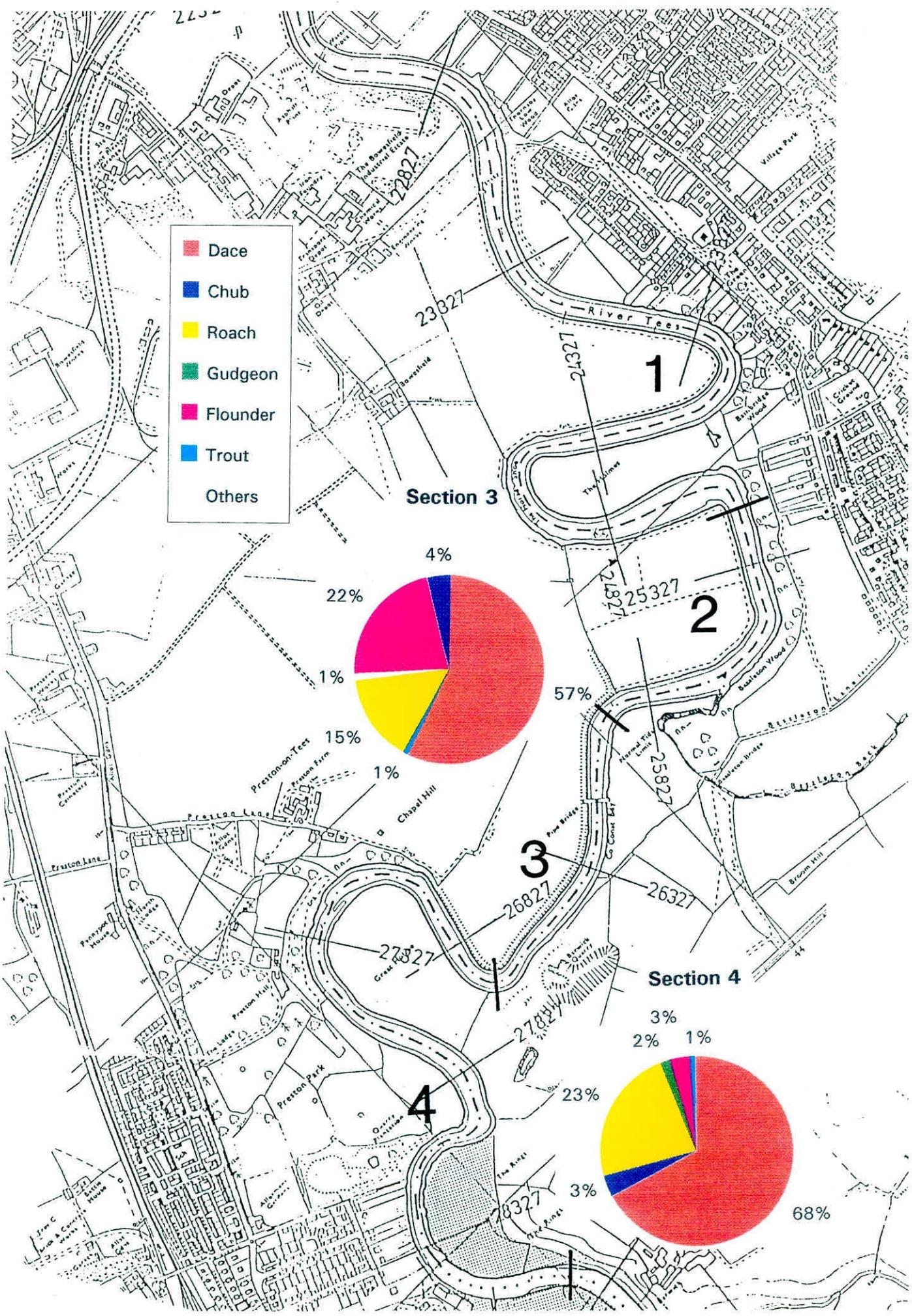
Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	1	35.0
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	34	2.2-42.6
Dace <i>Leuciscus leuciscus</i> (L.)	92	3.1-22.3
Flounder <i>Platichthys flesus</i> (L.)	34	9.1-35.0
Grayling <i>Thymallus thymallus</i> (L.)	5	19.3-31.3
Gudgeon <i>Gobio gobio</i> (L.)	7	8.1-15.0
Minnow <i>Phoxinus phoxinus</i> (L.)	21	2.1-7.0
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	10	2.3-3.5
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	25	
Pike <i>Esox lucius</i> L.	3	22.9-24.1

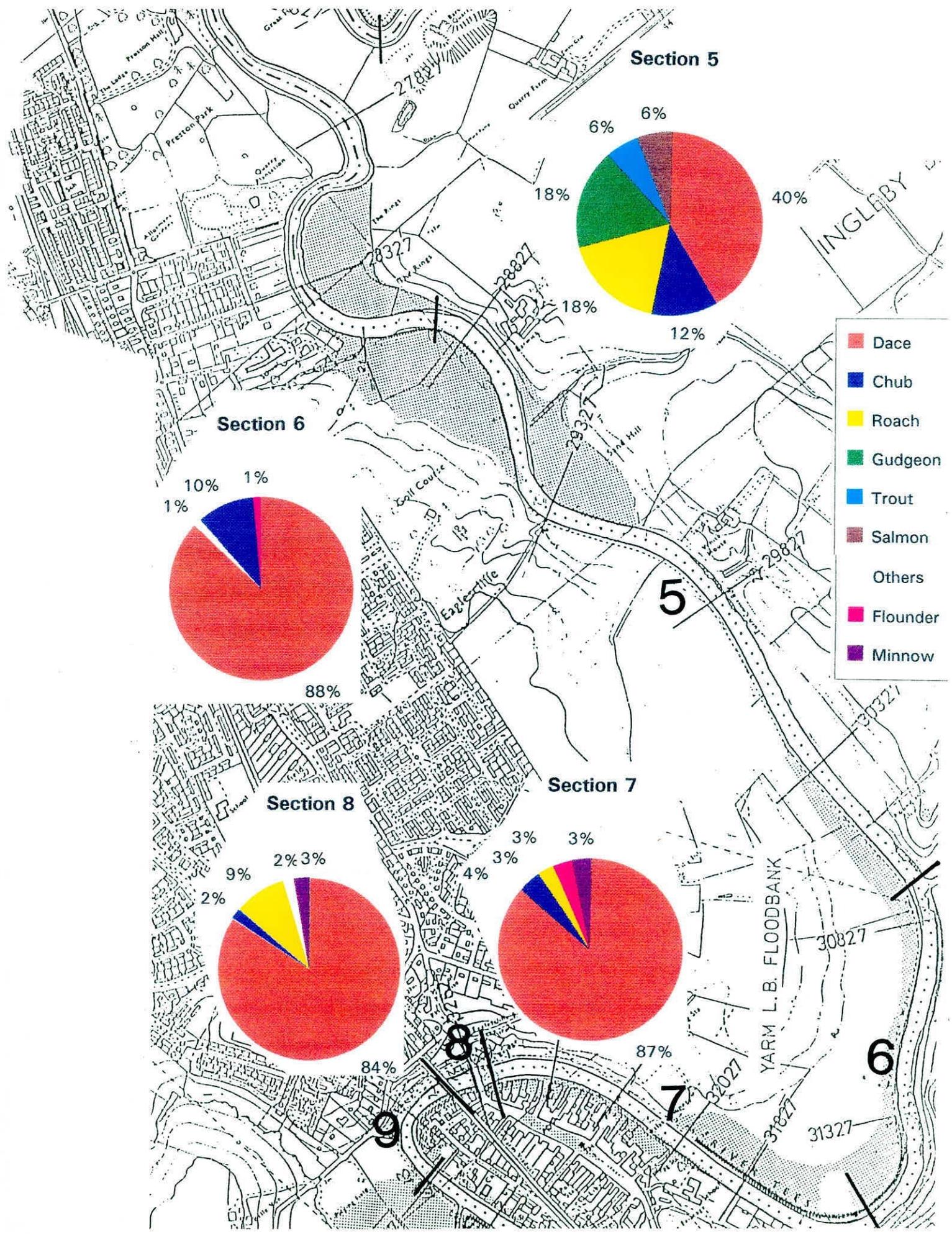
SECTION 25

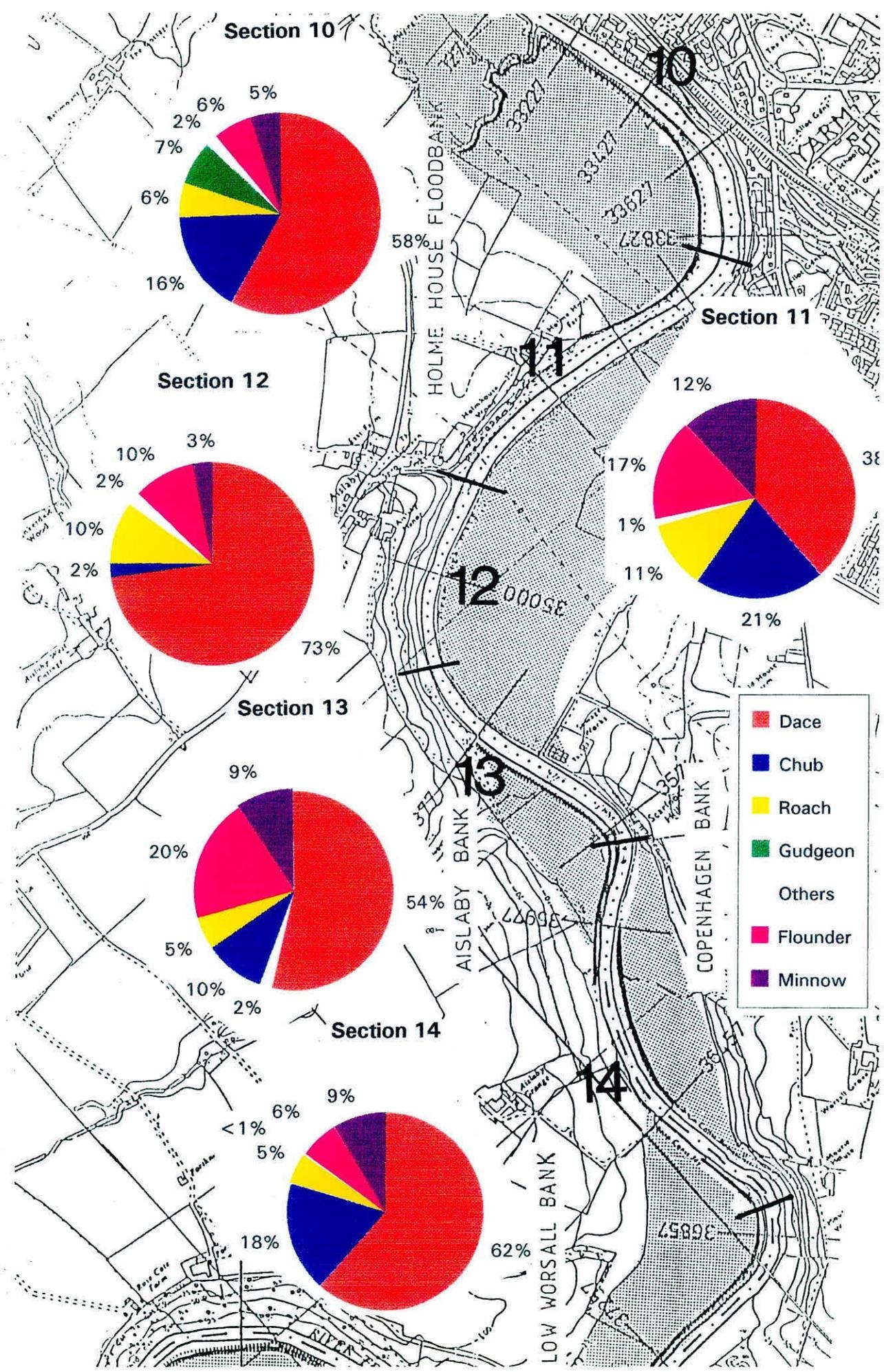
Date fished 31 August 1994
 Area Low Dinsdale toll bridge - first bend upstream
 Length 350 m
 NGR NZ350113 - NZ345114
 State of tide Not influenced by the tide
 Time 09.30-10.10 and 10.45-11.05
 Fishing method Twin anode wading
 Site description Fast flowing over bedrock. Gravel banks present in places usually near the bank. Very high wooded banks. Fallen trees in the water often with associated macrophyte debris.

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	1	38.5
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	20	1.6-38.2
Dace <i>Leuciscus leuciscus</i> (L.)	57	4.7-23.0
Flounder <i>Platichthys flesus</i> (L.)		
Grayling <i>Thymallus thymallus</i> (L.)	1	12.4
Gudgeon <i>Gobio gobio</i> (L.)	5	2.9-7.7
Minnnow <i>Phoxinus phoxinus</i> (L.)	40	2.4-7.5
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	15	2.9-21.5
Salmon <i>Salmo salar</i> L.	1	16.6
Stone loach <i>Barbatula barbatula</i> (L.)	4	4.8-5.6
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	1	3.7
Trout (brown) <i>Salmo trutta</i> L.	4	15.5-24.1
Eel <i>Anguilla anguilla</i> L.	21	

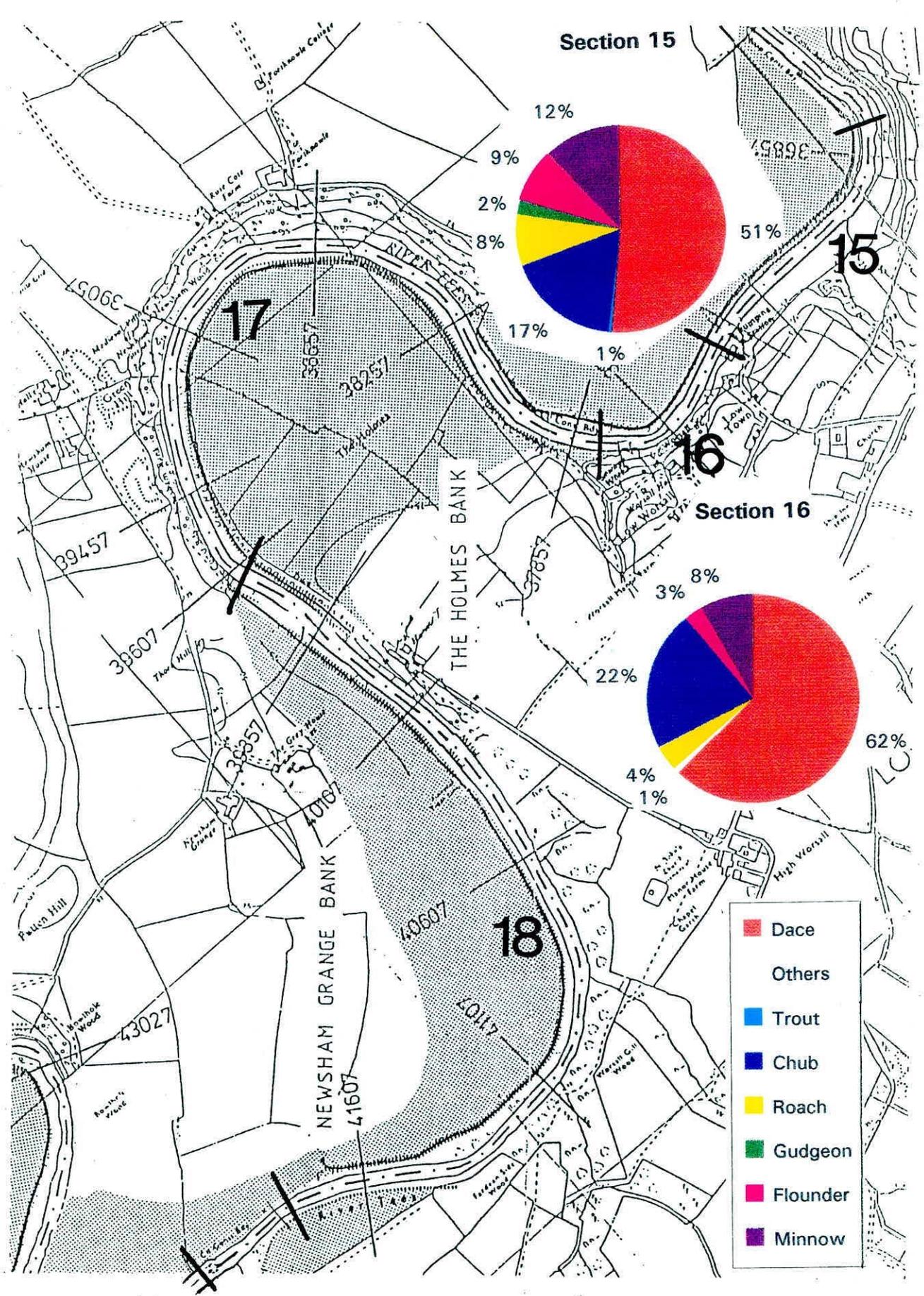
Appendix 7. Species composition of fish in each section in September 1994.



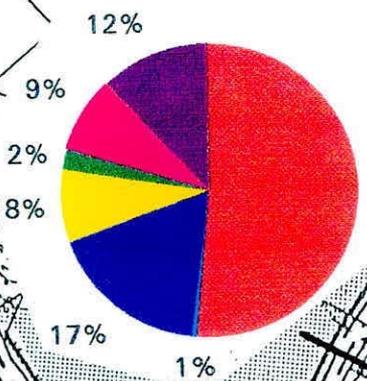




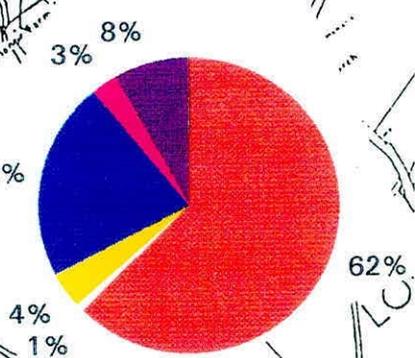
- Dace
- Chub
- Roach
- Gudgeon
- Others
- Flounder
- Minnow



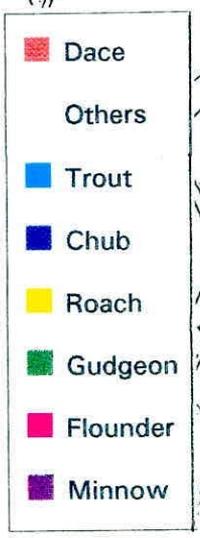
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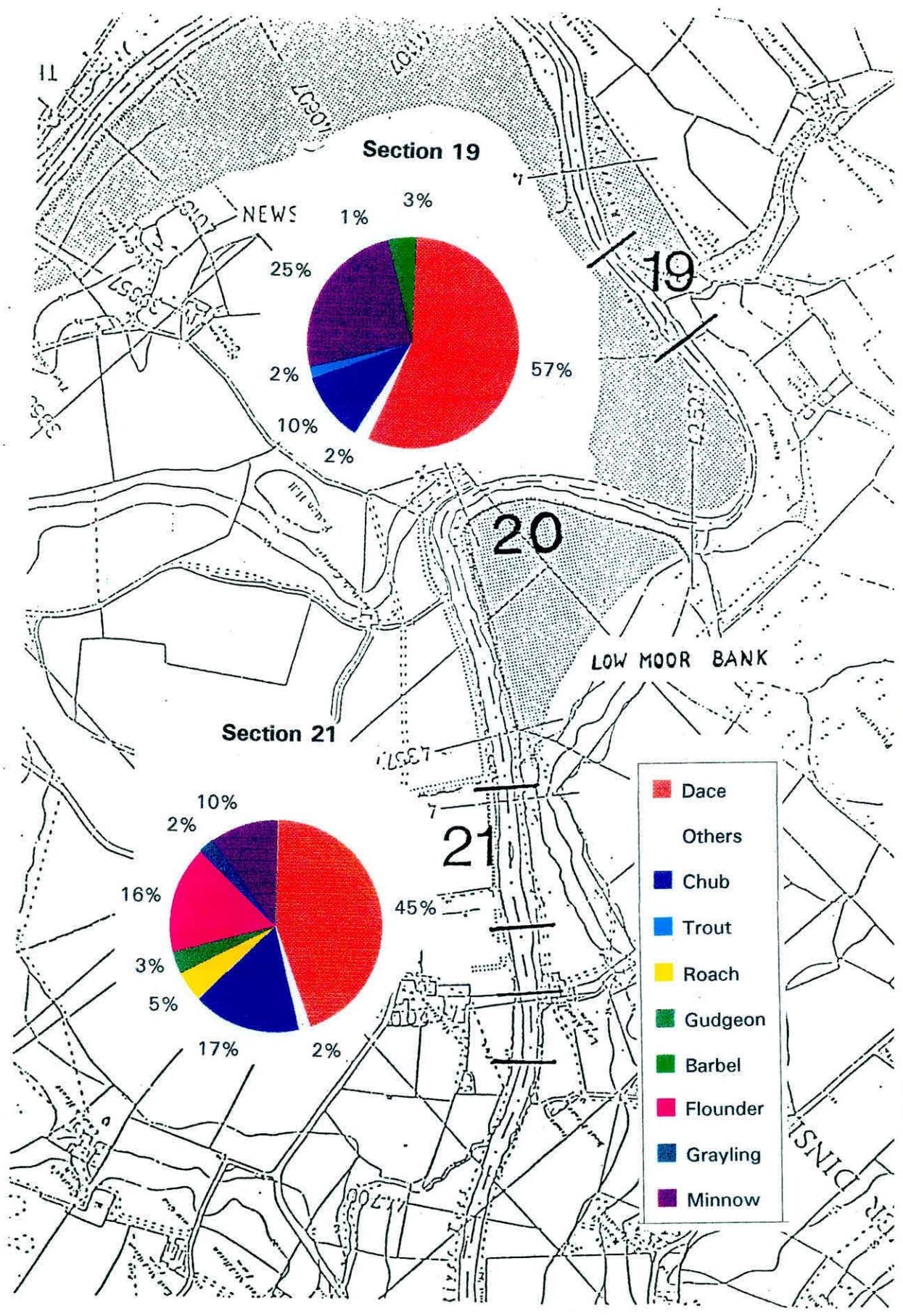


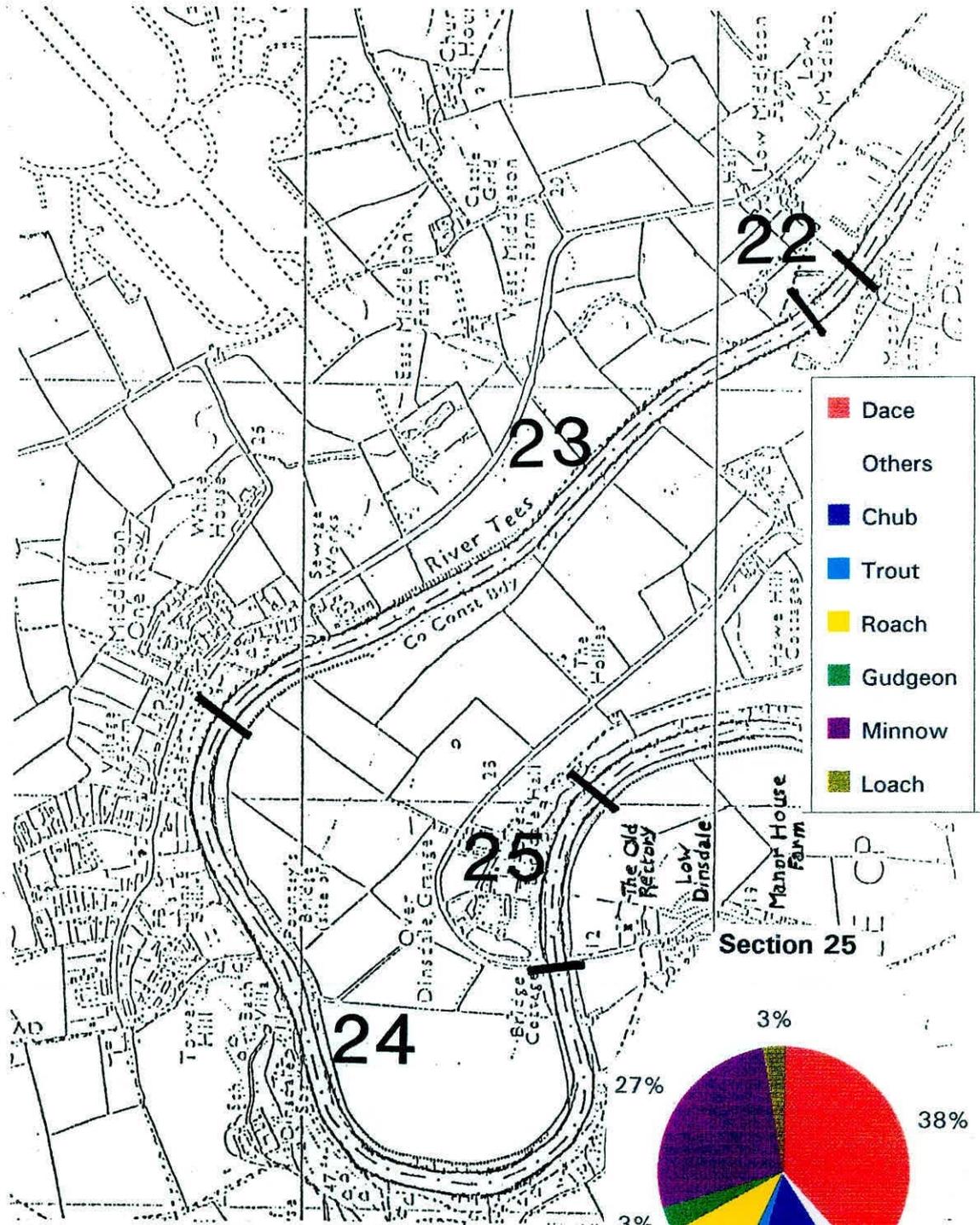
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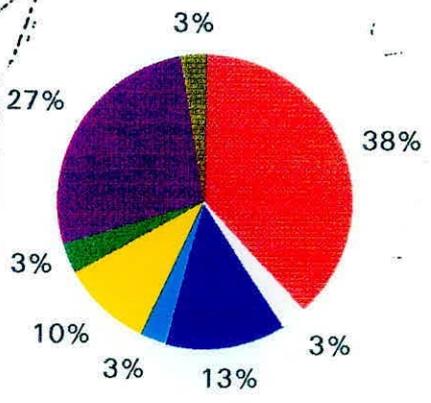
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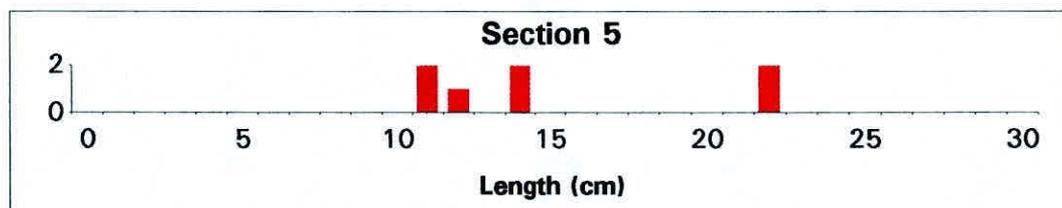
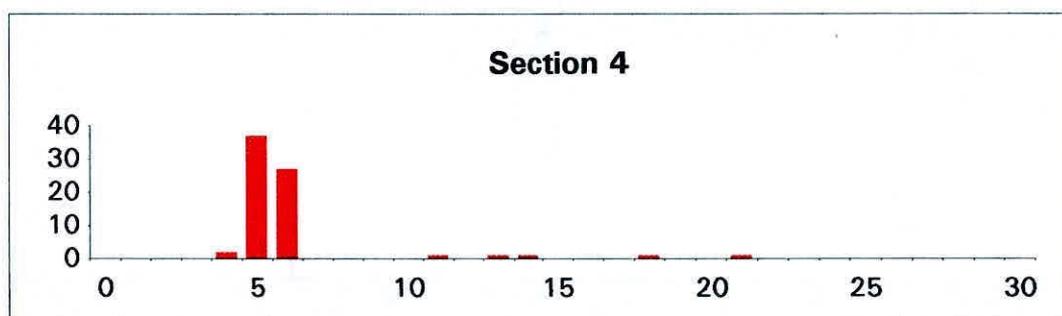
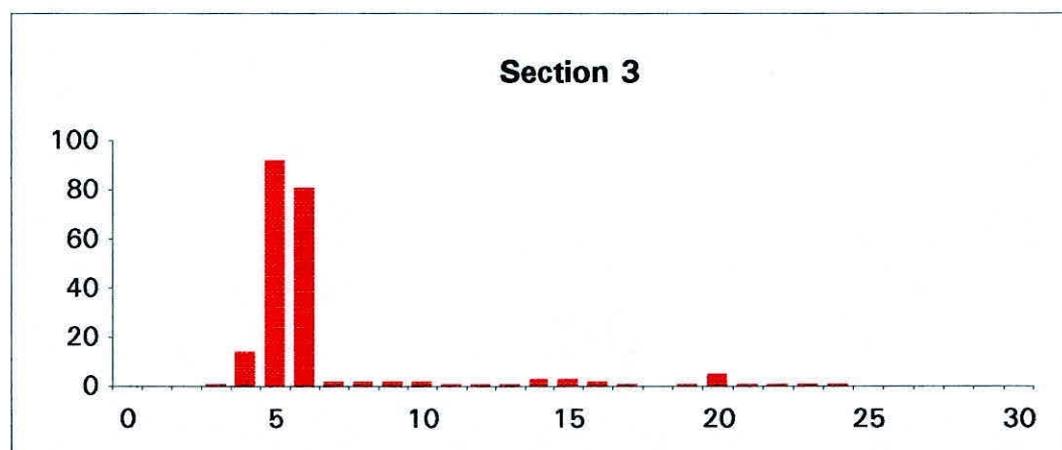
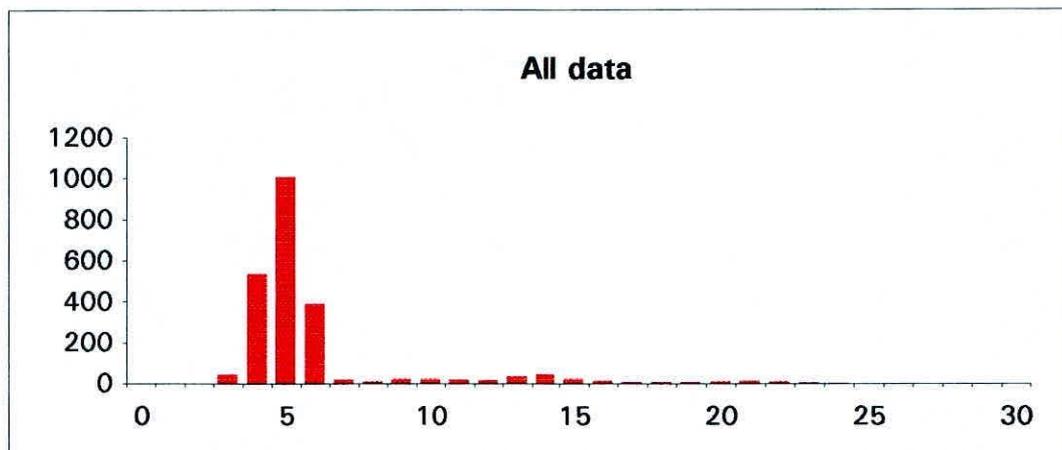




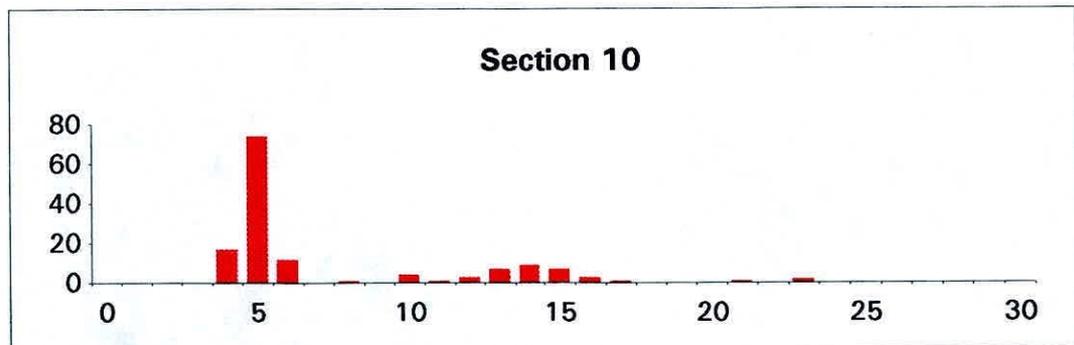
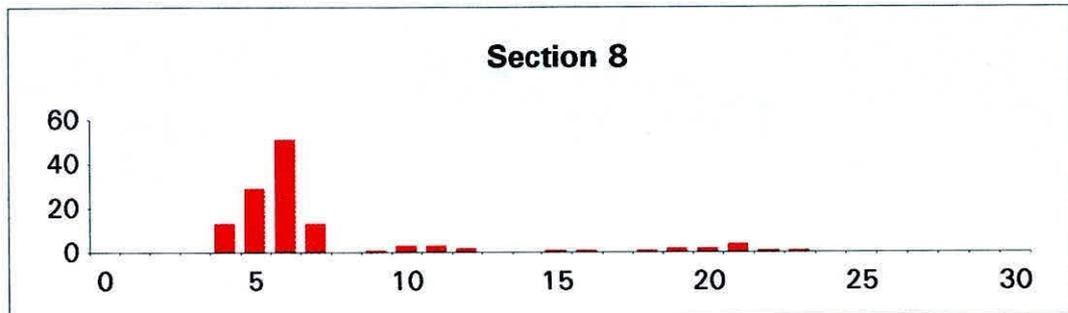
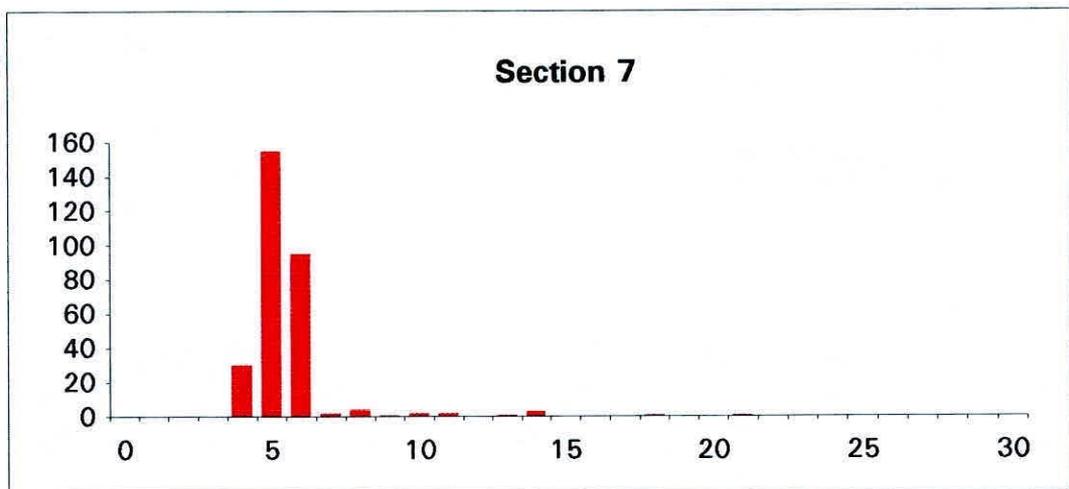
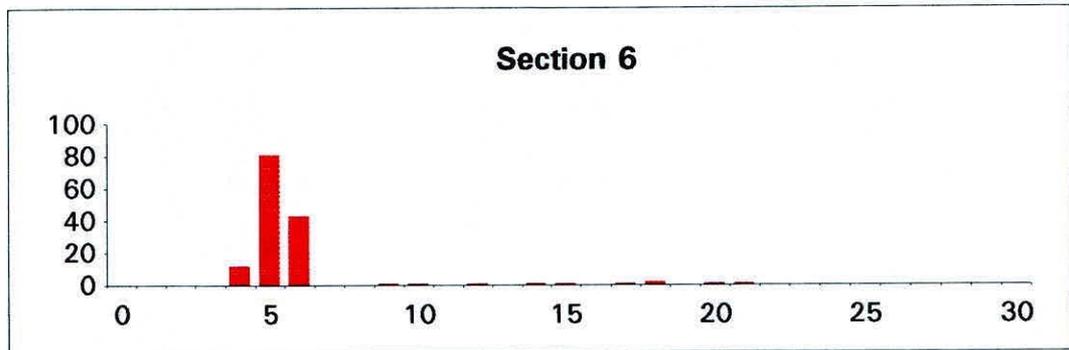
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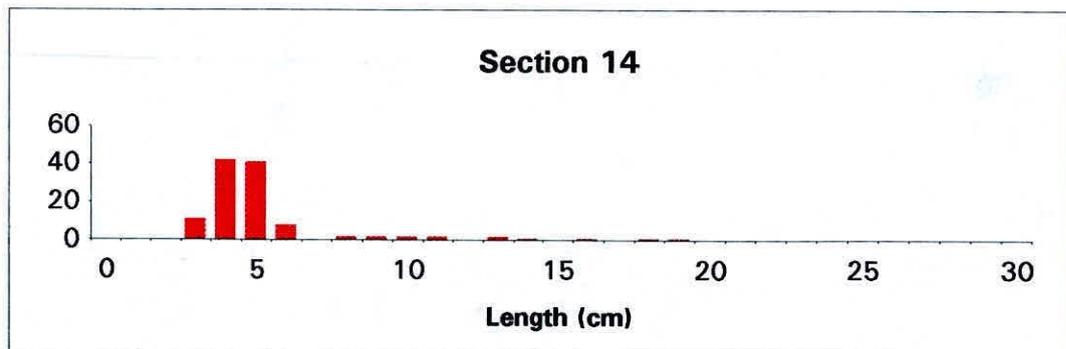
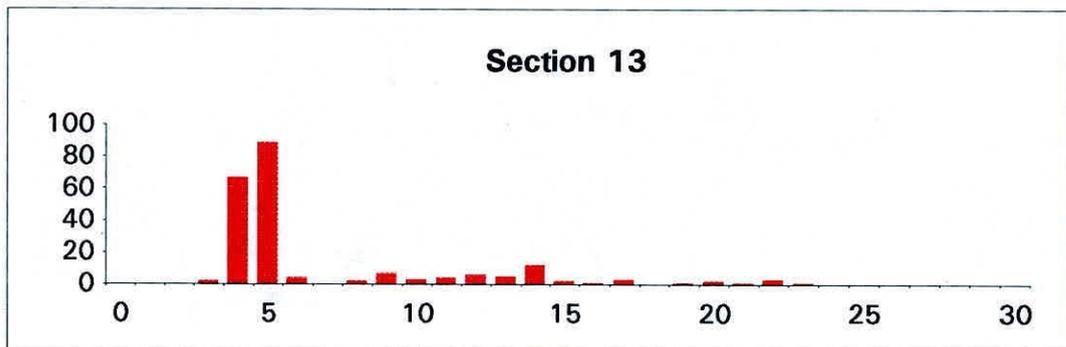
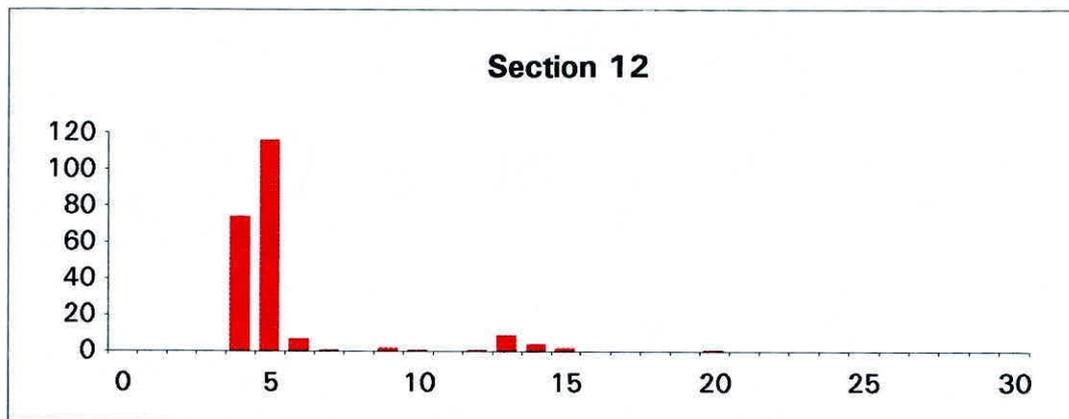
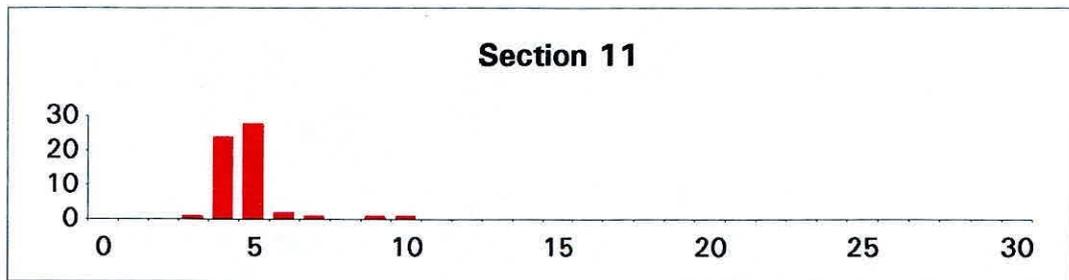
Appendix 8 Length frequency distribution of dace in the R.Tees in September 1994.



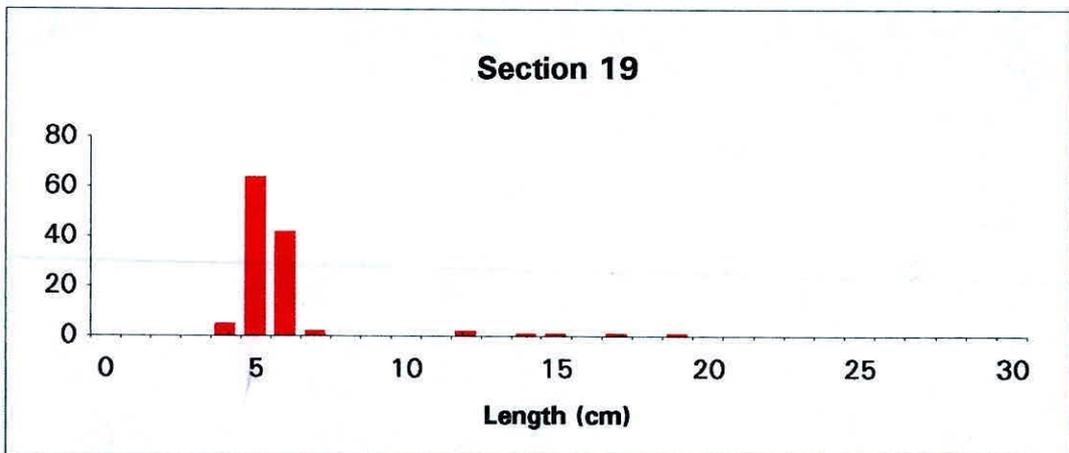
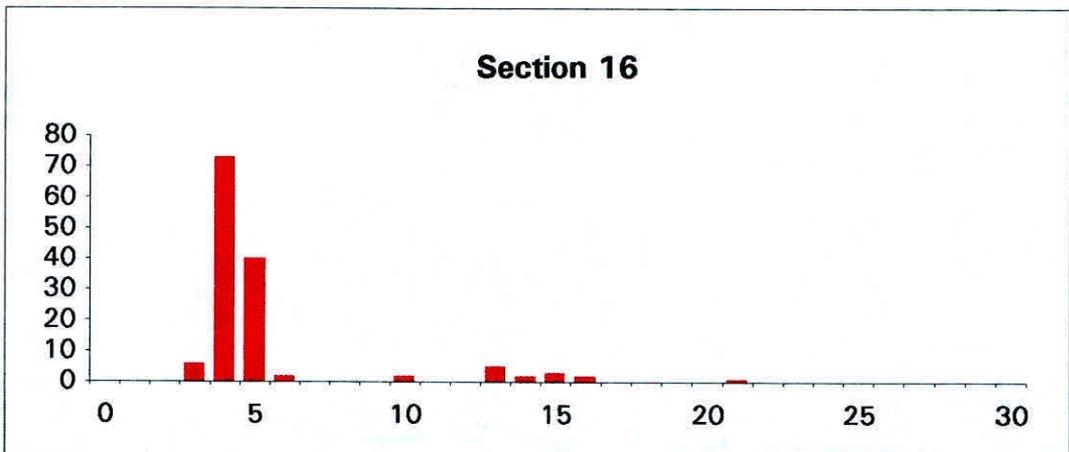
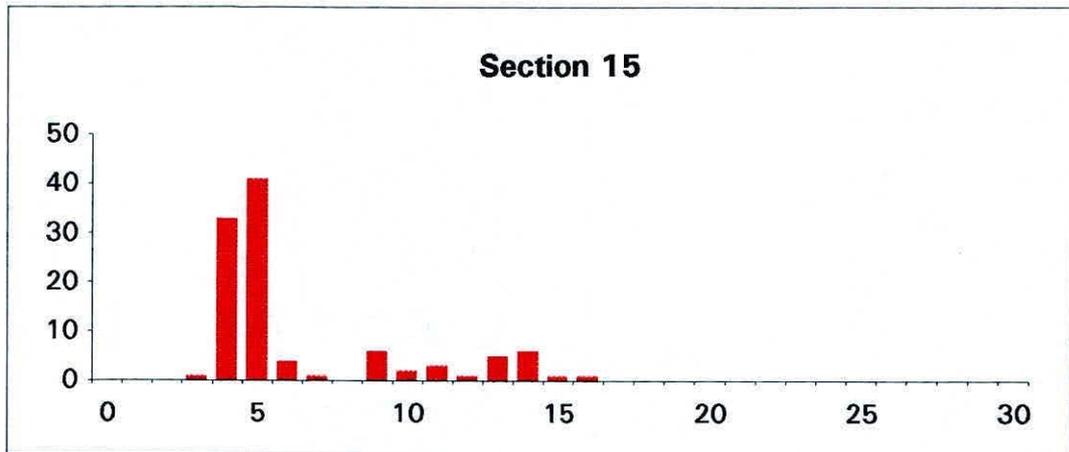
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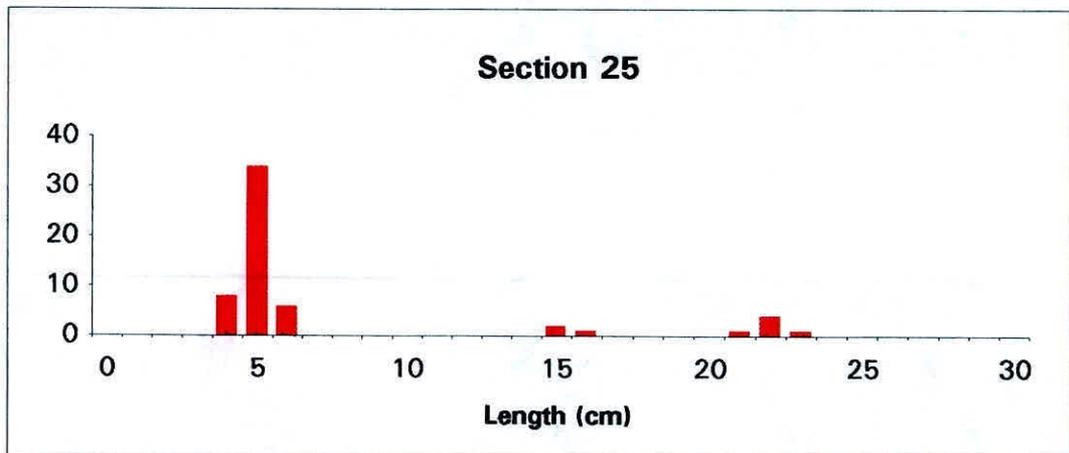
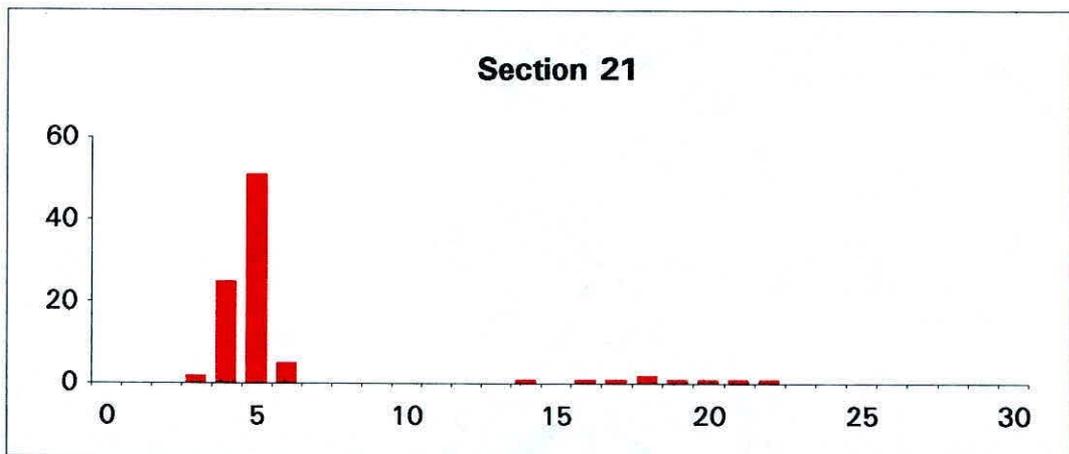
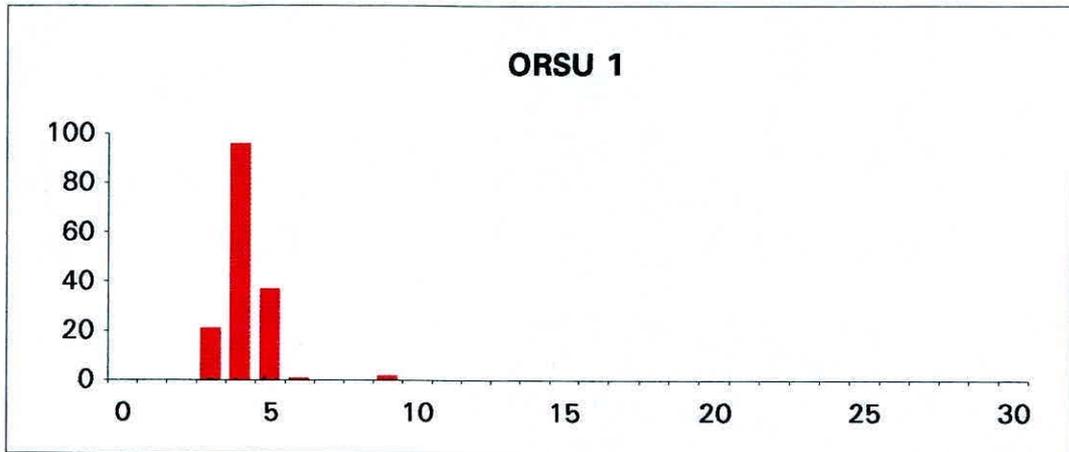
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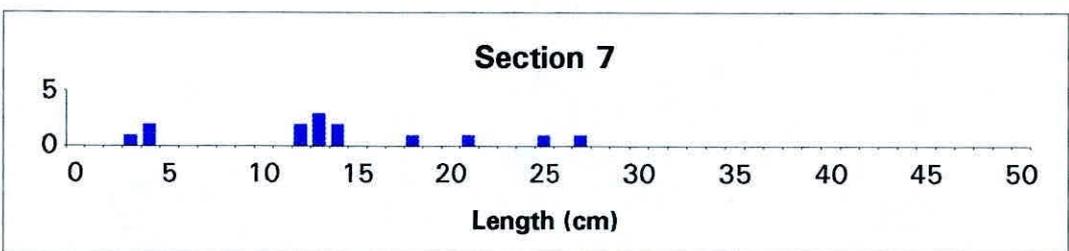
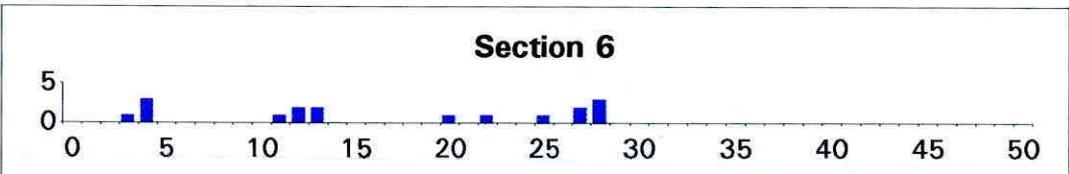
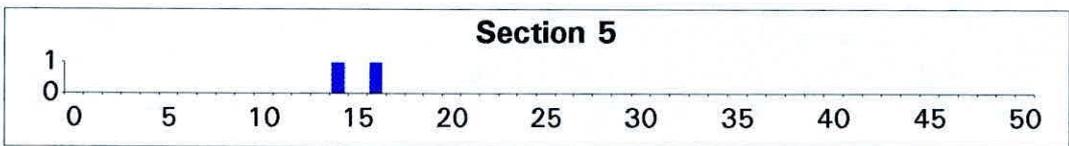
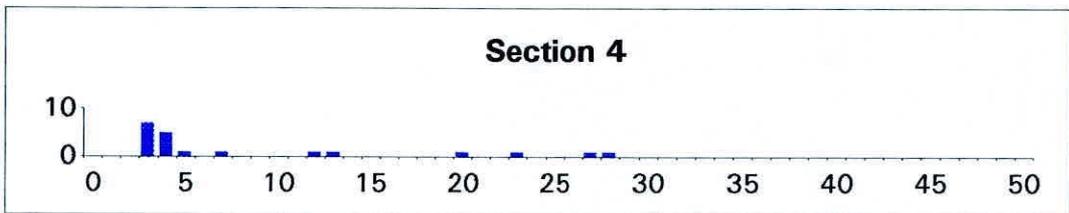
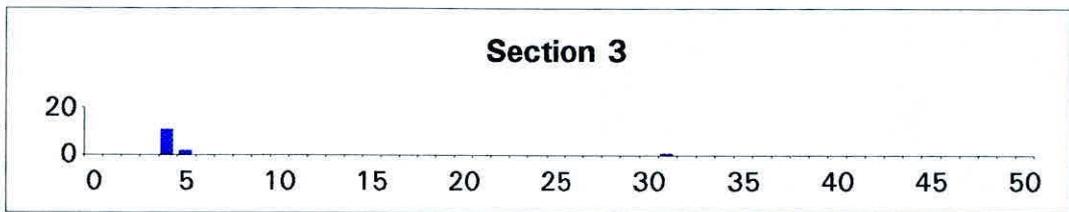
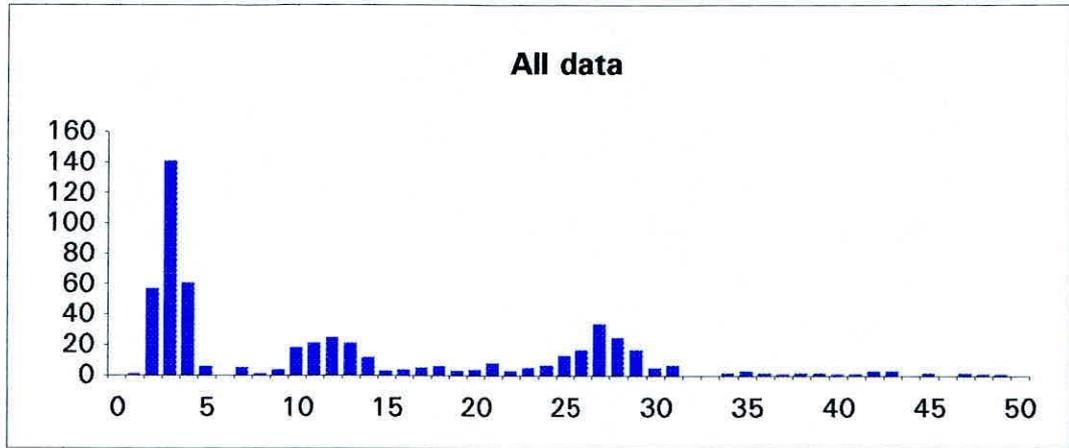
Appendix 8 (cont)



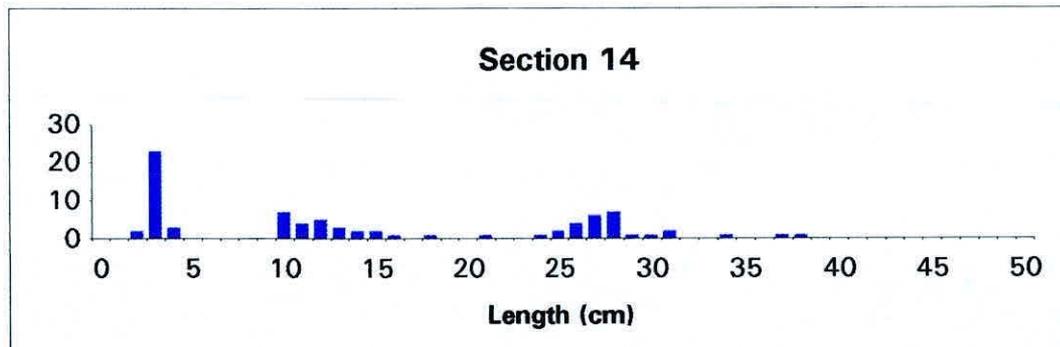
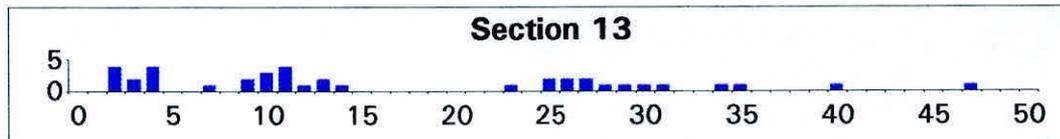
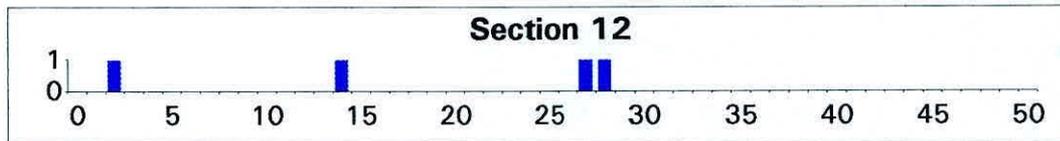
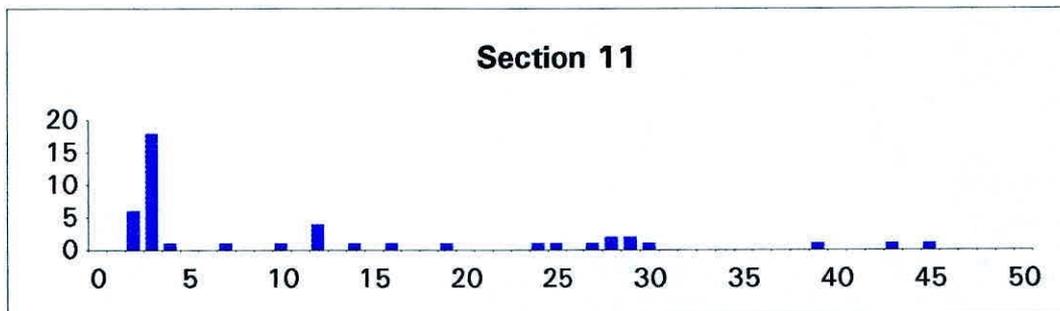
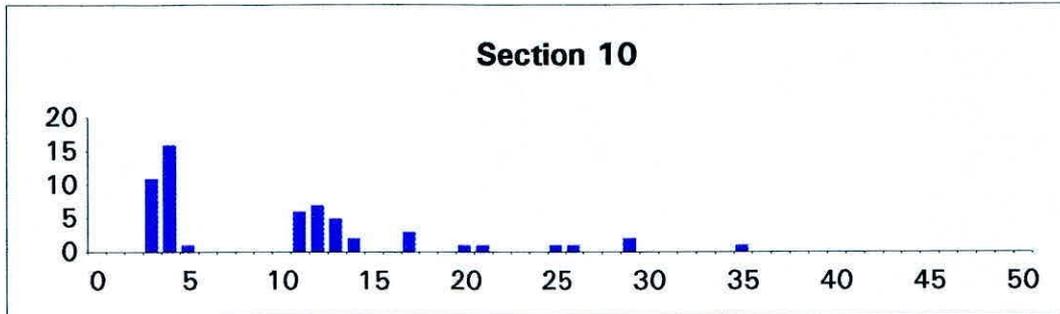
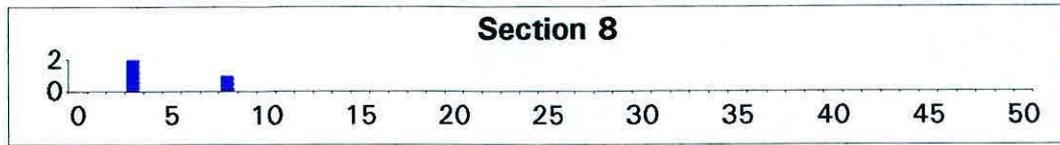
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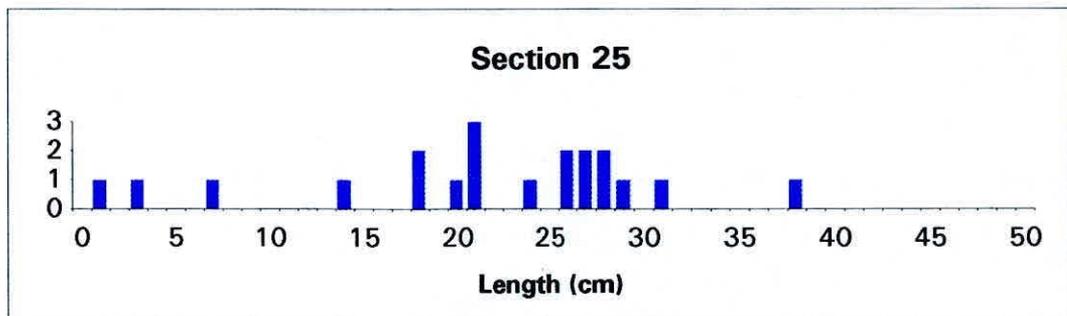
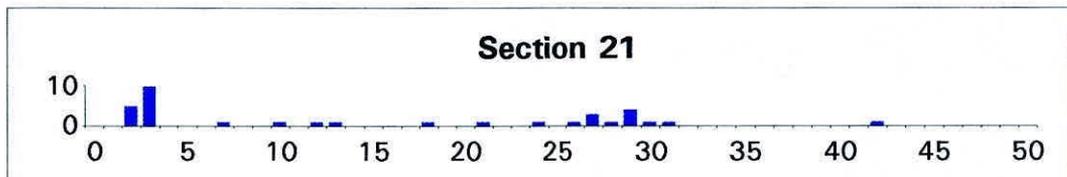
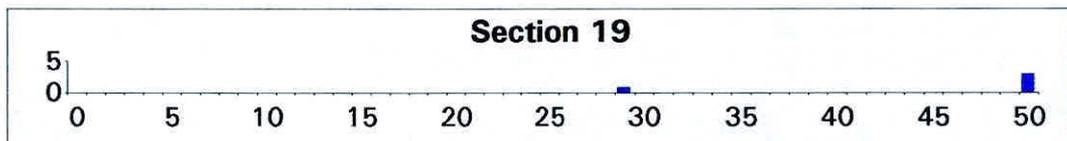
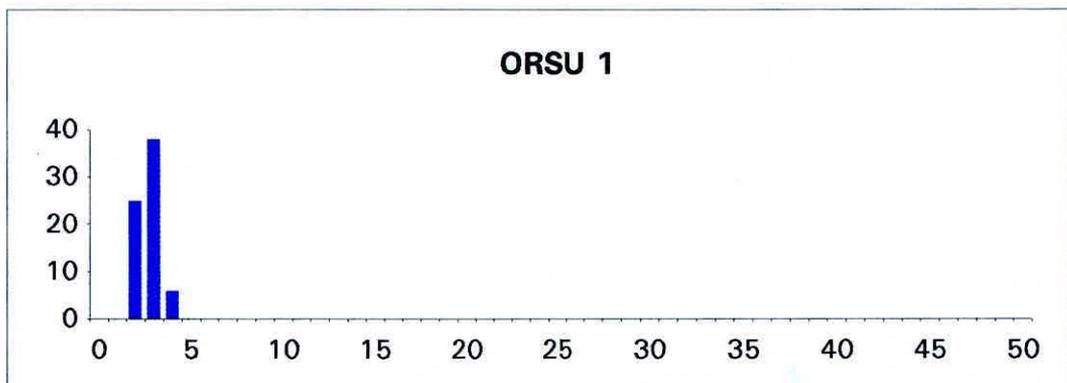
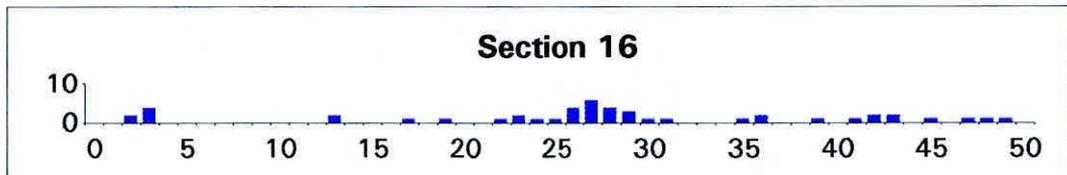
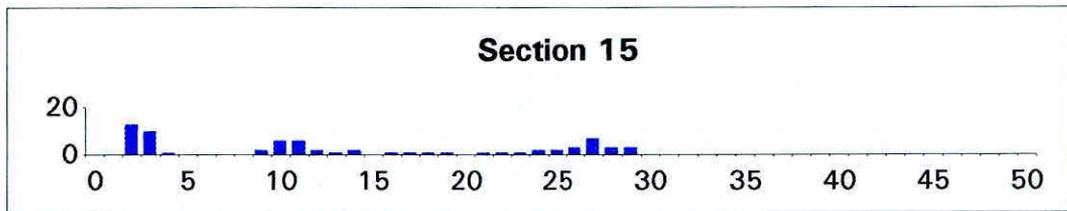
Appendix 9 Length frequency distribution of chub in each section of the R.Tees in September 1994.



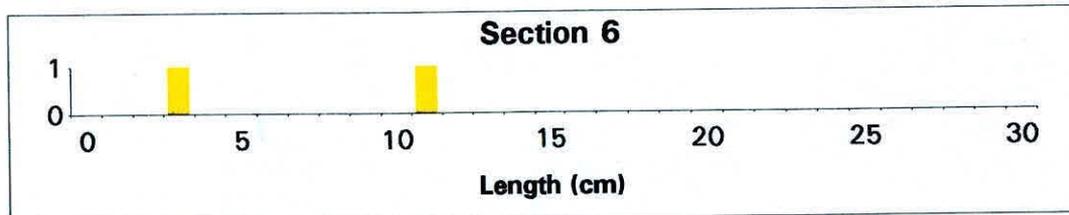
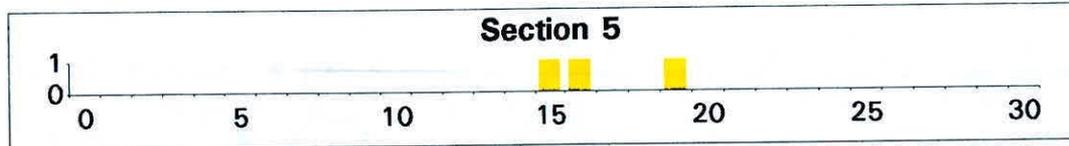
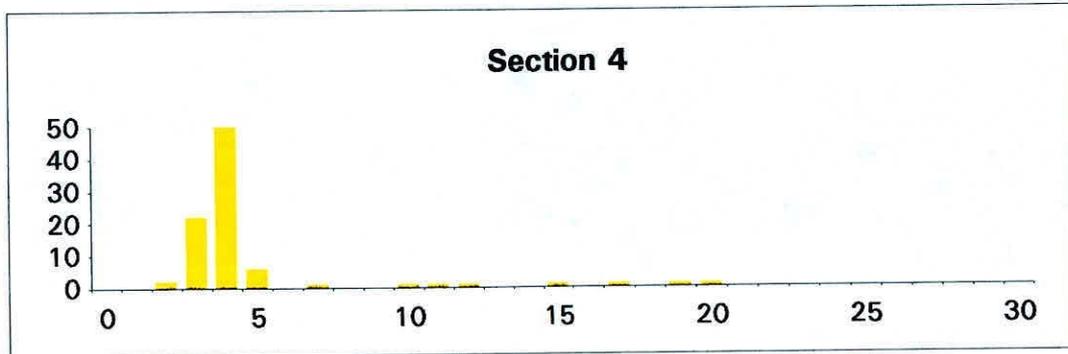
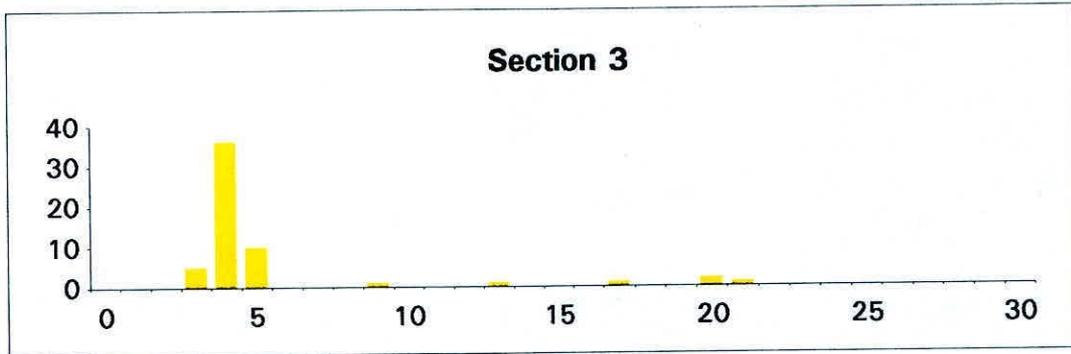
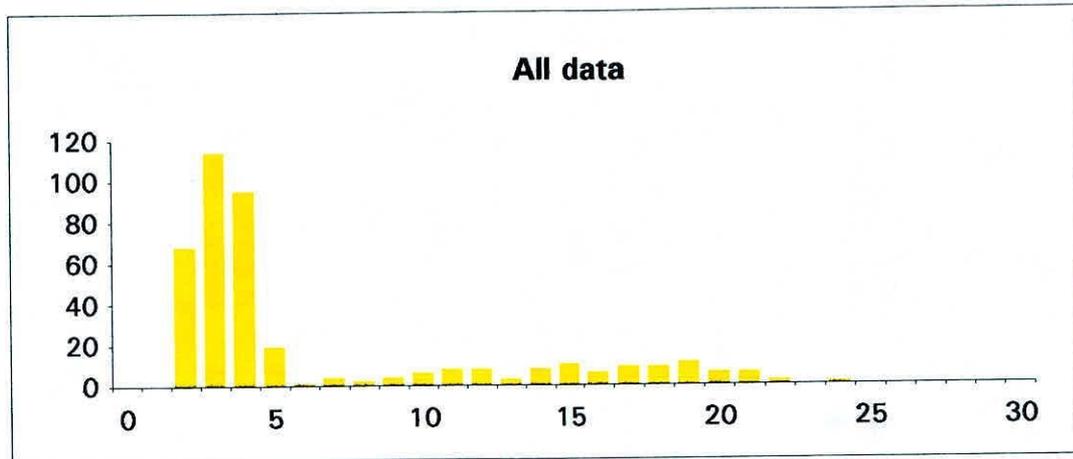
Appendix 9 (cont).



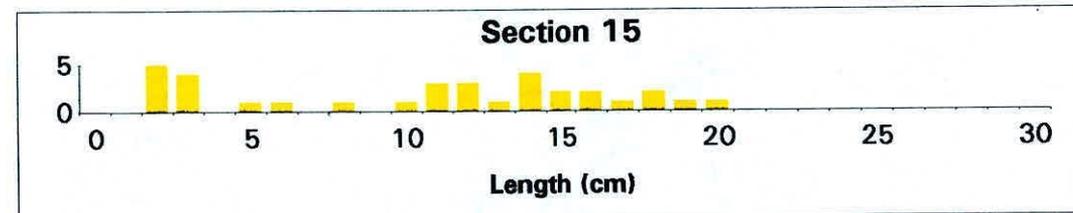
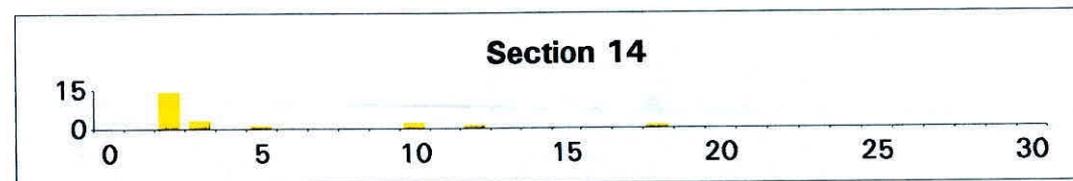
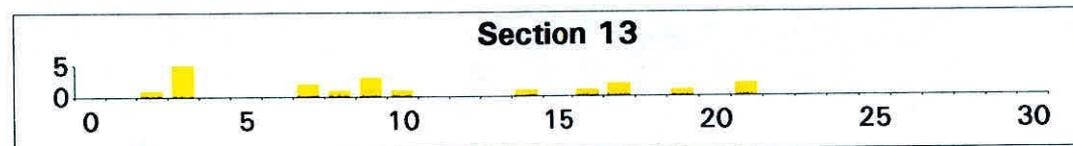
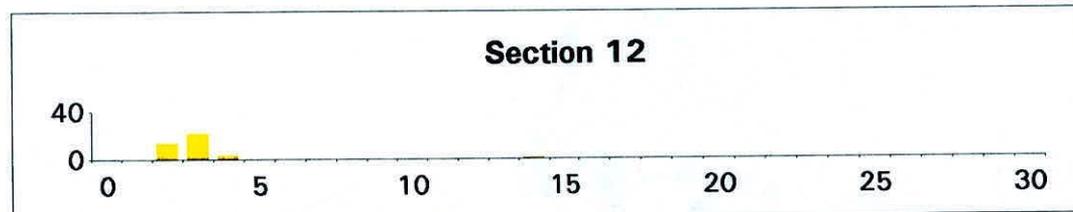
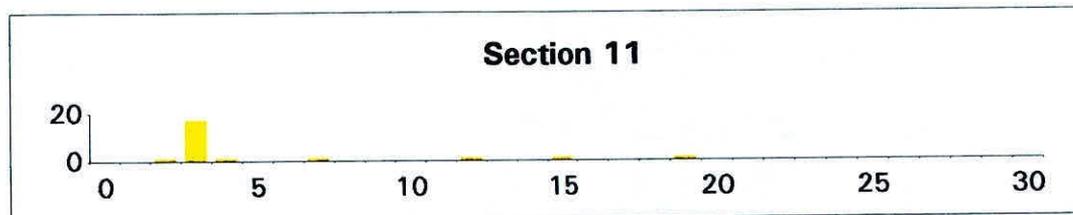
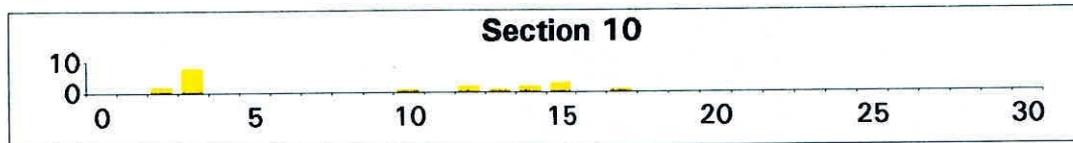
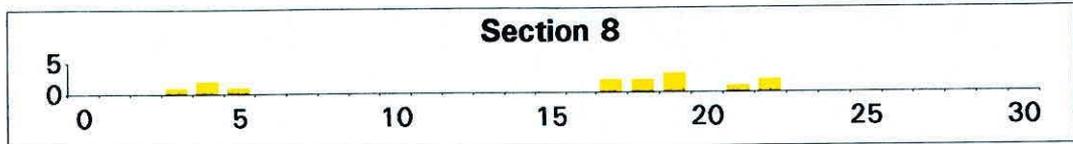
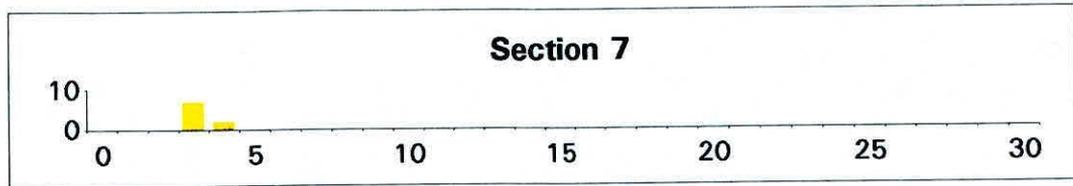
Appendix 9 (cont).



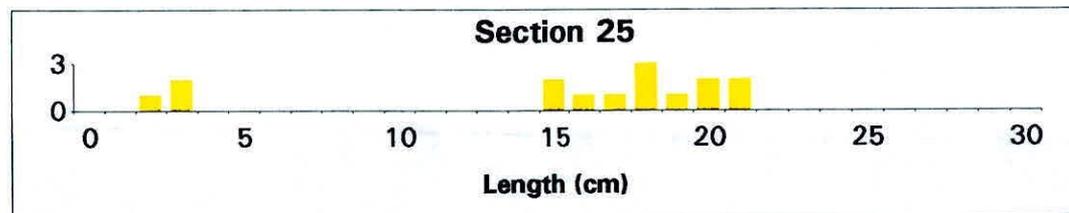
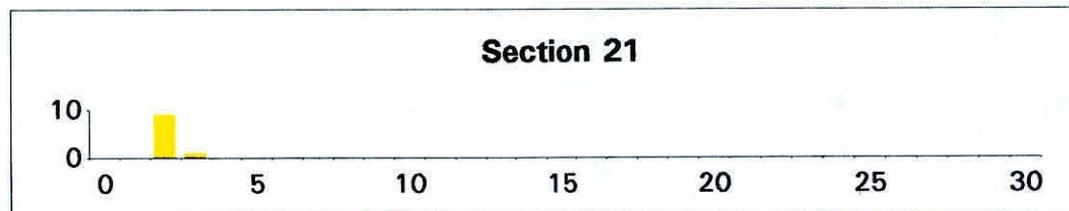
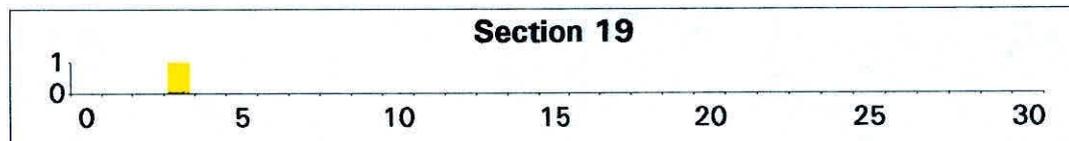
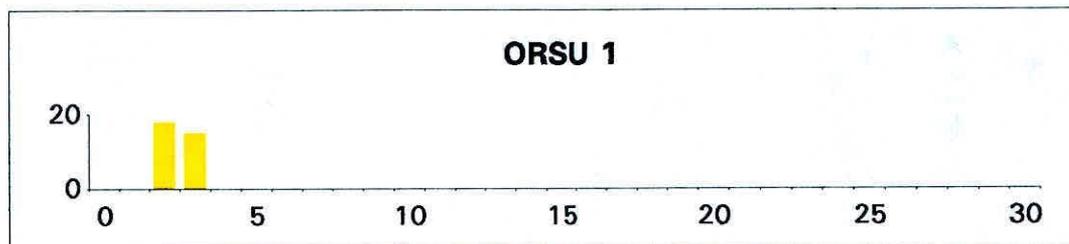
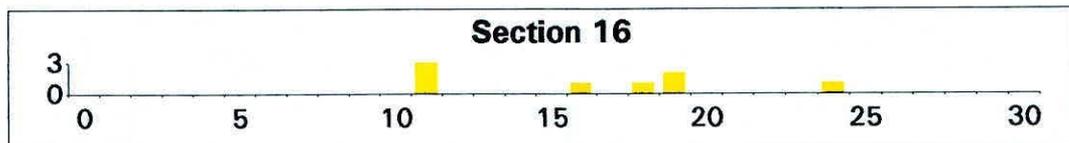
Appendix 10 Length frequency distribution of roach in each section of the R.Tees in September 1994.



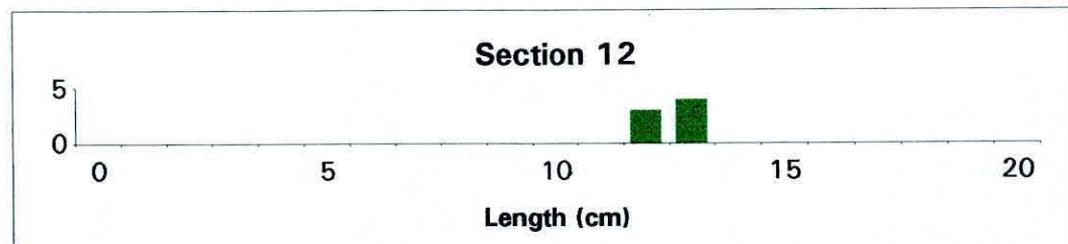
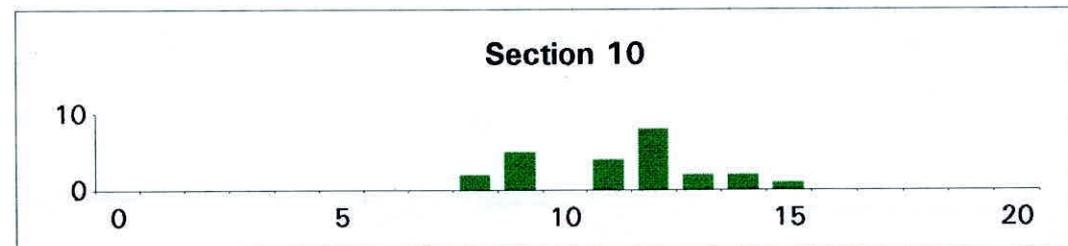
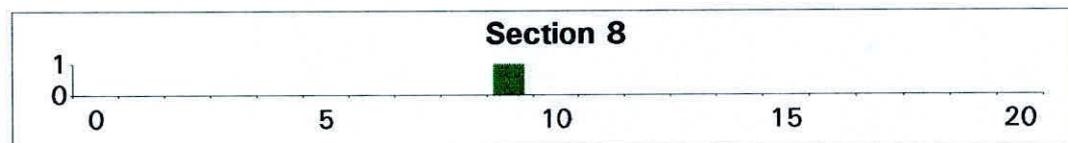
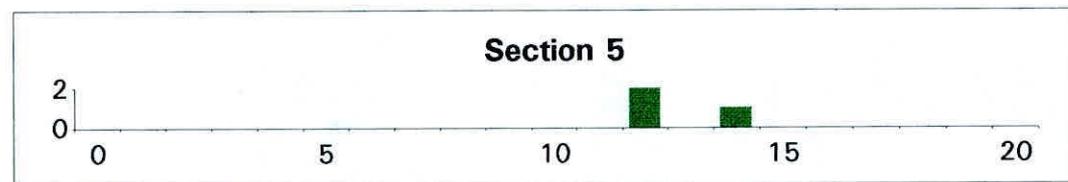
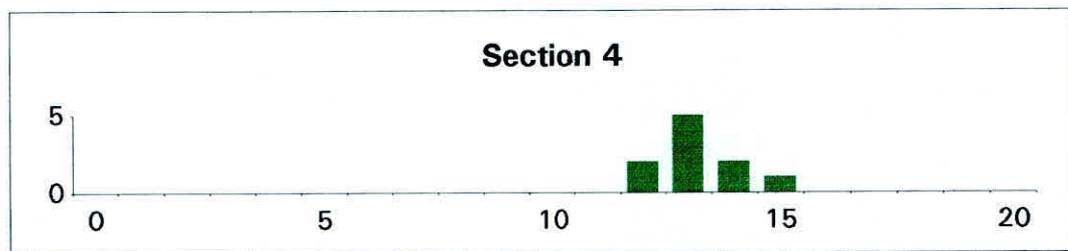
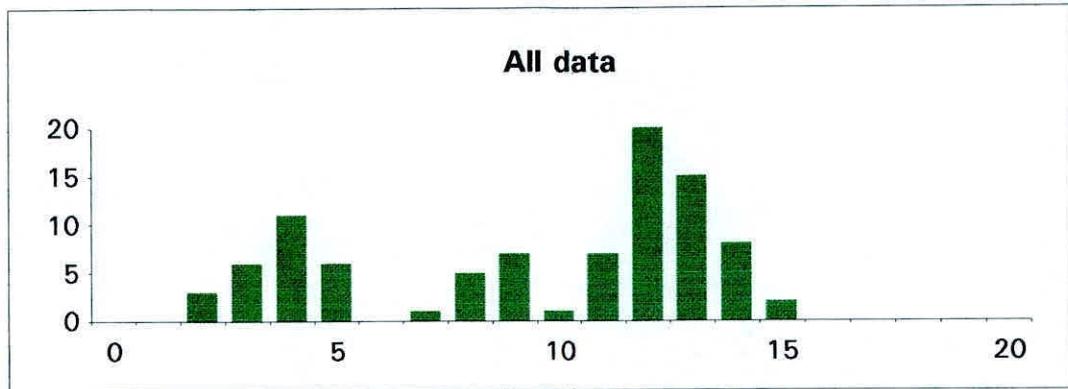
Appendix 10 (cont).



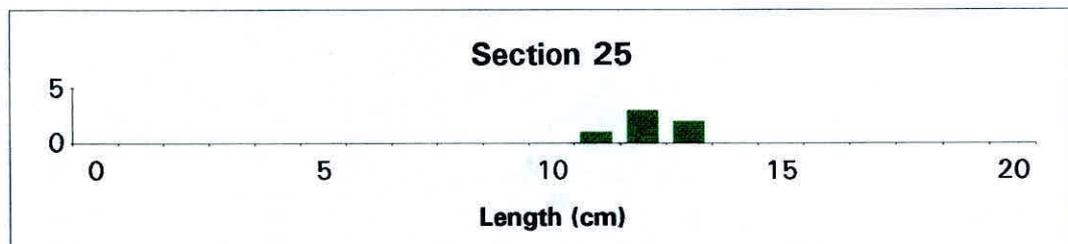
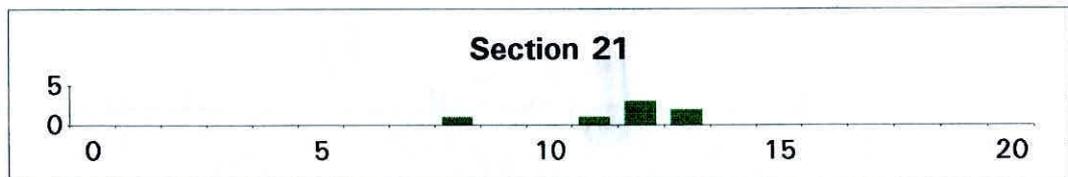
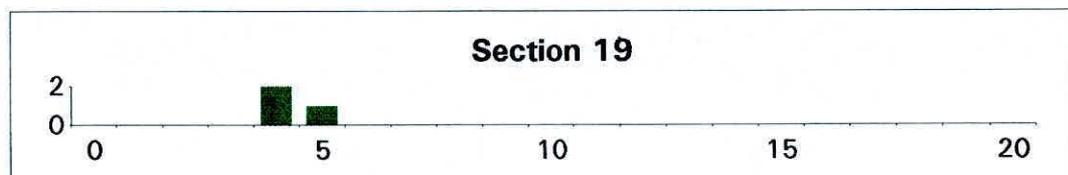
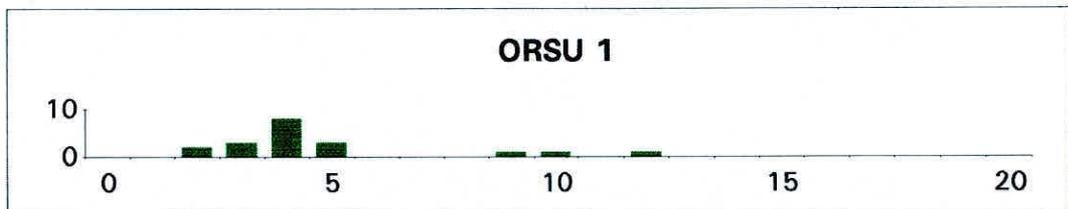
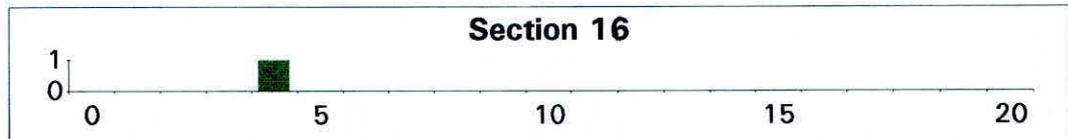
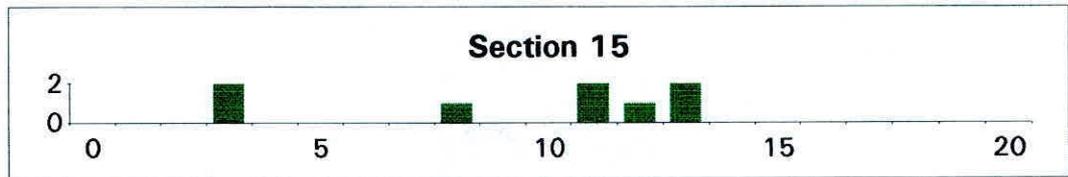
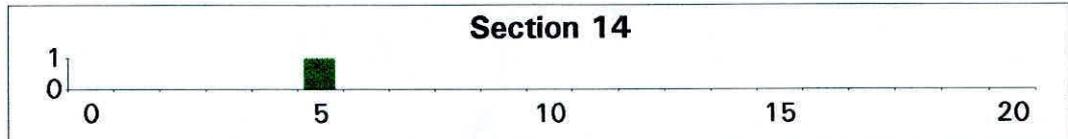
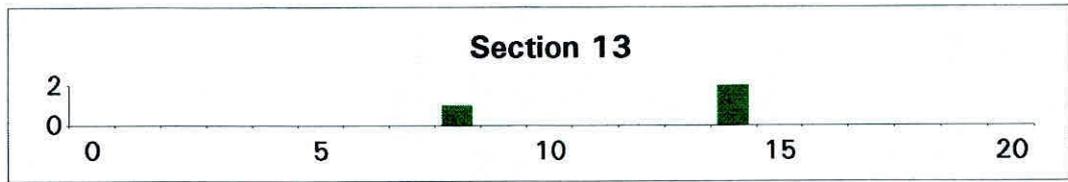
Appendix 10 (cont).



Appendix 11 Length frequency distribution of gudgeon in each section of the R.Tees in September 1994.



Appendix 11 (cont).



Section 25

