

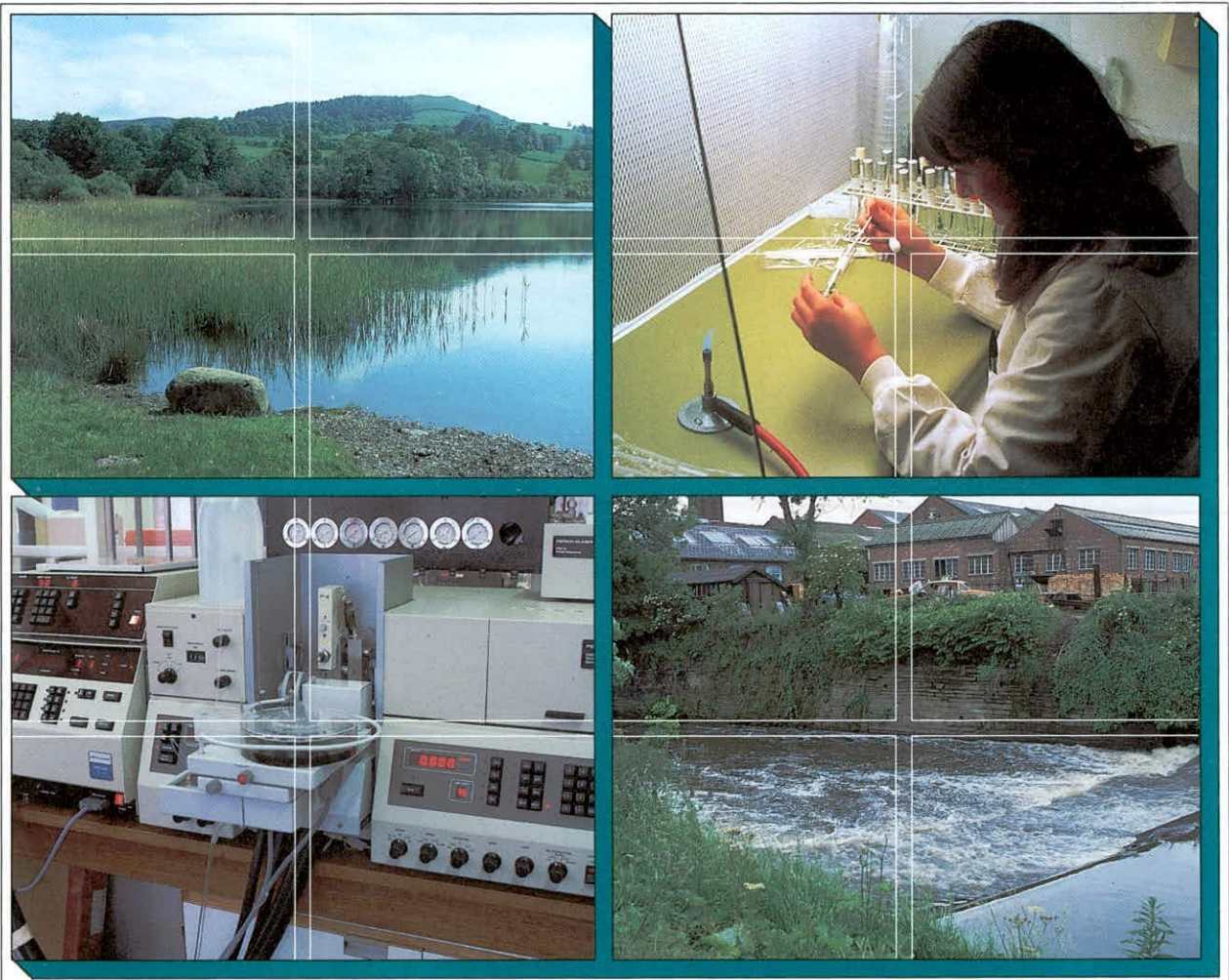


1995 Survey of the Coarse Fish of the River Tees

J.S. Welton, PhD CBiol MIBiol
W.R.C. Beaumont, LMIFM
A.C. Pinder
M. Ladle, PhD
J.E.G. Masters, BSc

Report To:
IFE Report Ref. No:

National Rivers Authority, Northumbria & Yorkshire Region
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**Institute of
Freshwater
Ecology**

River Laboratory
East Stoke
WAREHAM Dorset
BH20 6BB

Tel: 01929 462314
Fax: 01929 462180

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J.S. Welton, PhD CBiol MIBiol

W.R.C. Beaumont, LMIFM

A.C. Pinder

M. Ladle, PhD

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Project Leader:

Dr M Ladle

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REVIEW OF PROGRESS

This progress report covers the period April 1995-October 1995.

The fry survey was successfully carried out in June and covered the sections of river previously inundated by salt water. Approximately 4000 fry were sampled and identified and a proportion of these were measured.

The main survey of adults was successfully carried out in early September. Despite the increased water levels due to the completion of the barrage, over 3700 fish were caught and fish were found to be distributed through the lower sections which were previously saline at certain states of the tide.

Scales were taken from a proportion of fish of each species and each size group. These scales have been cleaned and mounted and ageing is proceeding satisfactorily.

Angling data is still being collected.

Temperature records are being continuously collected at Low Moor, Ingleby Barwick and in ORSU 1. The logger at Stockton marina has not been resited since the completion of the barrage due to the unavailability of a suitable site.

1. SURVEY OF COARSE FISH FRY JUNE 1995

1.1 Introduction

The survey was designed to collect information on the fry of all species of angling importance. This is the first survey since the completion of the barrage. The timing of the survey has in the past been variable due to the conflict between assessing the spawning areas for dace and sampling all species of fry. Dace spawn earlier than most other coarse fish on the R. Tees and become large enough to leave the margins (typical fry habitat) before the eggs of some other species have finished hatching. This year, the survey was carried out early (June) to determine whether the dace had successfully spawned in the now deep slow flowing water at the recognised dace spawning sites.

1.2 Methods

The survey was conducted in mid June and covered most of the length of the river affected by the barrage and areas above this for comparison. Sampling was conducted by point sampling from a boat and micromesh seine from the shore.

A description of sampling methods and sites 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 with minimal 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 length of the river. 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 Micromesh seining

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 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 3000 fry of species of angling importance were sampled this year compared with over 5000 in 1994 (Table 1). A minimum of 30 individuals of each species from each section were measured. Although effort varies between years gross changes can be recognised. Numbers of dace fry were very low compared with 1994 even though this year was considered to be a good year for growth and survival because of high temperatures. It is likely that the change is connected with the change in physical parameters after the closure of the barrage. Known dace spawning grounds have been flooded out and it is likely that spawning at these sites was less successful. Roach and chub on the other hand were present in much larger numbers than in 1994. It is likely that these species are not as well adapted to fast flowing water as dace due to their later hatching and to their smaller size at hatching. This year, with negligible flow, survival appears to have been very good.

In samples, numbers of both gudgeon fry and three-spined stickleback fry have increased markedly and numbers of stone loach have also increased (Table 2).

Table 1. Number of fry of each species of angling interest sampled in the R.Tees in June 1995.

Species	Total
Barbel <i>Barbus barbus</i> (L.)	6
Chub <i>Leuciscus cephalus</i> (L.)	1092
Dace <i>Leuciscus leuciscus</i> (L.)	526
Grayling <i>Thymallus thymallus</i> (L.)	5
Gudgeon <i>Gobio gobio</i> (L.)	91
Roach <i>Rutilus rutilus</i> (L.)	1641

Table 2. Number of fry of minor species sampled in the R.Tees in June 1995.

Species	Total
Minnow <i>Phoxinus phoxinus</i> (L.)	343
Stone loach <i>Barbatula barbatula</i> (L.)	146
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	158

Table 3. Number of fry of each species found in each section in the R.Tees in June 1995.

Section	1	3	4	PP Orsu	5	6	7	8	9	10	11	12	13	14	15	16	17	Orsu 1	18	19	20	21	22	25
Barbel																				1	3	2		
Chub		2	10	2	24		61	133	51	114	135	14	38	71	63	61	14	18	26	83	64	11	28	69
Dace			1	4	9		25	10	42	5	24	73	15	3	16	7	54	10	19	154	19	22	2	12
Gudgeon				1											1		58	1	2	6	5	14	25	4
Roach					5	113	50	2	73	56	67	41	232	145	302	232	59	42	16	75	61	15		30
Grayling																	5							
Salmon																								
Rudd																								
Stickleback	35	3	35	36	10	8	1		6	3	2	1			5	1								
Flounder																								
Minnow				28		1	2	3	1	1	5	3	1	12	24	52	79	20	30	39	21	8	5	35
Stone loach							2		1							3	47		10	30	12	16		22
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 dace, chub and roach for each section are given in Appendices 2-4.

The number of fry of the major species in Sections 3-5 were very low compared with the previous year. None was found in Sections 1 and 2. Fry are distributed mainly passively by the water current and with the lack of flow since the completion of the barrage, the fry have presumably not had time to reach these sections by active migration.

Gudgeon and barbel fry were found in the upper sections whereas stickleback fry were abundant in the lower sections only (Table 3). They were associated with the filamentous algae which has appeared this year for the first time.

High concentrations of roach fry were found in Sections 13-16 (Table 3). Dace concentrations in these sections were very low. High concentrations of chub fry occurred in Sections 8-12 (Yarm area) which is further downstream than the majority of the adults.

Distribution of fry compared with known spawning sites for dace will be considered in the Interim Report.

1.3.2 Length frequency distribution

Length frequency histograms are shown for each species (Fig 1). Although the timing of the sampling was similar to last year (ie mid June), the modal size classes of the fry in 1995 are larger by 4-5 mm in the major species. The relationship with temperature will be reviewed in the Interim Report.

Dace fry show no length differences between sections except in ORSU 1 where fry are slightly bigger (Appendix 2). This difference was evident also in 1994. A difference between sections can be seen with chub fry (Appendix 3). Fry are generally smaller in the upper sections. There is a marked difference in Sections 18 and 21, with the modal length depressed by 3 mm compared to adjacent sections. There is no clear reason for this. These sections are above the influence of the barrage but similar differences are not apparent in Section 25 upstream.

Differential growth in roach fry is apparent between sections. They are bigger in the lower sections (Appendix 4). As with chub, small individuals were found in Section 18 but not in Section 21. The size of fish in ORSU 1 are more similar to those in downstream sections than the sections near the ORSU showing that growth in the ORSU is enhanced.

2. SURVEY OF ADULT COARSE FISH SEPTEMBER 1995

2.1 Introduction

Although this is the fifth year that the survey of adult coarse fish has taken place, it is the first survey since the completion of the barrage and the subsequent increase in water levels. The tidal effect has been eliminated and flows are negligible in most of the sections fished. Algae and macrophytes have appeared in most sections. *Polygonum* sp. (Amphibious bistort) is present in the margins and filamentous algae is becoming widespread. Sites 19 and 25 remain the same as usual, acting as the controls above the influence of the barrage.

2.2 Methods

2.2.1 Electrofishing

Electrofishing was conducted in all sites except Section 1. Sites 19 and 25 were waded (twin anode 200 v, 1.9 KvA), the ORSU was electrofished from a dinghy with the same gear and all other sites were electrofished with the boom boat.

The boom boat used 200 v at 10 amps from a 7.5 KvA generator. Each section was fished twice, once along each bank. With the negligible flow there was no necessity to fish in any particular direction and fishing was conducted down one bank and up the other. 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 Gill netting

Gill nets were used in deep water in areas of Sections 1 and 2 where fish have not previously been able to survive due to the salinity. They were also used in Section 4 at Preston Park Pool where large bream had been caught by anglers. Two nets were used, with mesh sizes of 8 cm and 12 cm. Both nets were approximately 30 m in length and 2 m in height. Nets were set on the bottom and left for 30 minutes.

2.2.3 Processing

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

2.3 Results

The total number of fish caught in the September survey was 3756. Although this figure was lower than 1995 (5343), it was higher than the two previous years. It had been expected that numbers would be lower than last year as conditions had changed considerably since the closure of the barrage. The water depth was considerably greater over the whole length of the lower river, similar to the former high spring tide depth when electrofishing efficiency was known to be lower. In addition, the lack of saline water has increased the area available to the coarse fish and densities were expected to be lower. Water clarity, however, was better than before the completion of the barrage, and visibility of *c.* 2 m helped to increase efficiency of capture of stunned fish.

Table 4. Species list for the R. Tees and number of each species caught - September 1995.

Species	Totals
Barbel <i>Barbus barbus</i> (L.)	23
Bullhead <i>Cottus gobio</i> L.	2
Chub <i>Leuciscus cephalus</i> (L.)	559
Dace <i>Leuciscus leuciscus</i> (L.)	1911
Eel <i>Anguilla anguilla</i> (L.)	>>100
Flounder <i>Platichthys flesus</i> (L.)	125
Grayling <i>Thymallus thymallus</i> (L.)	5
Gudgeon <i>Gobio gobio</i> (L.)	215
Ide <i>Leuciscus idus</i> L.	1
Minnnow <i>Phoxinus phoxinus</i> (L.)	364
Perch <i>Perca fluviatilis</i> L.	3
Pike <i>Esox lucius</i> L.	1
River Lamprey <i>Lampetra fluviatilis</i> (L.)	0
Roach <i>Rutilus rutilus</i> (L.)	496
Salmon <i>Salmo salar</i> L.	0
Stone loach <i>Barbatula barbatula</i> (L.)	8
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	26
Trout (brown) <i>Salmo trutta</i> L.	17
Trout (sea) <i>Salmo trutta</i> L.	0

Although total numbers were lower than last year, the number of fish >8 cm was 1005 compared with 1180 for last year showing that the difference in numbers was mainly due to differences in the catch of young of the year.

Numbers of dace, roach and chub were remarkably consistent with last year (Table 4). Gudgeon numbers were over double the 1994 value whilst flounder numbers were only at a quarter of last year's level. Flounder numbers were expected to be low due to the increase in water depth and the effect of the barrage which is expected to interfere with the migration into freshwater. Salmon were expected to be similarly affected by the barrage even though there is a salmon pass incorporated. Only one adult salmon was seen. This individual was not caught but was estimated to be 8-10 lb.

Three perch were caught this year (first recorded in 1994) and it is expected that this species will do well under the new low flow conditions. Individuals are now being caught in angling matches. Three-spined sticklebacks are also expected to do well. Numbers sampled had trebled, with individuals mainly associated with filamentous algae which is appearing along the length of the study section.

One species new to the study was recorded. One 8.1 cm ide (*Leuciscus idus*) was caught in Section 2. Its identification was confirmed by examining the pharyngeal bones which had the dentition 5.3.3.5 on both sides. Anglers had indicated that this species was present having been introduced with roach from the River Kennet in Berkshire. This individual is smaller than the introduced specimens suggesting that the species is now breeding in the river.

2.3.1 Distribution of fish

Site descriptions, fishing methods, date, species and number of fish caught in each section are given in Appendix 5.

Species compositions at each site are summarised in Fig 2. Pie charts for each section are shown in Appendix 6.

Semi-quantitative information on number of fish per 100 m of river for each section is given in Table 5. Comparisons between sections and years may be made only after due regard to the different efficiencies with which each section is fished. Sections are more comparable post-barrage as the variability factors such as depth and state of tide have been substantially reduced or eliminated.

Table 5. Number of fish per 100 m found in each section in September 1995

Section	Dace	Roach	Chub
1	22.0	6.5	1.0
1/2	38.8	15.5	4.5
3	38.0	1.5	2.0
5	14.6	2.3	5.2
6	6.8	1.6	0.4
7	8.9	1.8	1.3
8	17.5	1.3	11.3
9	7.3	4.7	3.7
10	18.6	6.8	6.8
11	9.4	1.8	3.0
12	16.1	2.0	5.0
13	8.8	1.0	5.5
14	10.7	0.8	3.9
15	16.4	6.2	7.1
21	41.5	16.5	13.5
25	39.1	12.6	27.7

As in previous years, dace were present in all sections fished. In the upper sections unaffected by the barrage, densities were higher than in the previous year, especially in Section 25 (Low Dinsdale). Densities downstream, in most sections, were much lower than in the previous year. Fish have moved into Sections 1 and 2 which has reduced the density in the other sections.

A similar pattern is shown by roach. Densities in Sections 21 and 25 were high, 3-4 times the 1994 figures. Roach were spread out in Sections 3-15 ranging between 0.8 and 6.8 fish per 100 m although 8 out of the 12 sections had densities of 1-2 fish per 100 m. The previous year had shown more variable results suggesting that more of the habitat was now suitable for roach. Densities of roach in Sections 1 and 2 were high mainly from catches of young of the year although it should be noted that the largest roach caught (by gill net) were in this general area and thus the presence of

large numbers of young of the year may be indicative of the good conditions for roach in general.

The pattern of chub distribution was more complex. Of the sections where data were available for both 1994 and 1995, six sites had lower densities in 1995, four sites had higher densities and three sites were similar. The overall density was approximately the same. Densities of chub in Sections 1 and 2 were low compared with roach and dace and compared with densities in other sections. Thus chub have not utilised the extra habitat available as much as the other two species. This might have been expected as chub generally prefer the upper reaches. Densities in the areas unaffected by the barrage were high, for example, in Section 21 the number of chub was similar to the high number last year, and four times the high density in Section 25 in 1994.

The new habitat available to fish in the lower river has been colonised by all the main species although only to a limited extent by chub. Chub favour strong flows and overhead cover, neither of which are present in these sections. Up river section populations have also increased in density possibly by upstream migration of some fish.

2.3.2 Length frequency distribution

The length frequency distribution of each of the major species is presented in Fig 3 and for dace, chub, roach and gudgeon this is also given by section fished (Appendices 7-10).

Young of the year dace have been excluded from the histograms for dace, chub and roach (Fig 3) as they occurred in such large numbers that the length frequency of older fish could not readily be discerned. They are, however, included in the histograms in Appendices 7-9.

In 1994, the young of the year were found in very large numbers and it was postulated that this would be a good year class. This year, there were high numbers of 8-12 cm fish which correspond to the young of the year of 1994. In 1995, young of the year were again high in number but not as high as last year.

Dace were found in all sections fished (Appendix 7). Concern had been expressed by anglers that all the dace would move upstream to areas of flow. It is true to say that numbers of older dace (>1+) are lower than in previous years in the electrofishing catches and were noticeably absent in the Yarm area (Sections 8-12). Although conditions for electrofishing had changed (deep water) which may have affected efficiency, angling results also suggest that larger dace are absent in these sections. Most dace catches comprise 1+ fish which are present in large numbers. These are the result of last year's strong year class and are conspicuous in the electrofishing

catches. It should also be noted that the 1993 year class was poor and thus numbers of 2+ fish would be expected to be low even if conditions had not changed.

Sections 1 and 2 have been colonised by young of the year and 1+ dace. The large numbers of young of the year fish in the lower sections suggests that this species has successfully spawned in the area. It seems unlikely that so many fry would have drifted downstream from areas unaffected by the barrage especially as the flow has now been reduced considerably. It is likely the dace have spawned in the normal sites even though the flow is less than ideal for the species. Spawning gravels may not yet be silted up allowing good survival of eggs. In future years, as the silt component of the bed increases, survival of eggs is likely to diminish and the fish will eventually cease to spawn when silt levels are high.

The length frequency histogram for chub shows large numbers of young of the year suggesting a good year class (Appendix 8). Numbers of 5-10 cm fish were also high corresponding to the good year class of 1994. There was a noticeable absence of 10-15 cm fish consistent with the poor year class of 1993 which also showed as a low number of 5-10 cm fish last year. Strong year classes can be seen at modal lengths of 18 cm and 31 cm which correspond to those of 12 cm and 27 cm respectively in 1995. Year class strengths will be considered further when all fish have been aged.

In 1994, young of the year chub were found only in low numbers below Yarm. This year, numbers of these fish were higher in some of these sections particularly in Sections 2/1 and 5 (Appendix 8). Older fish were seldom found below Section 5 and were most common in the upper sections as is usually the case. Numbers of young of the year were low in ORSU 1 compared with 1994.

The length frequency histogram for roach shows a larger size range for young of the year than has occurred previously (Appendix 9). Large numbers of 5 and 6 cm fish were caught when previously few fish have been in this size range. These fish were found in the lower sections, particularly in Sections 1 and 2 which were previously too saline for coarse fish survival. This new slow flowing habitat appears to have produced good growth of roach fry and the size difference can be clearly seen between these sections and those higher up the river (Appendix 9). Only in Section 25, above the influence of the barrage, can roach fry of this size be found. This would suggest that it is not merely a temperature effect. The size of the young of the year in ORSU 1 substantiate this, where the fish are small compared with sections upstream and downstream but where the temperature was high, particularly in this hot dry year. It is always possible, however, that the larger young of the year may have left the ORSU and that only the smaller ones remain.

Last year's good survival of fry can be seen in terms of large numbers of 7-10 cm fish (Fig 3) although numbers of larger roach were very much reduced. The largest roach caught were in gill nets in Sections 1 and 2 and there could have been a general movement of adults into these areas where electrofishing efficiency is low.

Numbers of small barbel increased compared with previous years but there were less larger fish (Fig 3). Individuals presumably derived from the 1994 good year class were present. This will be confirmed after fish from this year's catch are aged.

Comparison between the length frequency distribution of flounder in 1995 and 1994 shows that the smallest individuals (5-10 cm) were not caught indicating a possible failure to negotiate the barrage (Fig 3).

Most gudgeon sampled were <5 cm in length and the number of these was much greater than in 1994. As usual, most gudgeon were found in the upper sections. Particularly high numbers were found in Orsu 1 as well as Sections 15, 21 and 25 (Appendix 10). Larger gudgeon were absent from many sections and present only in low numbers in others. Whilst the increase in depth may have contributed to the poor catch in the lower sections, a similar phenomenon was seen in those unaffected by the barrage.

3. PLANS FOR THE NEXT REPORTING PERIOD

The Interim Report will include data on the age structure from the 1995 survey of adults and length weight relationships will be given.

Results from the echo sounding survey of the lower river will be presented.

Data on temperature will be discussed in relation to growth.

All data collected before the completion of the barrage will be reviewed.

Angling results will be updated.

A financial summary for the year will be given.

Fig 1 Length frequency histograms for each species of fry in the R.Tees in June 1995

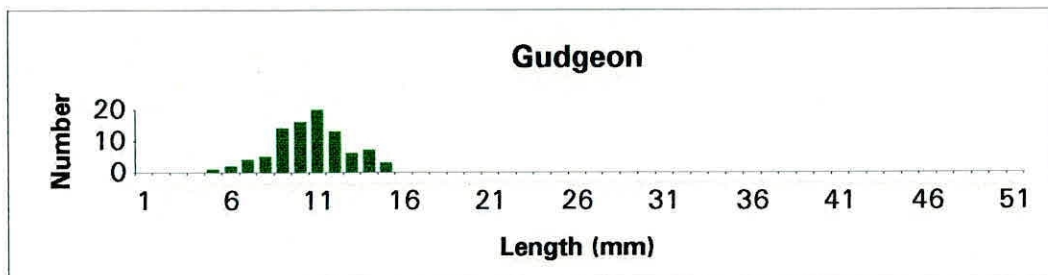
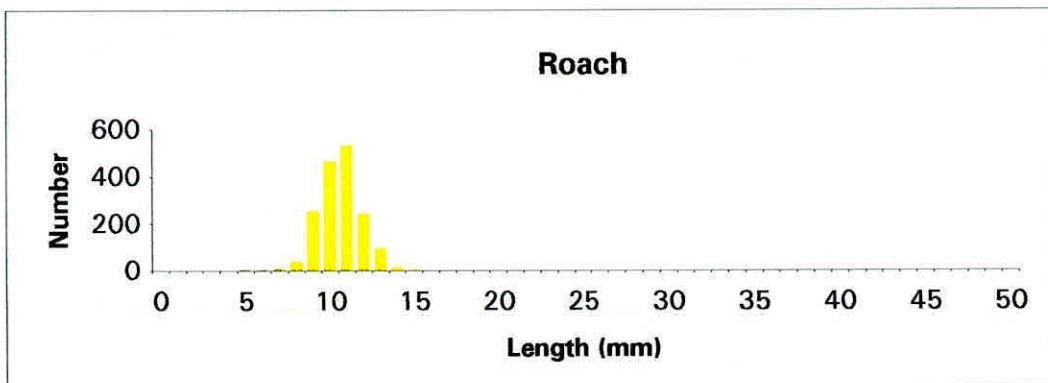
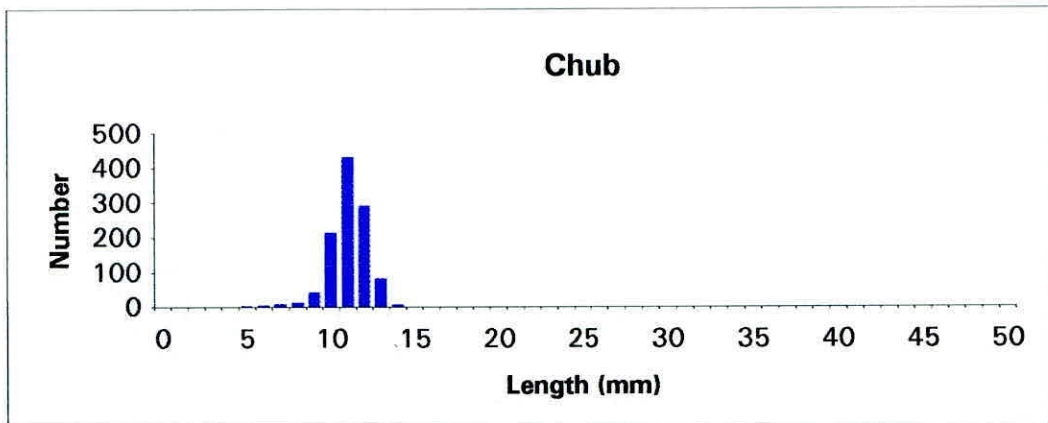
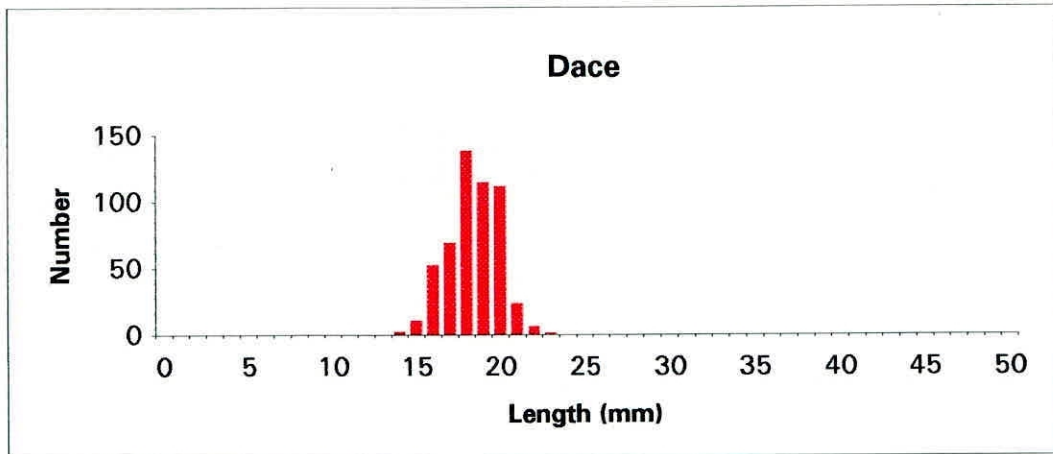


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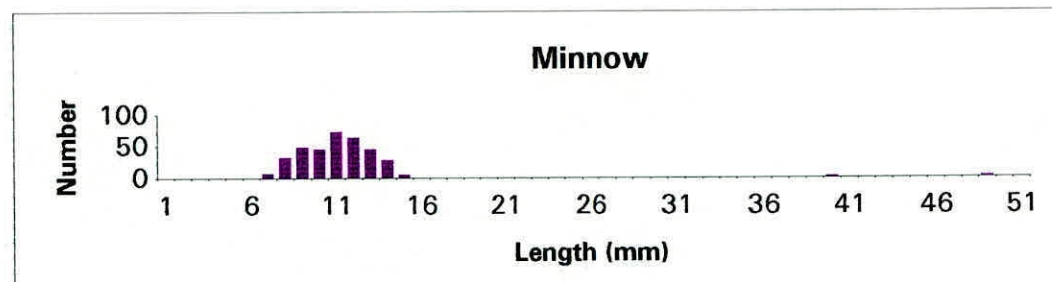
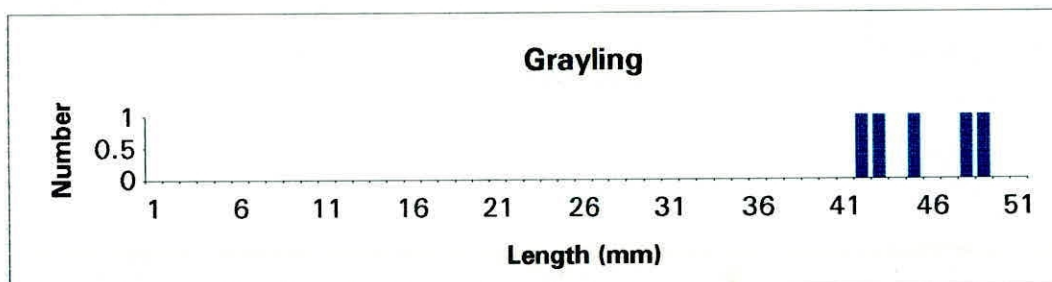
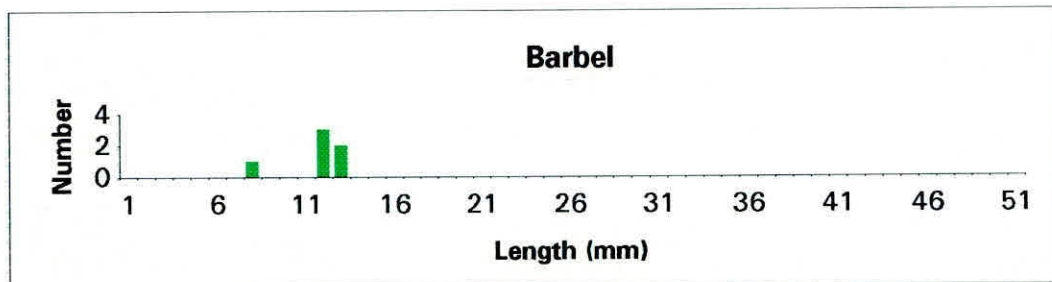
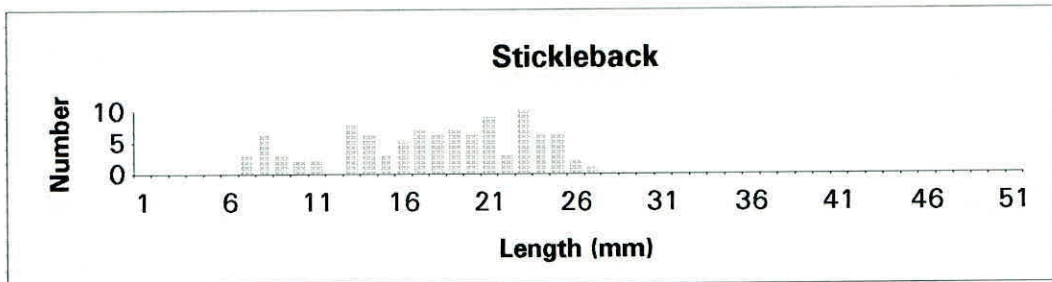
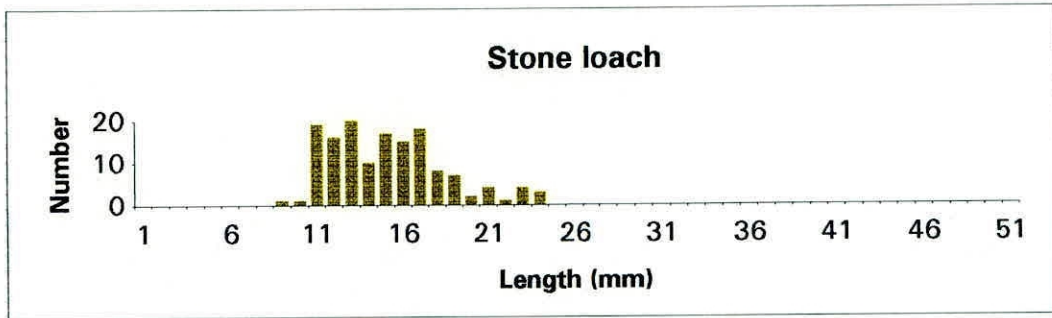


Fig 2 Species composition of fish in the R.Tees in September 1994 at various sites.

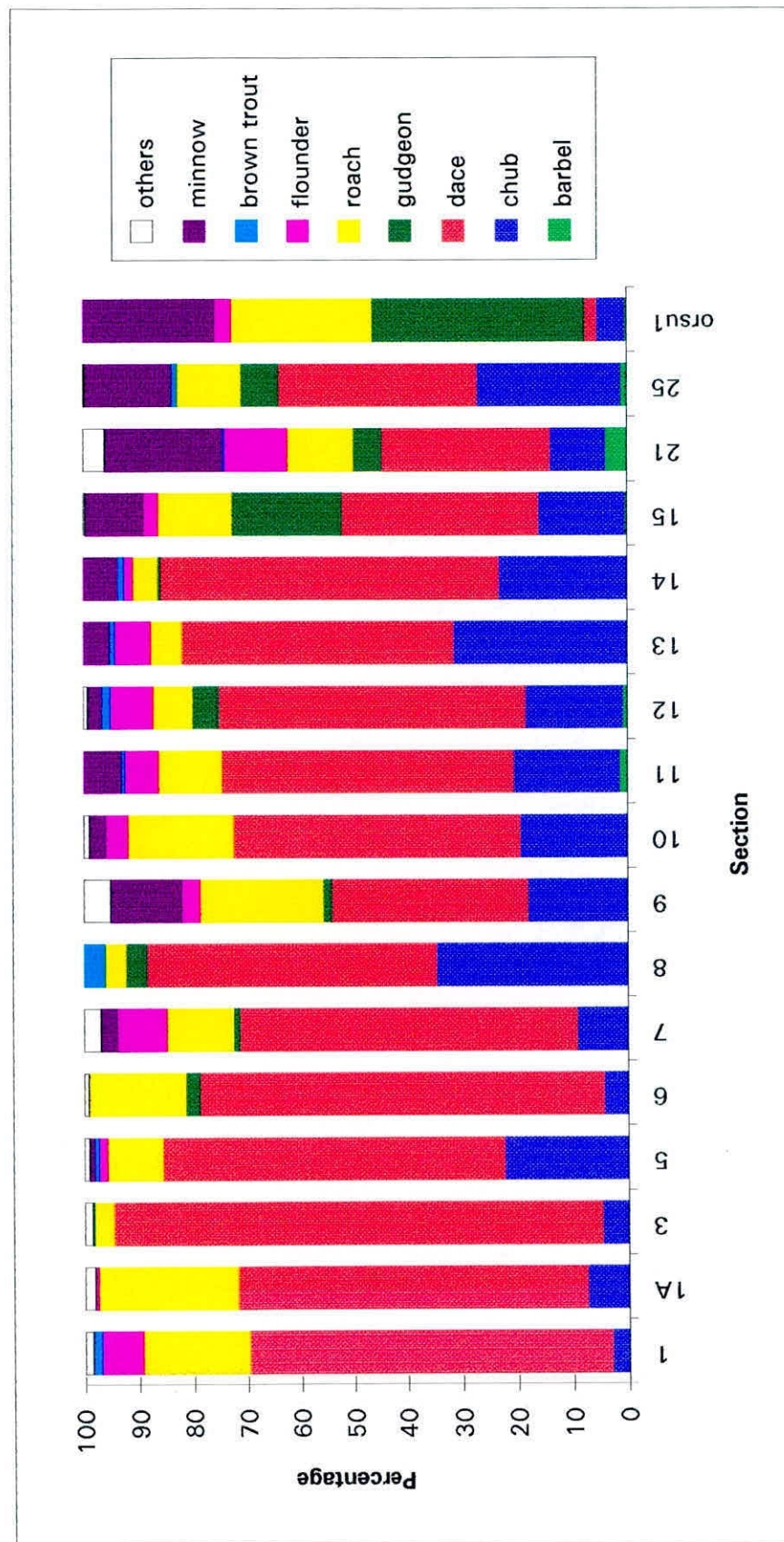


Fig 3 Length frequency histograms for each species of adult fish in the R.Tees in September 1995

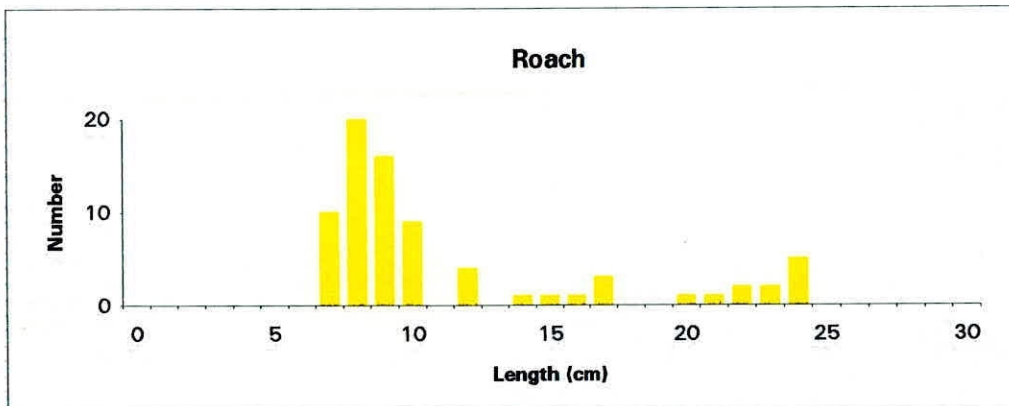
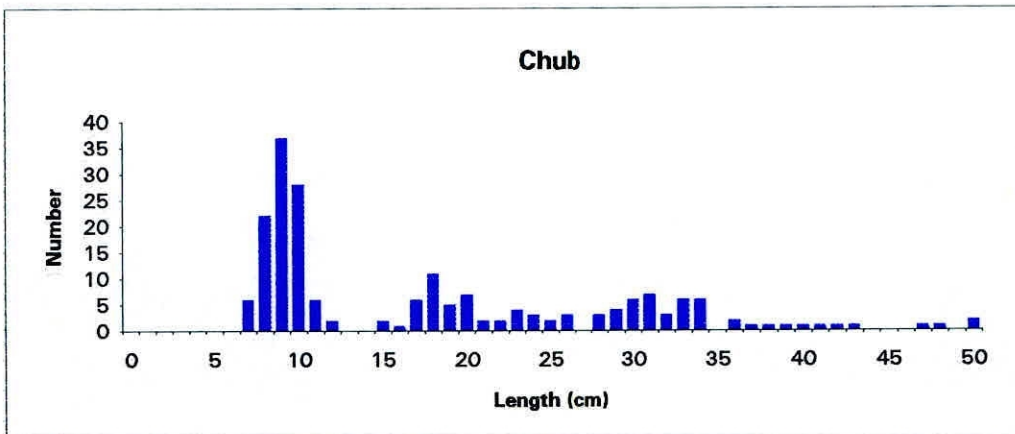
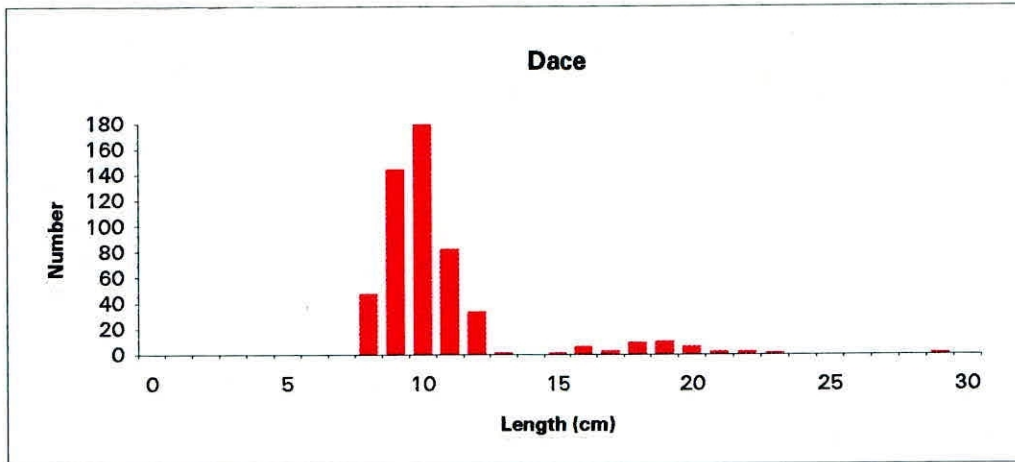
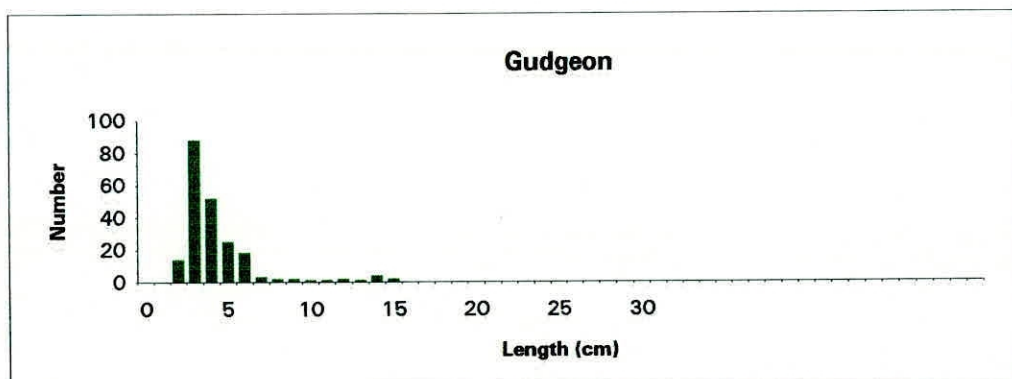
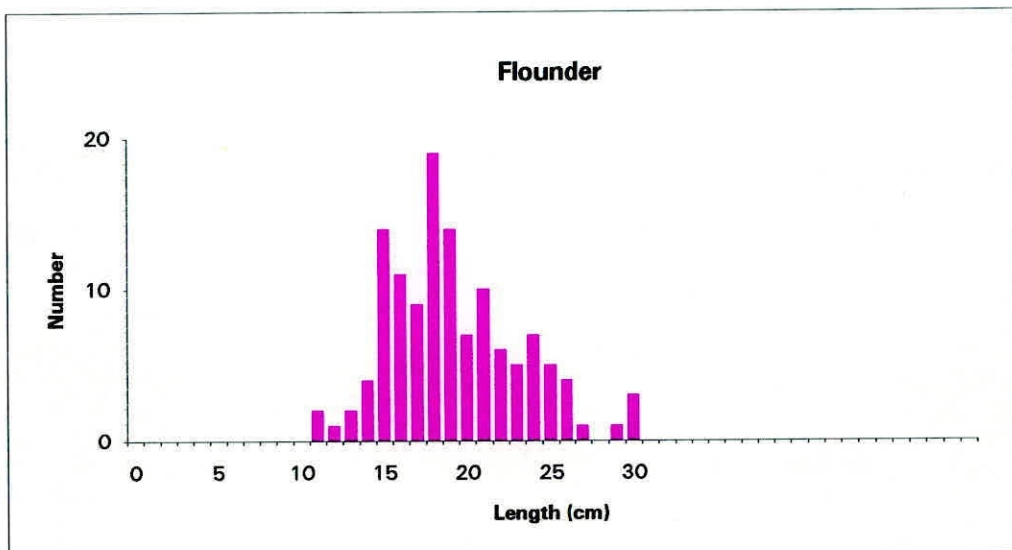
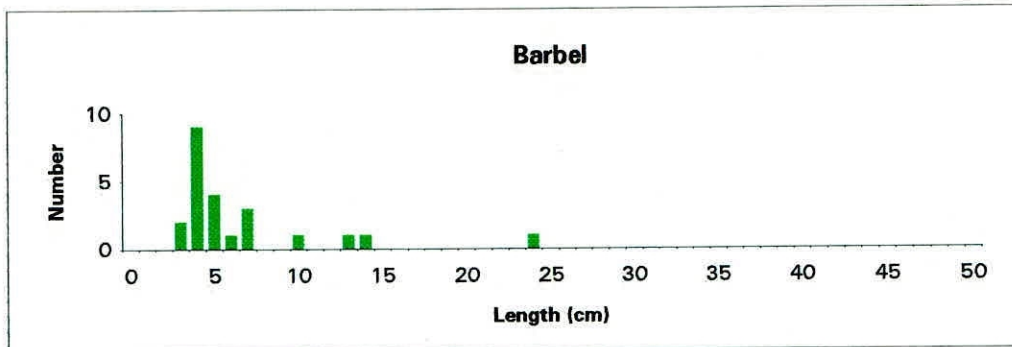


Fig 3 Continued



Appendix 1 Description of fry sampling sites: River Tees 13-15 June 1995.

Sampling technique:

S = micro-mesh seine net sample:

P(n) = point sample.

TP(n) = targetted point sample ie fish seen and actively caught using point sample electrofishing gear.

N(n) = hand net sample.

Where (n) = number of samples combined into one sample.

Flow: Unless stated all flows were negligible as from section 18 downstream the river was backed up from the barrage.

Section 1 Below Thornaby 15 June 1995.

P1(1) Upstream entrance to ORSU. Deep water - mud substrate.
Fry caught = 1 - 0+ Stickleback
Non-fry caught = 5 - 1+ Dace, 4 - 1+ Chub & 1 - 0+ Stickleback

P2(-) North bank of ORSU, 15 m of bank fished. No fish seen.

P3(1) Downstream entrance to ORSU. Deep water with large boulders
Fry caught = 4 - 0+ Sticklebacks
Non fry caught = 5 - 1+ Dace, 4 - 1+ Chub & 2 - 1+ Roach

P4(1) Eastern end of downstream ORSU. Bottom shallow shelving mud.
Fry caught = 30+ - 0+ Sticklebacks. No other fish seen.

S1 Micromesh seine on public slipway at Stockton. Bottom shelving concrete.
Non-fry caught = 100+ - 1+ Dace, 1 - 1+ Roach & 100++ Sticklebacks.

Section 2 Bassleton Wood 15 June 1995.

P1(5) Mouth of Basaleton Beck. Emergent reeds Depth >1m.
Non fry caught = 15 - 1+ Roach & 2 - >0+ Minnows.

P2(5) North bank, shelving area of mud (cattle drink) 10 cm deep.
No fish seen.

Section 3 Pipe Bridge 15 June 1995.

P1(5) North bank. Emergent reeds Depth >1m.

P2(5) South bank just downstream of pipe bridge. Emergent reeds Depth >1 m.

P3(5) South bank. Shallow shelving sand (10-20 cm) plus some emergent vegetation.
Fry caught = 1 - 0+ Stickleback.

Section 4 Preston Park 15 June 1995.

- TP1(10) North bank. Shelving sand with emergent reeds
- TP2(5) South bank. Mud / sand, steep drop-off.
- P1(15) Western end of Preston Park ORSU. Steeply shelving mud slope.
Non fry caught = 7 - 1+ Dace & 2 - >0+ Sticklebacks.
- P2(20) Eastern end of Preston Park ORSU. In shallow margins substrate mud.
- P3(10) South bank. Emergent reeds in 30 - 50 cm water
- P4(5) South bank. Floating grass, depth 40 cm.
Fry caught = 1 - 0+ Stickleback.

Section 5 Barwick Farm 15 June 1995 am

- P1(5) South bank. Depth = 30 - 50cm. Emergent reeds.
- P2(5) North bank. Depth >1m. Emergent reeds.
- P3(10) South bank. Mud / algae & emergent reeds. Shelving bottom (1m to 30 cm)
- TP4(3) South bank. Smal bay in bank, mud substrate
- P5(10) North bank. Emergent vegetation. Depth >1 m.
Non fry caught = 1 - 1+ Dace, 3 - 1+ Roach, 1 - 1+ Minnow & 1 - 2+ Chub.

Section 6 15 June 1995 am

- P1(10) North bank. Mud substrete 50 - 10 cm deep.
- P2(5) North bank. Substrate mud and emergent reeds 50 cm deep.
- P3(6) In mouth of R. Leven. Mud and emergent reeds, >1 m deep.
- P4(5) In R. Leven Emergent glyceria on mud substrate, >1 m deep.

Section 7 Below Yarm 14 June 1995 pm

- TP1(2) North bank. Shelving mud approximately 20 cm deep
- P2(5) North bank. Mud with emergent reeds. Depth 30 - 60 cm.
- P3(5) South bank. Depth >2 m. Mud substrate with emergent reeds.
- P4(10) North bank. Shelving mud bank with emergent reeds. Depth 1 - 2 m.

Section 8 Between Bridges 14 June 1995 pm

- P1(10) South bank between bridges. Substrate sandy-mud with floating vegetation.
N1(1) North bank by small drainage stream.

Section 9 14 June 1995 pm

- P1(5) North bank by inlet pipe from water works. Substrate mud with emergent reeds.
P2(6) South bank. Substrate mud with some emergent reeds and vegetation. Depth 30 cm to 1 m.
N1(1) North bank. Emergent reeds with mud substrate. Depth 30 cm +.

Section 10 14 June 1995 pm

- P1(5) South bank. Steeply shelving bank with emergent vegetation and felled tree.
P2(5) South bank by fishing platform. Bare mud substrate.
P3(5) In Nelly's Beck. Deep with branches.

Section 11 The Cabins 14 June 1995 pm

- N1(3) North bank just upstream of Holme House slipway. Emergent veg. present.
TP2(7) South bank. Mud and emergent / floating vegetation. Depth = 30 cm.
P3(5) South bank. Steep mud bank with emergent reeds.

Section 12 14 June 1995 am

- TP1(2) North bank. Steep mud bank with some emergent vegetation.
P2(5) South bank. Depth 20 cm Substrate mud with emergent glyceria.

Section 13 14 June 1995 am

- P1(5) South bank. Steep mud bank with emergent vegetation and tree stump.
Non fry caught. 1 - >0+ Bullhead
P2(5) North bank. Substrate mud with emergent glyceria. Depth 20 cm.

Section 14 14 June 1995 am

- P1(5) North bank. Steep bank with mud substrate and tree stump
P2(5) South bank. Steep mud bank with emergent Phragmites.
TP3(5) North bank. Steep mud bank with emergent reeds.

Section 15 14 June 1995 am

- P1(10) North bank. Mud substrate with emergent reeds.
P2(6) Backwater on south bank. Substrate mud with emergent vegetation.
N3(3) Backwater on south bank. Substrate mud & tree branches.

Section 16 Low Worsall 14 June 1995 am

- P1(6) South bank. Steep mud bank.
P2(8) North bank. Emergent Phragmites

Section 17 14 June 1995 am

- S1 South bank. Shelving gravel (1 m to 0 m)
Non fry caught. 100+ - 1+ dace
P1(5) Worsall ORSU. Depth = 60 cm. Soft mud substrate with emergent reeds.
Non fry caught. 1- 2+ Chub.
P2(5) Worsall ORSU. Depth = 40 cm. Soft mud substrate with emergent phragmites.
P3(5) North bank. Backwater area. Sand substrate depth = 30 cm.
P4(8) North bank. Between main river and backwater area. Mud substrate with some
emergent phragmites. Depth = 30 cm.

Section 18 14 June 1995 am

- P1(15) South bank. Sand / gravel area with emergent reed. Depth 40 cm.

Section 19 Fardeanside. 13 June 1995 pm

- TP1(2) South bank. Substrate silt & roots, depth 30 cm.
S1 In lee of island in mid-river. Deep bay shelving from 0 - 50 cm. Substrate sand
& silt.

Section 20 13 June 1995 am

- S1 South bank. In shear zone between slight and no flow. Depth shelving from 10 cm to 1 m. Substrate silty gravel.
Non fry caught. 1 - 1+ Dace.
- P1(8) South bank. Flow slight/nil. Substrate sand/silt & ranunculus. Depth 10-30 cm.
- S2 North bank. In shear zone between slight and no flow. Substrate cobbles/gravel.
Depth shelving from 5 - 75 cm.

Section 21 Below Low Moor weir 13 June 1995 am

- S1 South bank in backwater downstream of ford. Silt substrate flow nil.
- TP1(5) North bank in amongst weed beds. Slight flow depth 5 cm.
- P1(5) North bank. Slight flow. Depth 10 - 30 cm. in amongst ranunculus beds.
- P2(8) North bank. No flow. Depth 30 cm. in ranunculus beds.

Section 22 Above Low Moor weir 13 June 1995 am

- P1(5) North bank. In marginal vegetation, depth 50 - 75 cm Flow nil
- P1(2) North bank. In marginal vegetation, depth 30 - 40 cm Flow nil

Section 23

Not Sampled

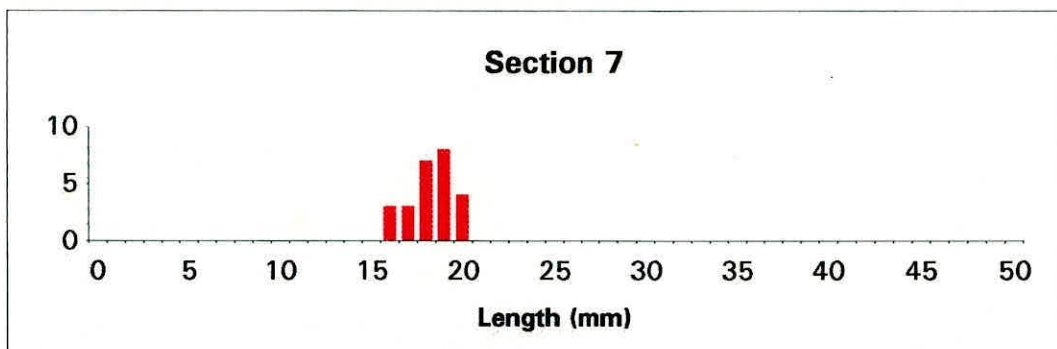
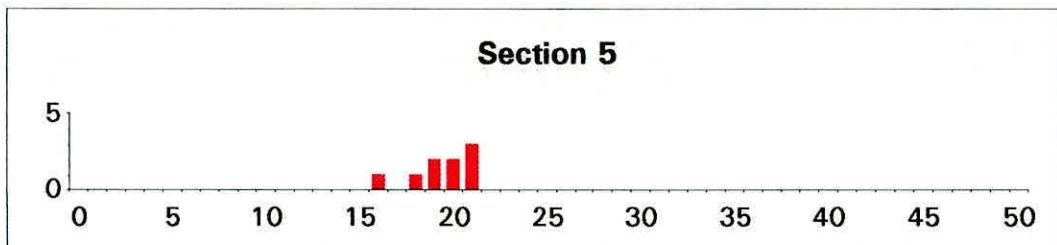
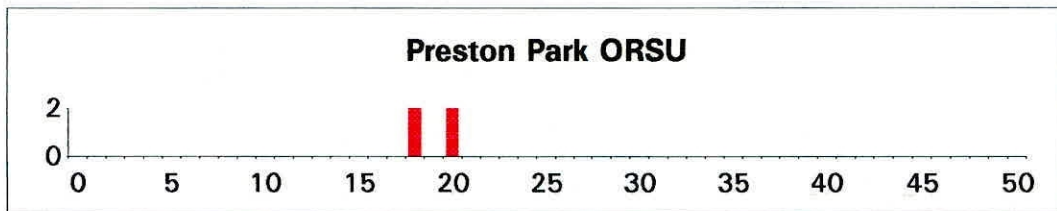
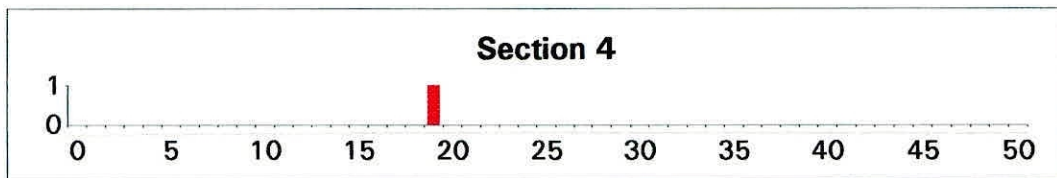
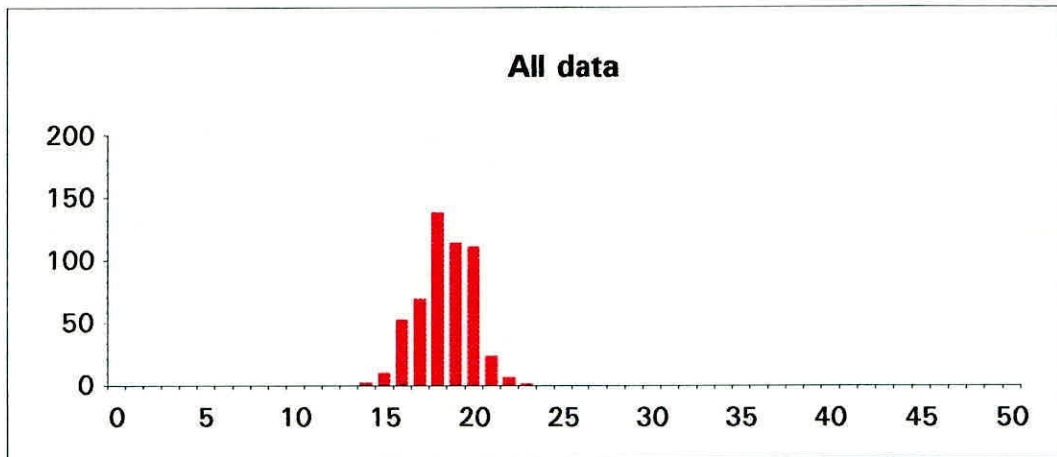
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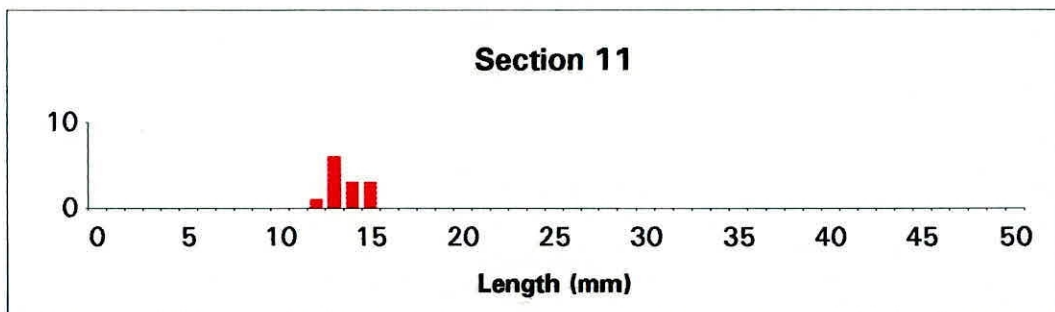
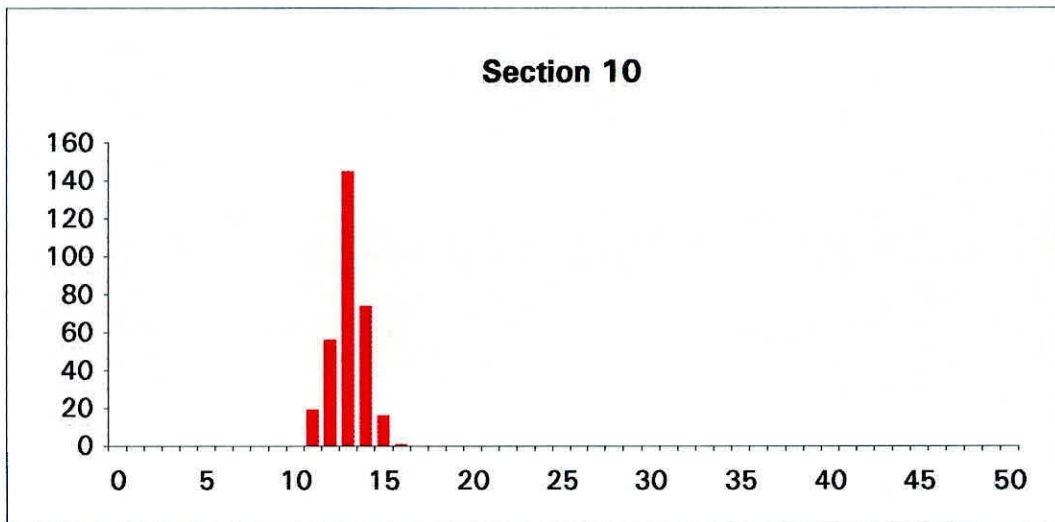
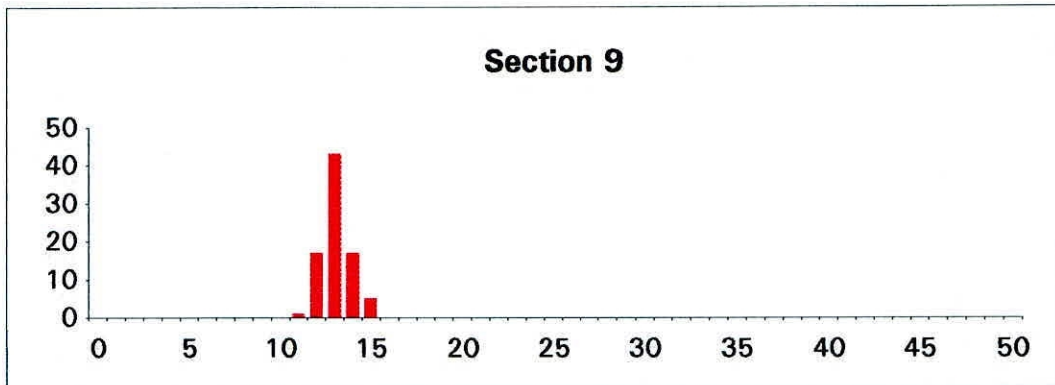
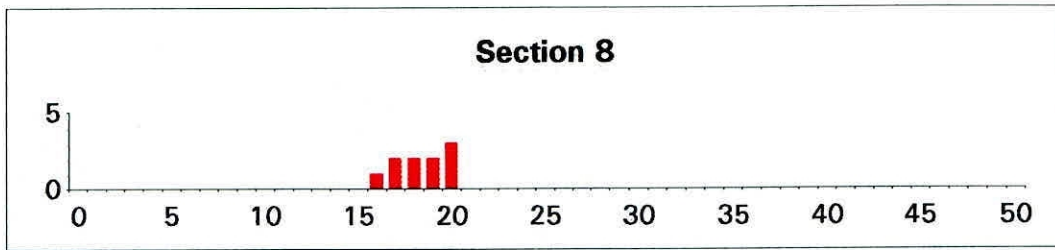
Section 25 Low Dinsdale 13 June 1995 am

- S1 Area 11 m * 5 m in 20 cm deep backwater. Substrate gravel / sand.
- S2 Area 11 m * 5 m in 30 cm deep backwater. Substrate gravel / sand.

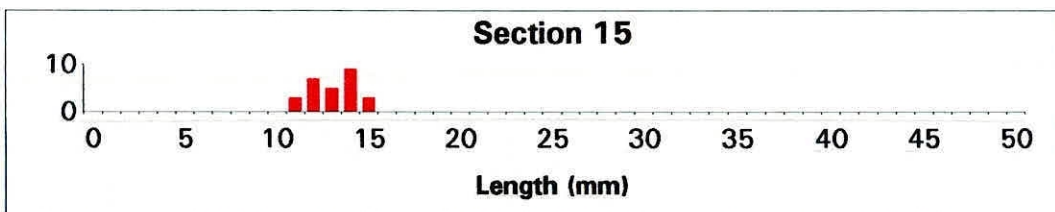
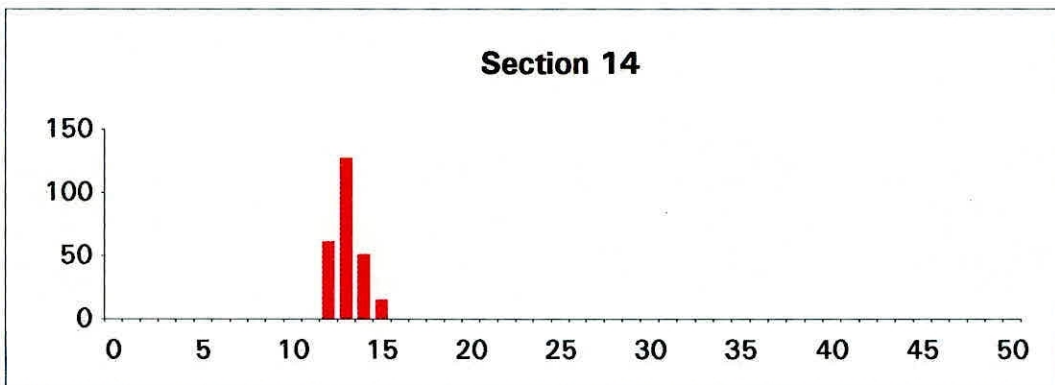
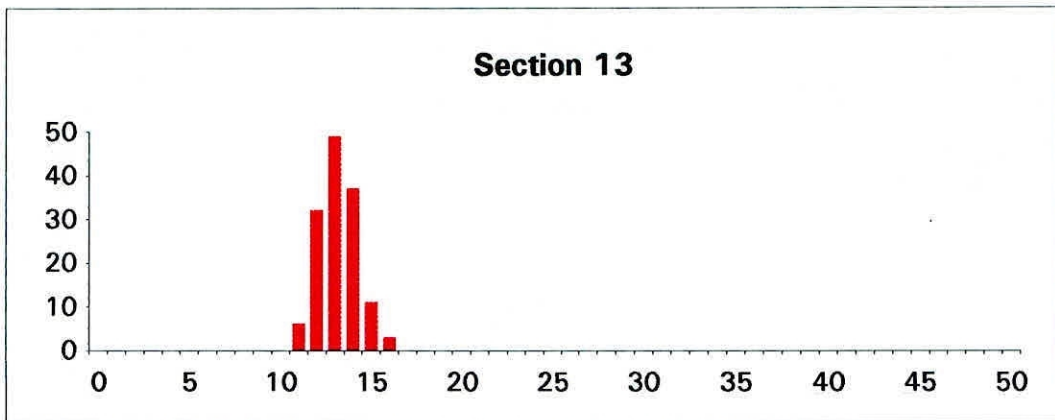
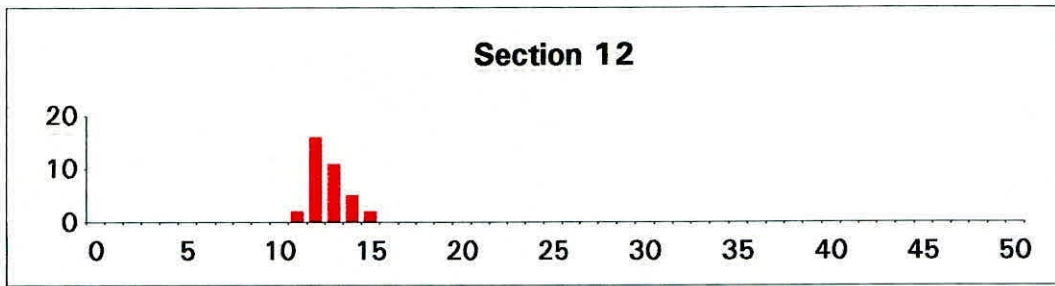
Appendix 2 Length frequency distribution of dace fry in each section of the R.Tees in June 1995.



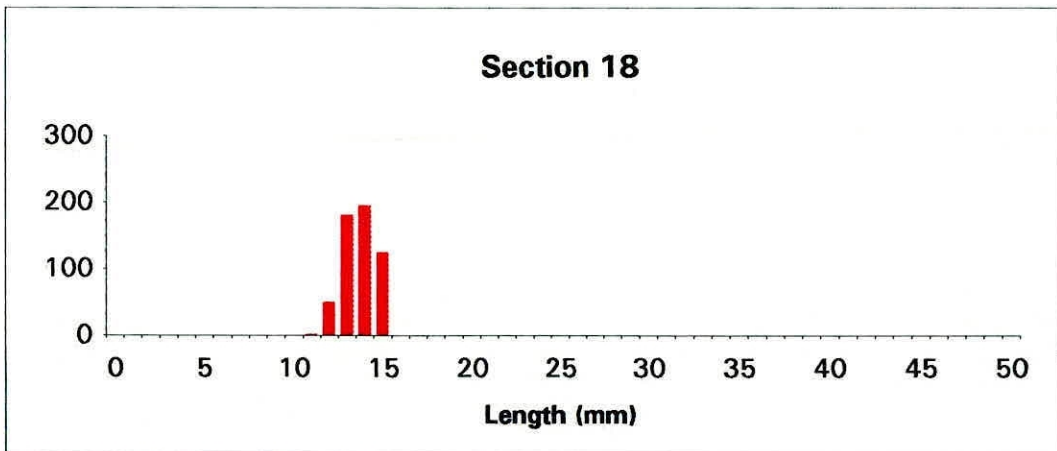
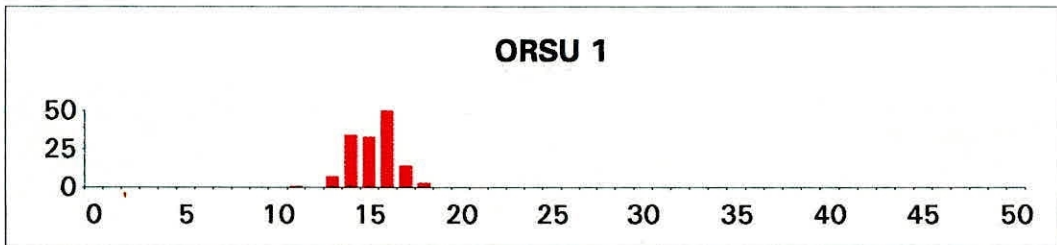
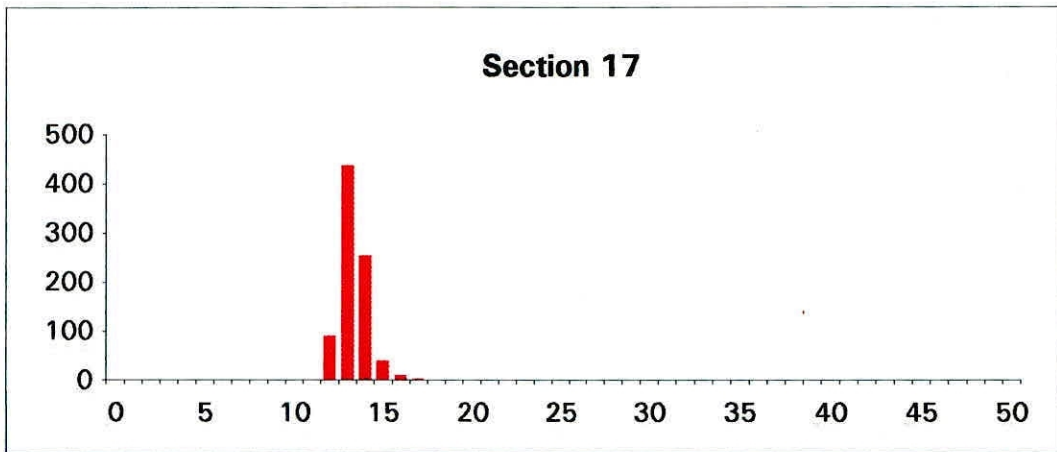
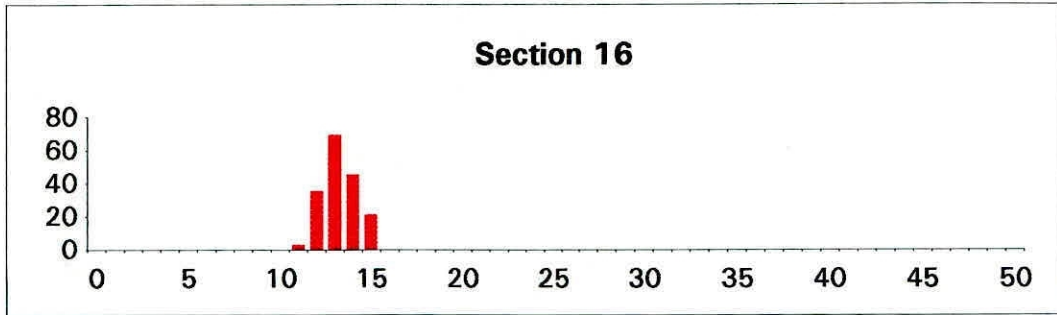
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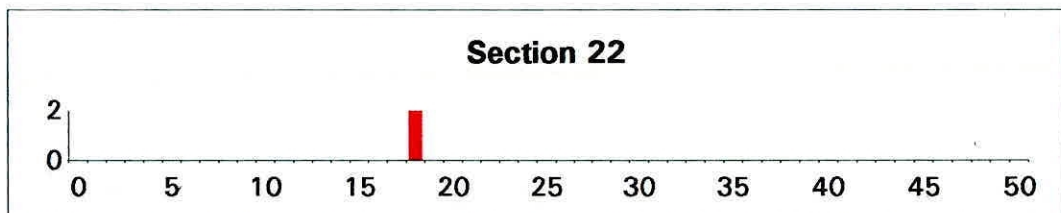
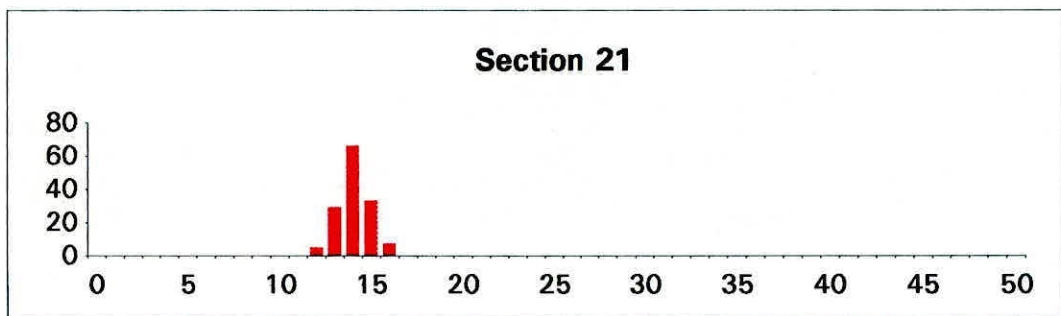
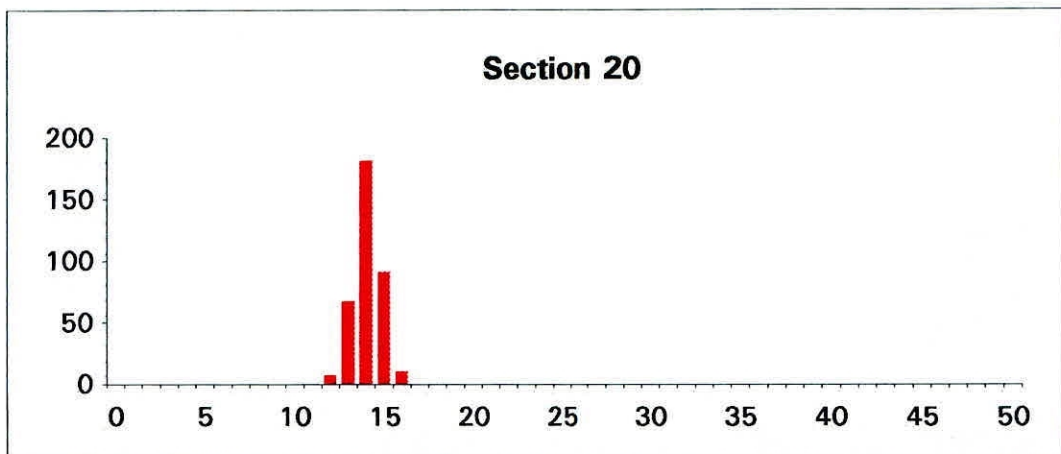
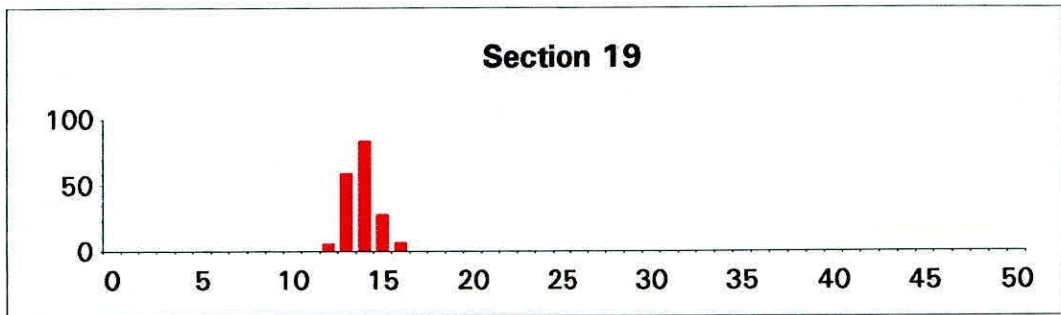
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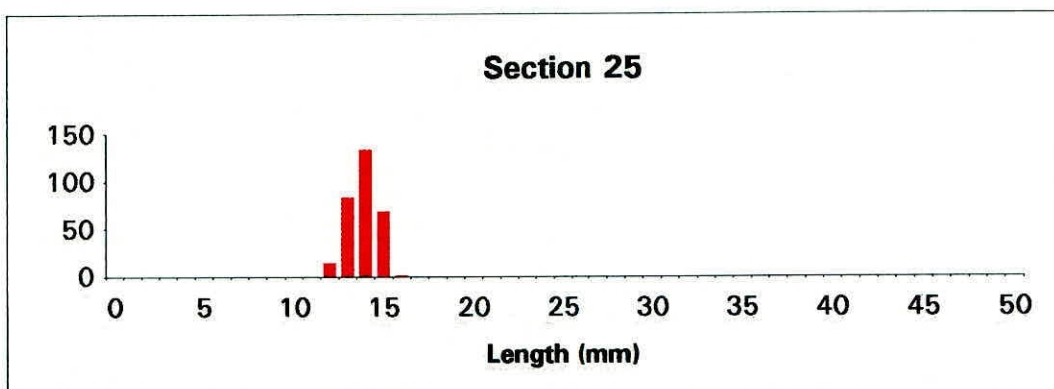
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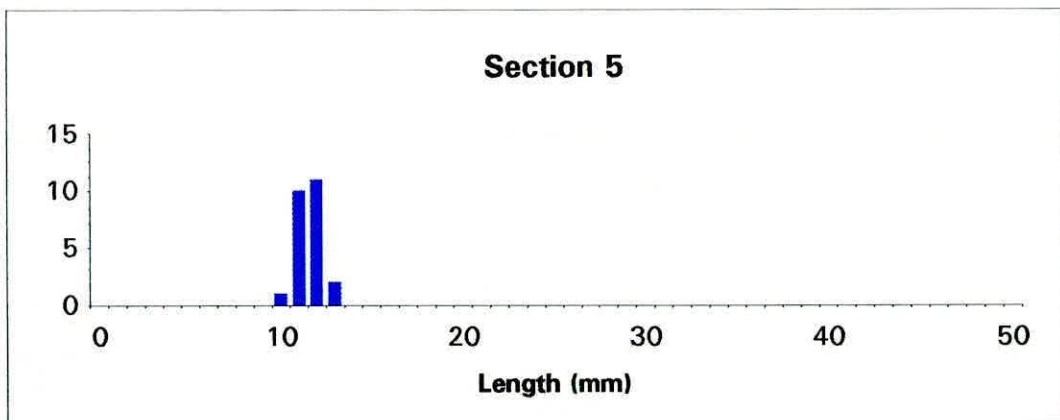
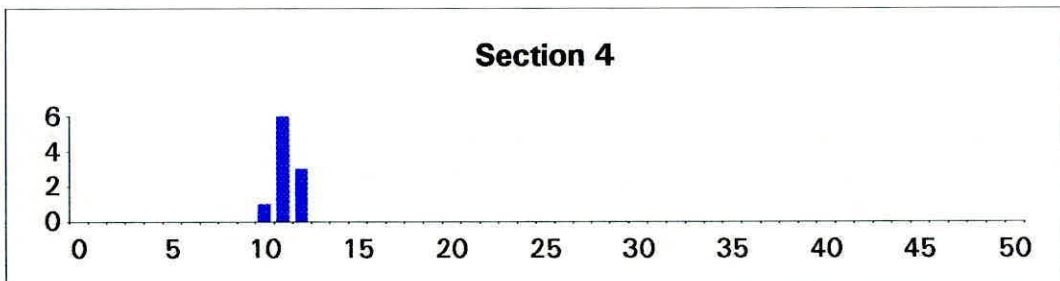
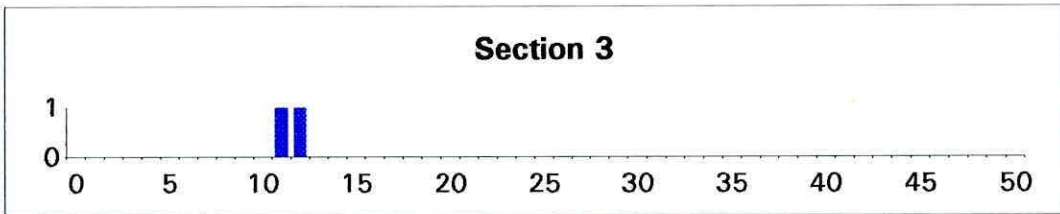
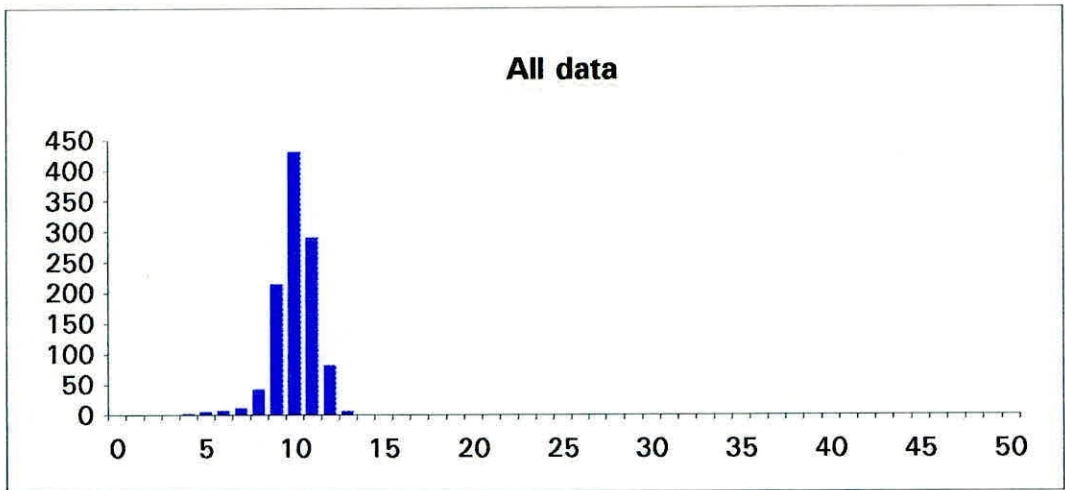
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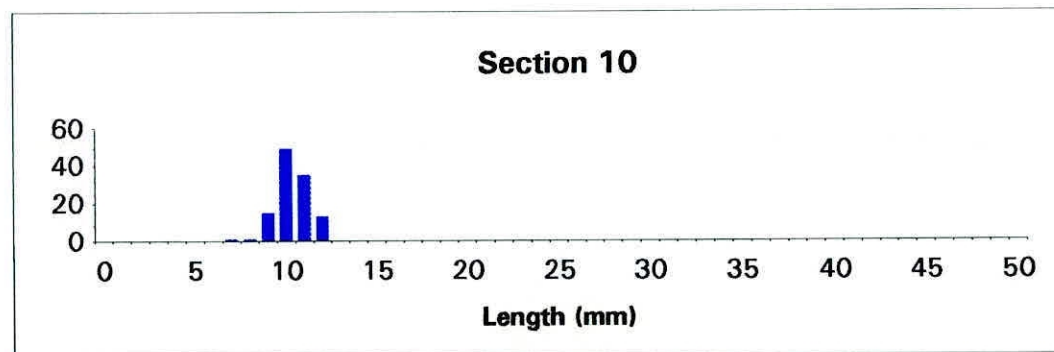
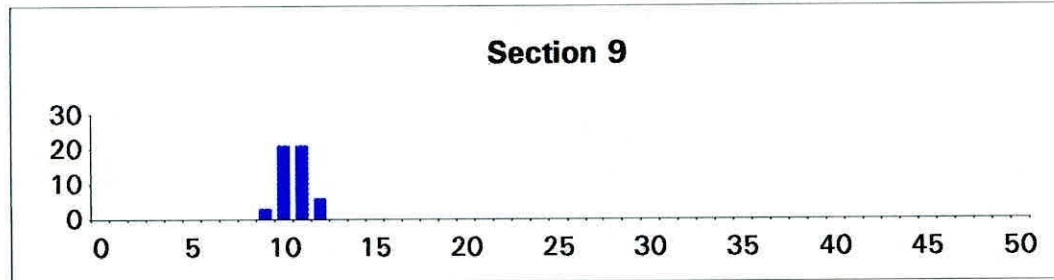
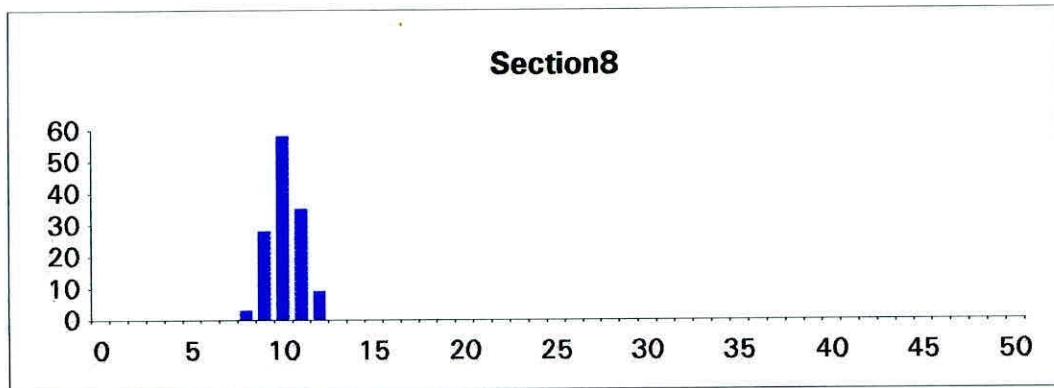
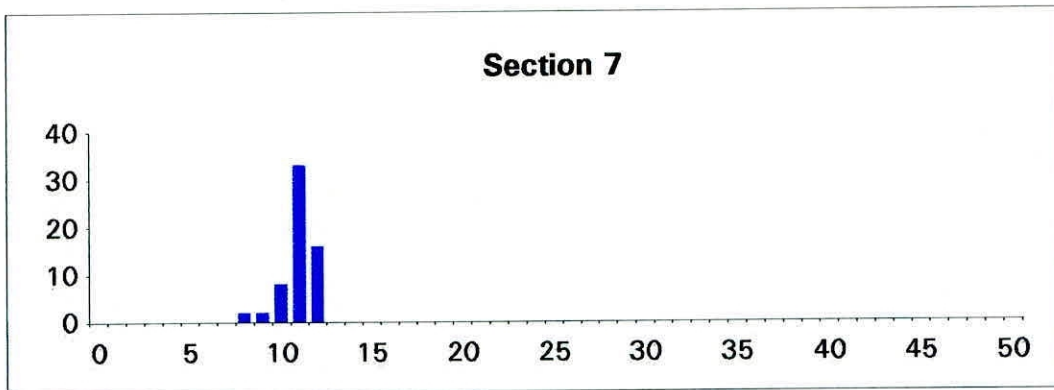
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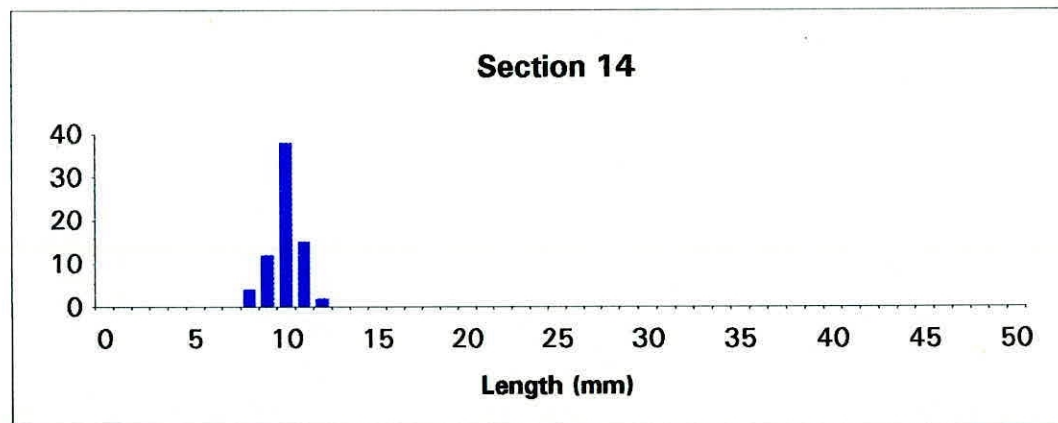
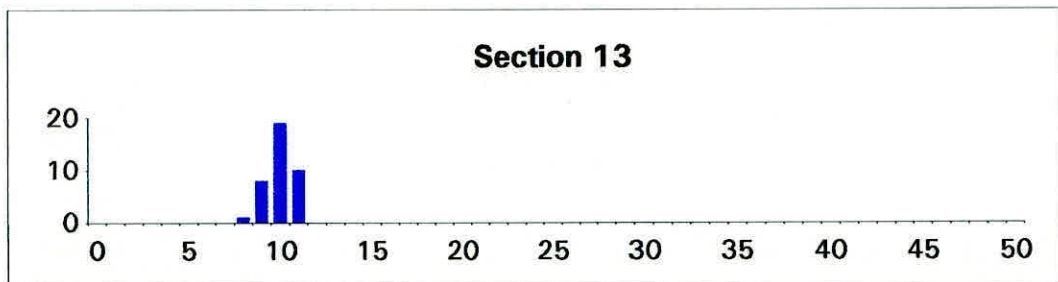
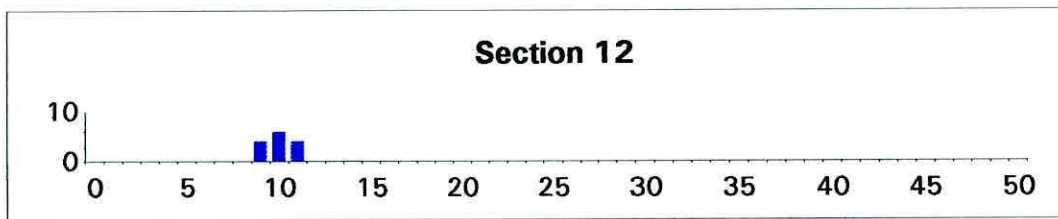
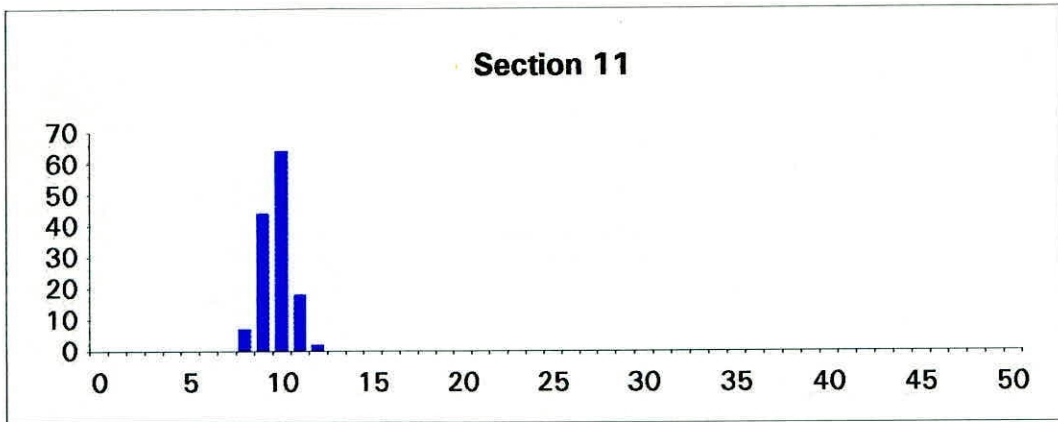
Appendix 3 Length frequency distribution of chub fry in each section of the R. Tees in June 1995.



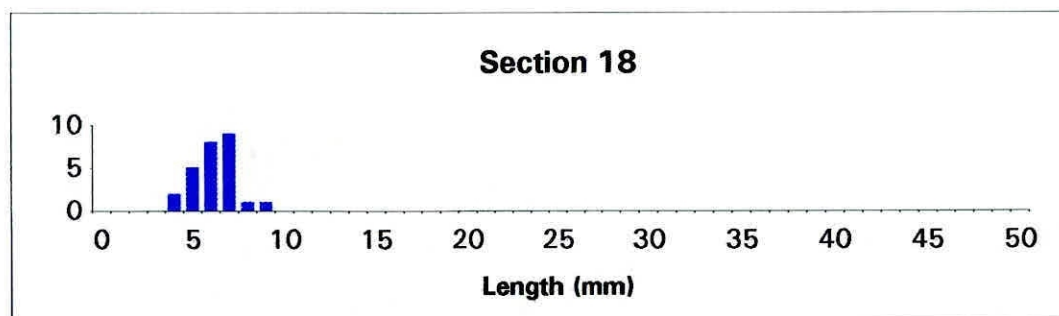
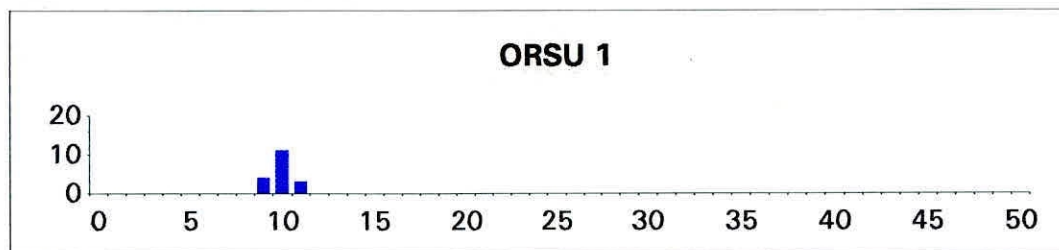
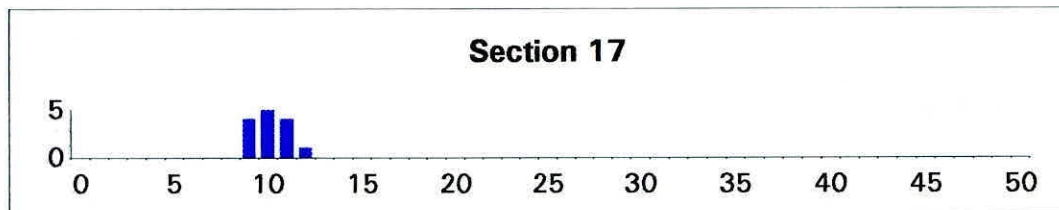
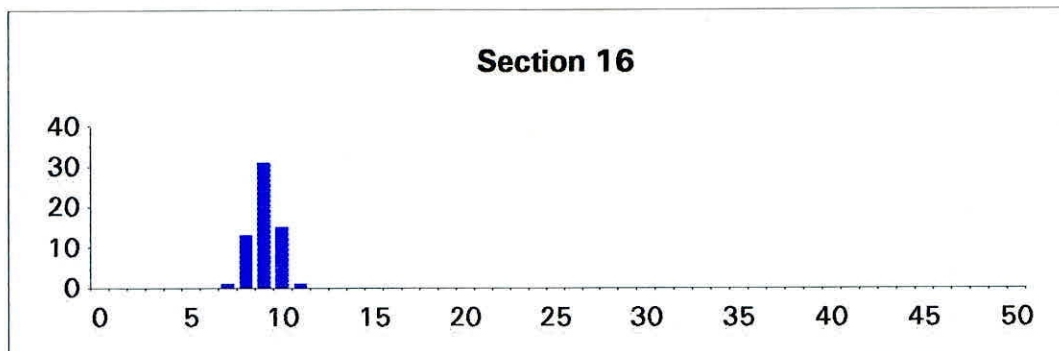
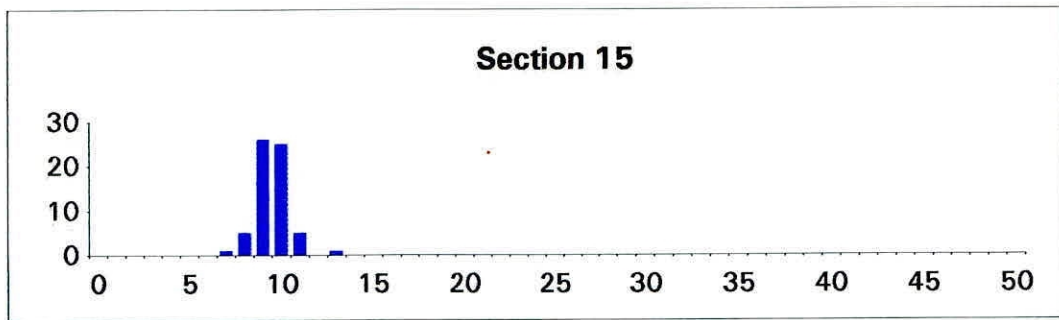
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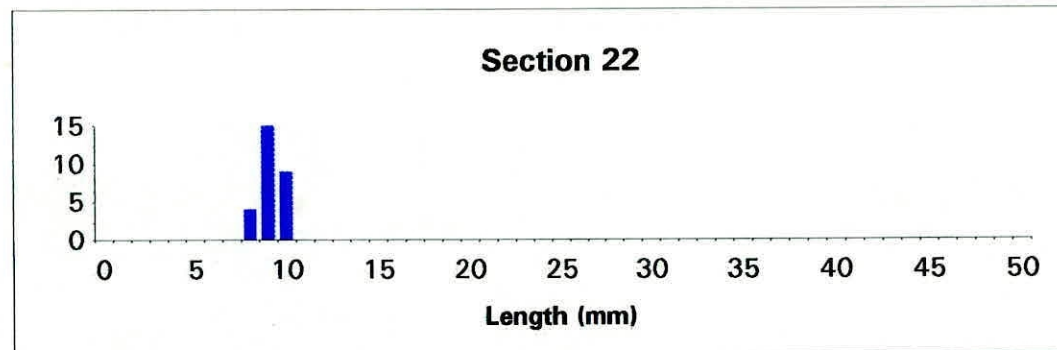
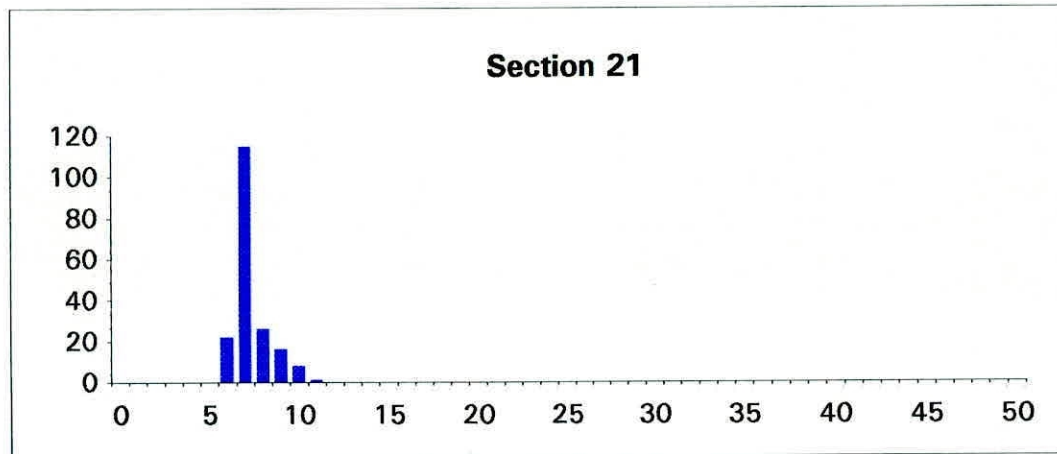
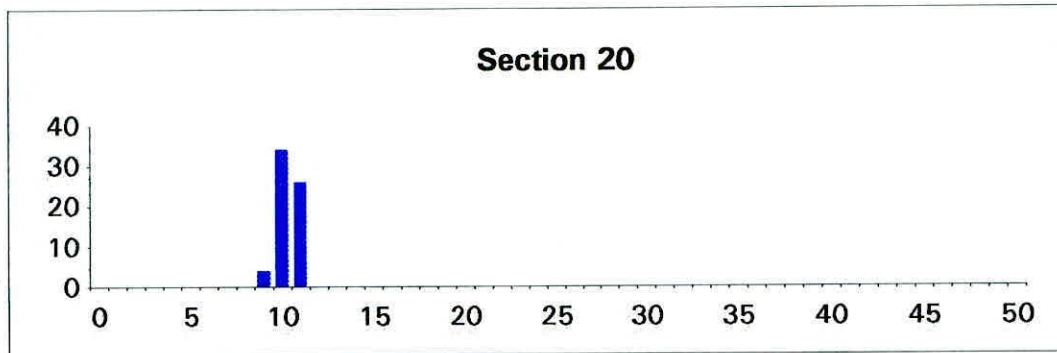
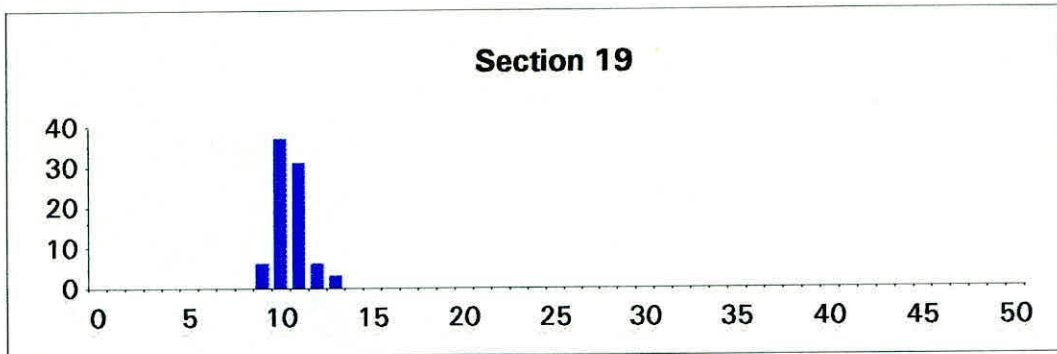
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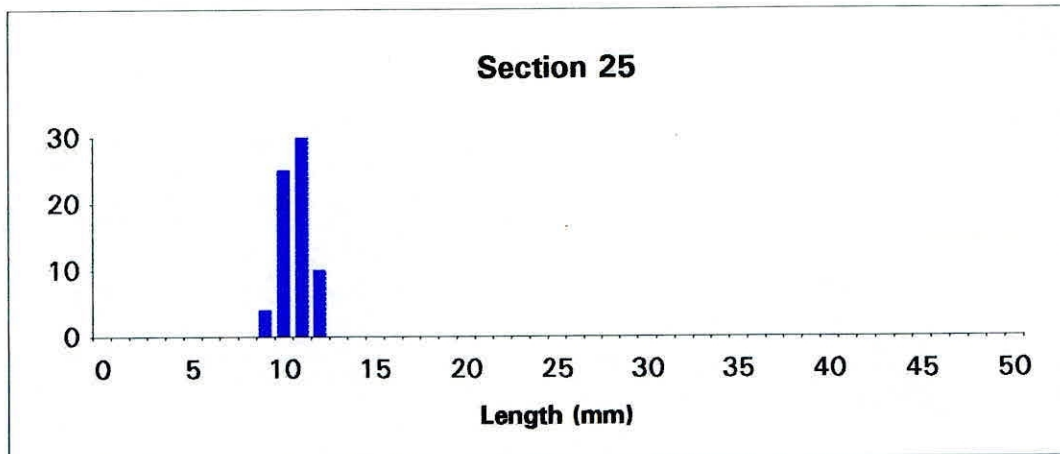
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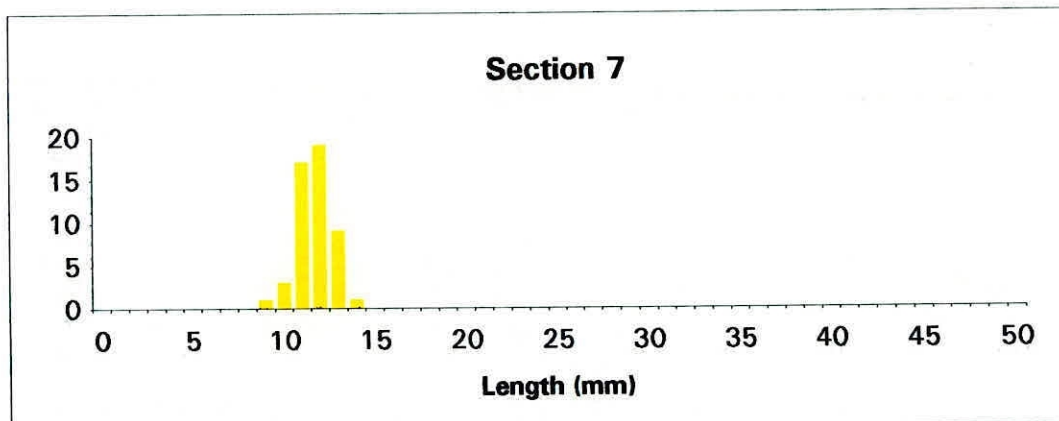
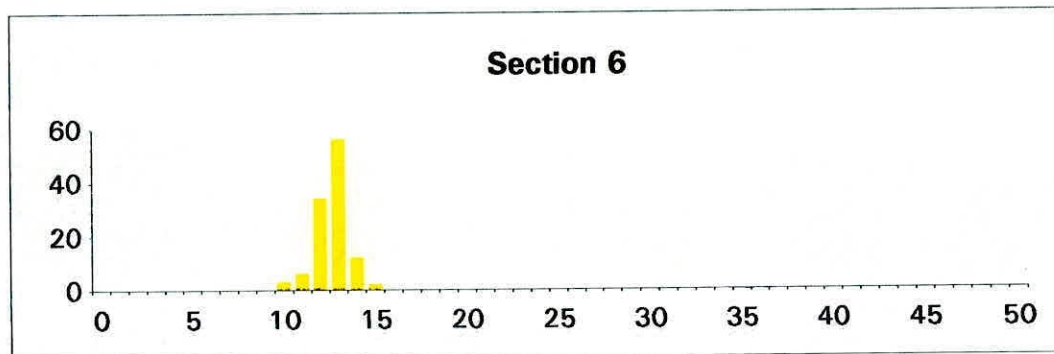
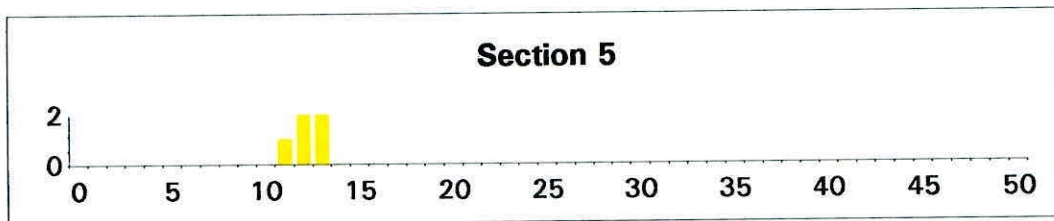
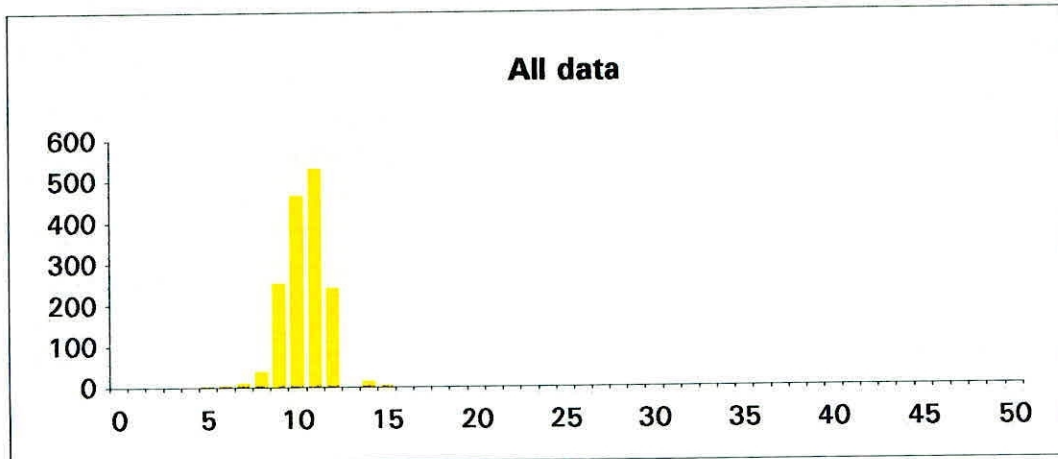
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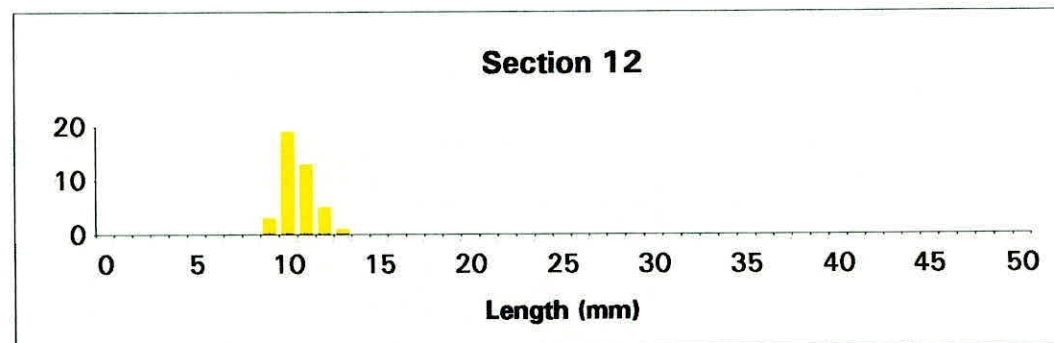
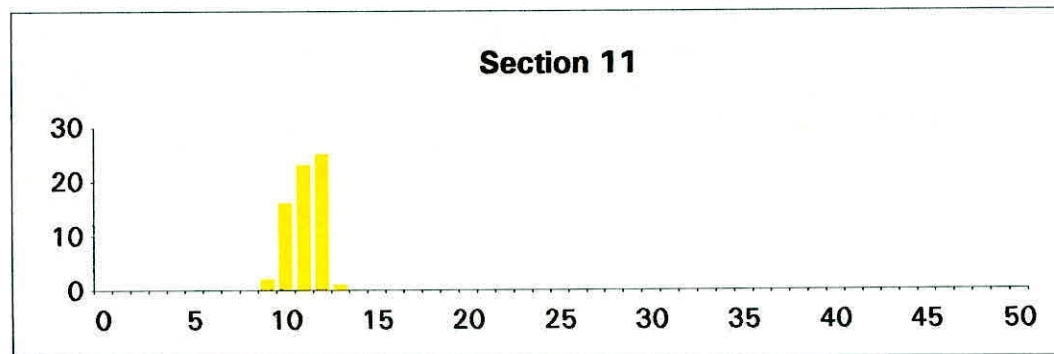
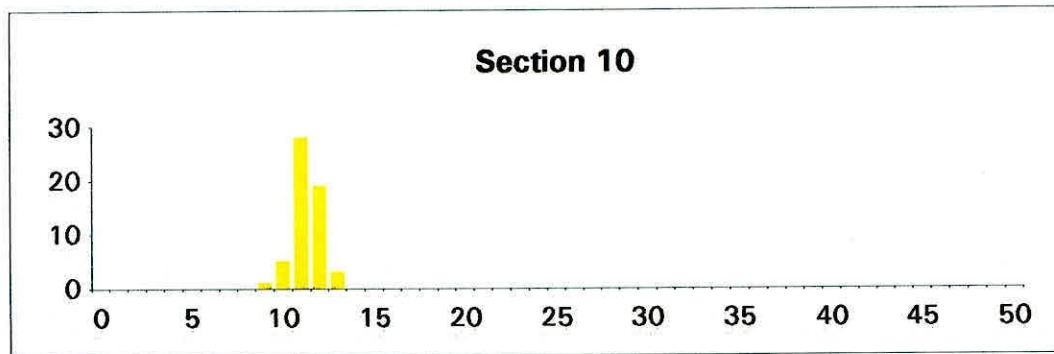
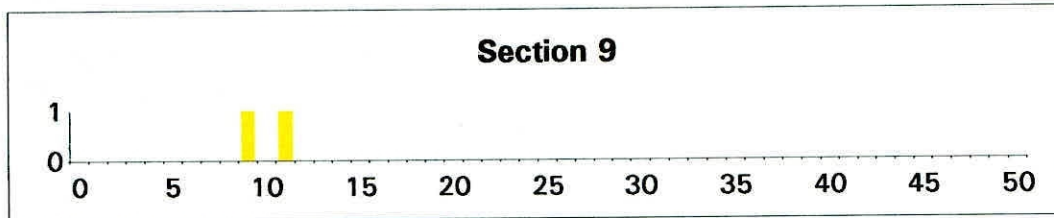
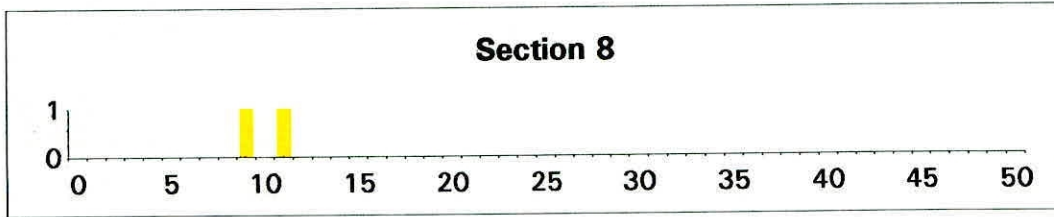
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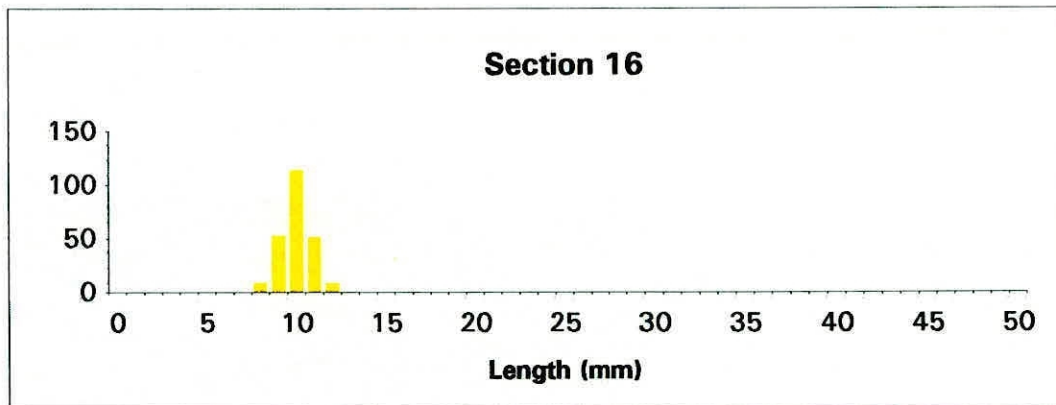
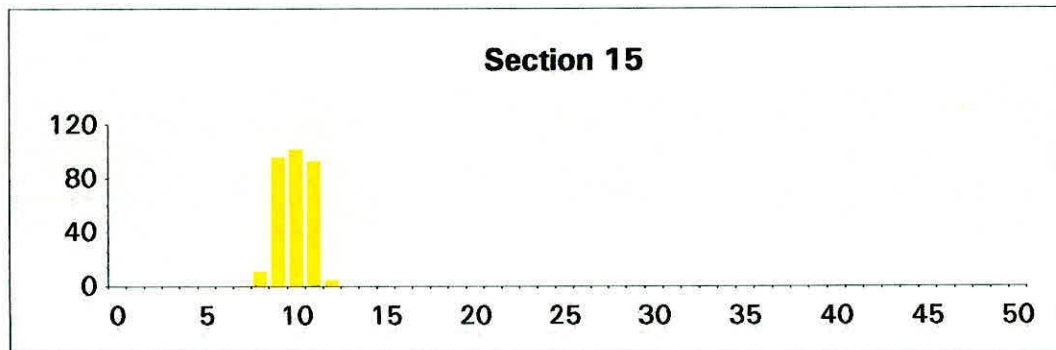
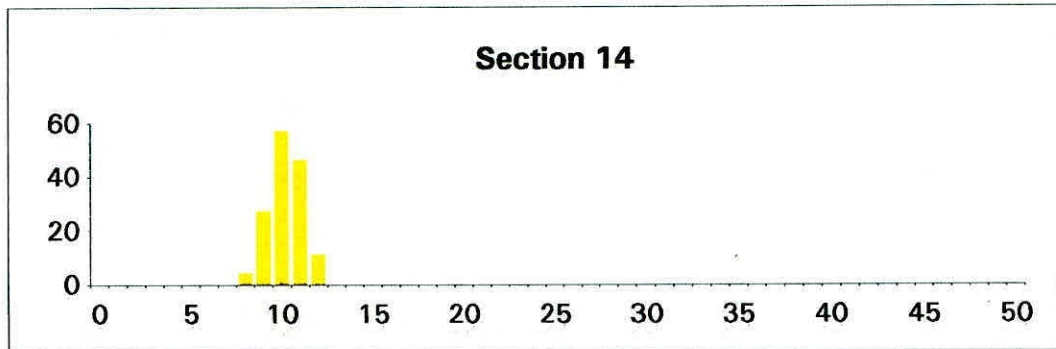
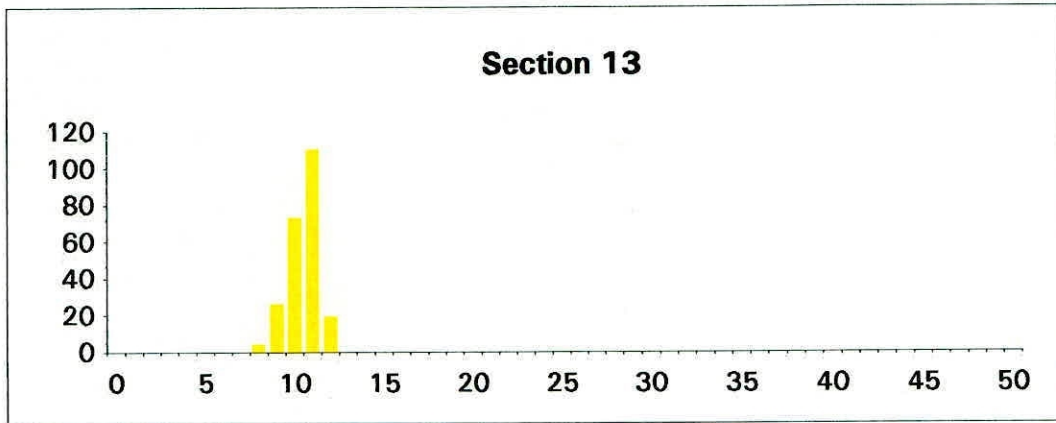
Appendix 4 Length frequency distribution of roach fry in each section of the R. Tees in June 1995.



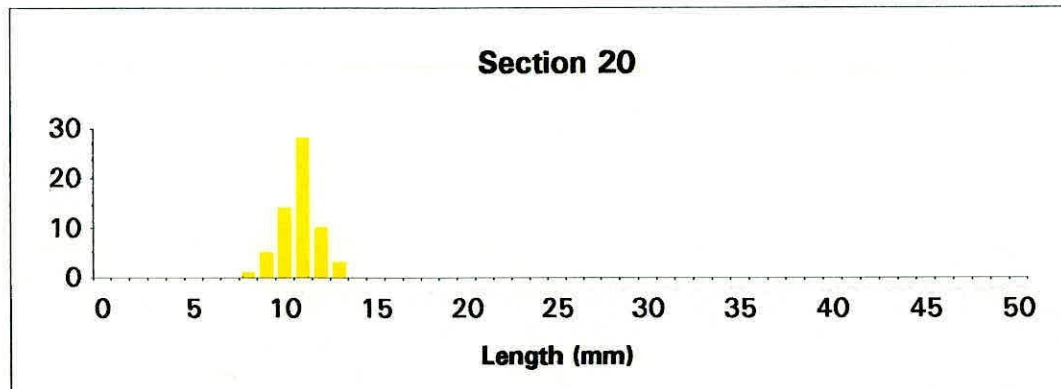
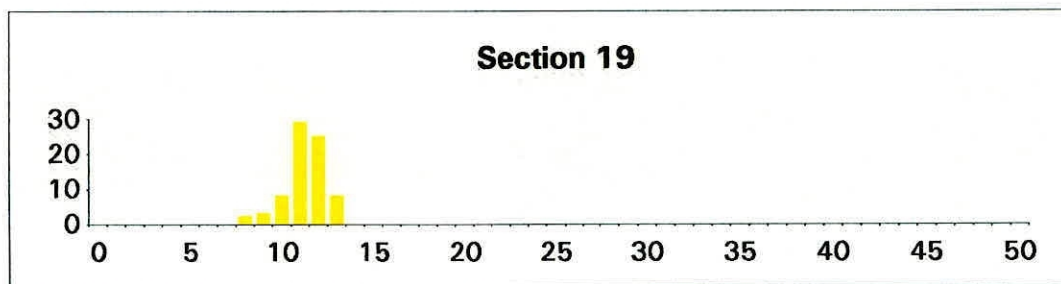
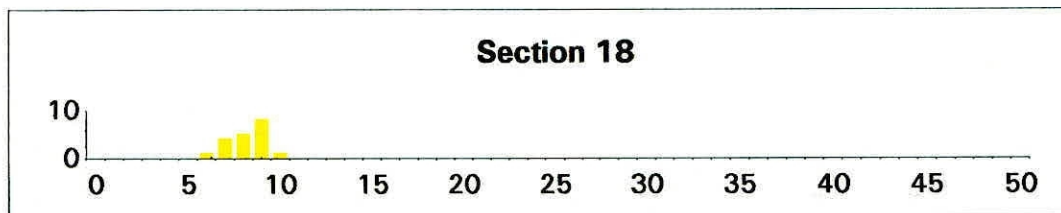
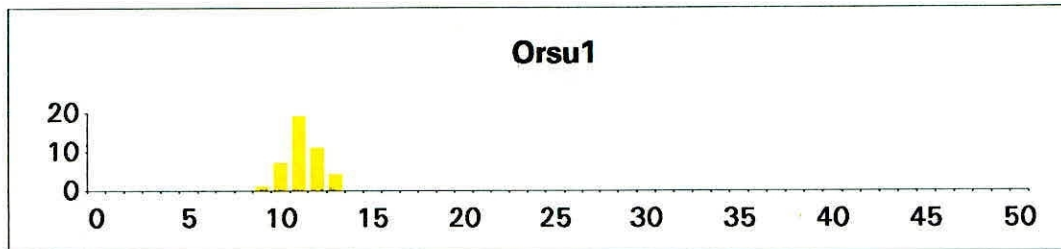
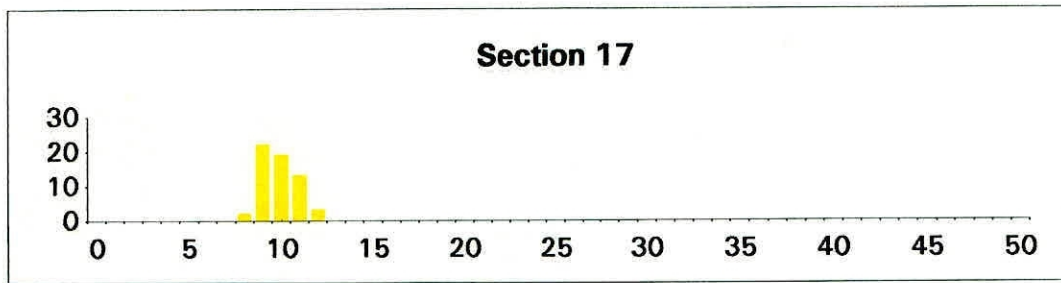
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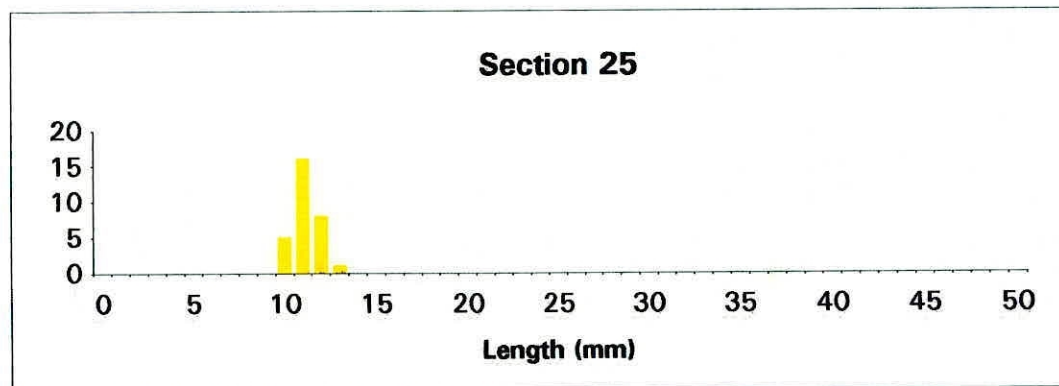
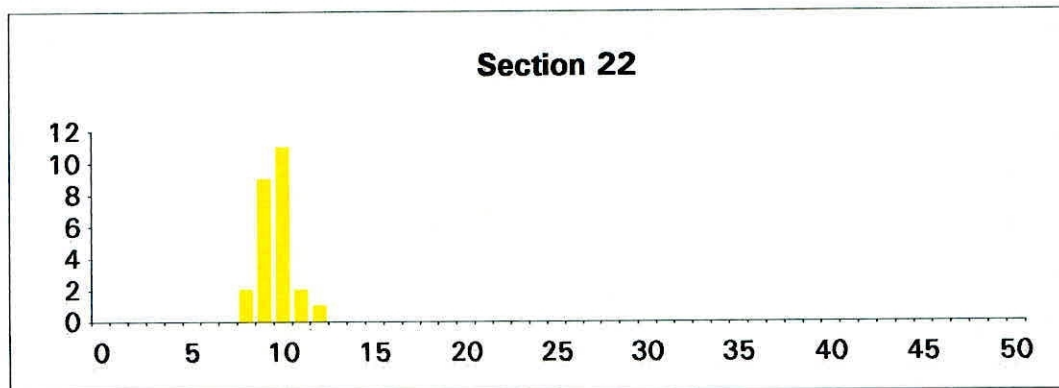
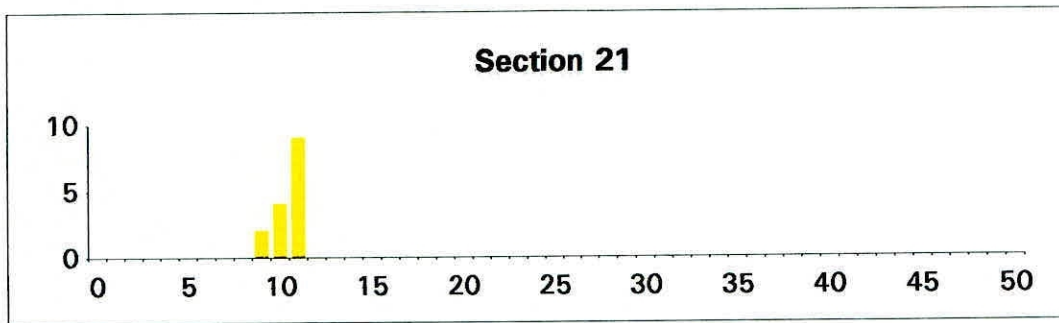
Appendix 4 continued.



Appendix 4 continued.



Appendix 4 continued.



Appendix 5. Site descriptions and details of fish caught.

SECTION 1

Date fished 8 September 1995
 Area 5MPH sign-ORSU
 Length 400 m Right hand bank only looking downstream
 NGR NZ449163 - NZ446166
 Time 14.30-15.30
 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.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	2	6.4-10.2
Dace <i>Leuciscus leuciscus</i> (L.)	44	5.7-11.4
Flounder <i>Platichthys flesus</i> (L.)	5	18.6-20.4
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.)	13	5.3-24.6
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.	1	28.0
Eel <i>Anguilla anguilla</i> L.		
Perch <i>Perca fluviatilis</i> L.	1	13.0

SECTION 2/1 (1A)

Date fished 9 September 1995
 Area Bassleton Beck-upstream mouth of ORSU Left hand bank only
 Length 1200 m
 NGR NZ442155 - NZ440160
 Time 13.30-14.00
 Fishing method Boom boat
 Site description River lined with reeds. Meadows, no trees.

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.)	27	5.5-9.9
Dace <i>Leuciscus leuciscus</i> (L.)	233	5.9-11.7
Flounder <i>Platichthys flesus</i> (L.)	2	15.2-19.5
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnnow <i>Phoxinus phoxinus</i> (L.)		
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	93	4.5-8.2
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	7	5.4-19.5
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.		
Sea trout <i>Salmo trutta</i> L.		

SECTION 3

Date fished 8 September 1995
 Area Bend below Great Holme to bend below pipe bridge
 Length 800 m
 NGR NZ434154 - NZ441157
 Time 17.00-18.30
 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.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	16	5.5-24.5
Dace <i>Leuciscus leuciscus</i> (L.)	304	5.2-19.0
Flounder <i>Platichthys flesus</i> (L.)		
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.)	12	4.7-12.0
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	5	4.0-5.7
Trout (brown) <i>Salmo trutta</i> L.	1	15.0
Eel <i>Anguilla anguilla</i> L.		
Sea trout <i>Salmo trutta</i> L.		

SECTION 4

Date fished Not fished
 Area The Rings and Great Holmes
 Length 2280 m
 NGR NZ431147 - NZ434154
 Time
 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 barbus</i> (L.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)		
Dace <i>Leuciscus leuciscus</i> (L.)		
Flounder <i>Platichthys flesus</i> (L.)		
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.)		
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.		

SECTION 5

Date fished 8 September 1995
 Area Downstream of R. Leven - start of The Rings
 Length 1840 m
 NGR NZ365105 - NZ431147
 Time 09.30-12.30
 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.)	95	4.7-34.0
Dace <i>Leuciscus leuciscus</i> (L.)	269	4.3-23.3
Flounder <i>Platichthys flesus</i> (L.)	7	14.4-27.1
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnow <i>Phoxinus phoxinus</i> (L.)	4	5.1-6.7
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	43	2.4-22.7
Salmon <i>Salmo salar</i> L.	1 seen	
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	4	3.7-4.5
Trout (brown) <i>Salmo trutta</i> L.	3	14.0-24.9
Eel <i>Anguilla anguilla</i> L.	8 <30 cm	35 >30 cm

SECTION 6

Date fished 6 September 1995
 Area River Leven - large bend upstream
 Length 1240 m
 NGR NZ423122 - NZ430130
 Time 15.45-17.05
 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.)	5	3.6-30.4
Dace <i>Leuciscus leuciscus</i> (L.)	84	4.5-22.8
Flounder <i>Platichthys flesus</i> (L.)		
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	3	5.8-15.9
Minnow <i>Phoxinus phoxinus</i> (L.)		
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	20	3.3-12.6
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	1	3.0
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	2 <30 cm	1 > 30 cm

SECTION 7

Date fished 6 September 1995
 Area Upstream of Section 6 - Yarm road bridge
 Length 1140 m
 NGR NZ418132 - NZ423122
 Time 13.45-15.30
 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.)	15	2.7-11.4
Dace <i>Leuciscus leuciscus</i> (L.)	102	3.9-20.1
Flounder <i>Platichthys flesus</i> (L.)	15	15.2-26.6
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	2	3.6-14.7
Minnow <i>Phoxinus phoxinus</i> (L.)	5	2.8-6.0
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	20	3.1-16.8
Salmon <i>Salmo salar</i> L.		
Sone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	4	3.0-3.8
Perch <i>Perca fluviatilis</i> L.	1	9.9
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	10 < 30 cm	13 > 30 cm

SECTION 8

Date fished 6 September 1995
 Area Yarm road bridge - Yarm railway bridge
 Length 80 m
 NGR NZ417132 - NZ418132
 Time 13.30-13.45
 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.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	9	3.2-10.5
Dace <i>Leuciscus leuciscus</i> (L.)	14	4.6-12.0
Flounder <i>Platichthys flesus</i> (L.)		
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	1	3.3
Minnow <i>Phoxinus phoxinus</i> (L.)		
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	1	3.1
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	16.5
Eel <i>Anguilla anguilla</i> L.	1 <30 cm	

SECTION 9

Date fished 6 September 1995
 Area Yarm railway bridge - upstream to outfall on north bank
 Length 300 m
 NGR NZ415131 - NZ417132
 Time 12.30-13.15
 Fishing method Boom boat
 Site description Flood defence construction on south bank. On north, high bank with bushes and herbaceous vegetation.

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.)	11	2.9-5.2
Dace <i>Leuciscus leuciscus</i> (L.)	22	4.3-19.8
Flounder <i>Platichthys flesus</i> (L.)	2	16.5-19.5
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	1	4.7
Minnow <i>Phoxinus phoxinus</i> (L.)	8	2.7-6.2
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	14	3.5-6.8
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	3	3.3-4.6
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	3 <30 cm	

SECTION 10

Date fished 6 September 1995
 Area Upstream of section 9 - downstream of section 11
 Length 560 m
 NGR NZ415122 - NZ415131
 Time 10.30-12.15
 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.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	38	2.9-31.2
Dace <i>Leuciscus leuciscus</i> (L.)	104	4.0-21.3
Flounder <i>Platichthys flesus</i> (L.)	8	11.6-22.8
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnnow <i>Phoxinus phoxinus</i> (L.)	6	3.3-6.9
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	38	2.1-10.7
Pike <i>Esox lucius</i> L.	1	48.2
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	1	4.2
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L. - - - - -	3 <30 cm	10 > 30 cm
Perch <i>Perca fluviatilis</i> L.		

SECTION 11

Date fished 6 September 1995
 Area Aislaby at The Cabins - bend downstream
 Length 840 m
 NGR NZ407123 - NZ415122
 Time 09.15-10.30
 Fishing method Boom boat
 Site description High banks. Wooded area

Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	2	5.0-5.8
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	28	2.5-31.5
Dace <i>Leuciscus leuciscus</i> (L.)	79	4.1-10.6
Flounder <i>Platichthys flesus</i> (L.)	9	13.5-19.2
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnow <i>Phoxinus phoxinus</i> (L.)	10	3.0-5.9
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	17	2.5-17.0
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	21.5
Eel <i>Anguilla anguilla</i> L.	13 <30 cm	20 > 30 cm

SECTION 12

Date fished 6 September 1995
 Area Aislaby at The Cabins - middle of 1st bend upstream
 Length 440 m
 NGR NZ405120 - NZ407123
 Time 17.30-18.45
 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	7.0
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	22	2.8-41.3
Dace <i>Leuciscus leuciscus</i> (L.)	71	4.1-10.8
Flounder <i>Platichthys flesus</i> (L.)	10	15.1-23.1
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	7	12.0-13.6
Minnow <i>Phoxinus phoxinus</i> (L.)	3	3.5-6.7
Perch <i>Perca fluviatilis</i> L.	1	10.4
Roach <i>Rutilus rutilus</i> (L.)	9	3.8-21.8
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	12.9-23.5
Eel <i>Anguilla anguilla</i> L.	10 <30 cm	14 >30 cm

SECTION 13

Date fished 7 September 1995
 Area Upstream of Aislaby, end of Section 12 - next bend upstream
 Length 600 m
 NGR NZ404114 - NZ405120
 Time 09.30-10.40
 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.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	33	3.0-40.3
Dace <i>Leuciscus leuciscus</i> (L.)	53	4.4-20.0
Flounder <i>Platichthys flesus</i> (L.)	7	14.4-31.2
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnow <i>Phoxinus phoxinus</i> (L.)	5	2.8-5.1
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	6	2.6-14.7
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.	1	24.3
Eel <i>Anguilla anguilla</i> L.	22 <30 cm	31 >30 cm

SECTION 14

Date fished 7 September 1995
 Area End of Section 13 - next bend upstream
 Length 1040 m
 NGR NZ401105 - NZ404114
 Time 10.40-12.30
 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.)		
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	41	2.5-48.0
Dace <i>Leuciscus leuciscus</i> (L.)	111	4.2-11.0
Flounder <i>Platichthys flesus</i> (L.)	3	16.1-17.2
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	1	9.0
Minnow <i>Phoxinus phoxinus</i> (L.)	11	2.9-7.3
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	8	2.4-23.0
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	22.4-27.8
Sea Trout <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	9 < 30 cm	16 >30 cm

SECTION 15

Date fished 7 September 1995
 Area Pumping station - bend downstream. Lower limit opposite upstream limit of section 14.
 Length 580 m
 NGR NZ395103 - NZ401105
 Time 12.45-14.00
 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.)	1	4.0
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	41	2.4-31.9
Dace <i>Leuciscus leuciscus</i> (L.)	95	4.2-19.1
Flounder <i>Platichthys flesus</i> (L.)	7	15.8-26.0
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	54	2.8-4.8
Minnnow <i>Phoxinus phoxinus</i> (L.)	28	2.4-6.4
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	36	2.0-10.4
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)		
Three spined stickleback <i>Gasterosteus aculeatus</i> L.	1	4.5
Trout (brown) <i>Salmo trutta</i> L.		
Eel <i>Anguilla anguilla</i> L.	5 <30 cm	18 >30 cm

SECTION 16

Date fished Not fished
 Area Lower Worsall - pumping station
 Length 400 m
 NGR NZ392103 - NZ395103
 Time
 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.)		
Dace <i>Leuciscus leuciscus</i> (L.)		
Flounder <i>Platichthys flesus</i> (L.)		
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.)		
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.		

SECTION 19

Date fished Not fished
 Area Fardeneside Farm to top of second island upstream.
 Length 200 m
 NGR NZ371095 - NZ373095
 Time
 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.)		
Chub <i>Leuciscus cephalus</i> (L.)		
Dace <i>Leuciscus leuciscus</i> (L.)		
Flounder <i>Platichthys flesus</i> (L.)		
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)		
Minnnow <i>Phoxinus phoxinus</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)		
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.)		
Trout (brown) <i>Salmo trutta</i> L.		
Bullhead <i>Cottus gobio</i> (L.)		
Eel <i>Anguilla anguilla</i> L.		

SECTION 21

Date fished 5 September 1995
 Area Downstream of ford below Low Moor weir
 Length 260 m
 NGR NZ365106 - NZ376104
 Time 11.45-13.30
 Fishing method 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.)	14	3.9-24.6
Bullhead <i>Cottus gobio</i> L.	2	6.3-7.3
Chub <i>Leuciscus cephalus</i> (L.)	35	3.0-47.0
Dace <i>Leuciscus leuciscus</i> (L.)	108	4.6-20.3
Flounder <i>Platichthys flesus</i> (L.)	42	11.8-25.8
Grayling <i>Thymallus thymallus</i> (L.)	4	21.0-32.3
Gudgeon <i>Gobio gobio</i> (L.)	19	3.6-14.1
Minnnow <i>Phoxinus phoxinus</i> (L.)	76	3.0-6.7
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	43	3.1-10.0
Salmon <i>Salmo salar</i> L.		
Stone loach <i>Barbatula barbatula</i> (L.)	8	4.4-8.1
Three spined stickleback <i>Gasterosteus aculeatus</i> L.		
Trout (brown) <i>Salmo trutta</i> L.	1	26.6
Eel <i>Anguilla anguilla</i> L.	15 <30 cm	75 >30 cm
Pike <i>Esox lucius</i> L.		

SECTION 25

Date fished 5 September 1995
 Area Low Dinsdale toll bridge - first bend upstream
 Length 350 m
 NGR NZ350113 - NZ345114
 Time 08.30-11.00
 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.)	4	4.5
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	97	1.6-43.4
Dace <i>Leuciscus leuciscus</i> (L.)	137	5.4-16.0
Flounder <i>Platichthys flesus</i> (L.)		
Grayling <i>Thymallus thymallus</i> (L.)	1	11.0
Gudgeon <i>Gobio gobio</i> (L.)	26	4.8-8.5
Minnow <i>Phoxinus phoxinus</i> (L.)	59	3.1-7.7
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	44	3.8-32.0
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	18.0-31.4
Eel <i>Anguilla anguilla</i> L.	22 <30 cm	15 >30 cm

ORSU 1

Date fished 5 September 1995

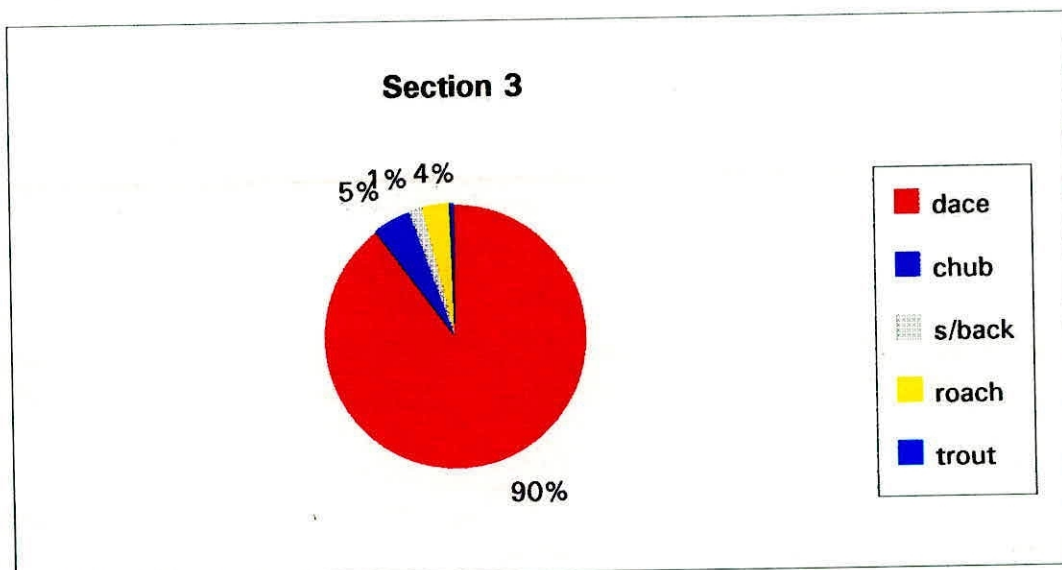
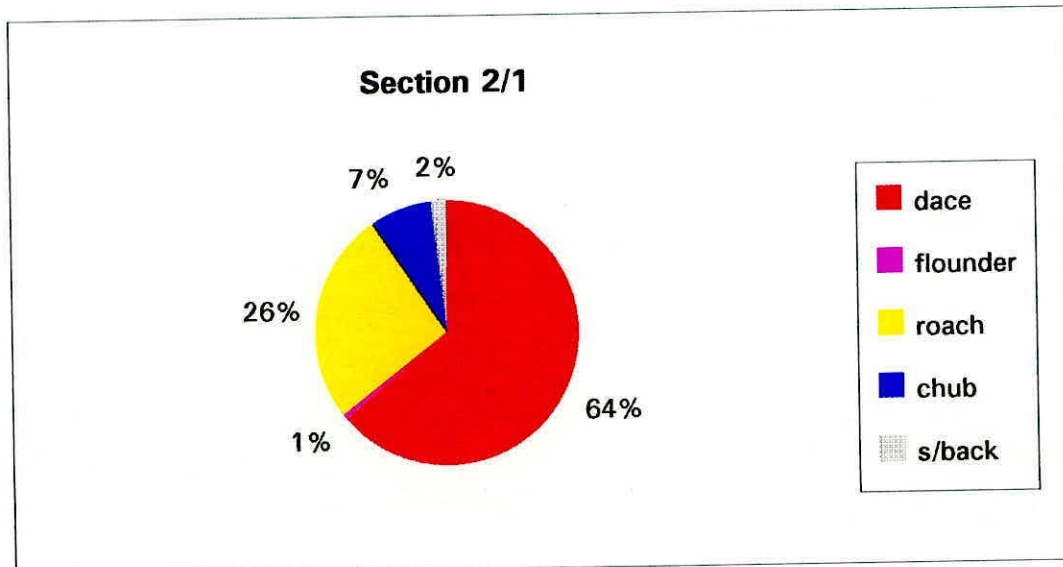
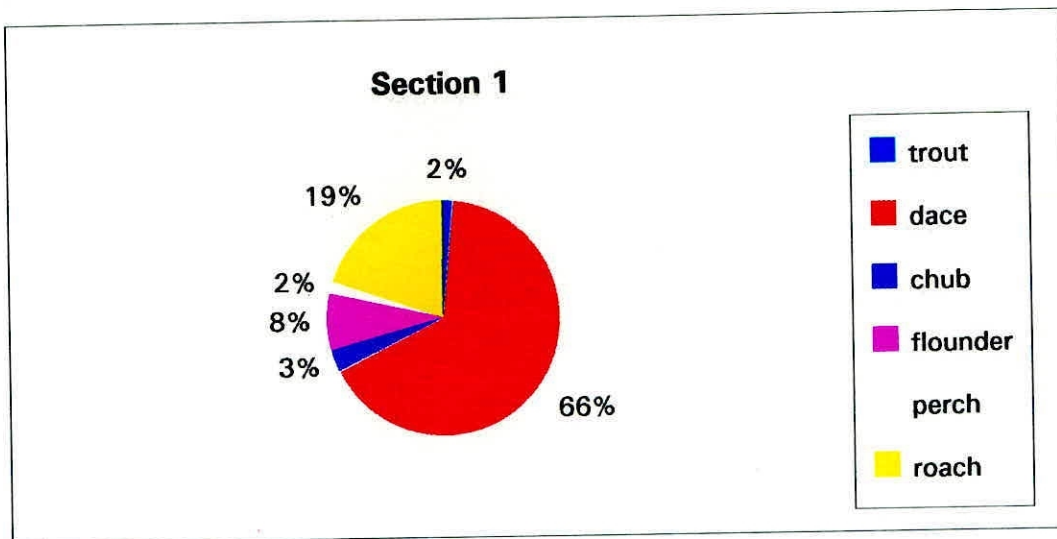
Time 14.45-15.30

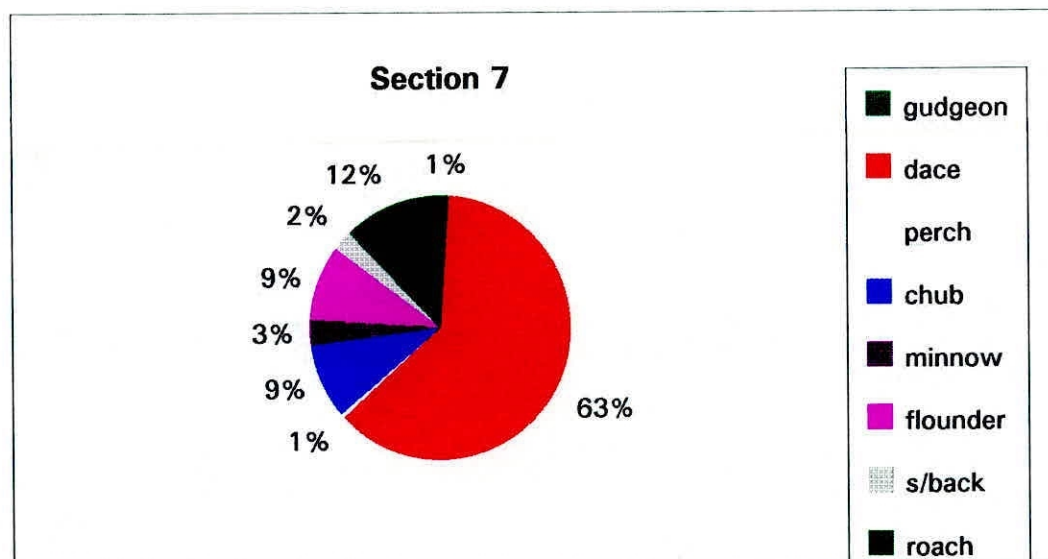
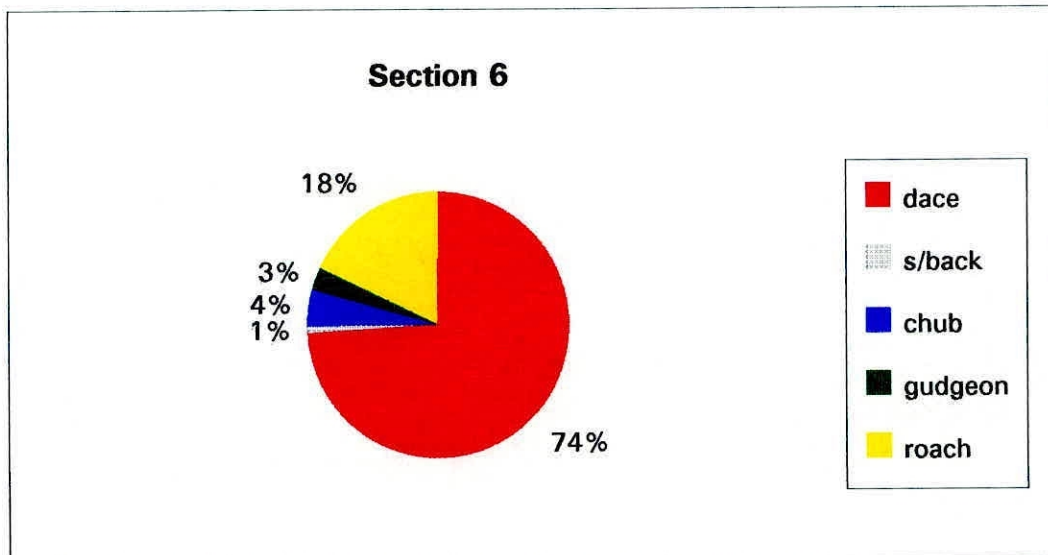
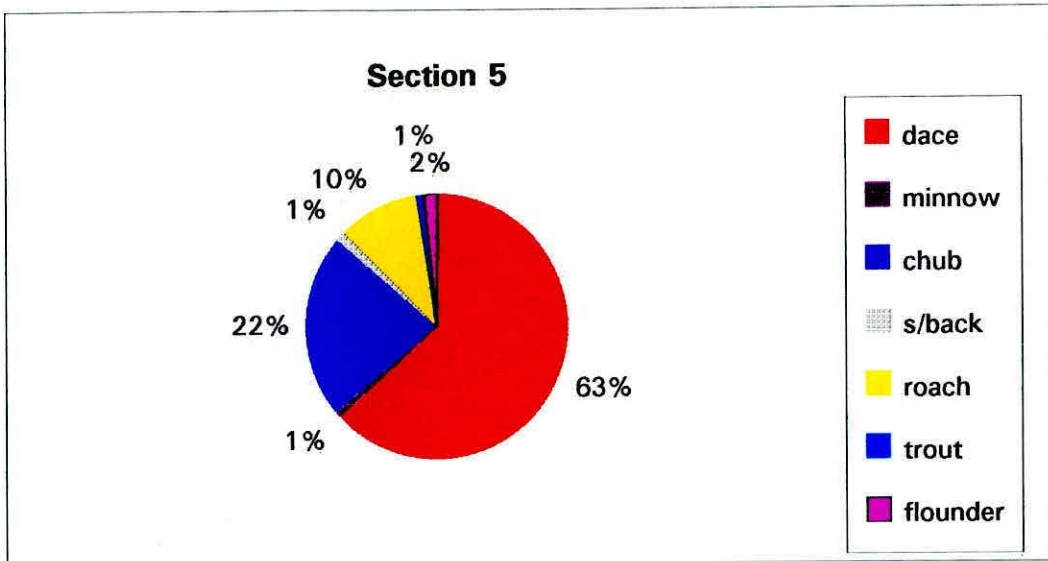
Fishing method Single anode from dinghy

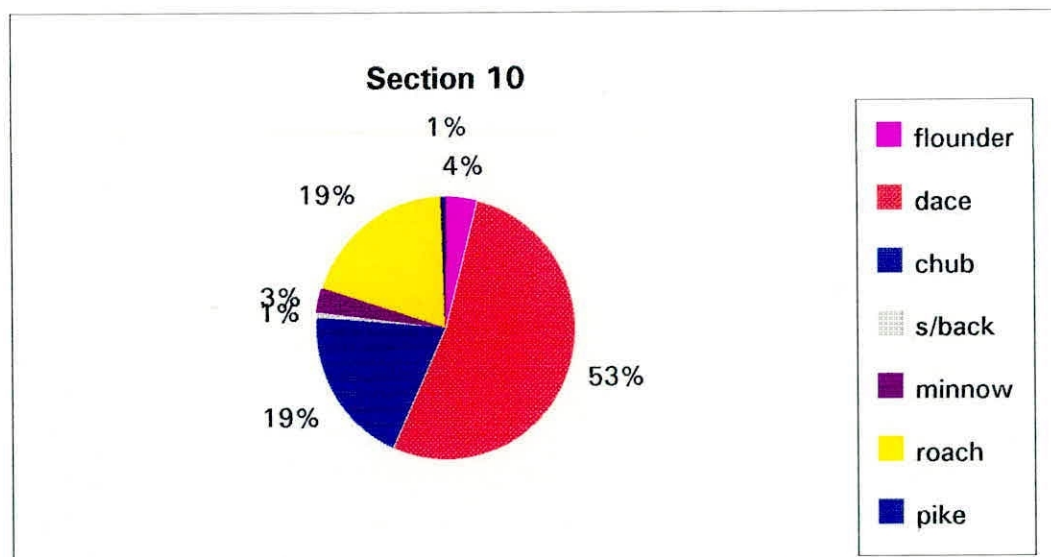
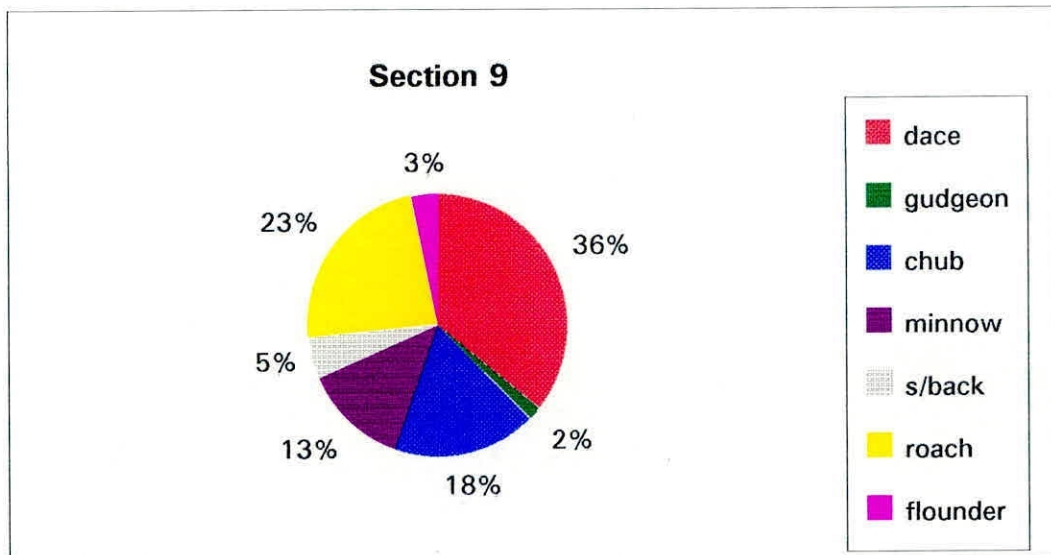
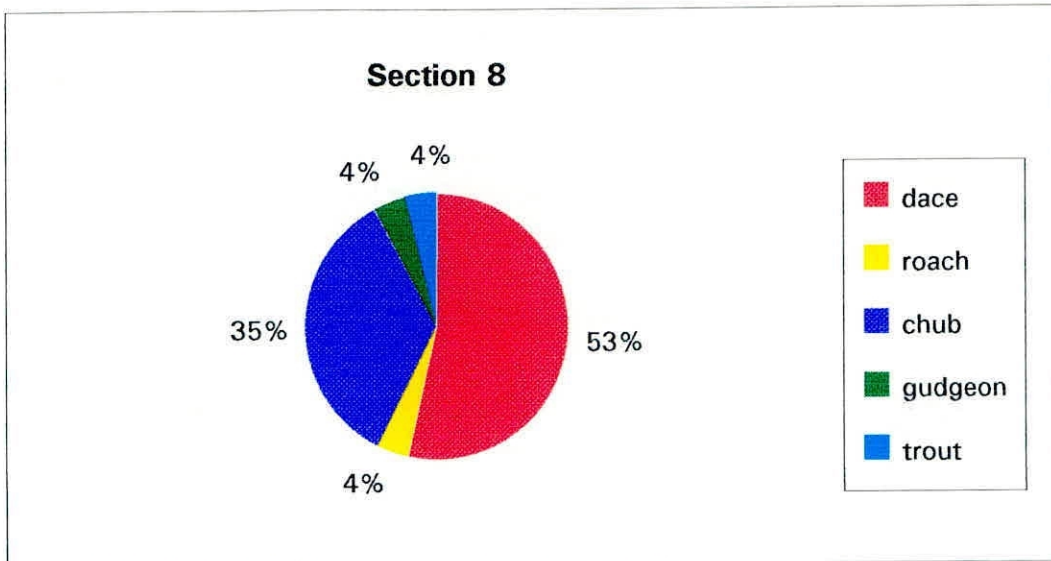
Site description Shallow water, silt substratum

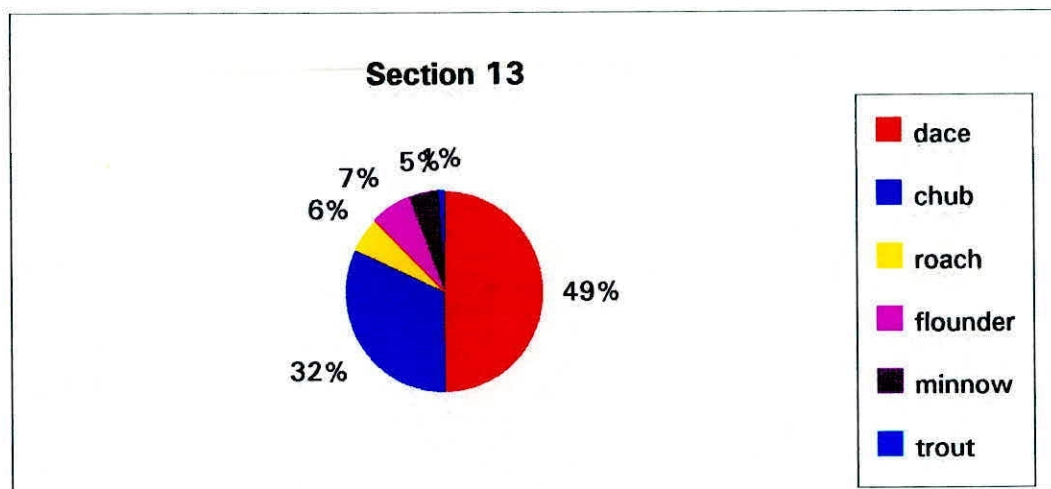
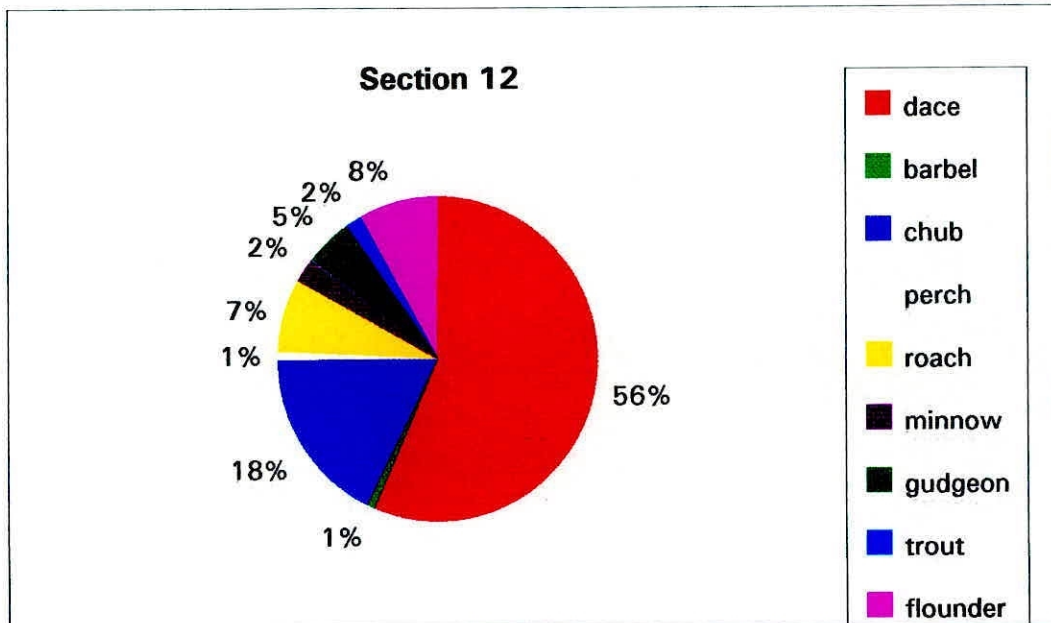
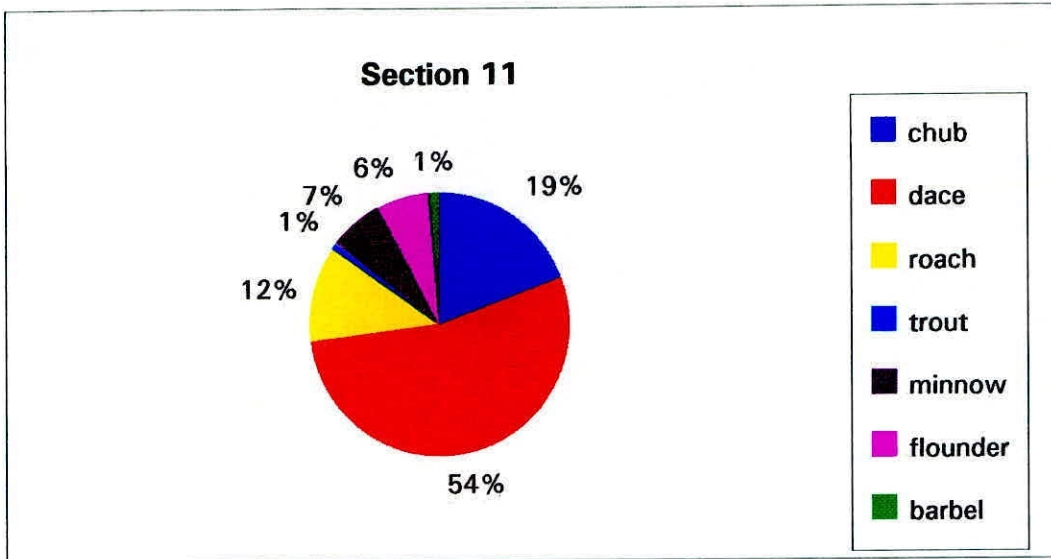
Species	No. of individuals	Size range (cm)
Barbel <i>Barbus barbus</i> (L.)	1	3.5
Bullhead <i>Cottus gobio</i> L.		
Chub <i>Leuciscus cephalus</i> (L.)	13	2.5-4.1
Dace <i>Leuciscus leuciscus</i> (L.)	6	4.4-11.6
Flounder <i>Platichthys flesus</i> (L.)	8	20.6-32.2
Grayling <i>Thymallus thymallus</i> (L.)		
Gudgeon <i>Gobio gobio</i> (L.)	101	2.5-9.3
Minnow <i>Phoxinus phoxinus</i> (L.)	63	1.6-4.2
River Lamprey <i>Lampetra fluviatilis</i> (L.)		
Roach <i>Rutilus rutilus</i> (L.)	68	2.1-9.9
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.	0 <30 cm	10 >30 cm

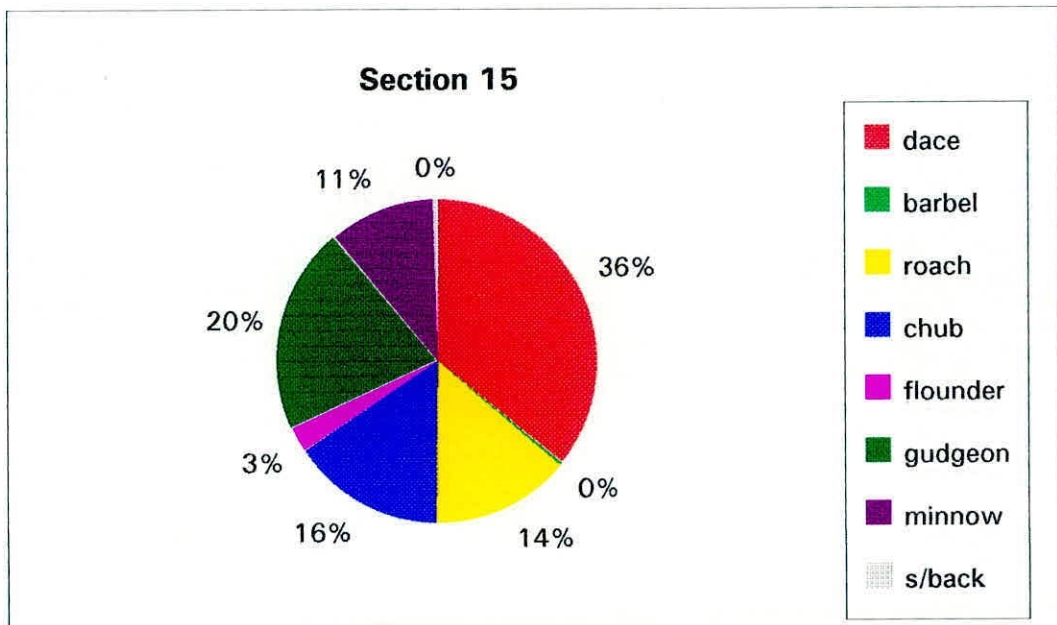
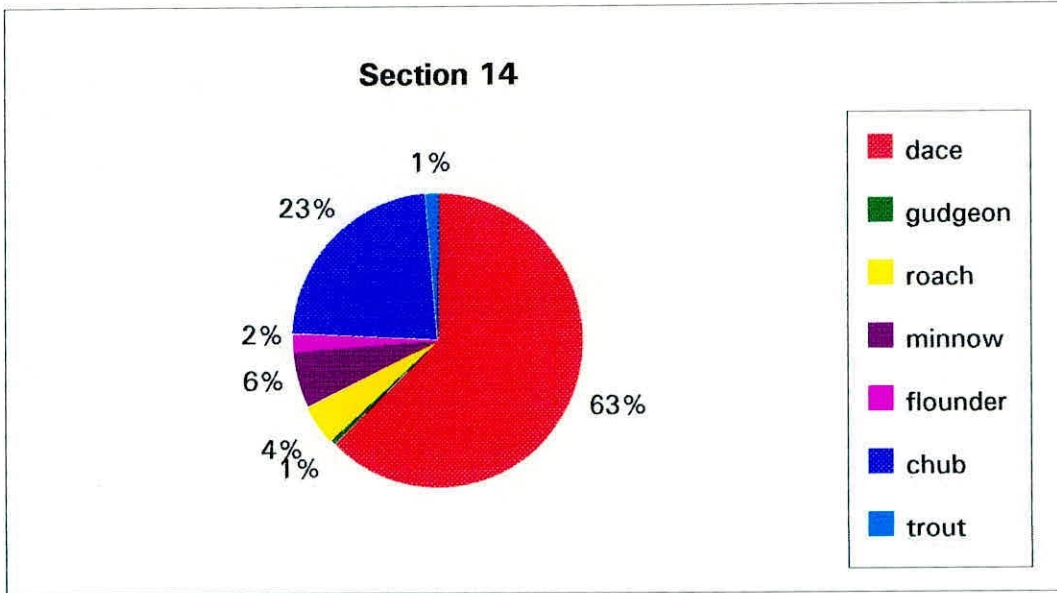
Appendix 6. Species composition of fish in each section in September 1995.

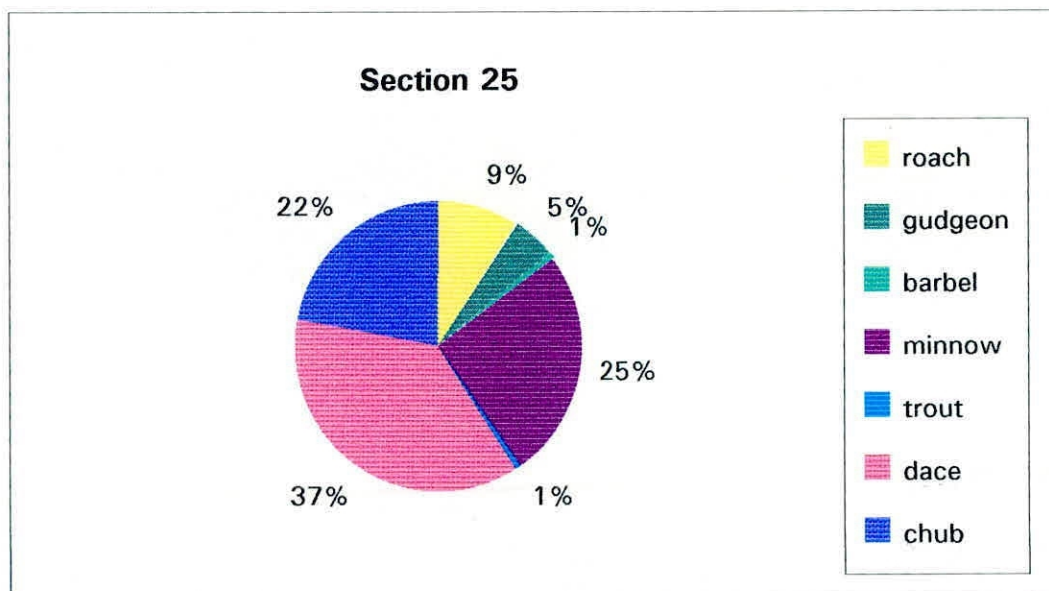
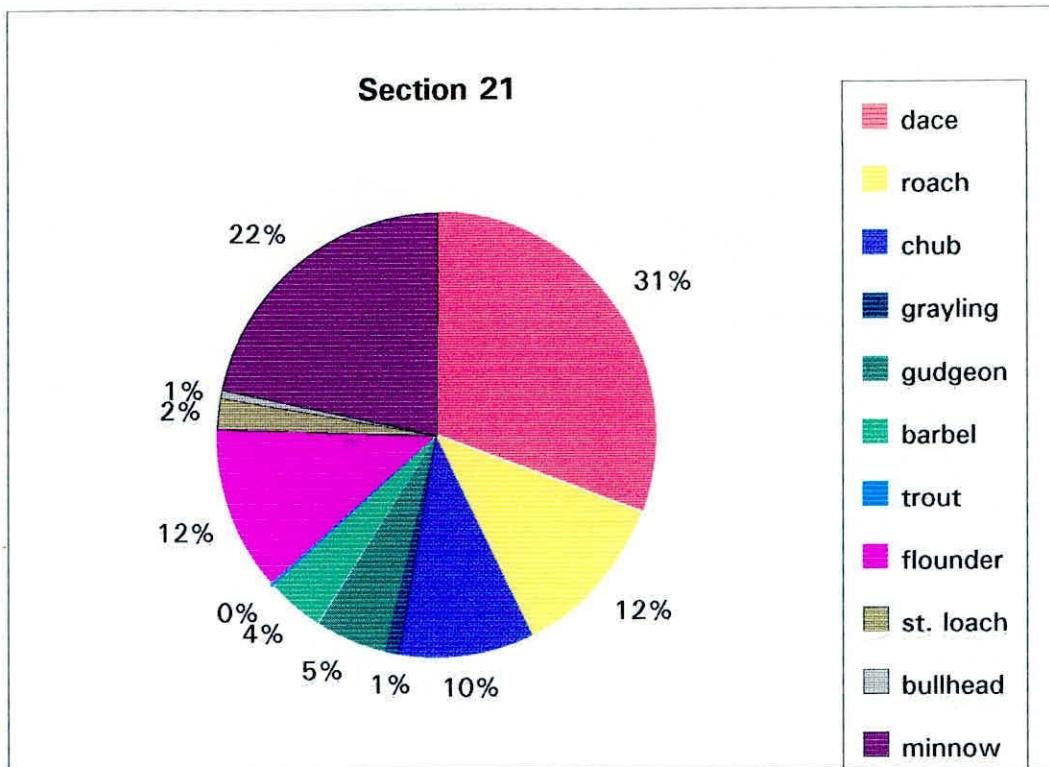




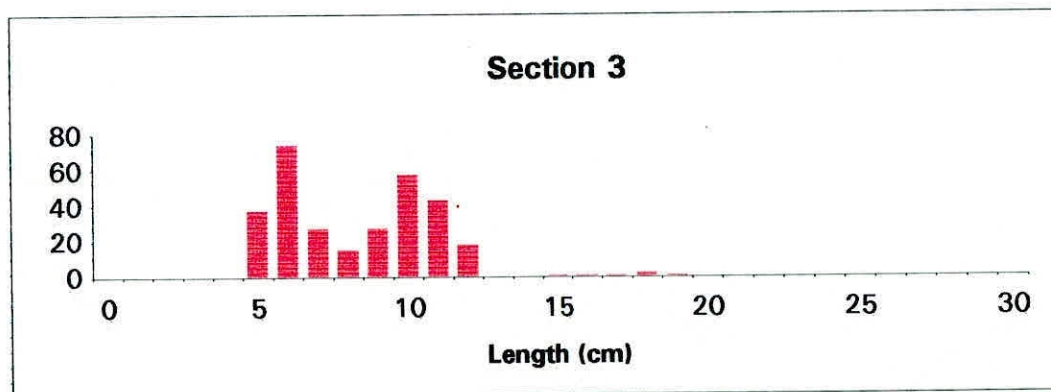
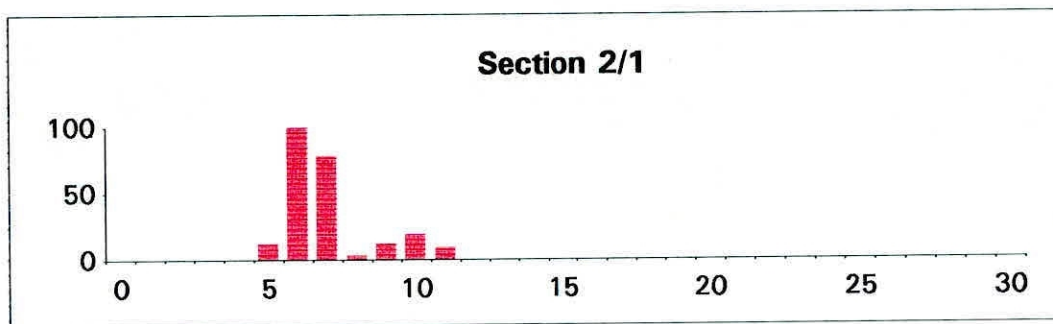
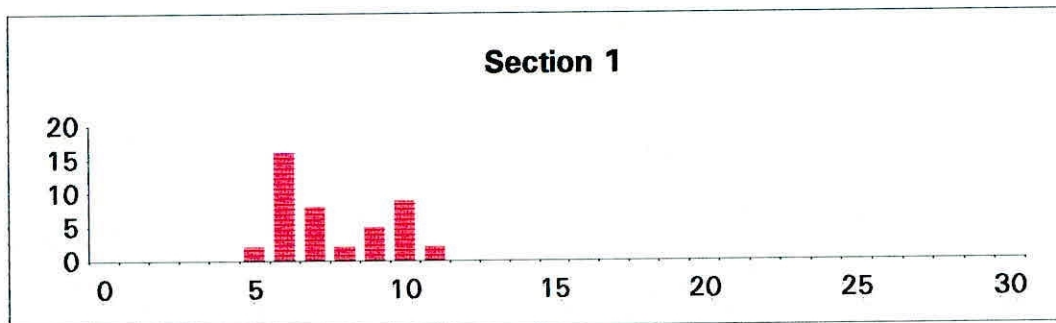
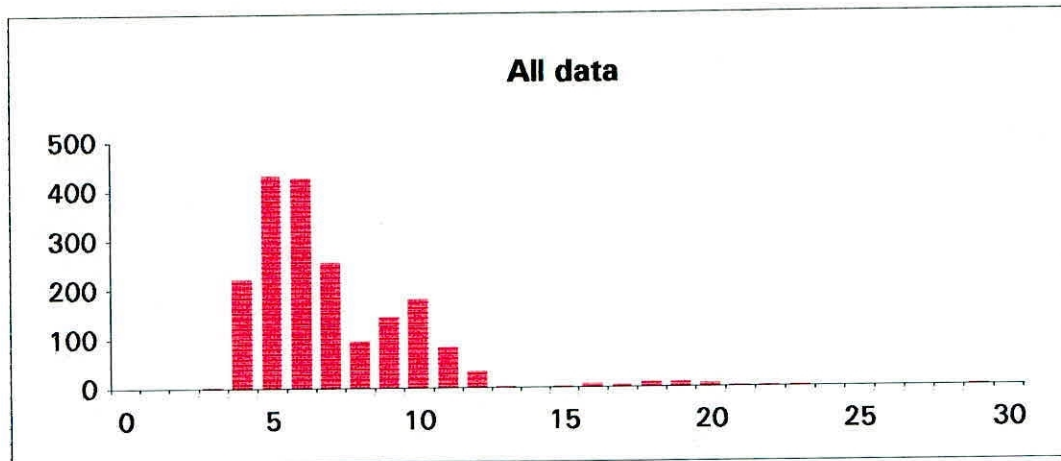




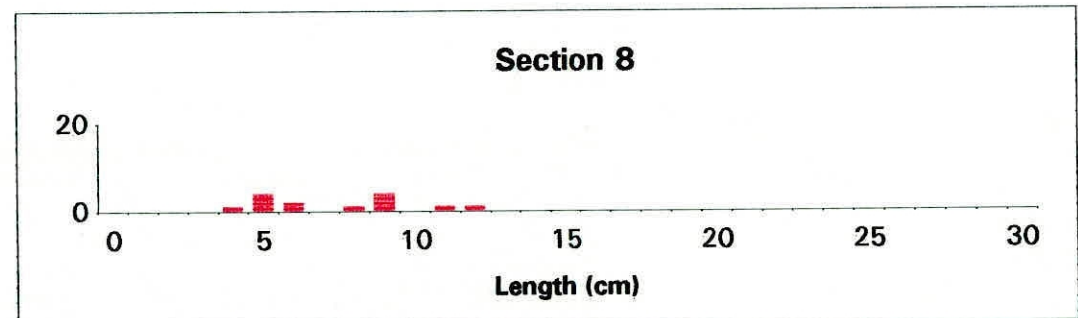
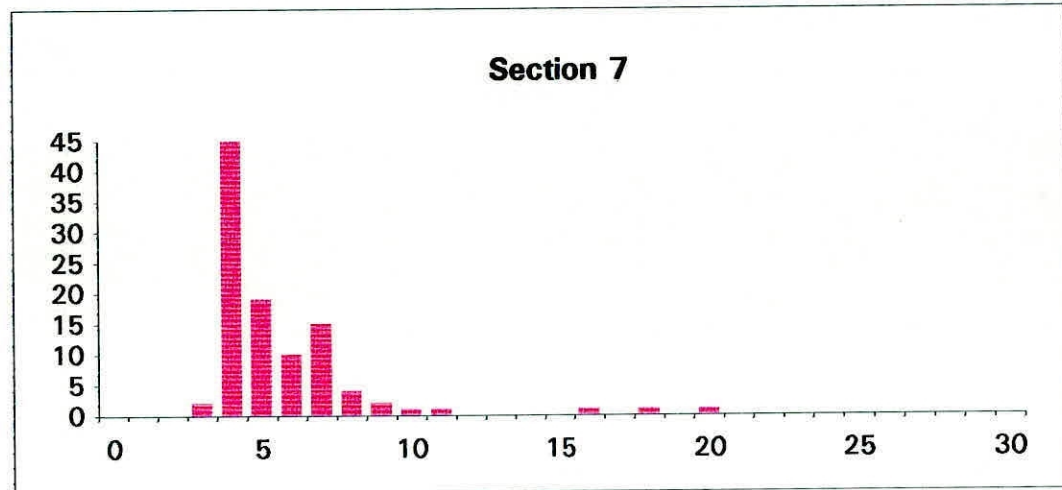
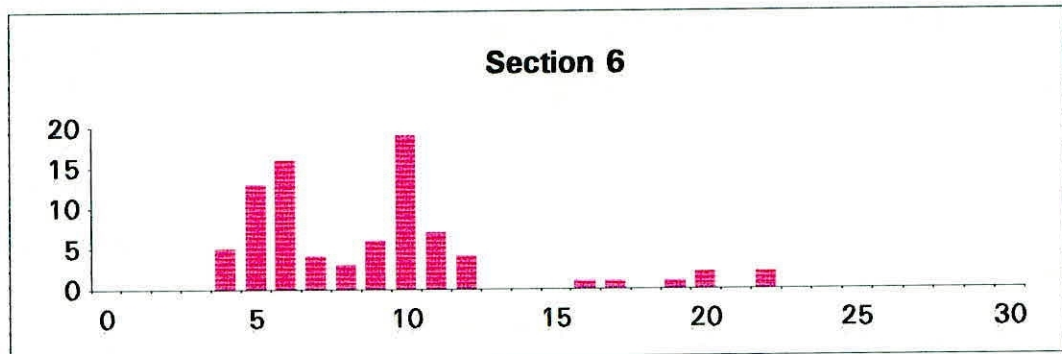
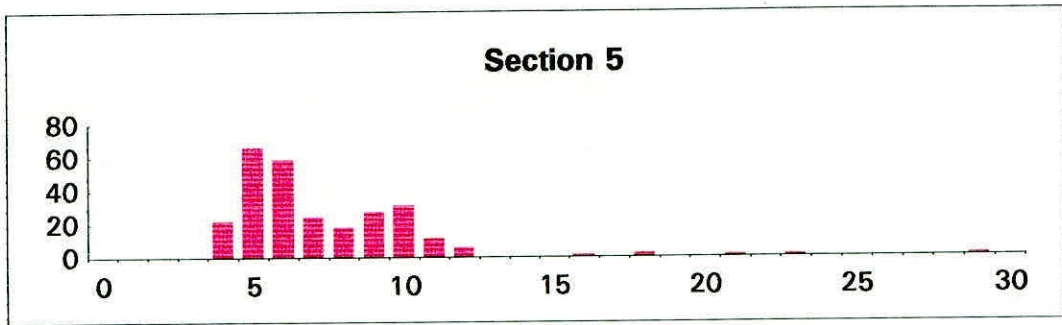




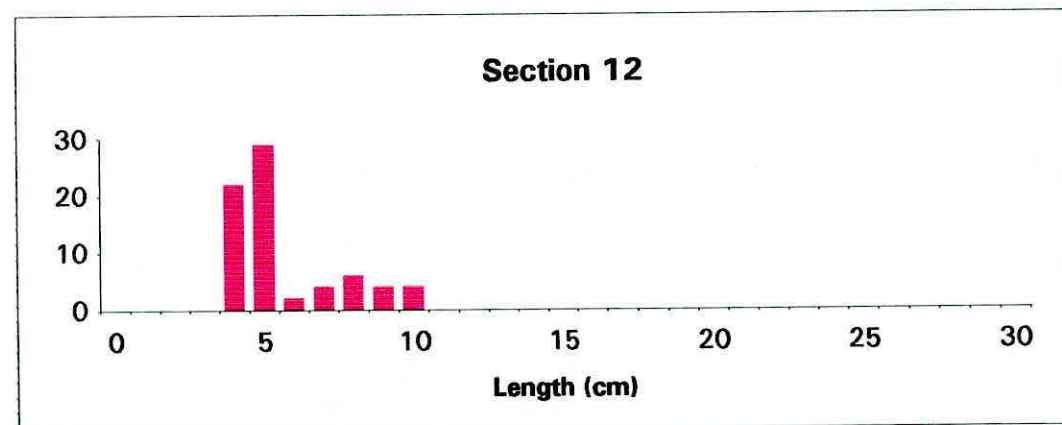
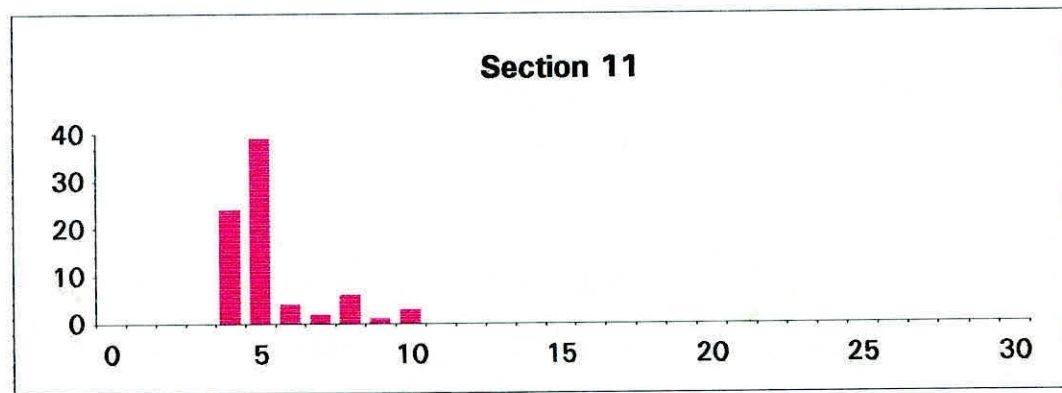
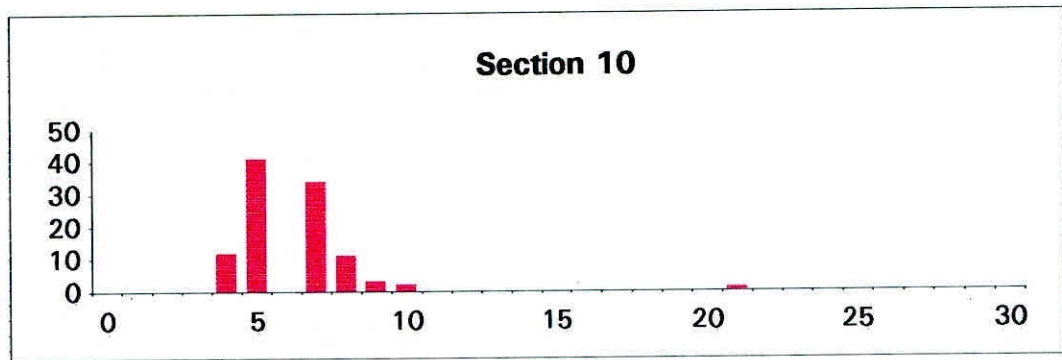
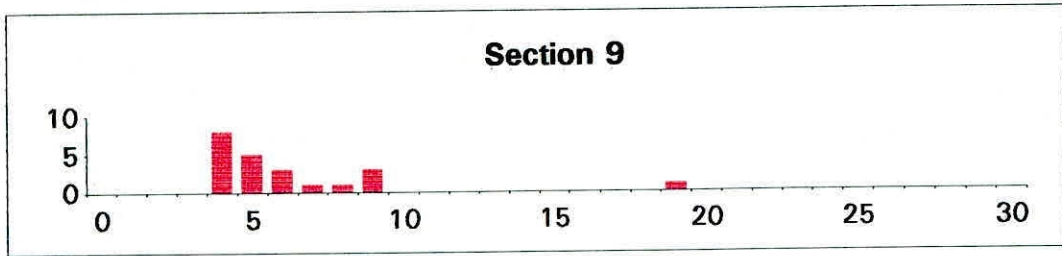
Appendix 7 Length frequency distribution of dace in the R.Tees in September 1995.



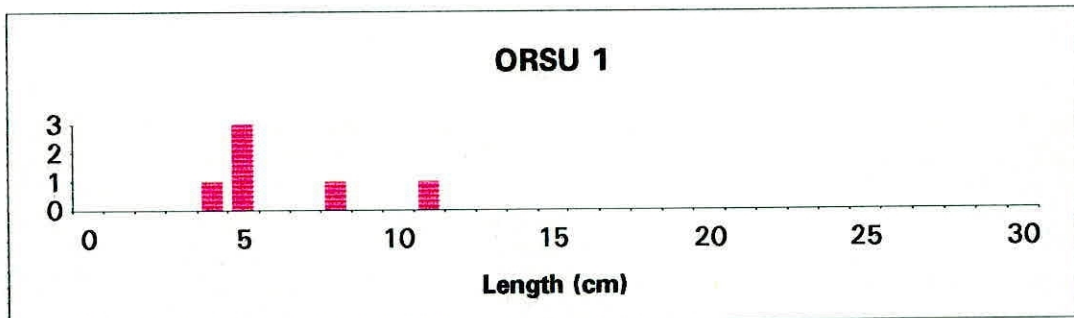
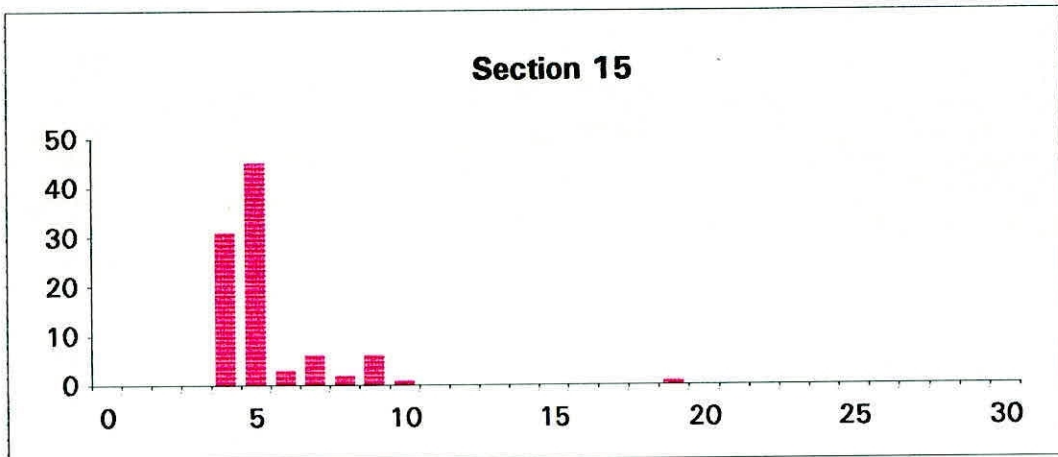
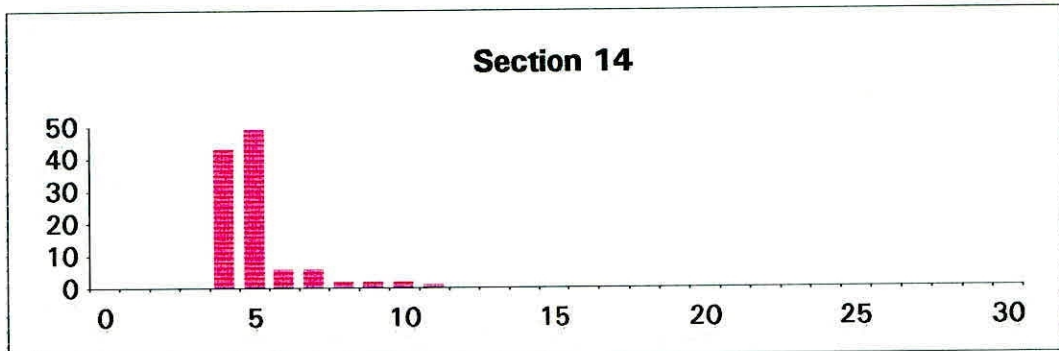
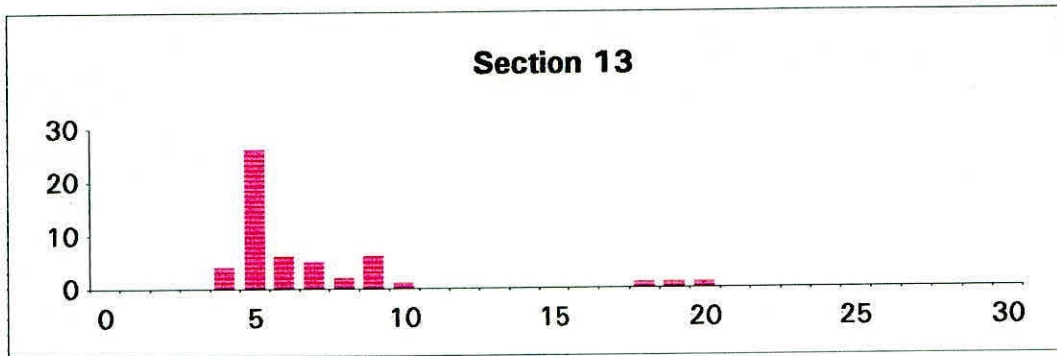
Appendix 7 continued



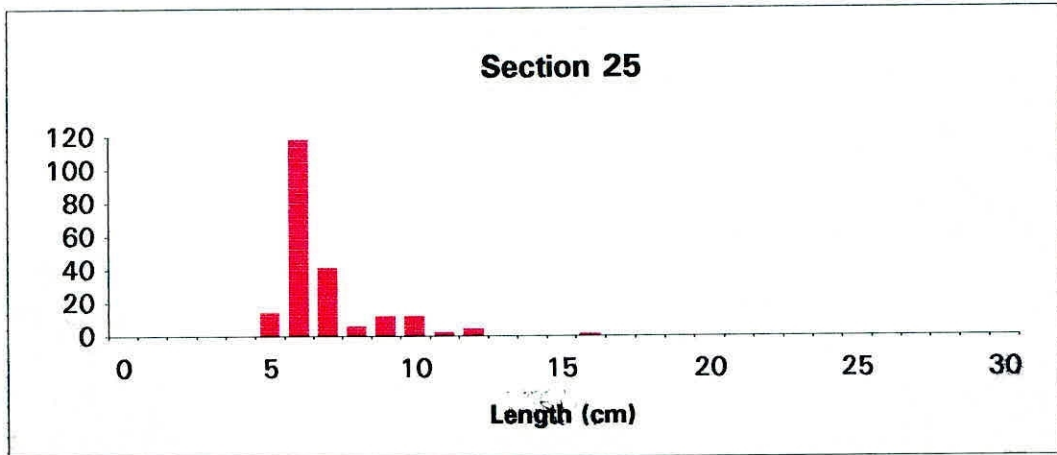
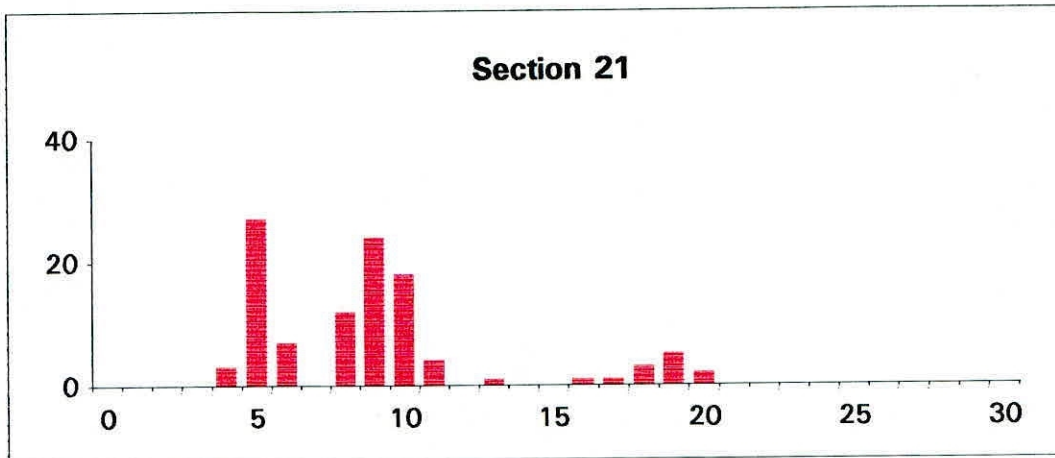
Appendix 7 continued



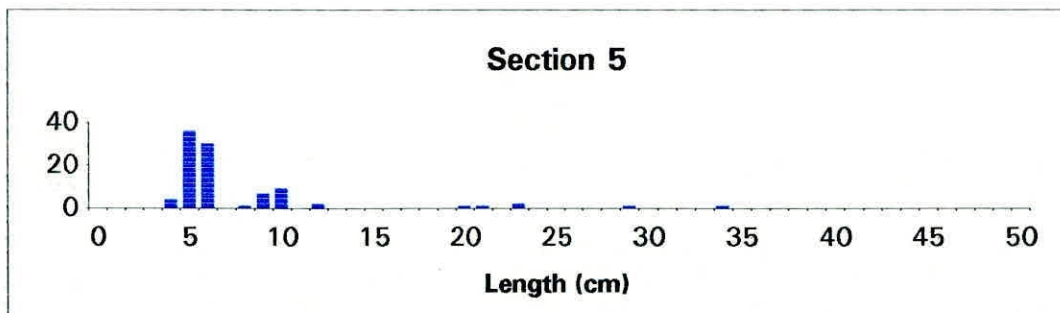
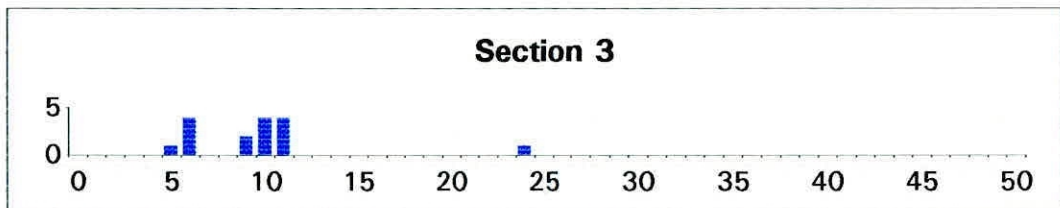
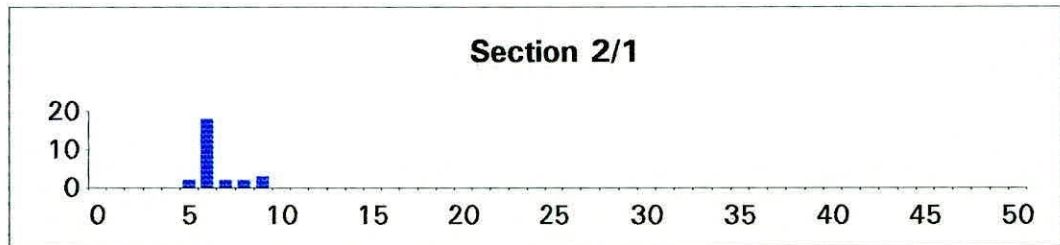
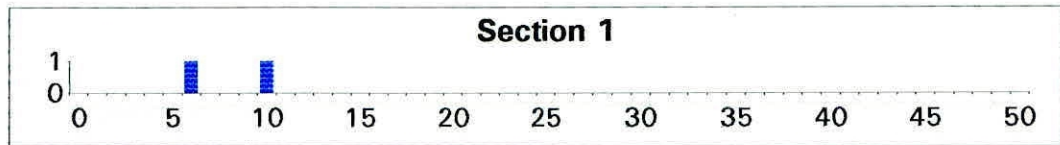
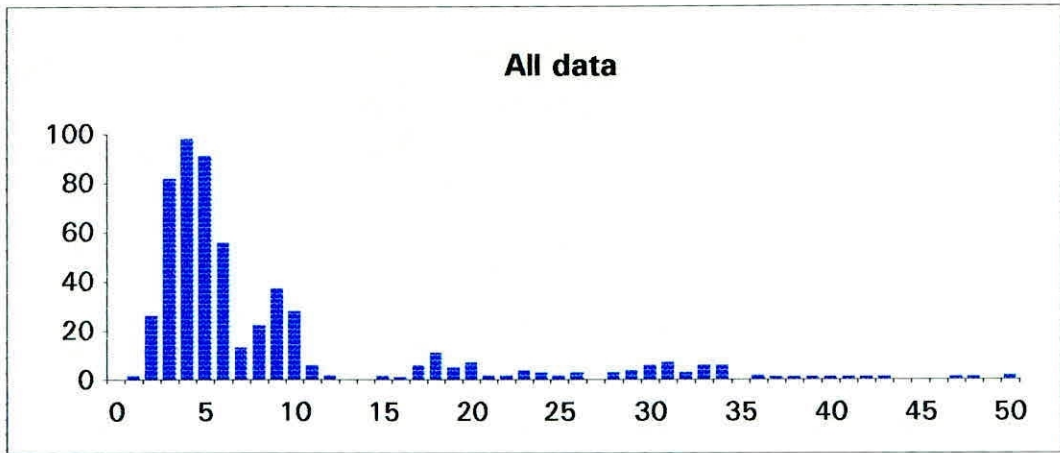
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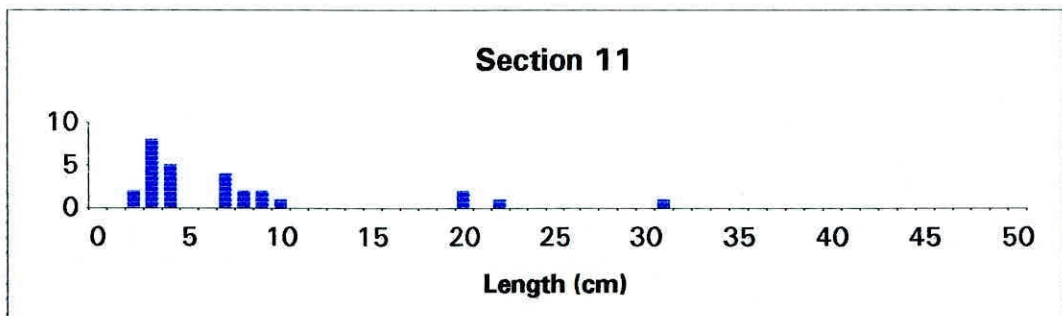
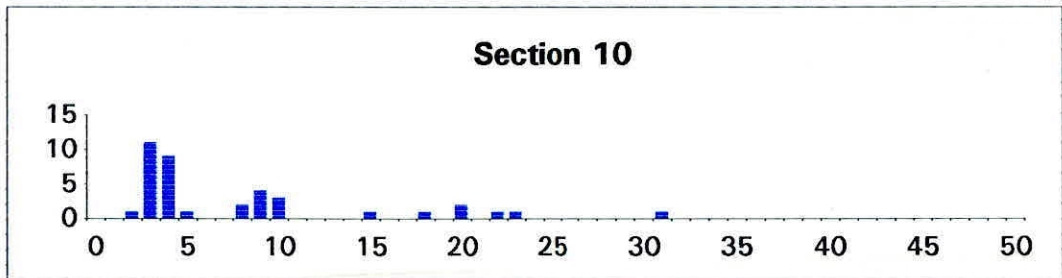
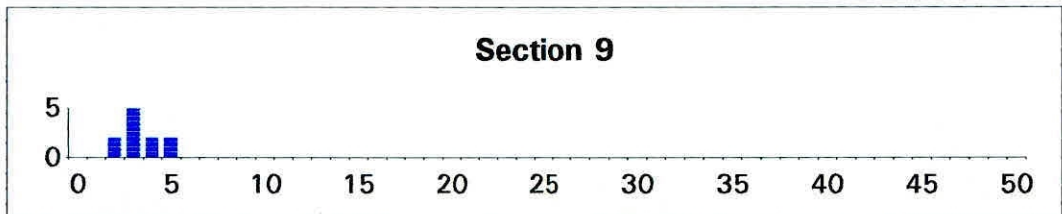
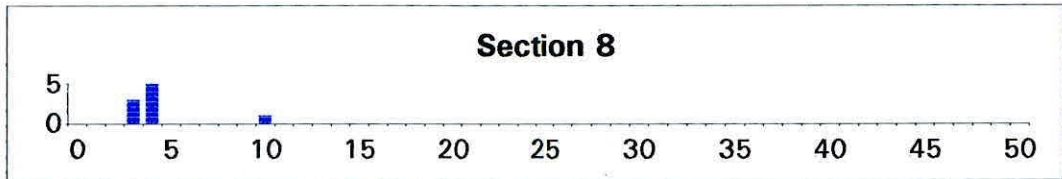
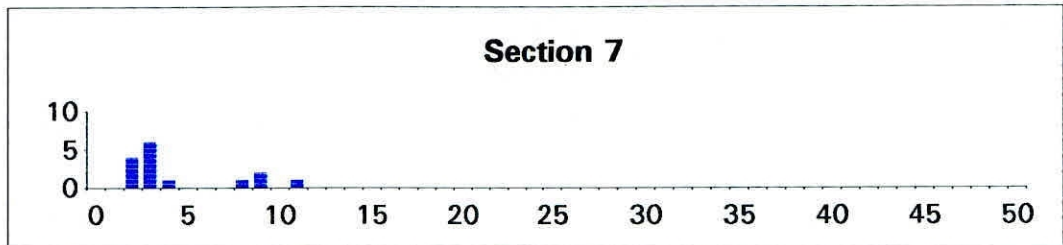
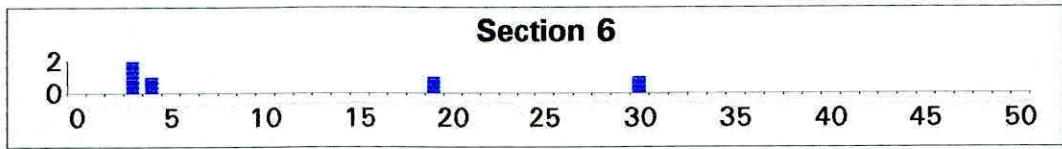
Appendix 7 continued



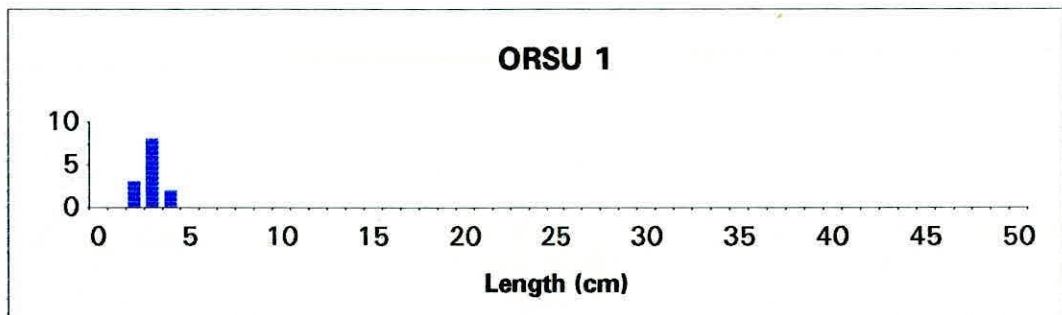
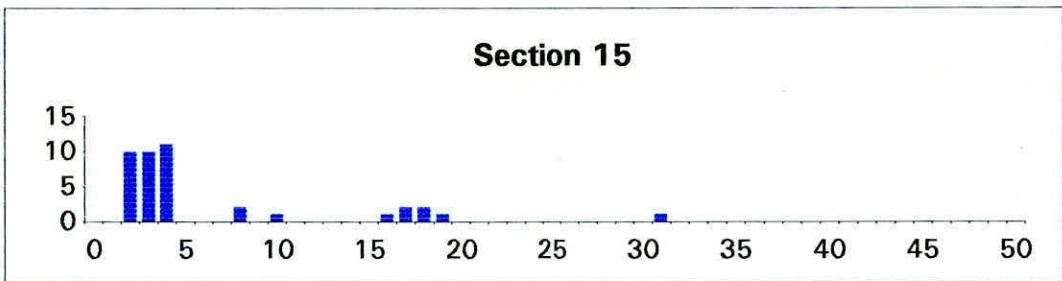
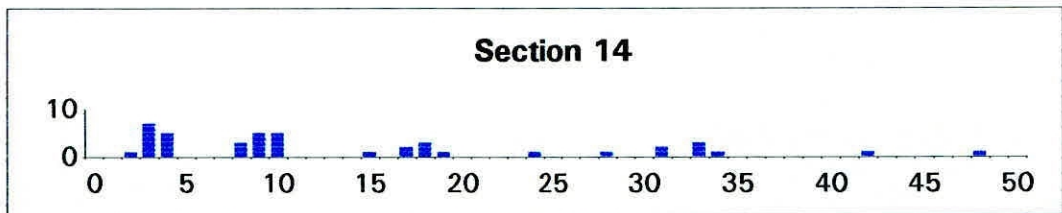
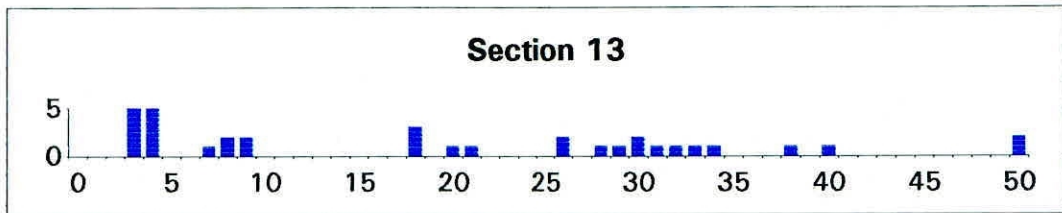
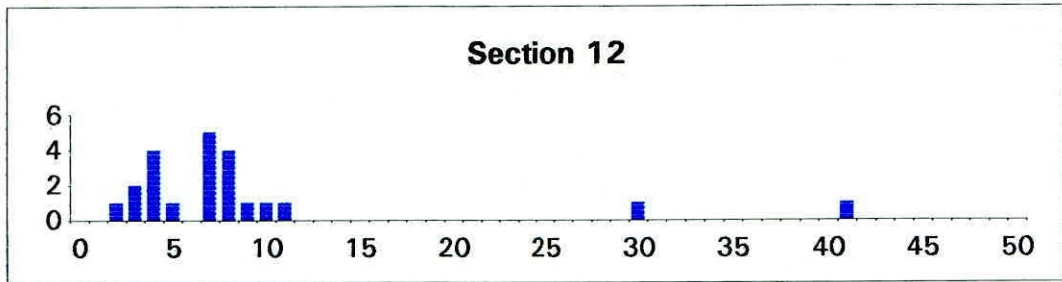
Appendix 8 Length frequency distribution of chub in each section of the R.Tees in September 1995.



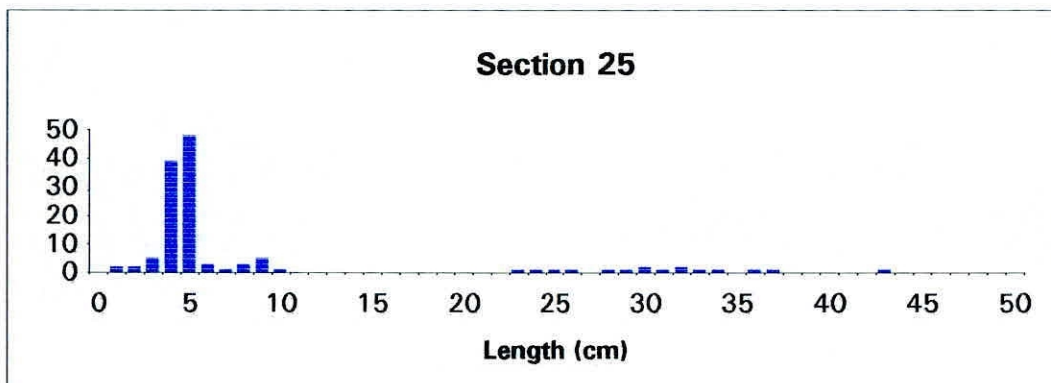
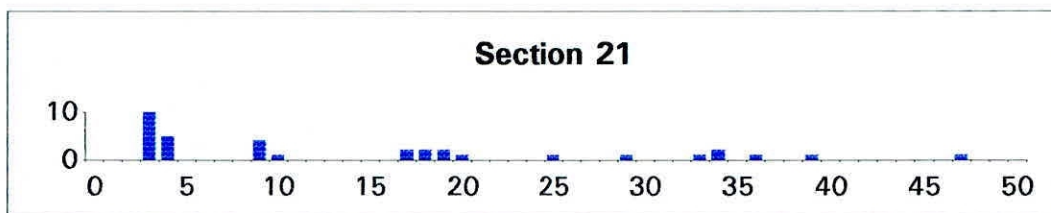
Appendix 8 continued



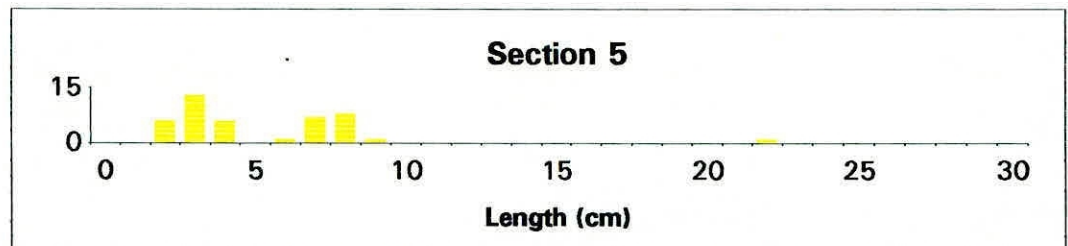
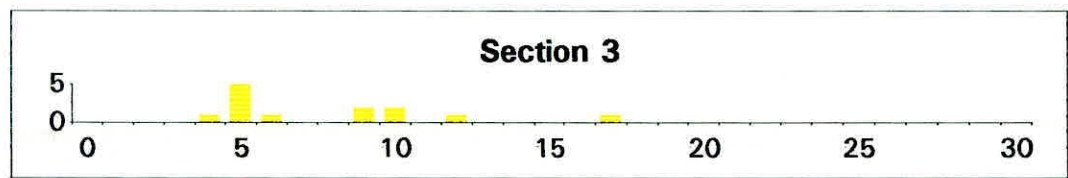
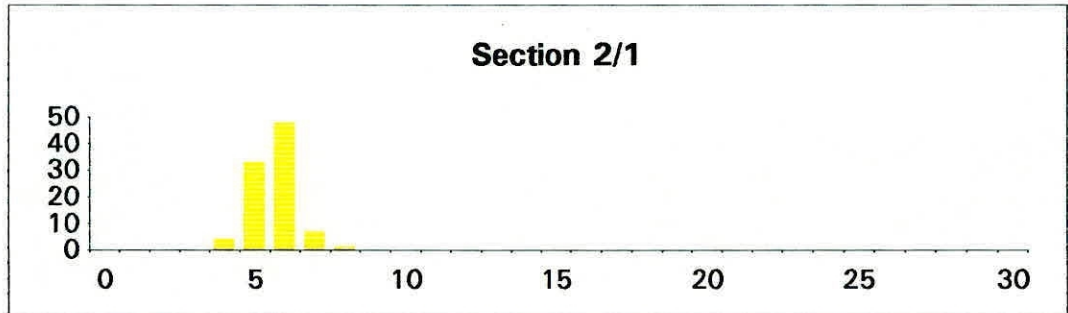
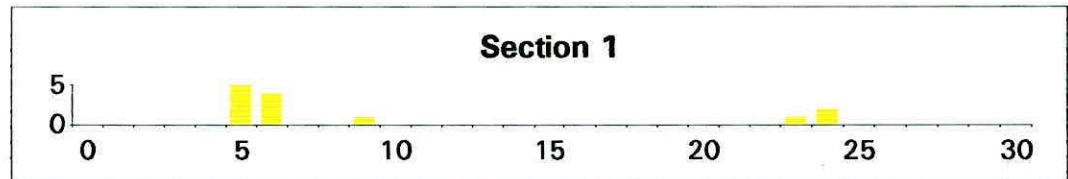
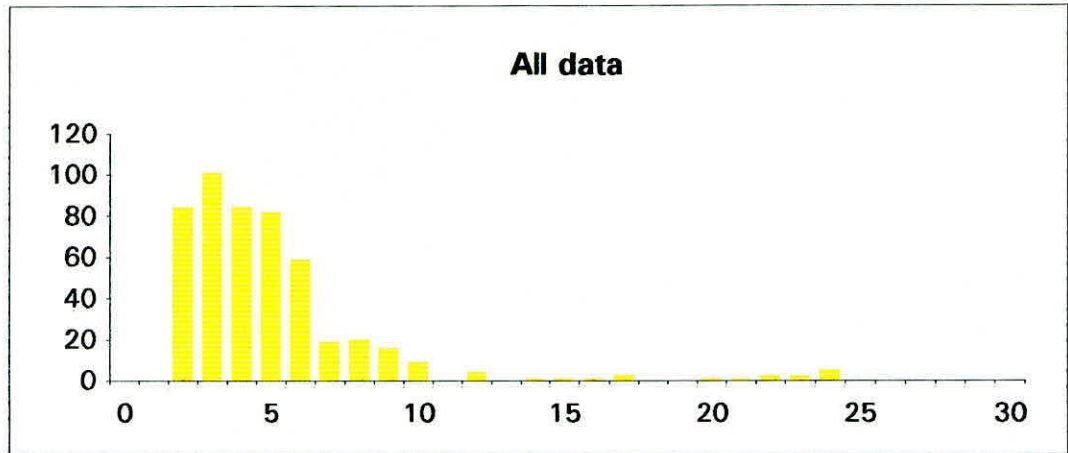
Appendix 8 continued



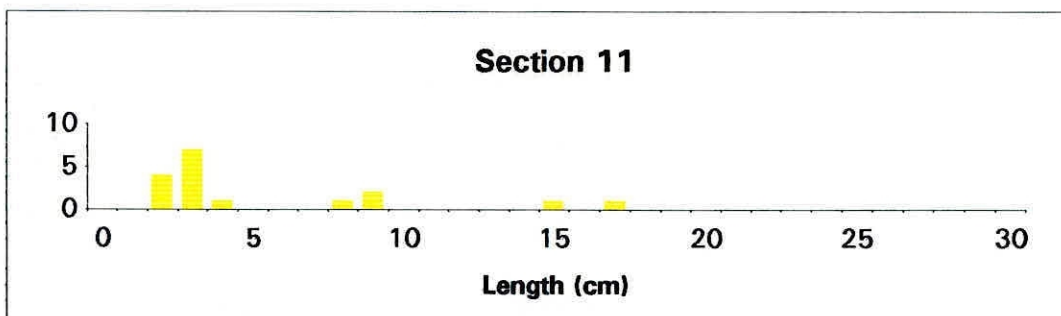
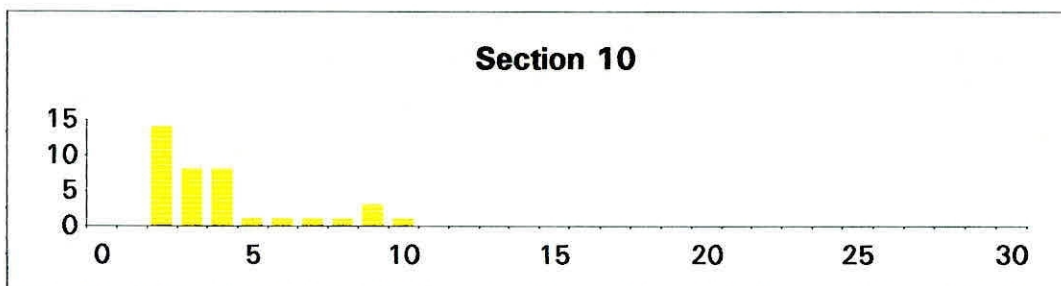
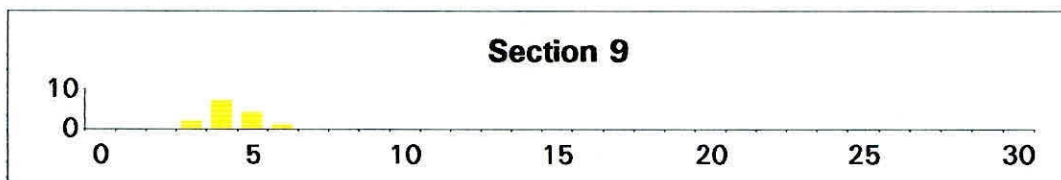
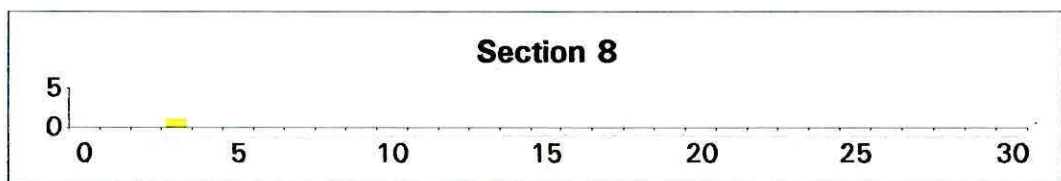
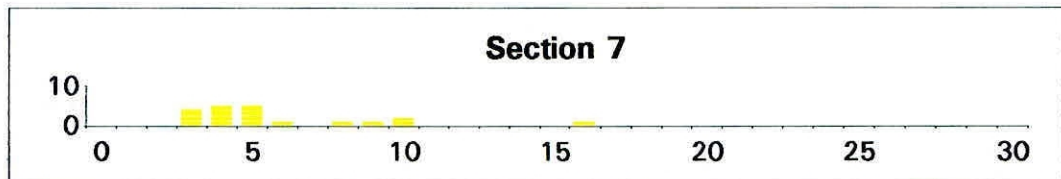
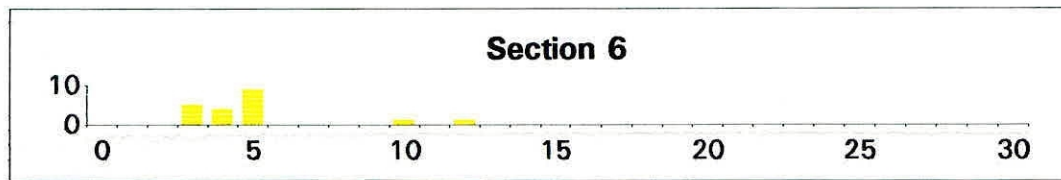
Appendix 8 continued



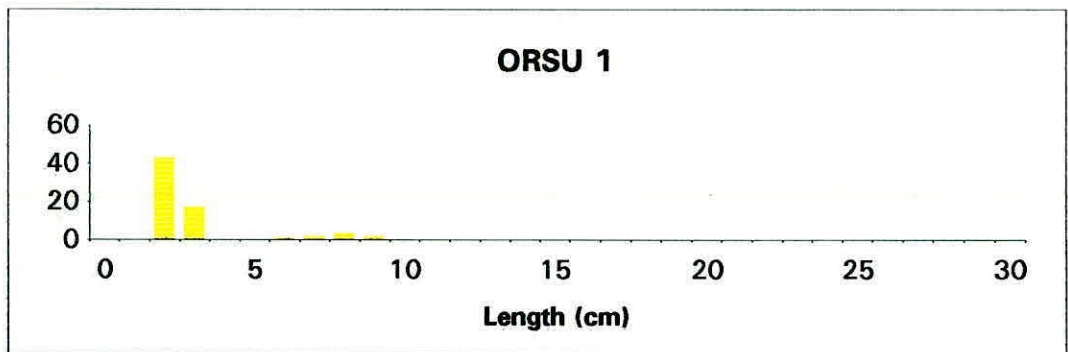
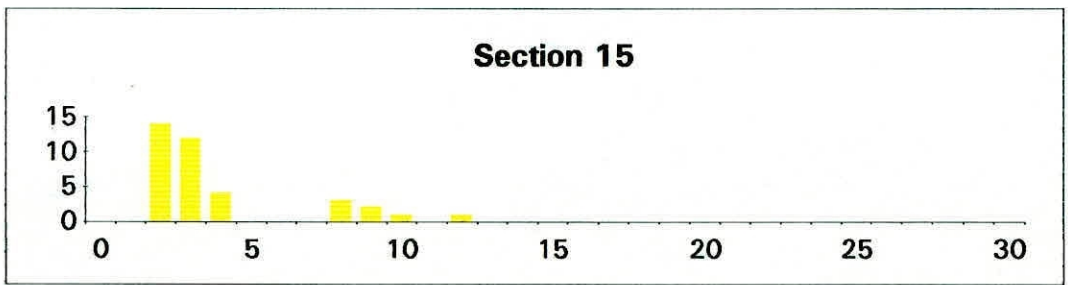
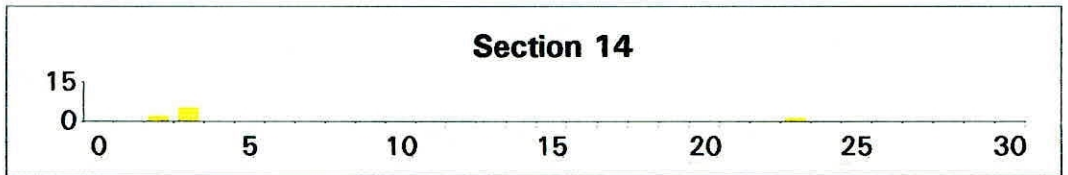
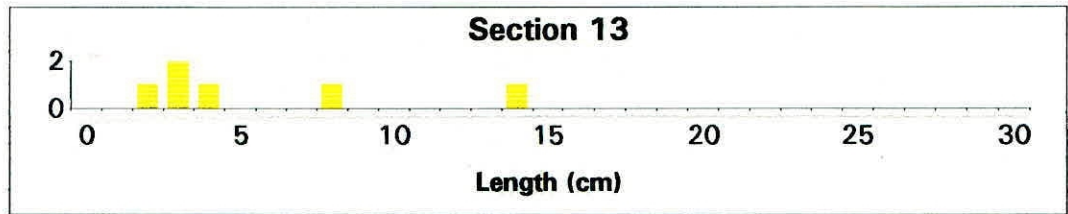
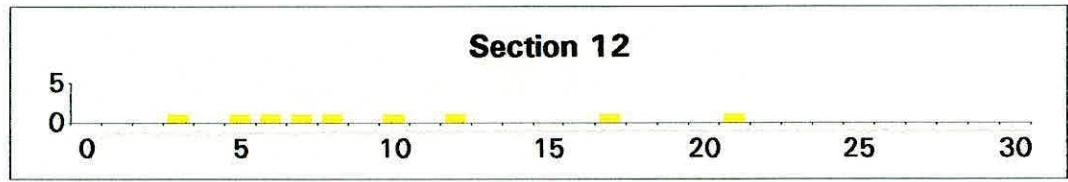
Appendix 9 Length frequency distribution of roach in each section of the R.Tees in September 1995.



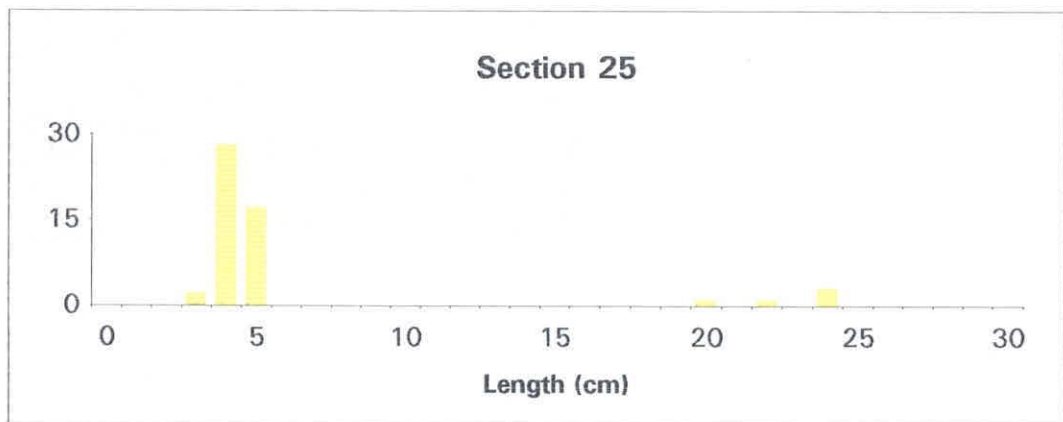
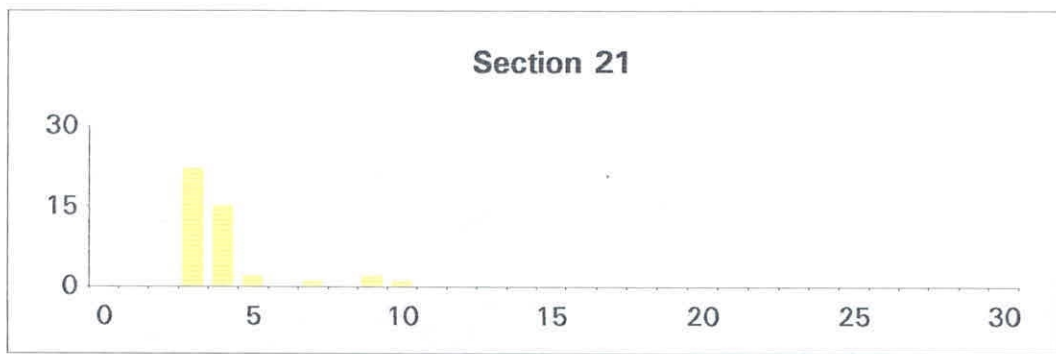
Appendix 9 continued



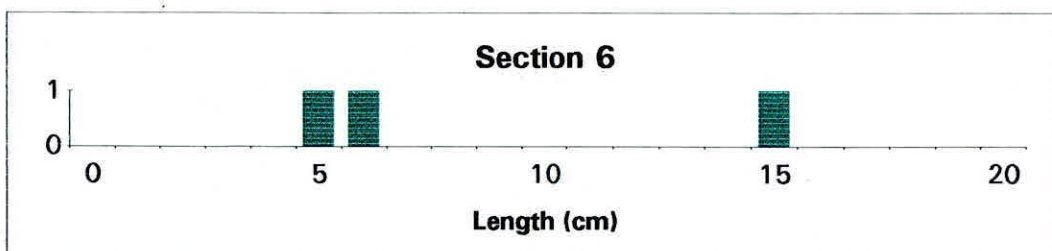
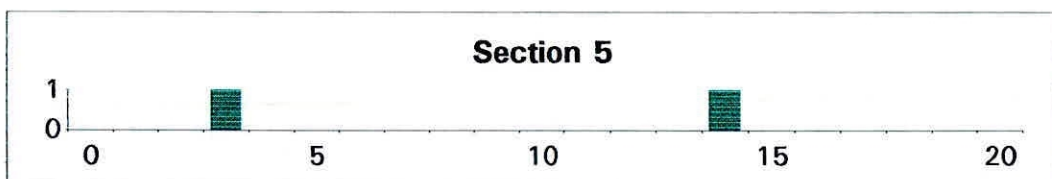
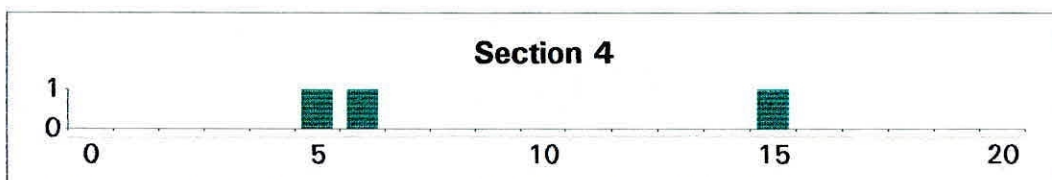
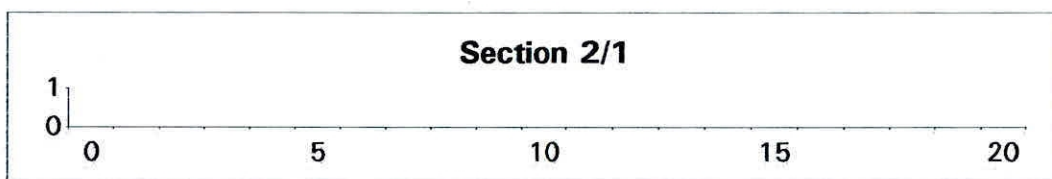
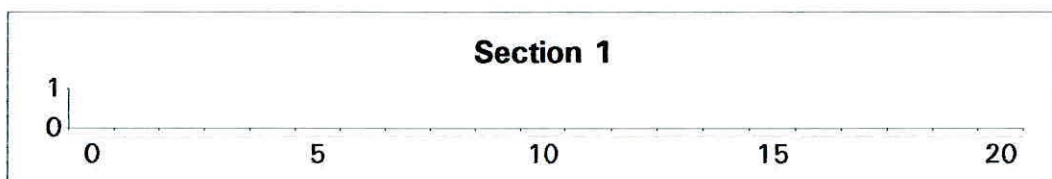
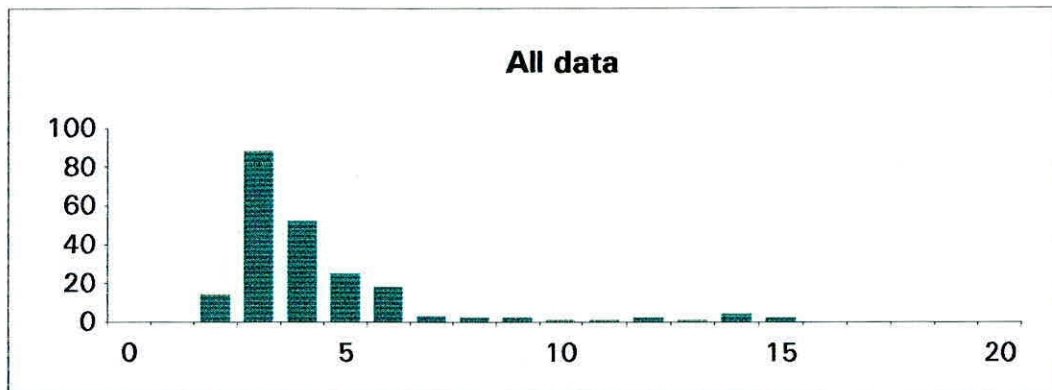
Appendix 9 continued



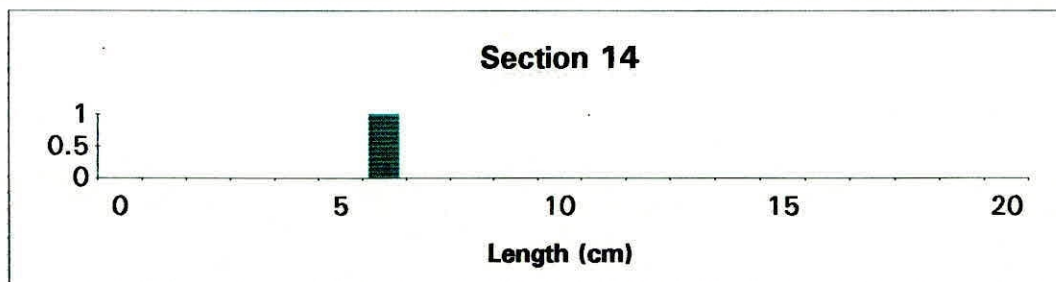
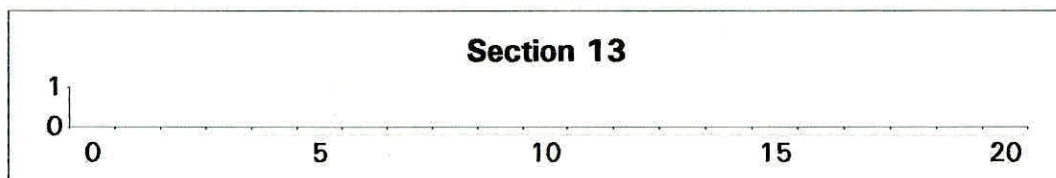
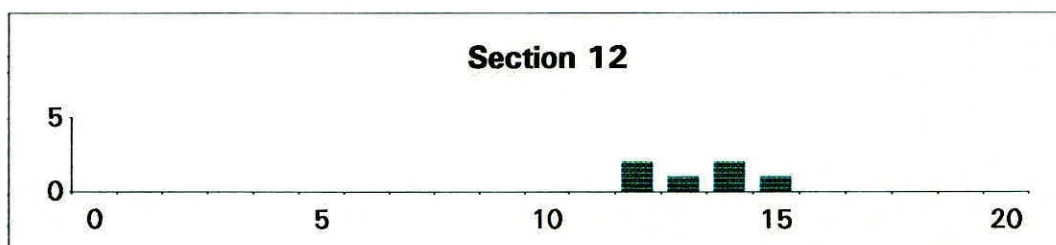
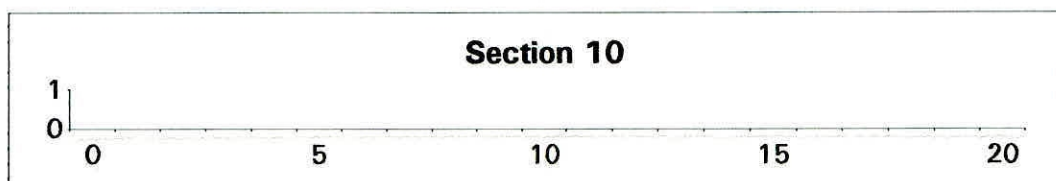
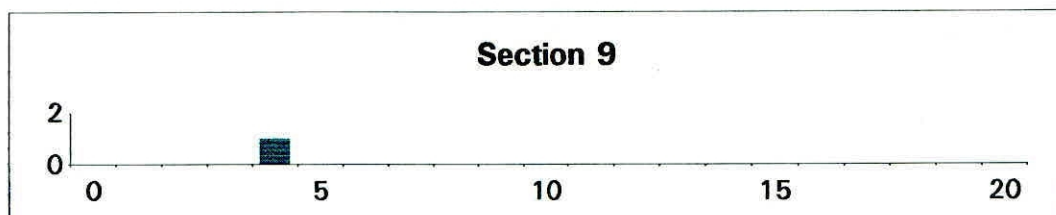
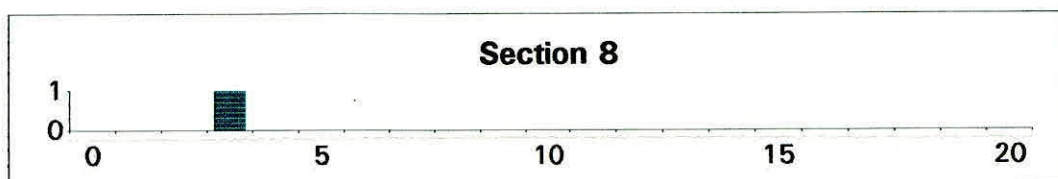
Appendix 9 continued



Appendix 10 Length frequency distribution of gudgeon in each section of the R.Tees in September 1995.



Appendix 10 continued



Appendix 10 continued

