

NORTH WESSEX ROUTINE SURVEY REPORT.
RIVER PARRETT 1994

1 INTRODUCTION

- 1.1 The River Parrett has its source near South Perrott and meanders in a northerly direction through Somerset passing the towns of Langport and Bridgwater on its way to the Bristol Channel.
- 1.2 The fisheries department of the North Wessex Area of the National Rivers Authority has a policy to undertake routine fisheries assessment surveys on a five year basis on catchments in this area. This 1994 survey is a repeat of the 1989 survey and includes all the freshwater part of the River Parrett but excludes the major tributaries the Rivers Yeo and Isle which are surveyed separately.

2 THE GEOLOGY OF THE CATCHMENT

- 2.1 The headwaters of the Parrett are fed by springs rising from the chalk and greensand hills south and southeast of Crewkerne. As the Parrett flows northward it is augmented by tributaries draining extensive outcrops of permeable Yeovil Sands from Shepton Beauchamp through Crewkerne to Odcombe, while the Broad River and the Chinnock Brook feed in the run off from vales of Fullers Earth clay. A salt spring at East Chinnock which once fed a copious saline flow into the Chinnock Brook dried up at about the time that a borehole was developed nearby.
- 2.2 Northwards again the Parrett enters an alluvial valley between low hills of Middle Lias siltstones and marls, east and west of Martock, then passes out onto wide alluvial flats where it is joined by the Isle and the Yeo. At Langport the hills of Lower Lias limestones and clays overlying Triassic red marls constrict the river into a narrow neck, then recede as the river crosses the alluvial Aller Moor to Oath Lock.

3 HYDROGEOLOGY AND ABSTRACTIONS

- 3.1 The River Parrett upstream of its confluence with the river Isle has a catchment of approximately 195 square kilometres. The River Isle drains an area of 165 square kilometres and the River Yeo drains an area of 400 square kilometres. This gives the entire catchment of the Parrett above the tidal limit an area of 760 square kilometres.
- 3.2 There is a gauging station at Chiselborough on the upper Parrett and Appendix 3 provides information on flow and other hydrological information.
- 3.3 There are 15 abstraction licences from surface waters for spray irrigation, or industrial purposes within the catchment (excluding the Rivers Isle and Yeo). Four licences have low flow conditions and two incorporate the provision for storage reservoirs. The total licensed abstraction represents slightly less than a quarter of the 95% exceeded flow.
- 3.4 Five large weirs or sluice structures break up the middle reaches into isolated stretches. These weirs are Thorney Mill hatches, Ham weir and

Gawbridge hatches, Parrett Works hatches, Joylers Mill hatches and Petherton Bridge hatches.

4 FRESHWATER WATER QUALITY

- 4.1 Under the N.R.A's new General Quality Assessment classification of water quality the 1993 results are displayed in Table 1.

TABLE 1

Stretch	Site NGR	Class
Chedington-South Perrott STW	ST 470 074	C
South Perrott STW conf with Mistrn Str	ST 470 077	C
Conf with Mistrn Str-Cnf with Crewkerne Bk	ST 470 077	C
Conf with Crewkerne Bk-conf with Broad	ST 459 110	C
Conf with Broad-Conf with Merriot Str	ST 458 132	C
Conf with Merriot Str-conf with Chink Bk	ST 458 132	C
Conf with Chinnock Bk-Conf with Lopen Bk	ST 461 144	B
Conf with Lopen Bk u/s Petherton Br	ST 445 187	B
U/s Petherton Br-Martock Weir	ST 445 187	B
Martock Weir-Conf with Lam Bk	ST 445 187	B
Conf with Lam Bk-conf with Wellhams Bk	ST 445 187	B
Conf with Wellhams Bk-Kingsbury Episcopi	ST 444 199	B
Kingsbury Episcopi-conf with Isle	ST 427 229	B
Conf with Isle-conf with Yeo	ST 427 229	B
Conf with Yeo-Sowy	ST 415 266	C
Conf with Sowy-Oath Lock (start of estuary)	ST 409 276	D

- 4.2 There are occasionally impacts on the main watercourse from the discharges to tributaries. The Chinnock Brook has a problem with low dissolved oxygen which is exacerbated by sewage discharges. The Broad River has a similar problem.
- 4.3 There was a serious pollution incident in 1994 on the Merriott stream. This was implicated at the time in low dissolved oxygen results in the Parrett.

5 THE TIDAL PARRETT

- 5.1 Although the survey sites did not include the tidal reaches these do contain migratory salmonids, eels and coarse fish. In flood considerable numbers of coarse fish are believed to move into the tidal area.
- 5.2 The lower reaches of the tidal river have a number of large consented discharges which can have impacts both downstream and upstream because of the tidal movement. These include partially treated and seasonally chlorinated effluent from sewage treatment works at Bridgwater and West Huntspill and large trade discharges from Courtaulds and Royal Ordnance.
- 5.3 When summer penning commences on the Parrett at Oath any coarse fish downstream cannot move above the structure and will be confined to the tidal reach throughout a dry summer. If freshwater overflow ceases there will be an increase in salinity and the impact of discharges and it is likely that significant mortality can occur.



- 5.4 The tidal River Tone which joins the Parrett at Burrowbridge has a more sustained freshwater input and it is possible that some coarse fish from the Parrett will move into the Tone and survive. There is a salmon pass from the tidal Tone to the freshwater reaches and this may be passable by coarse fish under certain circumstances.

6 SURVEY SITES

- 6.1 There were 14 sites surveyed and are shown on the attached map (Appendix 1). Table 2 lists all site details.

TABLE 2

NAME:	D/S LECHER	NORTH PERROTT	HASELBURY BRIDGES
CODE:	PA1B	PA1C	PA1D
DATE:	15/07/94	12/07/94	30/06/94
WIDTH(M)	2.4	2.7	3.9
LENGTH(M)	106	89	101
DEPTH(M)	.3	0.5	1.4
AREA(HA)	.025	0.024	0.039
WEED (%)	7	9	14
SHADE(%)	0	0	5
NAME:	U/S BROAD RIVER	U/S CHINMOCK BROOK	U/S LOPEN BROOK
CODE:	PA1E	PA1F	PA1G
DATE:	29/06/94	06/07/94	05/07/94
WIDTH(M)	3.0	3.6	4.1
LENGTH(M)	104	90	92
DEPTH(M)	1.3	1.0	1.4
AREA(HA)	0.031	0.032	0.038
WEED (%)	39	1	15
SHADE(%)	0	0	0
NAME:	D/S PETHERTON B'	D/S PARRETT WORKS	D/S GAWBRIDGE MILL
CODE:	PA1H	PA1J	PA1L
DATE:	08/06/94	07/06/94	02/06/94
WIDTH(M)	7.1	10.4	6.6
LENGTH(M)	90	96	99
DEPTH(M)	1.9	1.8	1.8
AREA(HA)	0.064	0.100	0.065
WEED (%)	57	11	11
SHADE(%)	0	0	5
NAME:	U/S COMBE BRIDGE	D/S THORNEY B'	U/S MUCHELNEY
CODE:	PA1M	PA1O	PA1P
DATE:	01/06/94	09/06/94	21/06/94
WIDTH(M)	11.7	8.1	14.7
LENGTH(M)	110	100	94
DEPTH(M)	1.8	1.3	2
AREA(HA)	0.129	0.081	0.138
WEED (%)	60	5	36
SHADE(%)	0	0	0
NAME:	U/S YEO CORNER	D/S LANGPORT VIADUCT	
CODE:	PA1R	PA1V	
DATE:	15/06/94	14/06/94	
WIDTH(M)	15.8	25.9	
LENGTH(M)	89	95	
DEPTH(M)	2.0	2	
AREA(HA)	0.141	0.246	
WEED (%)	9	8	
SHADE(%)	0	0	

7 FISHERY SURVEY METHOD

- 7.1 In 1989 the survey sites were chosen by dividing the River Parrett into two kilometre lengths in which a 100m survey length was selected using random numbers. The 1994 survey repeated all these sites except for one: PA1W, Above Oath Sluice, which was unfishable due to dredging.

7.2 All sites apart from PA1P, PA1R and PA1V were fished upstream using pulsed DC electric fishing apparatus from both boat and wading method. The remaining three sites were seine netted in two 50m sections. In the netted sites a sample of fish from one section was marked and placed in the second section to provide a simple estimate of capture probability.

7.3 Table 2 gives details of the sites and Appendix 1 indicates their position on the relevant Ordnance Survey map.

8 RESULTS

8.1 All fish over 10cm were measured and weighed. Most of the fish greater than 10cm had their scales removed for ageing purpose at a later date.

8.2 Figure 1 displays the biomass of fish greater than 10cm captured on the Parrett and Figure 2 displays the density of fish greater than 10cm. Figures 3 and 4 respectively display the biomass and density of fish less than 10cm. Figures used to produce these figures are included as Appendix 2.

8.3 Figure 5 shows a comparison of brown trout density in 1989 and 1994 at five of the sites on the upper Parrett.

9 DISCUSSION

9.1 The top sites from South Perrott to Petherton Bridge (PA1B to PA1G) have greatly improved in the number of brown trout present from the last survey undertaken in 1989. This is shown clearly in Figure 5 which illustrates how trout are now present at many sites where they were completely absent in 1989. The habitat in these areas is quite conducive to trout although there are probably few good spawning areas. An improvement in water quality is the most likely reason for the changes seen with an upgrading in Crewkerne East sewage works being the most important single factor.

9.2 In its middle reaches the Parrett is a harsh river for juvenile fish with steep clay banks and relatively few good quality tributaries or side arms to act as nursery areas. A succession of impoundments means that there are few areas of free flowing water and little variation in habitat. Catches of coarse fish, both in number and species composition, were as anticipated given these considerations.

9.3 The use of a miniboom boat meant that the site below Parrett Works PA1J could be sampled which was not possible in 1989. The site duly revealed some of the carp which are known to frequent the middle reaches of the river.

9.4 The two sites which lie at either end of the middle reaches below Petherton Bridge, PA1H, and Combe Bridge, PA1M, were particularly poor sites. There is no obvious explanation for the poor results at Petherton Bridge but at Combe Bridge the site lies downstream of Martock STW and lies within a long uniform ponded reach where fish populations are likely to be poor and clumped.

9.5 On the lower three sites which were surveyed using netting methods, catches appear to be poorer than those upstream but as shown in Figures 1 & 2 this is because no eels were caught by netting as they tend to

lie buried in the substrate during daylight hours. Even allowing for this catches in these lower reaches were not as good as those reported in 1989 when four out of five lower sites showed a biomass in excess of 1200 grams per 100 square metres excluding eels. The efficiency of the netting was satisfactory although not good, and the nature of the site could account for the catches. Angling catches are reputed to be good in these sites although the majority of the catch tends to be bream, which are well known for tight shoals and a heavily clumped distribution.

9.6 At sites PA10 and PA1R between Thorney and Langport the fish population included a number of the species Leucaspius delineatus, commonly known as the motherless minnow. The fish has Eastern European origins and was first noted in the South Western Region in 1990 in the Kings Sedgemoor Drain. The species was also noted extensively this year in the Bridgwater and Taunton Canal. It was possible that the species could have been present in the lower freshwater reaches of the Parrett system during the 1989 survey but individuals were too small to catch using seine nets.

9.7 The lowest survey site below Langport Viaduct, PA1V, could not be netted effectively due to a recent dredging operation and the poor result from this site is not likely to be at all representative. As a result of this experience no attempt was made to survey the site above Oath, PA1W in the 1989 survey. Concern was expressed to the NRA's Flood Defence staff about dredging taking place in the summer months when silt agitation and weed removal is likely to be extremely damaging to coarse fish recruitment.

10 CONCLUSIONS

10.1 There are some opportunities for habitat improvement in the middle reaches of the River Parrett. There may be a case for lowering some of the very large impoundments to create a more diverse habitat.

10.2 Some of the tributary streams could be improved in both water quality and habitat to provide useful nursery and refuge areas.

10.3 More work is needed to establish the reason for the poor results for the Combe Bridge site and to confirm that water quality here is not a problem.

10.4 Dredging should not take place in coarse fish rivers during the summer months. It is likely that this conflict of interest will arise again if a run of wet winters disrupts the planned programme of winter river maintenance work.

10.5 Information is needed on fish life within the long length of tidal river. This may require some ingenuity in developing an appropriate survey method as neither netting nor electric fishing would be practical in this situation.

RIVER PARRET

BIOMASS OF FISH >10cm gms 100m2

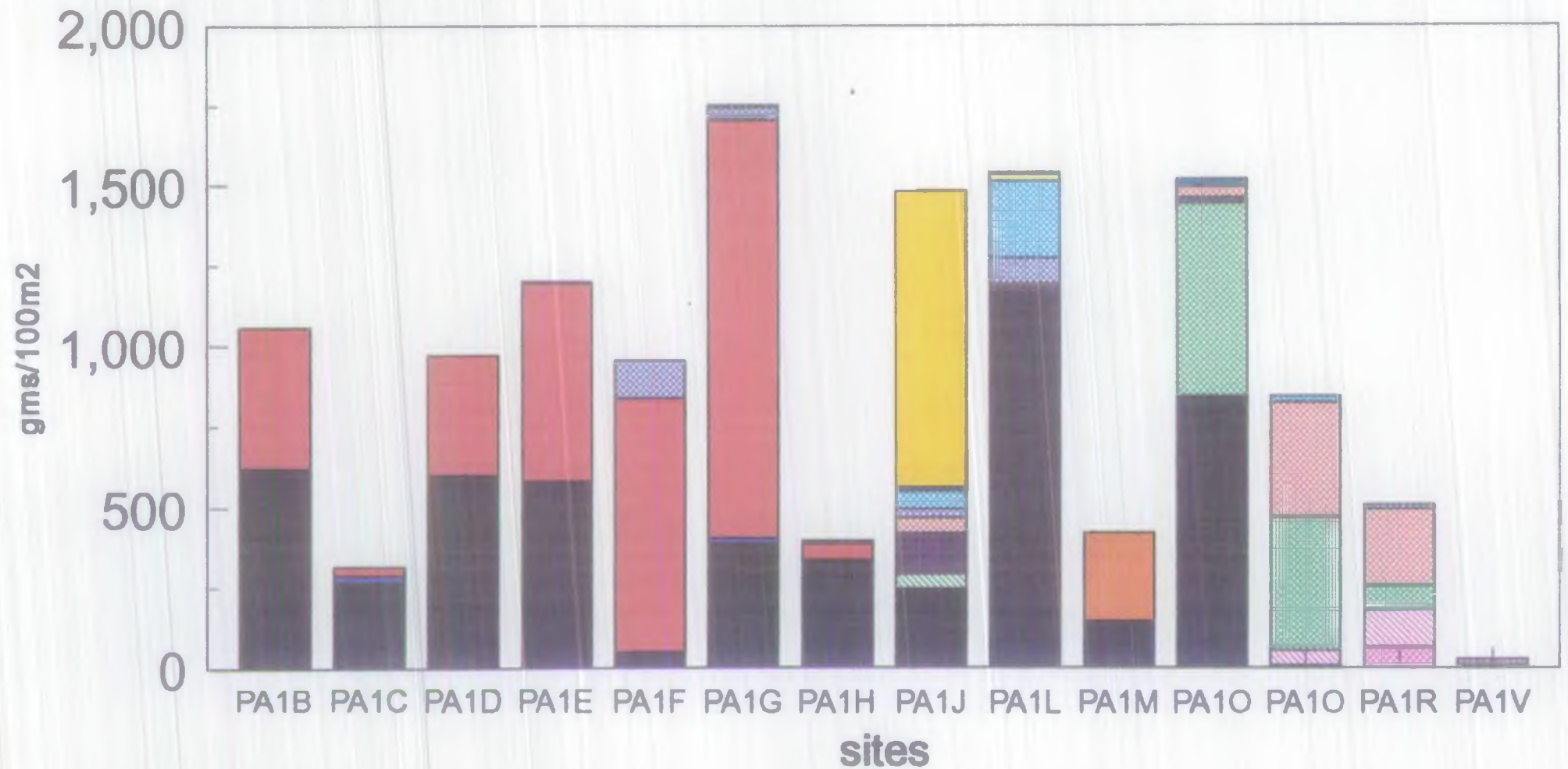


FIGURE 1

BREAM	EEL	R/B/HYBRID	TENCH	S/LOACH	PIKE	PERCH	B/TROUT
B/HEAD	ROACH	DACE	CHUB	GUDGEON	RUFFE	M/CARP	C/CARP

RIVER PARRETT

DENSITY OF FISH >10CM PER 100m²

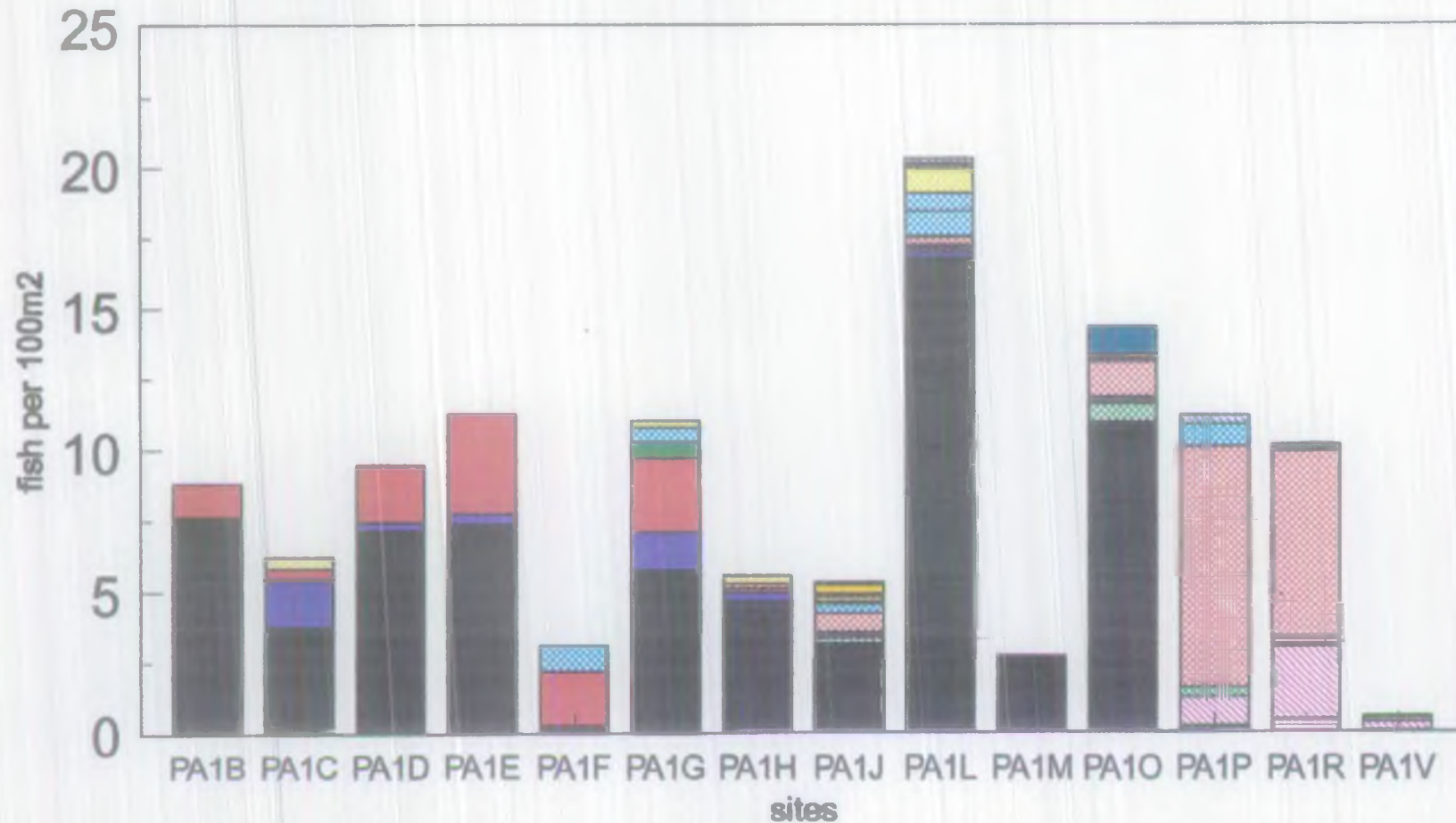


FIGURE 2

RIVER PARRETT

BIOMASS OF FISH <10cm gms/100m2

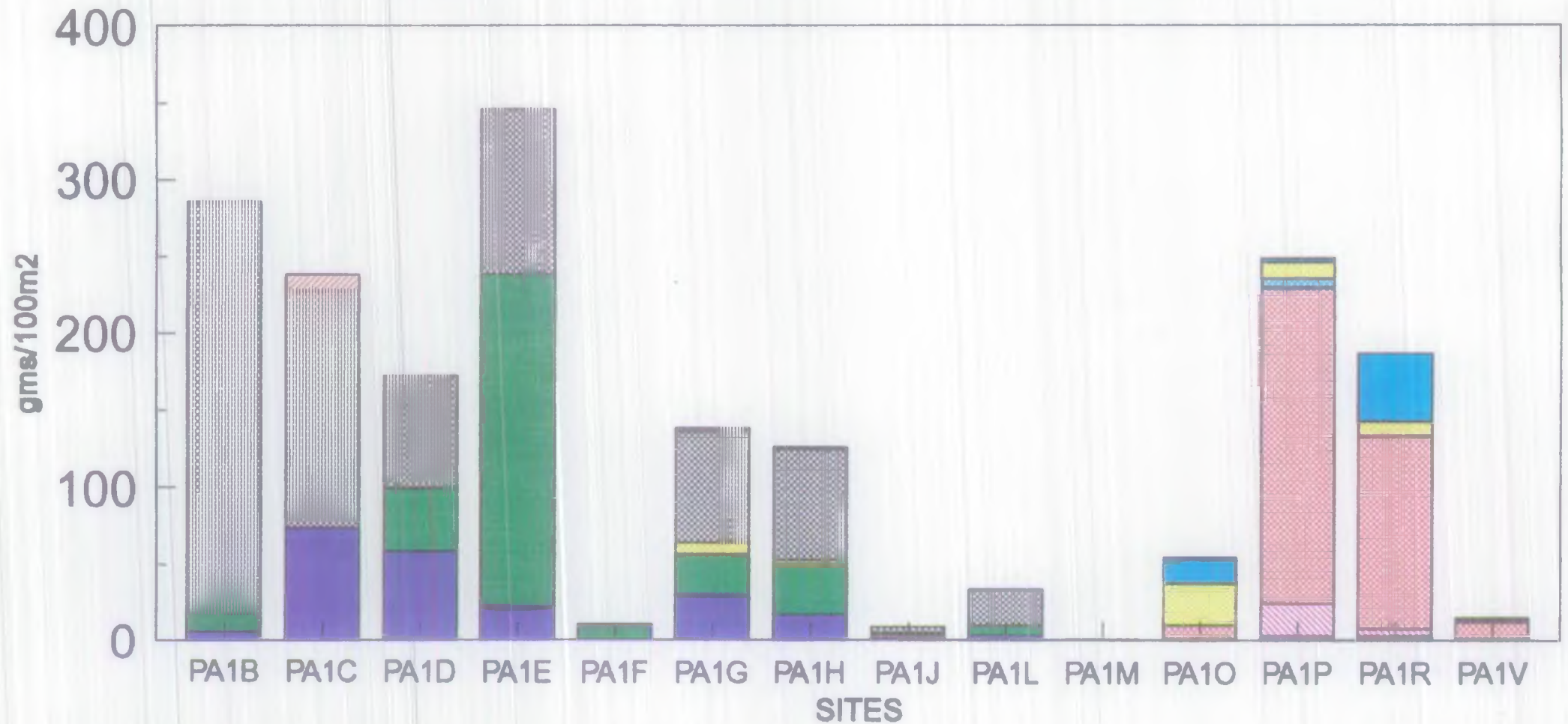


FIGURE 3



DENSITY OF FISH <10cm PER 100m2

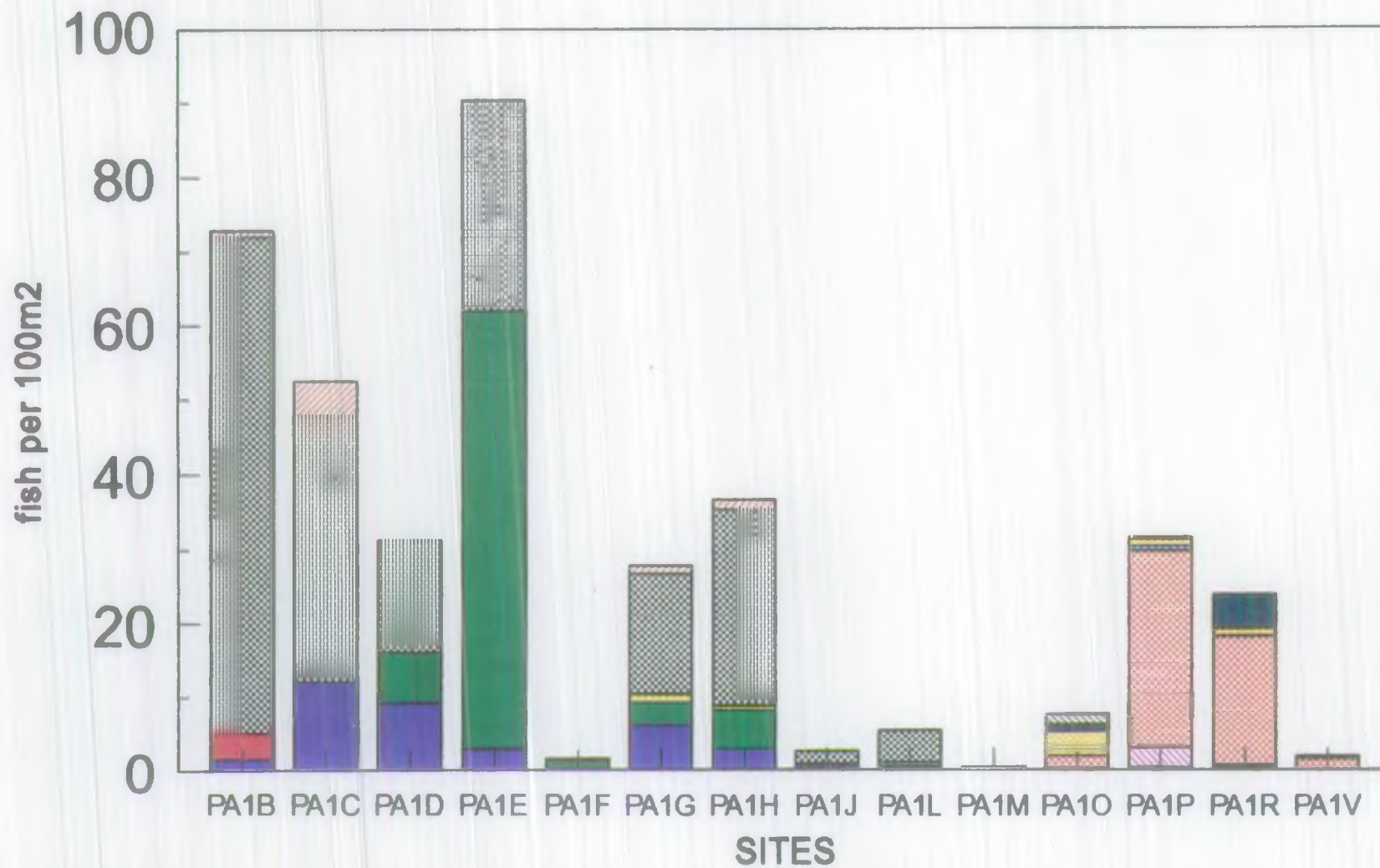


FIGURE 4

RIVER PARRETT 1989 & 1994

COMPARISON OF DENSITY OF BROWN TROUT AT SOME UPPER SITES

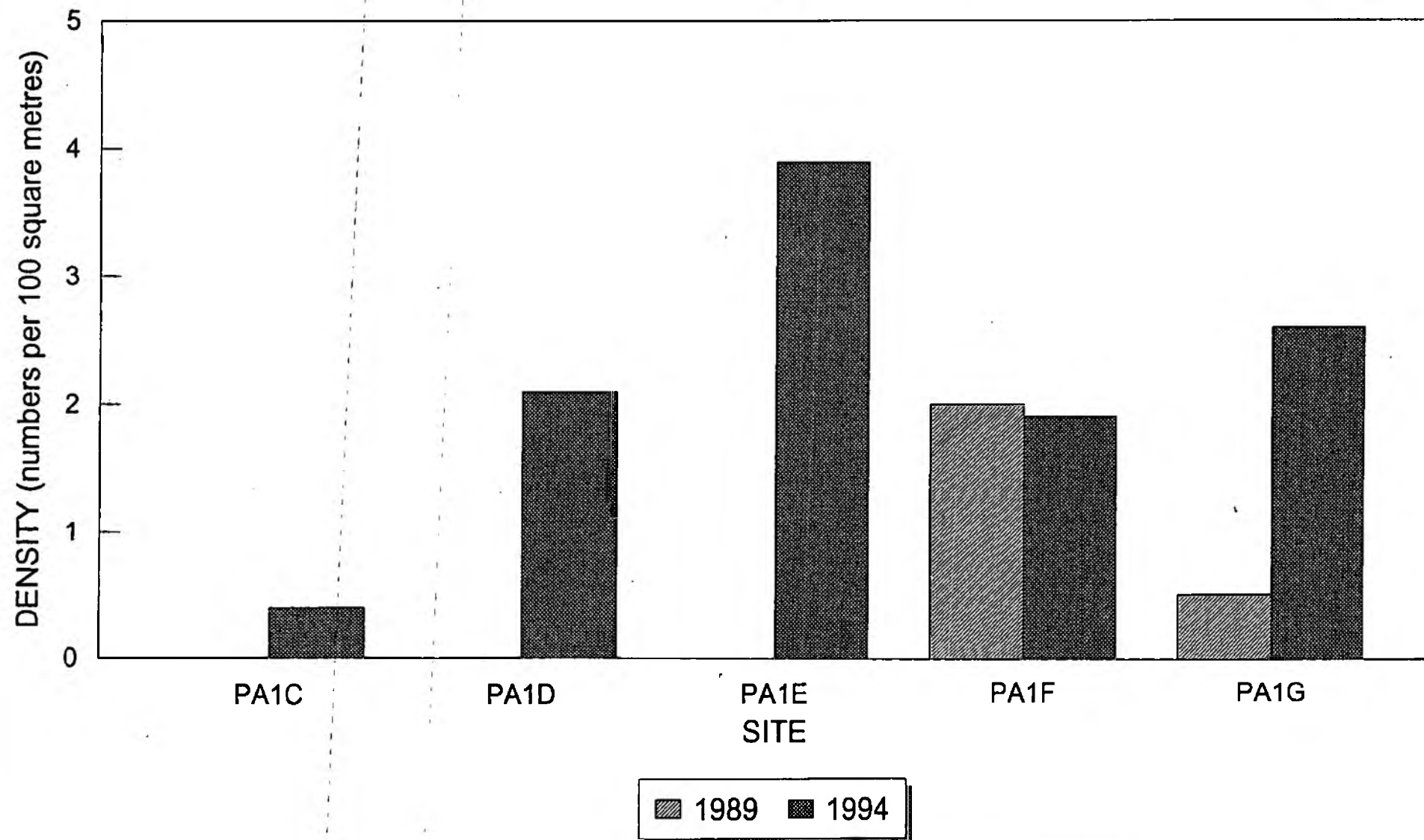


FIGURE 5

[illegible]

SPECIES	EST. POPULATION >10cm	BIOMASS >10 cm gms/100m2	DENSITY >10 cm per 100m2	POPULATION PROBABILITY METHOD OF CAPTURE	BIOMASS <10 cm gms/100m2	DENSITY <10 cm per 100m2	MEAN WEIGHT (gms)	MEAN CONDITION FACTOR
PA1B D/S LECHER WATER CONFLUENCE, ST470074, 15/7/94								
BULLHEAD	0	0	0	4 0	11.88	3.60		
BROWN TROUT	3	435.96	1.20	3 0.6	0	0		
EEL	19	621.68	7.60	3 0.7	0	0	81.8	0.19
MINNOW	1	6.40	0.40	3 1	267.60	66.80		
3 SP STICKLEBACK	0	0	0	4 0	0.80	0.80		
STONELOACH	0	0	0	4 0	5.60	1.60		
TOTALS		1064.04	9.20		285.88	72.80		
PA1C NORTH PERROTT, ST468092, 12/7/94								
BROWN TROUT	1	30.00	0.42	3 1	0	0		
EEL	9	267.38	3.75	3 0.9	0	0	71.3	0.18
BROOK LAMPREY	1	1.67	0.42	3 0.5	0	0		
MINNOW	1	5.42	0.42	3 1	154.09	35.83		
3 SP STICKLEBACK	0	0	0	4 0	10.75	4.58		
STONELOACH	4	20.00	1.67	3 1	73.67	12.08		
TOTALS		324.46	6.67		238.50	52.50		
PA1D BETWEEN HASELBURY BRIDGES, ST458109, 30/6/94								
BULLHEAD	0	0	0	4 0	41.08	6.93		
BROWN TROUT	8	370.28	2.05	3 0.67	0	0	180.5	1.21
EEL	28	600.21	7.18	3 0.61	0	0	83.6	0.18
MINNOW	0	0	0	4 0	73.02	15.13		
STONELOACH	1	3.08	0.26	3 1	58.46	9.23		
TOTALS		973.54	9.49		172.56	31.28		
PA1E U/S BROAD RIVER, ST458124, 29/6/94								
BULLHEAD	0	0	0	4 0	215.49	58.71		
BROWN TROUT	11	612.81	3.55	3 0.48	0.97	0.32	172.7	1.18
EEL	23	583.90	7.42	3 0.7	0	0	78.7	0.19
MINNOW	0	0	0	4 0	107.68	26.39		
	1	4.84	0.32	3 0.5	0	0		
STONELOACH	1	0	0.32	3 1	21.61	2.90		
TOTALS		1201.55	11.61		345.74	90.31		
PA1F U/S CHINNOCK BROOK, ST461142, 6/7/94								
BULLHEAD	0	0	0	4 0	10.00	1.25		
BROWN TROUT	6	784.13	1.88	3 0.75	0	0	418.2	1.21
DACE	3	120.00	0.94	3 0.5	0	0		
EEL	1	55.63	0.31	3 1	0	0		
3 SP STICKLEBACK	0	0	0	4 0	1.25	0.31		
TOTALS		959.75	3.13		11.25	1.56		

SPECIES	EST. POPULATION >10cm	BIOMASS >10 cm gms/100m2	DENSITY >10 cm per 100m2	POPULATION PROBABILITY METHOD OF CAPTURE	BIOMASS <10 cm gms/100m2	DENSITY <10 cm per 100m2	MEAN WEIGHT (gms)	MEAN CONDITION FACTOR
PA1G U/S LOPEN BROOK, ST457151, 5/7/94								
BULLHEAD	2	11.32	0.53	3 0.5	26.21	3.16		
BROWN TROUT	10	1292.89	2.63	3 0.83	0	0	491.3	1.41
DACE	2	43.42	0.53	3 0.87	0	0		
EEL	22	394.84	5.79	3 0.76	0	0	68.2	0.19
GUDGEON	1	7.63	0.26	3 1	8.21	1.05		
MINNOW	0	0	0	4 0	72.10	16.31		
3 SP STICKLEBACK	0	0	0	4 0	2.63	1.05		
STONELOACH	5	15.53	1.32	3 0.5	30.32	6.31	11.8	0.93
TOTALS		1765.63	11.05		139.47	27.89		
PA1H D/S PETHERTON BRIDGE, ST450167, 8/6/94								
BULLHEAD	0	0	0	4 0	31.70	5.47		
BROWN TROUT	1	52.81	0.16	3 0.33	0	0		
EEL	30	335.18	4.69	3 0.57	0	0	71.5	0.17
GUDGEON	2	7.97	0.31	3 0.67	3.63	0.63		
MINNOW	0	0	0	4 0	72.34	28.26		
ROACH	1	2.66	0.16	3 0.5	0	0		
3 SP STICKLEBACK	0	0	0	4 0	1.41	1.41		
STONELOACH	2	5.00	0.31	3 1	17.66	2.97		
TOTALS		403.59	5.63		126.73	36.73		
PA1J D/S PARRETT WORKS, ST445187, 7/6/94								
CHUB	1	51.80	0.10	3 0.5	0	0		
COMMON CARP	3	916.28	0.30	3 1	0	0		
DACE	3	26.61	0.30	3 0.75	0	0		
EEL	32	251.52	3.20	3 0.73	0	0	78.6	0.19
GUDGEON	2	4.30	0.20	3 1	1.10	0.20		
MINNOW	0	0	0	4 0	4.64	1.60		
PERCH	2	131.20	0.20	3 0.5	0	0		
RUDD	1	5.10	0.10	3 0.5	0	0		
RUFFE	1	8.60	0.10	3 1	0	0		
ROACH	7	47.81	0.70	3 0.88	1.71	0.30	68.3	1.7
3 SP STICKLEBACK	0	0	0	4 0	0	0.10		
STONELOACH	0	0	0	4 0	1.20	0.40		
TENCH	2	44.40	0.20	3 1	0	0		
TOTALS		1487.63	5.40		8.65	2.60		

SPECIES	EST. POPULATION >10cm	BIOMASS >10 cm gms/100m2	DENSITY>10 cm per 100m2	POPULATION METHOD	PROBABILITY OF CAPTURE	BIOMASS<10 cm gms/100m2	DENSITY<10 cm per 100m2	MEAN WEIGHT (gms)	MEAN CONDITION FACTOR
PA1L D/S GAWBRIDGE MILL, ST444197, 2/6/94									
BULLHEAD	0	0	0	4	0	6.77	0.62		
CHUB	4	237.72	0.62	3	0.67	0	0		
DACE	6	80.58	0.92	3	0.67	0	0	87.3	1.52
EEL	109	1165.46	18.77	3	0.61	0	0	69.5	0.2
GUDGEON	6	23.08	0.92	3	0.55	0	0	25	1.37
MINNOW	0	0	0	4	0	25.38	4.62		
PERCH	2	17.54	0.31	3	0.87	0	0		
RUDD	1	5.54	0.15	3	0.5	0	0		
RUFFE	1	3.23	0.15	3	1	0	0		
ROACH	2	12.31	0.31	3	1	0	0		
3 SP' STICKLEBACK	0	0	0	4	0	0	0.15		
STONELOACH	1	0	0.15	3	1	2.77	0.31		
TOTALS		1545.46	20.31			34.92	5.69		
PA1M U/S COMBE BRIDGE, ST435217, 1/6/94									
EEL	35	154.65	2.71	3	0.53	0	0	57	0.2
MIRROR CARP	1	271.32	0.08	3	1	0	0		
MINNOW	0	0	0	4	0	0	0.08		
STONELOACH	0	0	0	4	0	0.54	0.16		
TOTALS		425.97	2.79	14		0.54	0.23		
PA1O D/S THORNEY BRIDGE, ST425230, 9/6/94									
BULLHEAD	0	0	0	4	0	0.62	0.12		
CHUB	1	37.78	0.12	3	0.5	0	0		
EEL	89	848.25	10.99	3	0.45	0	0	77.2	0.2
GUDGEON	1	0	0.12	3	0.5	29.73	3.46		
M'LESS MINNOW	0	0	0	4	0	1.48	1.48		
PERCH	2	18.40	0.25	3	0.5	0	0		
PIKE	5	595.56	0.62	3	0.63	0	0	964.8	0.76
RUFFE	8	23.31	0.99	3	0.23	14.81	0.99	23.6	1.7
ROACH	10	34.32	1.24	3	0.36	8.64	1.73	27.8	1.54
3 SP' STICKLEBACK	0	0	0	4	0	0	0.12		
TOTALS		1557.61	14.32			55.28	7.90		

SPECIES	EST. POPULATION >10cm	BIOMASS >10 cm gms/100m2	DENSITY>10 cm per 100m2	POPULATION METHOD	PROBABILITY OF CAPTURE	BIOMASS<10 cm gms/100m2	DENSITY<10 cm per 100m2	MEAN WEIGHT (gms)	MEAN CONDITION FACTOR
PA1P	U/S MUCHELNEY, ST422243, 21/6/94								
BREAM	2	2.48	0.15	5	0.53	2.70	0.29		
CHUB	11	20.09	0.80	5	0.53	6.49	0.58	25.2	1.69
EEL	1	6.74	0.07	4	0	0	0		
GUDGEON	0	0	0	4	0	10.65	1.01		
R/B HYBRID	15	45.22	1.09	5	0.53	21.82	2.81	41.6	1.72
PERCH	0	0	0	4	0	0.80	0.07		
PIKE	5	422.32	0.36	4	0	0	0	1165.6	0.82
RUDD	4	7.68	0.29	5	0.53	0	0		
RUFFE	0	0	0	4	0	2.17	0.15		
ROACH	117	353.54	8.48	5	0.53	204.68	27.03	41.7	1.67
TOTALS		858.05	11.23			249.31	31.74		
PA1R	U/S YEO CORNER, ST423258, 15/6/94								
BREAM	6	64.68	0.43	5	0.5	2.40	0.21		
CHUB	2	13.05	0.14	5	1	0.64	0.07		
GUDGEON	0	0	0	4	0	9.33	0.99		
M'LESS MINNOW	0	0	0	4	0	0.07	0.07		
R/B HYBRID	38	120.74	2.70	5	0.5	4.82	0.36	44.8	1.76
PIKE	3	78.57	0.21	5	1	0	0		
RUFFE	1	0	0.07	4	0	44.10	4.68		
ROACH	93	236.13	6.60	5	0.61	126.66	17.73	35.8	1.59
3 SP STICKLEBACK	0	0	0	4	0	0	0.07		
TENCH	1	132.70	0.07	4	0	0	0		
TOTALS		645.87	10.21			188.03	24.19		
PA1V	D/S LANGPORT VIADUCT, ST415273, 14/6/94								
BREAM	1	11.83	0.04	4	0	0.33	0.04		
CHUB	2	1.30	0.08	4	0	1.38	0.16		
FL	1	0.57	0.04	4	0	0.65	0.08		
R/B HYBRID	7	11.95	0.29	4	0	0	0	42	1.78
RUFFE	0	0	0	4	0	0.73	0.08		
ROACH	4	3.90	0.16	4	0	11.13	1.50		
TOTALS		29.55	0.61			14.22	1.87		



Gauging Station Summary

APPENDIX 3

PARRETT AT CHISELBOROUGH

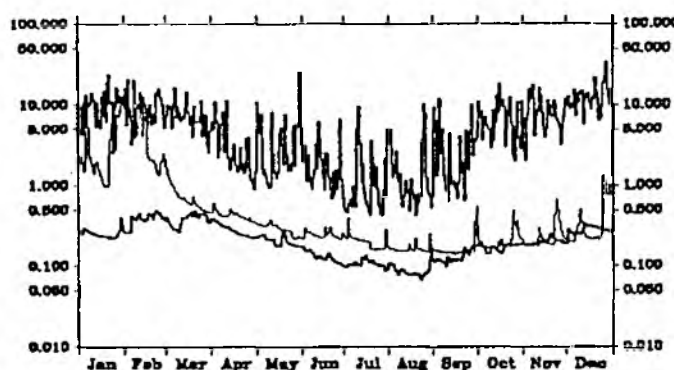
Station Number
052007

Gauged Flows
1966-1991

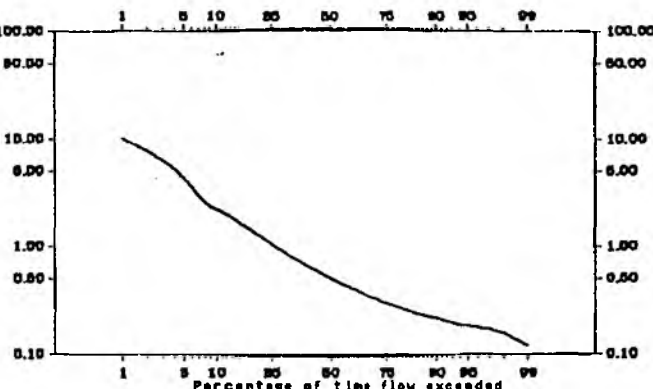
Measuring Authority: NRA - Wessex

Grid Reference: 31 (ST) 461 144

Daily Flow Hydrograph (m^3s^{-1})
Max. and min. daily mean flows from 1966 to 1991
excluding those for the featured year (1990)



Flow Duration Curve (m^3s^{-1})



Flow Statistics

Units: m^3s^{-1} unless otherwise stated

Mean flow	1.12
Mean flow ($\text{ls}^{-1}/\text{km}^2$)	15.01
Mean flow ($10^6\text{m}^3/\text{yr}$)	35.4
Peak flow & date	57.2 30 May 1979
Highest daily mean & date	32.9 27 Dec 1979
Lowest daily mean & date	0.065 23 Aug 1976
10 day minimum & end date	0.075 25 Aug 1976
60 day minimum & end date	0.095 28 Aug 1976
10% exceedance	2.227
50% exceedance	0.512
95% exceedance	0.185
Mean annual flood	24.3
Bankfull flow	11.60

Catchment Characteristics

Catchment area (km^2)	74.8
Level stn. (mOD)	20.70
Max alt. (mOD)	219
IH Baseflow index	0.45
FSR slope (m/km)	5.60
1941-70 rainfall (mm)	887
FSR stream freq. (junctions/ km^2)	
FSR percentage urban	

Factors Affecting Flow Regime

- Augmentation from effluent returns.

Rainfall and Runoff

Rainfall (mm)
(1966-1989)

Runoff (mm)
(1966-1991)

	Mean	Max/Yr	Min/Yr	Mean	Max/Yr	Min/Yr
Jan	104	201 1974	13 1987	68	176 1984	9 1976
Feb	73	157 1974	5 1984	68	198 1990	20 1976
Mar	83	148 1981	17 1973	55	109 1981	19 1973
Apr	46	92 1983	3 1984	29	65 1987	10 1976
May	70	166 1979	10 1975	25	73 1979	7 1976
Jun	63	147 1980	4 1974	17	36 1979	5 1976
Jul	55	122 1978	17 1976	12	33 1980	4 1976
Aug	68	132 1984	24 1987	12	35 1986	3 1976
Sep	74	194 1976	6 1971	15	77 1974	5 1984
Oct	89	249 1976	7 1978	34	173 1976	7 1978
Nov	84	168 1978	28 1988	44	151 1982	6 1978
Dec	108	218 1985	21 1988	74	151 1989	15 1990
Annual	917	1129 1974	666 1973	473	646 1982	237 1973

Station and Catchment Description

Crump weir (breadth: 7.87m) with crest tapping, situated in bridge culvert. Full range station. Throttling of high flows in high range, flow hydrograph exhibits hysteresis. Weir drowning more frequent prior to downstream channel improvements in 1966. Flows calculated from crest tapping prior to 1/4/67 are erroneous due to leak in float well. Minor augmentation from effluent returns.

Geology - predominantly Oxford Clay with small band of Upper Greensand and Gault in headwaters. Land use - rural.

Summary of Archived Data

Gauged Flows and Rainfall

Key:	All rain-fall	Some or no rain-fall	01234 56789
All daily, all peaks	A	a	1960s ----- -eAAA
All daily, some peaks	B	b	1970s AAAAA BAAAA
All daily, no peaks	C	c	1980s AAAAA AAAAA
Some daily, all peaks	D	d	1990s ae
Some daily, some peaks	E	e	
Some daily, no peaks	F	f	
No gauged flow data	*	*	

Naturalised Flows

Key:	No naturalised flow data available.
All daily, all monthly	A
Some daily, all monthly	B
Some daily, some monthly	C
Some daily, no monthly	D
No daily, all monthly	E
No daily, some monthly	F
No naturalised flow data	-