FISHERY SURVEY OF THE RIVER AXE CATCHMENT

1. INTRODUCTION

This fishery survey of the River Axe was started in April 1991 and concluded in October 1991. The watercourses surveyed were the River Axe itself together with its major tributaries, namely the River Cheddar Yeo and the Hixham Rhyne.

2. TOPOGRAPHY AND GEOLOGY

2.1 The headwaters of the River Axe are actually on top of Mendip and enter swallet holes. The recognised source of the river is Wookey Hole, which is one of the main springs arising from the Mendip limestone. The river falls progressively for the first 2 kilometres and then divides artificially into two branches. The most southerly, known as the Lower River Axe is in fact higher following the contour line through several villages and historically feeding several mills with water. Burcott Mill has been restored and still functions as a water mill. The northerly branch runs through Wookey and creates two fords before reuniting with the southerly branch at the top of Westbury Moor.

2.2 The Axe valley part of the Somerset Moors and Levels is underlain primarily by alluvial clay of freshwater, marine and brackish origin. Where the river crosses this alluvial valley it has been straightened and widened since 1800. In the early 19th century there was a major scheme which cut off numerous meanders. The Cheddar Yeo was also realigned at the same time. These alterations were so dramatic that what are now the lowest reaches of the Yeo were once part of the course of the Axe.

2.3 The River Cheddar Yeo emerges from the Carboniferous limestone of Mendip in Cheddar Gorge. The spring is in fact the largest one on Mendip and the gorge itself is thought to have been formed by downcutting of a surface stream in the Ice Age. The river falls steeply through Cheddar village then changes character dramatically as it crosses the flat land of Cheddar Moor. The Yeo joins the Axe just upstream of Crab Hole.

2.4 The Hixham Rhyne is a manmade watercourse constructed to improve drainage within Westbury and Rodney Stoke Moors. In 1970 the Hixham Rhyne was enlarged and a new pumping station was constructed at Clewer to lift water into the River Axe.

2.5 The relationship between the various watercourses is also shown on the map (Appendix 1).

APPENDIX 1

3. FLOW

3.1 There is one gauging station in this catchment, at Henley on the River Axe, which is operated by Bristol Water. Analysis of flow statistics and a comparison with the Rivers Brue and Sheppey are shown in Table 1 and further details are included as Appendix 2. **APPENDIX 2**

Table 1

FLOW STATISTICS FOR THE R.AXE AT HENLEY COMPARED WITH THE R.BRUE AT LOVINGTON AND THE R.SHEPPEY AT FENNY CASTLE.

	AXE	SHEPPEY	BRUE
Period of years covered by record	12	27	27
Catchment area above gauging station (sq. kilometres)	18	60	135
Height of highest point of catchment above Ordnance Datum (metres)	285	296	260
Average daily flow in cumecs (a.d.f.)	0.57	1.07	1.85
95 per cent exceeded flow (m^3/s)	0.12	0.25	0.25
FLOW RANGE percentage of days per year:			
over 4 x a.d.f.	1	0.8	4
between 2 x a.d.f. and 4 x a.d.f.	9	9.2	9
between a.d.f. and 2 x a.d.f.	25	27.5	17
between 0.75 a.d.f. and a.d.f.	20	14.5	9
between 0.5 a.d.f. and 0.75 a.d.f.	22	16	14.5
between 0.25 a.d.f. and 0.5 a.d.f.	16	26.5	23.5
between 0.125 a.d.f. and 0.25 a.d.f.	7	5.5	20
below 0.125 a.d.f.	0	0	3

Note: 1 cubic metre per second is approximately 19 million gallons per day

3.2 Table 1 indicates the flashy nature of the River Brue which has a high percentage of days when flows are very low and a significant period when flows are very high. By contrast the River Axe is like the River Sheppey with very few days at either extreme. The contribution made by storage within the Mendips is a significant factor in both these catchments.

4. ABSTRACTION

4.1 There are twelve abstraction licences from surface waters for spray irrigation, water supply or industrial purposes within the main Axe catchment. Ten of the licences relate to the River Axe itself where the total maximum daily licensed abstraction is slightly in excess of the average daily flow at Henley. This gives a somewhat false picture of impact as one licence for water supply is a winter only licence, one industrial licence is for water milling with full return of

the water and a third involves the use of cooling water mostly returned to the river. Three of the six licences for spray irrigation have a low flow condition.

4.2 On the Cheddar Yeo the only licence, for water supply, allows the removal of a maximum of 55 million gallons a day (mgd). A compensation flow of 2.5 mgd between mid-May to the end of November and 1.5 mgd for the rest of the year is a condition of this licence. In recent years the maximum abstraction has taken place in March when about 18 mgd has been abstracted. Allowing for the compensation flow this abstraction represents a significant proportion of the total flow of the river in a comparatively wet month.

4.3 Both the water supply abstraction from the Cheddar Yeo and the winter abstraction from the River Axe are linked to the 234 acre impounding reservoir at Cheddar which has a maximum capacity of 1290 million gallons. Very occasionally water may also be transferred from Cheddar to the 440 acre Blagdon reservoir which has a capacity of 1692 million gallons and which impounds the waters of the River Congresbury Yeo on the north side of Mendip.

4.4 In addition to licensed abstraction there is non-licensable abstraction for (non-spray) irrigation by the NRA pumps at White House and South Hill. During 1991 the typical average abstraction was 4 mgd at White House and 1 mgd at South Hill.

4.5 In dry summers there have been periods when the Axe ceased to overflow at Bleadon. Under the terms of their abstraction licence, when this happens, Bristol Water must cease abstraction from the Cheddar Yeo. This would lead to a stop/go situation so in practice it has been agreed that Bristol Water reduce abstraction to maintain a stable water level at Bleadon.

5. IMPOUNDMENTS

5.1 The most notable impoundment within the River Axe system is the 945 hectare (234 acre) offstream Cheddar Reservoir, which is fed by gravity from the Cheddar Yeo in Cheddar Gorge and can be supplemented by pumped water from the River Axe at Brinscombe.

5.2 Downstream of Wookey Hole Cave there are large weirs at Wookey Hole, Henley and Burcott. The Bleadney branch contains many weirs including two low stone weirs near Marchey recently built for fisheries improvement. After the branches of the River Axe reunite there are several small weirs for irrigation take offs before the river is affected by the summer penning sluice at Bleadon.

5.3 Within the length of river influenced by Bleadon Sluice several low level weirs have been constructed at Cocklake, Clewer and Loxton for fishery purposes. These weirs are

designed to retain a modest water level when Bleadon Sluice is up and not penning.

5.4 Below Bleadon Sluice the river is influenced by penning at Brean Cross Sluice which also has tide doors and is the tidal limit. The remaining two kilometres of tidal river join the sea at Weston Bay.

5.5 The River Cheddar Yeo once boasted seven mills in Cheddar. The remaining weirs, mill ponds and leats are a feature of the watercourse in Cheddar but only one of the old mills still has a wheel. Below Cheddar village the river flows freely until it reaches Cross where the effect of penning can be seen in summer.

6. WATER QUALITY

6.1 Chemical water quality is shown in Figure WQ1. Most of the rivers have good water quality though there was evidence during the survey period of problems originating from an industrial discharge at Wookey. **FIGURE WQ1**

6.2 Biological water quality is shown in Figure WQ2. Blue represents class A (good biological river quality), green class B (moderate biological water quality) and orange class C (poor biological water quality). The hatched areas represent river reaches where no samples have been taken and the class has been extrapolated from the sampled reaches. Results are for 1991 or 1990 for reaches where samples were not taken last year. **FIGURE WQ2**

6.3 The method of biological assessment checks the observed invertebrate score against that predicted from an analysis of the physical nature of the river at each site. As a result in the lower reaches of rivers the biological class may be A, even if the river is class 2 chemically.

6.4 The EEC Fishery Designation is shown in Figure WQ3. The Hixham Rhyne is not designated. **FIGURE WQ3**

7. FISHERY SURVEY METHOD

7.1 Sample sites were chosen by dividing the river into two kilometre lengths within which a one hundred metre survey length was selected using random numbers. Table 2 lists the sample sites with their grid references; the location of all sample sites is shown on the maps which make up Appendix 1. **APPENDIX 1**

Table 2

SURVEY SITES

RIVER AXE			
AX1A	Glencot House	ST532471	11/7/91
AX1B	Burcott Mill	ST520456	5/7/91
AX1C	Yarley Cross	ST501453	5/7/91
AX1D	Bleadney Bow	ST484454	5/7/91
AX1E	Burcott	ST523457	28/6/91
AX1F	Ford, Wookey	ST505462	28/6/91
AX1G	Knowle Moor	ST486471	1/7/91
AX1H	Theale	ST477472	19/6/91
AX1I	Latcham Drove	ST462479	17/7/91
AX1J	Bridge Farm	ST445499	18/6/91
AX1K	Clewer Bridge	ST443504	18/6/91
AX1L	Clewer PS	ST434519	14/6/91
AX1M	Upper Weare	ST416532	3/6/91
AX1N	D/S Lower Weare	ST398539	28/5/91
AX1O	Poplar Farm	ST386549	23/5/91
AX1P	White House Farm	ST358557	17/5/91
AX1Q	Bleadon	ST339563	9/5/91
AX1R	Batch End Farm	ST327558	1/5/91
AX1S	Brean Cross	ST309562	29/4/91
RIVER CHEDDAR YEO			
CH1A	Cheddar	ST461534	16/8/91
CH1B	Hythe Bow	ST444522	25/7/91
CH1C	Stubbington Drove	ST426530	14/8/91
CH1D	Cross	ST407546	8/8/91
CH1E	Compton Bishop	ST403546	8/8/91
HIXHAM RHYNE			
HI1A	Rodney Stoke PS	ST461487	17/10/91
HI1B	U/S Nyland Bridge	ST455498	15/10/91
HI1C	D/S Nyland Bridge	ST448503	15/10/91

7.2 Seven sites on the lower River Axe, all those from AX1M to AX1S were netted. All other sites were electrofished.

7.3 Where sites were netted, three stop nets were used to isolate adjacent fifty metre sections of river. Each section was netted once using a 100 yard seine net, followed by a second netting when the section stop nets were drawn together. At

representative sites an estimate of efficiency was derived by marking and releasing a known number of fish within a fifty metre section at each site. This gave efficiencies between 0.4 and 0.83. In general the higher efficiencies were obtained where the banks sloped more gradually. At two netted sites where obstructions were encountered only one net was possible and efficiency of 0.33 was adopted based on experience from previous nettings on other surveys.

7.4 Electrofished sites were fished using new pulsed DC fishing equipment operating at six hundred cycles per second. Both waded and boat sites were always fished upstream.

7.5 All electrofished sites were isolated using stop nets or large natural obstructions if these were present. Population estimates were obtained wherever possible by repeated fishing and using a declining catch method.

7.6 On the Cheddar Yeo two sites were electrofished for one run only. Once the survey was terminated to respond to a fish kill on the Mark Yeo and once the second fishing was abandoned when the stop nets lifted due to a build up of blanket weed. In both instances population estimates were derived from an estimate of efficiency of 0.5; representing the most typical efficiency derived from the results from other sites on the river.

7.7 All fish caught were measured and a large proportion were also weighed and had scales removed for age determination. These results were stored in the field using a Husky Hunter data logger. At sites where a considerable amount of, usually small, fish were caught prick sheets were used to record length. At one or two sites bulk weighing proved necessary allocated by species where possible, elsewhere pro rata.

7.8 Wherever possible all eels were caught measured and weighed so that information is obtained about this species. Considerable concern has been expressed by fishermen and by representatives of various conservation bodies about a perceived drop in eel numbers. Until recent years eels were often ignored or their presence simply noted.

8. RESULTS

8.1 All the sites were surveyed successfully though as already indicated there were problems with obstructions at two of the netted Axe sites and other problems at two sites on the Cheddar Yeo.

8.2 As indicated in a previous report on the River Brue catchment, the new electrofishing equipment used at 600 cycles per second appeared to be more effective especially with eels and also inflicted less stress on the fish caught.

8.3 Figures 1 to 3 show the biomass of fish caught at each site. **FIGURES 1-3**

8.4 Growth rates for roach and brown trout are shown in two figures: AXGROW for the R. Axe, and CHGROW for the R. Cheddar Yeo. **FIGURE AXGROW** **FIGURE CHGROW**

8.5 The species composition at each site has been produced as a Display with separate pie charts showing population and biomass for all fish over eight centimetres in length. Each species is indicated by a particular colour and style of hatching. **DISPLAY**

9. DISCUSSION

9.1 Before the survey commenced it was expected that brown trout would be found at a number of sites on the upper river Axe. In fact only at Glencot, site A, were significant numbers found. At this site the population estimate of 200 trout is perhaps more important than the biomass figure.

9.2 The absence of trout at sites B, C, D, E, and F was surprising given the apparent trout habitat. Sites E and F looked particularly suitable but all the niches were occupied by eels at E and by gudgeon and eels at F.

9.3 Temperature monitoring, which is noted as part of the information about each fisheries survey site prior to fishing, suggested that high temperature might be an important factor limiting trout distribution on the upper Axe.

9.4 Subsequent investigation has revealed a problem with the discharge of cooling water by industrial premises at Wookey. Plans to alleviate the situation are being considered.

9.5 Before the two branches of the river reunite near Marchey the river is clearly already a coarse fishery. It was only in this area at the top end of Westbury Moor that significant numbers of dace were found, though there are undoubtedly small numbers of both dace and chub downstream.

9.6 Significantly roach dominated every site fished from Latcham Drove downstream with pike making a major contribution to biomass at several sites as one might expect.

9.7 With the exception of the upper sites A, B and C and the lower sites P, R and S biomass was good with seven sites showing a biomass between 10 and 20 grams per square metre, four sites between 20 and 30 grams per square metre and two sites between 30 and 40 grams per square metre.

9.8 Eels made up a sizeable component of both the fish population and the biomass where electric fishing methods permitted their capture. At most sites they contributed between a quarter and three quarters of the total fish biomass. If one assumes that a similar eel population existed at netted sites, the fish biomass shown for sites M to S could be half or even a quarter of the real figure. The biomass present at

sites P, R and S may not therefore be as poor as first appears.

9.9 The large fish population present below Bleadon sluice compared with the poor results elsewhere in the lowest part of the river emphasises once again the problems of sampling shoaling fish populations.

9.10 As in other surveys bream known to be present in the system proved elusive again presumably because of their densely shoaling habit. The one elderly large specimen caught at site O was in poor condition probably due to its age.

9.11 Growth rates for roach in the River Axe are very close to the standard curve. Brown trout growth at Glencot was somewhat slower than that found on the upper Brue and it is possible that competition may be a factor in view of the large population.

9.12 The Cheddar Yeo survey revealed a healthy brown trout population at the uppermost site. It was encouraging to see some juvenile fish though not as many as one might expect. Silt is clearly a problem in some areas though the river is much improved from the situation which prevailed in July 1989 when a serious loss of trout occurred as a result of a desilting operation in Bays Pond at the bottom of Cheddar Gorge.

9.13 The middle reaches of the river were dominated by eels. A very open silty and weedy channel combined with shallow water almost certainly precludes other large coarse fish species.

9.14 The two down stream sites on the Cheddar Yeo were comparatively close together. Although the loss of a stop net prevented a second and third run at site D it is clear that the very high biomass figure for this site is of the right order as it clearly contained far more fish than site E where a declining catch population estimate was possible.

9.15 Site D interestingly was the one typical coarse fish site on the whole Axe system where there was significant shade and cover from riverside trees. Whilst it would be wrong to derive too much from this, it may have been a factor in concentrating shoals of fish within the bounds of the survey site.

9.16 Comparing sites with their nearest equivalent in the main River Axe it would appear that the fish biomass as expressed in grams per square metre is higher in the Cheddar Yeo than the Axe. This may reflect the fact that the Axe itself has been widened so dramatically from what was its natural profile. Judging from the remains of the old course of the Axe it seems likely that the river is at least twice its former width. The Cheddar Yeo has apparently avoided this fate though flows are clearly a shadow of the historic situation.

9.17 The growth rate of roach on the Cheddar Yeo is clearly above the standard and therefore that found on the River Axe. The reason for the aberrant 2 year figure is unknown. Brown trout growth is also better than that on the upper Axe and close to that found on the Rivers Brue and Sheppey.

9.18 Over most of their length both the Axe and Yeo have silty bottoms. From tell-tale signs under bridges notably at Bleadney and Marchey and from comments made by local farmers it is clear that the river bed of the middle part of the River Axe system may also have been degraded by machine dredging which has removed stone brought down from the hills over many years.

9.19 The Hixham Rhyne was dominated by eels though there was evidence that perch stocked into the system following a fish kill in recent years were surviving in small numbers.

9.20 The poor diversity of species on this drain reflects the water quality which is reduced by excessive weed growth in the summer months. In an effort to reduce weed growth grass carp were stocked into the Hixham Rhyne prior to 1989 but no sign of this species was detected during this survey.

10. CONCLUSIONS

10.1 Habscore should be used on the upper reaches of the River Axe to assess the potential trout population, which is currently not present probably due to problems arising from the industrial discharge at Wookey.

10.2 As indicated in the recent report on the River Brue system there is clearly a need to develop some logical system to identify catchment and habitat features which are important for coarse fish populations. Scope almost certainly exists for habitat improvement on some of the more featureless lengths of the River Axe. This would require the support of the riparian owners and close cooperation with Flood Defence staff.

10.3 The construction of low level weirs has probably not only helped water levels but also improved the diversity of the river bed.

10.4 Modification of Bleadon Sluice by replacing the top half of the existing gate with a tilting section could improve river management. Such an alteration would affect the terms under which Bristol Water abstract from the catchment and this implication would need careful consideration.

10.5 Restocking the River Axe in and around Wookey may be necessary to reestablish the species once water quality problems have been solved.

10.6 Experience on this survey again indicated that the use of high frequency electrofishing was more successful,

10.6 Experience on this survey again indicated that the use of high frequency electrofishing was more successful, particularly with eels, and less stressful for the fish. It remains difficult to objectively test the effectiveness of different frequencies.

10.7 The problem of effectively sampling species such as bream again emphasises the need for a system to be developed with local angling clubs so that anglers catch information is collected in a consistent way on a regular formal basis. Information gathered should be incorporated with routine survey results to provide a better picture of the status of coarse fisheries.

10.8 This survey probably gives a reasonable overall picture of the current fisheries status of the River Axe. Unfortunately there is no comparable historic data to indicate exactly what the river was like before the days of mechanical maintenance and significant abstraction.

11 RECOMMENDATION

The Committee is requested to note the contents of this paper.


CH A
CH B
CH C
AX L
AX K
AX J
HI C
HI B
HI A
AX I
AX H
AX C
AX F
AX A
AX E
AX B
AX D
AX C
Cheddar
Axbridge
Cheddar Moor
Draycott
Rodney Stoke
Cocklake
Stoke Moor
Westbury-sub-Mendip
Wedmore
Blackford
Westbury Moor
Wookey
Priddy
Townsend
Danger Area
Wedmore Moor
North Drain
APPENDIX

Weston Airport
Locking
Banwell
Churchill
Hutton
Uphill
Black Rock
Elborough
Knightcott
Sandford
Sandford Batch
Bleadon
Bleadon Level
Wonderstone
Shiplate
Christon
Winscombe
Sidcot
Barton
Hale Coombe
Loxton
Webbington
Compton Bishop
Crab Hole
Rackley
Cross
Axbridge
Cheddar Reservoir
Callow Hill
Batch
Ham Fm
Wick Fm
Hope Fm
Lympsham
Eastertown
North Yeo Fm
Green Fm
Biddisham
Lower Weare
Weare
Badgworth
Sparrow Hill
Brinscombe
Alston Sutton
Stone Allerton
Rooks Bridge
Tarnock
East Brent
Edingworth
Brent Knoll
Ham
Wick
Clewer
River Axe
AX S
AX R
AX Q
AX P
AX O
AX N
AX M
AX L
CH E
CH D
CH C
CH B

Gauging Station Summary

APPENDIX 2

AXE AT WOOKEY

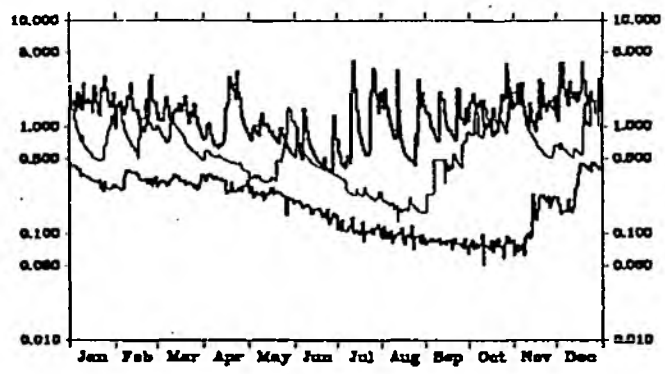
Station Number
052001

Gauged Flows
1956-1968

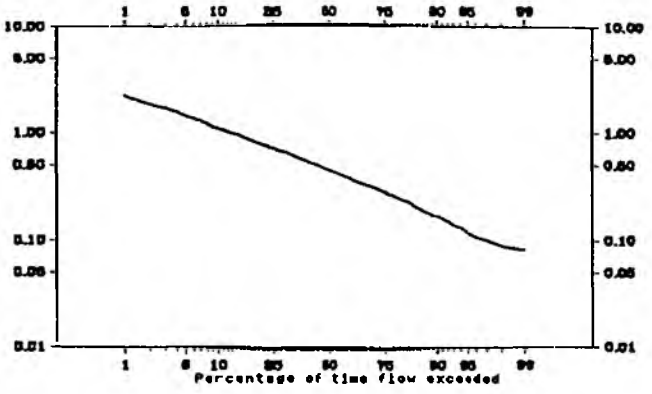
Measuring Authority: NRA - Wessex

Grid Reference: 31 (ST) 527 458

Daily Flow Hydrograph (m^3s^{-1})
Max. and min. daily mean flows from 1956 to 1968 excluding those for the featured year (1967)



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



Flow Statistics

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

Mean flow	0.57	
Mean flow (ls^{-1}/km^2)	31.28	
Mean flow ($10^6m^3/yr$)	18.0	
Peak flow & date	5.0	20 Nov 1963
Highest daily mean & date	4.1	12 Jul 1968
Lowest daily mean & date	0.051	11 Oct 1959
10 day minimum & end date	0.075	8 Nov 1959
60 day minimum & end date	0.079	8 Nov 1959
10% exceedance	1.108	
50% exceedance	0.456	
95% exceedance	0.118	
Mean annual flood		
Bankfull flow		

Catchment Characteristics

Catchment area (km^2)	18.2
Level stn. (mOD)	30.50
Max alt. (mOD)	285
IH Baseflow index	0.69
FSR slope (m/km)	
1941-70 rainfall (mm)	981
FSR stream freq. (junctions/km^2)	
FSR percentage urban	

Rainfall and Runoff

	Rainfall (mm) (1968-1968)				Runoff (mm) (1956-1968)			
	Mean	Max/Yr		Min/Yr	Mean	Max/Yr		Min/Yr
Jan	87	119	1961	60 1966	127	192	1962	49 1965
Feb	99	143	1966	58 1968	104	161	1966	52 1964
Mar	46	69	1967	13 1961	93	167	1963	51 1962
Apr	101	150	1966	60 1967	83	156	1963	43 1966
May	101	165	1967	36 1961	64	115	1966	37 1958
Jun	62	105	1960	28 1961	46	79	1964	26 1959
Jul	96	135	1960	74 1967	48	129	1965	16 1959
Aug	94	125	1966	60 1967	51	119	1965	14 1959
Sep	110	174	1967	52 1966	62	125	1965	12 1959
Oct	142	217	1967	19 1965	87	206	1960	12 1959
Nov	99	122	1960	63 1967	94	169	1960	32 1959
Dec	139	235	1965	93 1967	128	269	1965	50 1956
Annual	1176	1278	1966	1151 1968	987	1262	1960	668 1959

Station and Catchment Description

Factors Affecting Flow Regime

Summary of Archived Data

Gauged Flows and Rainfall

Key:	All rainfall	Some or no rainfall
All daily, all peaks	A	a
All daily, some peaks	B	b
All daily, no peaks	C	c
Some daily, all peaks	D	d
Some daily, some peaks	E	e
Some daily, no peaks	F	f
No gauged flow data	-	-

	01234 56789
1950s	----- -aaaa
1960s	aaaaa bAAE=
1970s	====- -====

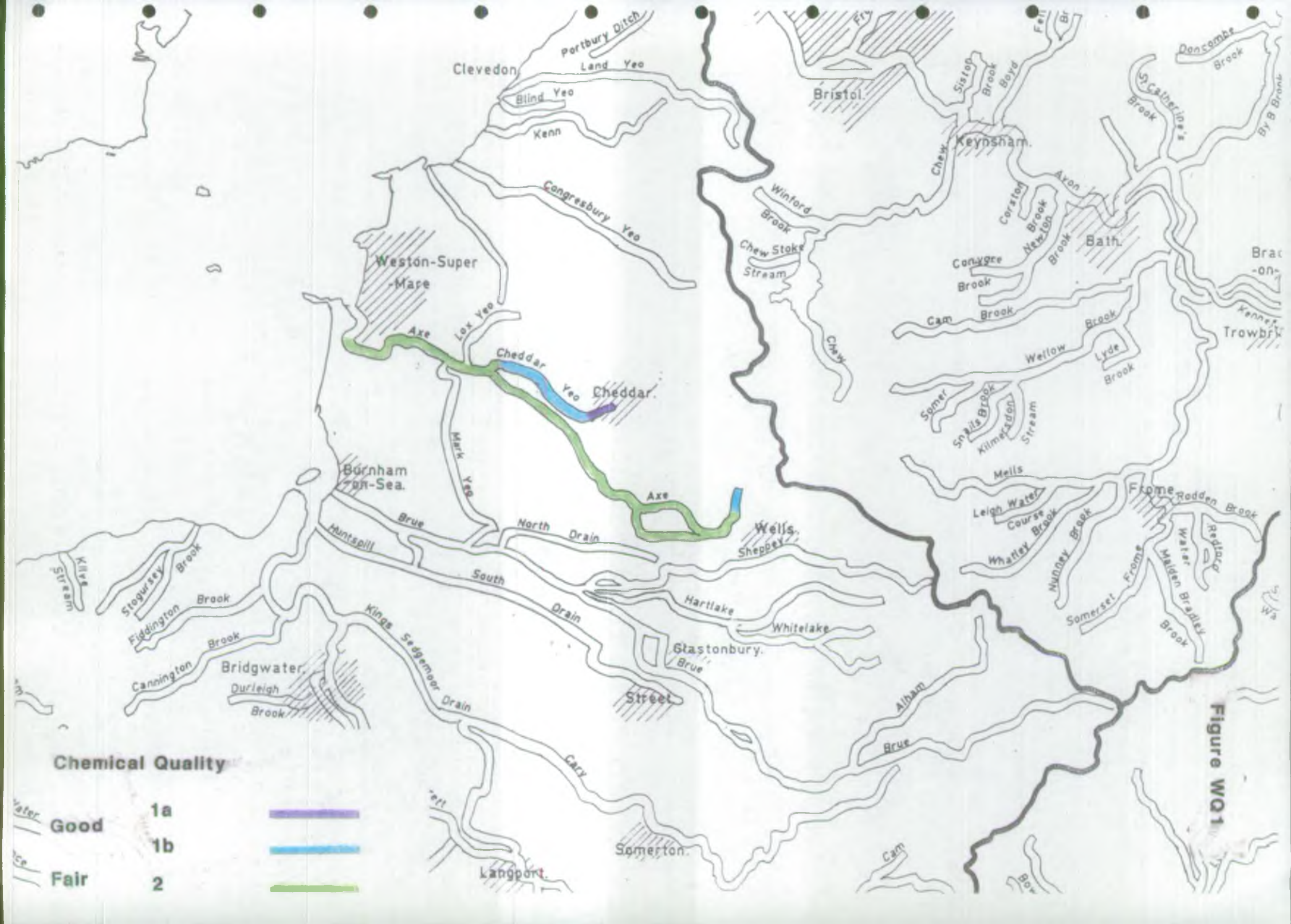
Naturalised Flows

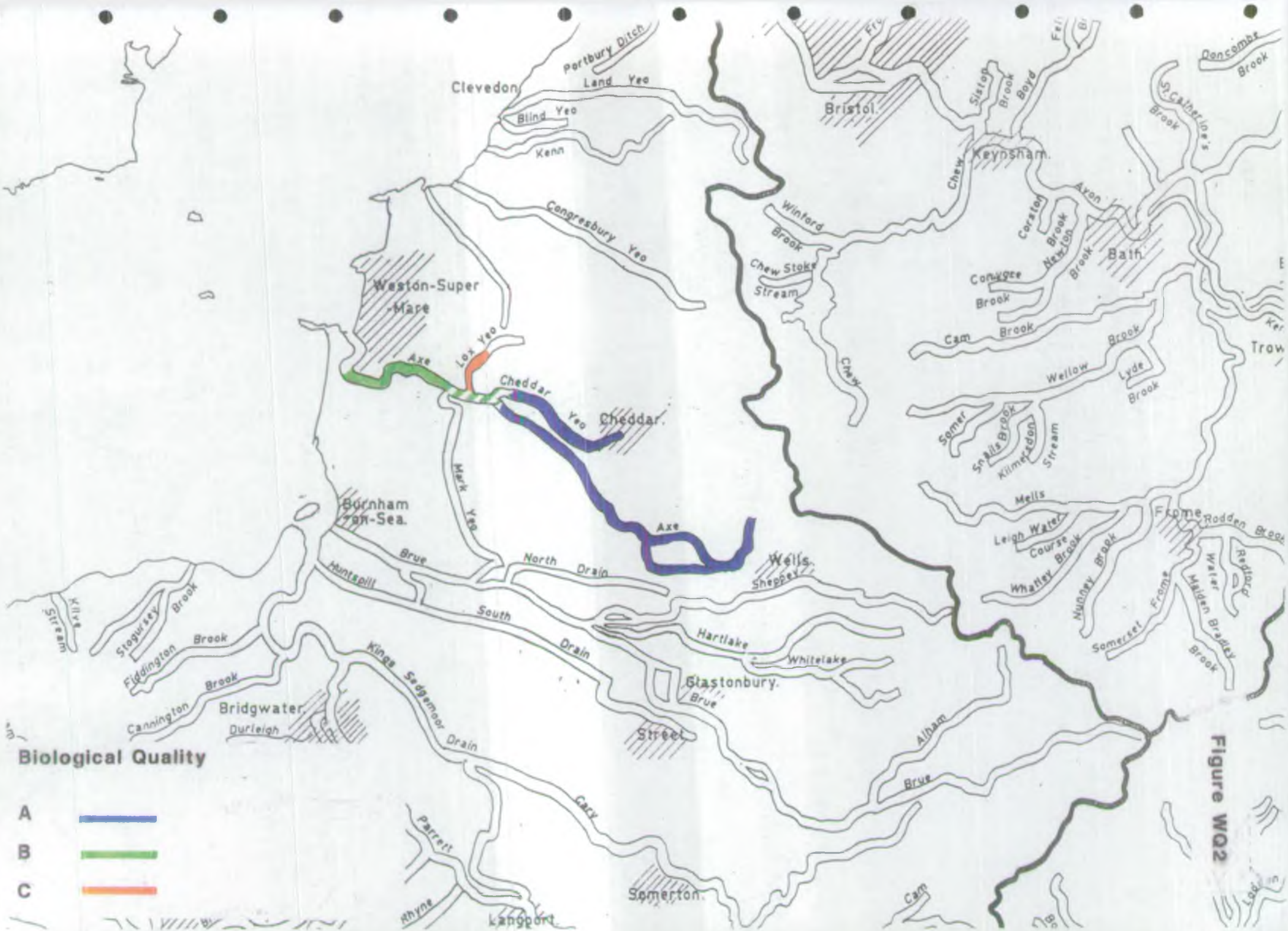
Key:	
All daily, all monthly	A
Some daily, all monthly	B
Some daily, some monthly	C
Some daily, no monthly	D
No daily, all monthly	E
No daily, some monthly	F
No naturalised flow data	-

No naturalised flow data available.

Institute of Hydrology (Surface Water Archive Service) Wallingford,
Oxon OX10 8BB, UK. Tel. 0491 38800.

1 Aug 1991


Clevedon
Portbury Ditch
Land Yeo
Blind Yeo
Kenn
Congresbury Yeo
Weston-Super-Mare
Axe
Lox Yeo
Cheddar Yeo
Cheddar
Mark Yeo
Burnham-on-Sea
Brue
North Drain
Huntspill
South Drain
Wells
Sheppey
Axe
Hartlake
Whitelake
Glastonbury
Street
Bridgwater
Cannington Brook
Durleigh Brook
Fiddington Brook
Stogursey Brook
Kilve Stream
Kings Sedgemoor Drain
Cary
Somerton
Langport
Alham Brue
Bristol
Siston Brook
Boyd
Chew
Keynsham
Winford Brook
Chew Stoke Stream
Chew
Congresbury Yeo
Bath
Corston Brook
Newton Brook
Avon
Conygre Brook
Cam Brook
Wellow Brook
Lyde Brook
Somer
Snails Brook
Kilmersdon Stream
Mells
Leigh Water Course
Whatley Brook
Frome
Nunney Brook
Somerset Frome
Malden Bradley Brook
Redlake Water
Redden Brook
Doncombe Brook
St Catherine's Brook
By & Brook
Trowbridge
Cam
Figure WQ1
Chemical Quality
Good
1a
1b
Fair
2


Clevedon
Portbury Ditch
Land Yeo
Blind Yeo
Kenn
Congresbury Yeo
Weston-Super-Mare
Lox Yeo
Axe
Cheddar
Yeo
Cheddar
Mark Yeo
Burnham-on-Sea
Brue
North Drain
Huntspill
South Drain
Wells
Sheppey
Axe
Hartlake
Whitelake
Glastonbury
Brue
Street
Kings Sedgemoor Drain
Bridgwater
Durleigh
Cannington Brook
Fiddington Brook
Stogursey Brook
Kilve Stream
Parrett
Cary
Ahyne
Langport
Somerton
Alham
Brue
Cam
Bristol
Fry
Siston Brook
Boyd
Fell
Bi
Keynsham
Chew
Winford Brook
Chew Stoke Stream
Chew
Congresbury Yeo
Corston Brook
Ayon
Newton Brook
Bath
Conygre Brook
Cam Brook
Willow Brook
Lyde Brook
Somer
Snails Brook
Kilmersdon Stream
Mells
Leigh Water
Course
Whatley Brook
Frome
Rodden Brook
Nunney Brook
Somerset Frome
Mells Water
Malden Bradley Brook
Redlake
Doncombe Brook
St Catherine's Brook
Trow
Biological Quality
A
B
C
Figure WQ2

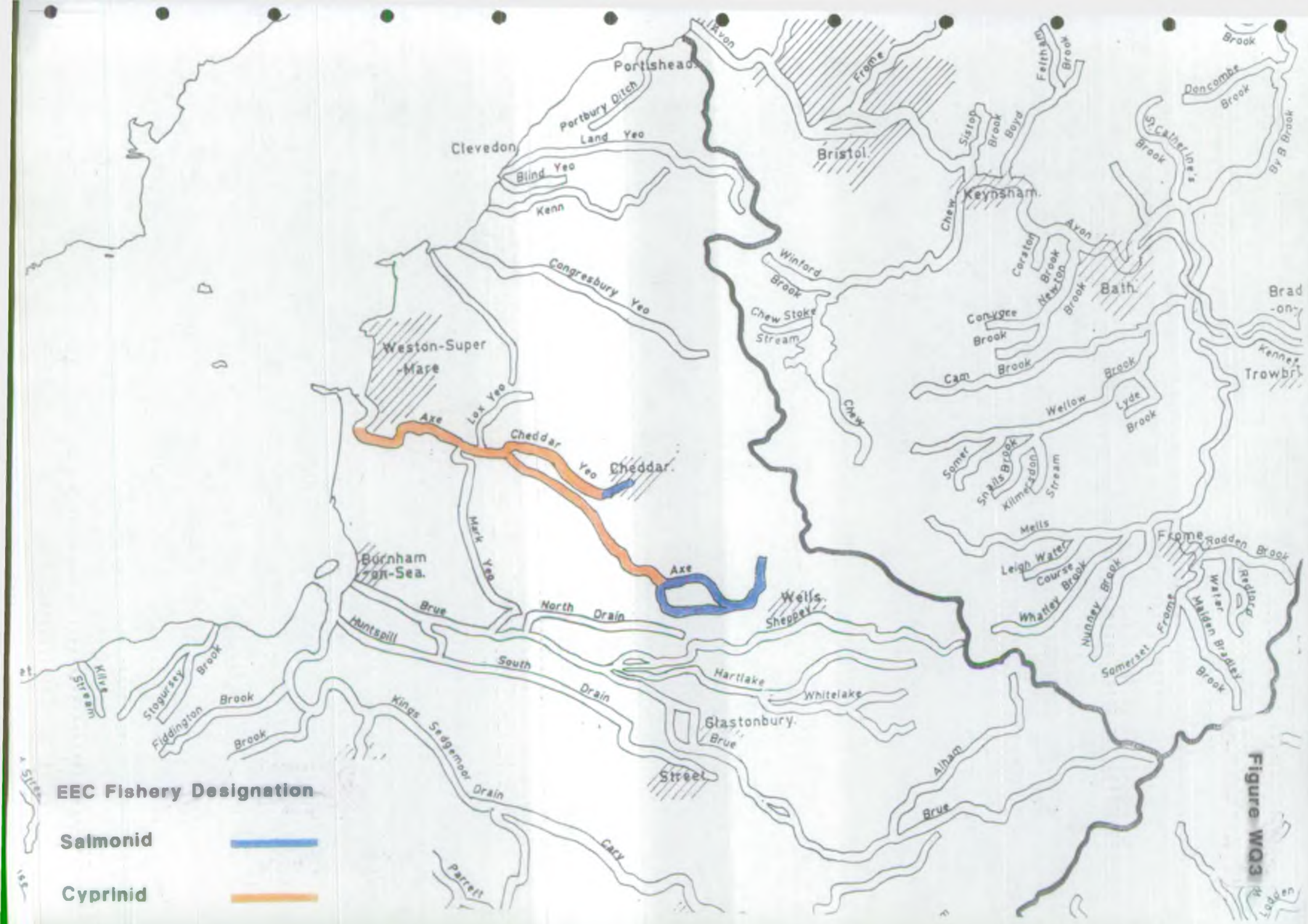

Avon
Portishead
Portbury Ditch
Land Yeo
Clevedon
Blind Yeo
Kenn
Congresbury Yeo
Weston-Super-Mare
Lox Yeo
Axe
Cheddar Yeo
Cheddar
Mark Yeo
Burnham-on-Sea
Brue
North Drain
Huntspill
South Drain
Kings Sedgemoor Drain
Parrett
Cary
Stogursey Brook
Fiddington Brook
Kilve Stream
Bristol
Frome
Feltham Brook
Siston Brook
Boyd
Chew
Keynsham
Winford Brook
Chew Stoke Stream
Bath
Corston Brook
Newton Brook
Conkgee Brook
Cam Brook
Wellow Brook
Lyde Brook
Somer
Spaniels Brook
Kilmersdon Stream
Doncombe Brook
St Catherine's Brook
By & Brook
Brad-on-
Kennet
Trowbr
Wells
Sheppey
Hartlake
Whitelake
Glastonbury
Brue
Street
Alham
Brue
Mells
Leigh Water Course
Whatley Brook
Nunney Brook
Frome
Rodden Brook
Somerset Frome
Water Maiden Bradley
Brook
Redlake
Laddon
EEC Fishery Designation
Salmonid
Cyprinid

Figure WQ3

River Axe

Biomass of fish (all species)

1991

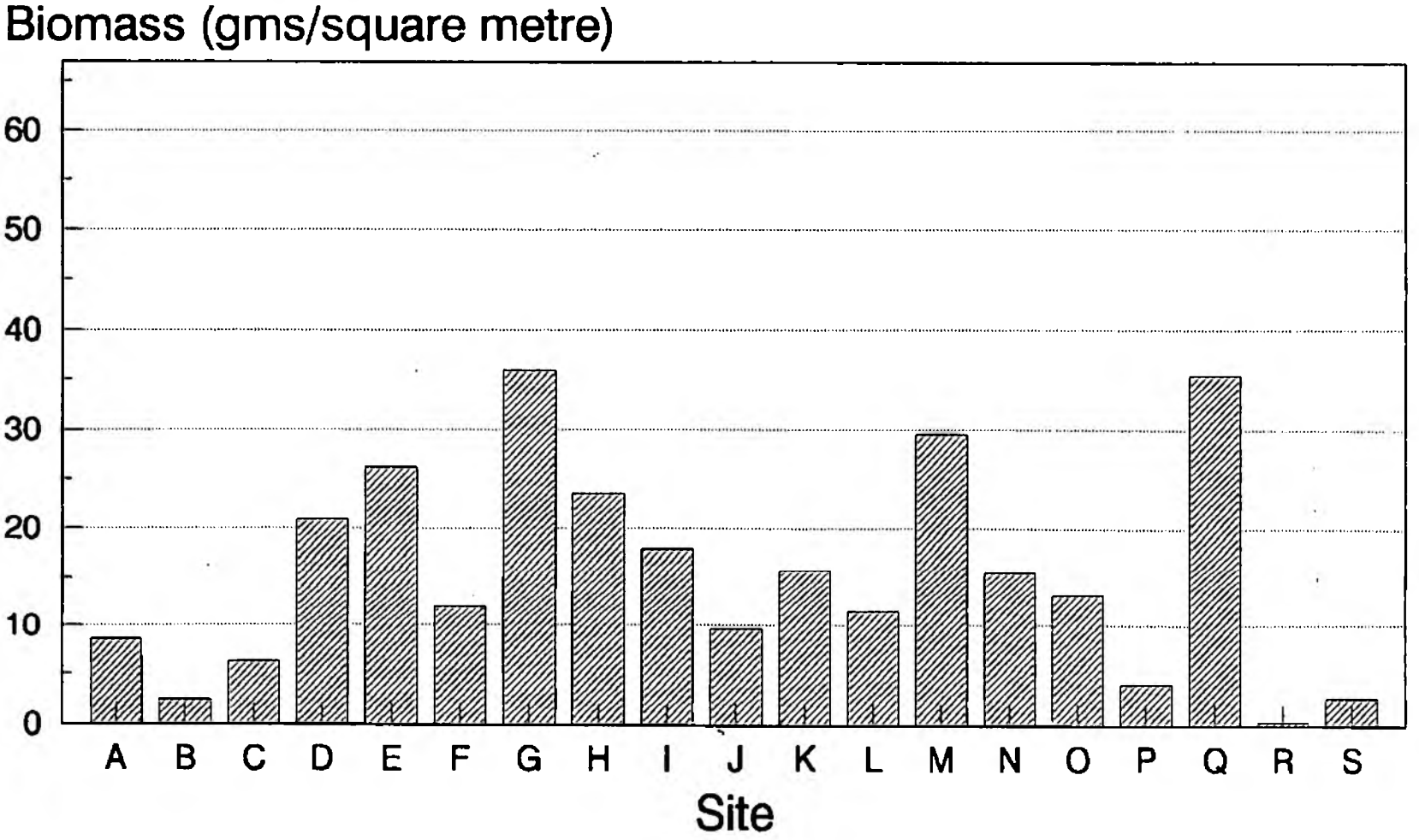


Figure 1

River Cheddar Yeo

Biomass of fish (all species)

1991

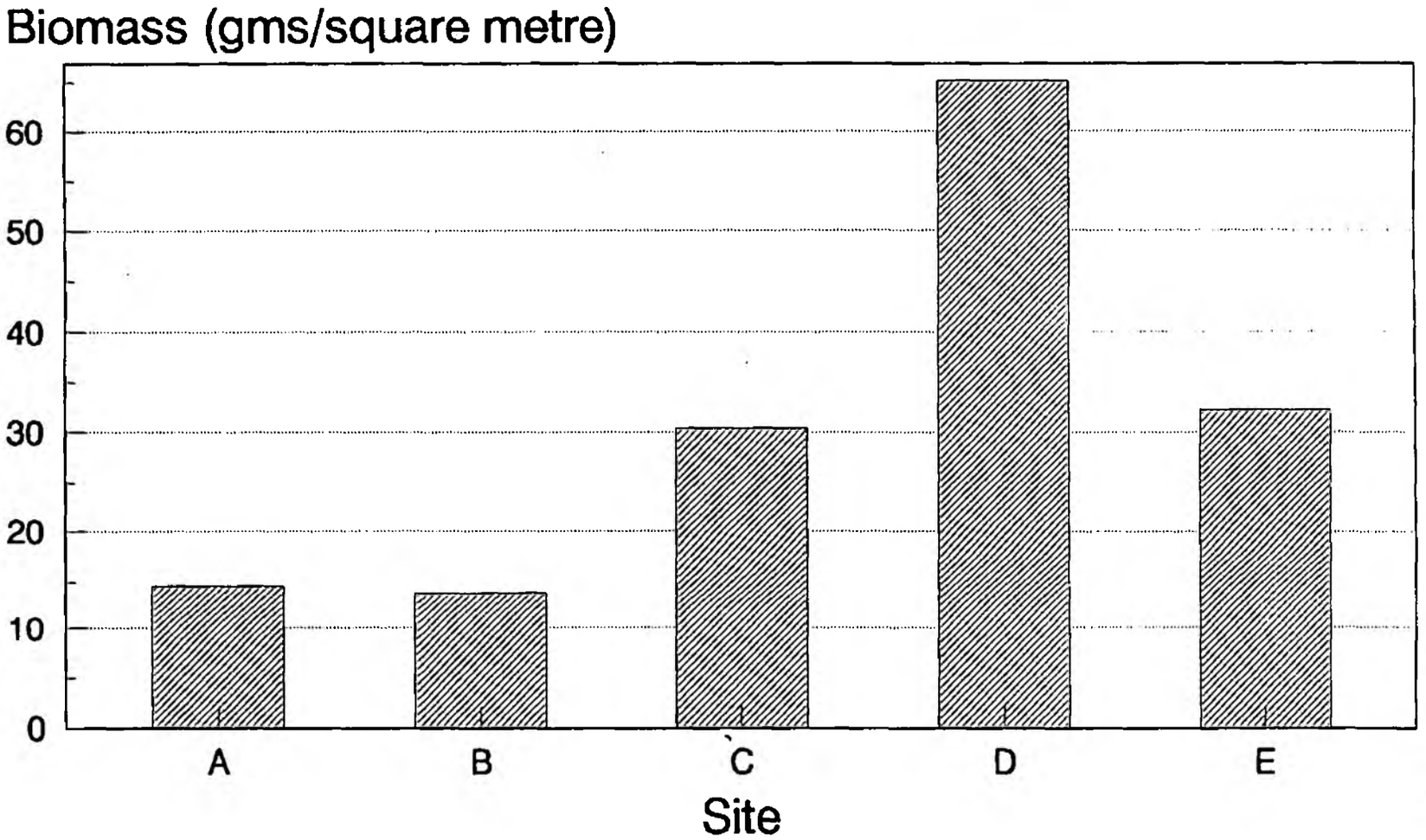


Figure 2

Hixham Rhyne

Biomass of fish (all species)

1991

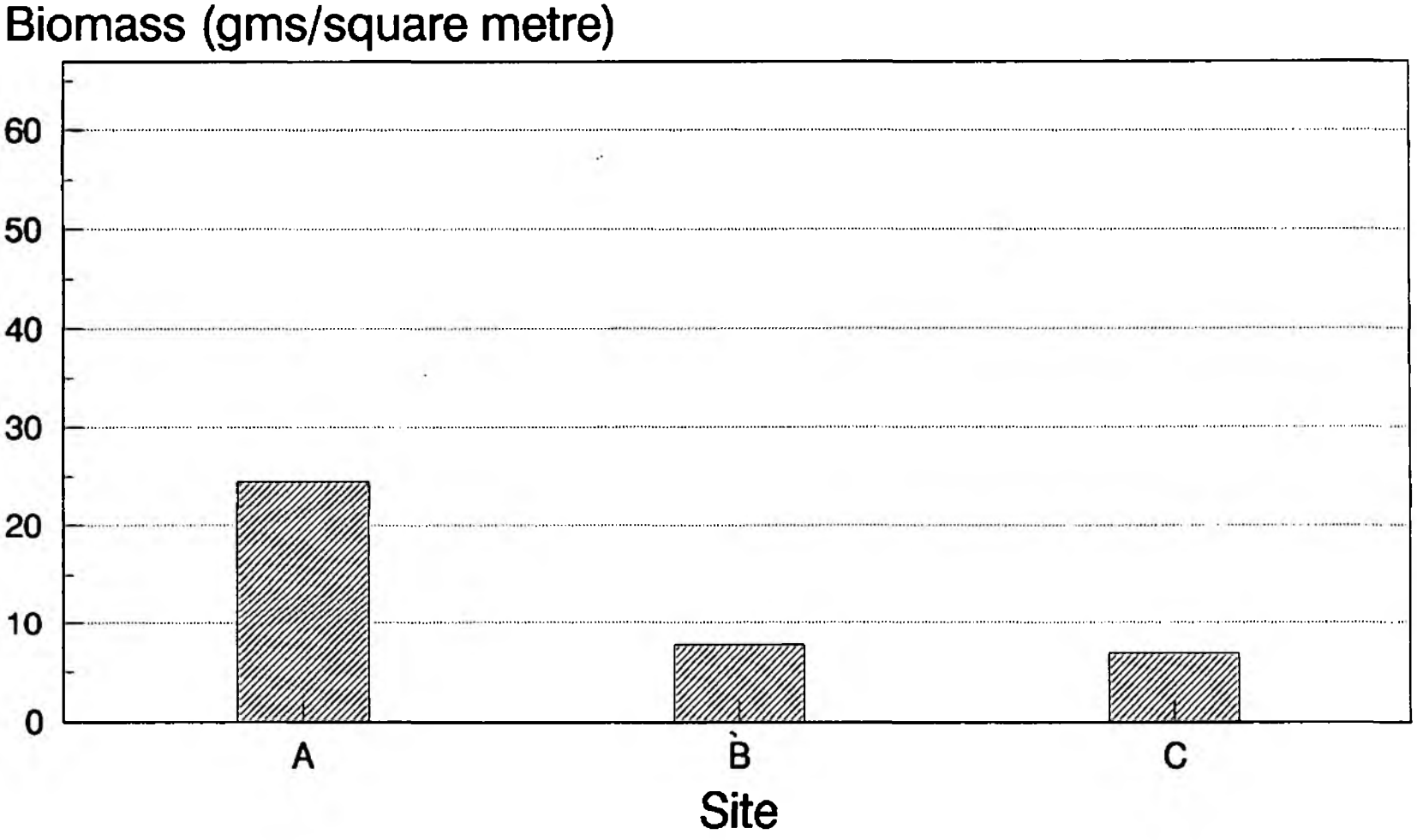
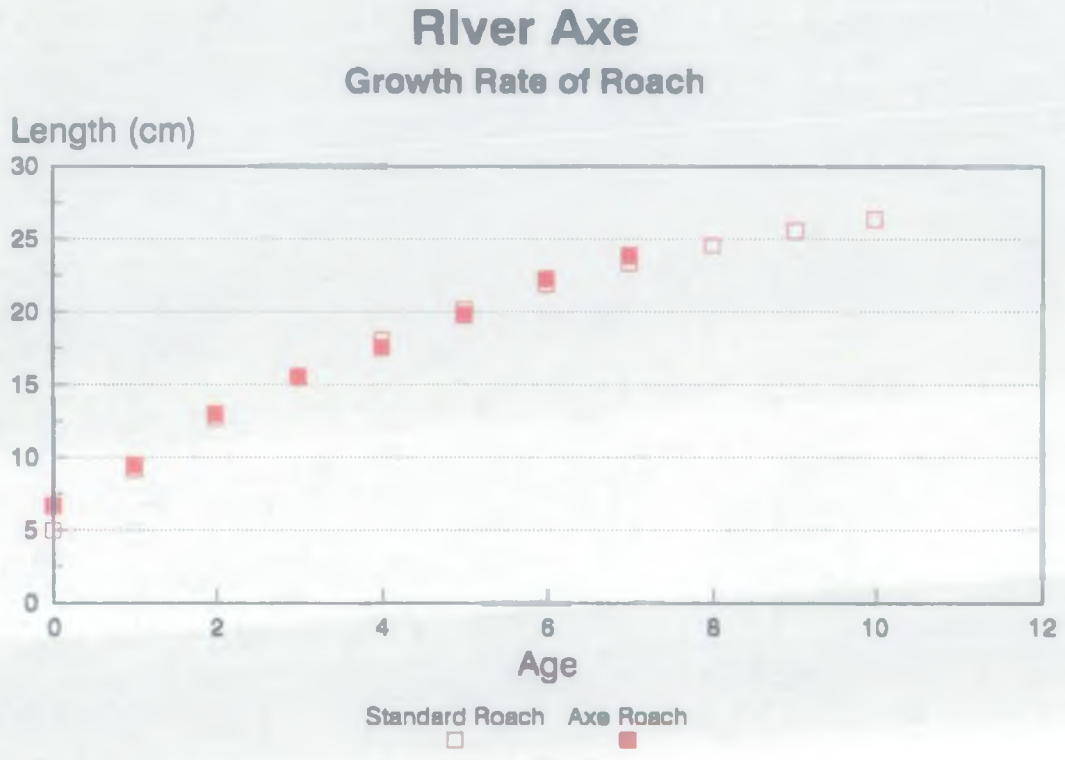


Figure 3

Figure AXGROW



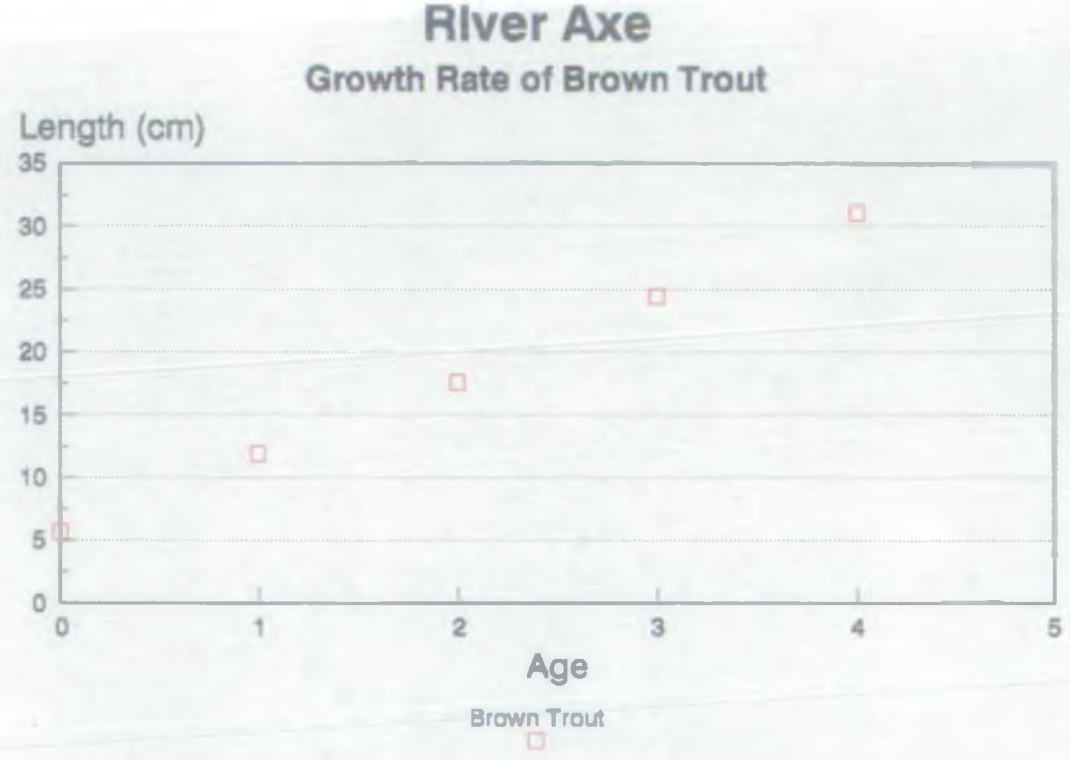


Figure CHGROW