



NRA

*National Rivers Authority
Thames Region*

ANNUAL REPORT ON FISHERIES

1st April 1988/31st March 1989



NRA Thames 187



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NATIONAL RIVERS AUTHORITY

THAMES REGION

Annual Report on Fisheries

1st April 1988 / 31st March 1989

Kings Meadow House
Kings Meadow Road
Reading
RG1 8DQ

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1. Introduction

This is the second annual account of the work of the fisheries function within Thames Water. Amidst the preparation for the changes due in 1989 which will transfer the function to the National Rivers Authority there has been good progress in several areas of activity. Some key points are summarised in this introduction. Details will be found in the remainder of the report.

There was a record return of 323 adult salmon counted through the trap or firmly recorded in other ways, but the number caught by anglers remains low. The Thames Salmon Trust has received promises of sponsorship which will continue to sustain the programme of fish pass construction.

There has been a further increase in sales of rod licences despite the increase in fees. As a result last year's deficit has been turned into a healthy surplus.

Good progress has been made with the development of the fish rearing site at Fobney Mead and production of chub and dace increased to over 10,000 fish.

In the river survey programme a great deal of fieldwork was undertaken. Results analysis has not kept pace and fourteen reports are now in course of preparation. All of these should be completed during 1989/90.

The annual edition of Newscast retained the improved format introduced last year and was once again well received.

In the early part of the summer an outbreak of Spring Viraemia of Carp affected 8 sites within the region. Vigorous efforts were made to reduce the numbers of fish at risk by curtailing stocking movements. The numbers stocked by Thames Water fell by about 15% over the previous year. Private movements eventually showed an increase despite the virtual standstill on waters involving carp throughout the summer months.

Checking of rod licences by bailiffs continued at about the same level as in the previous year, but there was a welcome fall in the number of offence reports issued for fishing without licences.

Following the considerable changes to the fishery staff structure in 1987/8 there were further developments in the appointment of four fishery assistants. These junior staff work with the equipment and on surveys, enabling the fishery officers to spend more time processing results and in advisory or development work.

The reception given to the first Annual Report was very encouraging. A number of suggestions were made and some incorporated this time. Once again we would welcome comments and hope that next year we can make further improvements.

2. The Regional Fisheries Advisory Committee

The Committee met on four occasions during the year. A continuing theme throughout the period was the development of the Government's proposals for the privatisation of the water industry and the establishment of the National Rivers Authority. At the outset the very future of Fisheries Advisory Committees was in some doubt but it was eventually established that the new NRA regions would have a Fisheries Advisory Committee reporting to their Regional Advisory Board.

Against this background there was discussion of a wide range of both general and specific issues affecting fisheries.

1. **Water Quality.** The Committee received a report on river water and sewage effluent quality during the previous year. As in the year before, concern was expressed over the condition of effluent discharges to the tideway. A number of the matters raised have been discussed with both Anglian and Southern Water Authorities. Correspondence with MAFF on the question of Dursban and the appropriateness of its packaging and usage instructions was unfortunately inconclusive. Drainage from motorways was discussed and concern expressed over the limited powers of Water Authorities to control pollution risks during construction. A paper was requested on the effects on fisheries in this region, but has not been proceeded with due to lack of tangible evidence of the impact of motorways once they have passed beyond the construction period and into use.
2. **Development: liaison with planning organisations and environmental impact assessment.** The Committee received a number of papers on these related issues. New arrangements for liaison on Thames Water's own land drainage operations were accepted. The implications of Statutory Instrument 1217 on environmental impact assessments were outlined. The committee noted Thames Water's policy of working in a way which was environmentally sensitive, thus avoiding the need for most impact assessments. There was continuing concern over the question of whether fisheries interests were adequately represented in responses to planning consultations. A number of specific instances were cited of problems and the Committee expressed the hope that future arrangements under the NRA would prove to be more effective.
3. **River flows.** The dry winter of 1988/9 was giving rise to concern over potential problems in the summer of 1989. Preparations for possible arrangements for drought orders or reductions in the flow at Teddington were explained. The Committee continued to request information on the details of the study on the alleviation of low flows undertaken on behalf of Thames Water by Sir William Halcrow and partners and on the possibility of its implementation. The Committee received a report on the proposals for abstraction from the Thames at Bray by Mid Southern Water Company.

4. **Tideway fisheries.** The eel fishery in the Tideway was discussed at every meeting. It was agreed that the Thames Eel Fishermen's Association would be consulted in any future proposals to raise licence fees. There was much concern over the disclosures by MAFF that a survey in 1985 had shown high levels of dieldrin in Thames eels. Although these were not dangerous provided that inordinate quantities were not consumed the resulting publicity had an adverse effect on the saleability of Thames eels. The Committee noted the efforts of management to have a more comprehensive study undertaken by MAFF.

The Committee noted that the Port of London Authority had no objection to relinquishing their sea fishery powers and endorsed the proposal by management to seek their transfer to Thames Water or its successor in the NRA.

5. **Other matters.** Amongst other items of business the Committee approved the vigorous stand taken to counteract the outbreak of Spring Viraemia of Carp. It also discussed the contamination and flooding of Brooklands Lake, Dartford by discharge from a Thames Water borehole. Apologies had been made by management. The possibility of effects on fisheries were still under investigation.

The Committee received several reports on Broomwood Lake where flood defence works on the River Cray threatened to disturb contaminated silt and pollute the lake, disturbing its fisheries and those of other waters downstream. Proposals alternative to those being pursued by Southern Water were submitted and the Committee endorsed these and asked to be kept informed of developments. Finally the Committee received a paper on the status of native crayfish stocks and proposals for their protection. They advised the Board to continue to urge the need for the formulation of measures for protection on MAFF and the N.C.C.

The terms of reference of the Committee and its membership are given in Appendix 1.

3. Financial Performance

The objective of financial self sufficiency was achieved for a further year. This was the first year of the raised licence fees, and of the arrangement by which a second rod licence was available at the concessionary rate.

The budget and actual outturn are shown in Table 1. As in the previous year both income and expenditure were higher than expected. Rod licence sales outstripped those of the previous year despite the increase in prices. Although there was a small fall in annual adult licence sales this was more than counterbalanced by the sales of the cheap second licences. The actual surplus over budget of £145,000 for rod licences in Table 1 does however include a sum for late licence money held over from the previous year.

Increased expenditure over budget could not be attributed to any particular cause.

Once again free fifteen day licences were made available to tackle dealers to issue under the starter licence scheme. As in the previous year the actual numbers used was about 1,000. The potential loss of income was thus small, and it is hoped that by casting our bread upon the waters in this way we reap a much greater benefit in the recruitment of regular anglers who are already attuned to the idea of licence holding.

Table 1 Income and Expenditure

	<u>Original Budget</u> 1988/9 £000	<u>Actual</u> 1988/9 £000	<u>Variance</u> £000
Income:			
Rod Licences	916	1061	+ 145
Miscellaneous Income	14	29	+ 15
Salmon Rehabilitation	71	71	-
	<u>1001</u>	<u>1161</u>	<u>+ 160</u>
Expenditure:			
Operating Costs			
- employees	371	375	+ 4
- other	247	250	+ 3
Divisional Support:			
- employees	22	26	+ 4
- other	16	19	+ 3
Research	15	12	- 3
Rod Licence Admin/ Commission	62	71	+ 9
Regional Costs	84	77	- 7
Financing Costs	68	80	+ 12
Salmon Rehabilitation	71	71	-
	<u>956</u>	<u>981</u>	<u>+ 25</u>
Surplus (deficit)	<u>45</u>	<u>180</u>	<u>+ 135</u>

4. Review of Operational Fisheries Work

a) Fishery Management

Fishery Management forms a major section of the department's work to maintain, improve and develop fisheries within the Thames region. This section deals with the practical management work carried out by the department including stocking, culling and fish health assessment. The subjects of fishery surveys and advisory work are covered in sections (b) and (c).

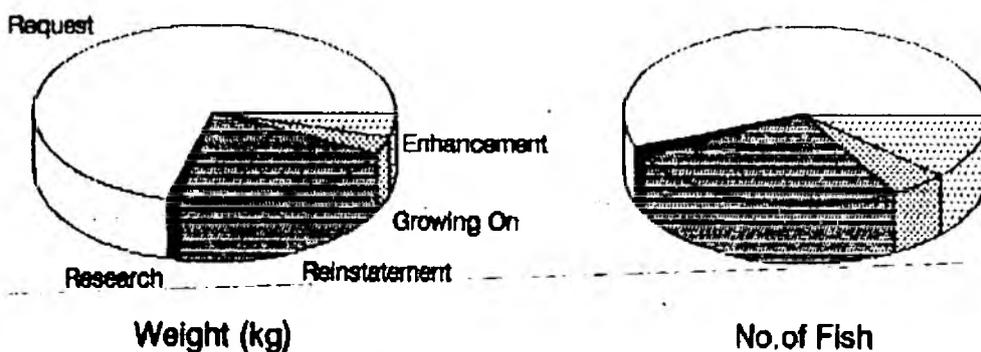
i) Stocking

A summary of Thames Water's stocking during 1988/89 is provided in Table 2. This excludes stocking associated with the Salmon Rehabilitation Scheme and Authority trout fisheries which are covered in other sections of the report. Full details of all stockings are provided in Appendix 3.

Table 2 - Reasons for Stocking

<u>Reason for Stocking</u>	<u>Weight (kg)</u>	<u>%</u>	<u>No. of Fish</u>	<u>%</u>
Request	6886	71	54490	56
Research	100	1	1740	2
Reinstatement	2014	21	24543	25
Growing On	289	3	4979	5
Enhancement	432	4	11516	12
	9721		97268	

Figure 1 - Reasons for Stocking



Requests: Orders from angling clubs and fishery owners. Angling Clubs receive this stock free of charge when the request is considered justified.

Research: Stocking undertaken as part of a specific investigation e.g. marked fish to assess specific populations.

Reinstatement: Stocking undertaken after a fishery has suffered a mortality.

Growing On: Fish stocked to Authority stock ponds to be grown on and used at a later date.

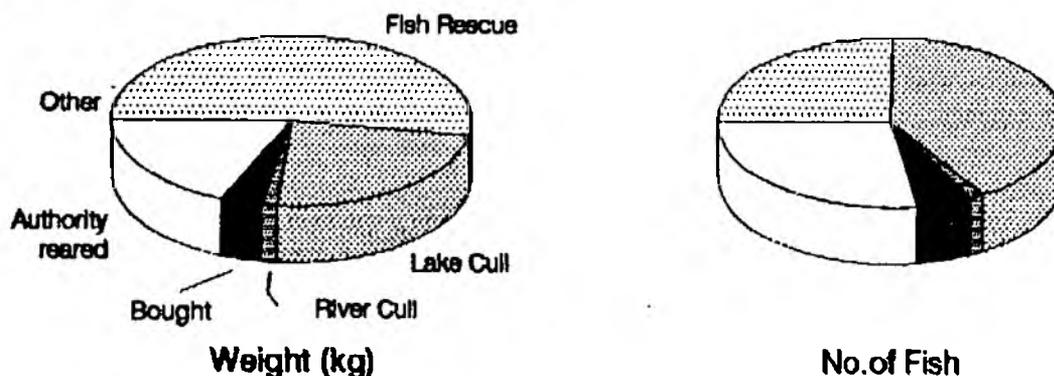
Enhancement: Stocking undertaken to improve an existing fishery.

Details concerning the source of the stocked fish are provided in Table 3.

Table 3 - Source of Stocked Fish

<u>Source</u>	<u>Weight (kg)</u>	<u>%</u>	<u>No. of Fish</u>	<u>%</u>
Authority Reared	1805	19	26646	27
Bought	354	4	5060	5
River Cull	130	1	1250	1
Lake Cull	2317	24	39777	41
Fish Rescue	5113	53	24511	25
Other	2	0	24	0
	----		----	
TOTAL	9721		97268	
	----		----	

Figure 2 - Source of Stocked Fish



A total of approximately 9.7 tonnes was stocked during 1988/89 with 71.6% being introduced to stillwaters and 28.4% to rivers and canals. The comparatively high percentage stocked to stillwater is mainly due to a number of major stillwater fish rescues in which up to four tonnes of stillwater species were stocked to other fisheries. This also accounts for fish rescues providing 53% of the total weight of fish stocked during 1988/89. The main reasons for stocking were requests from angling clubs (71%) and reinstatement (21%). Many introductions were made to angling club waters such as Badshot Lea Pond where 10,000 bream were stocked to enhance this Farnham A.S. match fishery. Several major reinstatement stockings were also undertaken including the Oxford Canal where almost one tonne of mixed coarse fish were introduced following a pollution incident. Other reinstatement stockings were undertaken on the River Lodden, River Mole and Cripsey Brook.

Overall, stockings during 1988/89 have fallen in comparison to 1987/88 with total weight being reduced by 15% and total number by 50%. This may be attributed to the Authority's fish movement policy during this period in response to the threat of the Spring Viraemia of Carp (S.V.C.) outbreak. This had the effect of restricting the Authority's stocking of non S.V.C. tested carp and other coarse species during part of the year.

With regard to the source of stocked fish, the large proportion (53% by weight) supplied from fish rescues has been commented on above. The other main sources were lake culls (24%) and Authority reared (19%). Although the weight of Authority reared fish has fallen by approximately 25% compared with 1987/88, the number of fish of stockable size has increased by 80%. This is not obvious from the

figures provided in the 1987/88 Annual Report due to the inclusion of a large number of fry which were stocked for growing on purposes. This increase is a step forward in the Authority's continued effort to develop its fish rearing facility.

ii) Culling Operations

During 1988/89, some 42 culling operations were carried out. The vast majority of these were selective removal of excess fish from overstocked stillwaters. One such operation was undertaken at Cray Valley Anglers Bexley Pit where 5000 stunted roach and bream were culled and used to enhance other stillwater fisheries with recruitment problems.

Other reasons for culling include the removal of pike and other unwanted species from trout fisheries.

iii) Health Assessment

During 1988/89, some 43 samples were obtained for health assessment. The major reasons for taking samples include health checks for angling clubs prior to fish movement and fish disease incidents. This year required an increased effort to investigate confirmed and potential cases of Spring Viraemia of Carp (S.V.C.).

b) Fishery Surveys

i) River Surveys

This report covers the third year of a five year programme which has the objective of assessing the fishery status of all 1200km of river designated under the E.E.C. directive 75/659. This directive, issued in 1978, instructed all member states to designate watercourses capable of supporting salmonid (game) or cyprinid (coarse) fisheries. These watercourses are required to comply with stipulated water quality parameters in order to protect fish life. Thames Water has set a standard of service for E.E.C. designated fisheries in the form of a minimum biomass (weight of fish per area) of 20g/m² for Cyprinid water and 15g/m² for Salmonid waters. An additional target is for 80% of E.E.C. designated watercourses to comply with the relevant biomass figure. The importance of surveys concerning non-designated watercourses has also been recognised.

Fish populations are affected directly and indirectly by a range of environmental factors including water quality, quantity and habitat structure. The response of fish populations to these factors provides an important biological indicator of environmental quality. The river survey programme provides biological monitoring to identify depressed fish populations which may result from factors such as poor water quality, land drainage operations, low flows and pollution incidents. The surveys also provide important baseline data which enables both short and long term changes to be assessed.

The details of the programmed river surveys undertaken in 1988/89 are presented in Table 4 and a summary of the results is provided in Table 5. One important point to note is the large number of watercourses scheduled for survey during this year in comparison to 1987/88.

Table 4

Programmed River Surveys 1988/89

Watercourse	Survey Length	Length EEC	Length Non-EEC	No. Sites	No. EEC Des. Sites	Compliance With Target Biomass		
	(km)	Des.(km)	Des.(km)	Sites	Sites	Sites	Length	% L
Programmed Surveys 1988/89								
River Churn	41.3	37.3	4	13	13	Report being compiled		
Ampney Brook	12.6	0	12.6	6	0	Report being compiled		
River Cherwell	86.5	52.1	34.4	9	3	Fieldwork incomplete		
River Coln	15	11	4	6	4	Report being compiled		
River Evenlode	64.4	54.4	10	9	9	$\frac{5}{9}$	$\frac{41.4}{54.4}$	76.1
Kennet Catchment	163	135	28	39	37	Fieldwork incomplete		
Upper Wey	119.2	119.2	0	33	30	Report being compiled		
River Ver	15.6	14.4	1.2	6	5	Report being compiled		
River Gade	21.7	2	19.7	6	1	Report being compiled		
River Misbourne	23	5.5	17.5	6	2	Report being compiled		
Upper Colne	20	1	19	6	1	Report being compiled		
River Cray	14	14	0	7	7	Report being compiled		
River Darent	23.4	23.4	0	10	10	Report being compiled		
River Wandle	16.9	7.4	9.5	6	-	Fieldwork incomplete		
TOTAL	646.6	483.7	159.9	162	122	$\frac{5}{9}$	$\frac{41.4}{54.4}$	76.1

Surveys carried over from 1987/88

Basingstoke Canal	60	30	30	13	7	$\frac{1}{7}$	$\frac{4}{30}$	13.3
Grand Union Canal	89.1	34.3	54.8	19	5	Report being compiled		
TOTAL	149.1	64.3	84.8	32	12	$\frac{1}{7}$	$\frac{4}{30}$	13.3

Additional Programmed Surveys 1988/89

River Pang	2	2	0	1	1	$\frac{1}{1}$	$\frac{2}{2}$	100
River Roding/ Cripsey Bk	8	8	0	4	4	$\frac{2}{4}$	$\frac{4.8}{8}$	60
TOTAL	10	10	0	5	5	$\frac{3}{5}$	$\frac{6.8}{10}$	68%

Table 5 - Summary of Programmed River Surveys 1988/89

<u>Stage of Survey</u>	<u>Length Surveyed (km)</u>	
	<u>E.E.C. designated fisheries</u>	<u>Non-designated rivers</u>
<u>Reported Surveys</u>		
1988/89	54.5	10.0
1987/88 (carried over)	30.0	30.0
Additional 1988/89	10.0	0.0
TOTAL	94.4	40.0
<u>Surveys being compiled</u>		
1988/89	237.8	78.0
1987/88 (carried over)	34.3	54.8
TOTAL	272.1	132.8
<u>Surveys with fieldwork incomplete</u>		
1988/89	194.5	71.9
Total surveys 1988/89	561.0	244.7

The vast majority of fieldwork associated with the programmed surveys has been completed with eleven of the fourteen reports now in the process of being compiled. Only one of the programmed surveys 1988/89 has been published during the same period. The River Evenlode report was based on fieldwork undertaken in 1982 and covered 54.4 km of E.E.C. designated fisheries and 10 km of non-designated river.

The completion of the Basingstoke Canal Survey carried over from 1987/88 produced a report covering 30km of E.E.C. designated fisheries and 30km of non-designated watercourse. The fieldwork for the Grand Union Canal survey was also carried over from 1987/88 and is now complete. This report is being compiled and will be published later in 1989.

Two additional programmed surveys were undertaken in 1988/89. A limited survey of the River Pang, in connection with low flow problems, produced a report covering 2km of E.E.C. fishery. A survey of the River Roding and its Cripsey Brook tributary was also undertaken following a major pollution incident. This produced a report covering 8km of E.E.C. designated fishery.

In total, survey reports have been produced covering 94.4km of E.E.C. designated fisheries and 40km of non-designated river. Fieldwork is complete and reports are being compiled covering a further 272.1km of E.E.C. designated fisheries and 132.8km of non-designated river. These reports will be published during 1989. Fieldwork remains incomplete on surveys covering 194.5km of E.E.C. designated fisheries and 71.9km of non-designated river.

With respect to compliance with biomass targets, 55.3% of E.E.C. designated fisheries achieved their target biomass. This figure fails

to meet Thames Water's target of 80% compliance. The reasons for the failures are detailed below.

<u>Length E.E.C. des. fishery(km)</u>	<u>%</u>	<u>Reason</u>
26	61.6	Recent dredging. Clustered fish population.
13	30.8	Water quality - pollution incidents.
3.2	7.6	Poor habitat.

TOTAL 42.2		

Failure to comply with target biomass can be due to a range of factors as seen above. No clear conclusions should be drawn from this limited data, a full assessment of cause of failure and comparative importance will be available when the five year programme has been completed. It is clear, however, that the enhancement of fish populations often requires a combined effort involving many departments and external bodies dealing with water treatment, water supply, land drainage, pollution control etc. As the programmed surveys are completed the results are brought to the attention of internal departments or external bodies responsible for factors having a deleterious effect on the fish populations of our rivers.

ii) Stillwater Surveys

During 1988/89 some 12 stillwater surveys were carried out. These were undertaken to gain information on stock levels and health status.

c) Advisory Work

Advisory work forms a major section of the Department's work to maintain, improve and develop fisheries. Angling clubs can seek advice and receive visits free of charge. Other fishery owners and tenants may receive one free visit before being subject to a charge.

During 1988/89, some 235 advisory visits involving external bodies were attended. The Department has set an internal service standard of 28 days to respond to external advisory requests and the compliance level for 1988/89 was 100%.

External advisory visits cover a wide variety of topics and a breakdown of these is provided in Table 6.

Table 6 - External Advisory Work

<u>General Heading</u>	<u>Areas of Advice</u>	<u>%</u>
Fisheries Management	Stocking	67%
	Culling	
	Fishery surveys	
	Fish health	
	Weed control	
	Habitat enhancement	
	Water quality/pollution	

Creation of New Fisheries	Fishery design Habitat enhancement Water quality Stocking	10%
River Engineering	Flood allevation schemes Re-routing rivers Fishery protection measures Habitat enhancement Planning liaison Abstraction/low flow	6%
Land Drainage	Fishery protection measures Remedial work Habitat enhancement Planning liaison Conservation liaison	4%
Fish Rearing	Setting up intensive units Setting up extensive units Planning liaison	4%
Fishery Consultatives	Meetings to discuss fishery matters in-consultatives region.	9%

In addition to providing advice to external bodies, the department also has an important input into the fishery implications of work carried out by other functions within the Authority. During 1988/89, some 145 visits/meetings were attended to liaise with other departments covering a wide variety of topics detailed in Table 7.

Table 7 - Internal Advisory Work

<u>Area of Advice</u>	<u>%</u>
Land drainage and conservation	61%
Water quality	12%
River Engineering	14%
Water resources/low flow	4%
Fishery management	3%
Fish rearing	2%
Computing/Biosonics	2%

Examples of the Department's advisory input includes large schemes such as the Maidenhead flood scheme and the planned Chertsey/Datchet/Wraysbury/Staines project. Routine land drainage work is an area of advisory input that can protect and enhance fisheries. The River Blackwater at Eversley is one such example where careful channel design and weed planting have created an excellent habitat for coarse fish. In other areas, specific schemes are being undertaken to enhance areas of poor habitat caused by previous land drainage schemes. One such example is the Scotsgrove Brook, near Thame, where instream enhancement and large scale bankside tree planting are planned.

The total number of advisory visits/meetings attended during 1988/89 was 380. This represents an increase of 26% in comparison to 1987/88 and indicates a welcome increase in advisory input to fisheries matters in the Thames area.

d) Fish Rescues

Fish rescue operations are undertaken when significant numbers of fish are reported to be at risk. Thames Water has an internal service standard for an on site response with target times being as follows:

0900 - 1700 - 2 hours
 1700 - 0900 - 2.5 hours

During 1988/89, some 30 fish rescue operations were carried out. Sufficient notice was provided for 20 of these to be planned operations but the remaining 10 were emergencies and required urgent action. With regard to the service standard, all but one of the emergency operations were attended within the target time.

The major cause of fish rescues during 1988/89 was the draining of stillwaters and canal pounds (73%). Other causes include the infilling of stillwaters (10%), river engineering/low flow problems (10%) and low dissolved oxygen levels (7%). Several very large operations were undertaken during the year including the rescue of four tonnes of carp and 2000 perch from Sunninghill Lake which was being drained for essential repairs. Two and a half tonnes of mixed coarse fish were also rescued from a 1300 metre stretch of the Hertford Union Canal at Hackney when it was drained to allow the construction of a new sewer.

e) Fish Mortalities

During 1988/89, some 87 fish mortalities were investigated involving an estimated 20,000 fish weighing approximately 5.7 tonnes. A breakdown of the cause of mortalities is provided in Table 8 and full details are shown in Appendix 4.

Table 8 - Cause of Fish Mortalities

<u>Cause of Mortality</u>	<u>No. of Mortalities</u>	<u>%</u>	<u>Weight (kg)</u>	<u>%</u>
Unknown	40	46.0	3420.2	59.9
Dissolved oxygen problems	10	11.5	75.2	1.3
Disease	6	6.9	203	3.6
Dewatering/low flow	5	5.7	13.2	0.2
Angling damage	5	5.7	7.2	0.1
Agricultural discharge	4	4.6	1227	21.5
Algal bloom	3	3.4	45	0.8
General drainage	3	3.4	311	5.5
Toxic chemicals	2	2.3	310	5.4
Spawning stress	2	2.3	10	0.2
Blocked/broken sewer	2	2.3	6	0.1
Dredging operations	2	2.3	45	0.8
Sewage treatment works	1	1.1	10	0.2
Silt influx	1	1.1	8	0.1
Post stocking stress	1	1.1	15	0.3
	--		----	
TOTAL	87		5706 kg	
	--		----	

The number of mortality incidents attended during 1987/88 is similar to that in the previous year. The number of fish killed has shown a marked decrease of 75% and the weight of fish has also fallen by 11%.

The continued high number of mortalities with an unknown cause again includes many minor mortalities which suffer from late reporting. However, the cause of several important mortalities accounting for a significant proportion of the annual mortality figure remained undetermined.

The major causes of fish mortality investigations were dissolved oxygen problems and disease incidents. With regard to the significance of the mortalities, agricultural discharge is the most important cause. Other significant causes include toxic chemicals and general drainage discharge. A major change in comparison to the 1987/88 figures is the lack of significant mortalities caused by sewage treatment works.

5. Research and Development

Research and Development projects ongoing or completed during 1988/89 included work on eels, salmon, computerised fish surveys and Biosonics echo sounding fish surveys.

Eels

Research work on eels during 1988 was concentrated on two aspects of local biology - monitoring of the elver run and investigation of the role of introduction of foreign eel parasites through live imports to Billingsgate fish market.

Monitoring of juvenile eel migration was carried out at Acacia Weir, River Darent, Dartford in continuance of studies started in 1985. The run was much earlier than previous years probably reflecting the warm spring with water temperatures of 11°C being measured in April. It was also much smaller than runs recorded in the previous three years although it is not possible to consider this to be a trend.

A short-term project was carried out to look at species of parasites being imported with foreign eels into Billingsgate since live eels can escape to the main river.

Salmon

The major piece of research work carried out in 1988 was concerned with estimating the scale of salmon smolt losses at major reservoir intakes. The Louvre screen diverter trap built during 1987 in the intake channel at Walton-on-Thames was run during April and May 1988. A model obtained from analysis of the data was applied to historical flow and abstraction data for the last 12 years. This suggested that in most years (8 from 12) losses would be less than 5%, however in dry years (2/12) and drought years (2/12) significant losses would occur of between 10-15% and 45-85% respectively. Losses over 10% are clearly unacceptable and it was therefore proposed to continue work in 1989 to examine potential methods for diverting smolt, and coarse fish, away from water intakes using bubble and strobe light curtains.

Work was also continued with the smolt trap on the River Pang to examine smolt output and timing, and a new project was commenced on the River Lyde to examine methods of increasing juvenile salmon production by habitat improvement works.

Computerised Fishery Surveys

Some further enhancements to the fisheries computer survey programme were completed in 1988 and this is now regarded as complete. The system has now been in successful operation for some time and is also in use in North West and Wessex Water Authorities.

Biosonics

A scientific dual-beam sonar system was acquired to increase our capability to assess fish populations in the larger watercourses and lakes which are not suitable for more conventional fish sampling methods.

This is the first system of this type to be employed in fisheries in the UK. It is innovative in that it is able not only to assess the density of fish, but also the size distribution and thus the biomass. It should prove to be

a great asset to the fisheries department for both the routine monitoring programme as well as specific research topics.

Trials of the equipment are taking place on the River Thames and various stillwaters.

Fish Disease

Two projects looking at the life cycle, biology and methods of treatment of the fish parasites Sanguinicola sp. (blood fluke of carp) and Myxobolus sp. (protozoan on gills), which have caused serious problems amongst some coarse fish populations in the area, have been completed. These are now being prepared.

6. Salmon Rehabilitation Programme

1988 proved to be a record year for salmon returning to the River Thames (fig. 3). A total of 323 fish were confirmed while the total run was estimated to have been about 450. Some 298 fish passed through the fish trap at Molesey where they were tagged and released upstream to continue their journey. A small number of returning sea trout were also seen.

The good return followed a poor year in 1987 and was largely due to efforts by the Authority to improve dissolved oxygen levels in the tideway by increasing aeration at major London sewage works. It was also encouraging that a number of reservoir-reared smolts returned as adults dispelling any fears that they were not strong enough to survive migration and life at sea.

Stocking of juvenile salmon continued to increase over previous years. Some 108925 parr were stocked into nursery streams; 25665 S1 (one year old) smolts and 9500 S2 (two year old) smolts were released into the lower River Thames from Sunbury to Twickenham. The majority, 118539, of these fish had been reared on to stocking at the Authority's fish rearing facilities. A substantial number of the fish released were marked in different ways including adipose-fin-clipping, microtag and chemical tagging to aid investigation into the management of not only Thames stocks but also British salmon stocks overall.

There is now a clear need to begin to develop a 'Thames' strain of salmon using fish returning successfully to the river. In the first instance it is intended to ensure that juvenile stock includes as wide a range of wild fish stock strains as possible, especially from Southern rivers.

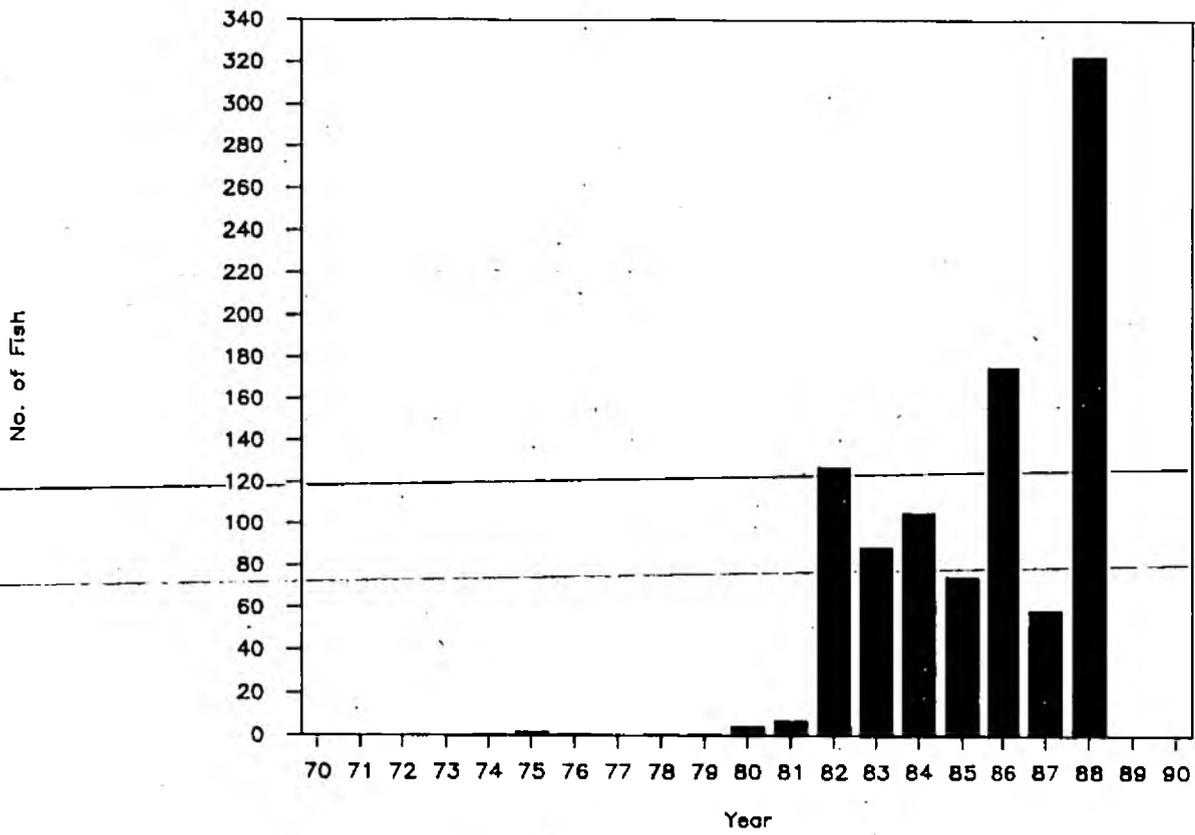
Investigations into the feasibility of establishing our own salmon hatchery and farm at Fobney proved that the costs would be inhibitive for the present. Negotiations have therefore begun with local fish farms with the necessary experience and facilities to do the hatching and early rearing work for us.

New fish passes commissioned during the year included Cookham on the main River Thames and Allied Mills and Troy weirs on the River Colne. These were all included in weirs being rebuilt as part of the Authority's capital programme. During the year plans were finalised for passes to be built at Goring, Sunbury and Shepperton weirs on the River Thames, Wraysbury and Hythe End on the River Colne and Colne Brook respectively. Plans for passes at several other weirs on the Colne being rebuilt as part of the Colne Flood Improvement Scheme are in the early stages of planning.

A new Appeals Director, Major John Hyslop, joined the Thames Salmon Trust in September 1988 taking over from Vice Admiral Sir David Brown. At March 1989 the Trust funds stood at more than £74,000. We were also greatly helped by Joseph Johnson, Trehaven and Wester Ross fish farms for donations of salmon parr for our stocking programme, and BP Nutrition for donating salmon food for our fish rearing operation.

Figure 3

Catch of Thames Salmon 1970-1990



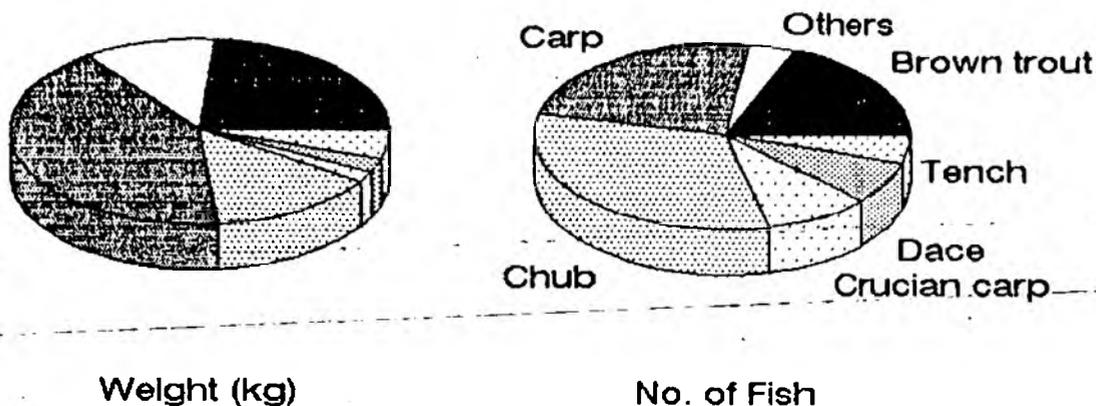
7. Fish Rearing

Fish rearing facilities within the Authority continued to be developed during the year. At Fobney Fish Farm in Reading £58,000 capital was spent on access roads, the conversion of former prefilters to additional ponds including spawning ponds, and other works required to bring the facilities up to the necessary standard of maintenance. Some work remains to be done on the Dubisch spawning ponds before they can be put into operational use in 1990. A small re-circulation type hatchery unit was constructed in an existing outbuilding.

A feasibility study examining the possibility of creating an additional fish farm facility at Rye Meads Northern Lagoons was begun with an accurate site survey. Some eleven hectares of water space exist at this location but considerable work will be required to make them manageable. Site development and financial implications will need to be considered during 1989. If the project is feasible and cost-beneficial this site would be used as an extensive fish farm facility producing fish species for stocking stillwaters and complimenting Fobney which is to be an intensive farm site producing riverine species.

Output of coarse fish from Fobney has risen steadily from 1800 (50kg) in 1986 when the site first became available, to 15,500 (488kg) in 1988 and is anticipated to reach 30,000 in 1989. A large proportion of this output was riverine fish including chub, dace and barbel, all of which were used for restitution in rivers around the area including the Mole, Loddon, Lea and Cripsey Brook. Together with cage reared carp, bream and brown trout total output of fish for reinstatement, enhancement and management purposes was 27,361 weighing 1.601 tonnes, and valued at £21,000. Details concerning the species reared during 1988/89 are provided in Figure 4.

Figure 4 - Species Reared 1988/89



Cage rearing of salmonids continued to produce large numbers of salmon and sea trout for the Thames Salmon Rehabilitation Scheme totalling 123,700 in 1988/89. Some 1610 rainbow trout, averaging 1.4kg, were also produced to augment the stocking of larger fish into Authority put-and-take trout fisheries.

Overall production from the sites was more than 152,000 fish weighing nearly 5.8 tonnes and worth approximately £88,000.

Full details of fish produced at both sites are presented in Table 9.

Table 9

Fish Output from Reservoir Cages and Fobney Ponds

Species	Cage Rearing			Pond Rearing		
	Nos.	Average Weight(g)	Total Weight(kg)	Nos.	Average Weight(g)	Total Weight(kg)
Salmon parr	85501	7.1	607			
S1 smolts	20233	21.5	436			
S2 smolts	10378	70.4	731			
Supersmolts	15	1867	28			
Sea trout parr }	7618	17.3	132			
Sea trout smolts }						
Rainbow trout	1610	1422	2290			
Brown trout	5155	73.1	377			
Barbel				240	167	40
Bream	250	280	70			
Carp	6470	103	666			
Chub				8864	26.2	232
Crucian carp				2484	11.3	28
Dace				2010	19.4	39
Perch				133	165	22
Roach				459	111	51
Tench				1296	58.6	76
Total	137230		5337	15486		488

It should be noted that the production of salmon and sea trout is that which was grown on during 1988/89 and output in spring/summer 1989. Actual stocking of these species during 1988 consisted of the production reported in the annual report (fish rearing section) of March 1988.

Byelaw 8. Prohibits the removal of undersized fish without the written consent of the Authority. Consents are given in conjunction with netting consents under Byelaw 6.

The Tidal Thames from Tower Bridge to the Yantlet Line (Southend), supports a commercial fishery for eels. The commercial eel netmen are licensed by Thames Water, and the licensing restrictions are enforced by a two-man team operating a dory out of Crossness Pier. 29 patrols were made during 1988 of which 16 were pure enforcement work, the remainder combined enforcement with a secondary purpose {i.e. coarse fish and fry distribution, assistance to the Biological Section with sampling and assistance to Pollution Control during pollution incidents}.

The patrols resulted in the seizure of 24 fykes and one successful prosecution ensued. Three home made traps were also seized. Trawling proved a problem during the year. The majority of this activity is single trawlers working for sole and shrimp. However deliberate eel fishing is carried out by paid trawlers at night. This activity is hard to detect and stop, nevertheless progress has been made in this area.

The following Table 12 summarises the activities of the commercial eel netmen.

Table 12 Applications for licences to fish
for eels under the SFFA - 1975

<u>Type of Instrument</u>	<u>Fykes</u>	<u>Traps</u>	<u>Trawls</u>
Applications for Licences	17	2	2
Noumbers of Instruments	538	12	3

The bailiffing of waters if monitored by the Area Fishery Officers and planned by their full-time staff. The actual bailiffing is done by part-time licence checkers who concentrate on public day-ticket waters. The honorary water bailiff force provide valuable assistance by covering club and the less popular public waters. Although the number of anglers and offences detected is generally low on these waters they help to maintain a Thames Water 'presence' which is usually appreciated.

The following Table 13 summarises the activity of the part-time bailiffs.

Table 13 Numbers of Licences Checked and
Offence Reports Issued by Part-time Bailiffs

<u>Type of Licence</u>	<u>Adult</u>	<u>Junior</u>	<u>OAP/ Disabled</u>	<u>Second Licences</u>	<u>Offence Reports</u>
Fisheries East	11724	5925	573	6278	1185
Fisheries West	8990	2870	574	2809	1079
	-----	-----	-----	-----	-----
TOTALS	20714	8795	1147	9087	2264
	-----	-----	-----	-----	-----

During the reporting year the Thames East and Metropolitan areas combined to become the Fisheries East area. Similarly Mid and Upper Thames became the Fisheries West area.

A comparison between the '88 and '89 Annual Report licences checked totals, show that the sub-totals for Adults, Junior and OAP/Disabled are broadly similar. The sub-total of 2nd licences checked shows an increase of 74% on the year. Offence reports produced show a fall of 31.6% and the total for all licences checked shows a 5.4% increase.

Adult evasion has declined from 15% in '88 to 10.9% in '89. It should be noted that both figures for evasion are an over estimate of the true circumstances. Many anglers subsequently produce a valid licence and these are figures mainly from public waters.

If the two reporting years are compared by area, it can be seen that the figures for licences checked are broadly similar for Adults, Juniors and OAP/Disabled. The East area recorded a fall in adult licences checked of 15% in this reporting year. The increase in 2nd licences checked for the reporting year was 52.1% for the Fisheries East Area and 156.2% for the Fisheries West Area. Both areas recorded a fall in offence reports produced for the reporting year of 34.6% for the Eastern Area and 28.0% for the Western Area.

Thames Water policy is to prosecute all adult anglers who are not in possession of valid rod licence, when fishing. Production of valid licences by anglers for Section 35/3 offences leads to a rapid reduction of the total number of offence reports that are forwarded for court action. The main problems encountered in attempting successful prosecutions are false names and addresses and the inability to serve summonses. The number of successful prosecutions undertaken during this year, together with fines and costs are summarised in Table 14. This year, there were 676 prosecutions, of which 658 were for licensing offences. the average figures for fines and costs for all licence offences combined were:-

	<u>Fines</u>	<u>Costs</u>
Fisheries East	£28.65	£22.05
Fisheries West	£21.23	£23.54

Total prosecutions showed a 13.4% fall when compared with last years figures. Average fines and costs had risen, during the reporting year. The most striking example of this is a comparison of the Fisheries East average fines and the former Thames East and Metropolitan fines for the '88 reporting year. The increase in fines was between 46.3% and 62.9%.

A full list of offences prosecuted is as follows.

The Salmon and Freshwater Fisheries Act 1975.

Section 19(6) During the annual close season for freshwater fish; fishing for, taking, killing, or attempting to take or kill, any freshwater fish in any inland water, or fishing for eels by means of a rod and line in any such water.

- 27(A) Fishing for or taking fish otherwise than by means of an instrument which he is entitled to use for that purpose by virtue of a fishing licence in accordance with the conditions of the licence.
- 27(B) Having in his possession with intent to use an instrument other than one which he is authorised to use by virtue of a licence.
- 35(3) Failing to produce his licence or to state his name and address.

Thames Fishery Byelaws

Paragraph: 10(i) Fishing with more than two rods and lines at the same time.

10(ii) Leaving a rod and line, with bait or hook in the water, or otherwise not having sufficient control of the above.

Table 14 Successful Fishing (Rod & Line) Licence Prosecutions

<u>Offence</u>	<u>Number Prosecuted</u>	<u>Fines (£)</u>	<u>Costs (£)</u>
<u>Fisheries East</u>			
Salmon & Freshwater Fisheries Act - 1975			
Section:-			
19(6)	18	845	545
27(A)	183	4130.5	3624.5
27(B)	0	0	0
35(3)	102	3705	2511
Thames Fishery Byelaws:			
10(i)	9	170	202.5
10(ii)	0	0	0
	---	-----	-----
TOTAL	312	8850.5	6883
	---	-----	-----
<u>Fisheries West</u>			
Salmon & Freshwater Fisheries Act - 1975			
Section:-			
19(6)	5	190	155
27(A)	328	6990	7855
27(B)	0	0	0
35(3)	22	355	345
Thames Fishery Byelaws:			
10(i)	7	280	150
10(ii)	2	60	65
	---	-----	-----
TOTAL	364	7875	8570
	---	-----	-----

Staff

The full complement of managerial and operational fishery staff is now 24. Additionally two clerical staff at Crossness and Reading operate the rod licence offence processing system. Reading has a further clerical assistant. The Oxford, Guildford and Waltham Cross fishery offices share clerical support, with other Rivers Division functions.

There were two important staff structure changes in the reporting year. In December 1988, the five former operational areas were reorganised into three larger areas. Thames East and Metropolitan became Fisheries East, Mid and Upper Thames, became Fisheries West. Thames Central remained unchanged.

A Senior Fishery Officer was appointed to each of the three new areas. In the Fisheries East and West areas, the S.F.O. controls two teams consisting of 1 x Area Fishery Officer, 2 x Fishery Officers and a Fishery Assistant. The teams are based at their former area bases of Crossness, Waltham Cross, Guildford and Oxford. The reorganisation was completed by the appointment of 4 x fishery assistants in March 1989.

This was a busy year for changes in operational staff. Gerry Cresswell of Metropolitan was replaced by Mark Pilcher in July. Mark completed his M.Sc. in Aquatic Hydrobiology at Plymouth, and was a Research Assistant at Kings College Chelsea, before joining Thames. Tim Lyons joined Metropolitan in March 1989 to fill the post of Fisheries Assistant. Jim had recently completed a M.Sc. in Applied Hydrobiology at Chelsea, and was a 'sandwich' student with the Metropolitan area. Neil Sampson spent time at Sparsholt College and working on various trout farms, before joining Thames East as a Fishery Assistant in March 1989. Steve Sheridan worked on the Kennet and Avon Canal project before joining Mid Thames as a Fishery Assistant in March 1989.

There were many promotions associated with the reorganisation, during this reporting year. Congratulations to:-

John Reeves who was promoted to Senior Fishery Officer East [Dec. 1988]

Alan Butterworth promoted to Senior Fishery Officer West [Dec. 1988]

Greg Armstrong promoted to Senior Fishery Officer Central [Dec. 1988]

John Sutton promoted to Area Fishery Officer, Mid-Thames [Dec. 1988]

Vaughan Lewis promoted to Area Fishery Officer, Upper Thames [Dec. 1988]

Mark Pilcher promoted to Area Fishery Officer, Thames East [June 1988]

Eddie Hopkins promoted to Fishery Assistant, Upper Thames [March 1989]

Tony Norman left his post as Fishery Officer at Thames East in July 1988, to move to Australia. Dave Jenkins, after many years of valuable service to fisheries, (as Senior Fisheries Officer, Upper Thames) left in July 1988 to manage the 'Coed Cymru', Welsh woodlands project. We wish both of these staff well, in their new ventures.

All full-time, part-time and honorary staff, in post up to March 1989 are listed in Appendix 2.

Appendix 1

The Regional Fisheries Advisory Committee.

Terms of Reference

"The provision of advice to the Board on the discharge of the Authority's duty under paragraph (a) of Section 28(1) of the Salmon and Freshwater Fisheries Act 1975."

Membership	Nominating Body or in respect of
*H.P. Parry FCA (Chairman)	T.W.A.
A.E. Hodges FIFM (Vice-Chairman)	T.F.C.C.
J.S. Alabaster C.Biol BSc DSc FIBiol FIFM	Science of Fisheries Management
H.J. Franklin	T.F.C.C.
M.A. Gregory Barrister LL.B.	C.L.A.
B.J. Hardcastle BSc FICE FIWES MIMechE DIC	Matters relating to land drainage
B. Knights MSc MIBiol MIFM	Commercial fishing interests in Tidal River Thames
G.G. Lee	T.F.C.C.
**P.T. McIntosh	T.W.A.
E.J. Macer FIFM	T.F.C.C.
A.V. Meddle	K. & E.S.F.C.
T.C. Small	N.F.U.F.F.E.C.
A.L. Williams MIFM	T.F.C.C.
One Vacancy	T.W.A.

* - Member of Thames Water Authority

** - Executive of Thames Water Authority

14 members (Quorum: 4) - all appointed by Thames Water

(a) Until 30th June, 1989 or their earlier ceasing to be a member or executive of the Authority:-

Chairman of the Committee

2 members

(b) Until 30th June, 1989:-

11 other members

Chairman (Member of Thames Water)	1
Members or Executive of Thames Water	2
Nominated by Thames Fisheries Consultative Council	5
Nominated by Kent & Essex Sea Fisheries Committee	1
Nominated by Country Landowners Association	1
Nominated by National Farmers Union Fish Farming Executive Committee	1
In respect of science of fisheries management	1
In respect of matters relating to land drainage	1
In respect of commercial fishing interests in the tidal River Thames	1

Appendix 2

Fisheries Personnel

Members of the full time fishery staff

Dr. J.W. Banks Regional Fishery Manager

Central Staff

G.S. Armstrong Senior Fishery Officer
P. Gough Fishery Officer
K. Miller " "
J.M. Moore " "
E. Hopkins Fish Rearing Assistant [April '88 - March '89]

Fisheries East Area

J. Reeves Senior Fishery Officer

Thames East

M. Pilcher Area Fishery Officer [Jan. '89 - March '89]
N. Buck Fishery Officer
R. Tyner " "
N. Sampson Fisheries Assistant [March '89]

Metropolitan

S. Colclough Area Fishery Officer
C. Dutton Fishery Officer
N.J. Foulkes " "
J. Lyons Fisheries Assistant [March '89]

Fisheries West Area

Dr. A. Butterworth Senior Fishery Officer

Mid Thames

J. Sutton Area Fishery Officer
R. Preston Fishery Officer
A. Thomas " "
S. Sheridan Fisheries Assistant [March '89]

Upper Thames

V. Lewis Area Fishery Officer
A. Killingbeck Fishery Officer
D. Willis " "
E. Hopkins Fisheries Assistant [March '89]

Clerical Staff

M. Hunt Reading
L. James " [Oct. '88 - March '89]
B. Watson Crossness

Part-time Bailiffs

Fisheries East

Thames East

A. Brightley
C. Costema
P. Hardy
D. Tait

Metropolitan

R. Merralls
J. Carroll
M. Brown

Fisheries West

Mid Thames

P. Draper
M. Koulermou
E. Tysoe

Upper Thames

W. Vigor
P. Willis

Honorary Water Bailiffs

Fisheries East

Thames East

T. Amos
J. Arnold
D. Ashcroft
R. Babbington
B. Bolton
A. Bovis
D. Brown
S. Bunce
D. Craddock
S. Davis
P. Dukes
I. D'Silva
L. Gregory
N. Harris
L. James
C. Landells
A. Levy

T. Marsbridge
M. McSweeney
R. Mirschke
J. Monk
T. Murphy
J. Pope
H. Reid
D. Roe
A. Sibley
D. Smith
J. Sullivan
M. Turner
H. Wade
K. Walker
D. Wall
A. Williams
N. Brown

Metropolitan

S. Banks
D. Bonsels
G. Cresswell
D. Hodges
R. Jenks
R. Mont
P. Newman
F. Norton

D. Purton
S. Rowlings
B. Scott
P. Wecch
L. Waite
D. Wild
A. Williams

Fisheries West

Mid Thames

L. Dolton
S. Holt
D. Mattinson
P. Metcalfe
P. Oram

M. Purchase
G. Rance
D. Tatnall
C. Watts
L. Webber
R. Wheldon

Upper Thames

A. Kembrey
M. Gausman
C. Fanning
B. Gough

APPENDIX 3

FISH STOCKED BY THE AUTHORITY

The following abbreviations are used:

Reason	Acquired
REQ=Stocking Requests	R=Rearred
RES=Research	B=Bought
REI=Reinstatement	S=Cull, river
GRO=Growing on	C=Cull, lake
ENH=Enhancement	F=Fish Rescue
	O=Other

1. METROPOLITAN

Date	Source	Site	Species	Number	Wt.(Kg)	Reason	Acquired
08-Apr-88	Numberside Fisheries	R.Wandle, Waterneads	Roach & Perch	1900	100	REI	B
13-Apr-88	Rosebery Park, Epsom	W.Middx.Hospital Pond	Carp, Tench, Rudd	86	4	ENH	F
28-Jun-88	Bexley Police Pit	Birchmere Lake	Roach, Bream, Pik	5000	97	ENH	C
27-Jul-88	7 Islnd Pond, Mitcham	Sundridge Lakes	Pike	3	16	REQ	C
27-Jul-88	7 Islnd Pond, Mitcham	Bradbourne Lakes	Carp & Tench	54	53	GRO	C
28-Jul-88	7 Islnd Pond, Mitcham	Bexley Police Pit	Tench	31	10	REQ	C
24-Aug-88	Salfords Ponds	Brooklands Lake	Carp	125	29	REQ	C
04-Oct-88	QEII PF	R.Wandle, Carshalton	Brown Trout	500	13	ENH	R
12-Oct-88	QEII PF	R.Wandle, Morden Hall	Brown Trout	200	70	ENH	R
01-Nov-88	QEII PF	Stanford Green, Epsom	Carp	400	40	GRO	R
01-Nov-88	QEII PF	Rosebery Pk., Epsom	Carp	400	40	GRO	R
01-Nov-88	QEII PF	Bensons Hill Ponds	Carp	600	60	GRO	R
15-Nov-88	Salfords Ponds	Woolwich Aquatic cen	Crucian Carp	15	3	REI	C
01-Dec-88	Fullers Earth Pit	R.Mole @ L.Bridge	Roach	4800	73	ENH	F
01-Dec-88	Fullers Earth Pit	R.Mole @ Sidlow	Carp	7500	114	REQ	F
06-Dec-88	Fobney PF	R.Mole @ Pixham	Barbel	100	18	REI	R
12-Dec-88	QEII PF	Chessington Lake	Carp	300	23	REQ	R
14-Dec-88	Fobney PF	R.Wandle, Carshalton	Dace	255	6	REI	R
14-Dec-88	Fobney PF	R.Wandle, H.Bridge	Chub	495	23	REI	R
16-Dec-88	Fobney PF	Brooklands Lake	Carp	100	3	REQ	R
16-Dec-88	Fobney PF	R.Mole @ Meath Grn	Chub	495	23	REI	R
16-Dec-88	Fobney PF	R.Mole @ Meath Grn	Carp	50	6	REQ	R
16-Dec-88	Fobney PF	R.Mole @ Meath Grn	Dace	255	6	REI	R
16-Dec-88	Fobney PF	Sutton-at-Hone Lakes	Carp	100	4	REQ	R
16-Dec-88	Fobney PF	Ruxley Large Lake	Carp	100	4	REQ	R
16-Dec-88	Fobney PF	Ibstock Brick Pits	Carp	100	4	REQ	R
17-Dec-88	Fullers Earth Pits	R.Mole @ L.Bridge	Roach	660	10	REI	F
11-Jan-89	Eastwick Pd, Fetcham	Ferris Meadows Pit	Crucian Carp	100	5	REQ	F
11-Jan-89	Eastwick Pd, Fetcham	Ferris Meadows Pit	Rudd	100	1	REQ	F
11-Jan-89	Eastwick Pd, Fetcham	Ferris Meadows Pit	Pike	5	3	REQ	F
11-Jan-89	Eastwick Pd, Fetcham	Ferris Meadows Pit	Perch	10	1	REQ	F
11-Jan-89	Eastwick Pd, Fetcham	Ferris Meadows Pit	Roach	100	2	REQ	F
11-Jan-89	Eastwick Pd, Fetcham	Ferris Meadows Pit	Tench	100	15	REQ	F

Summary

	Tot.Wt(kg)	Total No.
REQ	240	8824
RES	0	0
REI	189	4175
GRO	193	1454
ENH	257	10586
TOTAL	879	25039

2. MID THAMES

Date	Source	Site	Species	Number	Wt. (Kg)	Reason	Acquired
09-Apr-88	Johnsons Lake, Enton	Mill Lane, Yateley	Carp	5	15	REQ	C
09-Apr-88	Johnsons Lake, Enton	Badshot Lea Big Pond	Carp	10	30	REQ	C
09-Apr-88	Johnsons Lake, Enton	Cutt Mill, Farnham	Carp	15	45	REQ	C
22-Apr-88	Barford Pond, Churt	R.Wey, Headley Wood	Brown trout	120	12	REQ	C
03-May-88	The Tarn, Cutt Mill	Badshot Lea Big Pond	Tench	50	63	REQ	C
03-May-88	The Tarn, Cutt Mill	Badshot Lea Small Pd	Bream	10000	500	REQ	C
03-May-88	The Tarn, Cutt Mill	Johnsons Lake, Enton	Tench	50	63	REQ	C
06-Jun-88	Johnsons' Lake	Langmans Lake	Carp	16	48	REQ	C
27-Jun-88	Seymours Pit, Alton	Badshot Lea Pond	Rudd	3500	65	REQ	F
03-Oct-88	QE2	R.Wey at Neetham	Brown trout	270	31	REQ	R
11-Oct-88	Great Pond, Sunhill	Upper Lk, Sunhill	Carp	1400	2100	REQ	F
18-Oct-88	Great Pond, Sunhill	Upper Lake, Sunhill	Carp	1500	2250	REQ	F
02-Nov-88	Whipley Manor Pond	B.stoke Canal, Bwood	Mixed	5000	200	REQ	C
21-Nov-88	QE2	Riverside park	Carp	750	40	GRO	R
22-Nov-88	R Wey Sheephatch	R Wey Elstead	Dace	800	50	REQ	S
25-Nov-88	QE2	Southhill Park Pond	Carp	90	5	REQ	R
06-Dec-88	Fobney	R.Loddon, Arborfield	Chub	2000	35	REI	R
06-Dec-88	Fobney	R.Loddon, Sw.field	Chub	2000	35	REI	R
07-Dec-88	Fobney Fish Farm	Bas canal Winchfield	Crucian carp	350	10	REQ	R
13-Dec-88	Fobney	B.stoke Canal, Fboro	Crucian carp	1100	11	REQ	R
10-Jan-89	R.Pang, Yattendon	R.Pang,Bradfield	Brown trout	150	70	BNH	F

Summary

	Tot.Wt(kg)	Total No.
REQ	5498	24276
RKS	0	0
REI	70	4000
GRO	40	750
BNH	70	150

TOTAL	5678	29176

3. THAMES EAST

Date	Source	Site	Species	Number	Wt. (Kg)	Reason	Acquired
05-May-88	Copthall Fishery	Bowyers Pit, Cheshunt	Mixed	2500	50	REQ	C
02-Jun-88	Fobney FF	R.Colne @ Denham	Brown Trout	500	50	REI	R
02-Jun-88	Fobney FF	R.Lee @ Marford	Brown Trout	500	50	REI	R
02-Jun-88	Fobney FF	R.Beane @ Waterford	Brown Trout	150	15	REI	R
02-Jun-88	Fobney FF	R.Rib @ Puckeridge	Brown Trout	150	15	REI	R
12-Jul-88	QEII FF	Wrotham Park Lake	Carp	500	75	REI	R
06-Oct-88	Fobney FF	R.Gade @ Watford	Brown Trout	750	25	RES	R
06-Oct-88	Fobney FF	R.Rib @ Standon	Brown Trout	120	25	RES	R
06-Oct-88	Fobney FF	R.Chess, Sc'ts Brdg.	Brown Trout	750	25	RES	R
06-Oct-88	Fobney FF	R.Beane @ Goldings	Brown Trout	120	25	RES	R
02-Nov-88	Fobney FF	Ferry Lane Pit, Shep	Carp	900	160	REQ	R
02-Nov-88	Fobney FF	Troy Lake, Harefield	Bream	150	23	REQ	R
02-Nov-88	Fobney FF	Ferry Lane Pit, Shep	Bream	50	5	REQ	R
02-Nov-88	Fobney FF	Sunbury Ex's, Shep'n	Carp	900	160	REQ	R
02-Nov-88	Fobney FF	Troy Lake, Harefield	Carp	500	50	REQ	R
03-Nov-88	Fobney FF	Boxers Lake, Enfield	Carp	500	50	REI	R
03-Nov-88	Gobians lake culling	Harwood Hall Lake	Crucian carp	80	10	BNH	C
03-Nov-88	Fobney FF	Harwood Hall Lake	Carp	200	20	BNH	R
07-Nov-88	Grange Fishtanks	Pond @ Kelvedon	Rudd	24	2	REQ	O
30-Nov-88	Fobney FF	R.Lee @ Marford	Barbel	124	31	REI	R
30-Nov-88	QEII FF	Greenhills Park Lake	Tench	158	20	REQ	R
30-Nov-88	QEII FF	Wrotham Park Lake	Tench	200	25	REI	R

30-Nov-88 Fobney FF	R.Lee @ Marford	Chub	750	94	REI	R
04-Dec-88 Just Fish	Staines Aquaduct	Roach	1000	140	REI	B
08-Dec-88 Fobney FF	Cripsey Brook	Dace	1510	28	REI	R
08-Dec-88 Fobney FF	Cripsey Brook	Chub	2721	50	REI	R
16-Dec-88 Bridge Farm	R.Ver	Brown Trout	100	30	ENH	B
01-Mar-89 Just Fish	R.Mimram @ Codicote	Brown Trout	50	15	REI	B

Summary

	Tot.Wt(kg)	Total No.
REQ	470	5182
RES	100	1740
REI	638	8655
GRO	0	0
ENH	60	380

TOTAL	1268	15957

4. UPPER THAMES

Date	Source	Site	Species	Number	Wt.(Kg)	Reason	Acquired
08-Apr-88	Fosseway Fisheries	R. Churn-Siddington	Mirror Carp	10	19	REQ	B
12-Apr-88	L. Wittenham Reserve	Pickfords Pond	Brown Goldfish	100	10	REQ	C
18-Apr-88	SADAC Pit, S.Harcourt	Witney AC- New Pit	Mixed	400	100	REQ	F
24-Apr-88	Bierton A C Pond	Tubney Woods Pond	Rudd	300	15	REQ	C
25-Apr-88	The Limes Pit	Gt Brok-Buckland	Roach	10000	85	REQ	C
28-Apr-88	Bierton A C Pond	R Thames at Radcot	Roach	500	30	REQ	C
29-Jun-88	Tanners Pd. Alkerton	Swalcliffe School Pd	Carp	59	10	REQ	C
28-Jul-88	Bierton Lake	Fobney tanks	Grass Carp	19	7	REQ	C
13-Sep-88	Pitstone Chalk Pit	Castle Cement Works	Perch	300	30	REQ	F
27-Sep-88	Farmoor intake No1	River Thames, Farmoor	Mixed	300	30	REQ	F
28-Sep-88	Farmoor intake No 2	River Thames, Farmoor	Mixed	2000	15	REQ	F
06-Oct-88	QR2	R. Eynode-Adlestrop	Brown Trout	220	70	REI	R
20-Oct-88	S.Trent W.A	Oxford Canal, Kd'ton	Chub	2000	50	REI	B
26-Oct-88	Coate water N.R.	Oxford Canal Kd'ton	Roach	800	100	REI	C
26-Oct-88	Coate Water N.R.	Oxford Canal Kd'ton	Bream	1200	636	REI	C
28-Oct-88	Milton Pools	Oxford canal, A40&A34	Roach	1200	75	REI	C
01-Nov-88	QHII	Marcham Reservoir	Carp	150	15	REQ	R
01-Nov-88	QHII	Oakey Pond, Aynho	Carp	300	30	REQ	R
01-Nov-88	QHII	Stewkley Pond	carp	60	6	REI	R
02-Nov-88	QHII	Wroughton House Pd.	Carp	80	8	REQ	R
08-Nov-88	R. Coln, Fairford.	R. Coln, Whelford.	Grayling	100	10	REQ	S
20-Nov-88	R. Coln, Fairford.	R. Windrush, Beard Mil	Grayling	350	70	REQ	S
30-Nov-88	Fobney	Marcham Reservoir	Roach	150	15	REQ	R
30-Nov-88	Fobney	Ox. Canal A40 & A34	Tench	350	21	REI	R
30-Nov-88	Fobney	Marcham Reservoir	Tench	100	10	REQ	R
30-Nov-88	Fobney	Ox. Canal. A40 & A34	Roach	50	6	REI	R
30-Nov-88	Fobney	Oakey Lake, Aynho	Tench	100	10	REQ	R
30-Nov-88	Fobney	Weston o-t Green Pd.	Roach	20	2	REQ	R
01-Dec-88	Fobney	Stewkley pond	Tench	30	3	REI	R
01-Dec-88	Fobney	Stewkley Pond	Roach	30	3	REI	R
01-Dec-88	Fobney	Ox canal. Wolvercote	Roach	140	16	REI	R
01-Dec-88	Fobney	Ox. Canal-Wolvercote	Tench	350	21	REI	R
02-Dec-88	Fobney	Wroughton House Pd.	Roach	70	7	REQ	R
13-Dec-88	Fobney	Witney stock pond	Crucian Carp	1100	11	GRO	R
21-Dec-88	Fobney	Ox. Canal-Wolvercote	Perch	133	22	REI	R
23-Dec-88	Ashlea Pool	Ox. Canal-Wolvercote	Roach	500	25	REI	C
23-Dec-88	Ashlea Pool	Ox. Canal-Wolvercote	Perch & Pike	100	5	REI	C
22-Jan-89	The Limes	Witney stock pond	Crucian carp	1675	45	GRO	C

06-Feb-89	Berry brook, Reading	Pit at Lowfields fm	Mixed	300	40	ENH	F
22-Feb-89	SADAC Pit, S. Harcourt	Witney AC, Standlake	Mixed	800	150	REQ	F
27-Feb-89	Telecom pds-Leafield	R. Thames-Hannington	Mixed	300	30	REI	F
01-Mar-89	Withington Lake	R. Thames-Hannington	Perch	250	30	REI	C
02-Mar-89	Telecom pds-Leafield	R. Windrush-M. Lovell	Mixed	100	5	ENH	F

Summary

	Tot. Wt(kg)	Total No.
REQ	678	16208
RES	0	0
REI	1117	7713
GRO	56	2775
ENH	45	400

TOTAL	1896	27096

APPENDIX 4

FISH MORTALITIES

1. Metropolitan

Date	Location	Species	Number	Wt(kg)	Cause
16-May-88	R.Mole, Zuber Channel.	Roach & Chub	30	1.5	Low D.O. in flood channel, low flows
16-May-88	G.U.C., Islington.	Roach & Bream	10	2	Unknown.
16-May-88	Earlswood Lake	Roach and bream	50	0.6	Suspected runoff from golf course
09-Jun-88	Thames At Westminster	Sea Trout	1	3.5	Unknown
14-Jun-88	Clapham Common Pond	Roach	5	0.3	Low D.O. Warm Weather
16-Jun-88	Thames at Teddington	Roach and dace	50	2.5	Low D.O. in Tideway
11-Jul-88	Thames, Westminster	Salmon	1	3	Low D.O.
14-Jul-88	Private pond Biggin Hill	Carp	10	2	Sanguinicola inermis
21-Jul-88	Bradbourne Lakes, Sevenoak	Carp	2	6	Suspected spawning stress
03-Aug-88	Gunnery Park lake	Carp	5	10	High algal bloom/low D.O.
09-Aug-88	Darent, Sutton at Hone	Perch & roach	20	0.25	Stranding in dry overflow channel
12-Aug-88	Crystal Palace Lake	Carp & bream	5	1.5	Low D.O.
18-Aug-88	Nursery pond, Newham	Carp & g.fish	50	0.4	Low D.O.
21-Aug-88	Cannon Hill Common pond	Roach	11	0.2	Probable angling mortality
22-Aug-88	Handle, Carshalton	Roach	29	1.6	unknown
24-Aug-88	Sundridge lakes	Carp	3	3	Unknown
29-Sep-88	Brit. Legion Lk., Finchley	Roach	100	5	Low D.O., poor general condition.
04-Oct-88	R. Ravensbourne, Bromley	Mixed	200	5	Desilting work on river.
02-Nov-88	Woolwich Aquatic Centre	Mixed	140	50	Low D.O. cause unknown
02-Nov-88	Private pond, Planchford	Rainbow trout	400	300	Reigate Pumping St. pump failure
04-Nov-88	Horton Kirby Lakes	Carp	1	4	Spawn bound
10-Nov-88	Long Marsh, R.Darent	Mixed	100	0.2	small water course dried up
19-Dec-88	R.Mole, Horley	Roach	50	0.5	Unknown. Recent restocking close by.
29-Dec-88	South Norwood Lake	Roach	20	0.6	angling
23-Jan-89	Lullingstone lake	Rainbow trout	10	3	Unknown-reported 2 days later
23-Jan-89	Lullingstone lake	Common carp	2	5	Unknown-reported 2 days later
30-Jan-89	Darent pits Leisure Sport	Pike	1	16	Unknown
16-Feb-89	Burgess Park Lake	Roach	20	0.4	Probable angling mortality.
Total Wt. (kg)		428	Total No.	1326	

2. Mid Thames

Date	Location	Species	Number	Wt(kg)	Cause
18-May-88	Pondwood Farm	Carp	20	30	unknown - ectoparasites?
19-May-88	Brittens Pond, Guildford	Roach	1000	40	post-spawning
19-May-88	Bray Pit, Maidenhead	Bream	2000	2000	unknown
20-May-88	Andrews Farm, Odiham	Crucian carp	50	5	unknown
24-May-88	Summerlease Gravel Works	Roach	5000	300	unknown as yet
24-May-88	Pondwood Farm, Binfield	Rainbow trout	20	30	poor habitat
02-Jun-88	River Valley Lakes Yateley	Roach	75	7.5	D.O. Cause Unknown
20-Aug-88	White Ditch Maidenhead	Mixed	50	10	Stream de-watered
30-Aug-88	Papercourt Lake, Send	Bream	1000	5	ectoparasites
28-Sep-88	K & A Canal. Copse Lock	Roach	600	30	unknown
09-Oct-88	Hammer pond, Thursley	Perch	100	20	Silage pollution
20-Oct-88	R.Wey at Bordon	Mixed	100	10	hypochlorite from sewage works
31-Dec-88	Bas. Canal at Winchfield	Roach	100	15	post-stocking
21-Jan-89	Hollybush Ln, Pit 3	Carp	5	30	unknown - sample to MAPP negative
28-Mar-89	Brittens Pond, Guildford	Roach	20	1	under investigation
29-Mar-89	Tadley Pond, Hants	Roach	50	2	unknown
Total Wt. (kg)		2536	Total No.	10190	

3. Thames East

Date	Location	Species	Number	Wt(kg)	Cause
01-Apr-88	R.Ash, Cradle End Brook	Rainbow trout	1500	300	Chemical Fertilizer.
12-Apr-88	Tykeswater Lake, Elstree	Carp & tench	30	32	Fish stocked against TWA advice.
21-Apr-88	Lake @ Hardlebury Farm	Carp	20	110	SVC suspected via illegal stocking.
22-Apr-88	Brookhouse Brook	Mixed	300	6	Farm Effluent.
26-Apr-88	R.Roding @ Ilford	Mixed	20	4	Cause Unknown.
27-Apr-88	Tottenham Cemetery Lake	Bream	250	200	Unknown, investigations continue.
27-Apr-88	Tottenham Cemetery Lake	Roach	250	100	Unknown, ongoing investigations.
27-Apr-88	Bins Lake, Rickmansworth	Mixed	20	8	Unknown. SVC investigation cont's.
05-May-88	R.Stort @ Burnt Mill	Mixed	50	5	Cause unknown
13-May-88	Moorhen Lake, Harlow	Roach	20	1	Low DO's.
15-May-88	Paynes Lane Fishery	Carp	6	3	SVC suspected.
16-May-88	Cobbins Brook, W.Abbey	Mixed	60	5	Unknown, investigations continue.
27-May-88	Cripsey Brook, Moreton	Mixed	150	8	Unknown, investigations continue.
28-May-88	Lake, Verulamius Park	Roach	50	8	Fungal infection.
08-Jun-88	Mayesbrook, Chadwell Heath	Mixed	20	6	Surface water run-off.
14-Jun-88	Theydon Grove Lake	Carp & Orn'tis	20	4	Low DO's, oxygenation equip loaned.
23-Jun-88	Bretons Farm Lake	Roach & Rudd	350	10	Low DO's & algal problems.
24-Jun-88	GUC @ Berkhamstead	Roach	100	10	Tring STW suspected.
28-Jun-88	Running Water Brook	Roach & Bream	5	1	Angling Damage
01-Jul-88	R.Lee @ Hackney	Mixed	1000	300	First flush of gullies after rain.
07-Jul-88	R.Roding @ Stamford River	Roach	200	10	Unknown.
13-Jul-88	R.Mimram @ Codicote	Brown trout	24	8	Siltation influx.
19-Aug-88	R.Lee Flood Channel	Mixed	30	5	Local runoff suspected.
05-Oct-88	Lee Relief Channel - Bow	Mixed	100	10	Unknown. 1000's rep. dead non seen.
29-Oct-88	Rowley Pit, Slough	Mixed	3000	1200	Silage discharge from local Farm.
14-Dec-88	R.Colne @ London Colney	Chub & bream	5	2	Unknown
15-Dec-88	Colnebrook @ Wraysbury	Mixed	10	1	Low water level - sluice problems
06-Jan-89	R.Gade @ Hemel Hempstead	Brown trout	2	1	Unknown.
08-Feb-89	Small River Lee, Enf Lock	Roach & chub	700	200	W.Abbey culvert discharge-unknown
22-Feb-89	Wilton Park, Beaconsfield	Mixed	50	2	Unknown, Investigations continue
20-Mar-89	Boxers Lake Enfield	Carp	30	30	MAFF examination for SVC.
30-Mar-89	R.Ver @ Redbournbury	Brown trout	3	2	Local poachers suspected.
Total Wt. (kg)		2592	Total No.	8375	

4. Upper Thames

Date	Location	Species	Number	Wt(kg)	Cause
24-Apr-88	Halton Reservoir	Carp	20	75	Disease-problem
17-May-88	G.U.C.-Marsworth area.	Roach & Perch	6	1	Unknown. Reported carp not found.
16-Jun-88	Riverside Hs Pond, Burcot	Chub & Roach	12	3	Fungal infection-Overstocking.
24-Jun-88	G.U.C. Adj to Reservoirs	Mixed	50	7	Poss. D.O. due to high Temp
07-Jul-88	Oxford Canal, Aynho	Carp	10	12	Unknown
26-Jul-88	Thenford hill Fm Lake	Mixed	10	1	Silage effluent
29-Jul-88	Coate Water Swindon	Bream	20	5	Probable keep net mortality
10-Aug-88	Dorchester Old Pit	Carp & Bream	3	15	Unknown
03-Oct-88	Shillingsford Court Lake	Koi+Common Carp	20	25	Algal Bloom
14-Dec-88	Dorcan Brook	Mixed	20	5	Low D.O. due to blocked sewer
10-Jan-89	Cuttleslowe Park	Carp	6	1	Foul sewer polluted feeder stream
Total Wt. (kg)		150	Total No.	177	