ENVIRONMENTAL PROTECTION

NRA

National Rivers Authority
South West Region

CYANOBACTERIA (BLUE-GREEN ALGAE) IN THE SOUTH WEST REGION 1989

January 1990

FWI/90/002

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Summary

254 sites were sampled for the presence of cyanobacteria in the South West region of the National Rivers Authority between September 1989 and January 1990. 63 sites (25%) were found to contain cyanobacteria, of these 27 sites (11%) experienced blooms with more than 100 colonies/ml. 16 sites were tested for toxicity using standard mouse toxicity tests. 9 sites (56% of sites tested) were found to be toxic. 300 staff days were spent in the sampling and monitoring of the problem.

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1 Introduction

1.1 Ecology of cyanobacteria

Cyanobacteria (Blue-green algae) are primitive, autotrophic organisms commonly found in still or slow-flowing waters. Massive growths of the planktonic forms often occur during periods of calm weather from July to November in northern temperate latitudes (Codd et al, 1989). Most of these growths are as a consequence of nutrient enrichment from natural and anthropogenic sources. These growths, commonly known as blooms, are formed by those cyanobacteria which possess gas vacuoles. This enables the organisms to regulate their buoyancy. When blooms occur buoyant scums may form on the surface and at the margins of the water bodies. Most of the bloom forming genera are capable of producing water soluble toxins. These are either released by the cells or loosely bound within the cells to be released when the cells die. Problems occur when high concentrations of toxin are released into the water. These toxins have been implicated in the deaths of domestic animals, wild animals and fish.

1.2 Toxins of cyanobacteria

Two main types of toxin are produced by cyanobacteria (Carmichael, 1988). Anatoxins produced by Anabaena flos-aquae and aphanotoxins produced by Aphanizomenon flos-aquae are neurotoxins which inhibit nerve conduction, causing death very rapidly due to respiratory arrest. Microcystis aeruginosa produces several hepatotoxins which affect the liver. Microcystin is the fastest acting of these which is also produced by some strains of Anabaena flos-aquae. Other less well known hepatotoxic producing cyanobacteria are Nodularia and Oscillatoria. Microcystis and Aphanizomenon produce toxins endogenously which are released once the cells die, while Anabaena produces toxins exogenously which is excreted into the surrounding water while the cells are still alive. Gloeotrichia, Coelosphaerium and Gomphosphaeria also produce toxins (Codd et al, 1989) but little is known of their toxicity.

1.3 Development of cyanobacteria problems during 1989

Problems with cyanobacterial blooms were first reported at Rutland Water, Leicestershire, during August 1989, with the death of a number of sheep and dogs drinking at the waters edge. Anglian NRA were first notified on the 7th September 1989 about the problem and subsequent investigations revealed a massive bloom of Microcystis, which proved to be highly toxic.

On the 12th of September NRA Headquarters requested all NRA regions to evaluate the cyanobacterial situation at all reservoirs. Drought monitoring by South West NRA (then part of South West Water Authority) during the summer of 1989 identified a bloom of Microcystis in Loe Pool, near Helston. Porth Reservoir, near Newquay, was reported to have an unidentified algal bloom by the Fisheries section on the 30th of July. Both the reservoir and the outlet stream were reported to be like "pea soup". pH had been recorded at 10.4 and

supersaturation of dissolved oxygen implied, with levels of 11.5 mg/l and a probable water temperature of 20 degrees centigrade. About 100 dead fish had been found around the reservoir. A national statement released by the NRA on the 14th of September identified Loe Pool and a number of sites in Anglian NRA region as the only sites with cyanobacterial blooms.

Internal reports from South West Water PLC reported significant cyanobacterial blooms at Porth reservoir, Colliford reservoir, Argal reservoir, Squabmoor, Old Mill reservoir, Darracott reservoir and the Gammaton reservoirs between June and August. This information was not received by South West NRA until the 15th of September.

2 Methods

2.1 Initial sampling programme for cyanobacteria 1989

Management of the cyanobacteria Monitoring Programme in NRA South West Region was the responsibility of the Freshwater Officer.

Between the 6th of September and the 15th September 1989 visual inspections by NRA Wardens were carried out of reservoirs in the South West region for the presence of cyanobacterial blooms. No samples were taken for lab analysis.

Sites identified as containing cyanobacterial blooms, from visual inspections, were sampled by the Freshwater Investigations Biologist between the 14th of September and the 28th of September 1989. Samples were taken from several points at each site using clean plastic 1000 ml bottles filled from 5cm below the surface. Samples were transported to the laboratory in cool boxes and were analyzed within 24 hours. At some sites concentrated cyanobacterial samples were taken using a 250 micron mesh net trawled through the water. The concentrated cyanobacterial samples were washed into a 500 ml plastic pot. In the laboratory a few drops of the cyanobacterial sample were placed onto a microscope slide and examined using a high power microscope.

As a result of the initial sampling a further larger scale sampling programme was planned to assess all significant waterbodies in the South West. This programme was brought forward with the news on the 30th of September 1989 that a number of army cadets in the Severn Trent region had become seriously ill after canoeing in a lake, which was subsequently found to contain a dense bloom of toxic cyanobacteria. On the 31st of September and the 1st of October 1989 samples were taken by NRA Wardens and some of the routine sampling staff, using the same method described before. All samples were returned to NRA South West headquarters at Manley House, Exeter where the samples were examined for cyanobacteria.

2.2 Regular cyanobacterial monitoring 1989

A regular monitoring programme was instigated in early October at all sites where cyanobacteria were present. Weekly samples were taken at each site (except Bicton Lake) using the same procedure described before. Concentrated samples were obtained at some sites with dense blooms using a 300 mm diameter Plankton net with 53 micron mesh. The concentrated samples were placed in clean plastic 1000 ml bottles by unscrewing the cod end of the net and washing the algae into the bottle, with minimal water, via a funnel. The net and funnel were soaked in alcohol between sites to prevent cross contamination between sites. The equipment was rinsed with water prior to sampling. All samples were transported to the laboratory in cool boxes and placed in a fridge on arrival. Samples were analyzed within 24 hours.

2.3 Identification and enumeration procedures

Initially several methods of enumeration were assessed to determine numbers of cyanobacteria but these proved too time consuming. The method chosen was as follows:

1. The sample was mixed thoroughly.

2. 100 ml of sample was passed through a gridded 0.45 micron membrane filter (47 mm diameter) held in a glass Buchner assembly. The sample was passed through as rapidly as possible using a vacumn pump. If the sample was especially concentrated a lesser measured volume was used.

3. The filter was removed and allowed to dry slightly on a warm surface.

4. The filter was scanned square by square for the presence of cyanobacteria using a low power stereoscopic microscope. Identification of all the main genera was possible at these magnifications. Where confirmation was needed a small portion of the filter was placed on a slide, cleared with immersion oil and examined under a high power microscope.

5. All cyanobacteria found were counted in a transect of 10 squares across the filter. Numbers per ml were calculated by multiplying the average number of cyanobacteria per square by the total number of squares on the filter and dividing by the volume of sample used.

The same procedure was used for all new sites.

2.4 Criteria used for elimination of sites from monitoring programme

Sites were sampled weekly, except for Bicton Lake which was sampled twice weekly as the Lake urgently required draining for repair work to the dam. Up to the end of October 1989 all sites found to contain cyanobacteria were monitored and regular press releases were issued

on the current status of monitored sites. No national guidelines were available on the determination of the safety of a site. Therefore a limit of 100 colonies/ml was set. Sites falling below 100 colonies/ml on two consecutive sampling occasions were deemed to present little risk and were removed from the monitoring programme. On the 2nd of November 1989 the above criteria were implemented and were continued to the end of the year.

2.5 Toxicity testing

Samples obtained from Loe Pool in September 1989 were sent to Dundee University for testing. All subsequent samples were sent to the MAFF Fisheries Laboratory at Weymouth, Dorset which used the methods employed at Dundee University. Attempts were made to calculate LD50's of cyanobacterial samples by varying the doses but this was abandoned due to lack of resources and the requirement for rapid results. Preparation of the cyanobacterial samples was initially done at the testing labs but this was taken over by the Freshwater Investigations Technician and all processing up to injecting the mice was done at Manley House from mid-October onwards.

Concentrated cyanobacterial samples were dewatered by passing through a 12.5 cm glass fibre GF/B filter held in a Buchner funnel. The filter was then placed in a clean 14 cm plastic petri dish and freeze dried overnight. The dried cyanobacterial sample was ground using a pestle and mortar. The sample was then resuspended in distilled water (20 ml per mg) and sonicated to break up the cells. A small volume of sample was then injected into 3 (sometimes 2) laboratory mice to give a dose of 1000 mg/kg body weight. The mice were observed over a 24 hour period. If no deaths occurred the cyanobacteria was deemed to be non-toxic. If deaths did occur the mean time to death of all three mice was calculated. Toxicities were ranked according to the following criteria:

1. High toxicity - mean time of death within 2 hours
2. Medium toxicity - mean time of death within 2 to 12 hours
3. Low toxicity - mean time of death within 12 to 24 hours

3 Results

3.1 Sites sampled for cyanobacteria

Sites sampled for cyanobacteria between September 1989 and January 1990 by NRA South West Region are shown in Figure 1.

3.2 Cyanobacteria distribution

The distribution of genera of cyanobacteria found between September 1989 and January 1990 are shown in Figures 2 to 6.

3.3 Toxicity tests

Results of toxicity tests are shown in Table 1.

3.4 Results of sampling

Sites found to be clear of cyanobacteria are shown in Table 2.

Sites found to contain cyanobacteria are shown in Table 3.

4. Publicity

4.1 Notification procedures and publicity

Results obtained from the NRA cyanobacteria monitoring programme were passed to all interested parties. If sites met the criteria for elimination from the monitoring programme owners were informed. If sites proved to contain cyanobacteria owners were contacted and issued with guidelines. Other interested parties contacted during the initial stages of the investigation included:

Environmental Health Officers
Divisional Medical Officers
Nature Conservancy Council
Local MAFF Offices
MAFF, Weymouth
MAFF Veterinary Investigations Centres
National Farmers Union
Local County Trusts for Nature Conservation
Department of the Environment
Local Members of Parliament
NRA Headquarters
NRA Anglian region
NRA South West Members
Water Research Centre
Professor G. Codd, Dundee University
Dr P. O'Sullivan, Polytechnic South West
Cornwall County Council
Devon County Council
Helston Town Council (regarding Loe Pool)
Numerous concerned individuals

As the monitoring programme proceeded notification of sites with cyanobacterial blooms were confined to owners and relevant Environmental Health Officers. The Public Relations Office took over responsibility for notifications from early October onwards.

Once relevant parties had been informed a general press release was circulated to local radio and TV stations, local newspapers, the Press Association (London) and other organisations on the mailing list. Updated press releases were circulated as new information became available from the 13th of September. Press releases stated those sites found to contain cyanobacterial blooms and the results of any toxicity tests. Guidelines were issued with the early press

releases. Once sites were deemed to pose no further risk and monitoring was stopped, a press release was issued informing parties of the sites removal from the monitoring programme, a list of those sites still being monitored and cautionary notes regarding the possibility of reblooms of cyanobacteria at those sites taken off the list.

5 Discussion

5.1 Behaviour and persistence of the cyanobacteria

Problems with cyanobacterial blooms were first noticed in the South West region at Loe Pool and Porth Reservoir in July 1989. No samples were taken at that time but it is probable that these blooms were dominated by Microcystis. When sampling commenced in September 1989 Microcystis was the only species detected at these two sites and subsequent samples indicated the blooms were in decline. Many of the monitored sites found to contain Microcystis showed numbers of Microcystis declined during the first few weeks of monitoring. Microcystis blooms at most sites had declined to low levels by early October. Samples from both Upper Tamar Lake and Argal Reservoir showed Microcystis as very abundant (probably >1000 colonies/ml) on the 3rd of October but on the next sampling occasions numbers had reduced to <1 colony/ml (Upper Tamar Lake, 12th of October) and 1.5 colonies/ml (Argal Reservoir, 11th of October). Old Mill Reservoir, Porth Reservoir and the Lower Lake at Stafford Moor were the only remaining sites with dense blooms of Microcystis by the middle of October. At the beginning of November Microcystis numbers were found to be low at all sites remaining in the monitoring programme.

5.1.1 Microcystis

Microcystis was the most common form of cyanobacteria detected in large numbers in the South West region. Distribution was widespread (see Figure 2) and it was detected at 48 of the 63 sites known to contain cyanobacteria.

5.1.2 Coelosphaerium

Coelosphaerium was detected at 41 sites in the region (see Figure 3) often associated with Microcystis. Dense blooms of Coelosphaerium were only recorded at a few sites notably Old Mill Reservoir and the Fulford Estate Pond. Coelosphaerium blooms persisted longer than Microcystis, and at the Fulford Estate Pond the bloom persisted well into November.

5.1.3 Anabaena

Anabaena was detected at 17 sites in the region. Anabaena rarely occurred in high numbers (see Figure 4). Higher Marsh Trout Lake was one notable exception with a dense bloom of three million filaments per ml recorded on one occasion. The bloom at this site remained dense well into December. This could be partially the result of the poor flushing characteristics of this pond. At Bicton Lake numbers

of Anabaena filaments exceeded one million per ml during October though numbers had declined by the beginning of November.

5.1.4 Aphanizomenon

Aphanizomenon was detected at 8 sites in the region. Dense blooms of Aphanizomenon were not recorded at any site. Bicton Lake was the only site where numbers exceeded one thousand filaments per ml. The Exeter Ship Canal was the only site where Aphanizomenon occurred exclusive of other cyanobacteria. Aphanizomenon numbers tended to peak in the second half of October.

5.1.5 Oscillatoria/Lyngbya/Phormidium

Oscillatoria/Lyngbya/Phormidium were detected at 26 sites in the region (see Figure 6). Dense blooms only occurred in Meldon Pool. This site and Lower Clicker Quarry are old Quarries with no inlet or outlet to allow flushing of the cyanobacteria. At other sites Oscillatoria/Lyngbya/Phormidium remained in low numbers in association with denser blooms of other cyanobacteria. Determination of the individual genera of these three cyanobacteria was not attempted due to the difficulty in separating them without lengthy identification procedures. A few of the samples of this group of cyanobacteria were examined in detail and were thought to be Oscillatoria.

5.2 Toxicity of cyanobacterial blooms

Cyanobacteria from 16 sites were tested for toxicity in mice. Nine proved to be toxic (see Table 1). Cyanobacteria from Old Mill Reservoir, Porth Reservoir, Bussow Reservoir, Langarth Lake, Meldon Pool and Bicton Lake proved to be highly toxic. The first four sites all had dense blooms of Microcystis at the time of the toxicity test. Other cyanobacteria were absent or in low numbers. Numerous toxicity tests were carried out on cyanobacteria from Bicton Lake. The first three tests coincided with dense Microcystis blooms. Later tests were not found to be as toxic as the earlier tests and these coincided with Anabaena blooms.

Sites with dense blooms of cyanobacteria which proved to be non-toxic included Loe Pool, Argal Reservoir, Upper Tamar Reservoir, Fulford Estates Pond and Higher Marsh Trout Lake. The first three sites all had blooms of Microcystis at time of testing while Fulford Estates Pond had low numbers of Microcystis and high numbers of Coelosphaerium. Higher Marsh Trout Lake had a dense bloom of Anabaena at time of testing. Cyanobacteria from the above sites, apart from Loe Pool, were tested on one occasion only. Cyanobacteria from Bussow Reservoir proved to be non-toxic on the first occasion tested. However, six days later it was found to be highly toxic. Microcystis is known to release toxins after colonies die. Therefore, some of these sites may have contained toxins as the blooms declined.

5.3 Meteorological conditions preceding blooms

Meteorological data from Plymouth and Exeter was used for the purpose of a long term comparison with 1989 (see Appendix 3). spring 1989 was wet but from May until September it was very dry, sunny and warm. The large amount of sunshine and high temperatures provided ideal conditions for cyanobacterial growth and bloom formation. Nutrients from natural and anthropogenic sources would have become concentrated under the drought conditions. The persistence of many of the blooms may have been linked to the drought conditions persisting until mid-September 1989.

5.4 Problems in determining site risk

When cyanobacteria problems were first detected guidelines were not available on the assessment of the risks posed by cyanobacteria at a site. The formation of surface cyanobacterial scums was noticed at a few sites, such as Porth Reservoir and Old Mill Reservoir, but this could not be relied on to indicate the toxicity of the water. Cyanobacteria from Bicton Lake was found to be toxic for two months but at no time did the cyanobacteria form a surface scum.

There were no guidelines available on criteria to assess risks posed by sites. Bicton Lake remained toxic with cyanobacterial numbers in thousands of colonies per ml. The level chosen to remove a site from the monitoring programme was well below this at 100 colonies per ml and was probably an acceptable value for indicating that a site presented little or no risk.

6 Conclusions

6.1 Monitoring

Methodology developed for sample analysis was satisfactory for the purpose of this survey. However, visual inspections missed many sites later found to contain cyanobacteria.

6.2 Toxicity testing

Toxicity tests often took up to two weeks to complete between the time of sampling and receiving the results. Many cyanobacterial blooms were changing in density and species dominance week by week, and as such the results from these tests were of limited value. Ideally results of toxicity tests would be required within 72 hours of sampling.

6.3 General

1. 254 sites were sampled for cyanobacteria in the South West region in 1989.

2. Cyanobacteria were detected at 63 sites (25% of total sampled).

3. Cyanobacteria from 16 sites were tested for toxicity in mice.

4. Cyanobacteria from 9 sites (56% of sites tested) were found to be toxic to mice on at least one occasion.

7 Recommendations

7.1 Future monitoring

7.1.1 Standard methods are required for sampling, enumeration, identification and toxicity testing.

Action - Freshwater Officer

7.1.2 Continued limited monitoring should be carried out at a limited number of sites (See Appendix 5). Monitoring should involve:

1. Sites to be sampled once a month near the outlet together with a sample for chemical analysis.

2. Cyanobacteria samples should be preserved and sent back to a Biologist for identification and enumeration.

3. Cyanobacteria determinations on these sites to be kept on a computer register together with chemical, physical, meteorological (where available) and any other relevant data.

4. To use this information to expand the sampling programme if problems are detected. Controlled waters, public access waters and those sites able to affect downstream users should be the only ones included, perhaps with a priority rating system. This would enable the expansion of the program to take into account the severity of the problem and the availability of staff.

5. Any other sites would be sampled only on request.

This would necessitate resources being made available both in terms of staff and equipment, if other work programs are not to suffer.

Action - Freshwater Officer

8 References

Carmicheal,W.W. (1988) Toxins of Freshwater Algae. In: Handbook of Natural Toxins. Volume 3. Marine Toxins and Venoms. pp121-147.

Codd,G.A., Bell,S.G. and Brooks,W.P. (1989) Cyanobacterial Toxins in Water. WAT. SCI. TECH. Vol. 21. No. 3. pp. 1-13.

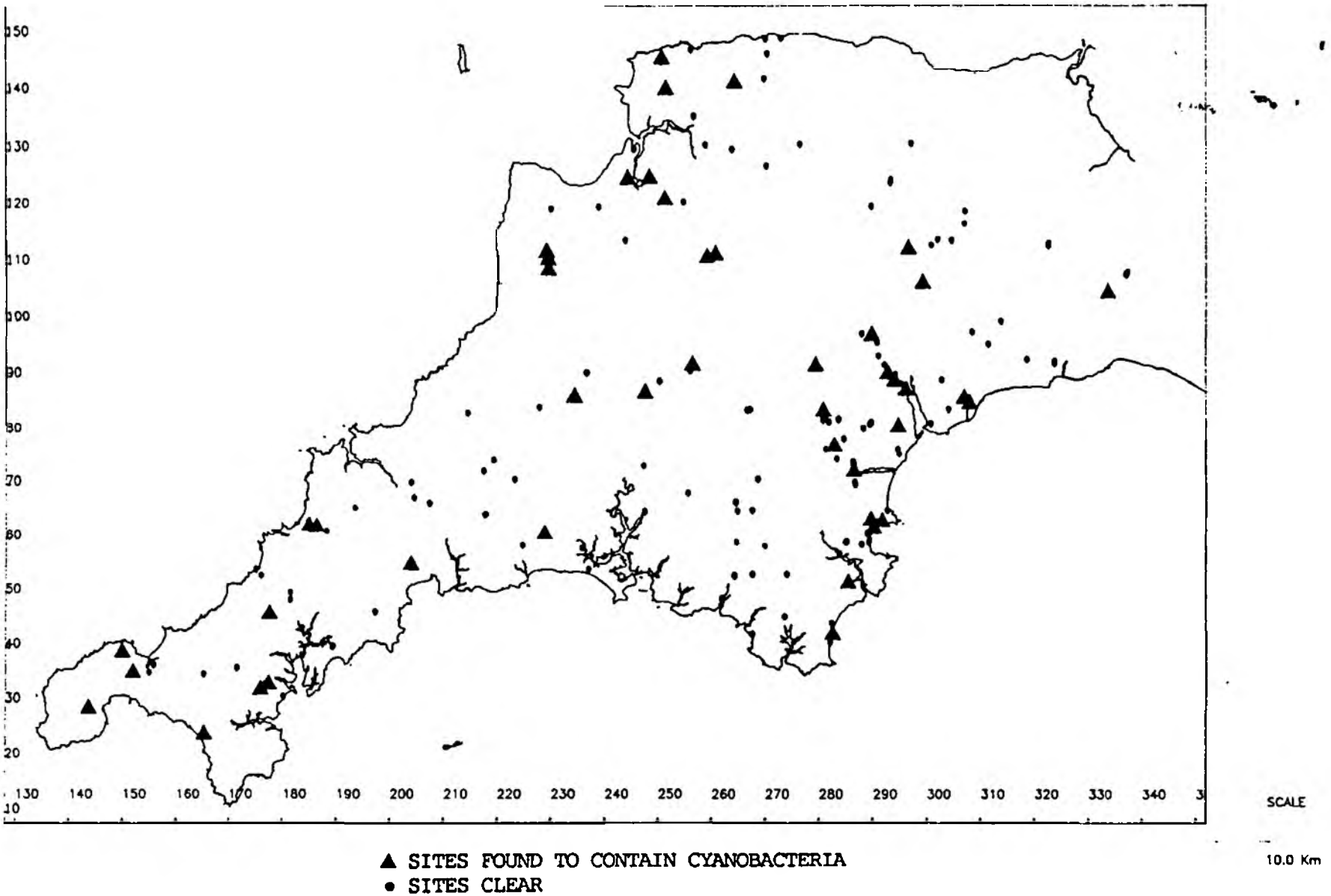

FIGURE 1. SITES SAMPLED FOR CYANOBACTERIA

FIGURE 2. MICROCYSTIS DISTRIBUTION

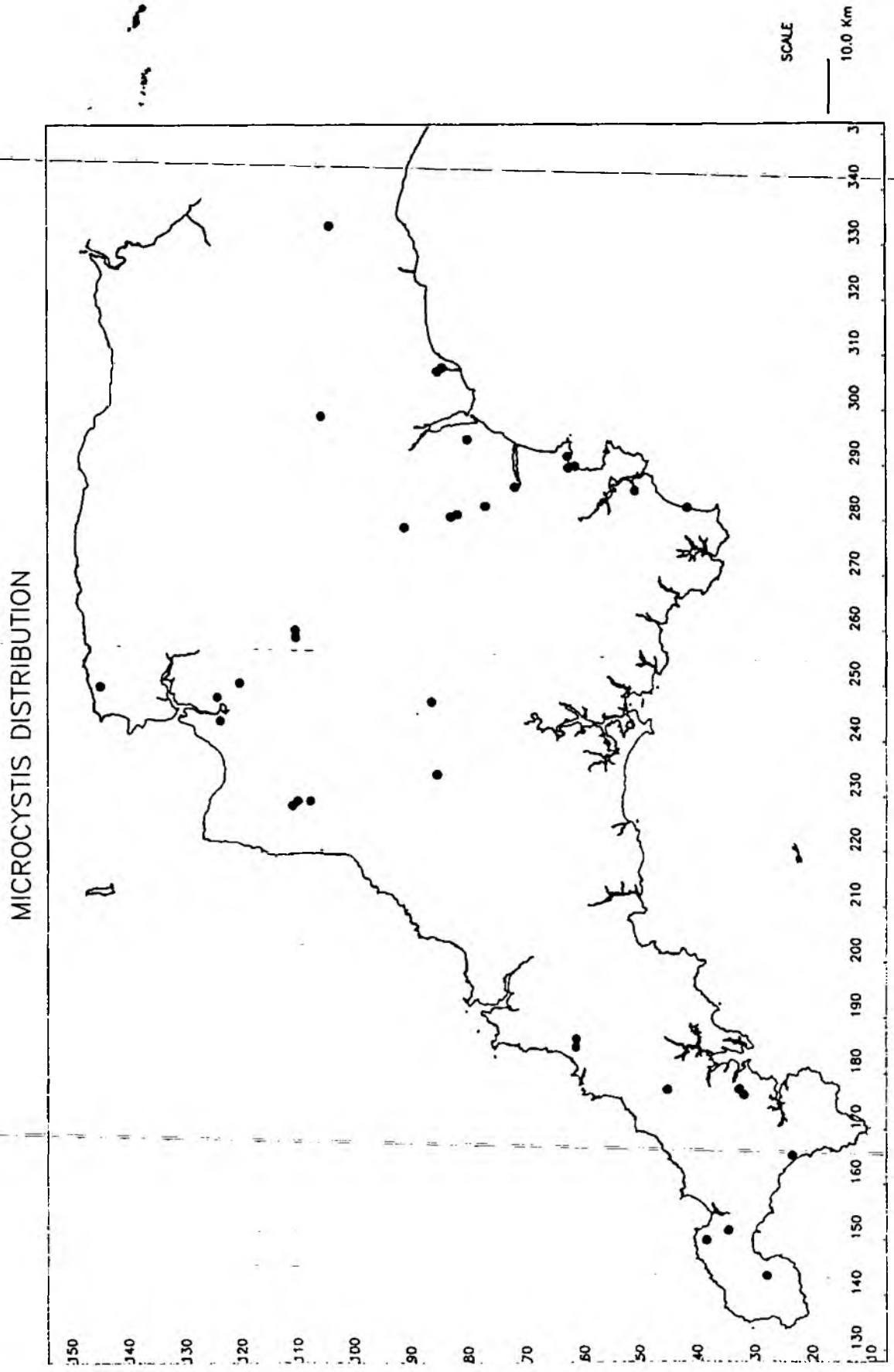

FIGURE 3. COELOSPHAERIUM DISTRIBUTION

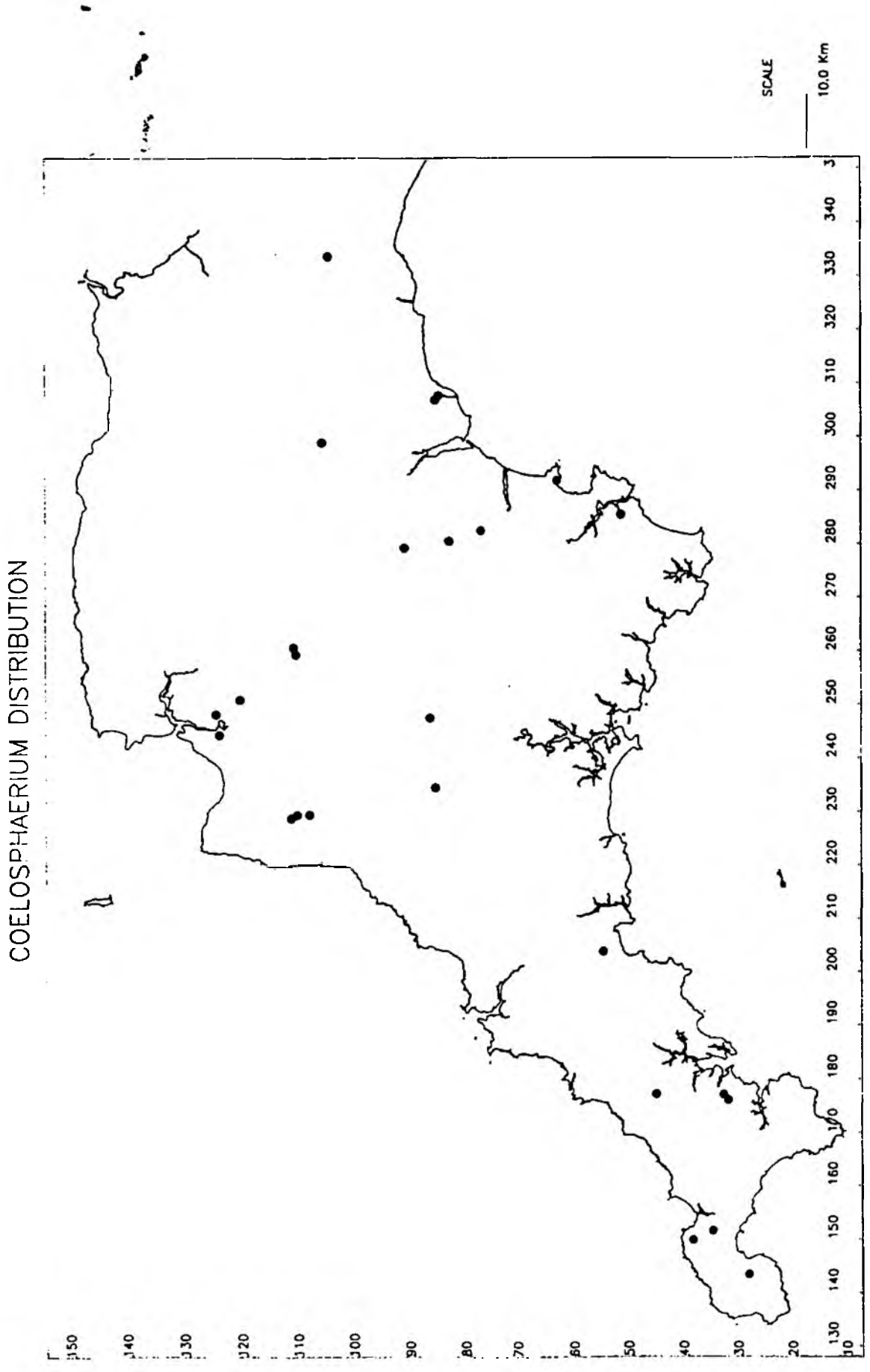

FIGURE 4. ANABAENA DISTRIBUTION

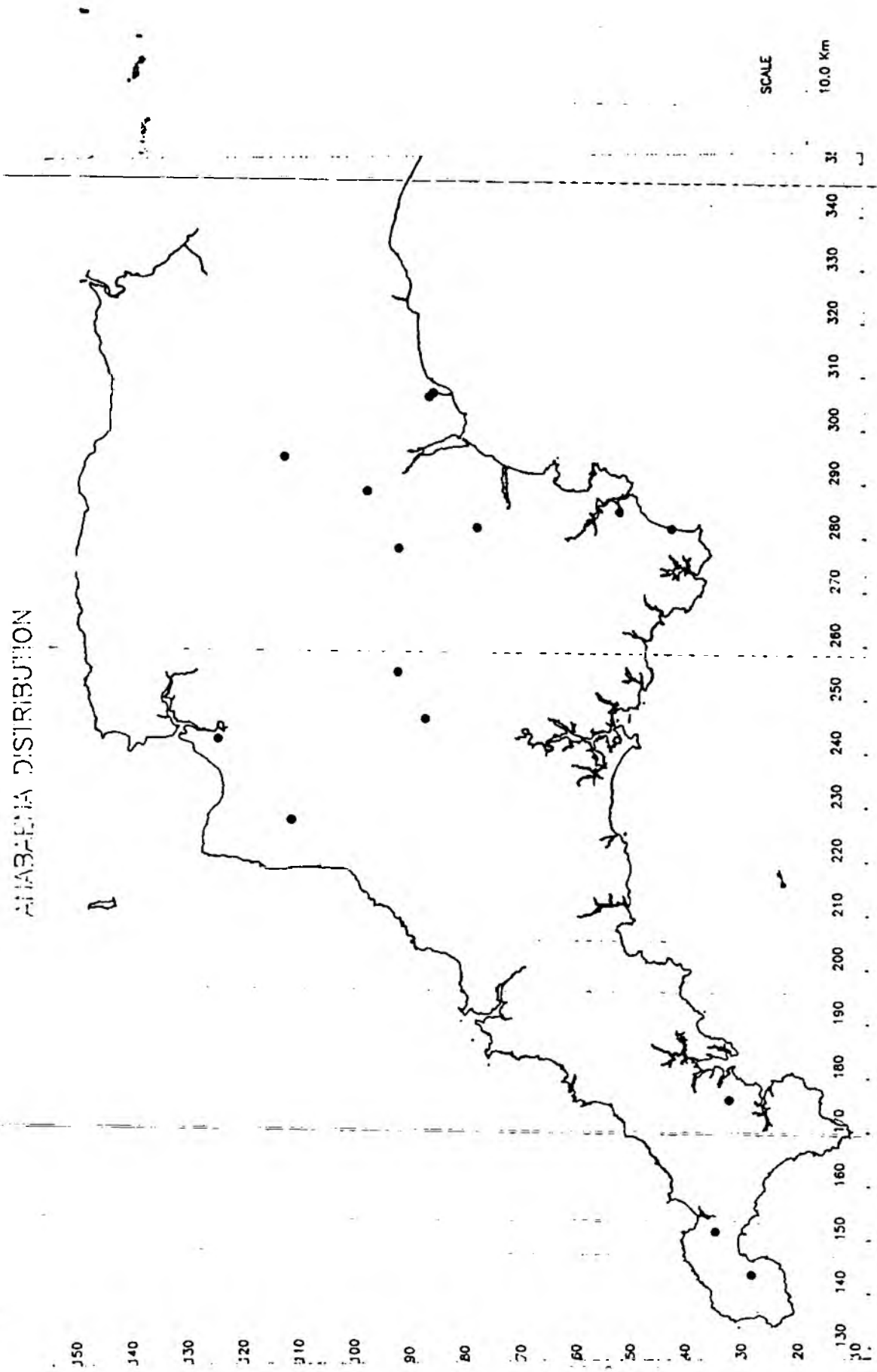

FIGURE 5. APHANIZOMENON DISTRIBUTION

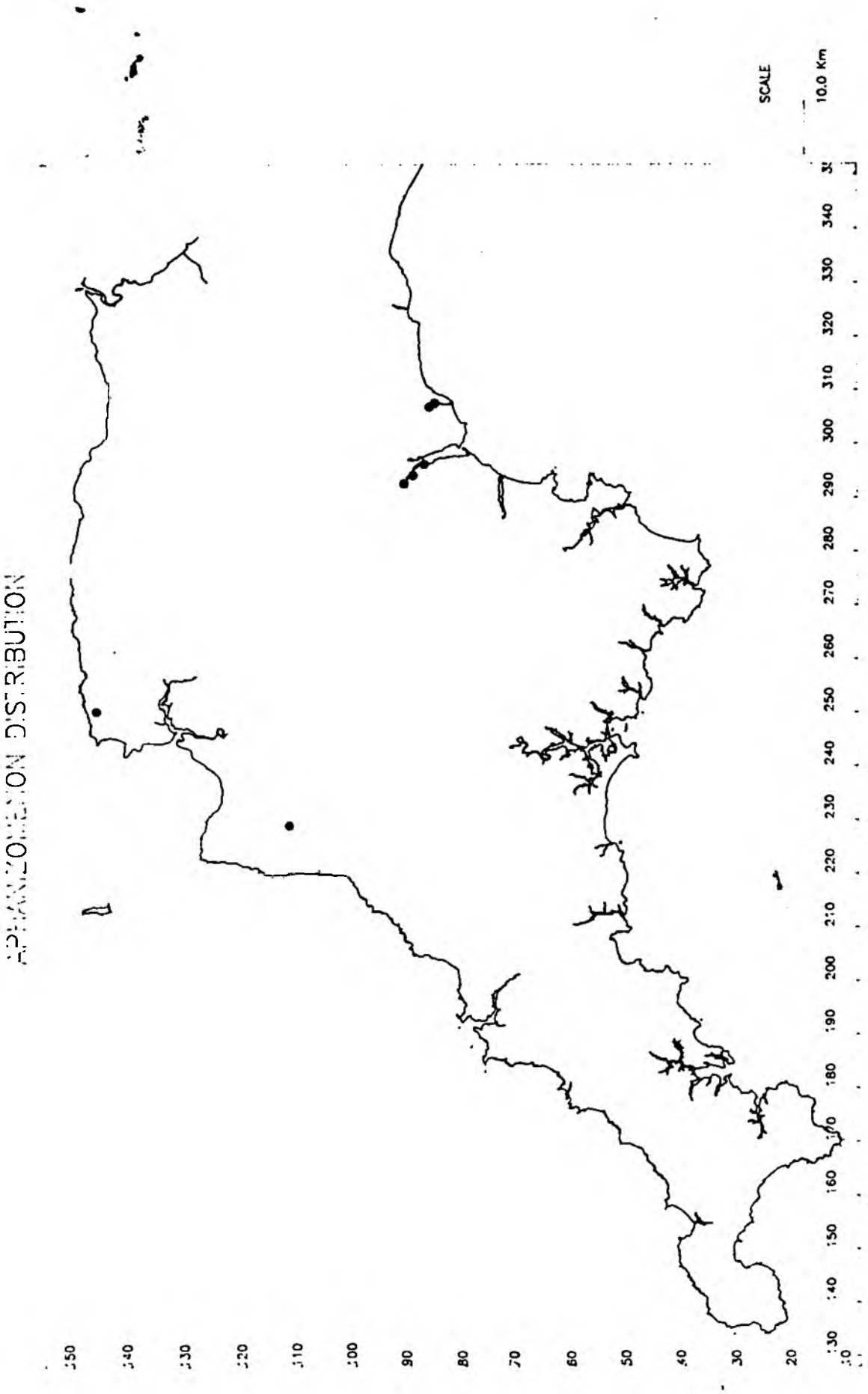

FIGURE 6. OSCILLATORIA/LYNBYA/PHORMIDIUM DISTRIBUTION

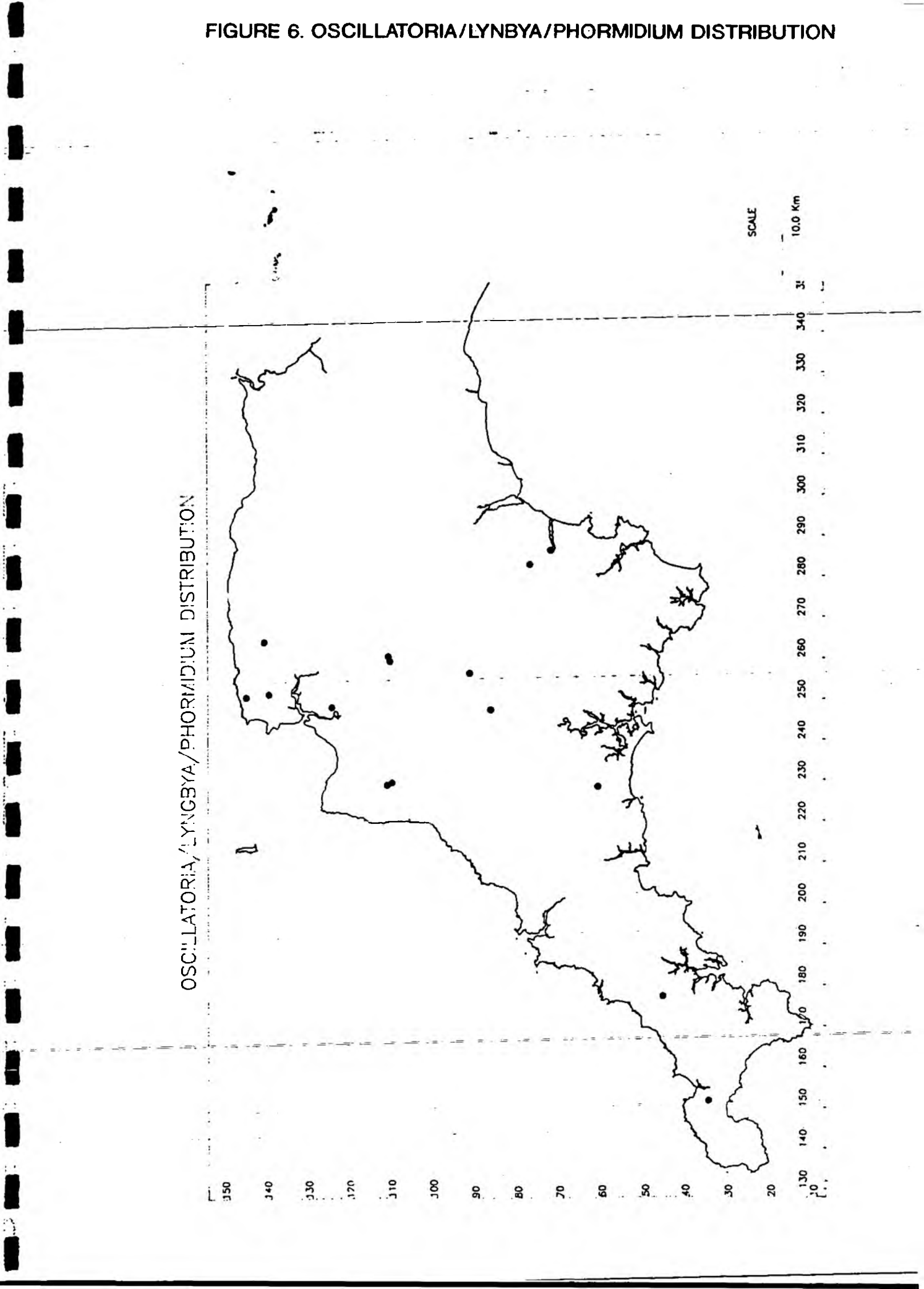

TABLE 1. RESULTS OF TOXICITY TESTS

NT = NON-TOXIC
N = 1000 mg/kg INJECTED
1:1 = 500 mg/kg INJECTED
1:9 = 100 mg/kg INJECTED
1:19 = 50 mg/kg INJECTED
1:49 = 20 mg/kg INJECTED
ALL OTHER VALUES ARE 1000 mg/kg INJECTED

ALL VALUES ARE MEAN TIMES TO DEATH IN MINUTES (TWO OR THREE MICE PER SAMPLE)

	DATE														
SITE	14/09/89	19/09/89	25/09/89	02/10/89	28/09/89	03/10/89	09/10/89	10/10/89	11/10/89	20/10/89	26/10/89	30/10/89	01/11/89	02/11/89	09/11/89
LOE POOL	NT	NT	NT												
OLD MILL RESERVOIR		N = 99	80		12										
PORTH RESERVOIR		N = 86 1:1 = 64 1:9 = 70 1:19 = 57	1:19 = 60 1:49 = 1440												
RUSSOW RESERVOIR		NT	70												
THE LAKE/ORNAMENTAL POND, EXETER		N = 53 1:1 = 128 1:9 = NT	70			60	60			600	NT	180			660
EXETER SHIP CANAL				NT											
MELDON POOL						60		60							
DRIFT RESERVOIR						420		NT							
JENNETS RESERVOIR						NT		NT							
LANGARTH LAKE						60									
ARGAL RESERVOIR						NT									
UPPER TAMAR LAKE						NT									
BRADLEY - MAIN POND						1200									
THE LAKE, FULFORD									NT						
HIGHER MARSH TROUT LAKE, HALF MOON														NT	
STAFFORD MOOR													150		

	SITE	OWNER
	CLOVELLY C.C. - UPPER POND	SAVAGE
	CLOVELLY C.C. - LOWER POND	SAVAGE
H	MELBURY	SOUTH WEST WATER
	EAST BROWNS FARM	BOND
L	ANGLERS PARADISE - UPPER LAKE	ZYG AND ROSE
L	ANGLERS PARADISE - SPECIMEN POOL	ZYG AND ROSE
L	ANGLERS PARADISE - TENCH LAKE	ZYG AND ROSE
L	ANGLERS PARADISE - CARP POND	ZYG AND ROSE
L	ANGLERS PARADISE - LOWER LAKE	ZYG AND ROSE
L	ANGLERS PARADISE - SPECIMEN LAKE	ZYG AND ROSE
L	ANGLERS PARADISE - KOI LAKE	ZYG AND ROSE
L	ANGLERS PARADISE - FLOAT LAKE	ZYG AND ROSE
H	LOWER GAMMATON	SOUTH WEST WATER
L	SOUTH REED FISHERY - RIGHT POND	
L	SOUTH REED FISHERY - LEFT POND	
H	UPPER SLADE	SOUTH WEST WATER
?	CRANFORD INN - TOP POND	NEWCOMBE
?	CRANFORD INN - BOTTOM POND	NEWCOMBE
?	CRANFORD INN - MIDDLE POND	NEWCOMBE
	BERRYNARBOUR MILL POND	MALIN
	BLAKEWELL - PRIVATE	NICKELL
	BLAKEWELL - PUBLIC	NICKELL
	VENN QUARRY	FOWLER
L	RIVERTON FISHERY - UPPER POND	CORK
L	RIVERTON FISHERY - LOWER POND	CORK
H	CHALLACOMBE	SOUTH WEST WATER
	WOOLHANGER FARM	MELSTROM
	SOUTH ALLER POND	FILLEIGH ESTATE
H	WEST IKERTON	NATIONAL RIVERS AUTHORITY
	WATERSMEET	NATIONAL RIVERS AUTHORITY
	HOLLYWELL	SOUTH WEST WATER
	BELLBROOK VALLEY - LOWER POND	SWABY
	BELLBROOK VALLEY - HIGHER POND	SWABY
	BELLBROOK VALLEY - HIGHEST POND	SWABY
	BELLBROOK VALLEY - MIDDLE POND	SWABY
	BELLBROOK VALLEY - LOWEST POND	SWABY
	LAKE SIDE, DULVERTON	SHARP
	EXE VALLEY FISHERY - LOBB'S LAKE	MAUND
	EXE VALLEY FISHERY - BACK POND	MAUND
H	WIMBLEBALL	SOUTH WEST WATER
L	STOUT FARM - BOTTOM COARSE POND	BERRY
?	TIVERTON CANAL - GREENWAY	DEVON COUNTY COUNCIL
?	TIVERTON CANAL - SAMFORD PEVERAL	DEVON COUNTY COUNCIL
L	SAMPFORD PEVERELL - POND 1	EXETER AND DISTRICT ANGLING C
L	SAMPFORD PEVERALL - POND 2	EXETER AND DISTRICT ANGLING C
?	TIVERTON CANAL - WESTLEIGH BR.	DEVON COUNTY COUNCIL
?	TIVERTON CANAL - BEACON HILL	DEVON COUNTY COUNCIL
H	OTTERHEAD - ROYSTON LAKE	WESSEX WATER
H	OTTERHEAD - TOPLAKE	WESSEX WATER
L	HORSE SHIRE CENTRE - BOTTOM POND	CRICKET ST THOMAS
L	FLAMINGO POND	CRICKET ST THOMAS
L	PELICAN POND	CRICKET ST THOMAS
	SPLATTEN RIDDEN - UPPER POOL	
	ST ERTH CANAL	

TABLE 2. SITES FOUND TO BE CLEAR OF CYANOBACTERIA.

	NGR	DATE	SAMPLER	COMMENTS	ALGAE
	SS29901980	1 10 89	G.CLARK	GREEN COLOUR	
	SS29901980	1 10 89	G.CLARK		
	SS38802010	30 9 89	G.CLARK		
	SS43801410	1 10 89	G.CLARK		
	SS45303010	1 10 89	G.CLARK		
	SS45303010	1 10 89	G.CLARK		
	SS45303010	1 10 89	G.CLARK		
	SS45303010	1 10 89	G.CLARK		UROGLENA,CYCLORELLA
	SS45303010	1 10 89	G.CLARK		
	SS45303010	1 10 89	G.CLARK		
	SS45303010	1 10 89	G.CLARK		
	SS45303010	1 10 89	G.CLARK		
	SS48502490	30 9 89	G.CLARK		
	SS49609160	4 10 89	T.RENALS		
	SS49609160	4 10 89	T.RENALS		
	SS50404520	30 9 89	G.CLARK		STRAURASTRUM
	SS54602100	1 10 89	G.CLARK		CHLORELLA
	SS54602100	1 10 89	G.CLARK		EUGLENA,ROTIFERA
	SS54602100	1 10 89	G.CLARK		
	SS55934730	19 10 89	R.GUTHRIE	CLADOCERA	
	SS56503570	1 10 89	G.CLARK		
	SS56503570	1 10 89	G.CLARK		
	SS58703075	23 10 89	A.ASHBY		
	SS63673003	19 10 89	R.GUTHRIE		TRUE GREENS
	SS63673003	19 10 89	R.GUTHRIE		
	SS69604220	30 9 89	G.CLARK		
	SS69904920	30 9 89	G.CLARK		
	SS70032715	23 10 89	A.ASHBY		
	SS70204660	30 9 89	G.CLARK		
	SS72804930	30 9 89	G.CLARK		
	SS76303090	30 9 89	G.CLARK		
	SS89602020	18 10 89	R.GUTHRIE		
	SS89602020	18 10 89	R.GUTHRIE		
	SS89602020	18 10 89	R.GUTHRIE		
	SS89602020	18 10 89	R.GUTHRIE		
	SS89602020	18 10 89	R.GUTHRIE		TRUE GREENS
	SS93152415	18 10 89	R.GUTHRIE		
	SS93202470	18 10 89	R.GUTHRIE		
	SS93202470	18 10 89	R.GUTHRIE		
	SS97003100	30 9 89	C.PEARCE		
	SS99150650	18 10 89	R.GUTHRIE		TRUE GREENS
	ST00811322	5 10 89	J.STONEMAN		TRUE GREENS
	ST02001420	5 10 89	J.STONEMAN		
LUB	ST04551405	18 10 89	R.GUTHRIE	CLADOCERA	
LUB	ST04601400	18 10 89	R.GUTHRIE	CLADOCERA	
	ST06971707	5 10 89	J.STONEMAN		
	ST07051930	18 10 89	R.GUTHRIE		SYNURA
	ST22601310	30 9 89	C.HEAD		VOLVOX
	ST22601350	30 9 89	C.HEAD		
	ST37100800	4 10 89	J.STONEMAN		
	ST37200830	4 10 89	J.STONEMAN		
	ST37400850	4 10 89	J.STONEMAN		
	SW51903550	4 10 89	T.RENALS		
	SW55003560	4 10 89	T.RENALS		

SITE	OWNER
HAYLE POOL	
CARGENWYN	SOUTH WEST WATER
STITHIANS	SOUTH WEST WATER
PERRANPORTH	
BOLINGEY	
COLLEGE	SOUTH WEST WATER
SWAN POOL	
GWARNICK MILL	
VENTON TRISSICK	
BOSCOWEN TRURO	
TREGOOSE	
TRENESTRALL - LAKE 1	
TRENESTRALL - LAKE 2	
BEAZLEYS, RETALLACK	BEAZLEY
MELLONWATTS	
PENCARROW	
DUNMERE COARSE POOL	
PRIORY ROAD, BODMIN	
CROWDY	SOUTH WEST WATER
COLLIFORD	SOUTH WEST WATER
TRAGO FISHERY	ROBERTSON
TRAGO ROADSIDE	ROBERTSON
TRAGO MILLS - POND 6	ROBERTSON
TRAGO MILLS - POND 2	ROBERTSON
TRAGO MILLS - POND 5	ROBERTSON
TRAGO MILLS - POND 7	ROBERTSON
TRAGO MILLS - POND 8	ROBERTSON
TRAGO MILLS - POND 3	ROBERTSON
TRAGO MILLS - POND 1	ROBERTSON
TRAGO MILLS - POND 4	ROBERTSON
DOZMARY POOL	
BUDE CANAL	NORTH CORNWALL DISTRICT COUNCIL
SIBLYBACK	SOUTH WEST WATER
BADHAM, LISKEARD	
TREDIDON BARTON	
DUTSON	
ASSOC. ST GERMANS	PLYMOUTH CFC
SITCOTT - LOWER LAKE	
SITCOTT - UPPER LAKE	
CRAFTHOLE	SOUTH WEST WATER
TAVISTOCK CANAL	SOUTH WEST WATER
LOPWELL	SOUTH WEST WATER
STONE LAKE	
BURRATOR	SOUTH WEST WATER
MELDON	SOUTH WEST WATER
FLEET - PANFLETE POND	MALMAY-WHITE
FLEET - EFFORD POND	MALMAY-WHITE
MILL LEAT TROUT FARM	TRANT
LUDBROOK TROUT FARM	KERR
REDLAKE - MAIN	SOUTH WEST WATER
REDLAKE - SMALL	SOUTH WEST WATER
REDLAKE - LARGE	SOUTH WEST WATER
BUTTERBROOK	SOUTH WEST WATER
LEFT LAKE	SOUTH WEST WATER

NGR	DATE	SAMPLER	COMMENTS	ALGAE
SW55903700	4 10 89	T.RENALS		
SW65203530	30 9 89	I.WARDEN	DEAD FISH	
SW71503650	30 9 89	I.WARDEN		
SW75005450	1 10 89	I.WARDEN		
SW76005340	1 10 89	I.WARDEN		
SW76703350	30 9 89	I.WARDEN		
SW80103120	4 10 89	T.RENALS		
SW81404890	1 10 89	I.WARDEN		
SW81405030	1 10 89	I.WARDEN		
SW83604370	1 10 89	I.WARDEN		
SW88206160	6 10 89	T.RENALS		
SW89204030	1 10 89	I.WARDEN		
SW89304030	1 10 89	I.WARDEN		
SW93506600	1 10 89	T.RENALS		OEDOGONIUM
SW97204660	1 10 89	I.WARDEN		
SX04007050	1 10 89	T.RENALS		
SX04506780	4 10 89	T.RENALS		
SX07406680	1 10 89	T.RENALS		
SX14508360	30 9 89	C.LEACH		
SX17507250	30 9 89	T.RENALS		
SX17606470	1 10 89	T.RENALS		
SX17606470	1 10 89	T.RENALS		
SX17806480	1 10 89	N.CLARK		
SX17806480	1 10 89	N.CLARK		
SX17806480	1 10 89	N.CLARK		
SX17806480	1 10 89	N.CLARK		
SX17806480	1 10 89	N.CLARK		
SX17806480	1 10 89	N.CLARK		CERATIUM
SX17806480	1 10 89	N.CLARK		
SX19307460	1 10 89	C.LEACH		
SX21000550	30 9 89	C.LEACH		
SX23207100	30 9 89	T.RENALS		
SX24705890	1 10 89	T.RENALS	VERY SMALL	CHLOROPHYCEAE
SX27808460	1 10 89	C.LEACH		
SX34408630	1 10 89	C.LEACH		
SX35805840	1 10 89	T.RENALS		
SX36609070	1 10 89	C.LEACH		
SX36709070	1 10 89	C.LEACH		
SX37005440	1 10 89	T.RENALS		
SX47307350	30 9 89	T.RENALS		
SX47506530	30 9 89	T.RENALS		
SX50308920	1 10 89	C.LEACH		
SX55606850	30 9 89	T.RENALS		
SX56009100	30 9 89	R.PEARDON		
SX61804790	1 10 89	G.STICKLAND		
SX61904910	1 10 89	G.STICKLAND		
SX64205330	1 10 89	G.STICKLAND		
SX64305320	1 10 89	G.STICKLAND		
SX64506690	30 9 89	G.STICKLAND	CLAY	
SX64506690	30 9 89	G.STICKLAND		
SX64506690	30 9 89	G.STICKLAND		
SX64605960	30 9 89	G.STICKLAND		
SX64706540	30 9 89	G.STICKLAND		

SITE	OWNER	NGR	DATE	SAMPLER	COMMENTS	ALGAE
FERNWORTHY	SOUTH WEST WATER	SX66508410	30 9 89	R.PEARDON	SURFACE SCUM	
METHERELL PIT	SOUTH WEST WATER	SX67108420	30 9 89	R.PEARDON		
SOUTH MILTON LEY		SX67504250	1 10 89	G.STICKLAND		
PAR CANAL		SX67505350	30 9 89	C.LEACH		
AVON	SOUTH WEST WATER	SX67506550	30 9 89	G.STICKLAND	PEATY	
VENFORD	SOUTH WEST WATER	SX68507100	30 9 89	R.PEARDON		UROGLENA
THE MILL, AVONWICK	BRUWKER	SX69805880	1 10 89	G.STICKLAND		
COOMBE FISHERY - LARGE LAKE	ROBINSON	SX73504570	1 10 89	G.STICKLAND		PEDIASTRUM
COOMBE FISHERY - SMALL LAKE	ROBINSON	SX73504570	1 10 89	G.STICKLAND		PEDIASTRUM
NEWHOUSE FISHERY	COOK	SX73905350	1 10 89	G.STICKLAND		
TRENCHFORD	SOUTH WEST WATER	SX80608230	30 9 89	J.STONEMAN		UROGLENA
TOTTIFORD	SOUTH WEST WATER	SX81008270	30 9 89	J.STONEMAN		UROGLENA
BLUE WATERS	BERKLEY LEISURE	SX81207700	30 9 89	J.STONEMAN		
BEADON BROOK		SX81758190	17 10 89	R.GUTHRIE		
WIDDICOMBE LEY	WHITLEY TRUST	SX82004100	30 9 89	N.CLARK		VOLVOX
SOUTH GROUNDS FARM POND	BLOMELEY	SX82254450	24 10 89	R.GUTHRIE		
STOVER LAKE	DEVON COUNTY COUNCIL	SX83207510	30 9 89	J.STONEMAN		
CANON TEIGN - LAKE	VISCOUNT EXMOUTH	SX83508245	20 10 89	R.GUTHRIE		
CANON TEIGN - HIGHER POND	VISCOUNT EXMOUTH	SX83558245	20 10 89	R.GUTHRIE		
CANON TEIGN - LOWER POND	VISCOUNT EXMOUTH	SX83558245	20 10 89	R.GUTHRIE		
FINLAKE - SMALL LAKE	MADDACOTT	SX84507890	1 10 89	G.STICKLAND		
FINLAKE - LARGE LAKE	MADDACOTT	SX84507890	1 10 89	G.STICKLAND		CERATIUM
NEW BARN FARM - REARING POND	WHITE	SX84905965	6 10 89	J.STONEMAN		VOLVOX
NEW BARN FARM - COARSE POND	WHITE	SX85105970	6 10 89	J.STONEMAN		
RACKERHAYES - LINNEY POND	NEWTON ABBOT FISHING ASSOCIATION	SX86207280	30 9 89	J.STONEMAN		
SAW MILLS POND	NEWTON ABBOT FISHING ASSOCIATION	SX86207460	1 10 89	N.CLARK		
RACKERHAYES - WEEDY POND	NEWTON ABBOT FISHING ASSOCIATION	SX86307270	30 9 89	J.STONEMAN		
GALLOWS CROSS POND	NEWTON ABBOT FISHING ASSOCIATION	SX86307360	1 10 89	N.CLARK		
KEY POND	NEWTON ABBOT FISHING ASSOCIATION	SX86307420	1 10 89	N.CLARK		
ABBROOK POND	NEWTON ABBOT FISHING ASSOCIATION	SX86307450	1 10 89	N.CLARK		
RACKERHAYES - WHEEL POND	NEWTON ABBOT FISHING ASSOCIATION	SX86407250	30 9 89	J.STONEMAN		
NEW CROSS POND	NEWTON ABBOT FISHING ASSOCIATION	SX86407390	1 10 89	N.CLARK		
DECOY POND	TEIGNBRIDGE	SX86507040	30 9 89	J.STONEMAN		
RACKERHAYES - DORES POND	NEWTON ABBOT FISHING ASSOCIATION	SX86507300	30 9 89	J.STONEMAN		CERATIUM
MAGAZINE POND	TEINBRIDGE	SX86607000	30 9 89	J.STONEMAN		
RACKERHAYES - ISLAND POND	NEWTON ABBOT FISHING ASSOCIATION	SX86607250	30 9 89	J.STONEMAN		ASTERIONELLA
NEWTON ST CYRES - POND	PIKE	SX87759767	24 10 89	R.COLLETT		
CLENNON VALLEY - LOWER POND	TORBAY DISTRICT COUNCIL	SX87805920	12 10 89	R.GUTHRIE		
CLENNON VALLEY - UPPER POND	TORBAY DISTRICT COUNCIL	SX87805920	12 10 89	R.GUTHRIE		
CLENNON VALLEY - TOP MIDDLE POND	TORBAY DISTRICT COUNCIL	SX87805920	12 10 89	R.GUTHRIE		TRUE GREENS
CLENNON VALLEY POND	TORBAY DISTRICT COUNCIL	SX87805920	12 10 89	R.GUTHRIE		
WATER CRESS FARM - ASH POND	HERN	SX88108080	6 10 89	J.STONEMAN		
WATER CRESS FARM - OAK POND	HERN	SX88108080	6 10 89	J.STONEMAN		
WATER CRESS FARM - ALDER POND	HERN	SX88108080	6 10 89	J.STONEMAN		
GROTTO POND, OLDWAY MANSION	TORBAY DISTRICT COUNCIL	SX88856130	12 10 89	R.GUTHRIE		
OLDWAY MANOR POND	TORBAY DISTRICT COUNCIL	SX88856130	12 10 89	R.GUTHRIE		TRUE GREENS
VICTORIA PARK POND	TORBAY DISTRICT COUNCIL	SX89006095	12 10 89	R.GUTHRIE		
GOODRINGTON PONDS	TORBAY DISTRICT COUNCIL	SX89135955	11 10 89	A.ASHBY		
HARCOMBE HOUSE - BOTTOM POND	HAYE	SX89308150	6 10 89	J.STONEMAN		
DRUM INN, COCKINGTON	DRUM INN	SX89406370	11 10 89	A.ASHBY		
HARCOMBE HOUSE - MIDDLE POND	HAYE	SX89408165	6 10 89	J.STONEMAN		
COCKINGTON COURT - UPPER POND	TORBAY DISTRICT COUNCIL	SX89506355	12 10 89	R.GUTHRIE		
COCKINGTON COURT - LOWER POND	TORBAY DISTRICT COUNCIL	SX89506355	12 10 89	R.GUTHRIE		
HARCOMBE HOUSE - TOP POND	HAYE	SX89608180	6 10 89	J.STONEMAN		

SITE	OWNER
COWLEY - TOP POND	EXETER AND DISTRICT ANGLERS
HOLLICOMBE - SMALL POND	TORBAY DISTRICT COUNCIL
RIVER CREEDY, COWLEY	
TORRE ABBEY POND	TORBAY DISTRICT COUNCIL
KINGS PARK POND	TORBAY DISTRICT COUNCIL
EXWICK FLOOD RELIEF CHANNEL	NATIONAL RIVERS AUTHORITY
ABBEY PARK POND	TORBAY DISTRICT COUNCIL
RIVER EXE - QUAYSIDE	
TESSIA GARDENS	TORBAY DISTRICT COUNCIL
LUSCOMBE ESTATE - BRAMBLE PATCH	HORE
LUSCOMBE ESTATE - ALLER POND	HORE
BILLINGS MOOR FARM - REAR POND	BERRY
BILLINGS MOOR FARM - POND	BERRY
STOUT FARM SPRING	
PHEAR PARK POOL	EAST DEVON DISTRICT COUNCIL
JUBILEE GARDENS POND	EXMOUTH DISTRICT COUNCIL
UPHAM TROUT FARM - SECOND POND	WILCOCKS
UPHAM TROUT FARM - THIRD POND	WILCOCKS
UPHAM TROUT POND - FIRST POND	WILCOCKS
GREENDALE BARTON - LOWER POND	CARTER
GREENDALE BARTON - HIGHER POND	CARTER
SQABMOOR	SOUTH WEST WATER
ESCOT AQUACULTURE	KENNAWAY
BRICKYARD FISH POND	LAWERENCE
TROUT POND	HOLLIES TROUT FARM (ROLES)
DEER PARK HOTEL, HONITON	NOAH
WISCOMBE PARK FISHERY	CHICHESTER
HOLYFORD D/S LAKE	SOUTH WEST WATER
HOLYFORD U/S LAKE	SOUTH WEST WATER

NGR	DATE	SAMPLER	COMMENTS	ALGAE
SX89709735	31 10 89	A.ASHBY		
SX89806235	9 10 89	J.STONEMAN		
SX90659605	17 10 89	R.GUTHRIE		
SX90706350	12 10 89	R.GUTHRIE		
SX90756350	12 10 89	R.GUTHRIE		
SX90909370	30 9 89	C.PEARCE		
SX91706365	12 10 89	R.GUTHRIE		TRUE GREENS
SX92059205	6 10 89	A.ASHBY		
SX92586543	11 10 89	A.ASHBY		
SX94547694	26 10 89	D.CLIFTON		TRUE GREENS
SX94807609	26 10 89	D.CLIFTON		
SX97200670	25 10 89	R.GUTHRIE		
SX97300633	25 10 89	R.GUTHRIE		
SX99250650	25 10 89	R.GUTHRIE		
SY00668163	7 11 89	D.BROOKS		TRUE GREENS
SY00708160	16 10 89	COUNCIL		CLADOPHORA
SY02200070	6 10 89	A.ASHBY		
SY02200070	6 10 89	A.ASHBY		TRUE GREENS
SY02200070	6 10 89	A.ASHBY		TRUE GREENS
SY02708940	5 10 89	A.ASHBY		
SY02708940	5 10 89	J.STONEMAN		
SY04008420	30 9 89	C.HEAD		
SY08309795	4 10 89	J.STONEMAN		
SY11409580	4 10 89	J.STONEMAN		
SY12100783	4 10 89	J.STONEMAN		
SY13659983	4 10 89	J.STONEMAN		
SY18599301	6 10 89	A.ASHBY		
SY23709230	30 9 89	C.HEAD		
SY23709270	30 9 89	C.HEAD		

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SITE NAME	LOWER CLICKER QUARRY, MENHENIOT			NATIONAL GRID REFERENCE		SX28706140	OWNER	
DATE SAMPLED	14/11/89	21/11/89	28/11/89	05/12/89	12/12/89	21/12/89	05/01/90	09/01/90
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	113.0 S.D. 21.1	85.5 S.D. 17.2	122.5 S.D. 29.3	115.0 S.D. 17	135.0 S.D. 44	131.2 S.D. 37.8	143.7 S.D. 28.4	118.7 S.D. 27.2

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

TABLE 3. SITES FOUND TO CONTAIN CYANOBACTERIA - TAXA AND COUNTS

SITE NAME	DRIFT RESERVOIR, PENZANCE			NATIONAL GRID REFERENCE	SW43702890	OWNER	S.W.W.	
DATE SAMPLED	03/10/89	11/10/89	18/10/89	25/10/89	01/11/89	07/11/89	14/11/89	21/11/89
Microcystis sp. (COLONIES/ml)	C	0.2 S.D. 0.5	1.0 S.D. 1.3					
Anabaena sp. (FILAMENTS/ml)	VA	176.9 S.D. 66.2	2462.5 S.D. 666.8	580.0 S.D. 38.4	1837.5 S.D. 467.9	318.7 S.D. 38.7	156.9 S.D. 2.6	59.7 S.D. 15.1
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)		51.7 S.D. 5.8	74.2 S.D. 7.6	24.0 S.D. 12	87.5 S.D. 60.4	13.0 S.D. 4.9	6.5 S.D. 2.6	2.9 S.D. 3.2
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED	28/11/89
Microcystis sp. (COLONIES/ml)	
Anabaena sp. (FILAMENTS/ml)	74.0 S.D. 16.3
Aphanizomenon sp. (COLONIES/ml)	
Coelosphaerium sp. (COLONIES/ml)	3.5 S.D. 2.4
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	

SITE NAME	SPLATTEN RIDDEN - LOWER POOL, HAYLE			NATIONAL GRID REFERENCE		SW51903550	OWNER	
DATE SAMPLED	04/10/89	11/10/89	18/10/89	25/10/89	01/11/89	07/11/89	14/11/89	
Microcystis sp. (COLONIES/ml)	187.0	25.0 S.D. 4.8	49.0 S.D. 11.6	10.4 S.D. 2.9	1.8	1.5 S.D. 1.1	1.7 S.D. 1	
Anabaena sp. (FILAMENTS/ml)				2812.5 S.D. 966.9	2650.0 S.D. 467	0.1	0.6 S.D. 1.2	
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)			1.0 S.D. 1.7			0.1		
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P							

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	BUSSOW RESERVOIR, ST.IVES			NATIONAL GRID REFERENCE		SW50203930	OWNER	
DATE SAMPLED	11/10/89	18/10/89	25/10/89	01/11/89	07/11/89	14/11/89		
Microcystis sp. (COLONIES/ml)	183.1 S.D. 28.6	21.5 S.D. 9.4	8.0 S.D. 4.2	125.5 S.D. 31	7.7 S.D. 2.2	4.4 S.D. 2.3		
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)		165.5 S.D. 18.3	53.6 S.D. 6.9	139.5 S.D. 30.5	20.2 S.D. 4	18.6 S.D. 7.1		
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	CARMINOE CREEK - LOE POOL, HELSTON			NATIONAL GRID REFERENCE		SW65502440	OWNER	
DATE SAMPLED	11/10/89	18/10/89	25/10/89	01/11/89				
Microcystis sp. (COLONIES/ml)	22.5 S.D. 7.9	96.2 S.D. 28.9	4.1 S.D. 1.7	0.33				
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								
DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	COLLEGE RESERVOIR, FALMOUTH	NATIONAL GRID REFERENCE	SW77303360	OWNER	

DATE SAMPLED	11/10/69								
Microcystis sp. (COLONIES/ml)	0.5 S.D. 0.9								
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)									
Coelosphaerium sp. (COLONIES/ml)	13.7 S.D. 4.4								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)									

DATE SAMPLED									
Microcystis sp. (COLONIES/ml)									
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)									
Coelosphaerium sp. (COLONIES/ml)									
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)									

SITE NAME	ARGAL RESERVOIR, FALMOUTH			NATIONAL GRID REFERENCE		SW76303280	OWNER	
DATE SAMPLED	03/10/89	11/10/89	18/10/89	25/10/89	01/11/89	07/11/89	14/11/89	21/11/89
Microcystis sp. (COLONIES/ml)	VA	1.5 S.D. 2.1	0.8	0.5		0.5 S.D. 1.6		
Anabaena sp. (FILAMENTS/ml)	P		P		1875.0 S.D. 1792.1		2.5	0.2 S.D. 0.6
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)		307.5 S.D. 21.8	7400.0 S.D. 1369	264.0 S.D. 39.6	49750.0 S.D. 7723.5	150.0 S.D. 18.6	820.0 S.D. 108.8	224.3 S.D. 61.3
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED	28/11/89	05/12/89	12/12/89					
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	180.0 S.D. 46.1	87.5 S.D. 11.1	42.4 S.D. 4.9					
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	PORTH RESERVOIR, NEWQUAY			NATIONAL GRID REFERENCE		SW86406210	OWNER	
DATE SAMPLED	06/10/89	12/10/89	18/10/89	24/10/89	31/10/89	07/11/89	14/11/89	
Microcystis sp. (COLONIES/ml)	50.1 S.D. 12.1	11.0 S.D. 2.1	46.5 S.D. 18.7	1337.5 S.D. 294.9	22.5 S.D. 10.6	1.7 S.D. 1.5	27.0 S.D. 9.5	
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STILLING BASIN, NEWQUAY			NATIONAL GRID REFERENCE		SW86406225	OWNER	
DATE SAMPLED	06/10/89	18/10/89						
Microcystis sp. (COLONIES/ml)	34.0 S.D. 4.7	0.9 S.D. 0.8						
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	RIALTON W.T.W - PORTH STREAM, NEWQUAY			NATIONAL GRID REFERENCE		SW84906230	OWNER	

DATE SAMPLED	06/10/89	12/10/89	18/10/89	24/10/89	31/10/89	07/11/89	14/11/89	
Microcystis sp. (COLONIES/ml)	21.7 S.D. 2.6	4.4 S.D. 2.4	1.4 S.D. 1.2	0.9	0.34	0.4	2.1 S.D. 1.4	
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	DUTSON WATER, LAUNCESTON			NATIONAL GRID REFERENCE		SX34408630	OWNER	
DATE SAMPLED	12/10/89	18/10/89	24/10/89	31/10/89				
Microcystis sp. (COLONIES/ml)	0.2	0.2 S.D. 0.5		0.1				
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	9.6 S.D. 2.7	8.5 S.D. 2.4	6.4 S.D. 2.5	7.4 S.D. 2.8				
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED
Microcystis sp. (COLONIES/ml)
Anabaena sp. (FILAMENTS/ml)
Aphanizomenon sp. (COLONIES/ml)
Coelosphaerium sp. (COLONIES/ml)
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)

SITE NAME	ALDER QUARRY, LAUNCESTON			NATIONAL GRID REFERENCE	SX47508720	OWNER	

DATE SAMPLED	12/10/89	18/10/89	25/10/89	01/11/89	07/11/89			
Microcystis sp. (COLONIES/ml)		0.04						
Anabaena sp. (FILAMENTS/ml)	36.2 S.D. 8.2	29.0 S.D. 10.7	134.5 S.D. 24.0	0.6 S.D. 0.9				
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	0.9 S.D. 0.8	1.2	4.0 S.D. 1.6	0.8 S.D. 1.0				
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	*	*	*	9.3 S.D. 2.3	2.2 S.D. 2.2			

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

* = counted with Anabaena as unable to distinguish on filter at low power

SITE NAME	LANGARTH LAKE, TRURO			NATIONAL GRID REFERENCE		SW77504600	OWNER	
DATE SAMPLED	03/10/89	11/10/89	18/10/89	25/10/89	01/11/89			
Microcystis sp. (COLONIES/ml)	A	8.5 S.D. 5.3	9.0 S.D. 2.9	6.0 S.D. 2.6	0.66			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)					0.04			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)					0.01			

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	TRETHURGY, ST.AUSTELL			NATIONAL GRID REFERENCE		SX04105540	OWNER	
DATE SAMPLED	24/10/89	31/10/89						
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	32.2 S.D. 4.6	35.0 S.D. 6.4						
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	UPPER TAMAR RESERVOIR			NATIONAL GRID REFERENCE		SS29001180	OWNER	S.W.W.
DATE SAMPLED	03/10/89	12/10/89	18/10/89	24/10/89	31/10/89	07/11/89	14/11/89	21/11/89
Microcystis sp. (COLONIES/ml)	VA	0.2	0.04				0.1	
Anabaena sp. (FILAMENTS/ml)			0.04					
Aphanizomenon sp. (COLONIES/ml)		18.7 S.D. 13.5	0.9	2.0 S.D. 2.6	0.1		0.2	
Coelosphaerium sp. (COLONIES/ml)		745.0 S.D. 144.3	286.0 S.D. 50	188.0 S.D. 30.7	115.2 S.D. 1.8	126.2 S.D. 50.8	67.5 S.D. 5.8	52.8 S.D. 17.4
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								17.2 S.D. 12

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	LOWER TAMAR RESERVOIR			NATIONAL GRID REFERENCE		SS29601080	OWNER	S.W.W.
DATE SAMPLED	12/10/89	24/10/89	31/10/89	07/11/89	14/11/89	21/11/89		
Microcystis sp. (COLONIES/ml)	0.2 S.D. 0.5							
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	120.5 S.D. 8.7	627.5 S.D. 59.6	25.9 S.D. 4.4	30.9 S.D. 7.3	53.2 S.D. 3.5	56.3 S.D. 19.0		
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)						1.6 S.D. 1.4		

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	RIVER TAMAR, BELOW TAMAR LAKES			NATIONAL GRID REFERENCE		SS29500870	OWNER	
DATE SAMPLED	12/10/89	24/10/89	31/10/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	2.0 S.D. 0.9							
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)		17.5 S.D. 4.7	16.7 S.D. 3.8	80.0 S.D. 40.9	41.2 S.D. 6.0			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	LITTLE BRADLEY POND			NATIONAL GRID REFERENCE		SX83007780	OWNER	N. ABBOT FISHING ASS.
DATE SAMPLED	03/10/89							
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P							

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	BRADLEY - MAIN POND			NATIONAL GRID REFERENCE		SX82607770	OWNER	N. ABBOT FISHING ASS.
DATE SAMPLED	01/10/89	03/10/89	11/10/89	17/10/89	24/10/89	02/11/89		
Microcystis sp. (COLONIES/ml)				0.04				
Anabaena sp. (FILAMENTS/ml)		A	28.9 S.D. 7.3					
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)				0.18	0.1	0.01		
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	ABBEY PARK, TORQUAY			NATIONAL GRID REFERENCE		SX91706360	OWNER	

DATE SAMPLED	11/10/89	12/10/89						
Microcystis sp. (COLONIES/ml)	P							
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	46.2 S.D. 32.3							
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	COCKINGTON COURT - MIDDLE POND			NATIONAL GRID REFERENCE		SX89506350	OWNER	TORBAY D. COUNCIL
DATE SAMPLED	12/10/89	24/10/89	31/10/89					
Microcystis sp. (COLONIES/ml)	0.01							
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	HOLLICOMBE GARDENS - MAIN POND			NATIONAL GRID REFERENCE		SX89806235	OWNER	
DATE SAMPLED	03/10/89	09/10/89						
Microcystis sp. (COLONIES/ml)	C	128.1 S.D. 23.4						
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	KENNICK RESERVOIR			NATIONAL GRID REFERENCE		SX80608380	OWNER	S.W.W.
DATE SAMPLED	30/09/89	09/10/89	17/10/89	24/10/89	31/10/89			
Microcystis sp. (COLONIES/ml)	P	0.02	0.08	0.01	0.01			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)			0.05	0.05				
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	TOTTIFORD RESERVOIR			NATIONAL GRID REFERENCE		SX81008270	OWNER	S.W.W.
DATE SAMPLED	30/09/89	17/10/89	24/10/89	31/10/89				
Microcystis sp. (COLONIES/ml)		0.01						
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	OLD MILL RESERVOIR			NATIONAL GRID REFERENCE		SX85505210	OWNER	S.W.W.
DATE SAMPLED	30/09/89	09/10/89	17/10/89	24/10/89	31/10/89	07/11/89	14/11/89	21/11/89
Microcystis sp. (COLONIES/ml)	A	28.1 S.D. 8.1	14.5 S.D. 2.0	14125.0 S.D. 4752.6	88.7 S.D. 36.1	175.0 S.D. 26.5	2.2 S.D. 2.1	28.7 S.D. 6.2
Anabaena sp. (FILAMENTS/ml)			P	937.5 S.D. 675.1	28.7 S.D. 14.5	175.0 S.D. 45.9		16.7 S.D. 8.5
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)			21.4 S.D. 5.1	19437.5 S.D. 2472.9	132.5 S.D. 58.7	97.5 S.D. 22.4	1.1 S.D. 0.9	
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	SLAPTON LEY, TORCROSS			NATIONAL GRID REFERENCE		SX82304230	OWNER	WHITLEY TRUST
DATE SAMPLED	30/09/89	09/10/89	17/10/89	24/10/89	24/10/89			
Microcystis sp. (COLONIES/ml)	C	1.2 S.D. 2.5	0.04					
Anabaena sp. (FILAMENTS/ml)		99.4 S.D. 26.9						
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomanon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	RACKERHAYES - FIRST POND			NATIONAL GRID REFERENCE		SX86207270	OWNER	N. ABBOT FISHING ASS.
DATE SAMPLED	30/09/89	11/10/89	17/10/89	24/10/89	02/11/89			
Microcystis sp. (COLONIES/ml)			0.1					
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P		1.1 S.D. 0.9		0.12			

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	EXETER SHIP CANAL - SALMONPOOL BRIDGE			NATIONAL GRID REFERENCE		SX92709070	OWNER	EXETER COUNCIL
DATE SAMPLED	09/10/89	17/10/89	24/10/89	31/10/89				
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)	0.2 S.D. 0.8	0.05	0.1					
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	EXETER SHIP CANAL - COUNTESS WEIR			NATIONAL GRID REFERENCE		SX94208930	OWNER	EXETER COUNCIL
DATE SAMPLED	30/09/89	09/10/89	17/10/89	24/10/89	31/10/89			
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)	C	5.0 S.D. 2.1	1.5 S.D. 1.4	0.05				
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	EXETER SHIP CANAL - EXMINSTER			NATIONAL GRID REFERENCE		SX96308730	OWNER	EXETER COUNCIL
DATE SAMPLED	09/10/89	17/10/89	24/10/89	31/10/89				
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)	2.7 S.D. 2.4	27.2 S.D. 5.2	9.0 S.D. 2.0	0.11				
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	TIVERTON CANAL - WESTERN END			NATIONAL GRID REFERENCE		SS96501240	OWNER	
DATE SAMPLED	30/09/89	10/10/89	17/10/89	18/10/89	25/10/89	01/11/89	07/11/89	14/11/89
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)	P	16.2 S.D. 15.6	230.0 S.D. 71.2	144.2 S.D. 33.4	104.0 S.D. 24.1	191.7 S.D. 15.3	262.5 S.D. 137.5	93.0 S.D. 21.7
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED	21/11/89
Microcystis sp. (COLONIES/ml)	
Anabaena sp. (FILAMENTS/ml)	35.4 S.D. 14.5
Aphanizomenon sp. (COLONIES/ml)	
Coelosphaerium sp. (COLONIES/ml)	
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	

SITE NAME	PERRY ST. CHARD			NATIONAL GRID REFERENCE	ST33600510	OWNER	

DATE SAMPLED	04/10/89	09/10/89	17/10/89	24/10/89	31/10/89			
Microcystis sp. (COLONIES/ml)	37.0		2.7 S.D. 1.7	0.07	0.05			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)			6.4 S.D. 2.1					
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STOUT FARM - TOP COARSE POND			NATIONAL GRID REFERENCE		SS99100650		OWNER	BERRY
DATE SAMPLED	18/10/89	25/10/89	01/11/89						
Microcystis sp. (COLONIES/ml)	0.4 S.D. 0.6	0.5	0.03						
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)									
Coelosphaerium sp. (COLONIES/ml)	7.9 S.D. 2.6	7.5 S.D. 2.0	1.1						
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)									

DATE SAMPLED									
Microcystis sp. (COLONIES/ml)									
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)									
Coelosphaerium sp. (COLONIES/ml)									
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)									

SITE NAME	STOUT FARM - MIDDLE COARSE POND			NATIONAL GRID REFERENCE		SS99100650	OWNER	BERRY
DATE SAMPLED	18/10/89	25/10/89	01/11/89					
Microcystis sp. (COLONIES/ml)	1.7 S.D. 1.9	1.0 S.D. 1.3	0.4 S.D. 0.6					
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	1.2 S.D. 1.3	1.5 S.D. 1.1	0.7 S.D. 1.2					
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	HIGHER MARSH TROUT LAKE, HALF MOON			NATIONAL GRID REFERENCE		SX89709730	OWNER	REEVES
DATE SAMPLED	05/10/89	10/10/89	17/10/89	24/10/89	02/11/89	07/11/89	14/11/89	21/11/89
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)	VA	63500.0 S.D. 229500	205000.0 S.D. 25800	2968750.0 S.D. 144900	434375.0 S.D. 83917.2	935000.0 S.D.119045.7	240625.0 S.D. 97772.5	209700.0 S.D. 55190
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED	28/11/89	05/12/89	12/12/ 89	19/12/89	02/01/90	05/01/90		
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)	2337.5. S.D. 460.4	87250.0 S.D. 12099.8	47.9 S.D. 8.5	315.0 S.D. 92.4	28.7 S.D. 10.3	4.1 S.D. 1.9		
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	FULFORD ESTATES POND			NATIONAL GRID REFERENCE	SX79309170	OWNER	STANBURY	
DATE SAMPLED	06/10/89	11/10/89	24/10/89	31/10/89	07/11/89	14/11/89	21/11/89	28/11/89
Microcystis sp. (COLONIES/ml)	A	13.7 S.D. 10.9	3.5 S.D. 3.4	0.5 S.D. 0.6				
Anabaena sp. (FILAMENTS/ml)	C							
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	C	5100.0	6525.0 S.D. 783.5	1512.5 S.D. 596.4	37812.5 S.D. 8771.1	7500.0 S.D. 2946.3	530.9 S.D. 272.7	297.5 S.D. 65.0
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED	05/12/89	12/12/89						
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	37.0 S.D. 7.4	35.1 S.D. 6.5						
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	FULFORD STREAM			NATIONAL GRID REFERENCE		SX79309170	OWNER	STANBURY
DATE SAMPLED	13/10/89	25/10/89	31/10/89	07/11/89	14/11/89	21/11/89	12/12/89	
Microcystis sp. (COLONIES/ml)			0.1					
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	3.0 S.D. 0.6	1687.5 S.D. 486.8	1325.0 S.D. 382.8	852.5 S.D. 188.2	172.0 S.D. 33.1	211.3 S.D. 24.3	34.4 S.D. 6.2	
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	HOME FARM, KENTON			NATIONAL GRID REFERENCE		SX94708100	OWNER	WILLIAMS
DATE SAMPLED	18/10/89	24/10/89	31/10/89					
Microcystis sp. (COLONIES/ml)	7.0 S.D. 1.7	11.7 S.D. 7.2	5.7 S.D. 2.1					
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	THE LAKE, BICTON			NATIONAL GRID REFERENCE		SY07108610	OWNER	DEVON C. COUNCIL
DATE SAMPLED	30/09/89	03/10/89	16/10/89	17/10/89	18/10/89	20/10/89	23/10/89	26/10/89
Microcystis sp. (COLONIES/ml)	A	4.0	0.5 S.D. 0.6	2.5 S.D. 2.7	2.7 S.D. 2.5	25.0 S.D. 52.7	5.2 S.D. 4.1	62.5 S.D. 106.2
Anabaena sp. (FILAMENTS/ml)	A	A	1130000.0 S.D. 300000	7300.0 S.D. 1000	21250.0 S.D. 5270.5	1256250.0 S.D. 287847	17875.0 S.D. 5466.1	134375.0 S.D. 46701.1
Aphanizomenon sp. (COLONIES/ml)			0.02	0.25	0.2	62.5 S.D. 88.4	1.5 S.D. 1.7	187.5 S.D. 179.2
Coelosphaerium sp. (COLONIES/ml)			1.5 S.D. 1.6	2.1 S.D. 1.9	2.2 S.D. 3.6	137.5 S.D. 181.1	11.0 S.D. 7.1	162.5 S.D. 132.4
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED	30/10/89	02/11/89	07/11/89	09/11/89	13/11/89	16/11/89		
Microcystis sp. (COLONIES/ml)	20.0 S.D. 50	0.2 S.D. 0.8			0.1	P		
Anabaena sp. (FILAMENTS/ml)	3975.0 S.D. 561.5	3350.0 S.D. 786.6	41.2 S.D. 8.8	+	4.0 S.D. 2.7	0.7		
Aphanizomenon sp. (COLONIES/ml)	1087.5 S.D. 372.9	2.0	4.7 S.D. 3.4	30.0 S.D. 14.7 [1662.5 *]	5.9 * S.D. 2.8	0.1		
Coelosphaerium sp. (COLONIES/ml)	50.0 S.D. 60	3.0	1.0 S.D. 1.3		0.1	P		
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

+ = small numbers found inamongst Aphanizomenon filaments
* = single Aphanizomenon filaments (all other Aphanizomenon counts are filament bundles)

SITE NAME	ORNAMENTAL POND, BICTON PARK			NATIONAL GRID REFERENCE	SY07308580	OWNER	BICTON PARK	
DATE SAMPLED	03/10/89	16/10/89	18/10/89	20/10/89	23/10/89	26/10/89	30/10/89	02/11/89
Microcystis sp. (COLONIES/ml)	2.3	0.9 S.D. 0.8	18.0 S.D. 9.5	78.1 S.D. 31.9	9.5 S.D. 4.8	2.1 S.D. 1.6	3.5 S.D. 1.4	28.0
Anabaena sp. (FILAMENTS/ml)	A	434375.0 S.D. 83917.0	26750.0 S.D. 5779.5	39062.5 S.D. 11808.1	18250.0 S.D.4972.1	1137.5 S.D. 291.4	750.0 S.D. 228.2	3550.0 S.D. 786.6
Aphanizomenon sp. (COLONIES/ml)			0.5	1.2	0.7 S.D. 1.2	0.5 S.D. 1.2	0.2 S.D. 0.5	2.0
Coelosphaerium sp. (COLONIES/ml)		0.2 S.D. 0.8	3.0 S.D. 3.5	1.0	1.2 S.D. 1.8	0.2	0.2 S.D. 0.5	3.0
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED	07/11/89	09/11/89	13/11/89	16/11/89	21/11/89			
Microcystis sp. (COLONIES/ml)	0.2	0.5	3.1 S.D. 1.7	0.08	0.3 S.D. 0.8			
Anabaena sp. (FILAMENTS/ml)	5.9 S.D. 2.7	11.5 S.D. 4.1	25.2 S.D. 3.2	0.9 S.D. 1	2.1 S.D. 2			
Aphanizomenon sp. (COLONIES/ml)	0.1	0.5						
Coelosphaerium sp. (COLONIES/ml)	0.01		0.7 S.D. 1.3	0.1				
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	BICTON STREAM			NATIONAL GRID REFERENCE		SY07908530	OWNER	
DATE SAMPLED	03/10/89	05/10/89	16/10/89	17/10/89	18/10/89	20/10/89	23/10/89	26/10/89
Microcystis sp. (COLONIES/ml)	2.0	3.0 S.D. 2.8	0.1	0.09		0.03	0.05	0.04
Anabaena sp. (FILAMENTS/ml)	A	500.0	266.2 S.D. 56.8	102.2 S.D. 15.5	49.4 S.D. 7.6	20.1 S.D. 5.2	7.5 S.D. 3.1	0.2
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)			0.2 S.D. 0.8	0.06	0.1	0.07	0.03	0.04
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED	30/10/89	02/11/89	07/11/89	09/11/89	13/11/89	16/11/89	21/11/89	
Microcystis sp. (COLONIES/ml)	0.04	0.02			0.01	0.03		
Anabaena sp. (FILAMENTS/ml)	0.12	1.4	1.1	0.4	0.09	0.4		
Aphanizomenon sp. (COLONIES/ml)			0.1	0.1			0.3 S.D. 0.8	
Coelosphaerium sp. (COLONIES/ml)	0.04	0.01					0.1 S.D. 0.4	
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	RIVER OTTER D/S BICTON STREAM			NATIONAL GRID REFERENCE		SY07908540	OWNER	

DATE SAMPLED	05/10/89	09/10/89	16/10/89	17/10/89	18/10/89	20/10/89	23/10/89	26/10/89
Microcystis sp. (COLONIES/ml)	0.1 S.D. 0.4	0.6 S.D. 0.6						0.01
Anabaena sp. (FILAMENTS/ml)	61.6 S.D. 9.6	345.0 S.D. 71.9	9.2 S.D. 2.1	1.6 S.D. 1.9	1.7 S.D. 1.2	0.4 S.D. 0.6	0.5 S.D. 0.6	
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED	30/10/89	02/11/89	07/11/89	09/11/89	13/11/89	16/11/89	21/11/879	
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)		0.01	0.04	0.02			0.1 S.D. 0.4	
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	0.04	0.01						
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	WISTLAND POUND RESERVOIR			NATIONAL GRID REFERENCE		SS64304160		OWNER	S.W.W.
DATE SAMPLED	30/09/89	10/10/89	16/10/89	23/10/89	30/10/89	28/11/89			
Microcystis sp. (COLONIES/ml)									
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)									
Coelosphaerium sp. (COLONIES/ml)									
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P	76.8 S.D. 46.3	30.0 S.D. 10.0	8.0 S.D. 2.9	25.0 S.D. 11.8	37.5 S.D. 30.6			

DATE SAMPLED									
Microcystis sp. (COLONIES/ml)									
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)									
Coelosphaerium sp. (COLONIES/ml)									
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)									

SITE NAME	WISTLANDPOUND RESERVOIR STREAM			NATIONAL GRID REFERENCE		SS64304140	OWNER	
DATE SAMPLED	16/10/89	30/10/89						
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	74.5 S.D. 16.7	25.0 S.D. 10.5						

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	JENNETTS RESERVOIR STREAM			NATIONAL GRID REFERENCE		SS44352465	OWNER	
DATE SAMPLED	16/10/89	23/10/89	30/10/89					
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	46.6 S.D 5.8	11.6 S.D. 2.1	3.9 S.D. 1.9					
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	JENNETTS RESERVOIR			NATIONAL GRID REFERENCE		SS44302470	OWNER	S.W.W.
DATE SAMPLED	30/09/89	03/10/89	10/10/89	16/10/89	23/10/89	30/10/89		
Microcystis sp. (COLONIES/ml)		C		2.5 S.D. 2.6		0.1		
Anabaena sp. (FILAMENTS/ml)	A	C						
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)			10.4 S.D. 2.5	278.5 S.D. 62.7	14.2 S.D. 2.7	5.7 S.D. 2.1		
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	HIGHER GAMMATON RESERVOIR			NATIONAL GRID REFERENCE	SS48402520	OWNER	S.W.W.

DATE SAMPLED	30/09/89	10/10/89	16/10/89	23/10/89	30/10/89			
Microcystis sp. (COLONIES/ml)			0.1	0.2 S.D. 0.5	0.1			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)		2.7 S.D. 1.6	4.5 S.D. 1.8	4.2 S.D 2.1	3.7 S.D. 2.6			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P	5.2 S.D. 2.0	4.0 S.D. 1.7	3.5 S.D. 1.6	3.4 S.D. 2.0			

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	DARRACOTT RESERVOIR			NATIONAL GRID REFERENCE	SS51102110	OWNER	S.W.W.

DATE SAMPLED	30/09/89	10/10/89	16/10/89	23/10/89	30/10/89			
Microcystis sp. (COLONIES/ml)	P	0.4 S.D. 0.3	1.2 S.D. 1.0	1.1 S.D. 1.6	1.0 S.D. 1.1			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)		35.2 S.D. 7.4	36.4 S.D. 5.0	45.4 S.D. 5.5	25.1 S.D. 5.8			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	MELDON POOL			NATIONAL GRID REFERENCE		SX56409210	OWNER	
DATE SAMPLED	30/09/89	10/10/89	16/10/89	23/10/89	30/10/89	07/11/89	14/11/89	21/11/89
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)		785.0 S.D. 115.7	4125.0 S.D. 1544.0	3600.0 S.D. 628.6	8350.0 S.D. 639.8	475.0 S.D. 184.5	248.7 S.D. 76.9	1.2 S.D. 1.5
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	A	*	*	*	*	*	*	153.7 S.D. 50.2

DATE SAMPLED	28/11/89	05/12/89	12/12/89	19/12/89	02/01/90	09/01/90		
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	142.5 S.D. 44.2	122.5 S.D. 30.3	132.5 S.D. 47.6	75.0 S.D. 10.2	127.5 S.D. 44.0	2350.0 S.D. 723.6		

* = counted with Anabaena as unable to distinguish on filter at low power

SITE NAME	LOWER SLADE RESERVOIR			NATIONAL GRID REFERENCE	SS50604580	OWNER	S.W.W.

DATE SAMPLED	30/09/89	10/10/89	16/10/89	23/10/89	30/10/89				
Microcystis sp. (COLONIES/ml)	A	0.5 S.D. 0.6	0.6 S.D. 0.7	0.4 S.D 0.6	0.04				
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)				0.5 S.D. 0.9	1.0 S.D. 1.3				
Coelosphaerium sp. (COLONIES/ml)									
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)			0.4 S.D. 0.6	1.1 S.D. 1.1	1.4 S.D. 1.6				

DATE SAMPLED									
Microcystis sp. (COLONIES/ml)									
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)									
Coelosphaerium sp. (COLONIES/ml)									
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)									

SITE NAME	LITTLE COMFORT, BRAUNTON			NATIONAL GRID REFERENCE		SS51324027		OWNER	ROPAUSAKER
DATE SAMPLED	19/10/89	25/10/89	30/10/89						
Microcystis sp. (COLONIES/ml)									
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)									
Coelosphaerium sp. (COLONIES/ml)									
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	67.5 S.D. 9.7	0.01							

DATE SAMPLED									
Microcystis sp. (COLONIES/ml)									
Anabaena sp. (FILAMENTS/ml)									
Aphanizomenon sp. (COLONIES/ml)									
Coelosphaerium sp. (COLONIES/ml)									
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)									

SITE NAME	STAFFORD MOOR - LOWER LAKE			NATIONAL GRID REFERENCE	SS59551120		OWNER	JOYNSON

DATE SAMPLED	16/10/89	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89		
Microcystis sp. (COLONIES/ml)	2.2 S.D. 2.5	9375.0 S.D. 4885.8	1.0 S.D. 0.8	325.0 S.D. 178.7	0.9 S.D. 1.2	0.6		
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	110.0 S.D. 41.2	51562.5 S.D. 9461.4	13.0 S.D. 3.6	1487.5 S.D. 279.2	4.5 S.D. 2.1	0.4		
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)			0.5 S.D. 0.9	50.0 S.D. 87.4	1.0 S.D. 1.0	5.4 S.D. 2.3		

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR - HIGHER LAKE			NATIONAL GRID REFERENCE		SS59151120	OWNER	JOYNSON
DATE SAMPLED	19/10/89	25/10/89	01/11/89					
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	5.5 S.D. 2.8	3.1 S.D. 2.0	7.6 S.D.3.5					
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P							

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR - GROWING POND 1			NATIONAL GRID REFERENCE	SS59251120	OWNER	JOYNSON

DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	3.0	1.2 S.D. 1.3	0.2		0.5			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	2950.0 S.D. 1007.2	63.0 S.D. 14.1	12.9 S.D. 3.5	1.4 S.D. 1.7	2.2 S.D.1.4			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)				0.1				

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR - GROWING POND 2			NATIONAL GRID REFERENCE		SS59251120	OWNER	JOYNSON
DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	37.5 S.D. 84.4	1.5 S.D. 1.4	1.5 S.D. 1.3	0.9 S.D. 1.0	0.05			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	2362.5 S.D. 581.7	19.5 S.D. 2.3	23.7 S.D. 3.9	1.6 S.D. 1.2	0.4			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)		0.2		0.1				

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR - GROWING POND 3			NATIONAL GRID REFERENCE	SS59251120	OWNER	JOYNSON

DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	7.5 S.D. 6.4	3.5 S.D. 4.7	27.5 S.D. 18.4	14.0 S.D. 9.4	7.5 S.D. 4.2			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	750.0 S.D. 82.9	25.5 S.D. 9.0	243.7 S.D. 64.6	38.0 S.D. 16.7	0.4			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P	0.4		2.0 S.D. 4.8				

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR - GROWING POND 4			NATIONAL GRID REFERENCE		SS59251120	OWNER	JOYNSON
DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	11.2 S.D. 9.2	3.2 S.D. 2.3	3.9 S.D. 1.6	2.5 S.D. 3.5	0.2			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	408.7 S.D. 64.3	64.5 S.D. 4.0	36.4 S.D. 11.2	1.5 S.D. 3.4	0.4			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P	1.0 S.D. 1.0	0.2					

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR - GROWING POND 5			NATIONAL GRID REFERENCE	SS59251120	OWNER	JOYNSON

DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	500.0 S.D. 645.5	4.4 S.D. 1.5	5.1 S.D. 2.2	12.0 S.D. 8.9	3.1 S.D. 2.1			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	17125.0 S.D. 4372.0	85.7 S.D. 7.7	79.7 S.D. 4.9	25.0 S.D. 10.5	0.6			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)		1.0 S.D. 1.4	0.7 S.D 0.6	1.5 S.D. 2.4				

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR - GROWING POND 6			NATIONAL GRID REFERENCE		SS59251120	OWNER	JOYNSON
DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	20.0 S.D. 14.7	3.7 S.D. 1.4	125.0 S.D. 155.9	1.1 S.D. 1.2	0.7 S.D. 1.0			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	1330.0 S.D. 141.6	121.7 S.D. 5.0	5750.0 S.D. 544.9	6.2 S.D. 2.9	1.7 S.D. 0.9			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	10 S.D. 7.9	1.2 S.D. 1.3	62.5 S.D. 106.2	0.2				

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR - GROWING POND 7			NATIONAL GRID REFERENCE	SS59251120	OWNER	JOYNSON

DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89
Microcystis sp. (COLONIES/ml)	200.0 S.D. 258.0	4.5 S.D. 6.4	35.0 S.D. 24.9	11.5 S.D. 7.8	0.5
Anabaena sp. (FILAMENTS/ml)					
Aphanizomenon sp. (COLONIES/ml)					
Coelosphaerium sp. (COLONIES/ml)	18950.0 S.D. 3312.0	216.0 S.D. 43.8	1285.5 S.D. 111.3	136.0 S.D. 29.2	0.5
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P	1.5 S.D. 2.4	10.0 S.D. 12.9	2.0 S.D. 2.6	

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR - GROWING POND 8			NATIONAL GRID REFERENCE		SS59251120	OWNER	JOYNSON
DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	50.0 S.D. 87.4	1.4 S.D. 1.4	8.0	0.4	0.8			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	2000.0 S.D. 478.7	301.0 S.D. 28.4	2225.0 S.D.495.8	7.1 S.D. 3.3	22.8 S.D. 10.4			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)	P	4.0 S.D. 2.2	4.0	0.1	2.8 S.D. 4.8			

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR STREAM - BY ROAD			NATIONAL GRID REFERENCE	SS59921128	OWNER	JOYNSON

DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	0.9 S.D. 1.0	0.7 S.D. 1.0	1.1 S.D. 1.2	1.4 S.D. 1.5	0.1			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	37.9 S.D. 7.5	10.1 S.D. 4.2	4.4 S.D. 2.4	2.9 S.D. 1.3	0.6 S.D. 0.9			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)		0.5 S.D. 0.9	0.6 S.D. 0.8	1.0 S.D. 1.1	0.6 S.D. 1.3			

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

SITE NAME	STAFFORD MOOR STREAM - VENTON			NATIONAL GRID REFERENCE		SS60731140	OWNER	JOYNSON
DATE SAMPLED	19/10/89	25/10/89	01/11/89	07/11/89	14/11/89			
Microcystis sp. (COLONIES/ml)	0.4 S.D. 0.8	0.6 S.D. 0.7	0.1	P	0.2			
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)	41.0 S.D. 8.6	0.9 S.D. 0.8	1.7 S.D.1.2	1.2 S.D. 1.2	0.7 S.D. 0.9			
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)			0.4 S.D. 0.6		0.1			

DATE SAMPLED								
Microcystis sp. (COLONIES/ml)								
Anabaena sp. (FILAMENTS/ml)								
Aphanizomenon sp. (COLONIES/ml)								
Coelosphaerium sp. (COLONIES/ml)								
Oscillatoria/Lyngbya /Phormidium sp. (FILAMENTS/ml)								

1989

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
PLYMOUTH										
RAINFALL (mm)	57.3	130.5	102.6	82.1	6.0	20.8	8.3	41.2	70.7	109.5
% NORMAL RAINFALL	53	174	139	144	9	37	12	48	82	119
SUNSHINE (hours)	71.5	91.0	98.6	186.5	312.8	276.4	315.0	268.7	146.2	89.9
% NORMAL SUNSHINE	128	114	74	102	141	124	152	140	97	80
TEMPERATURE (MEAN CENTIGRADE)	7.7	7.5	10.7	7.4	14.4	15.3	19.1	17.0	15.3	13.1
DIFFERENCE FROM EXPECTED TEMPERATURE	1.8	2.0	3.6	-1.8	2.8	1.0	3.2	1.2	0.8	1.0
EXETER										
RAINFALL (mm)	25.8	88.1	54.8	80.6	2.9	16.7	31.4	61.5	55.8	99.7
% NORMAL RAINFALL	32	152	100	171	5	41	62	90	83	138
SUNSHINE (hours)	61.6	93.0	82.2	142.3	275.4	235.4	305.1	236.5	124.3	78.1
% NORMAL SUNSHINE	114	122	67	84	136	114	160	134	93	77
TEMPERATURE (MEAN CENTIGRADE)	6.7	6.9	8.3	6.8	14.1	14.6	19.2	17.4	15.0	12.4
DIFFERENCE FROM EXPECTED TEMPERATURE	1.8	2.0	1.6	-2.2	2.5	0.0	2.9	1.4	0.7	1.0

% DIFFERENCES AND DIFFERENCES ARE BASED ON 1941 TO 1970 LONG TERM AVERAGES

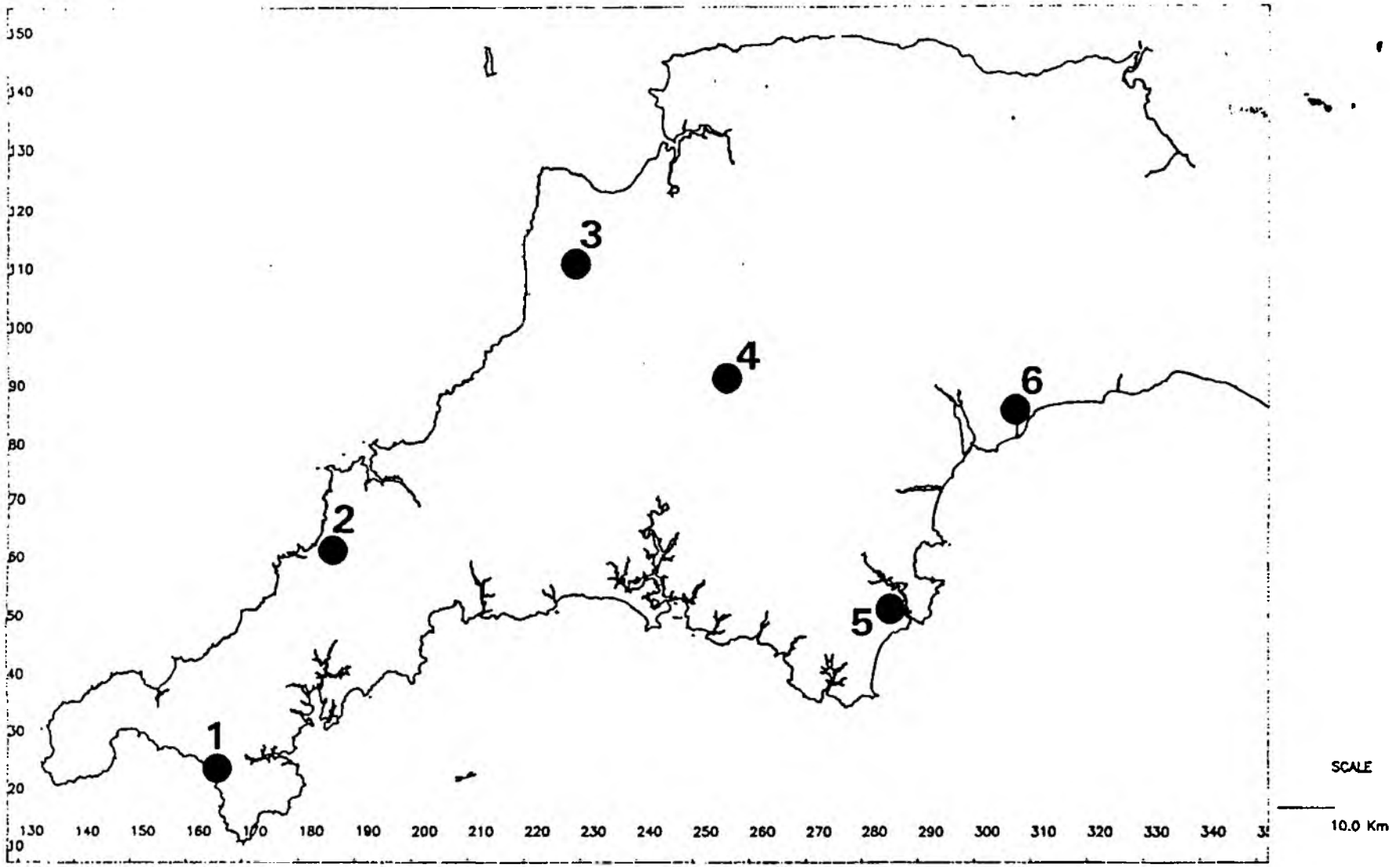
SECTION	NAME	POST
Water Quality	R.Hamilton	Freshwater Officer
	R.Broome	Assistant Scientist
	J.Murray-Bligh	Assistant Scientist
	M.Carpenter	Investigations Officer
	T.Geatches	Biologist
	G.Lincoln	Technician
	M.Edwards	Assistant (Temporary)
	N.Pearce	Assistant (Temporary)
Field Control	M.Chudley	Field Controller
	R.Collett	Superintendent Warden (Exeter)
	T.Davies	Warden (Otter and Sid)
	N.Guy	Warden (Lower Exe and Creedy)
	R.Peardon	Warden (Teign)
	G.Stickland	Warden (Avon and Erme)
	G.Clark	Survey Officer (Exeter)
	J.Stoneman	Biologist
	R.Guthrie	Survey Technician (Biology)
	C.Pearce	Survey Technician
	C.Head	Survey Technician
	A.Ashby	Survey Assistant
	N.Clark	Survey Assistant
	C.Leach	Survey Officer (Bodmin)
	T.Renals	Biologist
	N.Broad	Survey Technician (Biology)
	I.Warden	Survey Technician
Fisheries	D.Clifton	Fisheries Inspector
Public Relations	M.Weiler	Public Relations Officer
	J.Griffiths	Public Relations Assistant

APPENDIX 2. STAFF INVOLVED DURING THE PROBLEMS

INVOLVEMENT	DAYS
Coordination, management, notifications and public relations	35
Identification, sample delivery and public relations	25
Identification, sample delivery, meetings and public relations	25
Coordination and management	2
Sampling, identification, counting and report writing	50
Sampling and preparation of algae for toxicity testing	15
Sampling and help with report	1
Help with report	5
Coordination, management and notifications	2
Sampling and management	2
Sampling	2
Sampling	2
Sampling	2
Sampling	2
Sampling	2
Sampling, coordination, notifications and public relations	26
Sampling	22
Sampling	2
Sampling	2
Sampling	18
Sampling	2
Sampling	2
Sampling, coordination and notifications	20
Sampling	16
Sampling	2
Sampling	1
Press releases, notifications and information	10
Press releases, notifications and information	5
TOTAL DAYS =	300

PROPOSED SITES FOR CYANOBACTERIA MONITORING

1 - Loe Pool
2 - Porth Reservoir
3 - Upper Tamar Reservoir
4 - Meldon Pool
5 - Old Mill Reservoir
6 - The Lake, Bicton



APPENDIX 3. PROPOSED SITES FOR CONTINUAL MONITORING