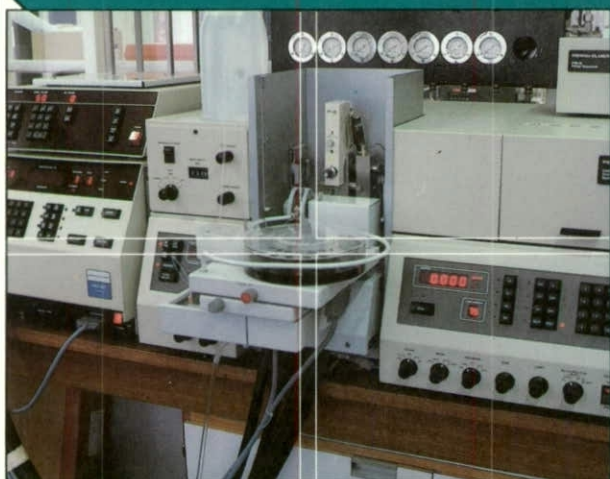
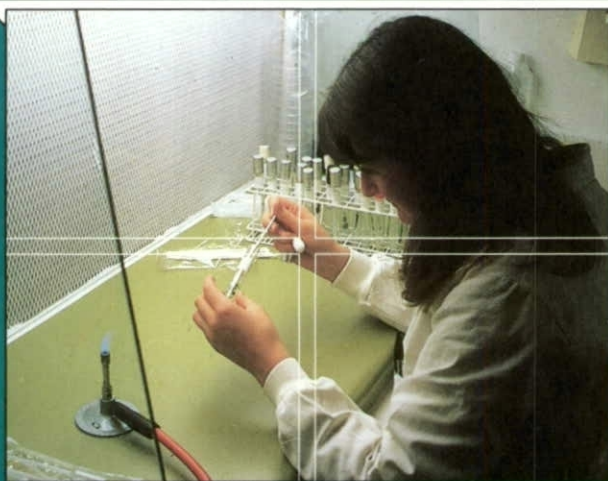


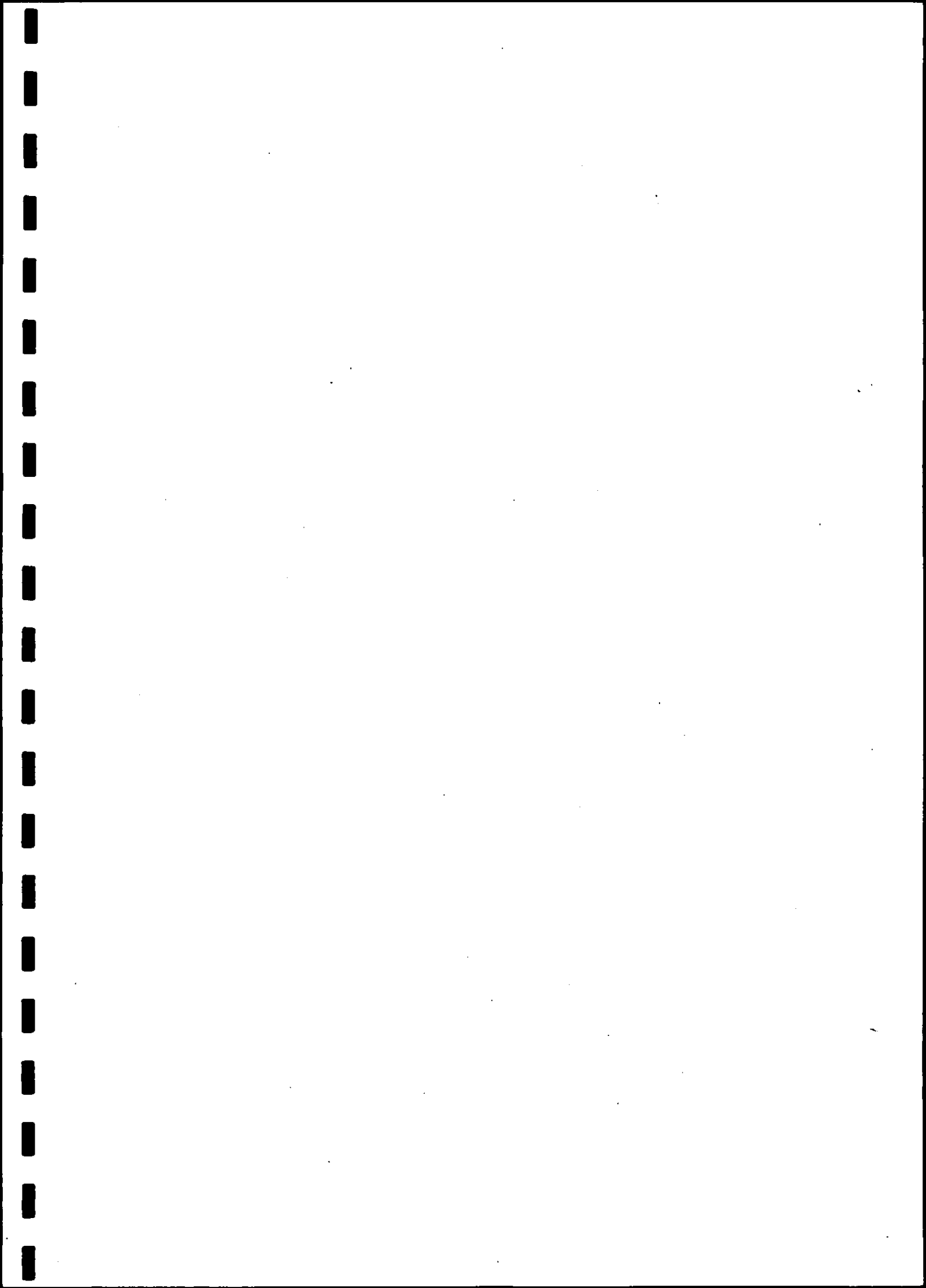


**Institute of
Freshwater
Ecology**

Quality audit of biological samples for the 1990 River Quality Survey NRA Northumbrian Region

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**Quality Audit of Biological Samples
for the 1990 River Quality Survey
NRA Northumbrian Region**

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Project leader:	J.F. Wright
Report date:	December 1991
Report to:	National Rivers Authority Northumbrian Region
Contract No:	
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The Institute of Freshwater Ecology is part of the Terrestrial and Freshwater Sciences Directorate of the Natural Environment Research Council.

1. INTRODUCTION

The 1990 River Quality Survey included the sampling of aquatic macro-invertebrates for biological assessment of river quality throughout the United Kingdom. In England and Wales the survey was undertaken by the National Rivers Authority (NRA), the River Purification Boards (RPBs) sampled in Scotland and the Department of Economic Development (DED) undertook the work in Northern Ireland.

Approximately 7750 sites were surveyed, the majority of which were sampled in spring, summer and autumn. Standard collection procedures were used and the sampling strategy was compatible with RIVPACS (River InVertebrate Prediction And Classification System), which has been developed by the Institute of Freshwater Ecology (IFE). Most of the remaining sites were sampled in a single season only, in order to extend the scope of the survey. For a variety of reasons, a few locations were sampled in just two seasons.

Samples were sorted for the families of macro-invertebrates included in the Biological Monitoring Working Party (BMWP) system. Taxa present were recorded on site data sheets. Sample processing and recording techniques varied from region to region.

In order to undertake this massive programme of fieldwork and sample processing, a large number of new staff were employed by the surveying agencies. In view of the number of staff involved and the variability of sample processing techniques, it was recognised that an independent quality control exercise was necessary to promote a consistently high level of reliability.

The IFE was contracted to undertake an audit of the sample sorting and identification performance of each NRA region, RPB and the DED. This report collates the results of 38 samples audited for Northumbrian Region of the NRA. The IFE was not required to perform any statistical analyses nor interpretation of the results of the audit.

2. SAMPLE SELECTION

Nearly all samples from the 1990 River Quality Survey were sent to IFE for storage. They were catalogued on arrival and placed in crates, such that individual samples were readily accessible. A stratified random selection of samples for each sample processor was then made. Selection was undertaken by IFE staff and no selection was made before each sample had been received by IFE. Thus, sample processors had no means of knowing which of their samples would be audited.

The total number of sample processors employed nationally during the survey was considerably higher than that anticipated at the outset. As a consequence, the number of samples audited per processor was limited by the need to keep within the contracted overall total of 700 samples. A minimum of 4 samples was audited per processor, except where individuals processed very few samples or did not process material from each of the 3 seasons.

Sample selection was weighted towards spring samples in order to give early feedback on the blindspots of particular sorters and problems of identification.

3. SAMPLE PROCESSING

Biologists processing samples for the 1990 Survey were instructed to sort their samples, ideally within the laboratory, and select examples of each scoring taxon within the BMWP system. In most cases, the invertebrates were placed in a vial of preservative (4% formaldehyde solution or 70% industrial alcohol) and the BMWP taxa were listed on a data sheet. The vial of animals and the sorted material were then returned to the sample container and preservative added. Thus, each sample available to IFE for selection for audit should have included:

- i) a list of the BMWP FAMILIES FOUND IN THE SAMPLE
- ii) a vial containing representatives from each family
- iii) the preserved sample

When these three elements were present, the sequence of operations at IFE was as follows:

- a) The remainder of the sample was sorted and the BMWP families listed
- b) The families contained within the vial were identified and listed
- c) A comparison was made between the NRA listing of families and those identified from the vial by IFE
- d) A comparison was made between the NRA listing of families and those found in the sample by IFE
- e) "Losses" or "gains" from the NRA listing of families were noted. In the case of "gains", each additional family was identified, where possible, to species level, in order to clarify any specific repetitive errors.

For a number of different reasons, some samples did not include a vial containing representative examples of the families listed on the NRA data sheet. These samples were avoided for audit, where possible. When selection of such samples was unavoidable (eg where a particular sorter would otherwise have been excluded from the audit exercise), only operations a), d) and e) above were appropriate.

Several directives were issued to IFE relating to the treatment of BMWP taxa. Terrestrial representatives of BMWP scoring families, animals deemed to have been dead at the time of sampling, cast insect skins, pupal exuviae, empty mollusc shells and tail ends of "living" specimens were to be excluded from the listing of families present. Trichopteran pupae, although not routinely identified by many biologists, were to be included in the listing of families.

4. REPORTING

The results of each sample audit were recorded on a standard report form (Table 1). For audit samples where a vial of animals was included, the comparison between the NRA listing and the taxa found in the vial by IFE was shown in box A of the report form. Discrepancies could be due to carelessness, misidentifications or errors in completing the NRA data sheet. Families not on the NRA listing but found by IFE in the remainder of the sample were entered in box B of the report form under "additional families". When the families listed as "losses" in section A of the report form were compared with the full list of families recorded in the sample by IFE, some apparent losses from the vial were offset by the presence of those families in the remainder of the sample. These taxa were therefore listed in the "losses" box of section A and the "gains" box of section B and were neither a net loss nor a net gain. In these cases, the families were marked with an asterisk in both boxes. Such errors are noted as "omissions" in the tables which summarise the results for each season (Tables 2, 3 and 4).

Species identifications, state of development (eg adult or larval coleopterans) and the presence of a single representative of a family within the remainder of the sample were recorded in the notes section of the report form. Where the NRA data sheet indicated that a family was noted and released at the site, this was recorded in the notes section but not included as a "loss", even though the family was not found in the vial.

For those samples which did not contain a vial of animals, box A of the report form was not applicable (N/a). Families not on the NRA list but present in the sample were listed in box B under "additional families" as before. Families recorded on the NRA list but not found by IFE were indicated on the left hand side of box B. If the vial of animals was retained by the NRA, entries in this box could include the sole representative of a family which was removed by the NRA, a family seen at the site which escaped or was released (without mention being made on the NRA data sheet), inaccurate identification, the wrong family box being ticked on the NRA data sheet or the family being present in the sample but missed by IFE.

Results of the audits of individual samples are presented in Table 5.

ACKNOWLEDGEMENTS

Thanks to Mrs Jessica Winder and Mrs Kay Symes for assistance with cataloguing and storage of samples and Mrs Valerie Palmer for typing the manuscript.

TABLE 1. The IFE Report form

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	<input type="text"/>	RIVER	<input type="text"/>
SEASON	<input type="text"/>	SITE	<input type="text"/>
SORTER	<input type="text"/>	SAMPLE CODE	<input type="text"/>
AQC OF BMWP FAMILIES A. IN VIAL <input type="checkbox"/> B. IN SAMPLE <input type="checkbox"/>			

		LOSSES	GAINS
A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE		
B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	

NET LOSSES NET GAINS

NOTES

TABLE 2. The 25 spring samples audited for Northumbrian Region, with sample sorter code and numbers of taxa 'lost', 'gained' and 'omitted'

River	Site	Sorter	Losses	Gains	Omissions
Hazon Burn	Whittle Colliery	1	0	3	0
Wansbeck	Meldon Park	4	0	5	0
Rede	West Woodburn	4	0	5	0
Tees	Croft	5	0	6	0
Swarland Burn	New Moor Hall	2	0	5	1
Rede	Redesmouth	2	1	5	0
Park Burn	Park Burn Foot	4	0	6	0
How Burn	U/s Wansbeck	5	0	2	0
Tyne	Corbridge	1	0	9	0
Rookhope Burn	Eastgate	4	0	1	0
Tees	Hurlworth	5	1	4	0
Wreigh Burn	Thropton	6	0	2	0
Moors Burn	Rainton	7	1	1	0
Deerness	Esh Winning	7	0	4	0
Bell Burn	Binchester	7	0	0	0
Leven	Thoraldby	7	0	3	0
Tweed	Norham	1	1	5	1
Wansbeck	Middleton Manor	1	0	5	0
Whiteadder	Newmills	2	0	8	0
Aln	Abberwick	2	0	4	0
Nelly Burdons Beck	Egglescliffe	2	0	3	0
Rede	Rochester	5	0	7	0
Rennington Burn	Howick Hall	6	0	3	0
Longdike Burn	Thirston	6	0	1	0
Leven	Leven Bridge	6	1	0	1

TABLE 3. The 9 summer samples audited for Northumbrian Region, with sample sorter codes and numbers of taxa 'lost', 'gained' and 'omitted'

River	Site	Sorter	Losses	Gains	Omissions
Wear	Bradley Hill	6	0	4	0
Derwent	Hollin Hill	1	1	4	0
Lumley Park Burn	Lumley Castle	1	1	0	0
Rede	Redesmouth	2	0	5	0
South Tyne	Haydon Bridge	4	0	1	0
Team	Rowleton Bridge	4	0	1	0
Tees	Gainford	4	0	0	0
Browney	Witton Gill	2	0	3	0
Wear	Eastgate	6	1	1	0

TABLE 4. The 4 autumn samples audited for Northumbrian Region, with sample sorter codes and numbers of taxa 'lost', 'gained' and 'omitted'.

River	Site	Sorter	Losses	Gains	Omissions
Leven	Leven Bridge	6	0	2	0
Whitton Brook	Whitton	1	0	3	0
Wear	Lambton	2	0	3	0
Brancepeth Burn	Page Bank	4	0	2	0

TABLE 5
Results of individual sample audits

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION **Northumbrian**RIVER **Hazon Burn**SEASON **Spring**SITE **Whittle Colliery**SORTER **1**SAMPLE CODE **NRA02 0530**AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	1 Taeniopterygidae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Planariidae 3 Dytiscidae

NET LOSSES NET GAINS

NOTES

1 Brachyptera risi
2 Polycelis sp. 1 only
3 Oreodytes sanmarkii (adult) 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION Northumbrian

RIVER Wansbeck

SEASON Spring

SITE Meldon Park

SORTER 4

SAMPLE CODE NRA02 0800

AQC OF BMWP FAMILIES A. IN VIAL +

B. IN SAMPLE +

LOSSES		GAINS
A	<u>VIAL</u>	
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	<div>BMWP FAMILIES NOT FOUND BY IFE</div> <div>ADDITIONAL FAMILIES FOUND BY IFE</div>
		<div>None</div> <div>None</div>

B	<u>SAMPLE</u>	
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	<div>BMWP FAMILIES NOT FOUND BY IFE</div> <div>ADDITIONAL FAMILIES FOUND BY IFE</div>
		<div>(This box only completed when no vial supplied with sample)</div> <div> 1 Planariidae 2 Sphaeriidae 3 Glossiphoniidae 4 Limnephilidae 5 Tipulidae </div>

NET LOSSES 0

NET GAINS 5

NOTES

- 1 Polycelis felina 1 only
- 2 Pisidium sp.
- 3 Helobdella stagnalis 1 only
- 4 Limnephilus sp. 1 only
- 5 Antocha vitripennis, Dicranota sp.

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	VIAL	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Sphaeriidae 2 Erpobdellidae 3 Nemouridae 4 Leptoceridae 5 Tipulidae

NET LOSSES

NET GAINS

NOTES

- 1 Pisidium sp.
- 2 Erpobdella octoculata
- 3 Amphinemura sulcicollis
- 4 Ceraclea annulicornis, Athripsodes bilineatus
- 5 Antocha vitripennis

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES		GAINS	
A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	1 Asellidae

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Gyrinidae 3 Leptoceridae 4 Lepidostomatidae 5 Sericostomatidae 6 Tipulidae

NET LOSSES

NET GAINS

NOTES

- 1 Asellus aquaticus
- 2 Orectochilus villosus (larva) 1 only
- 3 Athripsodes sp.
- 4 Lepidostoma hirtum
- 5 Sericostoma personatum 1 only
- 6 Hexatoma sp. 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION NorthumbrianRIVER Swarland BurnSEASON SpringSITE New Moor HallSORTER 2SAMPLE CODE NRA02 0590AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES		GAINS
A	VIAL	
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	1 Tipulidae*	None
B	SAMPLE	
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	(This box only completed when no vial supplied with sample)	2 Planariidae 3 Baetidae 4 Leuctridae 5 Hydrophilidae 6 Polycentropodidae 7 Tipulidae*

NET LOSSES NET GAINS

NOTES

- 2 Polycelis felina 1 only
- 3 Baetis rhodani
- 4 Leuctra geniculata 1 only
- 5 Hydraena gracilis 1 only
- 6 Polycentropus sp., Plectrocnemia sp
- 7 Dicranota sp. 1 only in sample

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES		GAINS
A	VIAL	
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE
		ADDITIONAL FAMILIES FOUND BY IFE
		1 Planariidae
		2 Dendrocoelidae

B	SAMPLE	
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE
		ADDITIONAL FAMILIES FOUND BY IFE
		(This box only completed when no vial supplied with sample)
		3 Glossiphoniidae 4 Ephemerellidae 5 Leuctridae 6 Hydroptilidae

NET LOSSES

NET GAINS

NOTES

- 2 Dendrocoelum lacteum
- 3 Helobdella stagnalis 1 only
- 4 Ephemerella notata 1 only
- 5 Leuctra sp. 1 only
- 6 Hydroptila sp., Ithytrichia sp.

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION NorthumbrianRIVER Park BurnSEASON SpringSITE Park Burn FootSORTER 4SAMPLE CODE NRA02 1760AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u> Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
		None	None

B	<u>SAMPLE</u> Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
		(This box only completed when no vial supplied with sample)	1 Ancylidae 2 Oligochaeta 3 Caenidae 4 Leuctridae 5 Dytiscidae 6 Hydrophilidae

NET LOSSES NET GAINS

NOTES

- 1 Ancylus fluviatilis 1 only
- 2 Tubificid 1 only
- 3 Caenis sp. 1 only
- 4 Leuctra sp. 1 only
- 5 Orcodytes sanmarkii (adult) 1 only
- 6 Hydraena gracilis

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION NorthumbrianRIVER How BurnSEASON SpringSITE U/s WansbeckSORTER 5SAMPLE CODE NRA02 0840AQC OF BMWP FAMILIES A. IN VIAL ☐B. IN SAMPLE ☐

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	1 Tipulidae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Sphaeriidae

NET LOSSES NET GAINS

NOTES

1 Molophilus sp. 1 only
2 Pisidium sp. 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	<input type="text" value="Northumbrian"/>	RIVER	<input type="text" value="Tyne"/>
SEASON	<input type="text" value="Spring"/>	SITE	<input type="text" value="Corbridge"/>
SORTER	<input type="text" value="1"/>	SAMPLE CODE	<input type="text" value="NRA02 1170"/>

AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES		GAINS
A	VIAL	
	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	None	None
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE		
B	SAMPLE	
	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	(This box only completed when no vial supplied with sample)	1 Dendrocoelidae 2 Sphaeriidae 3 Caenidae 4 Taeniopterygidae 5 Nemouridae 6 Perlidae 7 Dytiscidae 8 Rhyacophilidae 9 Simuliidae
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE		

NET LOSSES

NET GAINS

NOTES	1 Dendrocoelum lacteum 1 only 2 Pisidium sp. 3 Caenis rivulorum 4 Brachyptera risi 1 only 5 Protonemura meyeri 1 only 6 Indet perlid 1 only 7 Oreodytes sanmarkii, O. septentrionalis (adults)	8 Rhyacophila dorsalis 1 only 9 Simulium variegatum (pupa) 1 only
-------	--	--

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION NorthumbriaRIVER Rookhope BurnSEASON SpringSITE EastgateSORTER 4SAMPLE CODE NRA02 2770AQC OF BMWP FAMILIES A. IN VIAL +B. IN SAMPLE +

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Polycentropodidae

NET LOSSES 0NET GAINS 1

NOTES

Polycentropus flavomaculatus 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Hydroptilidae	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Dendrocoelidae 3 Valvatidae 4 Polycentropodidae 5 Simuliidae

NET LOSSES NET GAINS

NOTES

2 Dendrocoelum lacteum 1 only
 3 Valvata cristata
 4 Indet Polycentropodid juvenile 1 only
 5 Simulium variegatum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES		GAINS
A	VIAL	
	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	SAMPLE	
	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Hydrobiidae 2 Caenidae

NET LOSSES

NET GAINS

NOTES

1 Potamopyrgus jenkinsi
2 Caenis rivulorum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION NorthumbriaRIVER Moors BurnSEASON SpringSITE RaintonSORTER 7SAMPLE CODE NRA02 2290AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Neritidae	2 Hydrobiidae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	None

NET LOSSES NET GAINS

NOTES

2 Potamopyrgus jenkinsi (abundance cat D)

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION NorthumbriaRIVER DeernessSEASON SpringSITE Esh WinningSORTER 7SAMPLE CODE NRA02 2530AQC OF BMWP FAMILIES A. IN VIAL +B. IN SAMPLE +

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Lymnaeidae 2 Caenidae 3 Hydrophilidae 4 Sericostomatidae

NET LOSSES 0NET GAINS 4

NOTES

- 1 Lymnaea peregra 1 Only
- 2 Caenis rivulorum 1 only
- 3 Helophorus brevipalpis (adult) 1 only
- 4 Sericostoma personatum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	None

NET LOSSES NET GAINS

NOTES

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION **Northumbria**RIVER **Leven**SEASON **Spring**SITE **Thoraldby**SORTER **7**SAMPLE CODE **NRA02 3420**

AQC OF BMWP FAMILIES

A. IN VIAL

+

B. IN SAMPLE

+

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	1 Psychomyiidae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Planorbidae 3 Lepidostomatidae

NET LOSSES

0

NET GAINS

3

NOTES

- 1 Tinodes waeneri
2 Bathyomphalus contortus 1 only
3 Lepidostoma hirtum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES . A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Planorbidae 2 Rhyacophilidae*	3 Valvatidae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	4 Ephemerellidae 5 Caenidae 6 Nemouridae 7 Elmidae 8 Rhyacophilidae*

NET LOSSES

NET GAINS

NOTES

- 3 Valvata piscinalis
- 4 Ephemerella ignita 1 only
- 5 Caenis rivulorum
- 6 Nemoura cambrica/erratica 1 only
- 7 Elmia, Oulimnius, Esolus (adults + larvae)
- 8 Agapetus sp. 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION NorthumbriaRIVER WansbeckSEASON SpringSITE Middleton MSORTER 1SAMPLE CODE NRA02 0820AQC OF BMWP FAMILIES A. IN VIAL ☐B. IN SAMPLE ☐

LOSSES

GAINS

A	VIAL	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	1 Leptoceridae

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Lymnaeidae 3 Sphaeriidae 4 Nemouridae 5 Simuliidae

NET LOSSES NET GAINS

NOTES

- 1 Athripsodes sp.
- 2 Lymnaea peregra
- 3 Pisidium sp. 1 only
- 4 Amphinemura sp. 1 only
- 5 Simulium ornatum group 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE

AQC OF BMWP FAMILIES

A. IN VIAL

B. IN SAMPLE

LOSSES

GAINS

A	VIAL	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Dendrocoelidae 2 Ancylidae 3 Heptageniidae 4 Hydrophilidae 5 Psychomyiidae 6 Hydroptilidae 7 Leptoceridae 8 Sericostomatidae

NET LOSSES NET GAINS

NOTES

1 Dendrocoelum lacteum

8 Sericostoma personatum

2 Ancylus fluviatilis

3 Rhithrogena semicolorata group, Heptagenia sulphurea

4 Hydraena sp.

5 Tinodes waeneri

Limnephilidae assumed to be recorded
although mark on data sheet unclear.

6 Hydroptila sp.

7 Athripsodes cinereus

(Halesus sp. found in vial)

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	<input type="text" value="Northumbria"/>	RIVER	<input type="text" value="Aln"/>
SEASON	<input type="text" value="Spring"/>	SITE	<input type="text" value="Abberwick"/>
SORTER	<input type="text" value="2"/>	SAMPLE CODE	<input type="text" value="NRA02 0330"/>

AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES		GAINS
A	<u>VIAL</u>	
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE None
		ADDITIONAL FAMILIES FOUND BY IFE None

B	<u>SAMPLE</u>	
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE (This box only completed when no vial supplied with sample)
		ADDITIONAL FAMILIES FOUND BY IFE 1 Sphaeriidae 2 Caenidae 3 Capniidae 4 Lepidostomatidae

NET LOSSES NET GAINS

NOTES

- 1 Pisidium sp. 1 only
- 2 Caenis rivulorum
- 3 Capnia bifrons 1 only
- 4 Lepidostoma hirtum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE

AQC OF BMWP FAMILIES

A. IN VIAL

B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Planariidae 2 Nemouridae 3 Tipulidae

NET LOSSES

NET GAINS

NOTES

- 1 Polycelis nigra/tenuis 1 only
2 Nemoura cambrica/erratica 1 only
3 Limonia sp. 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION NorthumbriaRIVER RedeSEASON SpringSITE RochesterSORTER 5SAMPLE CODE NRA02 1930AQC OF BMWP FAMILIES A. IN VIAL +B. IN SAMPLE +

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Leptophlebiidae 2 Caenidae 3 Taeniopterygidae 4 Perlidae 5 Hydrophilidae 6 Lepidostomatidae 7 Simuliidae

NET LOSSES 0NET GAINS 7

NOTES

- 1 Paraleptophlebia submarginata 1 only
- 2 Caenis rivulorum
- 3 Brachyptera risi 1 only
- 4 Dinocras cephalotes 1 only
- 5 Hydraena gracilis 1 only
- 6 Lepidostoma hirtum
- 7 Simulium argyreatum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	1 Erpobdellidae 2 Elmidae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	3 Chironomidae

NET LOSSES

NET GAINS

NOTES

1 Erpobdella octoculata
2 Elmis aenea (adults + larvae)

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE

AQC OF BMWP FAMILIES

A. IN VIAL

B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Hydrobiidae

NET LOSSES

NET GAINS

NOTES

1 Potamopyrgus jenkinsi

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Hydrobiidae 2 Oligochaeta*	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	Oligochaeta*

NET LOSSES NET GAINS

NOTES

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL

B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
		None	1 Psychomyiidae
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE		

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
		(This box only completed when no vial supplied with sample)	2 Ancyliidae 3 Hydrophilidae 4 Leptoceridae
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE		

NET LOSSES

NET GAINS

NOTES

- 1 Psychomyia pusilla
- 2 Ancylos fluviatilis 1 only
- 3 Hydraena gracilis 1 only
- 4 Athripsodes sp. 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION Northumbria

RIVER Derwent

SEASON Summer

SITE Hollin Hill

SORTER 1

SAMPLE CODE NRA02 1340

AQC OF BMWP FAMILIES

A. IN VIAL

+

B. IN SAMPLE

+

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Erpobdellidae	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Haliplidae 3 Hydrophilidae 4 Psychomyiidae 5 Leptoceridae

NET LOSSES

1

NET GAINS

4

NOTES

- 2 Haliplus sp. (larva) 1 only
- 3 Helophorus brevipalpis
- 4 Tinodes waeneri
- 5 Mystacides azurea

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Sphaeriidae	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	None

NET LOSSES NET GAINS

NOTES

1 Empty Sphaeriid shell in vial

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Planariidae 2 Sphaeriidae 3 Dytiscidae 4 Leptoceridae 5 Lepidostomatidae

NET LOSSES

NET GAINS

NOTES

- 1 Dugesia polychroa/lugubris
- 2 Pisidium sp. 1 only
- 3 Potamonectes sp (larva) 1 only
- 4 Athripsodes sp. (pupa) 1 only
- 5 Lepidostoma hirtum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	1 Hydroptilidae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	None

NET LOSSES NET GAINS

NOTES

1 Ithytrichia sp.

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	1 Lymnaeidae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	None

NET LOSSES NET GAINS

NOTES

AQC - BIOLOGICAL SAMPLES

SAMPLE CODE NRA02 2960

B. IN SAMPLE	†
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<div style="border: 1px solid black; padding: 2px; display: inline-block;">B</div> <div style="text-align: center; padding: 5px;"><u>SAMPLE</u></div>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	<div style="text-align: center; padding: 20px;">None</div>

NET GAINS	0
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[illegible]

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Planariidae 2 Psychomyiidae 3 Hydropsychidae

NET LOSSES NET GAINS

NOTES

- 1 Polycelis nigra/tenuis 1 only
2 Tinodes waeneri 1 only
3 Hydropsyche sp. (pupae)

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES

A. IN VIAL

B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Mesoveliidae	2 Hydropsychidae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	None

NET LOSSES

NET GAINS

NOTES

1 Terrestrial Hemipteran in vial
2 Hydropsyche sp. (pupa)

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbrian	RIVER	Leven
SEASON	Autumn	SITE	Leven Bridge
SORTER	6	SAMPLE CODE	NRA02 3400

AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES		GAINS	
A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Planorbidae 2 Oligochaeta

NET LOSSES NET GAINS

NOTES

1 Gyraulus albus 1 only
 2 Indet Tubificid/Lumbriculid 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION NorthumbrianRIVER Whitton BrookSEASON AutumnSITE WhittonSORTER 1SAMPLE CODE NRA02 3280AQC OF BMWP FAMILIES A. IN VIAL +B. IN SAMPLE +

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Hydrobiidae 2 Ancyliidae 3 Elmidae

NET LOSSES 0NET GAINS 3

NOTES

1 Potamopyrgus jenkinsi
2 Ancyclus fluviatilis 1 only
3 Elmis aenea (adult) 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION RIVER SEASON SITE SORTER SAMPLE CODE AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Planariidae 2 Ancyliidae 3 Caenidae

NET LOSSES NET GAINS

NOTES

1 Dugesia polychroa/lugubris
2 Ancylos fluviatilis 1 only
3 Caenis luctuosa/macrura

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION

RIVER

SEASON

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES A. IN VIAL B. IN SAMPLE

LOSSES

GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Chironomidae 2 Simuliidae

NET LOSSES

NET GAINS

NOTES

1 Indet Tanytarsini
2 Indet Simulium juveniles

