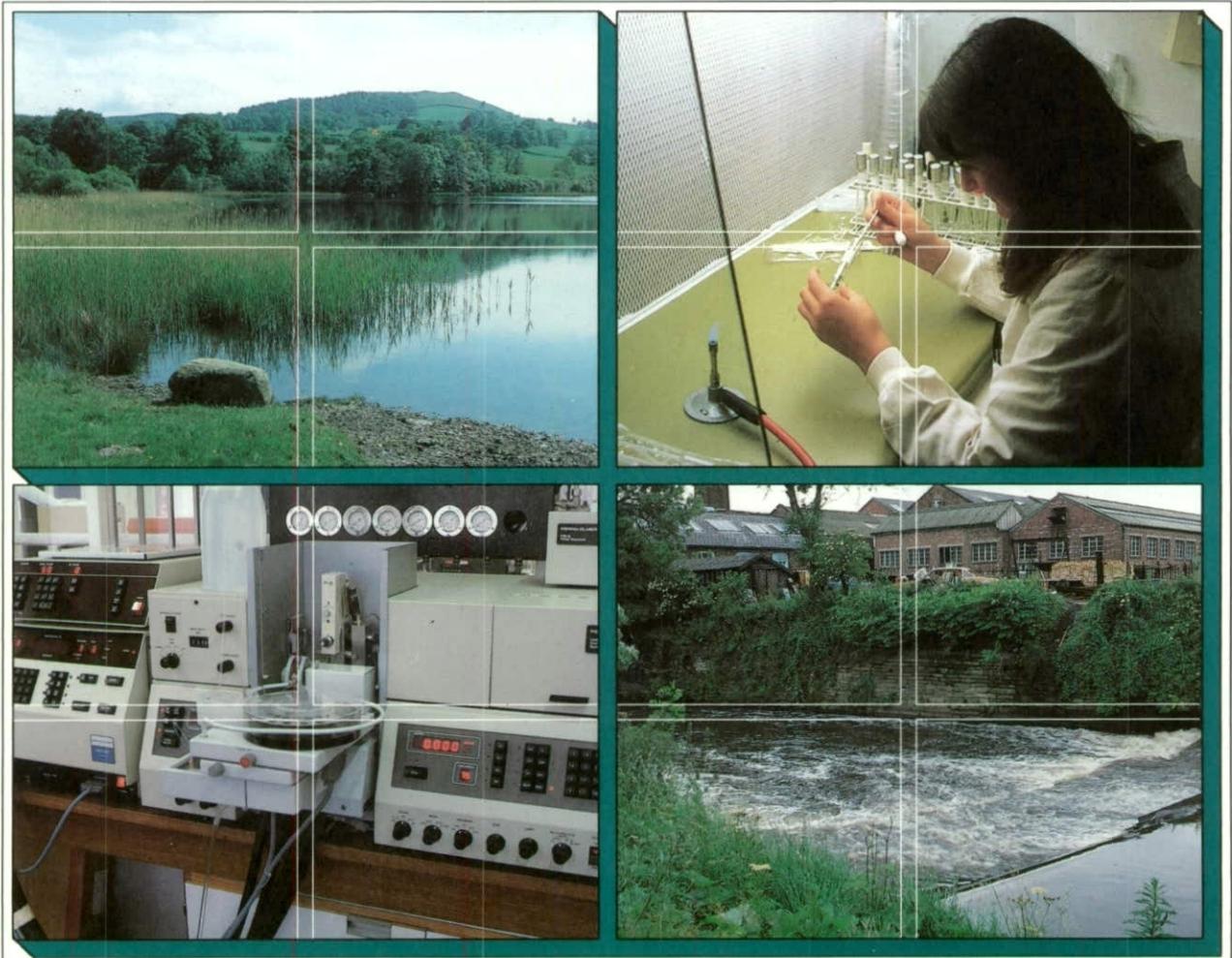


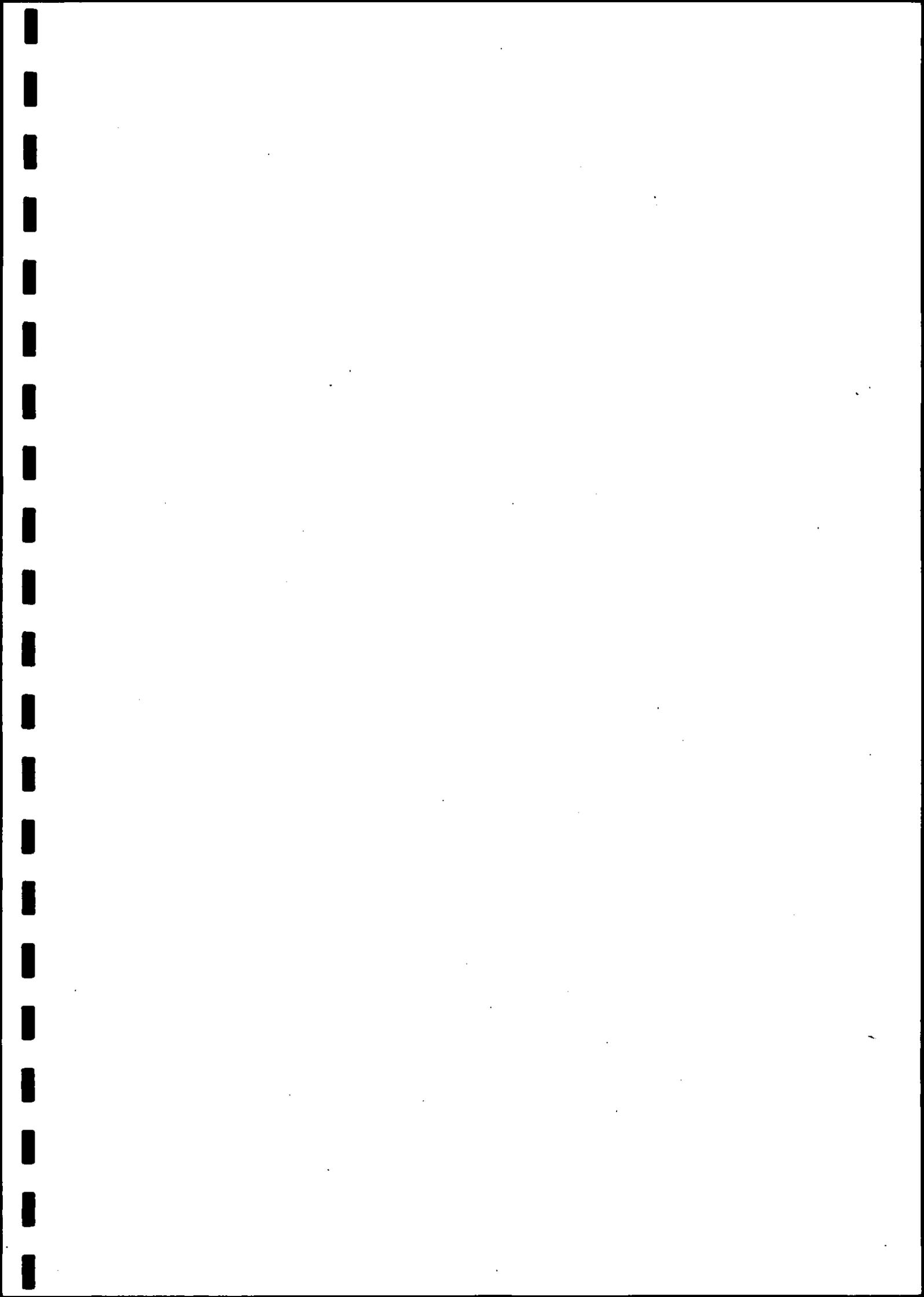


Institute of
Freshwater
Ecology

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

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for the 1990 River Quality Survey
NRA Northumbrian Region

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Northumbrian Region
Contract No:
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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 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		

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> 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 1 Taeniopterygidae

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 2 Planariidae 3 Dytiscidae
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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								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center; font-weight: bold;">A</td> <td style="text-align: center;"><u>VIAL</u></td> <td style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</td> <td style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</td> </tr> <tr> <td></td> <td style="padding: 5px;"> Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE </td> <td style="text-align: center; vertical-align: middle;">None</td> <td style="text-align: center; vertical-align: middle;">None</td> </tr> </table>	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		
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							

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center; font-weight: bold;">B</td> <td style="text-align: center;"><u>SAMPLE</u></td> <td style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</td> <td style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</td> </tr> <tr> <td></td> <td style="padding: 5px;"> Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE </td> <td style="padding: 5px;"> (This box only completed when no vial supplied with sample) </td> <td style="padding: 5px;"> 1 Planariidae 2 Sphaeriidae 3 Glossiphoniidae 4 Linnephilidae 5 Tipulidae </td> </tr> </table>	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 Glossiphoniidae 4 Linnephilidae 5 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)	1 Planariidae 2 Sphaeriidae 3 Glossiphoniidae 4 Linnephilidae 5 Tipulidae							

NET LOSSES 0 NET GAINS 5

NOTES

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

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbrian	RIVER	Rede
SEASON	Spring	SITE	West Woodburn
SORTER	4	SAMPLE CODE	NRA02 1900

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 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	<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 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	Northumbrian	RIVER	Swarland Burn
SEASON	Spring	SITE	New Moor Hall
SORTER	2	SAMPLE CODE	NRA02 0590

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 1 Tipulidae*	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 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 <input style="width: 100%;" type="text" value="Northumbrian"/>	RIVER <input style="width: 100%;" type="text" value="Rede"/>
SEASON <input style="width: 100%;" type="text" value="Spring"/>	SITE <input style="width: 100%;" type="text" value="Redesmouth"/>
SORTER <input style="width: 100%;" type="text" value="2"/>	SAMPLE CODE <input style="width: 100%;" type="text" value="NRA02 1890"/>

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

		LOSSES	GAINS
A	<p style="text-align: center;"><u>VIAL</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE</p>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>1 Planariidae</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>2 Dendrocoelidae</p>
B	<p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE</p>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>3 Glossiphoniidae 4 Ephemerellidae 5 Leuctridae 6 Hydroptilidae</p>

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	Northumbrian	RIVER	Park Burn
SEASON	Spring	SITE	Park Burn Foot
SORTER	4	SAMPLE CODE	NRA02 1760

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

		LOSSES	GAINS
A	<p><u>VIAL</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE</p>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; font-weight: bold;">None</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; font-weight: bold;">None</p>

B	<p><u>SAMPLE</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE</p>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>1 Ancylidae 2 Oligochaeta 3 Caenidae 4 Leuctridae 5 Dytiscidae 6 Hydrophilidae</p>
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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	<input type="text" value="Northumbrian"/>	RIVER	<input type="text" value="How Burn"/>
SEASON	<input type="text" value="Spring"/>	SITE	<input type="text" value="U/s Wansbeck"/>
SORTER	<input type="text" value="5"/>	SAMPLE CODE	<input type="text" value="NRA02 0840"/>

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 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	Northumbrian	RIVER	Tyne
SEASON	Spring	SITE	Corbridge
SORTER	1	SAMPLE CODE	NRA02 1170

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

LOSSES		GAINS
A	VIAL	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
	BMWP FAMILIES NOT FOUND BY IFE	None

B	SAMPLE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	1 Dendrocoelidae 2 Sphaeriidae 3 Caenidae 4 Taeniopterygidae 5 Nemouridae 6 Perlidae 7 Dytiscidae 8 Rhyacophilidae 9 Simuliidae
	BMWP FAMILIES NOT FOUND BY IFE	(This box only completed when no vial supplied with sample)

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
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1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbria	RIVER	Rookhope Burn
SEASON	Spring	SITE	Eastgate
SORTER	4	SAMPLE CODE	NRA02 2770

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

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

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

NET LOSSES NET GAINS

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	Northumbria	RIVER	Wreigh Burn
SEASON	Spring	SITE	Thropton
SORTER	6	SAMPLE CODE	NRA02 0640

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 2 Caenidae

NET LOSSES NET GAINS

NOTES

1 Potamopyrgus jenkinsi
2 Caenis rivulorum 1 only

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbria	RIVER	Moors Burn
SEASON	Spring	SITE	Rainton
SORTER	7	SAMPLE CODE	NRA02 2290

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 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 1 NET GAINS 1

NOTES

2 Potamopyrgus jenkinsi (abundance cat D)

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbria		RIVER	Deerness
SEASON	Spring		SITE	Esh Winning
SORTER	7		SAMPLE CODE	NRA02 2530

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

		LOSSES	GAINS
A	<p style="text-align: center;"><u>VIAL</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE</p>	<p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; font-size: 1.2em;">None</p>	<p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; font-size: 1.2em;">None</p>

B	<p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE</p>	<p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">(This box only completed when no vial supplied with sample)</p>	<p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: left; padding-left: 10px;"> 1 Lymnaeidae 2 Caenidae 3 Hydrophilidae 4 Sericostomatidae </p>
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NET LOSSES NET GAINS

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 <input style="width: 100%;" type="text" value="Northumbria"/>	RIVER <input style="width: 100%;" type="text" value="Bell Burn"/>
SEASON <input style="width: 100%;" type="text" value="Spring"/>	SITE <input style="width: 100%;" type="text" value="Binchester"/>
SORTER <input style="width: 100%;" type="text" value="7"/>	SAMPLE CODE <input style="width: 100%;" type="text" value="NRA02 2640"/>

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

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

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

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	Northumbria	RIVER	Tweed
SEASON	Spring	SITE	Norham
SORTER	1	SAMPLE CODE	NRA02 0010

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 Elmis, Oulimnius, Esolus (adults + larvae)
- 8 Agapetus sp. 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 Leptoceridae

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 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	<input type="text" value="Northumbria"/>	RIVER	<input type="text" value="Whiteadder"/>
SEASON	<input type="text" value="Spring"/>	SITE	<input type="text" value="Newmills"/>
SORTER	<input type="text" value="2"/>	SAMPLE CODE	<input type="text" value="NRA02 0030"/>

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 Dendrocoelidae 2 Ancylidae 3 Heptageniidae 4 Hydrophilidae 5 Psychomyiidae 6 Hydroptilidae 7 Leptoceridae 8 Sericostomatidae

NET LOSSES NET GAINS

NOTES	1 Dendrocoelum lacteum 2 Ancylus fluviatilis 3 Rhithrogena semicolorata group, Heptagenia sulphurea 4 Hydraena sp. 5 Tinodes waeneri 6 Hydroptila sp. 7 Athripsodes cinereus	8 Sericostoma personatum Limnephilidae assumed to be recorded although mark on data sheet unclear. (Halesus sp. found in vial)
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1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbria	RIVER	Aln
SEASON	Spring	SITE	Abberwick
SORTER	2	SAMPLE CODE	NRA02 0330

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 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	Northumbria	RIVER	Nelly Burdon's Beck
SEASON	Spring	SITE	Egglescliffe
SORTER	2	SAMPLE CODE	NRA02 3530

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	Northumbria	RIVER	Rede
SEASON	Spring	SITE	Rochester
SORTER	5	SAMPLE CODE	NRA02 1930

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 Leptophlebiidae 2 Caenidae 3 Taeniopterygidae 4 Perlidae 5 Hydrophilidae 6 Lepidostomatidae 7 Simuliidae

NET LOSSES NET GAINS

- 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	Northumbria	RIVER	Rennington Burn
SEASON	Spring	SITE	Howick Hall
SORTER	6	SAMPLE CODE	NRA02 0310

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	Northumbria	RIVER	Longdike Burn
SEASON	Spring	SITE	Thirston
SORTER	6	SAMPLE CODE	NRA02 0550

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	Northumbria	RIVER	Leven
SEASON	Spring	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> 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 1 Hydrobiidae 2 Oligochaeta*	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 Oligochaeta*
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NET LOSSES NET GAINS

NOTES 1 Dead Potamopyrgus jenkinsi in vial

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbria	RIVER	Wear
SEASON	Summer	SITE	Bradley Hill
SORTER	6	SAMPLE CODE	NRA02 2160

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 Ancyliidae 3 Hydrophilidae 4 Leptoceridae

NET LOSSES NET GAINS

NOTES

1 Psychomyia pusilla
 2 Ancylyus 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	<p><u>VIAL</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE</p>	<p>BMW P FAMILIES NOT FOUND BY IFE</p> <p>1 Erpobdellidae</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>None</p>
B	<p><u>SAMPLE</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE</p>	<p>BMW P FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>2 Haliplidae 3 Hydrophilidae 4 Psychomyiidae 5 Leptoceridae</p>

NET LOSSES NET GAINS

NOTES	<p>2 Haliplus sp. (larva) 1 only 3 Helophorus brevipalpis 4 Tinodes waeneri 5 Mystacides azurea</p>
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1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbria	RIVER	Lumley Pr B
SEASON	Summer	SITE	Lumley Castle
SORTER	1	SAMPLE CODE	NRA02 2270

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	Northumbria	RIVER	Rede
SEASON	Summer	SITE	Redesmouth
SORTER	2	SAMPLE CODE	NRA02 1890

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 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
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1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	<input type="text" value="Northumbria"/>	RIVER	<input type="text" value="South Tyne"/>
SEASON	<input type="text" value="Summer"/>	SITE	<input type="text" value="Haydon Bridge"/>
SORTER	<input type="text" value="4"/>	SAMPLE CODE	<input type="text" value="NRA02 1590"/>

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

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbria		RIVER	Team
SEASON	Summer		SITE	Rowleton B
SORTER	4		SAMPLE CODE	NRA02 1320

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

		LOSSES	GAINS
A	<p style="text-align: center;"><u>VIAL</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE</p>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center;">None</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">1 Lymnaeidae</p>
B	<p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE</p>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center;">None</p>

NET LOSSES NET GAINS

NOTES 1 Lymnaea peregra

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbria	RIVER	Tees
SEASON	Summer	SITE	Gainford
SORTER	4	SAMPLE CODE	NRA02 2960

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

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

NET LOSSES NET GAINS

NOTES

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	Northumbria	RIVER	Browney
SEASON	Summer	SITE	Witton Gill
SORTER	2	SAMPLE CODE	NRA02 2490

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	Northumbria	RIVER	Wear
SEASON	Summer	SITE	Eastgate
SORTER	6	SAMPLE CODE	NRA02 2200

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 1 NET GAINS 1

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	Northumbrian		RIVER	Whitton Brook
SEASON	Autumn		SITE	Whitton
SORTER	1		SAMPLE CODE	NRA02 3280

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 2 Ancylidae 3 Elmidae

NET LOSSES NET GAINS

NOTES

1 Potamopyrgus jenkinsi
 2 Ancylus fluviatilis 1 only
 3 Elms 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 Ancylyus fluviatilis 1 only
 3 Caenis luctuosa/macrura

1990 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION Northumbrian

RIVER Brancepeth Burn

SEASON Autumn

SITE Page Bank

SORTER 4

SAMPLE CODE NRA02 2620

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 0

NET GAINS 2

NOTES 1 Indet Tanytarsini
2 Indet Simulium juveniles

