Institute of Freshwater Ecology

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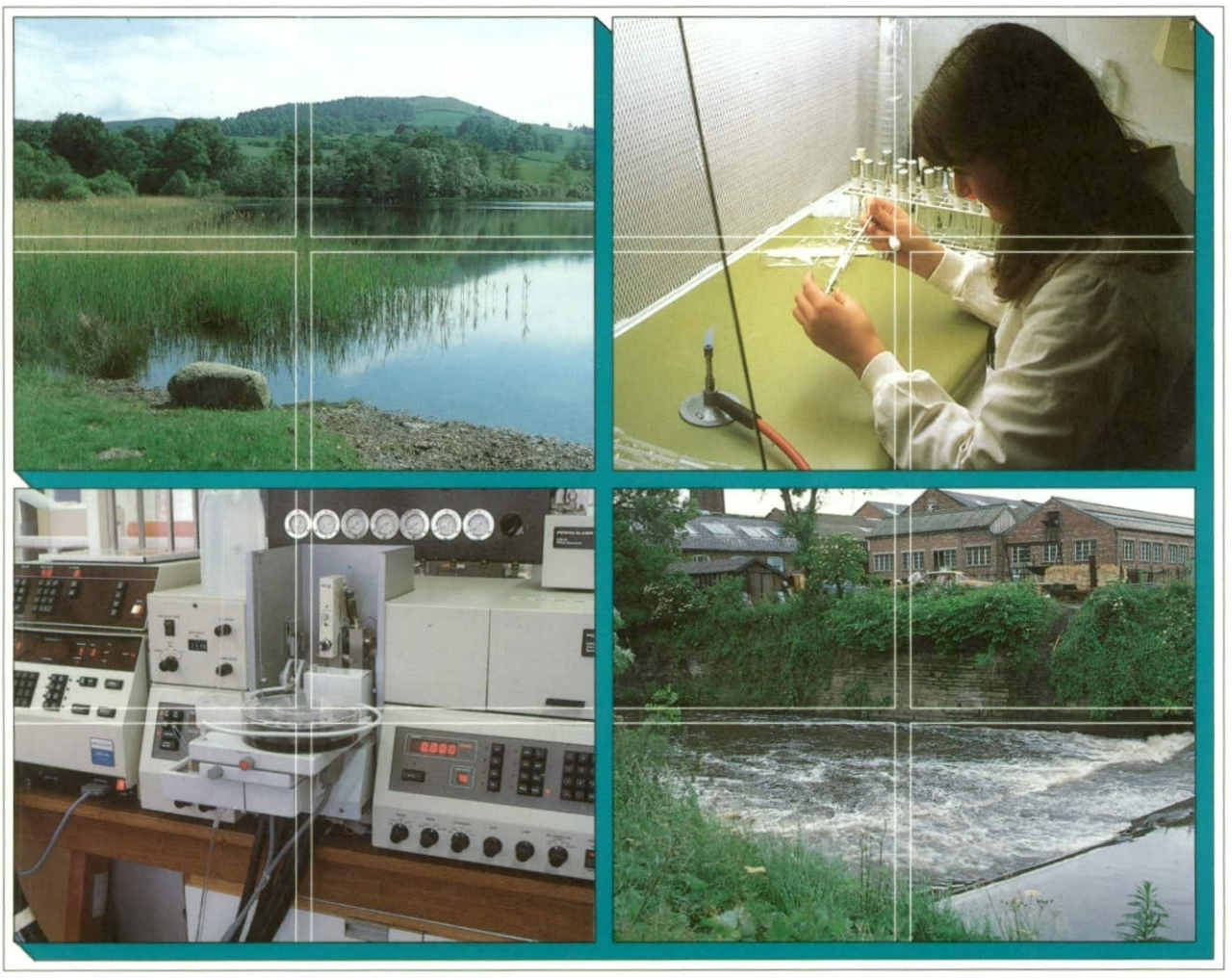
R.J.M Gunn, BA
J.F. Wright, PhD
J.M. Winder, BSc
J.H. Blackburn, BSc



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Natural
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INSTITUTE OF FRESHWATER ECOLOGY
River Laboratory, East Stoke, Wareham, Dorset BH20 6BB

Tel: 0929 462314
Fax: 0929 462180

An audit of performance in the processing of macro-invertebrate samples in 1991. NRA North West Region

R.J.M. Gunn, J.F. Wright, J.M. Winder & J.H. Blackburn

Project leader:	J.F. Wright
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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

In 1991 the sampling of aquatic macro-invertebrates for the biological assessment of river quality continued throughout the United Kingdom. In England and Wales this task 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.

The majority of sites were sampled in spring, summer and autumn. Standard collection procedures, as used in the 1990 River Quality Survey, were retained and the sampling strategy was therefore compatible with RIVPACS (River InVertebrate Prediction And Classification System), which has been developed by the Institute of Freshwater Ecology (IFE). For a variety of reasons, a few locations were sampled in just one or two seasons.

Samples were sorted by NRA, RPB and DED personnel 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 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. As in 1990, the IFE was contracted to undertake an audit of the sample sorting and identification performance of each NRA region, several RPBs and the DED. This report presents the results of 60 samples audited for North West 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

Samples for audit were selected internally by each of the agencies being monitored. The biologists processing these samples had no prior knowledge of the samples to be audited.

The manner of sample selection, which biologists would be monitored and the number of audit samples from each season, were left to the discretion of the agency, within the limits of the total number of samples that IFE was contracted to audit.

3. SAMPLE PROCESSING

The normal protocol for NRA, RPB and DED biologists was to sort their samples within the laboratory and to 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 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 data sheet. Others arrived with the vial damaged in transit such that the representative examples were no longer separated. For these samples, 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 posterior 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 in which the vial of animals was damaged or missing,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 the Appendix.

ACKNOWLEDGEMENTS

Thanks to Mike Furse for help and advice, to Kay Symes and Angela Matthews for assistance with cataloguing and storage of samples and to Valerie Palmer and Diana Morton for typing the manuscript.

TABLE 1. The IFE Report form

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION | RIVER

DATE | 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
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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE

NET LOSSES ☐ NET GAINS ☐

NOTES

TABLE 2. The 20 spring samples audited for North West Region, with sample sorter initials and numbers of taxa 'lost', 'gained' and 'omitted'

River	Site	Sorter	Losses	Gains	Omissions
Limy Water	U/s Loveclough Textiles	GTF	0	5	0
Yew Tree Beck	ptc Yewdale Beck	KJS	0	5	0
Dane	Shipbrook Bridge	SJM	0	0	0
Black Dub Beck	NY 079 449	JKA	0	1	0
Mersey	Flixton Bridge	GTF	0	1	0
Keekle	Keekle Grove	AJ	2	2	2
Arrowe Brook	Arrowe Park Road	DGH	0	6	4
Black Lyne	Selsbytown	DS	1	1	1
Irthing	Lanercost	RFP	0	0	1
Valley Brook	Radway Green	SJM	0	1	0
Winster	Blaycrag Bridge	KJS	0	8	0
Marron	Woodend Bridge	AJ	1	0	0
Mint	Patton Bridge	BJI	0	4	0
Norden Brook	ptc Hyndburn Brook	LHW	0	5	0
Woodplumpton Brook	ptc Barton Brook	SLP	0	2	0
Langleys Brook	D/s Ormskirk STW	EMP	0	1	1
Tawd	Ashtons	ERM	0	1	0
Fine Janes Brook	Meols Cop Road	EMP	0	3	0
Lambing Clough	D/s Hurst Green STW	SLP	1	4	0
Cemetery Beck	ptc R.Ribble	LHW	0	5	0

TABLE 3. The 20 summer samples audited for North West Region, with sample sorter initials and numbers of taxa 'lost', 'gained' and 'omitted'

River	Site	Sorter	Losses	Gains	Omissions
Glossop Brook	ptc R.Etherow	GTF	0	2	1
Kinder	ptc R.Sett	KL	1	7	1
Pott Shrigley Brook	ptc Harrop Brook	SJM	1	4	0
Gowy	Bates Mill Bridge	KL	0	6	1
Bollin	Beech Bridge	DGH	0	2	0
Peover Eye	Holford Hall	SJM	0	7	0
Thistleton Brook	B5269 Bridge	SLP	1	3	2
Ribble	Mitton Bridge	LHW	1	7	2
Smithy Brook	Lamberhead Green	EMP	0	5	1
The Sluice	Crossens PS	ERM	0	7	0
Lostock	D/s Brindle	EMP	1	2	0
Hodder	Lower Hodder Bridge	LHW	1	8	0
Duddon	ptc Moasdale Beck	AJ	1	0	0
Cam Beck	A6071 Bridge	RFP	0	4	0
Clough	Garsdale Head	KJS	0	1	0
Arndale Beck	ptc R.Winster	KJS	0	5	0
Duddon	Duddon Bridge	AJ	1	2	0
Eden	ptc R.Petteril	JKA	0	7	0
Wiza Beck	Westward	AJ	3	2	1
Williekeld Sike	NY 593 328	DS	2	6	1

TABLE 4. The 20 autumn samples audited for North West Region, with sample sorter initials and numbers of taxa 'lost', 'gained' and 'omitted'.

River	Site	Sorter	Losses	Gains	Omissions
Bradshaw Brook	U/s Jumbles Res	SJM	1	11	0
Hull Brook	U/s Hull Mill	GTF	2	10	2
Gowy	Gowy Bridge	DGH	1	8	1
Barley Water	ptc Pendle Water	LHW	0	3	3
Liggard Brook	U/s Road Bridge	SLP	0	2	1
Goyt	ptc R.Sett	KPL	0	4	0
Sandersons Brook	ptc R.Croco	SJM	0	0	0
Hardshaw Brook	Adj "The Hotties"	EMP	0	2	0
Douglas	Grimeford Bridge	EMP	0	2	0
Brennand	ptc Whitendale River	LHW	0	0	0
Yarrow	Pincock	ERM	1	3	0
Crookhurst Beck	NY 081 429	DS	1	5	1
Lune	ptc Leck Beck	BJI	0	2	0
Whicham Beck	Hellpool Bridge	AJ	1	0	0
Brock	D/s Brock Mill car park	SLP	0	4	0
Eden	Grinsdale Church	JKA	0	7	0
Calder	Calder Bridge	RFP	0	0	0
Rothay	D/s Grasmere	KJS	0	5	0
Fen Beck	Waters Bridge	BJI	0	3	1
Castle Beck	NY 572 620	DS	0	8	0

APPENDIX

Results of individual sample audits

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Limy Water

DATE: 5.3.91

SITE: U/s Loveclough Textiles

SORTER: GTF

SAMPLE CODE: NRA03 pdt8

AQC OF BMWP FAMILIES A. IN VIAL [+] B. IN SAMPLE [+]

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

		LOSSES: BMWP FAMILIES NOT FOUND BY IFE	GAINS: ADDITIONAL FAMILIES FOUND BY IFE
B	SAMPLE 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 Hydrobiidae 3 Planorbidae 4 Elmidae 5 Molannidae

NET LOSSES: 0 NET GAINS: 5

NOTES

1 Ancylus fluviatilis
2 Potamopyrgus jenkinsi
3 Gyraulus albus 1 only
4 Elmis aenea (adult) 1 only
5 Molanna angustata 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Yew Tree Beck
DATE	17.4.91	SITE	ptc Yewdale Beck
SORTER	KJS	SAMPLE CODE	NRA03 19u0

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Planariidae 2 Caenidae 3 Hydrophilidae 4 Scirtidae 5 Sericostomatidae

NET LOSSES 0 NET GAINS 5

NOTES

1 Polycelis felina 1 only
2 Caenis rivulorum 1 only
3 Hydraena gracilis (adults)
4 Hydrocyphon deflexicollis (larvae)
5 Sericostoma personatum

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Dane

DATE: 7.3.91

SITE: Shipbrook Bridge

SORTER: SJM

SAMPLE CODE: NRA03 mf6c

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE None

NET LOSSES: 0 NET GAINS: 0

NOTES

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Black Dub Beck

DATE: 22.4.91

SITE: NY 079 449

SORTER: JKA

SAMPLE CODE: NRA03 Odno

AQC OF BMWP FAMILIES A. IN VIAL [+] B. IN SAMPLE [+]

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

NET LOSSES: 0 NET GAINS: 1

NOTES: 1 Brillia modesta 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Mersey

DATE: 9.5.91

SITE: Flixton Bridge

SORTER: GTF

SAMPLE CODE: NRA03 q144

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Glossiphoniidae

NET LOSSES: 0 NET GAINS: 1

NOTES: 1 Helobdella stagnalis 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Keekle
DATE	9.4.91	SITE	Keekle Grove
SORTER	AJ	SAMPLE CODE	NRA03 02cq

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 1 Hydrobiidae* 2 Oligochaeta 3 Chironomidae* 4 Simuliidae	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 5 Hydrobiidae* 6 Glossiphoniidae 7 Caenidae 8 Chironomidae*

NET LOSSES [2] NET GAINS [2]

NOTES

1,5 Potamopyrgus jenkinsi (empty shell in vial)
6 Glossiphonia complanata, Helobdella stagnalis
7 Caenis rivulorum 1 only
8 Diamesinae, Orthocladiinae

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Arrowe Brook

DATE: 21.2.91

SITE: Arrowe Park Road

SORTER: DGH

SAMPLE CODE: NRA03 tajw

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 1 Hydrobiidae* 2 Gammaridae* 3 Baetidae* 4 Chironomidae*	ADDITIONAL FAMILIES FOUND BY IFE 5 Sphaeriidae
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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 6 Hydrobiidae* 7 Planorbidae 8 Ancylidae 9 Gammaridae* 10 Baetidae* 11 Elmidae 12 Rhyacophilidae 13 Psychomyiidae 14 Chironomidae*

NET LOSSES: 0 NET GAINS: 6

NOTES

1,6 Potamopyrgus jenkinsi (empty shell in vial)
5 Pisidium sp.
7 Planorbis carinatus, Armiger crista, Hippeutis complanatus
8 Ancylus fluviatilis
9 Gammarus pulex
10 Baetis rhodani 1 only
11 Elmis aenea (larvae)
12 Agapetus sp.
13 Tinodes waeneri 1 only
14 Orthocladiinae, Chironomini

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Black Lyne

DATE: 9.4.91

SITE: Selsbytown

SORTER: DS

SAMPLE CODE: NRA03 0t60

AQC OF BMWP FAMILIES A. IN VIAL [+] B. IN SAMPLE [+]

		LOSSES: BMWP FAMILIES NOT FOUND BY IFE	GAINS: ADDITIONAL FAMILIES FOUND BY IFE
A	VIAL Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Helodidae 2 Chironomidae*	None

		BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
B	SAMPLE 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 Perlidae 4 Chironomidae*

NET LOSSES: 1 NET GAINS: 1

NOTES

3 Perla bipunctata 1 only
4 Orthocladiinae, Chironomini

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Irthing
DATE	9.4.91	SITE	Lanercost
SORTER	RFP	SAMPLE CODE	NRA03 Omj4

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 1 Oligochaeta*	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Oligochaeta*

NET LOSSES [0] NET GAINS [0]

NOTES

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Valley Brook

DATE: 8.5.91

SITE: Radway Green

SORTER: SJM

SAMPLE CODE: NRA03 rdq4

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Tipulidae

NET LOSSES: 0 NET GAINS: 1

NOTES: 1 Dicranota sp. 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Winster

DATE: 14.3.91

SITE: Blaycrag Bridge

SORTER: KJS

SAMPLE CODE: NRA03 177k

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Valvatidae 2 Sphaeriidae 3 Leuctridae 4 Corixidae 5 Haliplidae 6 Sialidae 7 Psychomyiidae 8 Hydropsychidae

NET LOSSES: 0 NET GAINS: 8

NOTES

1 Valvata piscinalis
2 Pisidium sp.
3 Leuctra hippopus 1 only
4 Sigara dorsalis
5 Brychius elevatus (adult), Haliplus sp. (larvae)
6 Sialis lutaria 1 only
7 Tinodes waeneri
8 Hydropsyche sp 1 only

Note in vial that Ecdyonurus sp. missing - found in sample by IFE

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Marron

DATE: 7.3.91

SITE: Woodend Bridge

SORTER: AJ

SAMPLE CODE: NRA03 06po

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 1 Planariidae	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE None

NET LOSSES: 1 NET GAINS: 0

NOTES

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Mint

DATE: 27.3.91

SITE: Patton Bridge

SORTER: BJI

SAMPLE CODE: NRA03 15wc

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Hydrobiidae 2 Hydrophilidae 3 Leptoceridae 4 Goeridae

NET LOSSES: 0 NET GAINS: 4

NOTES

1 Potamopyrgus jenkinsi 1 only
2 Hydraena gracilis (adults)
3 Athripsodes bilineatus 1 only
4 Silo pallipes 1 only

Note in vial that Rhyacophila sp. is missing - found in sample by IFE

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Norden Brook
DATE	15.4.91	SITE	ptc Hyndburn Brook
SORTER	LHW	SAMPLE CODE	Unknown

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 None	ADDITIONAL FAMILIES FOUND BY IFE 1 Heptageniidae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Erpobdellidae 3 Hydrophilidae 4 Limnephilidae 5 Tipulidae

NET LOSSES [0] NET GAINS [5]

NOTES

1 Ecdyonurus sp.
2 Trocheta subviridis 1 only
3 Hydraena gracilis (adult) 1 only
4 Potamophylax sp. 1 only
5 Tipula sp., Dicranota sp.

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Woodplumpton Brook
DATE	29.5.91	SITE	ptc Barton Brook
SORTER	SLP	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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Tipulidae 2 Simuliidae

NET LOSSES [0] NET GAINS [2]

NOTES

1 Tipula sp.
2 Simulium ornatum group (larva), S.equinum (pupa)

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Langley's Brook
DATE	22.5.91	SITE	D/s Ormskirk STW
SORTER	EMP	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 1 Sphaeriidae*	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Hydrobiidae 3 Sphaeriidae*

NET LOSSES [0] NET GAINS [1]

NOTES

1,3 Seed in vial, Pisidium sp. in sample
2 Potamopyrgus jenkinsi

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Tawd

DATE: 15.5.91

SITE: Ashtons

SORTER: ERM

SAMPLE CODE: Unknown

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Hydrobiidae

NET LOSSES: 0 NET GAINS: 1

NOTES: 1 Potamopyrgus jenkinsi 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Fine Jane's Brook
DATE	21.5.91	SITE	Meols Cop Road
SORTER	EMP	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 Lymnaeidae 2 Physidae 3 Tipulidae

NET LOSSES [0] NET GAINS [3]

NOTES

1 Lymnaea peregra, L.palustris
2 Physa fontinalis 1 only
3 Tipula montium group 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Lambing Clough
DATE	15.5.91	SITE	D/s Hurst Green STW
SORTER	SLP	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 1 Planorbidae	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Hydrobiidae 3 Leuctridae 4 Elmidae 5 Sericostomatidae

NET LOSSES [1] NET GAINS [4]

NOTES

1 Zonitoides sp. found in vial
2 Potamopyrgus jenkinsi
3 Leuctra sp. 1 only
4 Limnius volckmari (larva) 1 only
5 Sericostoma personatum 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Cemetry Beck
DATE	22.5.91	SITE	ptc R.Ribble
SORTER	LHW	SAMPLE CODE	Unknown

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Hydrobiidae 2 Lymnaeidae 3 Sphaeriidae 4 Erpobdellidae 5 Simuliidae

NET LOSSES [0] NET GAINS [5]

NOTES

1 Potamopyrgus jenkinsi
2 Lymnaea peregra
3 Pisidium sp.
4 Erpobdella octoculata 1 only
5 Simulium ornatum group (larva) 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Glossop Brook
DATE	8.8.91	SITE	ptc R.Etherow
SORTER	GTF	SAMPLE CODE	NRA03 ni7w

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 1 Chironomidae*	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Lymnaeidae 3 Elmidae 4 Chironomidae*

NET LOSSES [0] NET GAINS [2]

NOTES

2 Lymnaea peregra 1 only
3 Elmis aenea (larvae)

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Kinder
DATE	18.7.91	SITE	ptc R.Sett
SORTER	KL	SAMPLE CODE	NRA03 or4k

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 1 Caenidae 2 Elmidae*	ADDITIONAL FAMILIES FOUND BY IFE 3 Odontoceridae 4 Sericostomatidae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 5 Sphaeriidae 6 Nemouridae 7 Hydrophilidae 8 Elmidae* 9 Goeridae 10 Simuliidae

NET LOSSES [1] NET GAINS [7]

NOTES

3 Odontocerum albicorne
4 Sericostoma personatum
5 Pisidium sp.
6 Amphinemura sulcicollis
7 Hydraena gracilis (adult) 1 only
8 Elmis aenea, Limnius volckmari (larvae)
9 Silo pallipes 1 only
10 Simulium cryophilum group (larva) 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Pott Shrigley Brook

DATE: 24.7.91

SITE: ptc Harrop Brook

SORTER: SJM

SAMPLE CODE: NRA03 nb4c

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 1 Hydropsychidae	ADDITIONAL FAMILIES FOUND BY IFE 2 Rhyacophilidae
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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 3 Sphaeriidae 4 Hydrophilidae 5 Tipulidae

NET LOSSES: 1

NET GAINS: 4

NOTES

2 Glossosoma sp. in vial, Rhyacophila sp. in sample
3 Pisidium sp. 1 only
4 Hydraena gracilis (adult) 1 only
5 Dicranota sp. 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Gowy

DATE: 29.7.91

SITE: Bates Mill Bridge

SORTER: KL

SAMPLE CODE: NRA03 o24k

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 1 Gammaridae*	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Lymnaeidae 3 Sphaeriidae 4 Glossiphoniidae 5 Gammaridae* 6 Elmidae 7 Psychomyiidae 8 Simuliidae

NET LOSSES: 0 NET GAINS: 6

NOTES

2 Lymnaea peregra
3 Pisidium sp., Sphaerium sp.
4 Glossiphonia complanata, Helobdella stagnalis
5 Gammarus sp.
6 Elmis aenea (larva) 1 only
7 Tinodes waeneri 1 only
8 Simulium ornatum group (larva) 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Bollin
DATE	27.6.91	SITE	Beech Bridge, Macclesfield
SORTER	DGH	SAMPLE CODE	NRA03 lggc

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Hydrobiidae 2 Caenidae

NET LOSSES [0] NET GAINS [2]

NOTES

1 Potamopyrgus jenkinsi 1 only
2 Caenis rivulorum

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Peover Eye

DATE: 9.8.91

SITE: Holford Hall, d/s Plumley

SORTER: SJM

SAMPLE CODE: NRA03 snpo

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 None	ADDITIONAL FAMILIES FOUND BY IFE 1 Oligochaeta

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Hydrobiidae 3 Planorbidae 4 Ancylidae 5 Glossiphoniidae 6 Asellidae 7 Elmidae

NET LOSSES: 0 NET GAINS: 7

NOTES

1 Indet Tubificids
2 Potamopyrgus jenkinsi
3 Planorbis sp. (juvenile) 1 only
4 Ancylus fluviatilis 1 only
5 Glossiphonia complanata 1 only
6 Asellus aquaticus 1 only
7 Esolus parallelepipedus (adult), Limnius volckmari (adult + larva)

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Thistleton Brook

DATE: 30.8.91

SITE: B5269 Bridge

SORTER: SLP

SAMPLE CODE: Not known

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 1 Hydrobiidae* 2 Dytiscidae 3 Chironomidae*	ADDITIONAL FAMILIES FOUND BY IFE 4 Physidae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 5 Hydrobiidae* 6 Sphaeriidae 7 Chironomidae* 8 Simuliidae

NET LOSSES: 1 NET GAINS: 3

NOTES

4 Aplexa hypnorum
5 Potamopyrgus jenkinsi 1 only
6 Pisidium sp.
7 Tanypodinae, Orthocladiinae, Chironomini
8 Simulium ornatum group (larva) 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Ribble

DATE: 12.7.91

SITE: Mitton Bridge

SORTER: LHW

SAMPLE CODE: Not known

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 1 Planariidae* 2 Oligochaeta* 3 Sericostomatidae	ADDITIONAL FAMILIES FOUND BY IFE 4 Leptoceridae
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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 5 Planariidae* 6 Lymnaeidae 7 Oligochaeta* 8 Corixidae 9 Hydrophilidae 10 Rhyacophilidae 11 Polycentropodidae 12 Psychomyiidae

NET LOSSES: 1 NET GAINS: 7

NOTES

4 Athripsodes albifrons, A.cinereus, Ceraclea dissimilis
5 Polycelis felina
6 Lymnaea peregra 1 only
8 Sigara sp. (nymph) 1 only
9 Helophorus brevipalpis (adult) 1 only
10 Rhyacophila dorsalis
11 Polycentropus flavomaculatus 1 only
12 Psychomyia pusilla, Tinodes waeneri

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Smithy Brook
DATE	29.7.91	SITE	Lamberhead Green
SORTER	EMP	SAMPLE CODE	Not known

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 1 Tipulidae*	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Sphaeriidae 3 Glossiphoniidae 4 Gammaridae 5 Haliplidae 6 Hydrophilidae 7 Tipulidae*

NET LOSSES [0] NET GAINS [5]

NOTES

1,7 Indet Cyclorrhapha (Anthomyiidae?) in vial, Tipula montium group in sample
2 Pisidium sp.
3 Glossiphonia complanata
4 Gammarus pulex
5 Haliplus wehnckei (adult) 1 only
6 Helophorus brevipalpis (adults)

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	The Sluice
DATE	16.8.91	SITE	Crossens PS
SORTER	ERM	SAMPLE CODE	Not known

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 None	ADDITIONAL FAMILIES FOUND BY IFE 1 Valvatidae 2 Piscicolidae 3 Coenagriidae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 4 Physidae 5 Oligochaeta 6 Baetidae 7 Haliplidae

NET LOSSES [0] NET GAINS [7]

NOTES

1 Valvata piscinalis
2 Piscicola geometra
3 Indet coenagriid juveniles
4 Physa fontinalis
5 Naididae (Ophidonais serpentina), Tubificidae
6 Cloeon dipterum 1 only
7 Haliplus sp. (larvae)

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Lostock

DATE: 20.8.91

SITE: D/s Brindle

SORTER: EMP

SAMPLE CODE: Not known

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 1 Hydrobiidae	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Sphaeriidae 3 Hydrophilidae

NET LOSSES: 1 NET GAINS: 2

NOTES

2 Pisidium sp. 1 only
3 Anacaena globulus, Helophorus aequalis, H.brevipalpis, H.obscurus (all adults)

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Hodder

DATE: 8.8.91

SITE: Lower Hodder Bridge

SORTER: LHW

SAMPLE CODE: Not known

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 1 Glossiphoniidae	ADDITIONAL FAMILIES FOUND BY IFE 2 Piscicolidae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 3 Hydrobiidae 4 Lymnaeidae 5 Ancylidae 6 Sphaeriidae 7 Hydrophilidae 8 Hydroptilidae 9 Tipulidae

NET LOSSES: 1 NET GAINS: 8

NOTES

2 Piscicola geometra
3 Potamopyrgus jenkinsi
4 Lymnaea peregra
5 Ancylus fluviatilis
6 Pisidium sp. 1 only
7 Hydraena gracilis (adult) 1 only
8 Hydroptila sp. 1 only
9.Dicranota sp., Antocha vitripennis

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Duddon
DATE	13.6.91	SITE	ptc Moasdale Beck
SORTER	AJ	SAMPLE CODE	NRA03 1c84

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 1 Leuctridae	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE None

NET LOSSES [1] NET GAINS [0]

NOTES

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Cam Beck
DATE	10.6.91	SITE	A6071 Bridge
SORTER	RFP	SAMPLE CODE	NRA03 Onuc

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Hydrobiidae 2 Glossiphoniidae 3 Polycentropodidae 4 Leptoceridae

NET LOSSES [0] NET GAINS [4]

NOTES

1 Potamopyrgus jenkinsi 1 only
2 Helobdella stagnalis 1 only
3 Polycentropus flavomaculatus
4 Athripsodes bilineatus 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Clough
DATE	19.7.91	SITE	Garsdale Head
SORTER	KJS	SAMPLE CODE	NRA03 Oyc4

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Hydroptilidae

NET LOSSES [0] NET GAINS [1]

NOTES

1 Hydroptila sp.

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Arndale Beck
DATE	8.7.91	SITE	ptc R.Winster
SORTER	KJS	SAMPLE CODE	NRA03 17ac

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Planorbidae 2 Sphaeriidae 3 Caenidae 4 Haliplidae 5 Rhyacophilidae

NET LOSSES [0] NET GAINS [5]

NOTES

1 Armiger crista
2 Pisidium sp. 1 only
3 Caenis rivulorum 1 only
4 Brychius elevatus (larva) 1 only
5 Glossosoma sp. 1 only

Note in vial says Planariidae missing.

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Duddon
DATE	6.8.91	SITE	Duddon Bridge
SORTER	AJ	SAMPLE CODE	NRA03 1cj8

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 1 Tipulidae	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Planorbidae 3 Oligochaeta

NET LOSSES [1] NET GAINS [2]

NOTES

2 Anisus vortex 1 only
3 Indet lumbricid

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Eden
DATE	10.6.91	SITE	ptc R.Petteril
SORTER	JKA	SAMPLE CODE	NRA03 Oetc

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 None	ADDITIONAL FAMILIES FOUND BY IFE 1 Planariidae 2 Psychomyiidae 3 Leptoceridae 4 Lepidostomatidae 5 Brachycentridae 6 Sericostomatidae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 7 Ancylidae

NET LOSSES [0] NET GAINS [7]

NOTES

1 Dugesia lugubris/polychroa, D.tigrina
2 Psychomyia pusilla
3 Athripsodes albifrons
4 Lepidostoma hirtum
5 Brachycentrus subnubilus
6 Sericostoma personatum
7 Ancylus fluviatilis 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Wiza Beck

DATE: 13.8.91

SITE: Westward

SORTER: AJ

SAMPLE CODE: NRA03 0c44

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 1 Ancylidae 2 Piscicolidae 3 Erpobdellidae* 4 Leptophlebiidae	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 5 Erpobdellidae* 6 Gammaridae 7 Hydroptilidae

NET LOSSES: 3

NET GAINS: 2

NOTES

1 Empty shells in sample
5 Erpobdella octoculata
6 Gammarus pulex
7 Hydroptila sp. 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Williekeld Sike
DATE	22.8.91	SITE	NY 593 328
SORTER	DS	SAMPLE CODE	NRA03 Ohlc

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 1 Dytiscidae* 2 Leptoceridae 3 Sericostomatidae	ADDITIONAL FAMILIES FOUND BY IFE 4 Sialidae 5 Beraeidae 6 Goeridae
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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 7 Sphaeriidae 8 Oligochaeta 9 Dytiscidae* 10 Tipulidae

NET LOSSES [2] NET GAINS [6]

NOTES

4 Sialis lutaria
5 Beraeodes minutus
6 Silo pallipes
7 Pisidium sp. 1 only
8 Indet tubificids
9 Oreodytes sanmarkii (larva) 1 only
10 Limnophila (Eloeophila) sp. 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Bradshaw Brook

DATE: 3.12.91

SITE: U/s Jumbles Reservoir

SORTER: SJM

SAMPLE CODE: NRA03 1jjg

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 1 Haliplidae	ADDITIONAL FAMILIES FOUND BY IFE 2 Ancylidae 3 Chironomidae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 4 Hydrobiidae 5 Lymnaeidae 6 Glossiphoniidae 7 Erpobdellidae 8 Hydrophilidae 9 Elmidae 10 Rhyacophilidae 11 Limnephilidae 12 Leptoceridae

NET LOSSES: 1 NET GAINS: 11

NOTES

2 Ancylus fluviatilis
4 Potamopyrgus jenkinsi
5 Lymnaea peregra 1 only
6 Glossiphonia complanata 1 only
7 Erpobdella octoculata
8 Hydraena gracilis (adult) 1 only
9 Elmis aenea (adult) 1 only
10 Rhyacophila dorsalis
11 Drusus annulatus, Ecclisopteryx guttulata
12 Mystacides azurea 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Hull Brook

DATE: 4.12.91

SITE: U/s Hull Mill

SORTER: GTF

SAMPLE CODE: NRA03 r58k

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 1 Sphaeriidae 2 Baetidae* 3 Nemouridae 4 Simuliidae*	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 5 Hydrobiidae 6 Erpobdellidae 7 Asellidae 8 Baetidae* 9 Leuctridae 10 Perlodidae 11 Elmidae 12 Sialidae 13 Leptoceridae 14 Goeridae 15 Chironomidae 16 Simuliidae*

NET LOSSES: 2 NET GAINS: 10

NOTES

5 Potamopyrgus jenkinsi
6 Indet erpobdellid 1 only
7 Asellus aquaticus 1 only
8 Baetis rhodani
9 Leuctra hippopus 1 only
10 Isoperla grammatica
11 Elmis aenea (larva) 1 only
12 Sialis fuliginosa 1 only
13 Athripsodes aterrimus 1 only
14 Silo pallipes 1 only
15 Diamesinae, Orthocladiinae, Tanypodinae
16 Simulium ornatum group

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Gowy
DATE	4.10.91	SITE	Gowy Bridge, Stanney
SORTER	DGH	SAMPLE CODE	NRA03 o3d0

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 1 Hydrobiidae 2 Sphaeriidae*	ADDITIONAL FAMILIES FOUND BY IFE 3 Chironomidae 4 Lymnaeidae
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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 5 Valvatidae 6 Ancylidae 7 Sphaeriidae* 8 Erpobdellidae 9 Haliplidae 10 Elmidae 11 Phryganeidae

NET LOSSES [1] NET GAINS [8]

NOTES

1 Empty shells in vial and sample
3 Microtendipes sp., Rheotanytarsus sp.
4 Lymnaea peregra
5 Valvata piscinalis 1 only
6 Ancylus fluviatilis 1 only
7 Sphaerium sp.
8 Erpobdella octoculata
9 Haliplus sp. (larva) 1 only
10 Elmis aenea (larva) 1 only
11 Phryganea bipunctata 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Barley Water

DATE: 8.10.91

SITE: ptc Pendle Water

SORTER: LHW

SAMPLE CODE: NRA03 2mlk

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 1 Heptageniidae* 2 Elmidae* 3 Polycentropodidae*	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 4 Hydrobiidae 5 Sphaeriidae 6 Heptageniidae* 7 Elmidae* 8 Polycentropodidae* 9 Leptoceridae

NET LOSSES: 0 NET GAINS: 3

NOTES

4 Potamopyrgus jenkinsi
5 Pisidium sp. 1 only
6 Ecdyonurus sp.
7 Elmis aenea, Limnius volckmari (larvae)
8 Polycentropus flavomaculatus
9 Athripsodes bilineatus

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Liggard Brook

DATE: 30.10.91

SITE: U/s Road Bridge

SORTER: SLP

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 1 Gammaridae*	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Glossiphoniidae 3 Gammaridae* 4 Baetidae

NET LOSSES: 0

NET GAINS: 2

NOTES

2 Helobdella stagnalis 1 only
3 Gammarus pulex
4 Baetis rhodani 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Goyt
DATE	4.12.91	SITE	ptc R.Sett
SORTER	KPL	SAMPLE CODE	NRA03 ohk4

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Ancylidae 2 Sphaeriidae 3 Gammaridae 4 Limnephilidae

NET LOSSES [0] NET GAINS [4]

NOTES

1 Ancylus fluviatilis 1 only
2 Pisidium sp. 1 only
3 Gammarus pulex, Crangonyx pseudogracilis
4 Indet limnephilid (juvenile) 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Sandersons Brook
DATE	8.10.91	SITE	ptc R.Croco
SORTER	SJM	SAMPLE CODE	NRA03 mslo

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE None

NET LOSSES [0] NET GAINS [0]

NOTES

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Hardshaw Brook
DATE	27.11.91	SITE	Adjacent "The Hotties"
SORTER	EMP	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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Hydrobiidae 2 Sphaeriidae

NET LOSSES [0] NET GAINS [2]

NOTES

1 Potamopyrgus jenkinsi, Bithynia tentaculata
2 Pisidium sp.

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Douglas
DATE	10.10.91	SITE	Grimeford Bridge
SORTER	EMP	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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Sphaeriidae 2 Tipulidae

NET LOSSES [0] NET GAINS [2]

NOTES

1 Pisidium sp.
2 Tipula montium group 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Brennand

DATE: 11.10.91

SITE: ptc Whitendale River

SORTER: LHW

SAMPLE CODE: NRA03 2gkw

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE None

NET LOSSES: 0 NET GAINS: 0

NOTES

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Yarrow
DATE	16.12.91	SITE	Pincock
SORTER	ERM	SAMPLE CODE	NRA03 26oc

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 1 Lymnaeidae	ADDITIONAL FAMILIES FOUND BY IFE 2 Physidae 3 Baetidae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 4 Ancylidae

NET LOSSES [1] NET GAINS [3]

NOTES

2 Physa fontinalis
3 Baetis rhodani
4 Acroloxus lacustris

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Crookhurst Beck
DATE	3.12.91	SITE	NY 081 429
SORTER	DS	SAMPLE CODE	NRA03 Od1g

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 1 Heptageniidae 2 Elmidae*	ADDITIONAL FAMILIES FOUND BY IFE 3 Oligochaeta 4 Caenidae 5 Haliplidae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 6 Planorbidae 7 Elmidae* 8 Hydropsychidae

NET LOSSES [1] NET GAINS [5]

NOTES

4 Caenis rivulorum
5 Brychius elevatus, Haliplus sp. (larvae)
6 Planorbis carinatus 1 only
7 Elmis aenea, Limnius volckmari, Oulimnius tuberculatus (adults + larvae)
8 Hydropsyche angustipennis

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Lune
DATE	4.9.91	SITE	ptc Leck Beck
SORTER	BJI	SAMPLE CODE	NRA03 Ovek

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Nemouridae 2 Polycentropodidae

NET LOSSES [0] NET GAINS [2]

NOTES

1 Protonemura sp. 1 only
2 Polycentropus flavomaculatus 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Whicham Beck

DATE: 20.11.91

SITE: Hellpool Bridge

SORTER: AJ

SAMPLE CODE: NRA03 1dds

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

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

		BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
B	SAMPLE 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: 0

NOTES

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Brock

DATE: 10.12.91

SITE: D/s Brock Mill car park

SORTER: SLP

SAMPLE CODE: NRA03 2vuw

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Glossiphoniidae 2 Taeniopterygidae 3 Elmidae 4 Chironomidae

NET LOSSES: 0 NET GAINS: 4

NOTES

1 Helobdella stagnalis 1 only
2 Brachyptera risi 1 only
3 Elmis aenea, Limnius volckmari (adults + larvae)
4 Orthocladiinae (larvae + pupae)

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Eden
DATE	29.10.91	SITE	Grinsdale Church
SORTER	JKA	SAMPLE CODE	NRA03 Oflo

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Valvatidae 2 Physidae 3 Ancylidae 4 Heptageniidae 5 Hydrophilidae 6 Hydroptilidae 7 Chironomidae

NET LOSSES [0] NET GAINS [7]

NOTES

1 Valvata piscinalis 1 only
2 Physa fontinalis 1 only
3 Ancylus fluviatilis 1 only
4 Heptagenia sulphurea
5 Hydraena gracilis (adult) 1 only
6 Hydroptila sp. 1 only
7 Microtendipes sp. 1 only

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Calder

DATE: 10.10.91

SITE: U/s Calder Bridge

SORTER: RFP

SAMPLE CODE: NRA03 018g

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE None

NET LOSSES: 0 NET GAINS: 0

NOTES

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Rothay

DATE: 18.10.91

SITE: D/s Grasmere

SORTER: KJS

SAMPLE CODE: NRA03 17wk

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 None	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 1 Lymnaeidae 2 Sphaeriidae 3 Asellidae 4 Leptoceridae 5 Simuliidae

NET LOSSES: 0 NET GAINS: 5

NOTES

1 Lymnaea peregra
2 Pisidium sp.
3 Asellus aquaticus 1 only
4 Oecetis testacea, Ceraclea dissimilis
5 Simulium noelleri 1 only

Note in vial that Corixidae "missing". None found by IFE in sample.

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION: North West

RIVER: Fen Beck

DATE: 20.11.91

SITE: D/s Waters Bridge

SORTER: BJI

SAMPLE CODE: NRA03 Ozsw

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 1 Chironomidae*	ADDITIONAL FAMILIES FOUND BY IFE 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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Gyrinidae 3 Psychomyiidae 4 Leptoceridae 5 Chironomidae*

NET LOSSES: 0

NET GAINS: 3

NOTES

2 Orectochilus villosus (larva) 1 only
3 Tinodes waeneri 1 only
4 Mystacides azurea 1 only
5 Chironomini, Diamesinae

1991 RIVER QUALITY SURVEY

AQC - BIOLOGICAL SAMPLES

REGION	North West	RIVER	Castle Beck
DATE	22.10.91	SITE	NY 572 620
SORTER	DS	SAMPLE CODE	NRA03 Onaw

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 None	ADDITIONAL FAMILIES FOUND BY IFE 1 Goeridae

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 (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE 2 Glossiphoniidae 3 Caenidae 4 Hydrophilidae 5 Polycentropodidae 6 Limnephilidae 7 Chironomidae 8 Simuliidae

NET LOSSES [0] NET GAINS [8]

NOTES

1 Silo pallipes
2 Glossiphonia complanata 1 only
3 Caenis rivulorum 1 only
4 Hydraena gracilis (adults)
5 Polycentropus flavomaculatus 1 only
6 Potamophylax cingulatus/latipennis
7 Prodiamesa olivacea 1 only
8 Simulium ornatum group 1 only