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Freshwater
Ecology**

An audit of performance in the processing of macro-invertebrate samples in 1993. NRA Southern Region

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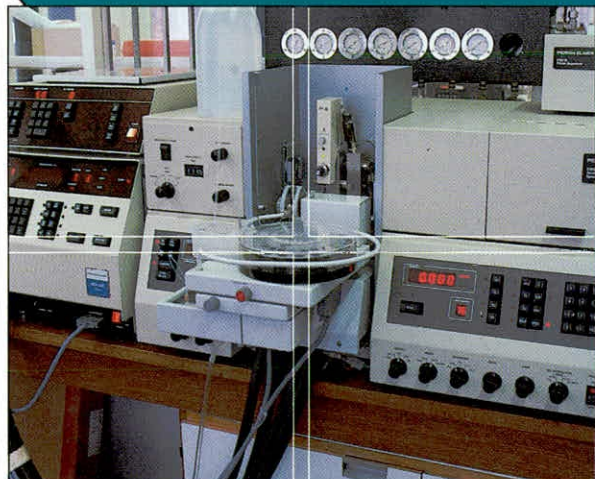
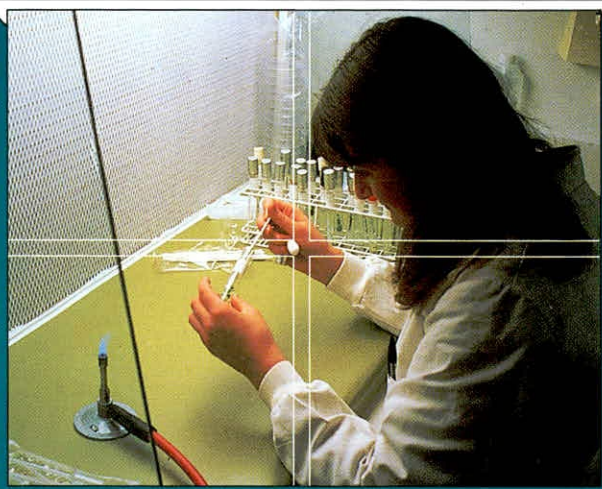
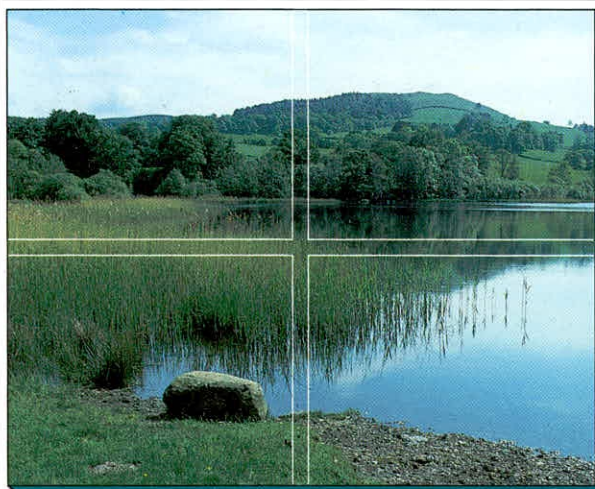
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**An audit of performance in the processing
of macro-invertebrate samples in 1993.**
NRA Southern Region

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Project leader:	R.J.M. Gunn
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1. INTRODUCTION

In 1993 the sampling of aquatic macro-invertebrates for the biological assessment of river quality continued throughout the United Kingdom. This task was undertaken by the National Rivers Authority (NRA) in England and Wales, the River Purification Boards (RPBs) in Scotland and the Industrial Research & Technology Unit (IRTU) in Northern Ireland.

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, several RPBs and the IRTU. This report presents the results of 60 samples audited for Southern Region of the NRA. The IFE was not required to perform any statistical analyses nor interpretation of the results of the audit.

Each organisation employed standard collection procedures, as used in the 1990 River Quality Survey, 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).

Samples were sorted by NRA, RPB and IRTU 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.

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 IRTU 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. Chrysomelidae and Curculionidae, which appear in the BMWP list, were also to be excluded for the purposes of the audit. 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 Valerie Palmer for typing the report.

TABLE 1. The IFE Report form

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION		RIVER	
DATE		SITE	
SORTER		SAMPLE CODE	

AQC OF BMWP FAMILIES A. IN VIAL

1

B. IN SAMPLE

7

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		

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
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 is supplied with sample)		

NOTES :

NET LOSSES

□

NET GAINS

7

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TABLE 2. The 23 spring samples audited for Southern Region.

River	Site	Sorter	Losses	Gains	Omissions
Black Ditch	Lyminster	W19	0	1	0
Wallop Brook	Bossington	W15	1	1	0
Hatchet Stream	St Leonards	W15	0	1	0
Sowley Stream East	Beck Farm	W1	0	1	0
Fletchwood Stream	Woodlands	W18	0	0	0
Northbrook	Baslam Station	W19	1	0	0
Manor Stream	A337 Bridge	W18	1	4	0
Royal Military Canal	Hamstreet	E12	0	4	0
Nunningham Stream	Tilley Bridge	E1	0	1	0
Leybourne Stream	Brook House	E14	0	1	0
Great Stour	Wye	E11	0	2	0
Pevensey Haven	Rickney at Pylons	E11	0	5	0
Loose Stream	Loose Village	E15	0	0	0
Waldron Gill	Brookside Bridge	E3	0	1	0
Curtisden Green Stream Trib.	Bakers Farm	E16	0	0	0
Len Tributary	d/s Leeds STW	E15	0	1	0
Meon	Titchfield	W21	0	1	0
Westwood Stream	Weston Parade	W20	0	0	0
Hook Lake	Hook	W20	1	1	1
Hoeford Lake	B3385 Bridge	W18	0	1	0
Butlocks Heath Stream	War Memorial	W21	2	1	0
Nuns Walk Stream	Abbots Barton	W18	0	0	0
Warblington Stream No.1	Brook Farm	W1	1	1	0

TABLE 3. The 16 summer samples audited for Southern Region

River	Site	Sorter	Losses	Gains	Omissions
Uck	Hastingford Bridge	E16	0	1	0
Loxwood Stream	White Beech Bridge	W14	0	2	0
Kird	u/s Pond Bay Mill	W14	0	3	0
Loxwood Stream	Sydney Farm	W14	1	0	0
Minstead Stream	A272 Bridge	W15	2	2	2
Loxwood Stream	Drungewick	W19	0	0	0
Par Brook	Parbrook Bridge	W20	1	0	0
Sussex Rother	Selham Bridge	W20	0	0	0
Springbrook Sewer	d/s Hamstreet STW	E11	0	1	0
Loose Stream	Hayle Place	E16	0	2	0
Brookley Stream	Brockenhurst	W9	0	1	0
Matley Bog	Matley Passage	W15	0	0	0
Itchen	Vernal Farm	W1	0	0	0
Arun	Magpie Bridge	W15	1	2	0
Plaitford Stream	u/s Plaitford Ford	W14	0	1	0
Uck	Uckfield Bypass Bridge	E4	0	1	0

TABLE 4: The 21 autumn samples audited for Southern Region

River	Site	Sorter	Losses	Gains	Omissions
Brightstone Stream	d/s Brightstone Mill	W18	0	1	0
Alre	200 m d/s Effluent channel inflow	W21	2	0	0
Brightstone Stream	u/s Military Road Bridge	W18	0	0	0
Alre	10 m d/s Effluent channel inflow	W21	1	0	0
Darent	Westerham	E3	1	4	0
Eden Vale Stream	Blackberry Farm	E6	0	1	0
Hilden Brook	Hilden Bridge	E15	1	3	0
Kent Water	Cowden	E16	0	4	0
Medway	Hartfield	E4	0	2	0
Hawkhurst South Stream	A229 Bridge	E16	0	2	0
Barden Mill Stream	Bowens, Poundbridge	E1	0	2	0
Medway	Whilleys Bridge	E4	0	1	0
Little Hawden Stream	Bid Bridge	E15	2	4	0
Bough Beech Stream	Waterlake	E6	0	0	0
Teise	Smallbridge	E11	1	1	0
Line	Whatlington	E1	0	2	0
Cockhaise Brook	u/s Holywell P.S.	E2	1	3	2
Leybourne Stream	Brook House	E3	0	3	0
Bartley Mill Stream	Great Shoesmiths Farm	E6	1	1	0
Longford Stream	Longford Farm	E2	0	2	0
Pippingford Brook	Withyham d/s Tributary	E15	2	2	0

APPENDIX

Results of individual sample audits

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Black Ditch
DATE	8.4.93	SITE	Lyminster
SORTER	W19	SAMPLE CODE	NRA05 3W0061

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

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

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES NET GAINS

NOTES:

1 Athripsodes aterrimus

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Wallop Brook
DATE	5.5.93	SITE	Bossington
SORTER	W15	SAMPLE CODE	NRA05 4W0141

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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	1 Gyrinidae	2 Elmidae

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES

1

NET GAINS

1

NOTES:

2 Limnius volckmari (larvae) in vial, Elmis aenea (adults + larvae) in sample

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Hatchet Stream
DATE	29.4.93	SITE	St.Leonards
SORTER	W15	SAMPLE CODE	NRA05 4W0166

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

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
	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 is supplied with sample)	1 Hydrobiidae

NET LOSSES NET GAINS

NOTES:

1 Potamopyrgus jenkinsi

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Sowley Stream East
DATE	29.4.93	SITE	Beck Farm
SORTER	W1	SAMPLE CODE	NRA05 4W0174

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

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
	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 is supplied with sample)	1 Beraeidae

NOTES:

NET LOSSES

NET GAINS

1 Beraea pullata

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Fletchwood Stream
DATE	7.4.93	SITE	Woodlands
SORTER	W18	SAMPLE CODE	NRA05 4W0155

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

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
	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 is supplied with sample)	None

NET LOSSES NET GAINS

NOTES:

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Northbrook
DATE	8.4.93	SITE	Baslam Station
SORTER	W19	SAMPLE CODE	NRA05 3W0067

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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	1 Simuliidae	None

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES

1

NET GAINS

0

NOTES:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Manor Stream
DATE	7.4.93	SITE	A337 Bridge
SORTER	W18	SAMPLE CODE	NRA05 4W0228

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

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	1 Leuctridae	2 Capniidae

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	3 Ephemerellidae 4 Caenidae 5 Polycentropodidae

NET LOSSES NET GAINS

NOTES:

2 Capnia bifrons
3 Ephemerella ignita 1 only
4 Caenis rivulorum 1 only
5 Plectrocnemia sp. (juvenile) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Royal Military Canal
DATE	17.3.93	SITE	Hamstreet
SORTER	E12	SAMPLE CODE	NRA05 1E0145

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	1 Pleidae 2 Haliplidae 3 Elmidae 4 Leptoceridae

NET LOSSES

0

NET GAINS

4

NOTES:

- 1 Plea leachi 1 only
- 2 Haliphus laminatus (adult) 1 only
- 3 Elmis aenea (larva) 1 only
- 4 Athripsodes aterrimus, Oecetis sp. (juveniles)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION Southern

RIVER Nunningham Stream

DATE 16.4.93

SITE Tilley Bridge

SORTER E1

SAMPLE CODE NRA05 2E0206

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	1 Hydrophilidae

NET LOSSES

0

NET GAINS

1

NOTES:

1 Anacaena lutescens, Hydraena riparia (adults)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Leybourne Stream
DATE	21.5.93	SITE	Brook House
SORTER	E14	SAMPLE CODE	NRA05 1E0088

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

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

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES NET GAINS

NOTES:

1 Lymnaea palustris

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION Southern

RIVER Great Stour

DATE 17.3.93

SITE Wye

SORTER E11

SAMPLE CODE NRA05 1E0091

AQC OF BMWP FAMILIES A. IN VIAL +

B. IN SAMPLE +

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
	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 is supplied with sample)	1 Ephemerellidae 2 Simuliidae

NET LOSSES 0

NET GAINS 2

NOTES:

1 Ephemerella ignita 1 only
2 Simulium ornatum group (pupa) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Pevensey Haven
DATE	16.4.93	SITE	Rickney at Pylons
SORTER	E11	SAMPLE CODE	NRA05 2E0209

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	3 Planariidae 4 Ancyridae 5 Nepidae

NET LOSSES

0

NET GAINS

5

NOTES:

1 Coenagrion puella/pulchellum, Erythromma najas, Ischnura elegans
 2 Ilyocoris cimicoides
 3 Polycelis nigra/tenuis 1 only
 4 Acroloxus lacustris
 5 Ranatra linearis 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Loose Stream
DATE	25.5.93	SITE	Loose Village
SORTER	E15	SAMPLE CODE	NRA05 1E0082

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	None

NET LOSSES

0

NET GAINS

0

NOTES:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION Southern

RIVER Waldron Gill

DATE 16.4.93

SITE Brookside Bridge

SORTER E3

SAMPLE CODE NRA05 2E0221

AQC OF BMWP FAMILIES A. IN VIAL +

B. IN SAMPLE +

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
	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 is supplied with sample)	1 Ancyliidae

NET LOSSES 0

NET GAINS 1

NOTES:

1 Ancylos fluviatilis 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Curtisden Green Stream Trib
DATE	22.4.93	SITE	Bakers Farm
SORTER	E16	SAMPLE CODE	NRA05 1E0062

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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 is supplied with sample)	None

NET LOSSES

0

NET GAINS

0

NOTES:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION Southern

RIVER Len Tributary

DATE 25.5.93

SITE d/s Leeds STW

SORTER E15

SAMPLE CODE NRA05 1E0086

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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 is supplied with sample)	1 Hydroptilidae

NET LOSSES

0

NET GAINS

1

NOTES:

1 Hydroptila sp. (pupa) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

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

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
	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 is supplied with sample)	1 Lymnaeidae

NET LOSSES

NET GAINS

NOTES:

1 Lymnaea peregra 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Westwood Stream
DATE	13.5.93	SITE	Weston Parade
SORTER	W20	SAMPLE CODE	NRA05 4W0222

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	None

NET LOSSES

0

NET GAINS

0

NOTES:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Hook Lake
DATE	13.5.93	SITE	Hook
SORTER	W20	SAMPLE CODE	NRA05 4W0116

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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	1 Glossiphoniidae 2 Tipulidae*	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 is supplied with sample)	3 Sphaeriidae 4 Tipulidae*

NET LOSSES

1

NET GAINS

1

NOTES:

1 Indet Microturbellarian in vial
3 Pisidium sp. 1 only
4 Dicranota sp.

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION Southern

RIVER Hoeford Lake

DATE 13.5.93

SITE B3385 Bridge

SORTER W18

SAMPLE CODE NRA05 4W0213

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	1 Physidae

NET LOSSES 0

NET GAINS 1

NOTES:

1 Physa acuta/heterostropa 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Butlocks Heath Stream
DATE	13.5.93	SITE	War Memorial
SORTER	W21	SAMPLE CODE	NRA05 4W0221

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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	1 Hydrobiidae 2 Elmidae	3 Scirtidae

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES

2

NET GAINS

1

NOTES:

1 Empty shells in vial and sample
3 Elodes sp. (larva)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Nuns Walk Stream
DATE	11.5.93	SITE	Abbots Barton
SORTER	W18	SAMPLE CODE	NRA05 4W0223

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	None

NET LOSSES

0

NET GAINS

0

NOTES:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Warblington Stream No.1
DATE	26.5.93	SITE	Brook Farm
SORTER	W1	SAMPLE CODE	NRA05 4W0211

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

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	1 Hydrophilidae	2 Lymnaeidae

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES

NET GAINS

NOTES:

2 Lymnaea peregra

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Uck
DATE	8.7.93	SITE	Hastingford Bridge
SORTER	E16	SAMPLE CODE	NRA05 2E0236

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	1 Piscicolidae

NET LOSSES

0

NET GAINS

1

NOTES:

1 Piscicola geometra 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Loxwood Stream
DATE	3.6.93	SITE	White Beech Bridge
SORTER	W14	SAMPLE CODE	NRA05 3W0053

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	1 Asellidae 2 Sialidae

NET LOSSES

0

NET GAINS

2

NOTES:

1 Asellus aquaticus 1 only
2 Sialis fuliginosa 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Kird
DATE	3.6.93	SITE	u/s Pond Bay Mill
SORTER	W14	SAMPLE CODE	NRA05 3W0051

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	1 Planariidae 2 Gyrinidae 3 Simuliidae

NET LOSSES

0

NET GAINS

3

NOTES:

1 Polycelis nigra/tenuis 1 only
2 Gyrinus sp. (larva) 1 only
3 Simulium aureum group

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Loxwood Stream
DATE	3.6.93	SITE	Sydney Farm
SORTER	W14	SAMPLE CODE	NRA05 3W0054

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

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	1 Platycnemididae	None

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES NET GAINS

NOTES:

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Minstead Stream
DATE	14.7.93	SITE	A272 Bridge
SORTER	W15	SAMPLE CODE	NRA05 3W0036

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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	1 Leptophlebiidae* 2 Mesoveliidae 3 Limnephilidae* 4 Sericostomatidae	5 Beraeidae

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	6 Planariidae 7 Leptophlebiidae* 8 Limnephilidae*

NET LOSSES

2

NET GAINS

2

NOTES:

2 Velia sp. (nymph) in vial
 5 Beraeodes minutus
 6 Polycelis felina
 7 Habrophlebia fusca
 8 Chaetopteryx villosa

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Loxwood Stream
DATE	3.6.93	SITE	Drungewick
SORTER	W19	SAMPLE CODE	NRA05 3W0055

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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 is supplied with sample)	None

NET LOSSES

0

NET GAINS

0

NOTES:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Par Brook
DATE	2.6.93	SITE	Parbrook Bridge
SORTER	W20	SAMPLE CODE	NRA05 3W0052

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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	1 Hydrobiidae	None

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES

1

NET GAINS

0

NOTES:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Sussex Rother
DATE	14.7.93	SITE	Selham Bridge
SORTER	W20	SAMPLE CODE	NRA05 3W0027

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	None

NET LOSSES

0

NET GAINS

0

NOTES:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Springbrook Sewer
DATE	25.8.93	SITE	d/s Hamstreet STW
SORTER	E11	SAMPLE CODE	NRA05 1E0151

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

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
	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 is supplied with sample)	1 Hydrobiidae

NET LOSSES NET GAINS

NOTES:

1 Bithynia tentaculata

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Loose Stream
DATE	31.8.93	SITE	Hayle Place
SORTER	E16	SAMPLE CODE	NRA05 1E0083

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

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
	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 is supplied with sample)	1 Dendrocoelidae 2 Hydroptilidae

NET LOSSES NET GAINS

NOTES:

1 Dendrocoelum lacteum
2 Hydroptila sp.

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Brookley Stream
DATE	20.7.93	SITE	Brockenhurst
SORTER	W9	SAMPLE CODE	NRA05 4W0171

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

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
	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 is supplied with sample)	1 Sphaeriidae

NET LOSSES NET GAINS

NOTES:

1 Pisidium sp. 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Matley Bog
DATE	15.7.93	SITE	Matley Passage
SORTER	W15	SAMPLE CODE	NRA05 4W0238

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

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 is supplied with sample)	None

NET LOSSES

NET GAINS

NOTES:

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Itchen
DATE	10.8.93	SITE	Vernal Farm
SORTER	W1	SAMPLE CODE	NRA05 4W0117

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

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 is supplied with sample)	None

NET LOSSES NET GAINS

NOTES:

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Arun
DATE	26.6.93	SITE	Magpie Bridge
SORTER	W15	SAMPLE CODE	NRA05 3W0042

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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	1 Haliplidae	2 Corixidae

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	3 Planariidae

NET LOSSES

1

NET GAINS

2

NOTES:

2 Sigara falleni
3 Dugesia tigrina 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Plaitford Stream
DATE	27.7.93	SITE	u/s Plaitford Ford
SORTER	W14	SAMPLE CODE	NRA05 4W0230

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

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

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES

NET GAINS

NOTES:

1 Niphargus aquilex
Niphargus was included in Gammaridae at the time that the BMWP system was introduced.

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Uck
DATE	8.7.93	SITE	Uckfield Bypass Bridge
SORTER	E4	SAMPLE CODE	NRA05 2E0237

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

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
	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 is supplied with sample)	1 Limnephilidae

NET LOSSES

NET GAINS

NOTES:

1 Halesus radiatus 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Brightstone Stream
DATE	25.11.93	SITE	d/s Brightstone Mill
SORTER	W18	SAMPLE CODE	NRA05 5W0271

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

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
	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 is supplied with sample)	1 Limnephilidae

NET LOSSES

NET GAINS

NOTES:

1 Indet Limnephilid (juveniles)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Alre
DATE	29.10.93	SITE	200m d/s Effluent inflow
SORTER	W21	SAMPLE CODE	NRA05 4W0570

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

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	1 Heptageniidae 2 Psychomyiidae	None

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	None

NET LOSSES NET GAINS

NOTES:

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Brightstone Stream
DATE	25.11.93	SITE	u/s Military Road Bridge
SORTER	W18	SAMPLE CODE	NRA05 5W0569

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

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
	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 is supplied with sample)	None

NET LOSSES NET GAINS

NOTES:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Alre
DATE	29.10.93	SITE	10m d/s Effluent inflow
SORTER	W21	SAMPLE CODE	NRA05 4W0569

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

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	1 Psychomyiidae	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 is supplied with sample)	None

NET LOSSES NET GAINS

NOTES:

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Darent
DATE	8.10.93	SITE	Westerham
SORTER	E3	SAMPLE CODE	NRA05 1E0001

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

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	1 Lymnaeidae	None

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	2 Ancyliidae 3 Psychomyiidae 4 Hydropsychidae 5 Chironomidae

NET LOSSES NET GAINS

NOTES:

- 1 Succinea sp. in vial
- 2 Ancyclus fluviatilis 1 only
- 3 Tinodes waeneri 1 only
- 4 Hydropsyche siltalai 1 only
- 5 Orthocladiinae (larva + pupa)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Eden Vale Stream
DATE	3.11.93	SITE	Blackberry Farm
SORTER	E6	SAMPLE CODE	NRA05 1E0038

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

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
	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 is supplied with sample)	1 Planariidae

NET LOSSES NET GAINS

NOTES:

1 Polycelis felina

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Hilden Brook
DATE	15.9.93	SITE	Hilden Bridge
SORTER	E15	SAMPLE CODE	NRA05 1E0041

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

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	1 Erpobdellidae	None

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	2 Baetidae 3 Hydrophilidae 4 Hydropsychidae

NET LOSSES

NET GAINS

NOTES:

2 Baetis rhodani
 3 Hydraena sp. (adult) 1 only
 4 Hydropsyche sp. (juvenile) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Kent Water
DATE	3.11.93	SITE	Cowden
SORTER	E16	SAMPLE CODE	NRA05 1E0023

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

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 is supplied with sample)	1 Sphaeriidae 2 Nemouridae 3 Calopterygidae 4 Simuliidae

NET LOSSES NET GAINS

NOTES:

- 1 Pisidium sp.
- 2 Nemoura avicularis
- 3 Calopteryx virgo 1 only
- 4 Simulium ornatum group 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Medway
DATE	26.10.93	SITE	Hartfield
SORTER	E4	SAMPLE CODE	NRA05 1E0007

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

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
	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 is supplied with sample)	1 Planorbidae 2 Scirtidae

NET LOSSES NET GAINS

NOTES:

1 Gyraulus albus 1 only
2 Elodes sp. (larva) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Hawkhurst South Stream
DATE	2.11.93	SITE	A229 Bridge
SORTER	E16	SAMPLE CODE	NRA05 1E0132

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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
	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 is supplied with sample)	1 Planariidae 2 Psychomyiidae

NET LOSSES

0

NET GAINS

2

NOTES:

1 Polycelis felina 1 only
2 Lype sp. 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Barden Mill Stream
DATE	15.9.93	SITE	Bowens, Poundbridge
SORTER	E1	SAMPLE CODE	NRA05 1E0025

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

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
	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 is supplied with sample)	1 Piscicolidæ 2 Gyrinidæ

NET LOSSES NET GAINS

NOTES:

1 Piscicola geometra 1 only
2 Orectochilus villosus (larva) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern
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RIVER	Medway
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DATE	26.10.93
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SITE | Whillets Bridge

SORTER	E4
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SAMPLE CODE	NRA05 1E0005
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AQC OF BMWP FAMILIES	A. IN VIAL	+
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
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41	41	41
42	42	42
43	43	43
44	44	44
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49	49	49
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54	54	54
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62	62	62
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66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
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73	73	73
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75	75	75
76	76	76
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82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
93	93	93
94	94	94
95	95	95
96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

B. IN SAMPLE	+
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<div style="border: 1px solid black; padding: 2px; width: 20px; text-align: center;">A</div> <div style="text-align: center; padding: 10px;">VIAL</div>	<div style="text-align: center; padding: 10px;">BMWP FAMILIES NOT FOUND BY IFE</div>	<div style="text-align: center; padding: 10px;">ADDITIONAL FAMILIES FOUND BY IFE</div>
<p>Differences between:</p> <p>i) BMWP families listed on sample data sheet and</p> <p>ii) BMWP families found in VIAL by IFE</p>	None	None

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	1 Simuliidae

NET LOSSES	0
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NET GAINS	1
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NOTES:

1 Simulium ornatum group (pupa) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Little Hawden Stream
DATE	15.9.93	SITE	Bid Bridge
SORTER	E15	SAMPLE CODE	NRA05 1E0040

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

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	1 Valvatidae 2 Hydrophilidae	3 Hydroptilidae

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	4 Gyrinidae 5 Rhyacophilidae 6 Limnephilidae

NET LOSSES NET GAINS

NOTES:

3 Hydroptila sp.
 4 Orectochilus villosus (larvae)
 5 Agapetus sp. 1 only
 6 Indet Limnephilid (pupa) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Bough Beech Stream
DATE	3.11.93	SITE	Waterlake
SORTER	E6	SAMPLE CODE	NRA05 1E0039

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

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
	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 is supplied with sample)	None

NET LOSSES NET GAINS

NOTES:

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Teise
DATE	3.11.93	SITE	Smallbridge
SORTER	E11	SAMPLE CODE	NRA05 1E0051

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

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	1 Caenidae	2 Physidae

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 is supplied with sample)	None

NOTES:

NET LOSSES NET GAINS

2 Physa acuta/heterostropha

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION Southern

RIVER Line

DATE 12.11.93

SITE Whatlington

SORTER E1

SAMPLE CODE NRA05 1E0162

AQC OF BMWP FAMILIES A. IN VIAL +

B. IN SAMPLE +

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 is supplied with sample)	1 Planariidae 2 Piscicolidae

NET LOSSES 0

NET GAINS 2

NOTES:

1 Polycelis nigra/tenuis, Dugesia tigrina
2 Piscicola geometra 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Cockhaise Brook
DATE	17.11.93	SITE	u/s Holywell Pumping Station
SORTER	E2	SAMPLE CODE	NRA05 2E0245

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

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	1 Asellidae* 2 Leuctridae 3 Chironomidae*	4 Capniidae

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 is supplied with sample)	5 Planariidae 6 Glossiphoniidae 7 Asellidae* 8 Chironomidae*

NOTES: NET LOSSES ☐1☐ NET GAINS ☐3☐

1,7 Terrestrial Isopod in vial, Asellus aquaticus in sample
4 Capnia sp. (juvenile)
5 Polycelis felina 1 only
6 Glossiphonia complanata 1 only
8 Tanypodinae, Orthocladiinae, Tanytarsini

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Leybourne Stream
DATE	8.10.93	SITE	Brook House
SORTER	E3	SAMPLE CODE	NRA05 1E0088

AQC OF BMWP FAMILIES A. IN VIAL

+

B. IN SAMPLE

+

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

B	SAMPLE	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES
	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 is supplied with sample)	2 Hydrophilidae 3 Leptoceridae

NET LOSSES

0

NET GAINS

3

NOTES:

1 Orthocladiinae
2 Indet Hydrophilid (larva) 1 only
3 Mystacides azurea 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Bartley Mill Stream
DATE	16.11.93	SITE	Great Shoesmiths Farm
SORTER	E6	SAMPLE CODE	NRA05 1E0054

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

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	1 Perlodidae	2 Chloroperlidae

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 is supplied with sample)	None

NET LOSSES

NET GAINS

NOTES:

2 Chloroperla torrentium 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Longford Stream
DATE	24.11.93	SITE	Longford Farm
SORTER	E2	SAMPLE CODE	NRA05 2E0235

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

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
	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 is supplied with sample)	1 Erpobdellidae 2 Sericostomatidae

NET LOSSES NET GAINS

NOTES:

1 Indet Erpobdellid (juvenile) 1 only
2 Sericostoma personatum 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	Southern	RIVER	Pippingford Brook
DATE	26.10.93	SITE	Withyham d/s Tributary
SORTER	E15	SAMPLE CODE	NRA05 1E0018

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

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	1 Valvatidae 2 Erpobdellidae	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 is supplied with sample)	3 Gyrinidae 4 Leptoceridae

NET LOSSES

NET GAINS

NOTES:

- 1 Zonitoides sp. in vial
- 2 Elongated Helobdella stagnalis in vial
- 3 Orectochilus villosus (larvae)
- 4 Mystacides azurea

