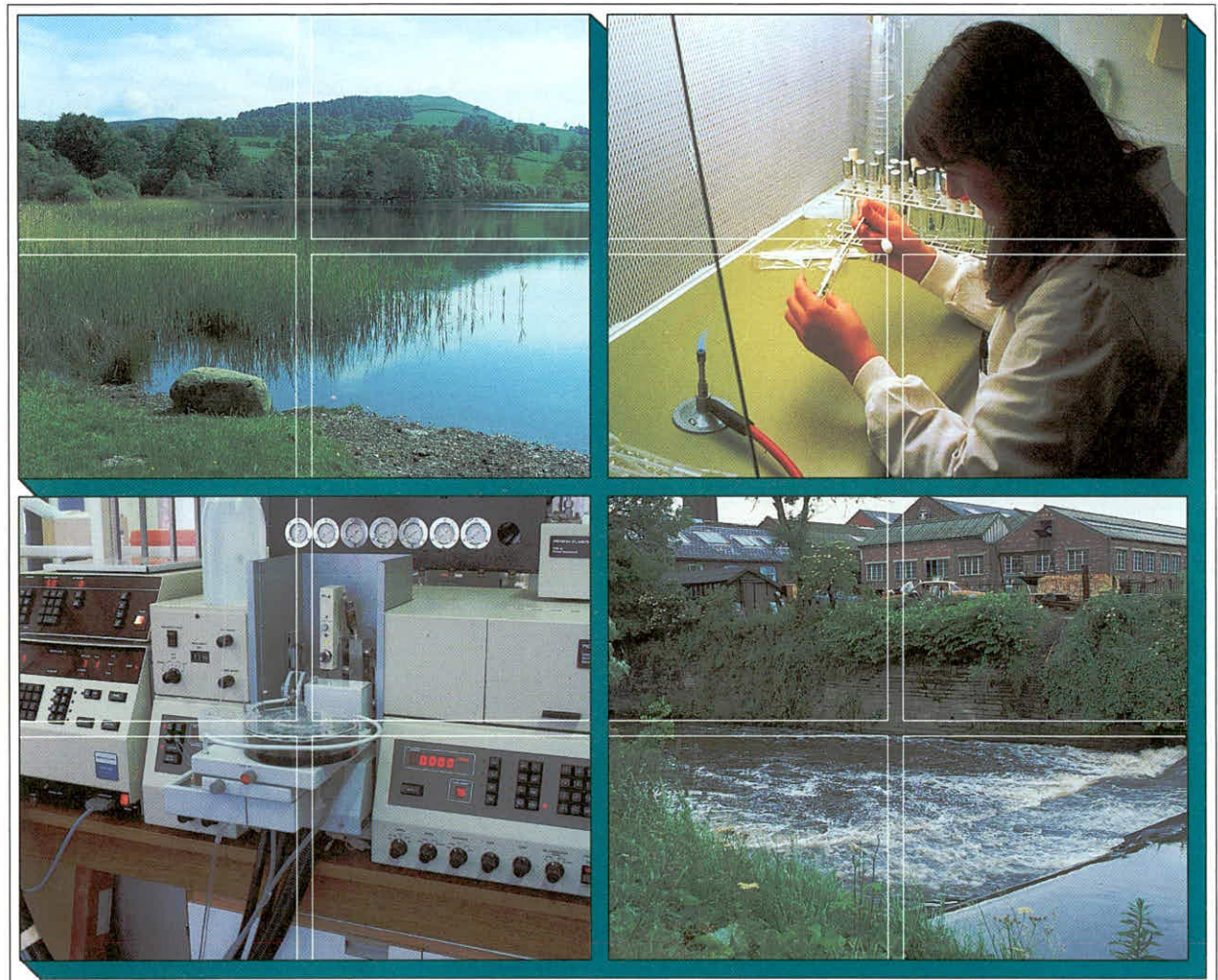




**Institute of
Freshwater
Ecology**

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

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NRA South West Region**

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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 South West 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 Diana Morton 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 B. IN SAMPLE

A	<p style="text-align: center;">VIAL</p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE</p>	<p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p>	<p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p>
B	<p style="text-align: center;">SAMPLE</p> <p>Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE</p>	<p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial is supplied with sample)</p>	<p style="text-align: center;">ADDITIONAL FAMILIES</p>

NOTES:

NET LOSSES

NET GAINS

TABLE 2. The 20 spring samples audited for South West Region.

River	Site	Sorter	Losses	Gains	Omissions
Trevella Stream	Tregurra Bridge	KAD	0	3	0
Lyme Brook	u/s Waterfall	AA	0	0	0
Holywell Stream	Trelaske	TAB	1	1	0
Alphin Brook	u/s Countess Weir	RA	0	0	0
Blackaton Brook	u/s Road Bridge	LK	0	3	0
Beadon Brook	B3193 Bridge	PG	0	6	0
East Dart	Post Bridge	LMB	0	1	0
Larrigan	Wherrytown Bridge	SDT	0	2	0
Lew	Hatherleigh Bridge	RA	0	5	0
Boscolla Stream	Roseworthy	PAB	1	4	0
Sid	Sidmouth	AA	0	0	0
St Erth Stream	Treloweth	PAB	1	2	0
Lamorna Stream	Lamorna	SDT	0	0	0
Zennor Stream	Zennor	TAB	0	4	0
Mollinis Stream	Mollinis	TAB	0	5	0
Carnon	d/s Chacewater STW	PAB	0	1	0
Cranny Brook	Barnshayes	AA	0	1	0
Avon	Horsebrook	LMB	0	1	0
Ruddycleave Water	Ruddycleave Cottage	RA	0	2	1
Clyst	u/s Withy Bridge	RA	0	2	1

TABLE 3. The 20 summer samples audited for South West Region

River	Site	Sorter	Losses	Gains	Omissions
Treverbyn Brook	u/s Par confluence	SDT	0	0	0
West Wilder	Langley Country House Hotel	PG	0	0	0
East Looe	Sandplace	TAB	0	0	0
Cranny Brook	Yellands	LMB	1	0	0
Teign	New Bridge	AA	0	0	0
Teign	u/s Chagford	PG	0	1	0
Newlyn	Newlyn Bridge	KAD	0	1	0
Roseworthy Stream	Nancemellin	MJD	0	1	0
Red	Gwithian Towans	SDT	0	2	0
West Lyn	Sunny Lyn Caravan Park	PG	0	0	0
Ford Brook	Ford Farm	LK	0	1	0
Swanpool Stream	u/s Swanpool	KAD	0	1	0
Mollinis Stream	Mollinis	KAD	0	0	0
Fal	Terras Bridge	SDT	0	1	0
Kenwyn	Bosvigo Bridge	TAB	0	0	0
Church Cove Stream	Church Cove	SDT	1	1	0
Pengold Stream	Crackington Haven West	TAB	0	0	0
Maenporth Stream	Tregedna Bridge	MJD	0	3	1
Reedy Brook	Reedy Bridge	PG	0	0	0
Lemon	Bagtor Mill Bridge	LK	0	5	0

TABLE 4. The 20 autumn samples audited for South West Region

River	Site	Sorter	Losses	Gains	Omissions
West Wilder	Langley Country House Hotel	LMB	0	0	0
Roncombe Stream	Cotford	PG	0	1	0
Bathern	A361 Bridge, Shillingford	LK	0	0	0
Carne Stream	Melinsey Mill	MJD	0	5	3
Hayle	Binner Bridge	TJR	0	1	0
Badgworthy Water	d/s Badgworthy House	RA	0	0	0
Madford Stream	u/s Dunkeswell confluence	PG	1	1	0
Chillington Stream	Chillington	NB	0	0	0
Bolham	Five Bridges	AA	0	1	0
Clyst	Clyst Honiton	LMB	0	2	0
Gissage	u/s Otter confluence	PG	0	2	0
Culm	Rosemary Lane	AA	0	0	0
Tresillian	Tresillian Pumping Station	MJD	0	1	0
Abbey	Hartland Abbey	PG	0	0	0
West Dart	Huccaby Bridge	LMB	0	0	0
Teign	New Bridge	LK	0	1	0
Fal	Kernick Bridge	SDT	0	0	0
South Teign	Leigh Bridge	RA	0	1	0
Sowton Brook	Sowton Bridge	AA	0	3	0
Bramble Brook	u/s Teign confluence	AA	0	0	0

APPENDIX

Results of individual sample audits

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Trevella Stream
DATE	23.3.93	SITE	Tregurra Bridge
SORTER	KAD	SAMPLE CODE	NRA06 1934

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 Chloroperlidae 2 Scirtidae 3 Sericostomatidae

NET LOSSES

0

NET GAINS

3

NOTES:

1 Chloroperla torrentium 1 only
2 Elodes sp.(larvae)
3 Sericostoma personatum 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Lyme Brook
DATE	5.3.93	SITE	u/s waterfall
SORTER	AA	SAMPLE CODE	NRA06 2803

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:

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EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Holywell Stream
DATE	22.3.93	SITE	Trelaske
SORTER	TAB	SAMPLE CODE	NRA06 2328

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)	2 Goeridae

NET LOSSES

1

NET GAINS

1

NOTES:

1 Empty shell in vial
2 Silo sp. (juvenile) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Alphin Brook
DATE	1.4.93	SITE	u/s Countess Weir
SORTER	RA	SAMPLE CODE	NRA06 0505

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	South West	RIVER	Blackaton Brook
DATE	8.4.93	SITE	u/s Road Bridge
SORTER	LK	SAMPLE CODE	NRA06 0641

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 2 Hydroptilidae 3 Lepidostomatidae

NET LOSSES NET GAINS

NOTES:

1 Pisidium sp.
2 Ithytrichia sp.
3 Indet. Lepidostomatid 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Beadon Brook
DATE	13.4.93	SITE	B3193 Bridge
SORTER	PG	SAMPLE CODE	NRA06 0637

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 Caenidae 2 Sialidae 3 Philopotamidae 4 Limnephilidae 5 Odontoceridae 6 Lepidostomatidae

NET LOSSES NET GAINS

NOTES:

- 1 Caenis rivulorum 1 only
- 2 Sialis fuliginosa 1 only
- 3 Wormaldia sp.
- 4 Indet. Limnephilid 1 only
- 5 Odontocerum albicorne 1 only
- 6 Lepidostoma hirtum

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	East Dart
DATE	20.4.93	SITE	Post Bridge
SORTER	LMB	SAMPLE CODE	NRA06 0716

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 Hydroptilidae

NET LOSSES

0

NET GAINS

1

NOTES:

1 Hydroptila sp., Oxyethira sp.

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Larrigan
DATE	2.3.93	SITE	Wherrytown Bridge
SORTER	SDT	SAMPLE CODE	NRA06 2106

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 Hydroptilidae

NET LOSSES

0

NET GAINS

2

NOTES:

1 Ephemerella ignita 1 only
2 Ithytrichia sp. 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Lew
DATE	8.3.93	SITE	Hatherleigh Bridge
SORTER	RA	SAMPLE CODE	NRA06 2924

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 Taeniopterygidae

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 Nemouridae 3 Chloroperlidae 4 Leptoceridae 5 Simuliidae

NET LOSSES NET GAINS

NOTES:

- 1 Brachyptera risi
- 2 Nemoura avicularis 1 only
- 3 Chloroperla torrentium 1 only
- 4 Athripsodes cinereus, A.bilineatus
- 5 Simulium ornatum group 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Boscolla Stream
DATE	23.3.93	SITE	Roseworthy
SORTER	PAB	SAMPLE CODE	NRA06 1973

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 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)	3 Pleidae 4 Philopotamidae 5 Odontoceridae

NET LOSSES

☐1☐

NET GAINS

☐4☐

NOTES:

2 Elodes sp. (larvae)
3 Plea leachi 1 only
4 Wormaldia sp. 1 only
5 Odontocerum albicorne 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Sid
DATE	9.3.93	SITE	Sidmouth
SORTER	AA	SAMPLE CODE	NRA06 0302

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	South West	RIVER	St Erth Stream
DATE	3.3.93	SITE	Treloweth
SORTER	PAB	SAMPLE CODE	NRA06 2217

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 Taeniopterygidae	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 Leuctridae 3 Beraeidae

NET LOSSES

1

NET GAINS

2

NOTES:

2 Leuctra nigra 1 only
3 Beraea maurus 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Lamorna Stream
DATE	1.3.93	SITE	Lamorna
SORTER	ST	SAMPLE CODE	NRA06 2109

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	South West	RIVER	Zennor Stream
DATE	2.3.93	SITE	Zennor
SORTER	TAB	SAMPLE CODE	NRA06 2209

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 Ephemerellidae 3 Hydrophilidae 4 Beraeidae

NET LOSSES NET GAINS

NOTES:

1 Asellus meridianus 1 only
 2 Ephemerella ignita
 3 Hydraena gracilis (adults)
 4 Beraea maurus

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Mollinis Stream
DATE	1.4.93	SITE	Mollinis
SORTER	TAB	SAMPLE CODE	NRA06 1615

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 2 Heptageniidae 3 Gerridae 4 Dytiscidae 5 Hydrophilidae

NET LOSSES

0

NET GAINS

5

NOTES:

- 1 Pisidium sp. 1 only
- 2 Rhithrogena sp. 1 only
- 3 Gerris gibbifer 1 only
- 4 Agabus sp.(larva) 1 only
- 5 Laccobius atrocephalus (adult) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Carnon
DATE	19.3.93	SITE	d/s Chacewater STW
SORTER	PAB	SAMPLE CODE	NRA06 1975

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 Calopterygidae

NET LOSSES

0

NET GAINS

1

NOTES:

1 Calopteryx virgo

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Cranny Brook
DATE	23.3.93	SITE	Barnshayes
SORTER	AA	SAMPLE CODE	NRA06 0513

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 NET GAINS

NOTES:

1 Helophorus obscurus (adult) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Avon
DATE	29.4.93	SITE	Horsebrook
SORTER	LB	SAMPLE CODE	NRA06 0809

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 Leptoceridae

NET LOSSES NET GAINS

NOTES:

1 Adicella reducta 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Ruddycleave Water
DATE	22.4.93	SITE	Ruddycleave Cottage
SORTER	RA	SAMPLE CODE	NRA06 0729

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 Lepidostomatidae*	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 Goeridae 3 Lepidostomatidae* 4 Tipulidae

NET LOSSES

NET GAINS

NOTES:

2 Silo sp. 1 only
 3 Crunoecia irrorata 1 only
 4 Dicranota sp. 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Clyst
DATE	30.3.93	SITE	Withy Bridge
SORTER	RA	SAMPLE CODE	NRA06 0511

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 Corixidae*	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 Corixidae* 4 Dytiscidae

NET LOSSES

0

NET GAINS

2

NOTES:

2 Acroloxus lacustris
 3 Sigara dorsalis
 4 Potamonectes depressus (adult) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Treverbryn Brook
DATE	8.7.93	SITE	u/s Par confluence
SORTER	SDT	SAMPLE CODE	NRA06 1605

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	South West	RIVER	West Wilder
DATE	4.6.93	SITE	Langley Country House Hotel
SORTER	PG	SAMPLE CODE	NRA06 3107

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	South West	RIVER	East Looe
DATE	20.7.93	SITE	Sandplace
SORTER	TAB	SAMPLE CODE	NRA06 1414

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	South West	RIVER	Cranny Brook
DATE	8.7.93	SITE	Yellands
SORTER	LB	SAMPLE CODE	NRA06 05109

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 Sphaeriidae	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

1

NET GAINS

0

NOTES:

1 Empty shell in vial

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Teign
DATE	12.7.93	SITE	New Bridge
SORTER	AA	SAMPLE CODE	NRA06 0634

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	South West	RIVER	Teign
DATE	8.7.93	SITE	Chagford
SORTER	PG	SAMPLE CODE	NRA06 0607

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 Dytiscidae

NET LOSSES NET GAINS

NOTES:

1 Oreodytes septentrionalis (adult) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Newlyn
DATE	3.6.93	SITE	Newlyn Bridge
SORTER	KAD	SAMPLE CODE	NRA06 2108

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 NET GAINS

NOTES:

1 Indet Hydrophilid (larva) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Roseworthy Stream
DATE	8.6.93	SITE	Nancemellin
SORTER	MJD	SAMPLE CODE	NRA06 2304

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 Simuliidae

NET LOSSES NET GAINS

NOTES:

1 Simulium ornatum group 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Red
DATE	8.6.93	SITE	Gwithian Towans
SORTER	SDT	SAMPLE CODE	NRA06 2302

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 Elmidae 2 Hydroptilidae

NET LOSSES NET GAINS

NOTES:

1 Elmis aenea (larva) 1 only
2 Oxyethira sp. 1 only

Indet Odonata (head only of juvenile) found by IFE in sample. Not included as a "gain" since impossible to name family for specimen.

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	West Lyn
DATE	3.6.93	SITE	Sunny Lyn Caravan Park
SORTER	PG	SAMPLE CODE	NRA06 3201

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	South West	RIVER	Ford Brook
DATE	2.7.93	SITE	Ford Farm
SORTER	LK	SAMPLE CODE	NRA06 05104

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 Glossiphoniidae

NET LOSSES

0

NET GAINS

1

NOTES:

1 Glossiphonia sp. (juvenile) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Swanpool Stream
DATE	23.6.93	SITE	u/s Swanpool
SORTER	KAD	SAMPLE CODE	NRA06 1949

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

0

NET GAINS

1

NOTES:

1 Polycelis felina, P.nigra/tenuis

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Mollinis Stream
DATE	13.7.93	SITE	Mollinis
SORTER	KAD	SAMPLE CODE	NRA06 1615

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	South West	RIVER	Fal
DATE	6.7.93	SITE	Terras Bridge
SORTER	SDT	SAMPLE CODE	NRA06 1960

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	South West	RIVER	Kenwyn
DATE	13.8.93	SITE	Bosvigo Bridge
SORTER	TAB	SAMPLE CODE	NRA06 1937

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	South West	RIVER	Church Cove Stream
DATE	15.6.93	SITE	Church Cove
SORTER	SDT	SAMPLE CODE	NRA06 1956

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 Dytiscidae	2 Hydrophilidae

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 Indet Hydrophilid (larva) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Pengold Stream
DATE	21.7.93	SITE	Crackington Haven West
SORTER	TAB	SAMPLE CODE	NRA06 2602

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	South West	RIVER	Maenporth Stream
DATE	23.6.93	SITE	Tregedna Bridge
SORTER	MD	SAMPLE CODE	NRA06 1950

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*	None

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

NET LOSSES	0	NET GAINS	3
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NOTES:

1,5 *Megasternum obscurum* (terrestrial) (adult) in vial, *Helophorus*
brevipalpis (adult) 1 only in sample
2 *Lymnaea peregra* 1 only
3 *Asellus aquaticus* 1 only
4 *Rhithrogena semicolorata/germanica* 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Reedy Brook
DATE	9.7.93	SITE	Reedy Bridge
SORTER	PG	SAMPLE CODE	NRA06 0639

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	South West	RIVER	Lemon
DATE	14.7.93	SITE	Bagtor Mill Bridge
SORTER	LK	SAMPLE CODE	NRA06 0627

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 Ancylidae 2 Sphaeriidae 3 Cordulegasteridae 4 Hydrophilidae 5 Odontoceridae

NET LOSSES NET GAINS

NOTES:

- 1 Ancylus fluviatilis 1 only
- 2 Pisidium sp. 1 only
- 3 Cordulegaster boltonii 1 only
- 4 Hydraena gracilis (adults)
- 5 Odontocerum albicorne 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	West Wilder
DATE	2.9.93	SITE	Langley Country House Hotel
SORTER	LB	SAMPLE CODE	NRA06 3107

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	South West	RIVER	Roncombe Stream
DATE	8.9.93	SITE	Cotford
SORTER	PG	SAMPLE CODE	NRA06 0304

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 Nemouridae

NET LOSSES

0

NET GAINS

1

NOTES:

1 Protonemura sp. 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Bathern
DATE	28.9.93	SITE	A361 Bridge, Shillingford
SORTER	LK	SAMPLE CODE	NRA06 0545

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	South West	RIVER	Carne Stream
DATE	22.9.93	SITE	Melinsey Mill
SORTER	MJD	SAMPLE CODE	NRA06 1816

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 Sphaeriidae* 2 Hydropsychidae* 3 Limnephilidae*	4 Psychomyiidae

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)	5 Lymnaeidae 6 Ancyliidae 7 Sphaeriidae* 8 Hydrophilidae 9 Hydropsychidae* 10 Limnephilidae* 11 Lepidostomatidae

NET LOSSES NET GAINS

NOTES:

- 1,7 Empty shell in vial, Pisidium sp. in sample
- 4 Lype sp.
- 5 Lymnaea palustris 1 only
- 6 Ancyclus fluviatilis 1 only
- 8 Limnobia truncatellus (adult) 1 only
- 9 Hydropsyche siltalai
- 10 Chaetopteryx villosa
- 11 Indet Lepidostomatid (juvenile) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Hayle
DATE	8.9.93	SITE	Binner Bridge
SORTER	TJR	SAMPLE CODE	NRA06 2212

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 sp. 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Badgworthy Water
DATE	1.9.93	SITE	d/s Badgworthy House
SORTER	RA	SAMPLE CODE	NRA06 3204

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	South West	RIVER	Madford Stream
DATE	8.9.93	SITE	u/s Dunkeswell confluence
SORTER	PG	SAMPLE CODE	NRA06 0578

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 Planariidae	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 Hydropsychidae

NET LOSSES

1

NET GAINS

1

NOTES:

2 Hydropsyche sp. (juvenile) 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Chillington Stream
DATE	26.10.93	SITE	Chillington
SORTER	NB	SAMPLE CODE	NRA06 0817

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	South West	RIVER	Bolham
DATE	17.9.93	SITE	Five Bridges
SORTER	AA	SAMPLE CODE	NRA06 0528

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 Hydroptilidae

NET LOSSES NET GAINS

NOTES:

1 Hydroptila sp. 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Clyst
DATE	16.9.93	SITE	Clyst Honiton
SORTER	LMB	SAMPLE CODE	NRA06 0512

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 Leuctridae

NET LOSSES

NET GAINS

NOTES:

1 Polycelis nigra/tenuis
2 Leuctra fusca 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Gissage
DATE	8.9.93	SITE	u/s Otter confluence
SORTER	PG	SAMPLE CODE	NRA06 0428

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 Caenidae

NET LOSSES NET GAINS

NOTES:

1 Ephemerella ignita 1 only
2 Caenis luctuosa/macrura 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Culm
DATE	17.9.93	SITE	Rosemary Lane
SORTER	AA	SAMPLE CODE	NRA06 0516

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

NOTES:

NET LOSSES NET GAINS

Posterior abdominal segments only of Ephemera sp. found by IFE in sample. Not included as a gain for purposes of audit.

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Tresillian
DATE	23.9.93	SITE	Tresillian Pumping Station
SORTER	MJD	SAMPLE CODE	NRA06 1966

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 Glossiphoniidae

NET LOSSES

0

NET GAINS

1

NOTES:

1 Glossiphonia complanata 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Abbey
DATE	3.9.93	SITE	Hartland Abbey
SORTER	PG	SAMPLE CODE	NRA06 2802

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

NOTES:

NET LOSSES NET GAINS

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	West Dart
DATE	19.10.93	SITE	Huccaby Bridge
SORTER	LMB	SAMPLE CODE	NRA06 0720

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	South West	RIVER	Teign
DATE	29.10.93	SITE	u/s New Bridge
SORTER	LK	SAMPLE CODE	NRA06 0634

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 Leptoceridae

NET LOSSES NET GAINS

NOTES:

1 Oecetis testacea 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Fal
DATE	28.9.93	SITE	Kernick Bridge
SORTER	SDT	SAMPLE CODE	NRA06 1922

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	South West
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RIVER	South Teign
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DATE	4.10.93
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SITE	Leigh Bridge
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SORTER	RA
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SAMPLE CODE	NRA06 0615
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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
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41	41	41
42	42	42
43	43	43
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67	67	67
68	68	68
69	69	69
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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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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 Ancylidae

NET LOSSES	0
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NET GAINS	1
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NOTES:

1 *Ancylus fluviatilis*

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Sowton Brook
DATE	15.10.93	SITE	Sowton Bridge
SORTER	AA	SAMPLE CODE	NRA06 0614

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 2 Ancyliidae 3 Leptoceridae

NET LOSSES NET GAINS

NOTES:

1 Lymnaea peregra 1 only
2 Ancylos fluviatilis
3 Athripsodes bilineatus 1 only

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES - 1993

REGION	South West	RIVER	Bramble Brook
DATE	15.10.93	SITE	u/s Teign confluence
SORTER	AA	SAMPLE CODE	NRA06 0610

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:

