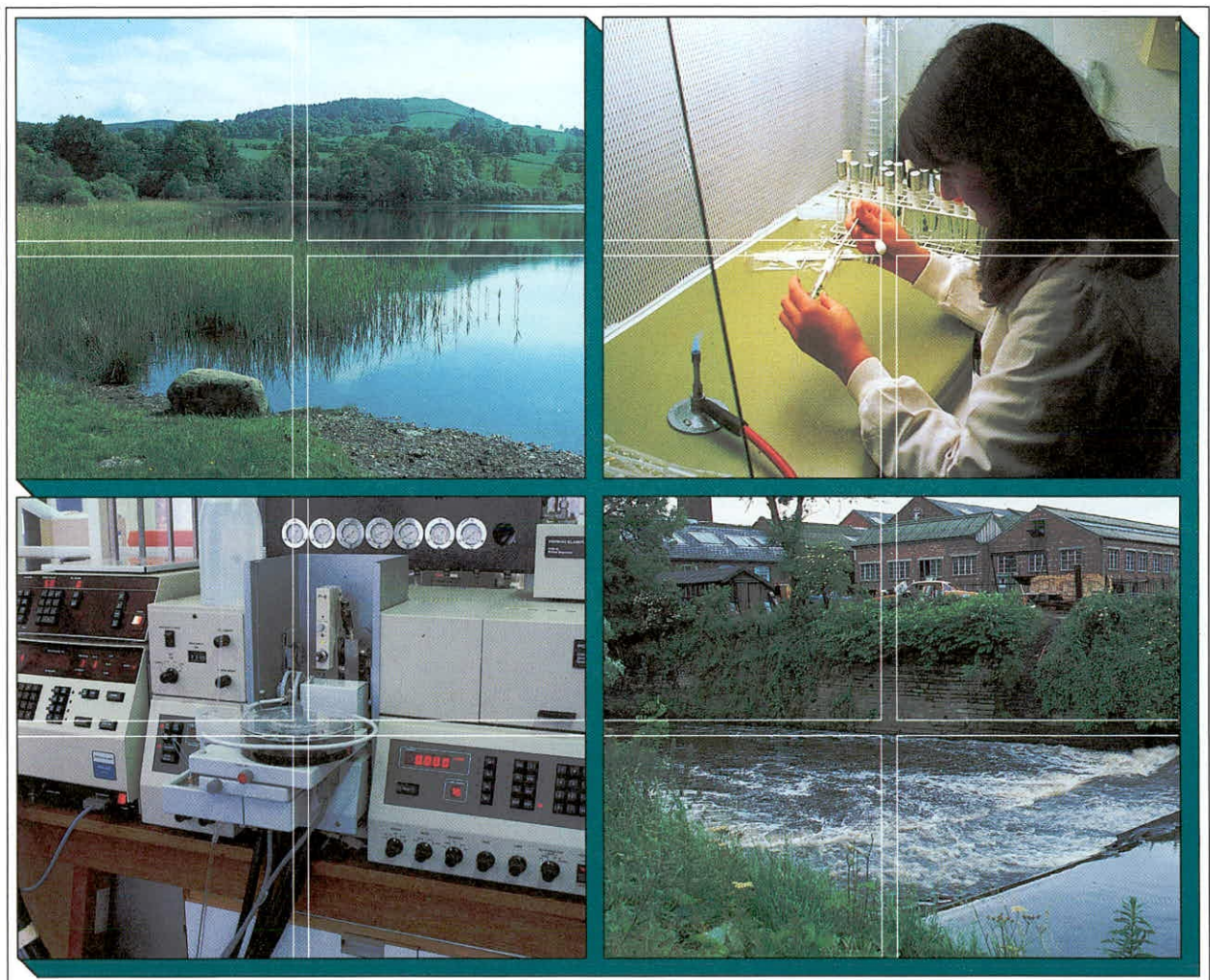




An audit of performance in the processing of macro-invertebrate samples in 1992. North East River Purification Board

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North East River Purification Board

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Project leader:	R J M Gunn
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The Institute of Freshwater Ecology is part of the Terrestrial and Freshwater Sciences Directorate of the Natural Environment Research Council.

1. INTRODUCTION

In 1992 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 24 samples audited for North East River Purification Board. 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 RPB listing of families and those identified from the vial by IFE
- d) A comparison was made between the RPB listing of families and those found in the sample by IFE
- e) "Losses" or "gains" from the RPB 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 RPB 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 RPB data sheet. Families not on the RPB 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 Table 2 which summarises the results.

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 RPB 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 list but present in the sample were entered in box B under "additional families" as before. Families recorded on the 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 sorter, entries in this box could include the sole representative of a family which was removed, a family seen at the site which escaped or was released (without mention being made on the data sheet), inaccurate identification, the wrong family box being ticked on the 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 Kay Symes for help with production of results and to Valerie Palmer for typing the manuscript.

TABLE 1. The IFE Report form

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION	<input type="text"/>	RIVER	<input type="text"/>
DATE	<input type="text"/>	SITE	<input type="text"/>
SORTER	<input type="text"/>	SAMPLE CODE	<input type="text"/>

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		

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

☐

TABLE 2. The 24 samples audited for North East RPB.

River	Site	Sorter	Losses	Gains	Omissions
SPRING					
Cromdale Burn	Lethendry	MAD	0	6	0
South Ugie	Abbey Bridge	DH	0	6	0
Don	u/s Inverurie	LC	1	5	0
Davidstone Burn	Bridge of Howdoup	JP	0	2	0
Bucks Burn	Bankhead	MBD	1	3	0
North Ugie	Millbank	DH	1	5	0
Allt na Criche	u/s Cragganmore	MAD	0	7	0
SUMMER					
Water of Cruden	d/s Fish Farm	CR	0	3	1
Water of Buchat	Bridge of Buchat	MAD	0	5	0
*Don	Stoneywood House	MAD	1	2	0
Laeca Burn	Aldie Bridge	CR	0	1	3
Deveron	Avochie	LC	1	0	0
Deveron	d/s Knockiemill	LC	1	5	0
Water of Cruden	d/s Hatton STW	CR	0	2	0
Deveron	Coniecleugh	LC	0	1	2
Deveron	Cabrach	LC	0	4	0
Livet	d/s Tamnavulin	JP	0	5	2
Livet	Minmore	JP	0	5	0
Bogie	Pirriesmill	DH	0	6	0
Forgue Burn	Forgue	JP	0	2	1
AUTUMN					
Don	Seaton Park	DH	1	2	0
Lossie	Moycroft	JP	0	2	0
Green Burn	Dailuaine	LC	0	4	0
Dullan Water	Cluny	MAD	0	1	0

* Indicates no vial of animals present in sample

APPENDIX

Results of individual sample audits

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Cromdale Burn

DATE 13.5.92

SITE Lethendry

SORTER MAD

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 Planariidae 2 Hydrophilidae 3 Limnephilidae 4 Leptoceridae 5 Lepidostomatidae 6 Simuliidae

NET LOSSES 0

NET GAINS 6

NOTES:

- 1 Polycelis felina
- 2 Hydraena gracilis (adult) 1 only
- 3 Drusus annulatus, Halesus radiatus
- 4 Athripsodes bilineatus 1 only
- 5 Lepidostoma hirtum 1 only
- 6 Simulium cryophilum group, S. tuberosum

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER South Ugie

DATE 13.5.92

SITE Abbey Bridge

SORTER DH

SAMPLE CODE NRA12 0711

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 2 Lymnaeidae 3 Chloroperlidae 4 Sericostomatidae 5 Chironomidae 6 Simuliidae

NET LOSSES

0

NET GAINS

6

NOTES:

- 1 Potamopyrgus jenkinsi 1 only
- 2 Lymnaea peregra 1 only
- 3 Chloroperla torrentium
- 4 Sericostoma personatum 1 only
- 5 Orthocladiinae, Diamesinae, Tanytarsini
- 6 Simulium ornatum group (larvae + pupa)

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION	North East RPB	RIVER	Don
DATE	26.5.92	SITE	u/s Inverurie
SORTER	LC	SAMPLE CODE	NRA12 0747

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 Philopotamidae	2 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)	3 Hydrobiidae 4 Sphaeriidae 5 Hydroptilidae 6 Brachycentridae

NET LOSSES

1

NET GAINS

5

NOTES:

2 Psychomyia pusilla
3 Potamopyrgus jenkinsi
4 Pisidium sp. 1 only
5 Hydroptila sp.
6 Brachycentrus subnubilus (pupa) 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Davidstone Burn

DATE 6.5.92

SITE Bridge of Howdoup

SORTER JP

SAMPLE CODE NRA12 0675

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 Gammaridae

NET LOSSES 0

NET GAINS 2

NOTES:

1 Lymnaea peregra 1 only
2 Gammarus pulex 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Bucks Burn

DATE 21.5.92

SITE Bankhead

SORTER MBD

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	1 Haliplidae	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)	3 Leptophlebiidae 4 Ephemerellidae

NET LOSSES 1

NET GAINS 3

NOTES:

2 Hydraena gracilis (adults)
3 Paraleptophlebia submarginata 1 only
4 Ephemerella ignita 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION	North East RPB	RIVER	North Ugie
DATE	26.5.92	SITE	Millbank
SORTER	DH	SAMPLE CODE	NRA12 0706

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 Planorbidae	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 Ephemerellidae 3 Dytiscidae 4 Hydrophilidae 5 Polycentropodidae 6 Psychomyiidae

NET LOSSES

1

NET GAINS

5

NOTES:

- 1 Empty shell in vial
- 2 Ephemerella ignita
- 3 Oreodytes sanmarkii (adult) 1 only
- 4 Hydraena gracilis (adult) 1 only
- 5 Polycentropus flavomaculatus
- 6 Psychomyia pusilla 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Allt na Criche

DATE 13.5.92

SITE u/s Cragganmore

SORTER MAD

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	1 Corixidae 2 Sericostomatidae

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 Heptageniidae 4 Hydrophilidae 5 Scirtidae 6 Beraeidae 7 Goeridae

NET LOSSES 0

NET GAINS 7

NOTES:

- 1 Sigara distincta
- 2 Sericostoma personatum
- 3 Ecdyonurus venosus 1 only
- 4 Anacaena globulus (adult) 1 only
- 5 Elodes sp. (larva) 1 only
- 6 Beraea maurus
- 7 Silo sp. 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION	North East RPB	RIVER	Water of Cruden
DATE	11.8.92	SITE	d/s Fish Farm
SORTER	CR	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	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 Hydrobiidae* 3 Lymnaeidae 4 Dytiscidae 5 Hydrophilidae

NET LOSSES

0

NET GAINS

3

NOTES:

2 Potamopyrgus jenkinsi
3 Lymnaea peregra
4 Oreodytes sanmarkii (larva) 1 only
5 Helophorus brevipalpis (adults)

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Water of Buchat

DATE 31.7.92

SITE Bridge of Buchat

SORTER MAD

SAMPLE CODE NRA12 0761

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 Gammaridae 2 Nemouridae 3 Limnephilidae 4 Tipulidae 5 Simuliidae

NET LOSSES 0

NET GAINS 5

NOTES:

- 1 Gammarus pulex 1 only
- 2 Protonemura sp. 1 only
- 3 Indet Limnephilids (Drusus/Ecclisopteryx)
- 4 Dicranota sp. 1 only
- 5 Simulium ornatum group (pupa) 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Don

DATE 21.8.92

SITE Stoneywood House

SORTER MAD

SAMPLE CODE NRA12 0754

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	No vial of animals present in sample. Identification check not applicable.	N/a

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 Caenidae 3 Tipulidae

NET LOSSES

1

NET GAINS

2

NOTES:

2 Caenis rivulorum
3 Dicranota sp. 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Laeca Burn

DATE 11.8.92

SITE Aldie Bridge

SORTER CR

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	1 Lymnaeidae* 2 Ephemerellidae* 3 Hydrophilidae*	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)	4 Lymnaeidae* 5 Ephemerellidae* 6 Hydrophilidae* 7 Elmidae

NET LOSSES 0

NET GAINS 1

NOTES:

4 Lymnaea peregra
5 Ephemerella ignita
6 Helophorus brevipalpis, Limnebius sp. (adults)
7 Elmis aenea, Limnius volckmari (adults)

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Deveron

DATE 18.8.92

SITE Avochie

SORTER LC

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	1 Leptophlebiidae	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:

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Deveron

DATE 18.8.92

SITE d/s Knockiemill

SORTER LC

SAMPLE CODE NRA12 0661

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 Tipulidae	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 Hydrobiidae 3 Sphaeriidae 4 Leuctridae 5 Limnephilidae 6 Brachycentridae

NET LOSSES 1

NET GAINS 5

NOTES:

- 1 Atherix ibis in vial
- 2 Potamopyrgus jenkinsi
- 3 Pisidium sp.
- 4 Leuctra fusca 1 only
- 5 Ecclisopteryx guttulata 1 only
- 6 Brachycentrus subnubilus 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION	North East RPB	RIVER	Water of Cruden
DATE	11.8.92	SITE	d/s Hatton STW
SORTER	CR	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 Sphaeriidae 2 Taeniopterygidae

NET LOSSES

0

NET GAINS

2

NOTES:

1 Pisidium sp. 1 only
2 Taeniopteryx nebulosa

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Deveron

DATE 18.8.92

SITE Coniecleugh

SORTER LC

SAMPLE CODE NRA12 0656

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 Baetidae* 2 Caenidae*	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)	3 Sphaeriidae 4 Baetidae* 5 Caenidae*

NET LOSSES

0

NET GAINS

1

NOTES:

3 Pisidium sp. 1 only
 4 Baetis muticus, B.rhodani, B.scambus
 5 Caenis rivulorum

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION	North East RPB	RIVER	Deveron
DATE	18.8.92	SITE	Cabrach
SORTER	LC	SAMPLE CODE	NRA12 0654

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 Gammaridae 2 Dytiscidae 3 Hydroptilidae 4 Goeridae

NET LOSSES NET GAINS

NOTES:

- 1 Gammarus sp. (juveniles)
- 2 Oreodytes sanmarkii (larva) 1 only
- 3 Hydroptila sp.
- 4 Silo pallipes 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Livet

DATE 11.8.92

SITE d/s Tamnavulin

SORTER JP

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	1 Baetidae* 2 Heptageniidae*	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)	3 Lymnaeidae 4 Ancylidae 5 Baetidae* 6 Heptageniidae* 7 Caenidae 8 Hydrophilidae 9 Goeridae

NET LOSSES 0

NET GAINS 5

NOTES:

3 Lymnaea peregra
 4 Ancylus fluviatilis 1 only
 5 Baetis muticus, B. rhodani
 6 Rhithrogena semicolorata/germanica, Ecdyonurus sp.
 7 Caenis rivulorum
 8 Hydraena gracilis (adult) 1 only
 9 Silo pallipes

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION	North East RPB	RIVER	Livet
DATE	11.8.92	SITE	Minmore
SORTER	JP	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 2 Sphaeriidae 3 Caenidae 4 Perlodidae 5 Goeridae

NET LOSSES

NET GAINS

NOTES:

1 Lymnaea peregra 1 only
2 Pisidium sp.
3 Caenis rivulorum
4 Perlodes microcephala
5 Silo pallipes 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Bogie

DATE 18.8.92

SITE Pirriesmill

SORTER DH

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 Sphaeriidae 2 Caenidae 3 Nemouridae 4 Perlodidae 5 Chloroperlidae 6 Sericostomatidae

NET LOSSES 0

NET GAINS 6

NOTES:

- 1 Pisidium sp. 1 only
- 2 Caenis rivulorum
- 3 Protonemura sp.
- 4 Perlodes microcephala 1 only
- 5 Chloroperla torrentium 1 only
- 6 Sericostoma personatum 1 only

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION	North East RPB	RIVER	Forgue Burn
DATE	11.6.92	SITE	Forgue
SORTER	JP	SAMPLE CODE	NRA12 0679

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 Gammaridae*	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 Hydrobiidae 3 Sphaeriidae 4 Gammaridae*

NET LOSSES

0

NET GAINS

2

NOTES:

2 Potamopyrgus jenkinsi 1 only
3 Pisidium sp.
4 Gammarus pulex

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Don

DATE 15.12.92

SITE Seaton Park

SORTER DH

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	1 Hydrophilidae	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 Planariidae 3 Planorbidae

NET LOSSES 1

NET GAINS 2

NOTES:

1 Terrestrial beetle (adult) in vial
2 Polycelis nigra/tenuis
3 Gyraulus albus

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Lossie

DATE 7.12.92

SITE Moycroft

SORTER JP

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 Nemouridae 2 Chironomidae

NET LOSSES

0

NET GAINS

2

NOTES:

1 Amphinemura sulcicollis
2 Diamesinae, Orthocladiinae

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION North East RPB

RIVER Green Burn

DATE 15.12.92

SITE Dailuaine

SORTER LC

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 2 Sphaeriidae 3 Scirtidae 4 Lepidostomatidae

NET LOSSES 0

NET GAINS 4

NOTES:

- 1 Lymnaea peregra 1 only
- 2 Pisidium sp. 1 only
- 3 Elodes sp. (larvae)
- 4 Lepidostoma hirtum

1992 RIVER QUALITY SURVEY AQC - BIOLOGICAL SAMPLES

REGION	North East RPB	RIVER	Dullan Water
DATE	24.11.92	SITE	Cluny
SORTER	MAD	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 Hydrophilidae

NET LOSSES

0

NET GAINS

1

NOTES:

1 Hydraena gracilis (adult) 1 only

