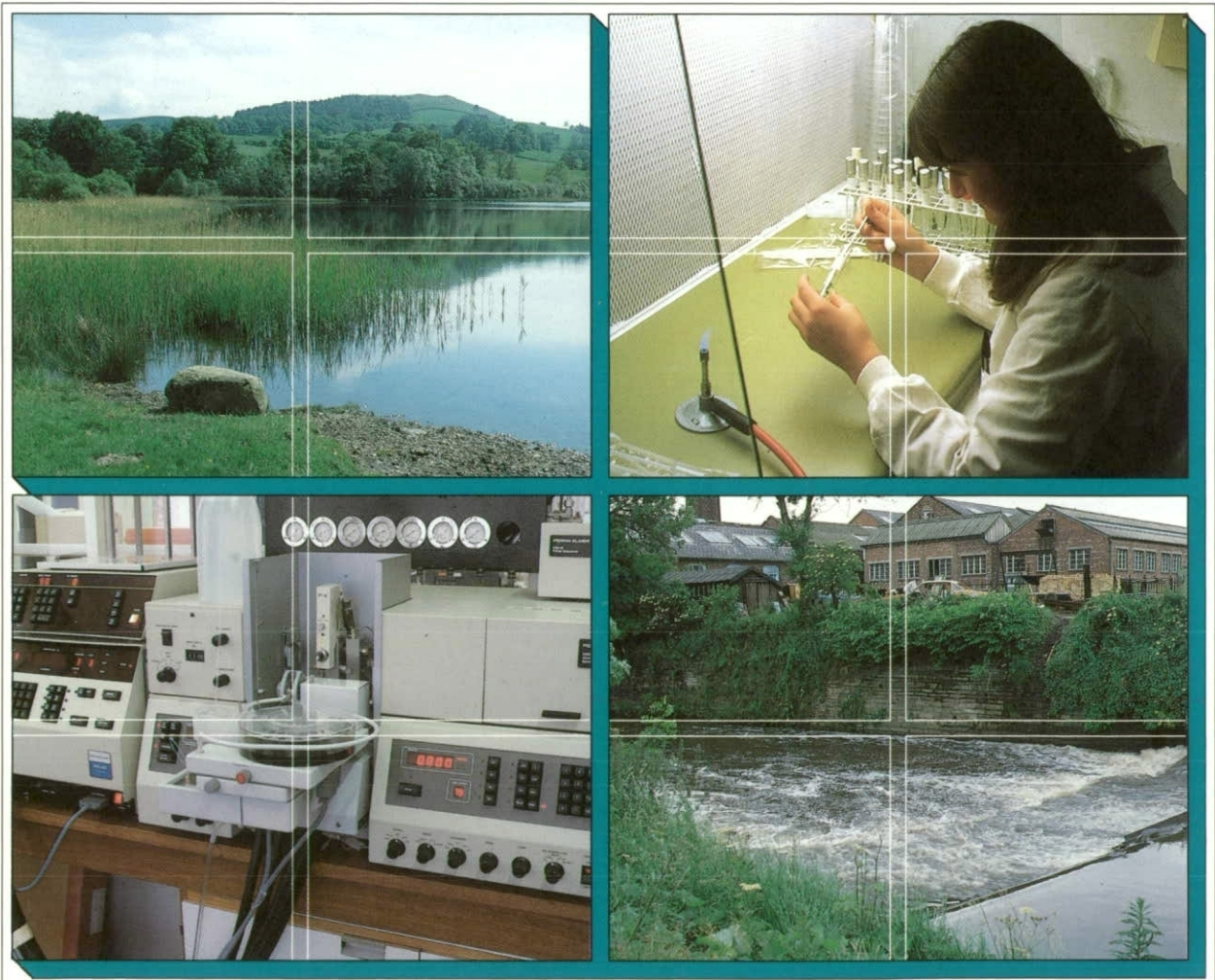




# An audit of performance in the processing of macro-invertebrate samples in 1991. Northern Ireland

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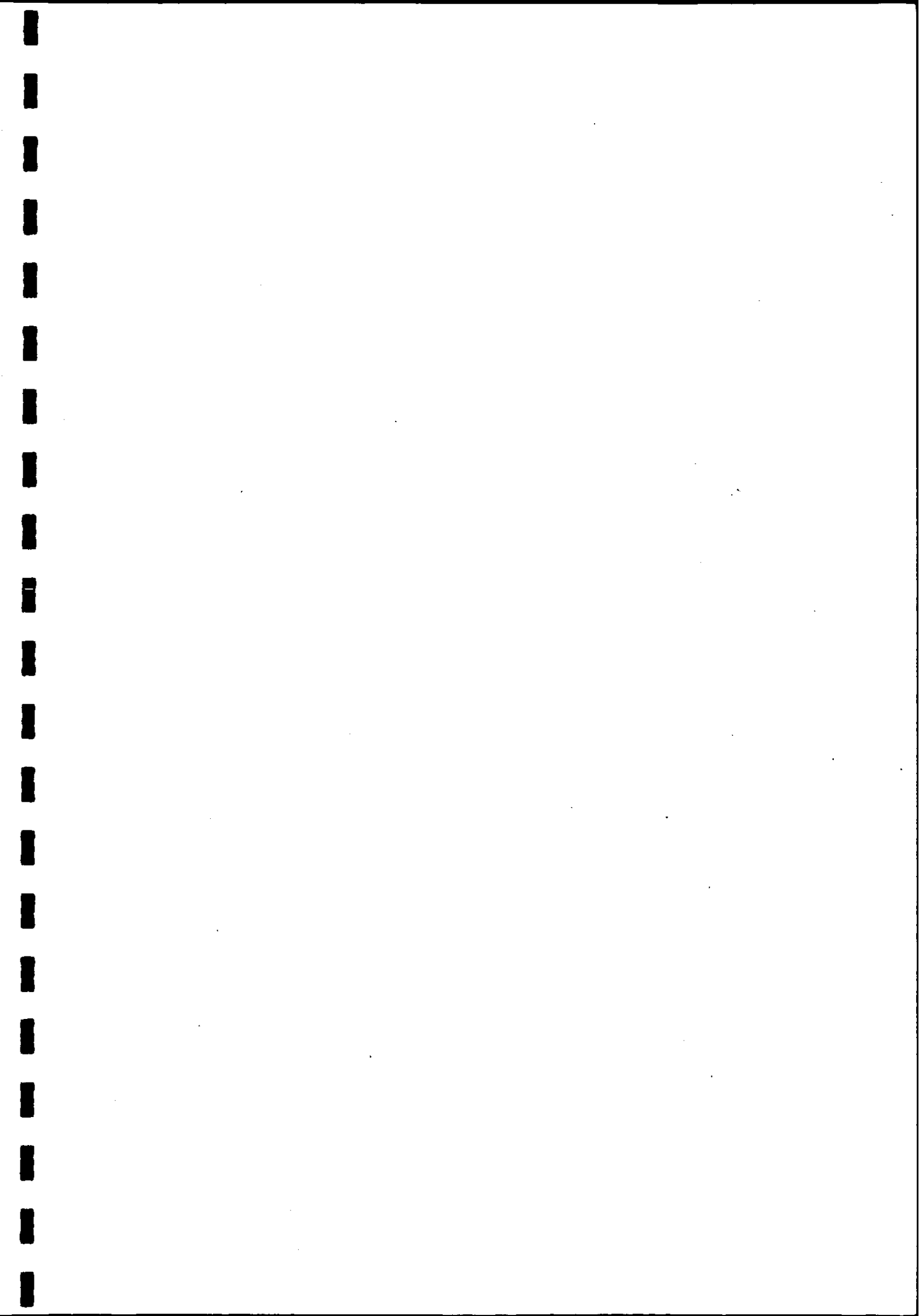
**An audit of performance in the processing  
of macro-invertebrate samples in 1991.  
Northern Ireland**

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

Project leader:	J.F. Wright
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## 1. INTRODUCTION

In 1991 the sampling of aquatic macro-invertebrates for the biological assessment of river quality continued throughout the United Kingdom. In England and Wales this task was undertaken by the National Rivers Authority (NRA), the River Purification Boards (RPBs) sampled in Scotland and the Department of Economic Development (DED) undertook the work in Northern Ireland.

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

Samples were sorted by NRA, RPB and DED personnel for the families of macro-invertebrates included in the Biological Monitoring Working Party (BMWP) system. Taxa present were recorded on site data sheets. Sample processing and recording techniques varied from region to region.

In view of the number of staff involved and the variability of sample processing techniques, it was recognised that an independent quality control exercise was necessary to promote a consistently high level of reliability. As in 1990, the IFE was contracted to undertake an audit of the sample sorting and identification performance of each NRA region, several RPBs and the DED. This report presents the results of 50 samples audited for Northern Ireland. The IFE was not required to perform any statistical analyses nor interpretation of the results of the audit.

## 2. SAMPLE SELECTION

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

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

## 3. SAMPLE PROCESSING

The normal protocol for NRA, RPB and DED biologists was to sort their samples within the laboratory and to select examples of each scoring taxon within the BMWP system. In most cases, the invertebrates were placed in a vial of preservative (4% formaldehyde solution or 70% industrial alcohol) and the BMWP taxa were listed on a data sheet. The vial of animals and the sorted material were then returned to the sample container and preservative added. Thus, each sample available to IFE for audit should have included:

- i) a list of the BMWP FAMILIES FOUND IN THE SAMPLE
- ii) a vial containing representatives from each family
- iii) the preserved sample

When these three elements were present, the sequence of operations at IFE was as follows:

- a) The remainder of the sample was sorted and the BMWP families listed
- b) The families contained within the vial were identified and listed
- c) A comparison was made between the DED listing of families and those identified from the vial by IFE
- d) A comparison was made between the DED listing of families and those found in the sample by IFE
- e) "Losses" or "gains" from the DED listing of families were noted. In the case of "gains", each additional family was identified, where possible, to species level, in order to clarify any specific repetitive errors.

For a number of different reasons, some samples did not include a vial containing representative examples of the families listed on the data sheet. Others arrived with the vial damaged in transit such that the representative examples were no longer separated. For these samples, only operations a), d) and e) above were appropriate.

Several directives were issued to IFE relating to the treatment of BMWP taxa. Terrestrial representatives of BMWP scoring families, animals deemed to have been dead at the time of sampling, cast insect skins, pupal exuviae, empty mollusc shells and posterior ends of "living" specimens were to be excluded from the listing of families present. Trichopteran pupae, although not routinely identified by many biologists, were to be included in the listing of families.

#### 4. REPORTING

The results of each sample audit were recorded on a standard report form (Table 1). For audit samples where a vial of animals was included, the comparison between the DED 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 DED data sheet. Families not on the DED 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 DED 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. Where 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 Mike Furse for help and advice, to Kay Symes and Angela Matthews for assistance with cataloguing and storage of samples and to Valerie Palmer and Diana Morton for typing the manuscript.

TABLE 1. The IFE Report form

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION <input style="width: 100%;" type="text"/>	RIVER <input style="width: 100%;" type="text"/>
DATE <input style="width: 100%;" type="text"/>	SITE <input style="width: 100%;" type="text"/>
SORTER <input style="width: 100%;" type="text"/>	SAMPLE CODE <input style="width: 100%;" type="text"/>

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

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

NET LOSSES                       NET GAINS

NOTES



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

River	Site	Sorter	Losses	Gains	Omissions
Burn Gushet	Burn Gushet Bridge	CAK/PRH	0	4	0
Finn	Clady Bridge	PRH	0	2	0
Clanrye	Crown Bridge	AHB/CAK	0	1	1
Colebrooke	Pollboy Bridge	IO'N	1	2	0
Torrent	Newmills Bridge	IO'N	0	2	0
Magherafelt Burn	Granias Bridge	AHB	0	1	0
Ballynahinch	Leggycurry Bridge	AHB	1	2	0
Lower Bann	Kilrea Bridge	IO'N	0	4	0
Glenmacofffer Burn	Glenmacofffer Bridge	AHB	1	4	1
Tall	Darbys Bridge	CAK/IO'N	0	5	0
Upper Bann	Hilltown	IO'N	0	0	0
Roe	Dungiven	AHB	0	2	0
Bessbrook	Glassdrummond	CAK/AHB	0	0	0
Tempo	Killashanbally	IO'N	2	2	0
Carey	Careymill Bridge	IO'N	0	1	0
Lagan	Drum Bridge	PRH	0	3	0
Lower Bann	Toomebridge	AHB	0	0	0
Copeland Water	Eden	PRH	0	2	1
Clady	Dunadry Bridge	PRH	0	2	0
Bush	Bushmills	PRH	0	0	0

TABLE 3. The 21 summer samples audited for Region, with sample sorter initials and numbers of taxa 'lost', 'gained' and 'omitted'

River	Site	Sorter	Losses	Gains	Omissions
Bush	Conagher Bridge	AHB	0	2	0
Glenelly	Corrick Bridge	PRH	0	2	0
Arney	Drumane Bridge	PRH	0	1	0
Irvinestown	Necarne	PRH	1	0	0
Drumragh	Campsie Bridge	IO'N	0	1	1
Termon	Tullyhommon	PRH	0	2	0
Glenariff	Callisnagh Bridge	PRH	0	0	0
Owenreagh	Drumlea Bridge	IO'N	0	3	0
Faughan	Ballynameen Bridge	IO'N	0	0	0
Clanrye	Crown Bridge	CAK	1	0	0
Magherafelt Burn	Granias Bridge	AHB	0	3	0
Glendun	Knocknacarry Bridge	AHB	0	2	1
Cusher	Clare Bridge	CAK	0	2	0
Bessbrook	Glassdrummond	AHB	0	3	1
Agivey	Glassgort Bridge	CAK	1	3	0
Glenelly	Sperrin	IO'N	1	3	0
Braid	Knockan	IO'N	0	1	0
Glencoy	Carnlough	CAK	1	1	0
Lissan Water	Drumgrass Bridge	CAK	0	6	0
Lagan	Shaws Bridge	AHB	2	2	0

TABLE 4. The 10 autumn samples audited for Northern Ireland, with sample sorter initials and numbers of taxa 'lost', 'gained' and 'omitted'

River	Site	Sorter	Losses	Gains	Omissions
Sillees	Drumkeen New Bridge	PRH	2	1	0
Fairywater	Fairywater Bridge	PRH	0	2	0
Ballymoney	Ballymoney Road Bridge	IO'N	0	4	0
Kilbroney	Newtown Bridge	IO'N	0	1	0
Moyola	New Bridge	CAK	1	1	0
Rhone	Clonteevy	CAK	1	1	0
Ravernet	Sprucefield	CAK	1	3	0
Blackwater	The Moy	AHB	1	1	0
Blackwater	Benburb	AHB	1	1	0
Braid	Tullaghgarley Bridge	AHB	0	0	0

**APPENDIX**

**Results of individual sample audits**

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N. Ireland	RIVER	Burn Gushet
DATE	15.5.91	SITE	Burn Gushet Bridge
SORTER	CAK + PRH	SAMPLE CODE	NRA11 0090

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

		LOSSES	GAINS
A	<u>VIAL</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE  None	ADDITIONAL FAMILIES FOUND BY IFE  1 Planorbidae 2 Hydropsychidae
B	<u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  3 Sphaeriidae 4 Tipulidae

NET LOSSES        NET GAINS   

NOTES

1 *Bathyomphalus contortus*  
 2 *Hydropsyche angustipennis*  
 3 *Pisidium* sp.  
 4 *Dicranota* sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N. Ireland	RIVER	Finn
DATE	9.4.91	SITE	Clady Bridge
SORTER	PRH	SAMPLE CODE	NRA11 0003

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

		LOSSES	GAINS
<b>A</b>	<p><u>VIAL</u></p> <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>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <hr/> <p>None</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <hr/> <p>None</p>
<b>B</b>	<p><u>SAMPLE</u></p> <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>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <hr/> <p>(This box only completed when no vial supplied with sample)</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <hr/> <p>1 Glossiphoniidae 2 Lepidostomatidae</p>

NET LOSSES        NET GAINS   

NOTES

1 Glossiphonia complanata 1 only  
2 Lepidostoma hirtum 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Clanrye
DATE	24.4.91	SITE	Crown Bridge
SORTER	AHB + CAK	SAMPLE CODE	NRA11 0118

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

		LOSSES	GAINS
<b>A</b>	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Hydrobiidae*	None
<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Hydrobiidae* 3 Simuliidae

NET LOSSES        NET GAINS   

NOTES

2 Potamopyrgus jenkinsi  
3 Simulium ornatum group (larvae + pupae)

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Colebrooke
DATE	3.5.91	SITE	Pollboy Bridge
SORTER	IO'N	SAMPLE CODE	NRA11 0150

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

		LOSSES	GAINS
<b>A</b>	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Sphaeriidae	None
<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Hydrobiidae 3 Tipulidae

NET LOSSES        NET GAINS   

NOTES

1 Empty Sphaeriid shell in vial  
 2 Potamopyrgus jenkinsi 1 only  
 3 Dicranota sp.



# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N. Ireland	RIVER	Torrent
DATE	18.4.91	SITE	Newmills Bridge
SORTER	10'N	SAMPLE CODE	NRA11 0063

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

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

<b>B</b> <u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  1 Limnephilidae 2 Goeridae
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NET LOSSES                        NET GAINS   

NOTES

1 Potamophylax latipennis  
 2 Silo nigricornis

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Magherafelt Burn
DATE	14.3.91	SITE	Granias Bridge
SORTER	AHB	SAMPLE CODE	NRA11 0246

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

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

NET LOSSES     NET GAINS

NOTES

1 Ancylus fluviatilis 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N. Ireland	RIVER	Ballynahinch
DATE	12.3.91	SITE	Leggycurry Bridge
SORTER	AHB	SAMPLE CODE	NRA11 0110

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

		LOSSES	GAINS
<b>A</b>	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Hydrophilidae	None
<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Glossiphoniidae 3 Rhyacophilidae

NET LOSSES        NET GAINS   

NOTES

2 Batracobdella paludosa? 1 only  
3 Rhyacophila munda 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N. Ireland	RIVER	Lower Bann
DATE	12.3.91	SITE	Kilrea Bridge
SORTER	IO'N	SAMPLE CODE	NRA11 0079

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

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

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Hydrobiidae 3 Planorbidae 4 Haliplidae

NET LOSSES        NET GAINS   

NOTES

1 Polycelis nigra/tenuis  
 2 Bithynia leachi/tentaculata (decalcified) 1 only  
 3 Planorbis carinatus/planorbis 1 only  
 4 Halipus sp. (larva) 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N. Ireland	RIVER	Glenmacoffer Burn
DATE	7.4.91	SITE	Glenmacoffer Bridge
SORTER	AHB	SAMPLE CODE	NRA11 0252

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

		LOSSES	GAINS
<b>A</b>	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Perlidae 2 Elmidae*	3 Hydrophilidae
<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	4 Baetidae 5 Taeniopterygidae 6 Elmidae* 7 Simuliidae

NET LOSSES        NET GAINS   

NOTES

3 Hydraena gracilis (adult) 1 only  
 4 Baetis rhodani 1 only  
 5 Brachyptera risi  
 6 Limnius volckmari (larvae)  
 7 Simulium argyreatum/variegatum (larvae)

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Tall
DATE	18.4.91	SITE	Darby's Bridge
SORTER	CAK + IO'N	SAMPLE CODE	NRA11 0071

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

		LOSSES	GAINS
<b>A</b>	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE		None	None
<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE		(This box only completed when no vial supplied with sample)	1 Sphaeriidae 2 Haliplidae 3 Hydrophilidae 4 Limnephilidae 5 Tipulidae

NET LOSSES        NET GAINS   

NOTES

1 Pisidium sp. 1 only  
 2 Haliplus sp. (larva) 1 only  
 3 Hydraena gracilis (adult) 1 only  
 4 Halesus sp. 1 only  
 5 Dicranota sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Upper Bann
DATE	6.3.91	SITE	Hilltown
SORTER	10'N	SAMPLE CODE	NRA11 0051

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

	LOSSES	GAINS
<b>A</b>	<b><u>VIAL</u></b>	<b>ADDITIONAL FAMILIES FOUND BY IFE</b>
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE		None
	None	None

<b>B</b>	<b><u>SAMPLE</u></b>	<b>ADDITIONAL FAMILIES FOUND BY IFE</b>
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE		None
	(This box only completed when no vial supplied with sample)	

NET LOSSES        NET GAINS   

NOTES

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N. Ireland	RIVER	Roe
DATE	3.4.91	SITE	Dungiven
SORTER	AIB	SAMPLE CODE	NRA11 0025

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

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

B	<u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  1 Perlodidae 2 Limnephilidae
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NET LOSSES        NET GAINS   

NOTES

1 Isoperla grammatica 1 only  
 2 Halesus sp. 1 only



# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Bessbrook
DATE	24.4.91	SITE	Glassdrummond
SORTER	CAK + AIB	SAMPLE CODE	NRA11 0119

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

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

B	<p style="text-align: center;"><u>SAMPLE</u></p> <p>Differences between:                      i) BMWP families listed on sample data sheet and                      ii) BMWP families found in SAMPLE by IFE</p>	<p style="text-align: center;">BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; font-size: 1.2em;">(This box only completed when no vial supplied with sample)</p>	<p style="text-align: center;">ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; font-size: 1.2em;">None</p>
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NET LOSSES        NET GAINS   

NOTES

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Tempo
DATE	3.5.91	SITE	Killashanbally
SORTER	IO'N	SAMPLE CODE	NRA11 0151

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

		LOSSES	GAINS
<b>A</b>	<p><u>VIAL</u></p> <p>Differences between:                      i) BMWP families listed on sample data sheet and                      ii) BMWP families found in VIAL by IFE</p>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>1 Valvatidae 2 Lepidostomatidae</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>3 Leptoceridae</p>
<b>B</b>	<p><u>SAMPLE</u></p> <p>Differences between:                      i) BMWP families listed on sample data sheet and                      ii) BMWP families found in SAMPLE by IFE</p>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>4 Tipulidae</p>

NET LOSSES        NET GAINS   

NOTES

1 Zonitoides sp. found in vial  
 3 Athripsodes sp.  
 4 Dicranota sp.

Unionidae + Astacidae assumed returned to river

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N. Ireland	RIVER	Carey
DATE	14.5.91	SITE	Careymill Bridge
SORTER	10'N	SAMPLE CODE	NRA11 0192

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

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

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

NET LOSSES        NET GAINS   

NOTES

1 Dicranota sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Lagan
DATE	19.2.91	SITE	Drum Bridge
SORTER	PRH	SAMPLE CODE	NRA11 0104

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

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

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

NET LOSSES        NET GAINS   

NOTES

1 Valvata cristata  
2 Piscicola geometra 1 only  
3 Dicranota sp. 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Lower Bann
DATE	14.3.91	SITE	Toomebridge
SORTER	AHB	SAMPLE CODE	NRA11 0081

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

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

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

NET LOSSES        NET GAINS   

NOTES

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Copeland Water
DATE	20.2.91	SITE	Eden
SORTER	PRH	SAMPLE CODE	NRA11 0215

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

		LOSSES	GAINS
A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Capniidae*	2 Leuctridae

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	3 Capniidae* 4 Tipulidae

NET LOSSES        NET GAINS   

NOTES

2 Leuctra hippopus  
3 Capnia bifrons  
4 Dicranota sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION N.Ireland

RIVER Clady

DATE 22.2.91

SITE Dunadry Bridge

SORTER PRH

SAMPLE CODE NRA11 0223

AQC OF BMWP FAMILIES    A. IN VIAL +

B. IN SAMPLE +

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

<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE		(This box only completed when no vial supplied with sample)	1 Asellidae 2 Tipulidae

NET LOSSES 0

NET GAINS 2

**NOTES**

1 Asellus aquaticus 1 only  
2 Dicranota sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N. Ireland	RIVER	Bush
DATE	15.5.91	SITE	Bushmills
SORTER	PRH	SAMPLE CODE	NRA11 0089

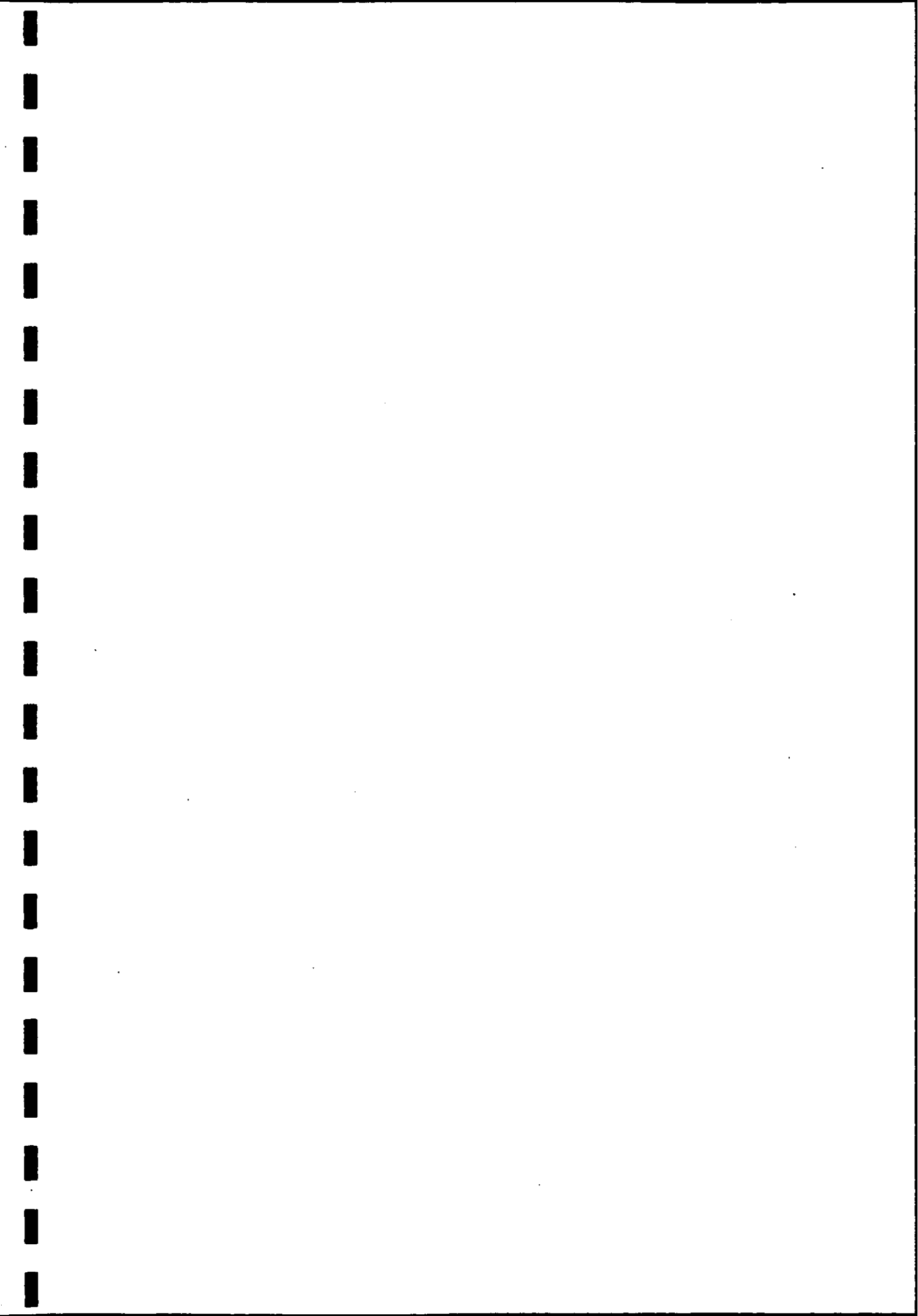
AQC OF BMWP FAMILIES    A. IN VIAL        B. IN SAMPLE   

		LOSSES	GAINS
<b>A</b>	<p><u>VIAL</u></p> <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>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>None</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>None</p>
<b>B</b>	<p><u>SAMPLE</u></p> <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>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>None</p>

NET LOSSES        NET GAINS   

NOTES





# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Bush
DATE	30.7.91	SITE	Conagher Bridge
SORTER	AIB	SAMPLE CODE	NRA11 0091

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

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

<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Caenidae 2 Tipulidae

NET LOSSES        NET GAINS   

NOTES

1 Caenis luctuosa/macrura, C.rivulorum  
2 Dicranota sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION <span style="border: 1px solid black; padding: 2px;">N. Ireland</span>	RIVER <span style="border: 1px solid black; padding: 2px;">Glenelly</span>
DATE <span style="border: 1px solid black; padding: 2px;">29.6.91</span>	SITE <span style="border: 1px solid black; padding: 2px;">Corrick Bridge</span>
SORTER <span style="border: 1px solid black; padding: 2px;">PRH</span>	SAMPLE CODE <span style="border: 1px solid black; padding: 2px;">NRA11 0009</span>

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

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

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Ancyliidae 2 Tipulidae

NET LOSSES 0      NET GAINS 2

NOTES

1 Ancylyus fluviatilis 1 only  
 2 Dicranota sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION <input style="width: 80%;" type="text" value="N. Ireland"/>	RIVER <input style="width: 80%;" type="text" value="Arney"/>
DATE <input style="width: 80%;" type="text" value="22.7.91"/>	SITE <input style="width: 80%;" type="text" value="Drumane Bridge"/>
SORTER <input style="width: 80%;" type="text" value="PRH"/>	SAMPLE CODE <input style="width: 80%;" type="text" value="NRA11 0132"/>

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

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

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

NET LOSSES                     NET GAINS

NOTES 
 1 Dicranota sp. 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Irvinestown
DATE	18.7.91	SITE	Necarne
SORTER	PRH	SAMPLE CODE	NRA11 0147

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

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

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

NET LOSSES     NET GAINS

NOTES

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Drumragh
DATE	20.6.91	SITE	Campsie Bridge
SORTER	10'N	SAMPLE CODE	NRA11 0015

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

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

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

NET LOSSES        NET GAINS   

NOTES

2 Helobdella stagnalis  
3 Anabolia nervosa

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION N.Ireland

RIVER Termon

DATE 20.7.91

SITE Tullyhommon

SORTER PRH

SAMPLE CODE NRA11 0262

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

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

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Glossiphoniidae 2 Tipulidae

NET LOSSES 0

NET GAINS 2

NOTES

1 Helobdella stagnalis 1 only  
2 Dicranota sp. 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Glenariff
DATE	12.8.91	SITE	Callisnagh Bridge
SORTER	PRH	SAMPLE CODE	NRA11 0189

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

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

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

NET LOSSES        NET GAINS   

NOTES



# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Owenreagh
DATE	16.6.91	SITE	Drumlea Bridge
SORTER	IO'N	SAMPLE CODE	NRA11 0178

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

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

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

NET LOSSES        NET GAINS   

NOTES

1 Rhyacophila dorsalis  
2 Siphonurus lacustris 1 only  
3 Dicranota sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION

RIVER

DATE

SITE

SORTER

SAMPLE CODE

AQC OF BMWP FAMILIES    A. IN VIAL   

B. IN SAMPLE   

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

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

NET LOSSES

NET GAINS

NOTES

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Clanrye
DATE	5.8.91	SITE	Crown Bridge
SORTER	CAK	SAMPLE CODE	NRA11 0118

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

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

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

NET LOSSES        NET GAINS   

NOTES

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION <span style="float: right;">N.Ireland</span>	RIVER <span style="float: right;">Magherafelt Burn</span>
DATE <span style="float: right;">13.6.91</span>	SITE <span style="float: right;">Granias Bridge</span>
SORTER <span style="float: right;">AHB</span>	SAMPLE CODE <span style="float: right;">NRA11 0251</span>

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

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

B <u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  1 Lymnaeidae 2 Sphaeriidae 3 Tipulidae
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NET LOSSES        NET GAINS   

NOTES  
 1 Lymnaea sp. (juvenile) 1 only  
 2 Pisidium sp.  
 3 Ormosia sp. 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Glendun
DATE	14.8.91	SITE	Knocknacarry Bridge
SORTER	AHB	SAMPLE CODE	NRA11 0191

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

		LOSSES	GAINS
<b>A</b>	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Simuliidae*	None

<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Ephemereſidae 3 Tipulidae 4 Simuliidae*

NET LOSSES        NET GAINS   

NOTES

2 Ephemereſella ignita  
3 Dicranota sp. 1 only  
4 Simulium ornatum group (larva)

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Cusher
DATE	22.7.91	SITE	Clare Bridge
SORTER	CAK	SAMPLE CODE	NRA11 0053

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

		LOSSES	GAINS
<b>A</b>	<p><u>VIAL</u></p> <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>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p style="text-align: center; font-weight: bold;">None</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p style="text-align: center; font-weight: bold;">None</p>

<b>B</b>	<p><u>SAMPLE</u></p> <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>	<p>BMWP FAMILIES NOT FOUND BY IFE</p> <p>(This box only completed when no vial supplied with sample)</p>	<p>ADDITIONAL FAMILIES FOUND BY IFE</p> <p>1 Baetidae 2 Gerridae</p>
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NET LOSSES     NET GAINS

NOTES

1 Baetis rhodani 1 only  
2 Gerris sp (nymphs)

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION <span style="border: 1px solid black; padding: 2px;">N. Ireland</span>	RIVER <span style="border: 1px solid black; padding: 2px;">Bessbrook</span>
DATE <span style="border: 1px solid black; padding: 2px;">24.7.91</span>	SITE <span style="border: 1px solid black; padding: 2px;">Glassdrummond</span>
SORTER <span style="border: 1px solid black; padding: 2px;">AHB</span>	SAMPLE CODE <span style="border: 1px solid black; padding: 2px;">NRA11 0119</span>

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

	LOSSES	GAINS
<b>A</b>	<b>VIAL</b>	<b>ADDITIONAL FAMILIES FOUND BY IFE</b>
	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>B</b>	<b>SAMPLE</b>	<b>ADDITIONAL FAMILIES FOUND BY IFE</b>
	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)
		2 Hydrobiidae 3 Lymnaeidae* 4 Ephemerellidae 5 Corixidae

NET LOSSES       NET GAINS

NOTES

2 Potamopyrgus jenkinsi 1 only  
 3 Lymnaea sp. (juvenile)  
 4 Ephemerella ignita  
 5 Indet Corixid (nymph) 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION <span style="border: 1px solid black; padding: 2px;">N.Ireland</span>	RIVER <span style="border: 1px solid black; padding: 2px;">Agivey</span>
DATE <span style="border: 1px solid black; padding: 2px;">17.6.91</span>	SITE <span style="border: 1px solid black; padding: 2px;">Glassgort Bridge</span>
SORTER <span style="border: 1px solid black; padding: 2px;">CAK</span>	SAMPLE CODE <span style="border: 1px solid black; padding: 2px;">NRA11 0083</span>

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

	LOSSES	GAINS			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%; text-align: left; padding: 5px;"> <b>A</b>                    <u>VIAL</u>                       Differences between:                      i) BMWP families listed on sample data sheet and                      ii) BMWP families found in VIAL by IFE                 </td> <td style="width: 35%; text-align: center; padding: 5px;">                     BMWP FAMILIES NOT FOUND BY IFE   <b>1 Ephemeroidea</b> </td> <td style="width: 35%; text-align: center; padding: 5px;">                     ADDITIONAL FAMILIES FOUND BY IFE   <b>2 Hydrophilidae</b> </td> </tr> </table>	<b>A</b> <u>VIAL</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE  <b>1 Ephemeroidea</b>	ADDITIONAL FAMILIES FOUND BY IFE  <b>2 Hydrophilidae</b>		
<b>A</b> <u>VIAL</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE  <b>1 Ephemeroidea</b>	ADDITIONAL FAMILIES FOUND BY IFE  <b>2 Hydrophilidae</b>			

<b>B</b> <u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  <b>3 Gammaridae</b> <b>4 Ephemerellidae</b>
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NET LOSSES 1                    NET GAINS 3

NOTES

2 Helophorus brevipalpis (adult)  
 3 Gammarus sp. 1 only  
 4 Ephemerella ignita



# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Glenelly
DATE	29.6.91	SITE	Sperrin
SORTER	IO'N	SAMPLE CODE	NRA11 0257

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

	LOSSES	GAINS
<b>A</b> <u>VIAL</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE  1 Hydroptilidae	ADDITIONAL FAMILIES FOUND BY IFE  2 Limnephilidae

<b>B</b> <u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  3 Oligochaeta 4 Tipulidae
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NET LOSSES                        NET GAINS   

NOTES

2 Indet Limnephilid (juvenile)  
 3 Enchytraeid 1 only  
 4 Dicranota sp. 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland	RIVER	Braid
DATE	1.8.91	SITE	Knockan
SORTER	IO'N	SAMPLE CODE	NRA11 0035

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

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

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

NET LOSSES     NET GAINS

NOTES

Pisidium sp. 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION <span style="border: 1px solid black; padding: 2px;">N.Ireland</span>	RIVER <span style="border: 1px solid black; padding: 2px;">Glencloy</span>
DATE <span style="border: 1px solid black; padding: 2px;">12.8.91</span>	SITE <span style="border: 1px solid black; padding: 2px;">Carnlough</span>
SORTER <span style="border: 1px solid black; padding: 2px;">CAK</span>	SAMPLE CODE <span style="border: 1px solid black; padding: 2px;">NRA11 0196</span>

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

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

<b>B</b> <u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  2 Sphaeriidae
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NET LOSSES 1                    NET GAINS 1

NOTES 2 Pisidium sp. 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION <b>N. Ireland</b>	RIVER <b>Lissan Water</b>
DATE <b>29.7.91</b>	SITE <b>Drumgrass Bridge</b>
SORTER <b>CAK</b>	SAMPLE CODE <b>NRA11 0243</b>

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

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

<b>B</b> <u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  2 Oligochaeta 3 Heptageniidae 4 Leptophlebiidae 5 Scirtidae 6 Tipulidae
--	---	---

NET LOSSES                          NET GAINS   

NOTES

- 1 Polycentropus flavomaculatus
- 3 Indet Heptageniid (head + legs only)
- 4 Indet Leptophlebiid (legless specimen)
- 5 Elodes sp (larva) 1 only
- 6 Limnophila (Eloeophila) sp. 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION <span style="border: 1px solid black; padding: 2px;">N.Ireland</span>	RIVER <span style="border: 1px solid black; padding: 2px;">Lagan</span>
DATE <span style="border: 1px solid black; padding: 2px;">5.6.91</span>	SITE <span style="border: 1px solid black; padding: 2px;">Shaws Bridge Belfast</span>
SORTER <span style="border: 1px solid black; padding: 2px;">AHB</span>	SAMPLE CODE <span style="border: 1px solid black; padding: 2px;">NRA11 0095</span>

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

	LOSSES	GAINS
<b>A</b> <u>VIAL</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE  1 Dendrocoelidae 2 Gerridae	ADDITIONAL FAMILIES FOUND BY IFE  3 Erpobdellidae 4 Caenidae

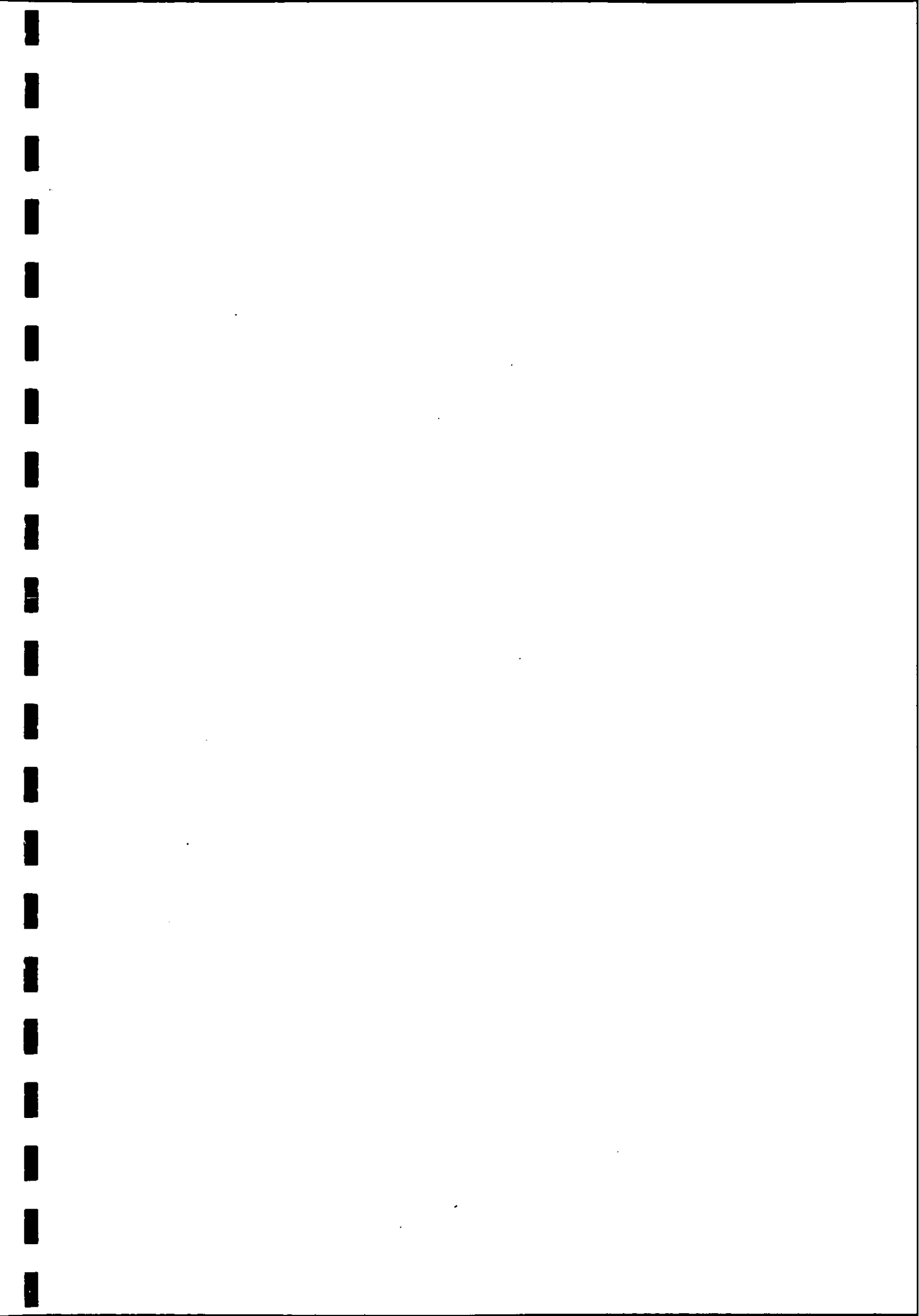
<b>B</b> <u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  None
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NET LOSSES 2                    NET GAINS 2

NOTES

2 Velia sp. (nymph) in vial  
 3 Erpobdella octoculata  
 4 Caenis rivulorum

Hirudinidae recorded on NRA data sheet as "noted and returned"



# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION N.Ireland

RIVER Sillees

DATE 10.10.91

SITE Drumkeen New Bridge

SORTER PRH

SAMPLE CODE NRA11 0133

AQC OF BMWP FAMILIES A. IN VIAL +

B. IN SAMPLE +

### LOSSES

### GAINS

A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	1 Valvatidae 2 Piscicolidae	3 Sialidae

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

NET LOSSES 2

NET GAINS 1

NOTES 3 Sialis lutaria

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION N.Ireland

RIVER Fairwater

DATE 10.9.91

SITE Fairwater Bridge

SORTER PRH

SAMPLE CODE NRA11 0013

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

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

<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE		(This box only completed when no vial supplied with sample)	1 Planariidae 2 Polycentropodidae

NET LOSSES 0

NET GAINS 2

NOTES

1 Polycelis nigra/tenuis 1 only  
2 Cynurus trimaculatus 1 only



# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland		RIVER	Ballymoney
DATE	11.9.91		SITE	Ballymoney Road Bridge
SORTER	IO'N		SAMPLE CODE	NRA11 0086

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

		LOSSES	GAINS
A	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	1 Gammaridae
B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Sphaeriidae 3 Asellidae 4 Tipulidae

NET LOSSES        NET GAINS   

NOTES

1 Gammarus duebeni  
2 Pisidium sp. 1 only  
3 Asellus aquaticus  
4 Dicranota sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland		RIVER	Kilbroney
DATE	5.9.91		SITE	Newtown Bridge
SORTER	10'N		SAMPLE CODE	NRA11 0121

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

		LOSSES	GAINS
<b>A</b>	<u>VIAL</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	None	None
<b>B</b>	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	1 Erpobdellidae

NET LOSSES        NET GAINS   

NOTES

1 Indet erpobdellid (juvenile) 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION N.Ireland

RIVER Moyola

DATE 18.9.91

SITE New Bridge

SORTER CAK

SAMPLE CODE NRA11 0078

AQC OF BMWP FAMILIES    A. IN VIAL +

B. IN SAMPLE +

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

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

NET LOSSES 1

NET GAINS 1

NOTES

1 Terrestrial bug in vial  
2 Valvata piscinalis 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION N.Ireland

RIVER Rhone

DATE 15.11.91

SITE Clonteevy

SORTER CAK

SAMPLE CODE NRA11 0061

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

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

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

NET LOSSES 1

NET GAINS 1

NOTES

1 Limnophora sp. (Muscidae) in vial  
2 Gammarus pulex 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland		RIVER	Ravernet
DATE	4.9.91		SITE	Sprucefield
SORTER	CAK		SAMPLE CODE	NRA11 0101

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

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

B	<u>SAMPLE</u>	BMWP FAMILIES NOT FOUND BY IFE	ADDITIONAL FAMILIES FOUND BY IFE
	Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	(This box only completed when no vial supplied with sample)	2 Planariidae 3 Hydrobiidae 4 Sphaeriidae

NET LOSSES        NET GAINS   

NOTES

2 Polycelis nigra/tenuis 1 only  
3 Potamopyrgus jenkinsi  
4 Pisidium sp.

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION N.Ireland

RIVER Blackwater

DATE 22.10.91

SITE The Moy

SORTER AHB

SAMPLE CODE NRA11 0056

AQC OF BMWP FAMILIES    A. IN VIAL    +

B. IN SAMPLE    +

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

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

NET LOSSES 1

NET GAINS 1

NOTES 2 Gyraulus albus 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland		RIVER	Blackwater
DATE	22.10.91		SITE	Benburb
SORTER	AHB		SAMPLE CODE	NRA11 0249

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

		LOSSES	GAINS
A	<u>VIAL</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in VIAL by IFE	BMWP FAMILIES NOT FOUND BY IFE  1 Rhyacophilidae	ADDITIONAL FAMILIES FOUND BY IFE  None
B	<u>SAMPLE</u>  Differences between: i) BMWP families listed on sample data sheet and ii) BMWP families found in SAMPLE by IFE	BMWP FAMILIES NOT FOUND BY IFE  (This box only completed when no vial supplied with sample)	ADDITIONAL FAMILIES FOUND BY IFE  2 Hydroptilidae

NET LOSSES        NET GAINS   

NOTES

1 Dead Rhyacophila sp. (pupa) in vial  
 2 Hydroptila sp. 1 only

# 1991 RIVER QUALITY SURVEY

## AQC - BIOLOGICAL SAMPLES

REGION	N.Ireland		RIVER	Braid
DATE	15.10.91		SITE	Tullagharley Bridge
SORTER	AHB		SAMPLE CODE	NRA11 0034

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

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

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

NET LOSSES        NET GAINS   

NOTES