



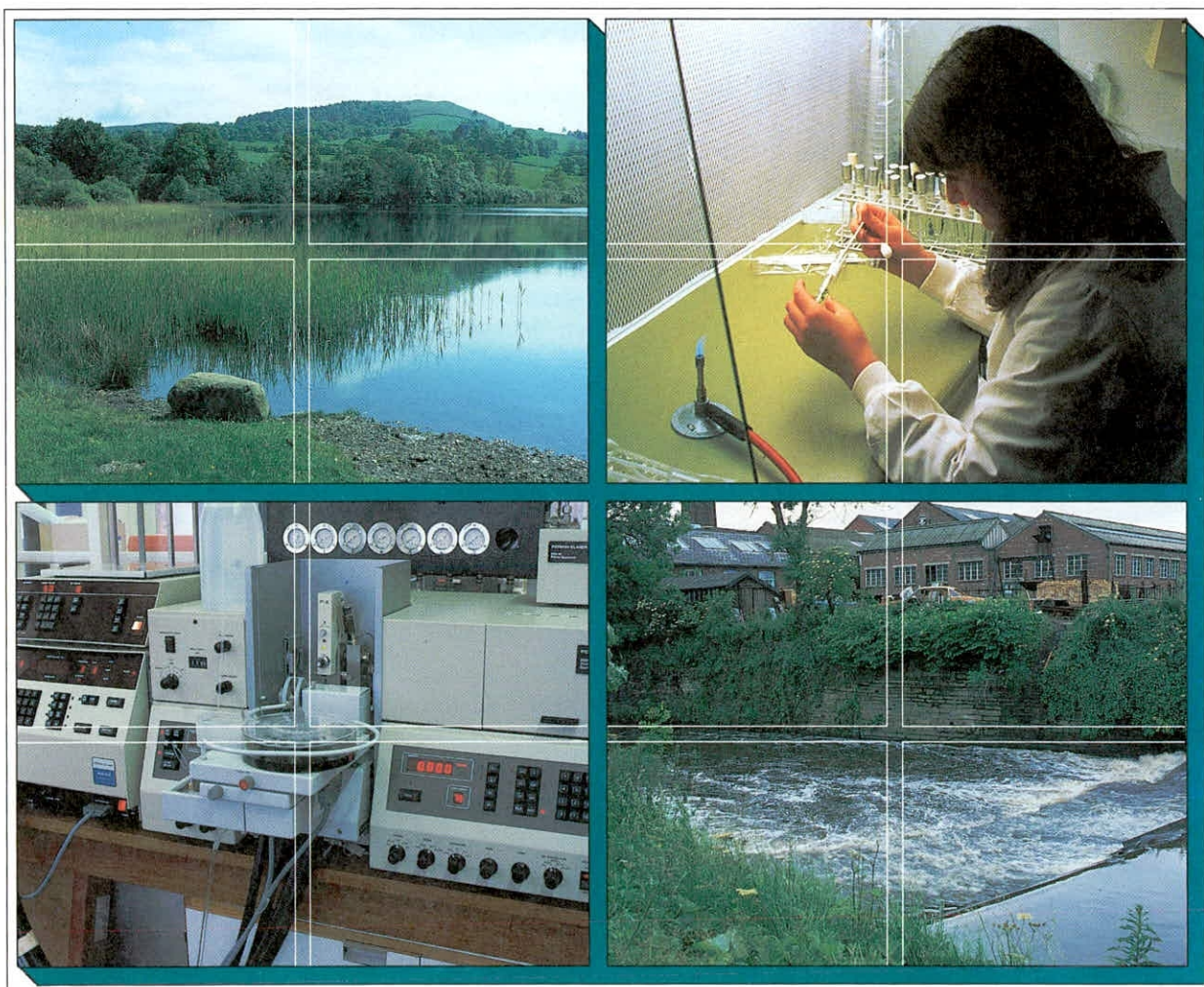
# **An audit of performance in the analysis of biological samples in 1995 NRA Welsh Region: Primary Audit**

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# **An audit of performance in the analysis of biological samples in 1995.**

## **NRA Welsh Region: Primary Audit**

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## 1. INTRODUCTION

The 1995 General Quality Assessment (GQA) Survey included the sampling of aquatic macro-invertebrates for biological assessment of river quality throughout the United Kingdom. In England and Wales the survey was undertaken by the National Rivers Authority (NRA), the River Purification Boards (RPBs) sampled in Scotland, the Industrial Research and Technology Unit (IRTU) undertook the work in Northern Ireland and the Government Laboratory covered the Isle of Man (IOM).

The majority of sites surveyed were sampled in two seasons, spring and autumn. Standard collection procedures were used and the sampling strategy was compatible with RIVPACS (River InVertebrate Prediction And Classification System), a computer model developed by the Institute of Freshwater Ecology (IFE).

Samples were sorted for the families of macro-invertebrates included in the Biological Monitoring Working Party (BMWP) system. Taxa present were recorded on site data sheets. Although attempts had been made to standardise sample processing and recording techniques, these did vary somewhat from region to region.

In order to undertake this massive programme of fieldwork and sample processing, a large number of staff, many of whom were relatively inexperienced, were employed by the surveying agencies. In view of the number of staff involved and the variability of sample processing techniques, it was recognised that a quality assurance exercise was necessary to minimise and quantify errors. Each laboratory appointed at least one experienced analyst to act as an internal analytical quality control (AQC) checker. For most agencies, these checkers re-sorted about 10% of the laboratory's samples, those samples chosen for re-sorting being selected at random. In addition, IFE was contracted to undertake an independent, external audit of the quality of the laboratory analysis of biological samples for each NRA region, each RPB, IRTU and IOM. This commission was consistent with the audit performed by IFE for the National River Quality Survey in 1990 and for the routine biological monitoring of river sites each year between 1991 and 1994. This audit was originally intended as a measure of the quality of the AQC analyses and is termed the main audit or AQC audit. The data collected for the 1995 GQA Survey was not adjusted for errors identified by either of the quality assurance procedures. Therefore the NRA contracted IFE to subject their samples to a further audit of the primary analysis (the primary audit) to provide an independent assessment of the quality of the Survey data.

This report presents the results of the 60 samples audited for NRA Welsh Region and represents a measure of the performance of the primary analyst rather than that of the AQC analyst. The results of the AQC Audit, detailing the performance of the biologists who analysed the 36 AQC'd samples for the Region, are reported separately.

## **2. SAMPLE SELECTION**

Samples for audit were selected internally by each of the agencies being monitored. The number of samples selected for audit varied between the different agencies and the biologists processing these samples had no prior knowledge of which samples were to be audited. Some agencies only sent to IFE samples that had been processed twice. Others adopted a random selection process, whereby some samples had been analysed just once and some had been re-sorted. 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, IRTU and IOM 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 data sheet containing 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, without reference to the data sheet or to the vial of animals, and the BMWP families identified.
- b) The families contained within the vial were identified.
- c) A comparison was made between the listing of families and those found in the sample by IFE.
- d) A comparison was made between the listing of families and those identified from the vial by IFE.
- e) "Losses" or "gains" from the original 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. Single representatives of a "gained" taxon were noted as such.
- f) An error code, selected from a list on the result sheet, was assigned by the IFE auditor for each "loss" or "gain".

Occasionally a sample did not include a vial containing representative examples of the families listed on the data sheet, while some arrived with the vial damaged in transit such that the representative specimens were no longer separated. For these samples, only operations a), c), e) and f) above were appropriate.

Several directives were issued to IFE relating to the treatment of BMWP taxa. Every taxon recorded on the data sheet must be supported by a voucher specimen of that family in the vial (or, for very large specimens, left in the sample). The only exceptions to this rule were the native crayfish, *Austropotamobius pallipes*, the medicinal leech, *Hirudo medicinalis* and the pearl mussel, *Margaritifera margaritifera* (which does not belong to a BMWP family), all of which are protected species. Where possible, IFE gave the benefit of doubt to the analyst in cases of the "loss" of Planariidae, specimens of which have been known to disintegrate in preservative. Animals deemed to have been dead at the time of sampling, cast insect skins, pupal exuviae and empty mollusc shells were to be excluded from the listing of families present. Isolated posterior ends of "living" specimens were not acceptable as records of a taxon. In these cases, thorax plus abdomen was deemed acceptable but abdomen only was deemed unacceptable. Terrestrial representatives of BMWP scoring families were also to be excluded from the audit. For this reason, Clambidae, Chrysomelidae and Curculionidae, which appear in the BMWP list, were excluded for the purposes of the audit since most representatives of these families are, at best, only semi-aquatic. 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 and sent to the Regional Biologist. Copies of these report forms are presented in the Appendix. For audit samples where a vial of animals was included, the comparison between the listing of families and the taxa found in the vial by IFE was shown in the section of the report form headed "VIAL". Discrepancies could be due to carelessness, misidentifications or errors in completing the data sheet listing the families present. Families not on the listing but found by IFE in the remainder of the sample were entered in the section of the report form headed "SAMPLE" under "Additional BMWP taxa found by IFE". Taxa recorded here represent families missed by the analyst(s) on sorting the sample. When the families listed as "losses" in the first section 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 both as "losses" from the vial and as "gains" from the sample 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".

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 centre section of the report form under "species name".

IFE was asked to interpret each error to provide a possible cause. An error code, selected from a list of options at the foot of each result sheet, was entered against each taxon in the column headed "Presumed cause of error".

For those samples in which the vial of animals was damaged or missing, the "VIAL" sections of the report form were not applicable (N/a). Families not on the list but present in the sample were entered in the section under "SAMPLE" : "Additional taxa" as before. Families recorded on the list but not found by IFE were indicated in the section above this. 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.

The final section of the result sheet summarises the audit, giving details of the numbers of "losses", "gains" and "omissions", together with the net effects on BMWP score and the number of scoring taxa.

## **5. RESULTS**

The results of the Primary audit for Welsh Region are summarised by area in Tables 1 to 3. Table 4 displays the statistics of these regional audit results centered around the target of acceptability of no more than two missed taxa per sample. These data are presented for each analyst, for their Area laboratories and for the Region as a whole. Table 5 compares these results for each NRA Region and Area laboratory. Table 6 presents data for Welsh Region for the net effects of the Primary audit on the BMWP score and number of taxa. This table is again based on the target of no more than two missed taxa per sample. The figure of 13 for an acceptable underestimate of BMWP score is based on twice the average score of all taxa in the BMWP listing (excluding Clambidae, Chrysomelidae and Curculionidae, which are excluded from the audit). This average score is 6.57. Table 7 compares this BMWP data for each NRA Region and Area laboratory. Table 8 lists the taxa missed in sorting by Welsh Region's primary analysts in the 1995 audit. A listing of all such taxa for the entire 1995 audit (Primary and AQC Audits for NRA regions and Main Audit for other organisations) for the whole of the UK is presented in the AQC audit report.

## **6. ACKNOWLEDGEMENTS**

Grateful thanks to John Murray-Bligh of NRA Thames Region, who provided an invaluable service in the development and implementation of improved methodology and in providing helpful advice throughout.



Table 1. The 20 samples audited for Northern Area

<b>River</b>	<b>Site</b>	<b>Primary Analyst</b>	<b>Losses</b>	<b>Gains</b>	<b>Omissions</b>
<b>SPRING</b>					
Ceirw	u/s Nug	JB(1)	0	3	0
Nug	u/s Ceirw	JB(1)	0	5	0
Wevre Brook	Shotton	JL	0	1	0
Black Brook	Penyffordd	JL	0	0	0
Nantcol	Cwm Nantcol	KW	0	2	0
Alyn	Fagl Lane	MS	1	0	0
Conwy	Llanrwst	MS	1	0	0
Lliw	Pen-y-bont	RC	0	3	0
Caldy Brook	Huntington	RC	1	2	0
<b>AUTUMN</b>					
Meirchion	Henllan Mill	GE	1	1	1
Ebbw Fawr	Rogerstone	HW	1	2	1
Angell	Aberangell	JB(1)	0	3	0
Rhymney	The Mill	JB(1)	0	2	0
Nant y Aber	Caerphilly	JB(2)	0	0	0
Aldford Brook	Lea Hall	JB(2)	0	0	0
Einion	Furnace	JL	0	5	0
Afon Gwydol	Abergwydol	JL	1	3	0
Wnion	Dolgellau	KW	1	3	0
Dwyfor	Dolbenmaen	KW	0	6	0
Cegidog	Llandrillo	RC	0	3	0

Table 2. The 20 samples audited for South Western Area

<b>River</b>	<b>Site</b>	<b>Primary Analyst</b>	<b>Losses</b>	<b>Gains</b>	<b>Omissions</b>
<b>SPRING</b>					
Dulais	Seven Sisters	AK	1	0	0
Gawr	Brynmenyn Bridge	GR	0	1	0
Alun	d/s Llandow Bridge	GR	1	3	0
Stembridge Brook	Stembridge Farm	GR	0	2	0
Rheidol	Lovesgrove	JG	0	5	0
Knock Brook	Cutty Bridge	JG	0	5	0
Teifi	Llechryd Road Bridge	JG	0	1	0
Pibwr	Pibwrllyd	KJ	1	0	0
Tywi	Llandeilo Road Bridge	KJ	0	0	0
<b>AUTUMN</b>					
Ritec	Holloway Bridge	CD	1	2	0
Anghof	Wolfscastle	CD	0	1	0
Cresswell	u/s Bishops Bridge	CD	2	2	0
Hengwm	d/s Hyddgen confluence	JG	0	1	0
Ystwyth	Rhydyfelin	JG	0	6	0
Clarach	d/s Caravan site STW	JG	0	1	0
Teifi	Llanybydder Road Bridge	JG	0	3	0
Fenni	SN 237 168	KJ	0	1	0
Camddwr	SN 784 532	KJ	0	0	0
Nant-y-Tendrod	u/s Tawe confluence	SL	1	1	0
Amman	Glanamman	SL	0	0	0

Table 3. The 20 samples audited for South Eastern Area

<b>River</b>	<b>Site</b>	<b>Primary Analyst</b>	<b>Losses</b>	<b>Gains</b>	<b>Omissions</b>
<b>SPRING</b>					
Ely	St Fagans	CM	0	0	0
Back Brook	u/s Arrow	CM	0	1	0
Nant Dowlais	d/s Tregurnog Farm	CM	0	0	0
Ely	u/s L'Oreal	CM	0	1	0
Berthin Brook	Pont y Pia	DJB	0	3	0
Weycock	Cumix Bridge	DJB	0	1	2
Clydach	Cwm Nant-garn	MGC	0	5	0
Tresenny Brook	Grosmont	MGC	1	4	0
Valley Brook	Millend	MGC	0	2	0
Taff	u/s Cynon + Cilfynydd STW	SE	0	0	0
<b>AUTUMN</b>					
Afon Hydfer	Pont ar Hydfer	DJB	0	3	0
Wellington Brook	Wellington	DJB	0	0	0
Ely	Pontyclun	DJB	0	3	0
Taff	u/s Taffs Well	IH	0	1	0
Afon Llwyd	Pontnewynydd	MGC	0	4	0
Usk	Llangrwyney	MGC	0	5	0
Ely	Bryn Farm	SE	0	2	0
Usk	Llantrisant	SE	0	1	0
Frome	Longworth Bridge	SR	0	3	0
Walford Brook	Walford	SR	0	1	0

Table 4. Statistics of 1995 primary Audit results for Welsh region

<b>Analyst/Group</b>	<b>n</b>	<b>Mean gains</b>	<b>Standard error</b>	<b>No.samples &gt;2 gains</b>	<b>% samples &gt;2 gains</b>	<b>Highest no. gains</b>	<b>Mean (1+g+o)</b>	<b>Standard error</b>
<b>Northern</b>	<b>20</b>	<b>2.20</b>	<b>0.40</b>	<b>9</b>	<b>45.00</b>	<b>6</b>	<b>2.65</b>	<b>0.39</b>
GE	1	1.00	n/a	0	0.00	1	3.00	n/a
HW	1	2.00	n/a	0	0.00	2	4.00	n/a
JB(1)	4	3.25	0.63	3	75.00	5	3.25	0.63
JB(2)	2	0.00	0.00	0	0.00	0	0.00	0.00
JL	4	2.25	1.11	2	50.00	5	2.50	1.19
KW	3	3.67	1.20	2	66.67	6	4.00	1.15
MS	2	0.00	0.00	0	0.00	0	1.00	0.00
RC	3	2.67	0.33	2	66.67	3	3.00	0.00
<b>South Western</b>	<b>20</b>	<b>1.75</b>	<b>0.40</b>	<b>5</b>	<b>25.00</b>	<b>6</b>	<b>2.10</b>	<b>0.41</b>
AK	1	0.00	n/a	0	0.00	0	1.00	n/a
CD	3	1.67	0.33	0	0.00	2	2.67	0.88
GR	3	2.00	0.58	1	33.33	3	2.33	0.88
JG	7	3.14	0.83	4	57.14	6	3.14	0.83
KJ	4	0.25	0.25	0	0.00	1	0.50	0.29
SL	2	0.50	0.50	0	0.00	1	1.00	1.00
<b>South Eastern</b>	<b>20</b>	<b>2.00</b>	<b>0.37</b>	<b>8</b>	<b>40.00</b>	<b>5</b>	<b>2.15</b>	<b>0.39</b>
CM	4	0.50	0.29	0	0.00	1	0.50	0.29
DJB	5	2.00	0.63	3	60.00	3	2.40	0.60
IH	1	1.00	n/a	0	0.00	1	1.00	n/a
MGC	5	4.00	0.55	4	80.00	5	4.20	0.58
SE	3	1.00	0.58	0	0.00	2	1.00	0.58
SR	2	2.00	1.00	1	50.00	3	2.00	1.00
<b>Welsh Region</b>	<b>60</b>	<b>1.98</b>	<b>0.22</b>	<b>22</b>	<b>36.67</b>	<b>6</b>	<b>2.30</b>	<b>0.23</b>
<b>Whole of NRA</b>	<b>481</b>	<b>1.88</b>	<b>0.08</b>	<b>150</b>	<b>31.19</b>	<b>8</b>	<b>2.21</b>	<b>0.09</b>

Table 5. Summary of errors found in 1995 Primary Audit for each NRA Laboratory

<b>Region/Lab.</b>	<b>n</b>	<b>Mean gains</b>	<b>Standard error</b>	<b>No.samples &gt;2 gains</b>	<b>% samples &gt;2 gains</b>	<b>Highest no. gains</b>	<b>Mean errors (I+g+o)</b>	<b>Standard error</b>
<b>Anglian</b>	<b>60</b>	<b>2.25</b>	<b>0.20</b>	<b>24</b>	<b>40.00</b>	<b>6</b>	<b>2.63</b>	<b>0.22</b>
Central	20	2.25	0.35	6	30.00	5	3.00	0.42
Eastern	20	2.85	0.39	11	50.00	6	3.05	0.38
Northern	20	1.65	0.27	7	35.00	3	1.85	0.27
<b>N'umb &amp; Yorks</b>	<b>60</b>	<b>1.52</b>	<b>0.20</b>	<b>12</b>	<b>20.00</b>	<b>6</b>	<b>1.68</b>	<b>0.21</b>
South Yorkshire	27	1.44	0.28	5	18.52	6	1.63	0.29
Northumbria	17	1.12	0.26	2	11.76	3	1.29	0.31
Dales	16	2.06	0.50	5	31.25	6	2.19	0.51
<b>North West</b>	<b>60</b>	<b>2.52</b>	<b>0.27</b>	<b>26</b>	<b>43.33</b>	<b>8</b>	<b>2.98</b>	<b>0.30</b>
Northern	18	2.22	0.45	6	33.33	7	2.89	0.57
Central	20	2.35	0.44	8	40.00	7	2.70	0.51
Southern	22	2.91	0.51	12	54.55	8	3.32	0.51
<b>Severn-Trent</b>	<b>61</b>	<b>1.84</b>	<b>0.22</b>	<b>18</b>	<b>29.51</b>	<b>8</b>	<b>1.23</b>	<b>0.27</b>
Upper Severn	16	1.50	0.41	5	31.25	5	1.88	0.60
Lower Severn	13	1.85	0.52	4	30.77	5	2.46	0.63
Upper Trent	13	1.69	0.41	3	23.08	5	1.92	0.42
Lower Trent	19	2.21	0.43	6	31.58	8	2.58	0.50
<b>Southern</b>	<b>60</b>	<b>1.33</b>	<b>0.19</b>	<b>10</b>	<b>16.67</b>	<b>7</b>	<b>1.77</b>	<b>0.21</b>
Western	30	1.20	0.26	5	16.67	6	1.60	0.27
Eastern	30	1.47	0.28	5	16.67	7	1.93	0.33
<b>South Western</b>	<b>60</b>	<b>1.52</b>	<b>0.21</b>	<b>16</b>	<b>26.67</b>	<b>6</b>	<b>1.63</b>	<b>0.23</b>
Devon	16	1.56	0.33	5	31.25	4	1.63	0.35
Cornwall	15	1.27	0.42	3	20.00	5	1.33	0.45
North Wessex	13	0.92	0.29	1	7.69	3	0.92	0.29
South Wessex	16	2.19	0.52	7	43.75	6	2.50	0.58
<b>Thames</b>	<b>60</b>	<b>2.05</b>	<b>0.22</b>	<b>22</b>	<b>36.67</b>	<b>7</b>	<b>2.43</b>	<b>0.24</b>
Fobney Mead	30	2.43	0.32	16	53.33	6	2.97	0.35
Waltham Cross	30	1.67	0.29	6	20.00	7	1.90	0.29
<b>Welsh</b>	<b>60</b>	<b>1.98</b>	<b>0.22</b>	<b>22</b>	<b>36.67</b>	<b>6</b>	<b>2.30</b>	<b>0.23</b>
Northern	20	2.20	0.40	9	45.00	6	2.65	0.39
South Western	20	1.75	0.40	5	25.00	6	2.10	0.41
South Eastern	20	2.00	0.37	8	40.00	5	2.15	0.39
<b>Whole of NRA</b>	<b>481</b>	<b>1.88</b>	<b>0.08</b>	<b>150</b>	<b>31.19</b>	<b>8</b>	<b>2.21</b>	<b>0.09</b>

Table 6. Net effects of the Primary Audit on BMWP score and number of scoring taxa

Analyst/Group	n	Mean net effect on BMWP score	% of samples underestimated by score >13	Maximum underestimate of BMWP score	Mean net effect on no. of taxa	% of samples underestimated by >2 taxa	Maximum underestimate of no. of taxa
<b>Northern</b>	<b>20</b>	<b>12.45</b>	<b>45.00</b>	<b>43</b>	<b>1.85</b>	<b>35.00</b>	<b>6</b>
GE	1	2.00	0.00	2	0.00	0.00	0
HW	1	4.00	0.00	4	1.00	0.00	1
JB(1)	4	21.50	75.00	36	3.25	75.00	5
JB(2)	2	0.00	0.00	0	0.00	0.00	0
JL	4	13.50	50.00	30	2.00	25.00	5
KW	3	22.33	33.33	43	3.33	33.33	6
MS	2	-7.50	0.00	-5	-1.00	0.00	-1
RC	3	17.00	66.67	23	2.33	66.67	3
<b>S.Western</b>	<b>20</b>	<b>9.45</b>	<b>20.00</b>	<b>37</b>	<b>1.40</b>	<b>20.00</b>	<b>6</b>
AK	1	-5.00	0.00	-5	-1.00	0.00	-1
CD	3	6.00	0.00	10	0.67	0.00	1
GR	3	9.00	0.00	11	1.67	0.00	2
JG	7	21.57	57.14	37	3.14	57.14	6
KJ	4	-0.25	0.00	5	0.00	0.00	1
SL	2	-1.00	0.00	0	0.00	0.00	0
<b>S.Eastern</b>	<b>20</b>	<b>13.70</b>	<b>35.00</b>	<b>38</b>	<b>1.95</b>	<b>40.00</b>	<b>5</b>
CM	4	3.75	0.00	10	0.50	0.00	1
DJB	5	14.40	40.00	28	2.00	60.00	3
IH	1	10.00	0.00	10	1.00	0.00	1
MGC	5	25.40	80.00	38	3.80	80.00	5
SE	3	6.00	0.00	10	1.00	0.00	2
SR	2	16.00	50.00	27	2.00	50.00	3
<b>Welsh Region</b>	<b>60</b>	<b>11.87</b>	<b>33.33</b>	<b>43</b>	<b>1.73</b>	<b>31.67</b>	<b>6</b>
<b>Whole of NRA</b>	<b>481</b>	<b>9.56</b>	<b>28.90</b>	<b>52</b>	<b>1.65</b>	<b>27.86</b>	<b>8</b>

Table 7. Net effects of the Primary Audit on BMWP score and number of scoring taxa for each NRA Area

Analyst/Group	n	Mean net effect on BMWP score	% of samples underestimated by score >13	Maximum underestimate of BMWP score	Mean net effect on no. of taxa	% of samples underestimated by >2 taxa	Maximum underestimate of no. of taxa
<b>Anglian Region</b>	<b>60</b>	<b>10.32</b>	<b>35.00</b>	<b>37</b>	<b>1.98</b>	<b>35.00</b>	<b>6</b>
Central	20	9.45	30.00	24	1.85	25.00	5
Eastern	20	14.35	55.00	37	2.65	55.00	6
Northern	20	7.15	20.00	18	1.45	30.00	3
<b>N &amp; Y Region</b>	<b>60</b>	<b>8.35</b>	<b>16.67</b>	<b>40</b>	<b>1.45</b>	<b>18.33</b>	<b>6</b>
S. Yorkshire	27	7.33	14.81	35	1.37	18.52	6
Northumbria	17	5.41	5.88	20	1.00	5.88	3
Dales	16	13.19	31.25	40	2.06	31.25	6
<b>N.West Region</b>	<b>60</b>	<b>13.03</b>	<b>41.67</b>	<b>49</b>	<b>2.18</b>	<b>40.00</b>	<b>8</b>
Northern	18	12.50	44.44	33	1.83	33.33	5
Central	20	13.00	35.00	39	2.10	40.00	6
Southern	22	13.50	45.45	49	2.55	45.45	8
<b>S-T Region</b>	<b>61</b>	<b>8.69</b>	<b>27.87</b>	<b>41</b>	<b>1.64</b>	<b>27.87</b>	<b>7</b>
Upper Severn	16	8.44	25.00	33	1.31	25.00	4
Lower Severn	13	6.77	23.08	30	1.54	30.77	5
Upper Trent	13	9.23	23.08	41	1.62	23.08	5
Lower Trent	19	9.84	36.84	36	2.00	31.58	7
<b>Southern Region</b>	<b>60</b>	<b>6.62</b>	<b>20.00</b>	<b>52</b>	<b>1.02</b>	<b>15.00</b>	<b>6</b>
Western	30	5.33	13.33	32	0.90	13.33	6
Eastern	30	7.90	40.00	52	1.13	16.67	6
<b>S.W.Region</b>	<b>60</b>	<b>8.43</b>	<b>30.00</b>	<b>35</b>	<b>1.42</b>	<b>23.33</b>	<b>6</b>
Devon	16	9.25	37.50	28	1.50	25.00	4
Cornwall	15	7.87	26.67	35	1.20	30.00	5
N.Wessex	13	4.54	15.38	16	0.85	6.25	3
S.Wessex	16	11.31	37.50	33	2.00	37.50	6
<b>Thames Region</b>	<b>60</b>	<b>9.18</b>	<b>26.67</b>	<b>47</b>	<b>1.78</b>	<b>31.67</b>	<b>7</b>
Fobney Mead	30	11.00	40.00	47	2.10	46.67	6
Waltham Cross	30	7.37	13.33	42	1.47	16.67	7
<b>Welsh Region</b>	<b>60</b>	<b>11.87</b>	<b>33.33</b>	<b>43</b>	<b>1.73</b>	<b>31.67</b>	<b>6</b>
Northern	20	12.45	45.00	43	1.85	35.00	6
S.Western	20	9.45	20.00	37	1.40	20.00	6
S.Eastern	20	13.70	35.00	38	1.95	40.00	5
<b>Whole of NRA</b>	<b>481</b>	<b>9.56</b>	<b>28.90</b>	<b>52</b>	<b>1.65</b>	<b>27.86</b>	<b>8</b>

Table 8. Taxa missed by Welsh Region's primary analysts

Family	n	% of Welsh Region's missed taxa in Primary Audit	% of missed taxa in Primary Audit for all NRA Regions
Hydroptilidae	8	7.02	5.93
Planariidae (incl. Dugesiidae)	7	6.14	4.27
Sericostomatidae	6	5.26	1.07
Dytiscidae (incl. Noteridae)	5	4.39	1.90
Hydrophilidae (incl. Hydraenidae)	5	4.39	5.46
Leptoceridae	5	4.39	3.68
Nemouridae	5	4.39	2.25
Psychomyiidae (incl. Ecnomidae)	5	4.39	2.85
Lymnaeidae	4	3.51	2.49
Scirtidae	4	3.51	1.42
Chloroperlidae	3	2.63	0.47
Goeridae	3	2.63	1.78
Hydropsychidae	3	2.63	1.66
Leptophlebiidae	3	2.63	1.54
Odontoceridae	3	2.63	0.83
Perlodidae	3	2.63	0.47
Piscicolidae	3	2.63	1.90
Polycentropodidae	3	2.63	1.19
Dendrocoelidae	2	1.75	1.07
Gammaridae (incl. Crangonyctidae)	2	1.75	0.95
Glossiphoniidae	2	1.75	1.66
Haliplidae	2	1.75	2.02
Heptageniidae	2	1.75	0.83
Hydrobiidae (incl. Bithyniidae)	2	1.75	4.98
Lepidostomatidae	2	1.75	1.07
Simuliidae	2	1.75	2.73
Sphaeriidae	2	1.75	4.63
Tipulidae	2	1.75	2.25
Ancylidae (incl. Acroloxidae)	1	0.88	1.66
Asellidae	1	0.88	1.66
Caenidae	1	0.88	3.56
Calopterygidae	1	0.88	0.47
Dryopidae	1	0.88	0.24



Table 8. (cont.)

<b>Family</b>	<b>n</b>	<b>% of Welsh Region's missed taxa in Primary Audit</b>	<b>% of missed taxa in Primary Audit for all NRA Regions</b>
Elmidae	1	0.88	4.03
Ephemerellidae	1	0.88	1.54
Gerridae	1	0.88	0.24
Gyrinidae	1	0.88	1.19
Hydrometridae	1	0.88	0.95
Limnephilidae	1	0.88	2.61
Oligochaeta	1	0.88	0.71
Perlidae	1	0.88	0.47
Philopotamidae	1	0.88	0.12
Planorbidae	1	0.88	2.85
Taeniopterygidae	1	0.88	0.47



## **APPENDIX**

### **Results of individual sample audits**

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 20.4.95

WATER-  
COURSE: Ceirw

PRIMARY  
ANALYST: JB

AQC  
ANALYST: MS

SITE: u/s Nug

CODE: 08/N187/01

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Nemouridae	Amphinemura standfussi 1 only	9
Polycentropodidae	Polycentropus sp. 1 only	9
Hydroptilidae	Ithytrichia sp.	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 20

ON NO. OF TAXA 3

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: Northern	DATE: 20.4.95
WATER- COURSE: Nug	PRIMARY ANALYST: JB	AQC ANALYST:
SITE: u/s Ceirw	CODE: 08/N189/01	SORT/AQC METHOD: Preserved

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

VIAL

BMWP taxa not found by IFE  
None  
Additional BMWP taxa found by IFE  
None

SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)  
N/a  
Additional BMWP taxa found by IFE

Leptoceridae	Athripsodes bilineatus	9
Hydroptilidae	Ithytrichia sp.	9
Haliplidae	Brychius elevatus (adult) 1 only	9
Hydrophilidae (incl. Hydraenidae)	Hydraena gracilis (adult) 1 only	9
Chloroperlidae	Chloroperla torrentium 1 only	9

SUMMARY OF AUDIT

LOSSES 0	GAINS 5	OMISSIONS: 0	NET EFFECTS:
			ON BMWP SCORE 36
			ON NO. OF TAXA 5
1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting	
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error	
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC	
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst	

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 4.5.95

WATER-

PRIMARY

AQC

COURSE: Wepre Brook

ANALYST: JL

ANALYST: JB(1)

SITE: Shotton

CODE: 08 N208

SORT/AQC

METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Nemouridae

Nemoura cambrica/erratica 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 7

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 10.5.95

WATER-

PRIMARY

AQC

COURSE: Black Brook

ANALYST: JL

ANALYST:

SITE: Penyffordd

CODE: N143

SORT/AQC

METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: Northern	DATE: 20.4.95
WATER- COURSE: Nantcol	PRIMARY ANALYST: KW	AQC ANALYST:
SITE: Cwm Nantcol	CODE: 08 N033	SORT/AQC METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydrophilidae (incl. Hydraenidae)	Hydraena gracilis (adults)	9
Hydroptilidae	Ithytrichia sp.	9

### SUMMARY OF AUDIT

LOSSES 0      GAINS 2      OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 11  
ON NO. OF TAXA 2

1 No representative of family in vial  
2 Alternative terrestrial specimen in vial  
3 Posterior end only in vial  
4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling  
6 Taxon in vial but not recorded  
7 Mis-identification  
8 Typographical error - wrong box ticked

9 Taxon missed in sorting  
10 Unexplained error  
11 Taxon added in internal AQC  
12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 10.5.95

WATER-  
COURSE: Alyn

PRIMARY  
ANALYST: MS

AQC  
ANALYST: JB

SITE: Fagl Lane

CODE: 08/N133/01

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

#### VIAL

##### BMWP taxa not found by IFE

Tipulidae	Empididae in vial	1
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##### Additional BMWP taxa found by IFE

None

#### SAMPLE

##### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

##### Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 1

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE -5

ON NO. OF TAXA -1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh  
WATER-  
COURSE: Conwy  
SITE: Llanrwst

LABORATORY: Northern  
PRIMARY  
ANALYST: MS  
CODE: 08/N071/01

DATE: 13.4.95  
AQC  
ANALYST: RC  
SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

Perlidae

1

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 1

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE -10

ON NO. OF TAXA -1

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: Northern	DATE: 11.4.95
WATER-COURSE: Lliw	PRIMARY ANALYST: RC	AQC ANALYST:
SITE: Pen-y-bont	CODE: 08/N204/01	SORT/AQC METHOD: Preserved

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Hydroptilidae	Ithytrichia sp., Oxyethira sp.	9
Leptoceridae	Oecetis testacea 1 only	9
Polycentropodidae	Polycentropus sp. (juvenile) 1 only	9

SUMMARY OF AUDIT

LOSSES 0	GAINS 3	OMISSIONS: 0	NET EFFECTS:
			ON BMWP SCORE 23
			ON NO. OF TAXA 3
1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting	
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error	
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC	
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst	

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 11.5.95

WATER-  
COURSE: Caldry Brook

PRIMARY  
ANALYST: RC

AQC  
ANALYST: KW

SITE: Huntington

CODE: N250-9547

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

Dytiscidae (incl. Noteridae)

12

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Dendrocoelidae

Dendrocoelum lacteum 1 only

9

Hydrophilidae (incl. Hydraenidae)

Helophorus grandis (adult) 1 only

9

### SUMMARY OF AUDIT

LOSSES 1

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 5

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: Northern	DATE: 13.9.95
WATER-COURSE: Meirchion	PRIMARY ANALYST: GE	AQC ANALYST:
SITE: Henllan Mill	CODE: N242	SORT/AQC METHOD: Preserved

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

VIAL

BMWP taxa not found by IFE

Sericostomatidae *	1
Planorbidae	2

Additional BMWP taxa found by IFE

None

SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Sericostomatidae *	Sericostoma personatum 1 only	1
Scirtidae	Elodes sp. (larva) 1 only	9

SUMMARY OF AUDIT

LOSSES 1	GAINS 1	OMISSIONS: 1	NET EFFECTS:
			ON BMWP SCORE 2
			ON NO. OF TAXA 0
1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting	
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error	
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC	
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst	

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: Northern	DATE: 18.10.95
WATER- COURSE: Ebbw Fawr	PRIMARY ANALYST: HW	AQC ANALYST: JB(1)
SITE: Rogerstone	CODE: 08 E215	SORT/AQC METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

Asellidae *	1
Hydroptilidae	4

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Lymnaeidae	Lymnaea sp. (juvenile) in AQC vial	9
Asellidae *	Asellus aquaticus in AQC vial	1
Polycentropodidae	Polycentropus sp. (juvenile) 1 only	9

### SUMMARY OF AUDIT

LOSSES 1      GAINS 2      OMISSIONS: 1

#### NET EFFECTS:

ON BMWP SCORE 4  
ON NO. OF TAXA 1

1 No representative of family in vial  
2 Alternative terrestrial specimen in vial  
3 Posterior end only in vial  
4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling  
6 Taxon in vial but not recorded  
7 Mis-identification  
8 Typographical error - wrong box ticked

9 Taxon missed in sorting  
10 Unexplained error  
11 Taxon added in internal AQC  
12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh  
WATER-  
COURSE: Angell

LABORATORY: Northern  
PRIMARY  
ANALYST: JB(1)

DATE: 5.9.95  
AQC  
ANALYST: RC  
SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Planariidae (incl. Dugesiiidae)	Crenobia alpina	9
Dytiscidae (incl. Noteridae)	Oreodytes sanmarkii (larva) 1 only	9
Gammaridae (incl. Crangonyctidae)	Gammarus pulex	9

### SUMMARY OF AUDIT

LOSSES 0      GAINS 3      OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 16  
ON NO. OF TAXA 3

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain) .

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 4.10.95

WATER-  
COURSE: Rhymney

PRIMARY  
ANALYST: JB(1)

AQC  
ANALYST:

SITE: The Mill

CODE: E242

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Leptophlebiidae	Paraleptophlebia submarginata 1 only	9
Piscicolidae	Piscicola geometra 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 14

ON NO. OF TAXA 2

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 4.10.95

WATER-  
COURSE: Nant y Aber

PRIMARY  
ANALYST: JB(2)

AQC  
ANALYST:

SITE: Caerphilly

CODE: 08 E258

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 18.9.95

WATER-  
COURSE: Aldford Brook

PRIMARY  
ANALYST: JB(2)

AQC  
ANALYST: RC

SITE: Lea Hall

CODE: N252-9539

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 4.9.95

WATER-  
COURSE: Einion

PRIMARY  
ANALYST: JL

AQC  
ANALYST:

SITE: Furnace

CODE: 08 N215

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Scirtidae	Elodes sp. (larva) 1 only	9
Heptageniidae	Rhithrogena sp. 1 only	9
Dytiscidae (incl. Noteridae)	Oreodytes sanmarkii (adult) 1 only	9
Hydropsychidae	Hydropsyche siltalai 1 only	9
Planariidae (incl. Dugesiidae)	Crenobia alpina	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 5

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 30

ON NO. OF TAXA 5

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 5.9.95

WATER-

PRIMARY

AQC

COURSE: Afon Gwydol

ANALYST: JL

ANALYST: RC

SITE: Abergwydol

CODE: 08 N013

SORT/AQC

METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

Planorbidae	Zonitidae in vial	7
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#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Dryopidae	Helichus substriatus (adult) 1 only	9
Perlodidae	Indet Perlodid (juvenile) 1 only	9
Scirtidae	Elodes sp. (larvae)	9

### SUMMARY OF AUDIT

LOSSES 1

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 17

ON NO. OF TAXA 2

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

WATER-COURSE: Wnion

SITE: Dolgellau

LABORATORY: Northern

PRIMARY ANALYST: KW

CODE: N028-9529

DATE: 6.9.95

AQC ANALYST: RC

SORT/AQC METHOD: Preserved/Preserved

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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VIAL

<u>BMWP taxa not found by IFE</u>		
Corophiidae	Gammarus pulex	8
<u>Additional BMWP taxa found by IFE</u>		
Gammaridae (incl. Crangonyctidae)	Gammarus pulex	8

SAMPLE

<u>BMWP taxa not found by IFE</u> (For samples where vial is broken or absent)		
N/a		
<u>Additional BMWP taxa found by IFE</u>		
Hydrobiidae (incl. Bithyniidae)	Potamopyrgus jenkinsi	11
Goeridae	Silo sp. 1 only	11

SUMMARY OF AUDIT

LOSSES 1	GAINS 3	OMISSIONS: 0	NET EFFECTS:
			ON BMWP SCORE 13
			ON NO. OF TAXA 2
1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting	
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error	
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC	
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst	

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh  
WATER-  
COURSE: Dwyfor  
  
SITE: Dolbenmaen

LABORATORY: Northern  
PRIMARY  
ANALYST: KW  
  
CODE: N219-9535

DATE: 12.9.95  
AQC  
ANALYST: RC  
SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

Perlodidae	Perlodes microcephala 1 only	6
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### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydroptilidae	Oxyethira sp.	11
Gammaridae (incl. Crangonyctidae)	Gammarus sp. 1 only	11
Psychomyiidae (incl. Ecnomidae)	Lype sp. 1 only	9
Odontoceridae	Odontocerum albicorne 1 only	11
Lymnaeidae	Lymnaea peregra 1 only	11

### SUMMARY OF AUDIT

LOSSES 0    GAINS 6    OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 43  
ON NO. OF TAXA 6

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: Northern

DATE: 12.9.95

WATER-  
COURSE: Cegidog

PRIMARY  
ANALYST: RC

AQC  
ANALYST: JB(1)

SITE: Llandrillo

CODE: N193-9533

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Leptophlebiidae	Paraleptophlebia submarginata 1 only	9
Philopotamidae	Wormaldia sp.	9
Gyrinidae	Orectochilus villosus (larva) 1 only	11

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 23

ON NO. OF TAXA 3

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western /

DATE: 10.5.95

WATER-  
COURSE: Dulais

PRIMARY  
ANALYST: AK

AQC  
ANALYST:

SITE: Seven Sisters

CODE: W055

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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#### VIAL

##### BMWP taxa not found by IFE

Mesovelidae

Velia sp. (nymph) in vial

7

##### Additional BMWP taxa found by IFE

None

#### SAMPLE

##### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

##### Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 1

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE -5

ON NO. OF TAXA -1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 2.5.95

WATER-  
COURSE: Gawr

PRIMARY  
ANALYST: GR

AQC  
ANALYST: KJ

SITE: Brynmenyn Bridge

CODE: W025

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Lepidostomatidae	Crunoecia irrorata 1 only	11
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### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 10

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 26.4.95

WATER-  
COURSE: Alun

PRIMARY  
ANALYST: GR

AQC  
ANALYST:

SITE: d/s Llandow Bridge

CODE: W007

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

Hydrobiidae (incl. Bithyniidae)

4

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydrometridae

Hydrometra stagnorum 1 only

9

Dendrocoelidae

Dendrocoelum lacteum

9

Piscicolidae

Piscicola geometra 1 only

9

### SUMMARY OF AUDIT

LOSSES 1

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 11

ON NO. OF TAXA 2

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 26.4.95

WATER-

COURSE: Stembridge Brook

PRIMARY

ANALYST: GR

AQC

ANALYST: KJ

SITE: Stembridge Farm

CODE: 08 W303

SORT/AQC

METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydrobiidae (incl. Bithyniidae)

Potamopyrgus jenkinsi

11

Glossiphoniidae

Glossiphonia complanata 1 only

11

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 6

ON NO. OF TAXA 2

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

# EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: South Western	DATE: 4.4.95
WATER-COURSE: Rheidol	PRIMARY ANALYST: JG	AQC ANALYST: KJ
SITE: Lovesgrove	CODE: W264	SORT/AQC METHOD: Preserved/Preserved

## RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

Leptoceridae	Athripsodes bilineatus in primary vial A. cinereus + Ocetis testacea in sample	6
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### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Oligochaeta	Nais sp., Enchytracidae	11
Perlodidae	Isoperla grammatica	11
Limnephilidae	Anabolia nervosa	11
Hydropsychidae	Hydropsyche siltalai	11

## SUMMARY OF AUDIT

LOSSES 0      GAINS 5      OMISSIONS: 0

### NET EFFECTS:

ON BMWP SCORE 33  
ON NO. OF TAXA 5

1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: South Western	DATE: 27.4.95
WATER- COURSE: Knock Brook	PRIMARY ANALYST: JG	AQC ANALYST:
SITE: Cutty Bridge	CODE: W203	SORT/AQC METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydroptilidae	Ithytrichia sp.	9
Leptoceridae	Athripsodes sp. 1 only	9
Psychomyiidae (incl. Ecnomidae)	Lype sp. 1 only	9
Caenidae	Caenis rivulorum	9
Ancylidae (incl. Acroloxidae)	Ancylus fluviatilis 1 only	9

### SUMMARY OF AUDIT

LOSSES 0      GAINS 5      OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 37  
ON NO. OF TAXA 5

- |  |  |  |
|--|--|--|
| 1 No representative of family in vial      | 5 Specimen dead at time of sampling      | 9 Taxon missed in sorting                          |
| 2 Alternative terrestrial specimen in vial | 6 Taxon in vial but not recorded         | 10 Unexplained error                               |
| 3 Posterior end only in vial               | 7 Mis-identification                     | 11 Taxon added in internal AQC                     |
| 4 Empty shell or case or cast skin in vial | 8 Typographical error - wrong box ticked | 12 Recorded taxon that was rejected by AQC analyst |

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: South Western	DATE: 21.4.95
WATER-COURSE: Teifi	PRIMARY ANALYST: JG	AQC ANALYST: GR
SITE: Llechryd Road Bridge	CODE: W212-95SW13	SORT/AQC METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Perlidae	Perla bipunctata 1 only	9
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### SUMMARY OF AUDIT

LOSSES 0    GAINS 1    OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 10  
ON NO. OF TAXA 1

- |  |  |  |
|--|--|--|
| 1 No representative of family in vial      | 5 Specimen dead at time of sampling      | 9 Taxon missed in sorting                          |
| 2 Alternative terrestrial specimen in vial | 6 Taxon in vial but not recorded         | 10 Unexplained error                               |
| 3 Posterior end only in vial               | 7 Mis-identification                     | 11 Taxon added in internal AQC                     |
| 4 Empty shell or case or cast skin in vial | 8 Typographical error - wrong box ticked | 12 Recorded taxon that was rejected by AQC analyst |

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

WATER-COURSE: Pibwr

SITE: Pibwrllyd

LABORATORY: South Western

PRIMARY ANALYST: KJ

CODE: W142

DATE: 27.4.95

AQC ANALYST: GR

SORT/AQC METHOD: Preserved/Preserved

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
-------------	-------------------------------------	---

VIAL

BMWP taxa not found by IFE

Ancylidae (incl. Acroloxidae)

Additional BMWP taxa found by IFE

None

1

SAMPLE

BMWP taxa not found by IFE

N/a

Additional BMWP taxa found by IFE

None

(For samples where vial is broken or absent)

SUMMARY OF AUDIT

LOSSES 1

GAINS 0

OMISSIONS: 0

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

NET EFFECTS:

ON BMWP SCORE -6

ON NO. OF TAXA -1

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: South Western	DATE: 19.4.95
WATER-COURSE: Tywi	PRIMARY ANALYST: KJ	AQC ANALYST:
SITE: Llandeilo Road Bridge	CODE: W115	SORT/AQC METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0    GAINS 0    OMISSIONS: 0

### NET EFFECTS:

ON BMWP SCORE 0  
ON NO. OF TAXA 0

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 9.10.95

WATER-  
COURSE: Ritec

PRIMARY  
ANALYST: CD

AQC  
ANALYST: GR

SITE: Holloway Bridge

CODE: W188-95SW25

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

Perlidae 5

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Hydroptilidae	Hydroptila sp. (pupa) 1 only	9
Dytiscidae (incl. Noteridae)	Ilybius sp. (larvae)	11

### SUMMARY OF AUDIT

LOSSES 1

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 1

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh  
WATER-  
COURSE: Anghof  
SITE: Wolfscastle

LABORATORY: South Western  
PRIMARY  
ANALYST: CD  
CODE: W204

DATE: 29.9.95  
AQC  
ANALYST:  
SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Leptoceridae

Oecetis testacea 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 10

ON NO. OF TAXA 1

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 9.10.95

WATER-  
COURSE: Cresswell

PRIMARY  
ANALYST: CD

AQC  
ANALYST: GR

SITE: u/s Bishops Bridge

CODE: W414-95SW51

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

Caenidae	1
Planorbidae	2

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Nemouridae	Nemurella picteti, Nemoura avicularis	11
Ephemerelellidae	Ephemerelella ignita 1 only	11

### SUMMARY OF AUDIT

LOSSES 2

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 7  
ON NO. OF TAXA 0

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 14.9.95

WATER-  
COURSE: Hengwm

PRIMARY  
ANALYST: JG

AQC  
ANALYST:

SITE: d/s Hyddgen confluence

CODE: W271

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Hydroptilidae

Oxyethira sp. 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 6

ON NO. OF TAXA 1

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh  
WATER-  
COURSE: Ystwyth

LABORATORY: South Western  
PRIMARY  
ANALYST: JG

DATE: 13.9.95  
AQC  
ANALYST: GR  
SORT/AQC  
METHOD: Preserved/Preserved

SITE: Rhydyfelin

CODE: 08 W272

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Scirtidae	Hydrocyphon deflexicollis (larva) 1 only	11
Planariidae (incl. Dugesiidae)	Crenobia alpina 1 only	11
Hydrophilidae (incl. Hydraenidae)	Hydraena gracilis (adult) 1 only	9
Nemouridae	Protonemura sp. (juveniles)	11
Chloroperlidae	Chloroperla sp. (juvenile) 1 only	11
Lymnaeidae	Lymnaea sp. (juvenile) 1 only	11

### SUMMARY OF AUDIT

LOSSES 0

GAINS 6

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 35

ON NO. OF TAXA 6

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: South Western	DATE: 13.9.95
WATER-COURSE: Clarach	PRIMARY ANALYST: JG	AQC ANALYST: GR
SITE: d/s Caravan site STW	CODE: 08 W424	SORT/AQC METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Calopterygidae	Calopteryx virgo 1 only	11
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### SUMMARY OF AUDIT

LOSSES 0      GAINS 1      OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 8  
ON NO. OF TAXA 1

1 No representative of family in vial  
2 Alternative terrestrial specimen in vial  
3 Posterior end only in vial  
4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling  
6 Taxon in vial but not recorded  
7 Mis-identification  
8 Typographical error - wrong box ticked

9 Taxon missed in sorting  
10 Unexplained error  
11 Taxon added in internal AQC  
12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

WATER-COURSE: Teifi

SITE: Llanybydder Road Bridge

LABORATORY: South Western

PRIMARY ANALYST: JG

CODE: W391-95SW49

DATE: 6.9.95

AQC ANALYST: KJ

SORT/AQC METHOD: Preserved/Preserved

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

SAMPLE

BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Psychomyiidae (incl. Ecnomidae)	Psychomyia pusilla 1 only	11
Planariidae (incl. Dugesiidae)	Polycelis nigra/tenuis 1 only	11
Sericostomatidae	Sericostoma personatum 1 only	11

SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 23

ON NO. OF TAXA 3

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 22.9.95

WATER-  
COURSE: Fenni

PRIMARY  
ANALYST: KJ

AQC  
ANALYST:

SITE: SN 237 168

CODE: W138

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

Haliplidae

Brychius elevatus (adult) 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 5

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 2.10.95

WATER-  
COURSE: Camddwr

PRIMARY  
ANALYST: KJ

AQC  
ANALYST: GR

SITE: SN 784 532

CODE: W186-95SW48

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 10.10.95

WATER-  
COURSE: Nant-y-Tendrod

PRIMARY  
ANALYST: SL

AQC  
ANALYST:

SITE: u/s Tawe confluence

CODE: W073

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

Haliplidae

5

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Lymnaeidae

Lymnaea peregra 1 only

9

### SUMMARY OF AUDIT

LOSSES 1

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE -2

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Western

DATE: 8.10.95

WATER-  
COURSE: Amman

PRIMARY  
ANALYST: SL

AQC  
ANALYST: GR

SITE: Glanamman

CODE: 08 W102

SORT/AQC

METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 10.5.95

WATER-  
COURSE: Ely

PRIMARY  
ANALYST: CM

AQC  
ANALYST: SR

SITE: St Fagans

CODE: 08/E324/01

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 2.5.95

WATER-  
COURSE: Back Brook

PRIMARY  
ANALYST: CM

AQC  
ANALYST:

SITE: u/s Arrow

CODE: 08 E100

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Sericostomatidae

Sericostoma personatum 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 10

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 10.5.95

WATER-  
COURSE: Nant Dowlais

PRIMARY  
ANALYST: CM

AQC  
ANALYST: SR

SITE: d/s Tregurnog Farm

CODE: 08/E445/01

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 19.4.95

WATER-  
COURSE: Ely

PRIMARY  
ANALYST: CM

AQC  
ANALYST: SR

SITE: u/s L'Oreal

CODE: 08/E330/01

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Dytiscidae (incl. Noteridae)	Oreodytes sanmarkii (adults)	9
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### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 5

ON NO. OF TAXA 1

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 20.4.95

WATER-

COURSE: Berthin Brook

PRIMARY

ANALYST: DJB

AQC

ANALYST:

SITE: Pont y Pia

CODE: 08 E376

SORT/AQC

METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Odontoceridae	Odontocerum albicorne 1 only	9
Leptophlebiidae	Habrophlebia fusca	9
Simuliidae	Simulium cryophilum group 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 25

ON NO. OF TAXA 3

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

WATER-COURSE: Weycock

SITE: Cumix Bridge

LABORATORY: South Eastern

PRIMARY ANALYST: DJB

CODE: E451-021

DATE: 23.3.95

AQC ANALYST: SR

SORT/AQC METHOD: Preserved/Preserved

RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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VIAL

<b>BMWP taxa not found by IFE</b>		
Hydrobiidae (incl. Bithyniidae) *		4
Sphaeriidae *		4
<b>Additional BMWP taxa found by IFE</b>		
None		

SAMPLE

<b>BMWP taxa not found by IFE</b> (For samples where vial is broken or absent)		
N/a		
<b>Additional BMWP taxa found by IFE</b>		
Hydrobiidae (incl. Bithyniidae) *	Potamopyrgus jenkinsi	4
Sphaeriidae *	Pisidium sp.	4
Goeridae	Goera pilosa 1 only	9

SUMMARY OF AUDIT

LOSSES 0	GAINS 1	OMISSIONS: 2	NET EFFECTS:
			ON BMWP SCORE 10
			ON NO. OF TAXA 1
1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting	
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error	
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC	
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst	

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

# EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: South Eastern	DATE: 1.5.95
WATER-COURSE: Clydach	PRIMARY ANALYST: MC	AQC ANALYST: SR
SITE: Cwm Nant-garn	CODE: 08/E199/01	SORT/AQC METHOD: Preserved/Preserved

## RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

Hydrobiidae (incl. Bithyniidae)	Potamopyrgus jenkinsi in primary vial	11
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### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Taeniopterygidae	Brachyptera risi 1 only	11
Leptoceridae	Athripsodes albifrons 1 only	11
Sericostomatidae	Sericostoma personatum 1 only	11
Elmidae	Elmis aenea (larvae), Limnius volckmari Esolus parallelepipedus (adults)	9

## SUMMARY OF AUDIT

LOSSES 0

GAINS 5

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 38

ON NO. OF TAXA 5

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 3.5.95

WATER-  
COURSE: Tresenny Brook

PRIMARY  
ANALYST: MC

AQC  
ANALYST: SR

SITE: Grosmont

CODE: 08 E400

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

Planorbidae	AQC column of data sheet marked "terrestrial?" but taxon still included by AQC checker in assessing BMWP score	2
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#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Odontoceridae	Odontocerum albicorne	9
Dytiscidae (incl. Noteridae)	Oreodytes sanmarkii (adults)	11
Piscicolidae	Piscicola geometra 1 only	9
Glossiphoniidae	Glossiphonia complanata 1 only	11

### SUMMARY OF AUDIT

LOSSES 1

GAINS 4

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 19

ON NO. OF TAXA 3

- 1 No representative of family in vial  
2 Alternative terrestrial specimen in vial  
3 Posterior end only in vial  
4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling  
6 Taxon in vial but not recorded  
7 Mis-identification  
8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting  
10 Unexplained error  
11 Taxon added in internal AQC  
12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: South Eastern	DATE: 2.5.95
WATER- COURSE: Valley Brook	PRIMARY ANALYST: MC	AQC ANALYST:
SITE: Millend	CODE: 08 E022	SORT/AQC METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Tipulidae	Molophilus sp.	9
Gerridae	Gerris gibbifer 1 only	9

### SUMMARY OF AUDIT

LOSSES 0      GAINS 2      OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 10  
ON NO. OF TAXA 2

1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 31.3.95

WATER-  
COURSE: Taff

PRIMARY  
ANALYST: SE

AQC  
ANALYST:

SITE: u/s Cynon + Cilfynydd STW

CODE: 08 E274

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent).

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 6.9.95

WATER-  
COURSE: Afon Hydfer

PRIMARY  
ANALYST: DJB

AQC  
ANALYST:

SITE: Pont ar Hydfer

CODE: E213

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Chloroperlidae	Chloroperla sp. 1 only	9
Perlodidae	Perlodes microcephala 1 only	9
Psychomyiidae (incl. Ecnomidae)	Psychomyia pusilla 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 28

ON NO. OF TAXA 3

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 7.9.95

WATER-

COURSE: Wellington Brook

PRIMARY

ANALYST: DJB

AQC

ANALYST: SR

SITE: Wellington

CODE: 08 E085

SORT/AQC

METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

BMWP taxa not found by IFE

None

Additional BMWP taxa found by IFE

None

### SAMPLE

BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

Additional BMWP taxa found by IFE

None

### SUMMARY OF AUDIT

LOSSES 0

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 0

ON NO. OF TAXA 0

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 19.9.95

WATER-  
COURSE: Ely

PRIMARY  
ANALYST: DJB

AQC  
ANALYST: SR

SITE: Pontyclun

CODE: 08 E329

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Planorbidae	Armiger crista 1 only	11
Sphaeriidae	Pisidium sp.	9
Asellidae	Asellus aquaticus 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 9

ON NO. OF TAXA 3

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)



## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 21.9.95

WATER-  
COURSE: Taff

PRIMARY  
ANALYST: IH

AQC  
ANALYST: SR

SITE: u/s Taffs Well

CODE: E269-035

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Sericostomatidae

Sericostoma personatum

11

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 10

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC,

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 16.10.95

WATER-  
COURSE: Afon Llwyd

PRIMARY  
ANALYST: MGC

AQC  
ANALYST: SR

SITE: Pontnewynydd

CODE: 08 E181

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

Limnephilidae	Potamophylax latipennis	11
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### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Sericostomatidae	Sericostoma personatum 1 only	11
Hydrophilidae (incl. Hydraenidae)	Hydraena gracilis (adult) 1 only	11
Planariidae (incl. Dugesiidae)	Polycelis felina 1 only	11

### SUMMARY OF AUDIT

LOSSES 0

GAINS 4

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 27

ON NO. OF TAXA 4

- 1 No representative of family in vial
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell or case or cast skin in vial

- 5 Specimen dead at time of sampling
- 6 Taxon in vial but not recorded
- 7 Mis-identification
- 8 Typographical error - wrong box ticked

- 9 Taxon missed in sorting
- 10 Unexplained error
- 11 Taxon added in internal AQC
- 12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 18.9.95

WATER-  
COURSE: Usk

PRIMARY  
ANALYST: MGC

AQC  
ANALYST:

SITE: Llangrwyney

CODE: E171

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Tipulidae	Dicranota sp. 1 only	9
Lepidostomatidae	Lepidostoma hirtum 1 only	9
Planariidae (incl. Dugesiidae)	Polycelis felina	9
Psychomyiidae (incl. Ecnomidae)	Psychomyia pusilla 1 only	9
Simuliidae	Simulium aureum group, S.reptans (pupa)	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 5

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 33

ON NO. OF TAXA 5

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 14.9.95

WATER-  
COURSE: Ely

PRIMARY  
ANALYST: SE

AQC  
ANALYST:

SITE: Bryn Farm

CODE: E327

SORT/AQC  
METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Sphaeriidae

Sphaerium sp. 1 only

9

Hydropsychidae

Hydropsyche pellucidula 1 only

9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 8

ON NO. OF TAXA 2

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 25.9.95

WATER-

COURSE: Usk

PRIMARY

ANALYST: SE

AQC

ANALYST: SR

SITE: Llantrisant

CODE: E167-030

SORT/AQC

METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Sericostomatidae

Sericostoma personatum 1 only

11

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 10

ON NO. OF TAXA 1

1 No representative of family in vial

2 Alternative terrestrial specimen in vial

3 Posterior end only in vial

4 Empty shell or case or cast skin in vial

5 Specimen dead at time of sampling

6 Taxon in vial but not recorded

7 Mis-identification

8 Typographical error - wrong box ticked

9 Taxon missed in sorting

10 Unexplained error

11 Taxon added in internal AQC

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample ( no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh	LABORATORY: South Eastern	DATE: 8.9.95
WATER- COURSE: Frome	PRIMARY ANALYST: SR	AQC ANALYST:
SITE: Longworth Bridge	CODE: E067	SORT/AQC METHOD: Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE (For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Goeridae	Goera pilosa	9
Nemouridae	Nemoura avicularis 1 only	9
Heptageniidae	Heptagenia sulphurea	9

### SUMMARY OF AUDIT

LOSSES 0      GAINS 3      OMISSIONS: 0

#### NET EFFECTS:

ON BMWP SCORE 27  
ON NO. OF TAXA 3

1 No representative of family in vial	5 Specimen dead at time of sampling	9 Taxon missed in sorting
2 Alternative terrestrial specimen in vial	6 Taxon in vial but not recorded	10 Unexplained error
3 Posterior end only in vial	7 Mis-identification	11 Taxon added in internal AQC
4 Empty shell or case or cast skin in vial	8 Typographical error - wrong box ticked	12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

## EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Welsh

LABORATORY: South Eastern

DATE: 4.9.95

WATER-

PRIMARY

AQC

COURSE: Walford Brook

ANALYST: SR

ANALYST: DJB

SITE: Walford

CODE: E050-041

SORT/AQC

METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

Family name	Species name (where appropriate)	Presumed cause of error (see footnotes)
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### VIAL

#### BMWP taxa not found by IFE

None

#### Additional BMWP taxa found by IFE

None

### SAMPLE

#### BMWP taxa not found by IFE

(For samples where vial is broken or absent)

N/a

#### Additional BMWP taxa found by IFE

Planariidae (incl. Dugesidae)

Polycelis nigra/tenuis 1 only

11

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 5

ON NO. OF TAXA 1

1 No representative of family in vial

5 Specimen dead at time of sampling

9 Taxon missed in sorting

2 Alternative terrestrial specimen in vial

6 Taxon in vial but not recorded

10 Unexplained error

3 Posterior end only in vial

7 Mis-identification

11 Taxon added in internal AQC

4 Empty shell or case or cast skin in vial

8 Typographical error - wrong box ticked

12 Recorded taxon that was rejected by AQC analyst

Omission (\*) = Recorded, not in vial but found by IFE in sample (no net loss or gain)

