

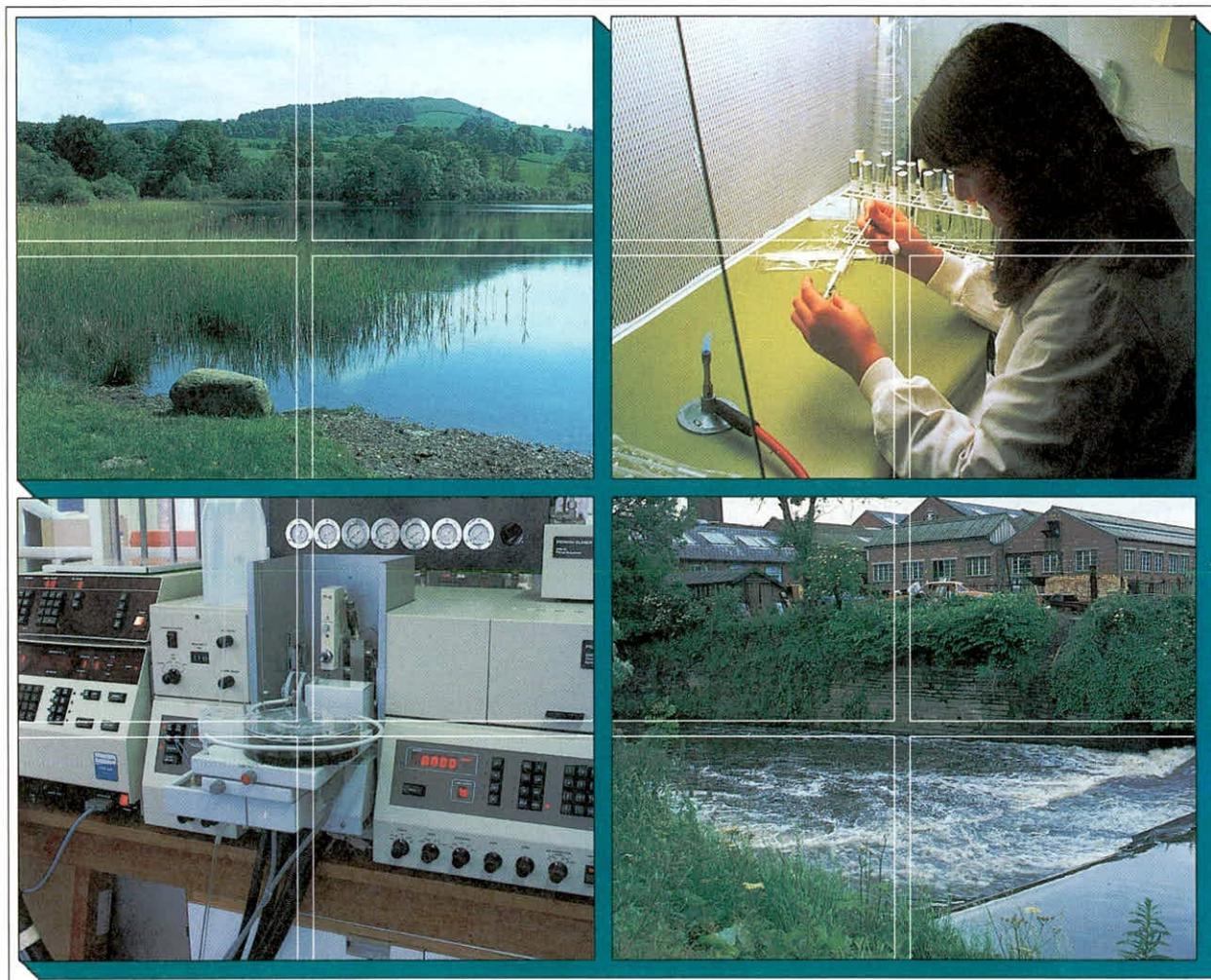
# An audit of performance in the analysis of biological samples in 1995 NRA Southern Region: Primary Audit

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

## **NRA Southern Region: Primary Audit**

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Project Leader:  
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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 Southern 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 24 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 Southern Region are summarised by area in Tables 1 and 2. Table 3 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 4 compares these results for each NRA Region and Area laboratory. Table 5 presents data for Southern 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 6 compares this BMWP data for each NRA Region and Area laboratory. Table 7 lists the taxa missed in sorting by Southern 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 30 samples audited for Western Area

River	Site	Primary Analyst	Losses	Gains	Omissions
<b>SPRING</b>					
Arun	u/s Horsham By-pass	W1	1	1	1
Sowley Stream	Beck Farm	W1	1	1	1
Arun	New Bridge	W1	0	1	0
Rother	Durford Bridge	W9	0	1	0
Sussex Rother	Shopham Bridge	W9	1	1	0
Weston Common Stream	Botany Bay	W13	0	0	0
Bartley Water	Ashurst Bridge	W14	0	3	0
Manor Stream	A337 Bridge	W14	1	4	0
Woodsmill Stream	Streatham Railway Culvert	W15	0	0	0
Woodsmill Stream	Woodsmill Bridge	W15	0	3	0
Caulbourne	Fulling Mill	W15	0	0	0
Warblington Stream	Church Path	W18	0	0	0
Horton Heath Stream	Maddox Ford Farm	W18	0	2	0
Test	Testwood	W19	0	0	1
Fairbourne Stream	Brook Farm	W19	1	0	0
Pagham Rife	u/s Harbour Wall	W19	0	2	0
Test	Longstock	W19	0	1	0
Marchwood Park Stream	Dibden North P.S.	W21	0	0	0
Test	Bridge Street, Overton	W23	1	1	0
Ober Water	Aldridgehill	W25	0	1	0
Croften Stream	Croften Farm Dairy	W25	1	0	0
Herring Stream	Herring Bridge	W25	0	1	0
Itchen	Easton	E23	0	1	0
<b>AUTUMN</b>					
Rother	Sheet d/s A3	W9	0	1	0
Moors Stream	Botley Road	W13	0	0	0
Meon	Drayton	W13	1	3	0
Blackwater	Nutsey Road	W14	0	1	0
Plaitford Stream	u/s Plaitford Place	W14	0	1	0
Darkwater	Gatewood Bridge	W14	0	6	0
Wroxall Stream	Bathingbourne	W15	1	0	0

Table 2. The 30 samples audited for Eastern Area

River	Site	Primary Analyst	Losses	Gains	Omissions
<b>SPRING</b>					
Royal Military Canal Trib.	d/s Appledore STW	E1	0	1	0
Brede	Rye Harbour Road Bridge	E2	0	3	0
Teise	Lamberhurst	E4	1	1	0
Kent Water	Cowden	E6	0	2	0
Beult	Yalding	E11	0	1	1
Len	Mote Park	E11	0	1	0
Hammer Stream	Buckhurst	E15	1	1	0
Gibbs Brook	u/s Godstone STW	E17	0	2	0
Wateringbury Stream	Wateringbury	E18	1	0	0
Ouse	East Mascalls	E20	0	0	0
Horse Eye Sewer	d/s Hailsham South	E21	1	4	1
Great Stour	Bretts	E22	0	2	1
Line	River Hall, Heath Hill	E22	0	0	0
Hurst Green Stream	Bugsell Mill	E22	0	0	0
<b>AUTUMN</b>					
Eden	Popes Lane, Oxted	E1	0	0	0
Limden Tributary	Little Boarzell	E1	0	3	0
Somerhill Stream	Old Forge Farm	E1	0	0	0
Gynde Reach	Beddingham	E6	0	4	1
Royal Military Canal	Iden Lock	E19	0	1	0
Dudwell	Etchingham	E19	0	2	0
Beult	Cross at Hand	E19	1	1	0
Cuckmere	Boship Bridge	E21	1	2	0
Rother	Blackwall Bridge	E21	0	2	0
Teise	d/s Horsmonden STW	E21	0	1	0
Bewl	A21 Bewl Bridge	E21	1	7	0
Brede	Rye Harbour Road Bridge	E22	0	1	0
Pippingford Beck	Withyham	E22	1	1	0
Medway	u/s Trebor	E22	1	1	0
Hugletts Stream	Henleys Bridge	E24	1	0	0
Vines Cross Stream	Craille Bridge	E24	0	0	0

Table 3. Statistics of 1995 Primary Audit results for Southern Region

Analyst/Group	n	Mean gains	Standard error	No.samples >2 gains	% samples >2 gains	Highest no. gains	Mean errors (l+g+o)	Standard error
<b>Western</b>	<b>30</b>	<b>1.20</b>	<b>0.26</b>	<b>5</b>	<b>16.67</b>	<b>6</b>	<b>1.60</b>	<b>0.27</b>
W1	3	1.00	0.00	0	0.00	1	2.33	0.67
W9	3	1.00	0.00	0	0.00	1	1.33	0.33
W13	3	1.00	1.00	1	33.33	3	1.33	1.33
W14	5	3.00	0.95	3	60.00	6	3.20	1.02
W15	4	0.75	0.75	1	25.00	3	1.00	0.71
W18	2	1.00	1.00	0	0.00	2	1.00	1.00
W19	4	0.75	0.48	0	0.00	2	1.25	0.25
W21	1	0.00	n/a	0	0.00	0	0.00	n/a
W23	1	1.00	n/a	0	0.00	1	2.00	n/a
W25	3	0.67	0.33	0	0.00	1	1.00	0.00
E23	1	1.00	n/a	0	0.00	1	1.00	n/a
<b>Eastern</b>	<b>30</b>	<b>1.47</b>	<b>0.28</b>	<b>5</b>	<b>16.67</b>	<b>7</b>	<b>1.93</b>	<b>0.33</b>
E1	4	1.00	0.71	1	25.00	3	1.00	0.71
E2	1	3.00	n/a	1	100.00	3	3.00	n/a
E4	1	1.00	n/a	0	0.00	1	2.00	n/a
E6	2	3.00	1.00	1	50.00	4	3.50	1.50
E11	2	1.00	0.00	0	0.00	1	1.50	0.50
E15	1	1.00	n/a	0	0.00	1	2.00	n/a
E17	1	2.00	n/a	0	0.00	2	2.00	n/a
E18	1	0.00	n/a	0	0.00	0	1.00	n/a
E19	3	1.33	0.33	0	0.00	2	1.67	0.33
E20	1	0.00	n/a	0	0.00	0	0.00	n/a
E21	5	3.20	1.07	2	40.00	7	4.00	1.30
E22	6	0.83	0.31	0	0.00	2	1.33	0.49
E24	2	0.00	0.00	0	0.00	0	0.50	0.50
<b>Southern Region</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>
<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 4. Summary of errors found in 1995 Primary Audit for each NRA Laboratory

Region/Lab.	n	Mean gains	Standard error	No.samples >2 gains	% samples >2 gains	Highest no. gains	Mean errors (l+g+o)	Standard error
<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 5. Net effects of the Primary Audit on BMWP score and number of scoring taxa

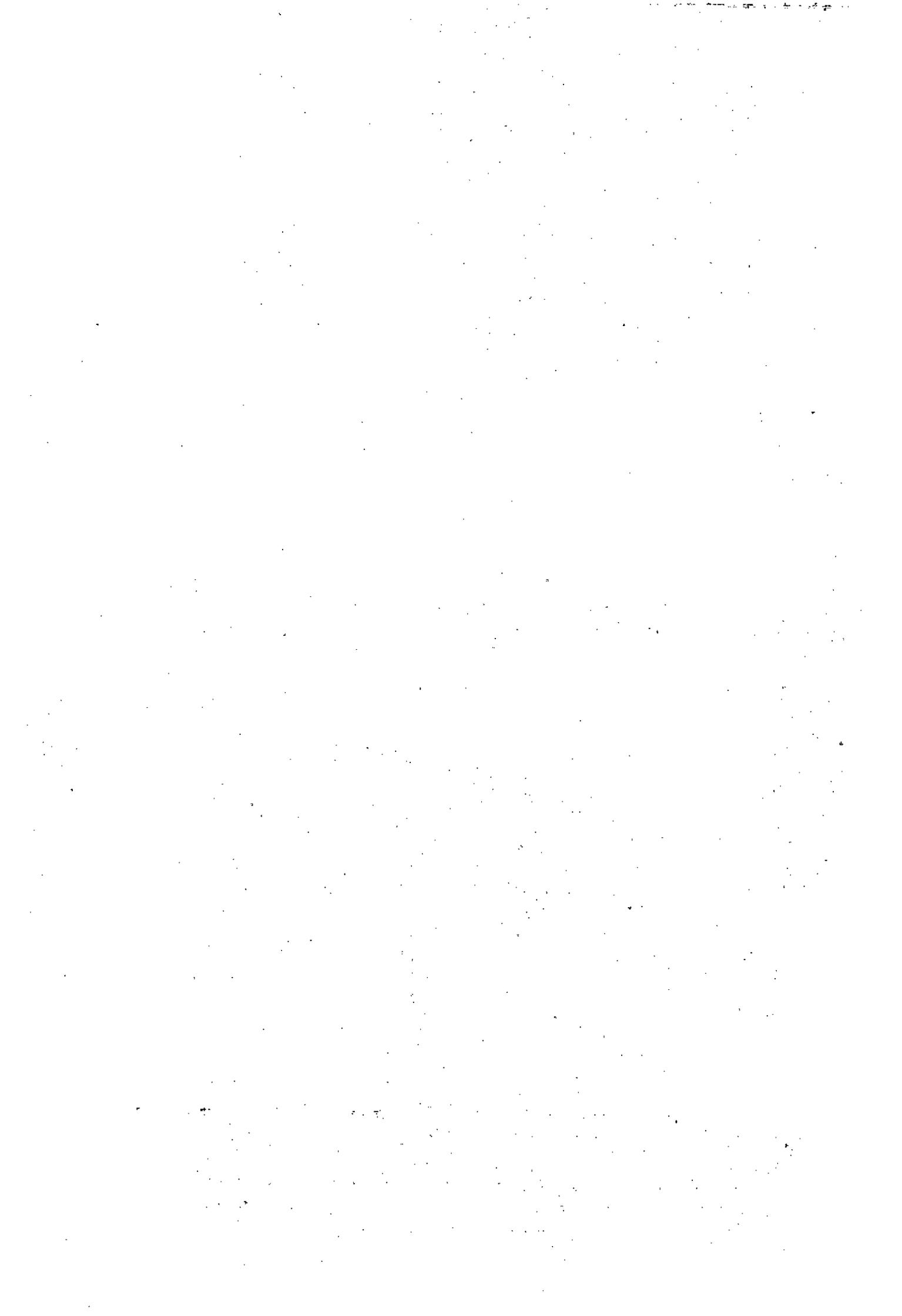
Analyst/Group	n	Mean net effect on BMWP score	% of samples underestimated by score >13	Maximum underestimate of BMWP score	Mean net effect on no. of taxa	% of samples underestimated by >2 taxa	Maximum underestimate of no. of taxa
<b>Western</b>	<b>30</b>	<b>5.33</b>	<b>13.33</b>	<b>32</b>	<b>0.90</b>	<b>13.33</b>	<b>6</b>
W1	3	0.00	0.00	5	0.33	0.00	1
W9	3	6.00	0.00	10	0.67	0.00	1
W13	3	4.00	0.00	12	0.67	0.00	2
W14	5	16.00	60.00	32	2.80	60.00	6
W15	4	2.75	25.00	16	0.50	25.00	3
W18	2	4.00	0.00	8	1.00	0.00	2
W19	4	3.75	0.00	12	0.50	0.00	2
W21	1	0.00	0.00	0	0.00	0.00	0
W23	1	0.00	0.00	0	0.00	0.00	0
W25	3	2.67	0.00	10	0.33	0.00	1
E23	1	8.00	0.00	8	1.00	0.00	1
<b>Eastern</b>	<b>30</b>	<b>7.90</b>	<b>40.00</b>	<b>52</b>	<b>1.13</b>	<b>16.67</b>	<b>6</b>
E1	4	6.25	25.00	20	1.00	25.00	3
E2	1	15.00	100.00	15	3.00	100.00	3
E4	1	1.00	0.00	1	0.00	0.00	0
E6	2	15.00	50.00	22	3.00	50.00	4
E11	2	7.00	0.00	10	1.00	0.00	1
E15	1	0.00	0.00	0	0.00	0.00	0
E17	1	17.00	100.00	17	2.00	0.00	2
E18	1	-3.00	0.00	-3	-1.00	0.00	-1
E19	3	8.33	33.33	20	1.00	0.00	2
E20	1	0.00	0.00	0	0.00	0.00	0
E21	5	20.60	60.00	52	2.60	40.00	6
E22	6	2.67	0.00	11	0.50	0.00	2
E24	2	-2.50	0.00	0	-0.50	0.00	0
<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>
<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 6. 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 7. Taxa missed by Southern Region's primary analysts

<b>Family</b>	<b>n</b>	<b>% of Southern Region's missed taxa in Primary Audit</b>	<b>% of missed taxa in Primary Audit for all NRA Regions</b>
Hydrophilidae (incl. Hydraenidae)	9	12.33	5.46
Leptoceridae	4	5.48	3.68
Psychomyiidae (incl. Ecnomidae)	4	5.48	2.85
Valvatidae	4	5.48	2.14
Baetidae	3	4.11	2.25
Hydroptilidae	3	4.11	5.93
Limnephilidae	3	4.11	2.61
Sphaeriidae	3	4.11	4.63
Caenidae	2	2.74	3.56
Ephemerellidae	2	2.74	1.54
Ephemeridae	2	2.74	0.47
Goeridae	2	2.74	1.78
Heptageniidae	2	2.74	0.83
Piscicolidae	2	2.74	1.90
Planorbidae	2	2.74	2.85
Polycentropodidae	2	2.74	1.19
Tipulidae	2	2.74	2.25
Aeshnidae	1	1.37	0.12
Ancylidae (incl. Acroloxidae)	1	1.37	1.66
Asellidae	1	1.37	1.66
Calopterygidae	1	1.37	0.47
Cordulegasteridae	1	1.37	0.12
Corophiidae	1	1.37	0.47
Dendrocoelidae	1	1.37	1.07
Dytiscidae (incl. Noteridae)	1	1.37	1.90
Erpobdellidae	1	1.37	1.42
Gammaridae (incl. Crangonyctidae)	1	1.37	0.95
Glossiphoniidae	1	1.37	1.66
Gyrinidae	1	1.37	1.19
Haliplidae	1	1.37	2.02
Hydrobiidae (incl. Bithyniidae)	1	1.37	4.98
Hydrometridae	1	1.37	0.95
Hydropsychidae	1	1.37	1.66
Lepidostomatidae	1	1.37	1.07
Leptophlebiidae	1	1.37	1.54
Libellulidae	1	1.37	0.36
Rhyacophilidae (incl. Glossosomatidae)	1	1.37	0.83
Sericostomatidae	1	1.37	1.07
Unionidae	1	1.37	0.47



## **APPENDIX**

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

# EXTERNAL AUDIT OF BIOLOGICAL SAMPLES

REGION: Southern

LABORATORY: Western

DATE: 19.4.95

WATER-COURSE: Arun

PRIMARY ANALYST: W1

AQC ANALYST:

SITE: u/s Horsham By-pass

CODE: 395-397

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

Caenidae *		1
Rhyacophilidae (incl. Glossosomatidae)		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

Valvatidae	Valvata cristata	9
Caenidae *	Caenis luctuosa/macrura	1

## SUMMARY OF AUDIT

LOSSES 1

GAINS 1

OMISSIONS: 1

NET EFFECTS:

ON BMWP SCORE -4

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: Southern

LABORATORY: Western

DATE: 10.5.95

WATER-COURSE: Sowley Stream

PRIMARY ANALYST: W1

AQC ANALYST:

SITE: Beck Farm

CODE: 495-584

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

Sphaeriidae *	1
Planariidae (incl. Dugesiidae)	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

Sphaeriidae *	Pisidium sp.	1
Baetidae	Baetis rhodani 1 only	9

### SUMMARY OF AUDIT

LOSSES 1

GAINS 1

OMISSIONS: 1

NET EFFECTS:

ON BMWP SCORE -1

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: Southern

LABORATORY: Western

DATE: 19.4.95

WATER-COURSE: Arun

PRIMARY ANALYST: W1

AQC ANALYST:

SITE: New Bridge

CODE: 395-394

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

Hydrometridae

Hydrometra stagnorum 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
- 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: Southern

LABORATORY: Western

DATE: 12.5.95

WATER-COURSE: Rother

PRIMARY ANALYST: W9

AQC ANALYST:

SITE: Durford Bridge

CODE: 395-409

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

Baetidae

Baetis vernus 1 only

9

## SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 4

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: Southern  
WATER-COURSE: Sussex Rother  
SITE: Shopham Bridge

LABORATORY: Western  
PRIMARY ANALYST: W9  
CODE: 395-404

DATE: 16.5.95  
AQC ANALYST:  
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

Planorbidae 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

Limnephilidae Potamophylax latipennis 1 only 9

## SUMMARY OF AUDIT

LOSSES 1 GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 4  
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: Southern

LABORATORY: Western

DATE: 2.5.95

WATER-COURSE: Weston Common Stream

PRIMARY ANALYST: W13

AQC ANALYST:

SITE: Botany Bay

CODE: 495-510

SORT/AQC METHOD: Preserved

## RESULTS OF PRIMARY AUDIT

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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: Southern  
WATER-  
COURSE: Bartley Water  
SITE: Ashurst Bridge

LABORATORY: Western  
PRIMARY  
ANALYST: W14  
CODE: 495-549

DATE: 21.4.95  
AQC  
ANALYST:  
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

Lymnaeidae	Lymnaea truncatula	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	Hydroptila sp.	9
Hydrophilidae (incl. Hydraenidae)	Hydraena gracilis, H.rufipes (adults)	9

## SUMMARY OF AUDIT

LOSSES 0    GAINS 3    OMISSIONS: 0

### NET EFFECTS:

ON BMWP SCORE 14  
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: Southern

LABORATORY: Western

DATE: 21.4.95

WATER-COURSE: Manor Stream

PRIMARY ANALYST: W14

AQC ANALYST:

SITE: A337 Bridge

CODE: 495-553

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

Perlidae	Isoperla grammatica	7
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#### Additional BMWP taxa found by IFE

Perlodidae	Isoperla grammatica	7
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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

Ephemerellidae	Ephemerella ignita	9
Hydrophilidae (incl. Hydraenidae)	Hydraena gracilis (adults)	9
Asellidae	Asellus meridianus 1 only	9

## SUMMARY OF AUDIT

LOSSES 1

GAINS 4

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 18

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: Southern

LABORATORY: Western

DATE: 26.5.95

WATER-COURSE: Woodsmill Stream

PRIMARY ANALYST: W15

AQC ANALYST:

SITE: Streatham Railway Culvert

CODE: 395-380

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: Southern

LABORATORY: Western

DATE: 26.5.95

WATER-COURSE: Woodsmill Stream

PRIMARY ANALYST: W15

AQC ANALYST: W19

SITE: Woodsmill Bridge

CODE: 395-381

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

Caenidae	Caenis luctuosa/macrura, C.horaria	11
Hydrophilidae (incl. Hydraenidae)	Helophorus brevipalpis (adult) 1 only	11
Piscicolidae	Piscicola geometra 1 only	11

## 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: Southern

LABORATORY: Western

DATE: 11.5.95

WATER-  
COURSE: Caulbourne

PRIMARY  
ANALYST: W15

AQC  
ANALYST:

SITE: Fulling Mill

CODE: 595-614

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
- 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: Southern

LABORATORY: Western

DATE: 28.4.95

WATER-  
COURSE: Warblington Stream

PRIMARY  
ANALYST: W18

AQC  
ANALYST:

SITE: Church Path

CODE: 495-464/054212

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
- 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: Southern

LABORATORY: Western

DATE: 22.5.95

WATER-COURSE: Horton Heath Stream

PRIMARY ANALYST: W18

AQC ANALYST:

SITE: Maddox Ford Farm

CODE: 495-495

SORT/AQC METHOD: Preserved

## RESULTS OF PRIMARY AUDIT

<u>Family name</u>	<u>Species name (where appropriate)</u>	<u>Presumed cause of error (see footnotes)</u>
--------------------	---	--

### 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

Gyrinidae	Orectochilus villosus (larva) 1 only	9
Hydrobiidae (incl. Bithyniidae)	Potamopyrgus jenkinsi	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: Southern

LABORATORY: Western

DATE: 21.4.95

WATER-  
COURSE: Test

PRIMARY  
ANALYST: W19

AQC  
ANALYST:

SITE: Testwood

CODE: 495-525

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

Hydroptilidae \*

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

Hydroptilidae \*

Hydroptila sp.

1

## SUMMARY OF AUDIT

LOSSES 0    GAINS 0

OMISSIONS: 1

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: Southern

LABORATORY: Western

DATE: 27.4.95

WATER-COURSE: Fairbourne Stream

PRIMARY ANALYST: W19

AQC ANALYST:

SITE: Brook Farm

CODE: 495-568

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

Dryopidae 1

Additional BMWP taxa found by IFE

None 1

### 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: Southern  
WATER-  
COURSE: Pagham Rife  
SITE: u/s Harbour Wall

LABORATORY: Western  
PRIMARY  
ANALYST: W19  
CODE: 395-439

DATE: 18.4.95  
AQC  
ANALYST: W9  
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

Aeshnidae	Indet Aeshnid (juvenile) 1 only	11
Baetidae	Proclleon bifidum 1 only	11

## SUMMARY OF AUDIT

LOSSES 0    GAINS 2    OMISSIONS: 0

### NET EFFECTS:

ON BMWP SCORE 12  
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: Southern

LABORATORY: Western

DATE: 13.4.95

WATER-COURSE: Test

PRIMARY ANALYST: W19

AQC ANALYST:

SITE: Longstock

CODE: 495-529

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

Psychomyiidae (incl. Ecnomidae)                      Lype sp. (anterior end) 1 only                      9

## 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: Southern

LABORATORY: Western

DATE: 7.4.95

WATER-

PRIMARY

AQC

COURSE: Marchwood Park Stream

ANALYST: W21

ANALYST:

SITE: Dibden North Pumping Station

CODE: 495-570

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: Southern

LABORATORY: Western

DATE: 24.4.95

WATER-  
COURSE: Test

PRIMARY  
ANALYST: W23

AQC  
ANALYST:

SITE: Bridge Street, Overton

CODE: 495-534/054132

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

7

#### Additional BMWP taxa found by IFE

Lepidostomatidae

Lepidostoma hirtum

7

### 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 1

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: Southern

LABORATORY: Western

DATE: 10.5.95

WATER-COURSE: Ober Water

PRIMARY ANALYST: W25

AQC ANALYST:

SITE: Aldridgehill

CODE: 495-592

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

Mystacides azurea, Oecetis testacea

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: Southern

LABORATORY: Western

DATE: 2.5.95

WATER-COURSE: Croften Stream

PRIMARY ANALYST: W25

AQC ANALYST:

SITE: Croften Farm Dairy

CODE: 495-480

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

Tipulidae

Sciomyzidae 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
- 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: Southern

LABORATORY: Western

DATE: 26.5.95

WATER-COURSE: Herring Stream

PRIMARY ANALYST: W25

AQC ANALYST: W19

SITE: Herring Bridge

CODE: 395-375

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

Glossiphoniidae	Glossiphonia sp. (juvenile) 1 only	11
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## SUMMARY OF AUDIT

LOSSES 0      GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 3

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: Southern

LABORATORY: Western

DATE: 24.5.95

WATER-COURSE: Itchen

PRIMARY ANALYST: E23

AQC ANALYST: W19

SITE: Easton

CODE: 495-505

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

Psychomyiidae (incl. Ecnomidae)	Lype sp. 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: Southern

LABORATORY: Western

DATE: 7.11.95

WATER-  
COURSE: Rother

PRIMARY  
ANALYST: W9

AQC  
ANALYST: W19

SITE: Sheet d/s A3

CODE: 395-410

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

Ephemerellidae

Ephemerella ignita

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: Southern

LABORATORY: Western

DATE: 14.11.95

WATER-COURSE: Moors Stream

PRIMARY ANALYST: W13

AQC ANALYST:

SITE: Botley Road

CODE: 495-489

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: Southern

LABORATORY: Western

DATE: 14.11.95

WATER-COURSE: Meon

PRIMARY ANALYST: W13

AQC ANALYST: W9

SITE: Drayton

CODE: 495-479

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

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

Tipulidae

Pilaria (Pilaria) sp. 1 only

11

Ephemeraidae

Ephemera sp. 1 only

11

Valvatidae

Valvata cristata

11

## SUMMARY OF AUDIT

LOSSES 1

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 12

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: Southern

LABORATORY: Western

DATE: 23.11.95

WATER-  
COURSE: Blackwater

PRIMARY  
ANALYST: W14

AQC  
ANALYST:

SITE: Nutsey Road

CODE: 495-555

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. 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: Southern

LABORATORY: Western

DATE: 21.11.95

WATER-COURSE: Plaitford Stream

PRIMARY ANALYST: W14

AQC ANALYST: W9

SITE: u/s Plaitford Place

CODE: 495-565

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

Ephemera danica	Ephemera danica 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: Southern	LABORATORY: Western	DATE: 20.11.95
WATER-COURSE: Darkwater	PRIMARY ANALYST: W14	AQC ANALYST: W9
SITE: Gatewood Bridge	CODE: 495-575	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**

Lymnaeidae	Lymnaea sp.	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**

Limnephilidae	Indet Limnephilid (juvenile) 1 only	11
Planorbidae	Hippeutis complanatus 1 only	11
Erpobdellidae	Indet Erpobdellid 1 only	11
Psychomyiidae (incl. Ecnomidae)	Lype sp. 1 only	11
Cordulegasteridae	Cordulegaster boltonii 1 only	11

### SUMMARY OF AUDIT

LOSSES 0	GAINS 6	OMISSIONS: 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: Southern

LABORATORY: Western

DATE: 17.10.95

WATER-COURSE: Wroxall Stream

PRIMARY ANALYST: W15

AQC ANALYST: W9

SITE: Bathingbourne

CODE: 595-631

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**

Hydrophilidae (incl. Hydraenidae)      Megasternum obscurum (adult)      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**

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: Southern

LABORATORY: Eastern

DATE: 27.4.95

WATER-

PRIMARY

AQC

COURSE: Royal Military Canal Tributary ANALYST: E1

ANALYST: E3

SITE: d/s Appledore STW

CODE: 1E0150

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

Dendrocoelidae

Dendrocoelum lacteum 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: Southern

LABORATORY: Eastern

DATE: 12.4.95

WATER-COURSE: Brede

PRIMARY ANALYST: E2

AQC ANALYST:

SITE: u/s Rye Harbour Road Bridge

CODE: 1E0375

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

Corophiidae	Corophium sp.	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

Planorbidae	Armiger crista 1 only	9
Unionidae	Unio sp. (juveniles)	9

## SUMMARY OF AUDIT

LOSSES 0

GAINS 3

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 15

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: Southern

LABORATORY: Eastern

DATE: 26.5.95

WATER-COURSE: Teise

PRIMARY ANALYST: E4

AQC ANALYST:

SITE: Lamberhurst

CODE: 1E0050

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**

Hydrophilidae (incl. Hydraenidae)	Cercyon sp.	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**

Gammaridae (incl. Crangonyctidae)	Gammarus pulex 1 only	9
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### SUMMARY OF AUDIT

LOSSES 1      GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 1  
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: Southern  
WATER-  
COURSE: Kent Water

LABORATORY: Eastern  
PRIMARY  
ANALYST: E6

DATE: 28.4.95  
AQC  
ANALYST: E2  
SORT/AQC  
METHOD: Preserved/Preserved

SITE: Cowden

CODE: 1E0023

### 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	Pisidium sp. 1 only	11
Hydrophilidae (incl. Hydraenidae)	Hydraena gracilis, Helophorus brevipalpis	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
- 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: Southern

LABORATORY: Eastern

DATE: 24.4.95

WATER-COURSE: Beult

PRIMARY ANALYST: E11

AQC ANALYST:

SITE: Yalding

CODE: 1E0067

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**

Planorbidae *	Valvata cristata	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**

Planorbidae *	Gyraulus albus, Bathyomphalus contortus	7
Piscicolidae	Piscicola geometra 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 1

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: Southern

LABORATORY: Eastern

DATE: 24.4.95

WATER-  
COURSE: Len

PRIMARY  
ANALYST: E11

AQC  
ANALYST: E3

SITE: Mote Park

CODE: 1E0085

SORT/AQC  
METHOD: Preserved/Preserved

### RESULTS OF PRIMARY AUDIT

<u>Family name</u>	<u>Species name (where appropriate)</u>	<u>Presumed cause of error (see footnotes)</u>
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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

Lasiocephala basalis 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: Southern	LABORATORY: Eastern	DATE: 2.5.95
WATER-COURSE: Hammer Stream	PRIMARY ANALYST: E15	AQC ANALYST: E4
SITE: Buckhurst	CODE: 1E0068	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**

Tipulidae	12
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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**

Hydrophilidae (incl. Hydraenidae)	Hydraena gracilis (adult) 1 only	9
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### SUMMARY OF AUDIT

LOSSES 1

GAINS 1

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: Southern

LABORATORY: Eastern

DATE: 7.4.95

WATER-COURSE: Gibbs Brook

PRIMARY ANALYST: E17

AQC ANALYST: E1

SITE: u/s Godstone STW

CODE: 1E0030

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

Rhyacophilidae (incl. Glossosomatidae)	Rhyacophila sp. (juvenile) 1 only	11
Leptoceridae	Mystacides azurea 1 only	11

## SUMMARY OF AUDIT

LOSSES 0

GAINS 2

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: Southern

LABORATORY: Eastern

DATE: 24.4.95

WATER-COURSE: Watringbury Stream

PRIMARY ANALYST: E18

AQC ANALYST:

SITE: Watringbury

CODE: 1E0081

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

Planorbidae

Error compounded since shell was empty

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

None

## SUMMARY OF AUDIT

LOSSES 1

GAINS 0

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE -3

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: Southern

LABORATORY: Eastern

DATE: 16.5.95

WATER-  
COURSE: Ouse

PRIMARY  
ANALYST: E20

AQC  
ANALYST: E2

SITE: East Mascalls

CODE: 1E0226

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

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: Southern	LABORATORY: Eastern	DATE: 16.5.95
WATER-COURSE: Horse Eye Sewer	PRIMARY ANALYST: E21	AQC ANALYST: E2
SITE: d/s Hailsham South	CODE: 2E0212	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

Oligochaeta *		1
Planorbidae	Valvata cristata in vial	7

##### Additional BMWP taxa found by IFE

Valvatidae	Valvata cristata 1 only	7
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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

Leptoceridae	Athripsodes cinereus 1 only	11
Polycentropodidae	Polycentropus flavomaculatus 1 only	9
Tipulidae	Tipula montium group 1 only	9
Oligochaeta *	Tubificidae, Lumbriculidae	1

### SUMMARY OF AUDIT

LOSSES 1      GAINS 4

OMISSIONS: 1

NET EFFECTS:

ON BMWP SCORE 22

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: Southern

LABORATORY: Eastern

DATE: 30.3.95

WATER-COURSE: Great Stour

PRIMARY ANALYST: E22

AQC ANALYST: E3

SITE: Bretts

CODE: 1E0095

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 \* Note on data sheet "Not in vial". 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

Psychomyiidae (incl. Ecnomidae)	Tinodes waeneri 1 only	11
Valvatidae	Valvata piscinalis	11
Caenidae *	Caenis luctuosa/macrura	1

## SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 1

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: Southern

LABORATORY: Eastern

DATE: 21.4.95

WATER-COURSE: Line

PRIMARY ANALYST: E22

AQC ANALYST: E3

SITE: River Hall, Heath Hill

CODE: 1E0491

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
- 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: Southern

LABORATORY: Eastern

DATE: 18.5.95

WATER-COURSE: Hurst Green Stream

PRIMARY ANALYST: E22

AQC ANALYST: E4

SITE: Bugsell Mill

CODE: 1E0128

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: Southern

LABORATORY: Eastern

DATE: 6.11.95

WATER-  
COURSE: Eden

PRIMARY  
ANALYST: E1

AQC  
ANALYST:

SITE: Popes Lane, Oxted

CODE: 1E0702

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
- 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: Southern  
WATER-  
COURSE: Limden Tributary  
SITE: Little Boarzell

LABORATORY: Eastern  
PRIMARY  
ANALYST: E1  
CODE: 1155 (195280)

DATE: 16.11.95  
AQC  
ANALYST:  
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 riparia (adult) 1 only	9
Dytiscidae (incl. Noteridae)	Stictotarsus 12-pustulatus (adult) 1 only	9
Leptophlebiidae	Paraleptophlebia submarginata 1 only	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: Southern

LABORATORY: Eastern

DATE: 24.10.95

WATER-  
COURSE: Somerhill Stream

PRIMARY  
ANALYST: E1

AQC  
ANALYST:

SITE: Old Forge Farm

CODE: 1E0326 (195099)

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: Southern	LABORATORY: Eastern	DATE: 2.11.95
WATER-COURSE: Gynde Reach	PRIMARY ANALYST: E6	AQC ANALYST:
SITE: Beddingham	CODE: 2E0230 (295359)	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**

Hydrobiidae (incl. Bithyniidae) *	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**

Hydropsychidae	Hydropsyche angustipennis 1 only	9
Hydrobiidae (incl. Bithyniidae) *	Potamopyrgus jenkinsi	1
Hydrophilidae (incl. Hydraenidae)	Helophorus brevipalpis (adult), Ochthebius minimus (adult)	9
Polycentropodidae	Cyrnus trimaculatus 1 only	9
Halipidae	Halipus fluviatilis (adult) 1 only	9

### SUMMARY OF AUDIT

**LOSSES 0      GAINS 4**

**OMISSIONS: 1**

**NET EFFECTS:**

**ON BMWP SCORE 22  
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: Southern

LABORATORY: Eastern

DATE: 26.10.95

WATER-

PRIMARY

AQC

COURSE: Royal Military Canal

ANALYST: E19

ANALYST:

SITE: Iden Lock

CODE: 1E0367 (195227)

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	Pisidium sp. 1 only	9
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## SUMMARY OF AUDIT

LOSSES 0

GAINS 1

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 3

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: Southern

LABORATORY: Eastern

DATE: 27.10.95

WATER-  
COURSE: Dudwell

PRIMARY  
ANALYST: E19

AQC  
ANALYST:

SITE: Etchingham

CODE: 1E0127 (195278)

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

Heptageniidae	Rhithrogena sp. 1 only	9
Goeridae	Goera pilosa 1 only	9

### SUMMARY OF AUDIT

LOSSES 0

GAINS 2

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 20

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: Southern

LABORATORY: Eastern

DATE: 1.11.95

WATER-COURSE: Beult

PRIMARY ANALYST: E19

AQC ANALYST: E4

SITE: Cross at Hand

CODE: 1E0066

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**

Piscicolidae	Hemiclepsis marginata	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**

Ancyliidae (incl. Acroloxidae)	Ancyclus fluviatilis 1 only	11
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### 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
- 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: Southern	LABORATORY: Eastern	DATE: 8.11.95
WATER-COURSE: Cuckmere	PRIMARY ANALYST: E21	AQC ANALYST:
SITE: Boship Bridge	CODE: 2E0304 (295322)	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**

Piscicolidae	Sialis lutaria	8
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**Additional BMWP taxa found by IFE**

Sialidae	Sialis lutaria	8
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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**

Caenidae	Caenis rivulorum 1 only	9
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### SUMMARY OF AUDIT

**LOSSES 1      GAINS 2      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: Southern

LABORATORY: Eastern

DATE: 26.10.95

WATER-COURSE: Rother

PRIMARY ANALYST: E21

AQC ANALYST:

SITE: Blackwall Bridge

CODE: 1E0122 (195239)

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	Agraylea multipunctata 1 only	9
Libellulidae	Indet Libellulid (juvenile) 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: Southern

LABORATORY: Eastern

DATE: 7.11.95

WATER-  
COURSE: Teise

PRIMARY  
ANALYST: E21

AQC  
ANALYST: E2

SITE: d/s Horsmonden STW

CODE: 1E0317

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 sp. (juveniles)

9

### 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

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: Southern

LABORATORY: Eastern

DATE: 16.11.95

WATER-COURSE: Bewl

PRIMARY ANALYST: E21

AQC ANALYST: E4

SITE: A21 Bewl Bridge

CODE: 1E0056

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**

Lymnaeidae	Helicidae?	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**

Leptoceridae	Ceraclea sp. (juvenile) 1 only	11
Heptageniidae	Rhithrogena sp. 1 only	11
Sericostomatidae	Sericostoma personatum 1 only	11
Goeridae	Silo pallipes	11
Sphaeriidae	Pisidium sp.	11
Hydrophilidae (incl. Hydraenidae)	Hydraena riparia (adults)	11
Limnephilidae	Indet Limnephilid (juvenile) 1 only	9

## SUMMARY OF AUDIT

LOSSES 1

GAINS 7

OMISSIONS: 0

NET EFFECTS:

ON BMWP SCORE 52

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: Southern

LABORATORY: Eastern

DATE: 3.11.95

WATER-COURSE: Brede

PRIMARY ANALYST: E22

AQC ANALYST:

SITE: Rye Harbour Road Bridge

CODE: 1E0375 (195248)

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

Corophiidae

Corophium lacustre

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: Southern

LABORATORY: Eastern

DATE: 1.11.95

WATER-COURSE: Pippingford Beck

PRIMARY ANALYST: E22

AQC ANALYST:

SITE: Withyham

CODE: 1E0343 (195140)

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

Limnephilidae

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

Hydrophilidae (incl. Hydraenidae)

Hydraena gracilis (adults)

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
- 2 Alternative terrestrial specimen in vial
- 3 Posterior end only in vial
- 4 Empty shell 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: Southern

LABORATORY: Eastern

DATE: 3.11.95

WATER-COURSE: Medway

PRIMARY ANALYST: E22

AQC ANALYST: E2

SITE: u/s Trebor

CODE: 1E0301

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**

Hydrobiidae (incl. Bithyniidae)	AQC checker wrote detailed note on data sheet about absence of specimen from vial but included taxon in assessment of BMWP score	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**

Valvatidae	Valvata piscinalis	11
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### SUMMARY OF AUDIT

LOSSES 1

GAINS 1

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: Southern

LABORATORY: Eastern

DATE: 15.11.95

WATER-COURSE: Hugletts Stream

PRIMARY ANALYST: E24

AQC ANALYST:

SITE: Henleys Bridge

CODE: 2E0207 (295310)

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

Tipulidae

Sciomyzidae

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
- 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: Southern

LABORATORY: Eastern

DATE: 22.11.95

WATER-COURSE: Vines Cross Stream

PRIMARY ANALYST: E24

AQC ANALYST: E4

SITE: Craille Bridge

CODE: 2E0223

SORT/AQC METHOD: Preserved/Preserved

## RESULTS OF PRIMARY AUDIT

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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

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## 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)