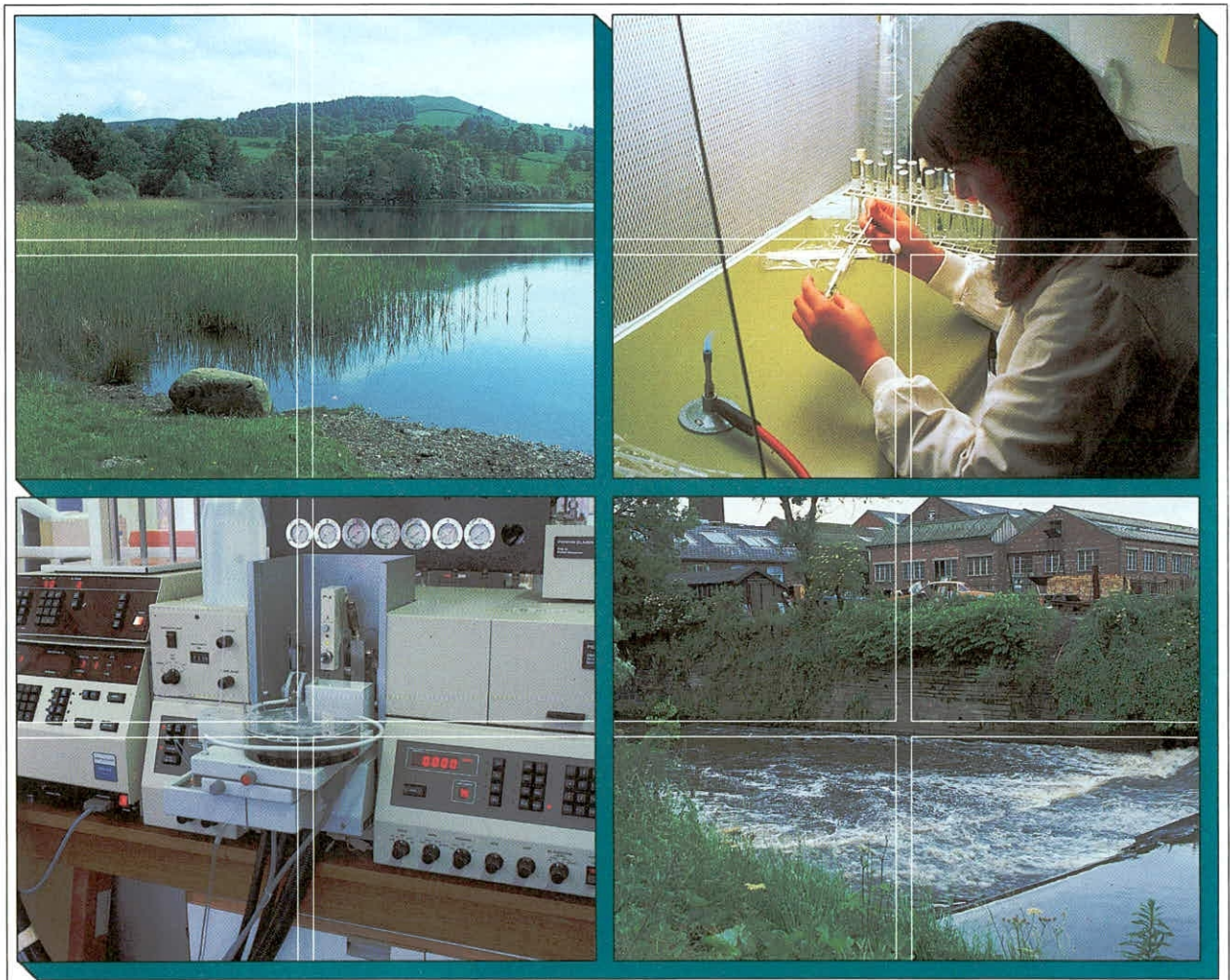


MACROINVERTEBRATE SPECIES IDENTIFICATION - THAMES CATCHMENT (OXFORD AREA)

Principal investigators:

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J H Blackburn BSc

Report to The Environment Agency (Thames Region) - June 1997





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INTRODUCTION

The aim of this project was to process and identify, to species level, the macroinvertebrates present in 13 samples collected by the Environment Agency from various rivers within the Oxford area of the Thames catchment. In addition, to the compilation of validated taxon lists, there was a remit to provide abundance estimates for each macroinvertebrate sample and notes highlighting taxa of conservation interest.

METHODS

Sample sorting

The sample sorting procedures adopted were based on those laid out in the NRA Document BT001, *Procedure for Collecting and Analysing River Macroinvertebrate Samples for RIVPACS Application*. First, the samples were thoroughly washed to remove the formaldehyde preservative, all the material being retained in a 500µm sieve. Small quantities of the washed material were then sorted in water in a white enamel tray marked with sixteen equal sized grid squares. Macroinvertebrates were picked from the tray and placed in either petri-dishes or vials containing 70% IMS. Specimens of the Chironomidae, Oligochaeta and Sphaeriidae groups were stored in separate labelled vials. A maximum of 50 specimens of each taxon requiring microscopic identification were picked out for further analysis. This sorting and picking process was repeated until the whole sample had been processed, each tray being thoroughly searched for macroinvertebrates, in order to ensure that no rare taxa were missed. In those samples where the amount of material was sufficiently great to warrant sub-sampling, quantitative estimates were limited to 25% of the tray area, picked as two separate eighths (see below).

Macroinvertebrate identification

The macroinvertebrates were identified to the level requested in the invitation to tender which was generally to species level or the level required for RIVPACS analysis, using the most recently available keys (see list of taxonomic keys). However, specimens which were either too small or in a poor state of preservation for reliable species level identification were identified to the level appropriate to their size and condition, usually to genus but sometimes to family. If, there were some specimens of a particular taxon mature enough to identify to species level in the same sample as specimens which were not readily identifiable but believed to be the same, then these latter specimens were assigned to the named species. Specific identifications were also provided for some taxa which are normally identified only to genus level for RIVPACS (e.g. *Corophium* sp. and *Aeshna* sp.) but only when specimens were sufficiently mature to allow quick identification.

Difficult and contentious specimens, specimens with national conservation status (Red Data Book or 'Notable' taxa) and taxa which occur in fewer than 5% of the sites in the RIVPACS III data base were examined by two experienced IFE staff members. All such taxa were retained in labelled vials in case of further examination by Environment Agency biologists. Chironomidae, Oligochaeta and Sphaeriidae groups were not identified further but were retained in separate vials for possible genus or species level identification at a later date. The nomenclature follows that laid down in the latest revision of the 'Maitland' coded checklist, a copy of which is held by the Environment Agency, Thames Region.

Estimation of abundances

In those samples without too much material all the macroinvertebrates were identified and counted. For those samples which were sub-sampled, two equal sized fractions (i.e. eighths) were picked and counted separately to provide a maximum and a minimum estimate of abundance for each taxon, from which a mean value was calculated for the 25% of the total area of the sorting tray that had been picked over. The number of each taxa found in the sub-sample area was then multiplied by four to obtain abundance estimates based on the following logarithmic categories :

- A 1-9 animals
- B 10-99 animals
- C 100-999 animals
- D 1000-9999 animals

Where specimens were removed from outside the sub-sample area, the taxa concerned and the number removed from the whole sample were added to the taxon abundance list. In the situation of where a maximum of about 50 specimens of a particular taxon type was removed and other taxa of a similar appearance tally-counted, the composition of the tally-counted specimens was assumed to be in the same relative proportions as the specific taxonomic composition of those *ca.* 50 taxa removed and fully identified.

Threatened and rare taxa

Accompanying the validated taxon list for each sample are notes indicating whether or not there were any threatened or rare taxa present as defined by the following Red Data Book and Notable categories respectively:

RDB 1 Endangered: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating.

RDB 2 Vulnerable: Taxa believed likely to move into the Endangered category in the near future if the causal factors continue operating.

RDB 3 Rare: Taxa with small populations that are not presently Endangered or Vulnerable, but are at risk.

Nationally Notable: Taxa known to occur in fewer than 100 10 km squares of the National Grid.

In addition, those taxa which occur in less than 5% of the RIVPACS III data base are also highlighted to indicate those species which are infrequent members of the macroinvertebrate fauna within the wide range of running waters included in the 614 reference sites selected for RIVPACS III. It should be stressed that species with a low frequency of occurrence in the RIVPACS III data set do not necessarily merit RDB or Notable status as many of these taxa, though rare in rivers, are common in standing waters or other types of water body.

RESULTS

Macroinvertebrate taxon list for Botley Stream above Bulstake (SP49600640) - 13/8/1996

No Red Data Book 1-3 or Notable species were found in sample. The mayfly *Ephemera vulgata* and the White-legged damselfly *Platycnemis pennipes* are found in <5% of the RIVPACS III reference sites.

<u>Taxa</u>	<u>Abundance</u>
<i>Ephemera vulgata</i> L.	B
<i>Molanna angustata</i> Curtis	A
<i>Mystacides nigra</i> (L.)	A
<i>Calopteryx splendens</i> (Harris)	A
<i>Aeshna</i> sp.	A
<i>Caenis luctuosa</i> group	A
<i>Theodoxus fluviatilis</i> (L.)	A
<i>Crangonyx pseudogracilis</i> Bousfield	A
<i>Platycnemis pennipes</i> (Pallas)	B
<i>Stictotarsus duodecimpastulatus</i> (Fabricius)	A
<i>Oulimnius</i> sp.	A
<i>Centroptilum luteolum</i> (Müller)	A
<i>Sialis lutaria</i> (L.)	B
<i>Bithynia tentaculata</i> (L.)	B
<i>Physa fontinalis</i> (L.)	A
<i>Bathymphalus contortus</i> (L.)	A
Sphaeriidae	B
<i>Hemiclepsis marginata</i> (Müller)	A
<i>Glossiphonia complanata</i> (L.)	A
<i>Asellus aquaticus</i> (L.)	B
Chironomidae	B
Oligochaeta	B

Macroinvertebrate taxon list for Castle Mill Stream at Mount Place, Oxford (SP50400698) - 14/8/96

No Red Data Book 1-3 or Notable species were found in sample. The Flat Ramshorn snail *Hippeutis complanatus* is found in <5% of the RIVPACS III reference sites.

<u>Taxa</u>	<u>Abundance</u>
<i>Mystacides nigra</i> (L.)	A
<i>Caenis luctuosa</i> group	A
<i>Crangonyx pseudogracilis</i> Bousfield	B
<i>Ischnura elegans</i> (Van der Linden)	A
<i>Haliplus fluviatilis</i> Aubé	A
<i>Dugesia tigrana</i> (Girard)	B
<i>Cloeon dipterum</i> (L.)	A
<i>Valvata piscinalis</i> (Müller)	A
<i>Bithynia tentaculata</i> (L.)	A
<i>Hippeutis complanatus</i> (L.)	A
<i>Gyraulus albus</i> (Müller)	A
Sphaeriidae	B
<i>Glossiphonia complanata</i> (L.)	A
<i>Erpobdella octoculata</i> (L.)	A
<i>Asellus aquaticus</i> (L.)	B
Chironomidae	B
Oligochaeta	C
Ostracoda	B
<i>Eurycercus lamellatus</i>	A

Macroinvertebrate taxon list for Castle Mill Stream at Oxpens Road, Oxford (SP50900581) - 14/8/96

No Red Data Book 1-3 or Notable species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the caddis species *Oecetis lacustris* and *Neureclipsis bimaculata*, the crustacean *Corophium curvispinum*, the White-legged damselfly *Platycnemis pennipes*, and the snails *Physa acuta* group and *Hippeutis complanatus*.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Aphelocheirus aestivalis</i> (Fabricius)	B	<i>Potamopyrgus jenkinsi</i> (Smith)+	B
<i>Molanna angustata</i> Curtis	A	<i>Bithynia tentaculata</i> (L.)	C
<i>Oecetis lacustris</i> (Pictet)	A	<i>Lymnaea peregra</i> (Müller)	A
<i>Ceraclea dissimilis</i> (Stephens)	A	<i>Physa acuta</i> group	A
<i>Calopteryx splendens</i> (Harris)	A	<i>Bathyomphalus contortus</i> (L.)	B
<i>Tinodes waeneri</i> (L.)	A	<i>Hippeutis complanatus</i> (L.)	A
<i>Neureclipsis bimaculata</i> (L.)	A	<i>Gyraulus albus</i> (Müller)	A
<i>Theodoxus fluviatilis</i> (L.)	B	<i>Armiger crista</i> (L.)	A
<i>Acroloxus lacustris</i> (L.)	A	<i>Anisus vortex</i> (L.)	A
<i>Hydroptila</i> sp.	A	Sphaeriidae	C
<i>Corophium curvispinum</i> Sars	A	<i>Glossiphonia complanata</i> (L.)	A
<i>Crangonyx pseudogracilis</i> Bousfield	B	<i>Asellus aquaticus</i> (L.)	C
<i>Platycnemis pennipes</i> (Pallas)	A	Chironomidae	B
Corixidae	A	Oligochaeta	C
<i>Sigara dorsalis</i> group	A	<i>Sida crystallina</i> (Müller)	B
Haliplidae	A	Ostracoda	A
<i>Haliplus fluviatilis</i> Aubé	A	<i>Eurycercus lamellatus</i> (Müller)	B
Dytiscidae	A	<i>Simocephalus</i> sp.	B
<i>Potamonectes depressus</i> group*	A		
<i>Limnius volckmari</i> (Panzer)	A		
<i>Dugesia tigrana</i> (Girard)	A		
<i>Centroptilum luteolum</i> (Müller)	A	*Now <i>Nebrioporus depressus/elegans</i> (Panzer)	
<i>Cloeon dipterum</i> (L.)	A	+Now <i>Potamopyrgus antipodarum</i> (Gray)	
<i>Sialis lutaria</i> (L.)	A		
<i>Valvata piscinalis</i> (Müller)	B		
<i>Valvata cristata</i> Müller	A		

Macroinvertebrate taxon list for Bulstake Stream just above Thames (SP50650558) - 14/8/96

No Red Data Book 1-3 or Notable species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the mayfly *Ephemera vulgata*, the caddis species *Neureclipsis bimaculata* and *Limnephilus rhombicus*, the bivalve mussel *Anodonta* group, the White-legged damselfly *Platycnemis pennipes*, the water scorpion *Nepa cinerea*, the water beetle *Laccophilus hyalinus* and the Ear Snail *Lymnaea auricularia*.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Ephemera vulgata</i> L.	B	<i>Oulimnius</i> sp.	A
<i>Leuctra geniculata</i> (Stephens)	A	<i>Similium</i> (<i>Boophthora</i>) <i>erythrocephalum</i> (de Geer)	A
<i>Aphelocheirus aestivalis</i> (Fabricius)	A	<i>Centroptilum luteolum</i> (Müller)	B
<i>Molanna angustata</i> Curtis	B	<i>Cloeon dipterum</i> (L.)	B
<i>Mystacides nigra</i> (L.)	B	<i>Sialis lutaria</i> (L.)	B
<i>Lype</i> sp.	A	<i>Piscicola geometra</i> (L.)	A
<i>Caenis luctuosa</i> group	A	<i>Potamopyrgus jenkinsi</i> (Smith)*	C
<i>Caenis horaria</i> (L.)	A	<i>Bithynia tentaculata</i> (L.)	B
<i>Neureclipsis bimaculata</i> (L.)	A	<i>Lymnaea auricularia</i> (L.)	A
<i>Polycentropus flavomaculatus</i> (Pictet)	A	<i>Physa fontinalis</i> (L.)	A
<i>Cyrnus trimaculatus</i> (Curtis)	A	<i>Gyraulus albus</i> (Müller)	A
<i>Limnephilus rhombicus</i> (L.)	A	Sphaeriidae	B
Limnephilidae	A	<i>Helobdella stagnalis</i> (L.)	A
<i>Theodoxus fluviatilis</i> (L.)	A	<i>Glossiphonia complanata</i> (L.)	A
<i>Hydroptila</i> sp.	A	<i>Erpobdella octoculata</i> (L.)	A
<i>Anodonta</i> group	A	<i>Asellus aquaticus</i> (L.)	C
<i>Crangonyx pseudogracilis</i> Bousfield	A	Chironomidae	C
<i>Platycnemis pennipes</i> (Pallas)	A	Oligochaeta	B
<i>Ischnura elegans</i> (Van der Linden)	A	Hydracarina	A
<i>Gerris</i> sp.	A	Ostracoda	A
<i>Nepa cinerea</i> L.	A	Ceratopogonidae	A
Corixidae	A	<i>Hydrellia</i> sp.	A
Dytiscidae	A	<i>Hemerodromia</i> group	A
<i>Platambus maculatus</i> (L.)	A		
<i>Laccophilus hyalinus</i> (Degeer)	A	*Now <i>Potamopyrgus antipodarum</i> (Gray)	

Macroinvertebrate taxon list for Bulstake Stream below Bathing Pool (SP50200658) - 14/8/96

The Notable Megaloptera species *Sialis nigripes* was found in sample. No Red Data Book species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the mayfly *Ephemera vulgata*, the caddis *Ceraclea nigronervosa*, the bivalve molluscs *Unio* sp. and *Anodonta* group, the crustacean *Corophium curvispinum*, the water measurer *Hydrometra stagnorum*, the blackfly *Simulium (Simulium) noelleri* and the snail *Physa acuta* group.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Ephemera vulgata</i> L.	A	<i>Oulimnius</i> sp.	B
<i>Leuctra geniculata</i> (Stephens)	A	<i>Elmis aenea</i> (Müller)	A
<i>Aphelocheirus aestivalis</i> (Fabricius)	A	<i>Simulium (Simulium) noelleri</i> Friederichs	A
<i>Molanna angustata</i> Curtis	A	<i>Dugesia tigrana</i> (Girard)	B
<i>Athripsodes cinereus</i> (Curtis)	B	<i>Cloeon dipterum</i> (L.)	A
<i>Ceraclea nigronervosa</i> (Retzius)	A	<i>Sialis nigripes</i> Pictet	A
<i>Mystacides nigra</i> (L.)	A	<i>Valvata piscinalis</i> (Müller)	A
<i>Goera pilosa</i> (Fabricius)	A	<i>Potamopyrgus jenkinsi</i> (Smith)*	B
<i>Calopteryx splendens</i> (Harris)	A	<i>Bithynia tentaculata</i> (L.)	B
<i>Aeshna</i> sp.	A	<i>Physa acuta</i> group	A
<i>Tinodes waeneri</i> (L.)	B	<i>Gyraulus albus</i> (Müller)	A
<i>Caenis luctuosa</i> group	B	Sphaeriidae	B
<i>Cyrnus trimaculatus</i> (Curtis)	A	<i>Helobdella stagnalis</i> (L.)	B
<i>Halesus</i> sp.	A	<i>Asellus aquaticus</i> (L.)	C
<i>Theodoxus fluviatilis</i> (L.)	B	Chironomidae	B
<i>Anyclus fluviatilis</i> Müller	B	Oligochaeta	C
<i>Hydroptila</i> sp.	B		
<i>Unio</i> sp.	A		
<i>Anodonta</i> group	A	*Now <i>Potamopyrgus antipodarum</i> (Gray)	
<i>Corophium curvispinum</i> Sars	B		
<i>Crangonyx pseudogracilis</i> Bousfield	A		
<i>Ischnura elegans</i> (Van der Linden)	A		
<i>Hydrometra stagnorum</i> (L.)	A		
<i>Gerris</i> sp.	A		
<i>Platambus maculatus</i> (L.)	A		

Macroinvertebrate taxon list for Wolvercote Mill Stream, East Mill Leat (SP48710970) - 13/8/96

No Red Data Book 1-3 or Notable species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the mayfly *Ephemera vulgata*, the caddis *Neureclipsis bimaculata*, the bivalve mollusc *Unio* sp., the crustacean *Corophium curvispinum* and the Red-eyed damselfly *Erythromma najas*. Note should be made of the presence of the alien North American signal crayfish, *Pacifastacus leniusculus*.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Ephemerella ignita</i> (Poda)	A	<i>Haliphus fluviatilis</i> Aubé	A
<i>Ephemera vulgata</i> L.	A	<i>Elmis aenea</i> (Müller)	A
<i>Leuctra geniculata</i> (Stephens)	A	<i>Oulimnius</i> sp.	B
<i>Leuctra fusca</i> (L.)	A	<i>Esolus parallelepipedus</i> (Müller)	A
<i>Aphelocheirus aestivalis</i> (Fabricius)	A	<i>Hydropsyche angustipennis</i> (Curtis)	B
<i>Brachycentrus subnubilis</i> Curtis	A	<i>Hydropsyche pellucidula</i> (Curtis)	A
<i>Pacifastacus leniusculus</i> (Dana)	A	<i>Simulium</i> (<i>Boophthora</i>) <i>erythrocephalum</i> (de Geer)	B
<i>Calopteryx</i> sp.	A	<i>Dugesia tigrana</i> (Girard)	B
<i>Aeshna</i> sp.	A	<i>Dugesia polychroa</i> group	A
<i>Tinodes waeneri</i> (L.)	B	<i>Cloeon dipterum</i> (L.)	A
<i>Lype</i> sp.	A	<i>Baetis scambus</i> group	B
<i>Caenis luctuosa</i> group	A	<i>Baetis buceratus</i> Eaton	A
<i>Neureclipsis bimaculata</i> (L.)	A	<i>Sialis lutaria</i> (L.)	A
<i>Cyrnus trimaculatus</i> (Curtis)	A	<i>Potamopyrgus jenkinsi</i> (Smith)*	C
<i>Theodoxus fluviatilis</i> (L.)	B	<i>Bithynia tentaculata</i> (L.)	B
<i>Ancylus fluviatilis</i> Müller	A	Sphaeriidae	B
<i>Hydroptila</i> sp.	B	<i>Glossiphonia complanata</i> (L.)	B
<i>Ithytrichia</i> sp.	A	<i>Helobdella stagnalis</i> (L.)	A
<i>Unio</i> sp.	A	<i>Erpobdella octoculata</i> (L.)	A
<i>Corophium curvispinum</i> Sars	B	<i>Asellus aquaticus</i> (L.)	C
<i>Gammarus pulex</i> (L.)	A	Chironomidae	C
<i>Crangonyx pseudogracilis</i> Bousfield	B	Oligochaeta	B
<i>Ischnura elegans</i> (Van der Linden)	A	Hydracarina	A
<i>Erythromma najas</i> (Hansemann)	A		
Haliplidae	A	*Now <i>Potamopyrgus antipodarum</i> (Gray)	

Macroinvertebrate taxon list for Seacourt Stream at North Hinksey (SP49470559) - 13/8/96

No Red Data Book 1-3 or Notable species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the mayfly *Ephemera vulgata*, the River Snail *Viviparus viviparus*, the bivalve mollusc *Anodonta* group and the Large red damselfly *Pyrrosoma nymphula*.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Ephemera vulgata</i> L.	A	<i>Amiger crista</i> (L.)	A
<i>Molanna angustata</i> Curtis	A	<i>Anisus vortex</i> (L.)	A
<i>Mystacides nigra</i> (L.)	A	<i>Bathymphalus contortus</i> (L.)	B
<i>Caenis luctuosa</i> group	A	<i>Gyraulus albus</i> (Müller)	B
<i>Theodoxus fluviatilis</i> (L.)	A	<i>Planorbis carinatus</i> (Müller)	A
<i>Viviparus viviparus</i> (L.)	A	Sphaeriidae	B
<i>Anodonta</i> group	A	<i>Glossiphonia complanata</i> (L.)	A
<i>Gammarus pulex</i> (L.)	A	<i>Erpobdella octoculata</i> (L.)	A
<i>Crangonyx pseudogracilis</i> Bousfield	A	<i>Asellus aquaticus</i> (L.)	B
<i>Pyrrosoma nymphula</i> (Sulzer)	A	Chironomidae	C
<i>Gerris</i> sp.	A	Oligochaeta	C
Dytiscidae	A	Ceratopogonidae	A
<i>Potamonectes depressus</i> group*	A	<i>Eurycercus lamellatus</i> (Müller)	B
<i>Stictotarsus duodecimpustulatus</i> (Fabricius)	A		
<i>Oulimnius</i> sp.	A		
<i>Simulium</i> (<i>Boophthora</i>) <i>erythrocephalum</i> (de Geer)	B		
<i>Centroptilum luteolum</i> (Müller)	B	* Now <i>Nebrioporus depressus/elegans</i> (Panzer)	
<i>Cloeon dipterum</i> (L.)	A	+ Now <i>Potamopyrgus antipodarum</i> (Gray)	
<i>Sialis lutaria</i> (L.)	B		
<i>Piscicola geometra</i> (L.)	A		
<i>Valvata cistata</i> Müller	A		
<i>Valvata piscinalis</i> (Müller)	B		
<i>Potamopyrgus jenkinsi</i> (Smith)+	B		
<i>Bithynia tentaculata</i> (L.)	C		
<i>Lymnaea peregra</i> (Müller)	B		
<i>Physa fontinalis</i> (L.)	A		

Macroinvertebrate taxon list for Seacourt Stream at Wytham (SP47650875) - 13/8/96

No Red Data Book 1-3 or Notable species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the mayfly *Ephemera vulgata*, the caddis species *Ceraclea nigronervosa* and *Neureclipsis bimaculata*, the River Snail *Viviparus viviparus*, the bivalve molluscs *Unio* sp. and *Anodonta* group. and the White-legged damselfly *Platycnemis pennipes*.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Ephemera vulgata</i> L.	A	<i>Centroptilum luteolum</i> (Müller)	A
<i>Leuctra geniculata</i> (Stephens)	A	<i>Sialis lutaria</i> (L.)	B
<i>Aphelocheirus aestivalis</i> (Fabricius)	B	<i>Bithynia tentaculata</i> (L.)	C
<i>Ceraclea nigronervosa</i> (Retzius)	A	<i>Lymnaea peregra</i> (Müller)	A
<i>Mystacides azurea</i> (L.)	A	<i>Anisus vortex</i> (L.)	A
<i>Brachycentrus subnubilis</i> Curtis	C	<i>Planorbis carinatus</i> (Müller)	A
<i>Calopteryx splendens</i> (Harris)	A	Sphaeriidae	C
<i>Caenis luctuosa</i> group	A	<i>Glossiphonia complanata</i>	A
<i>Neureclipsis bimaculata</i> (L.)	A	<i>Asellus aquaticus</i> (L.)	B
<i>Halesus</i> group	A	Chironomidae	C
<i>Theodoxus fluviatilis</i> (L.)	B	Oligochaeta	C
<i>Viviparus viviparus</i> (L.)	A		
<i>Hydroptila</i> sp.	A		
<i>Anodonta</i> group	A		
<i>Unio</i> sp.	A		
<i>Gammarus pulex</i> (L.)	C		
<i>Platycnemis pennipes</i> (Pallas)	A		
<i>Gerris</i> sp.	A		
<i>Elmis aenea</i> (Müller)	A		
<i>Oulimnius</i> sp.	B		
<i>Hydropysche pellucidula</i> (Curtis)	B		
<i>Simulium</i> (<i>Nevermannia</i>) <i>angustitarse</i> group	A		
<i>Simulium</i> (<i>Boophthora</i>) <i>erythrocephalum</i> (de Geer)	A		
<i>Dugesia tigrana</i> (Girard)	A		
<i>Baetis scambus</i> group	B		

Macoinvertebrate taxon list for Wolvercote Mill Stream, West Mill Leat (SP48700970) - 13/8/96

No Red Data Book 1-3 or Notable species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the White-legged damselfly *Platycnemis pennipes*, the Red-eyed damselfly *Erythromma najas*, the Water Scorpion *Nepa cinerea*, the greater water-boatman *Notonecta glauca* and the snail *Physa acuta* group.

<u>Taxa</u>	<u>Abundance</u>
<i>Mystacides nigra</i> (L.)	A
<i>Calopteryx splendens</i> (Harris)	A
<i>Cyrnus trimaculatus</i> (Curtis)	A
<i>Acroloxus lacustris</i> (L.)	A
<i>Ancylus fluviatilis</i> Müller	A
<i>Crangonyx pseudogracilis</i> Bousfield	B
<i>Platycnemis pennipes</i> (Pallas)	A
<i>Erythromma najas</i> (Hansemann)	A
<i>Gerris</i> sp.	A
<i>Nepa cinerea</i> L.	A
<i>Notonecta glauca</i> L.	A
Dytiscidae	A
<i>Cloeon dipterum</i> (L.)	A
<i>Sialis lutaria</i> (L.)	A
<i>Piscicola geometra</i> (L.)	A
<i>Potamopyrgus jenkinsi</i> (Smith)*	B
<i>Physa acuta</i> group	B
Sphaeriidae	A
<i>Asellus aquaticus</i> (L.)	B
Chironomidae	B
Oligochaeta	B
<i>Eurycerus lamallatus</i> (Müller)	A

* Now *Potamopyrgus antipodarum* (Gray)

Macroinvertebrate taxa list for River Cherwell above St. Clements Park, Oxford (SP52610630) -14/8/96

No Red Data Book 1-3 or Notable species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the caddis species *Ceraclea nigronevosa* and *Agraylea* sp., and the Flat Ramshorn snail *Hippeutis complanatus*.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Molanna angustata</i> Curtis	A	<i>Planorbis carinatus</i> Müller	A
<i>Athripsodes</i> sp.	A	Sphaeriidae	B
<i>Ceraclea nigronevosa</i> (Retzius)	A	<i>Glossiphonia complanata</i> (L.)	A
<i>Mystacides azurea</i> (L.)	A	<i>Helobdella stagnalis</i> (L.)	A
<i>Mystacides nigra</i> (L.)	B	<i>Hemiclepsis marginata</i> (Müller)	A
<i>Tinodes waeneri</i> (L.)	A	<i>Erpobdella octoculata</i> (L.)	A
<i>Caenis luctuosa</i> group	B	<i>Asellus aquaticus</i> (L.)	B
<i>Cyrnus trimaculatus</i> (Curtis)	A	Chironomidae	C
<i>Theodoxus fluviatilis</i> (L.)	B	Oligochaeta	C
<i>Ancylus fluviatilis</i> Müller	A	<i>Eurycercus lamellatus</i> (Müller)	A
<i>Agraylea</i> sp.	A		
<i>Hydroptila</i> sp.	A		
Dytiscidae	A	* Now <i>Nebrioporus depressus/elegans</i> (Panzer)	
<i>Potamonectes depressus</i> group*	A	+ Now <i>Potamopyrgus antipodarum</i> (Gray)	
<i>Oulimnius</i> sp.	A		
<i>Centroptilum luteolum</i> (Müller)	A		
<i>Cloeon dipterum</i> (L.)	A		
<i>Sialis lutaria</i> (L.)	A		
<i>Valvata piscinalis</i> (Müller)	A		
<i>Potamopyrgus jenkinsi</i> (Smith)+	B		
<i>Bithynia tentaculata</i> (L.)	A		
<i>Lymnaea peregra</i> (Müller)	A		
<i>Amiger crista</i> (L.)	A		
<i>Anisus vortex</i> (L.)	A		
<i>Bathymophalus contortus</i> (L.)	A		
<i>Gyraulus albus</i> (Müller)	A		
<i>Hippeutis complanatus</i> (L.)	A		

Macroinvertebrate taxa list for River Cherwell at St. Clements Car Park, Oxford (SP52190608) - 14/8/96

No Red Data Book 1-3 or Notable species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the White-legged damselfly *Platycnemis pennipes* and the Flat Ramshorn snail *Hippeutis complanatus*.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Molanna angustata</i> Curtis	A	Oligochaeta	B
<i>Mystacides azurea</i> (L.)	A	<i>Eurycerus lamellatus</i> (Müller)	A
<i>Mystacides nigra</i> (L.)	A	Ostracoda	A
<i>Mystacides</i> sp.	B	Hydracarina	A
<i>Cyrtus trimaculatus</i> (Curtis)	A		
<i>Crangonyx pseudogracilis</i> Bousfield	B		
<i>Gammarus pulex</i> (L.)	A		
<i>Platycnemis pennipes</i> (Pallas)	A	* Now <i>Nebrioporus depressus/elegans</i> (Panzer)	
Dytiscidae	A	+ Now <i>Potamopyrgus antipodarum</i> (Gray)	
<i>Potamonectes depressus</i> (Fabricius)*	A		
<i>Oulimnius</i> sp.	A		
<i>Dugesia tigrana</i> (Girard)	A		
<i>Cloeon dipterum</i> (L.)	A		
<i>Sialis lutaria</i> (L.)	A		
<i>Valvata cristata</i> Müller	A		
<i>Valvata piscinalis</i> (Müller)	A		
<i>Potamopyrgus jenkinsi</i> (Smith)+	B		
<i>Bithynia tentaculata</i> (L.)	B		
<i>Lymnaea peregra</i> (Müller)	B		
<i>Anisus vortex</i> (L.)	A		
<i>Bathymphalus contortus</i> (L.)	B		
<i>Gyraulus albus</i> (Müller)	B		
<i>Hippeutis complanatus</i> (L.)	A		
Sphaeriidae	B		
<i>Glossiphonia complanata</i> (L.)	A		
<i>Asellus aquaticus</i> (L.)	C		
Chironomidae	C		

Macroinvertebrate taxon list for Hinksey Stream at Abingdon Road, Oxford (51800384) - 14/8/96

The Notable water beetle *Ilybius fenestratus* was found in sample. No Red Data Book 1-3 species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the caddis *Triaenodes bicolor*, the Migrant Hawker dragonfly *Aeshna mixta*, the greater water boatman *Notonecta glauca* and the water beetle *Hyphydrus ovatus*.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Phryganea</i> sp.	A	Sphaeriidae	C
<i>Mystacides</i> sp.	A	<i>Helobdella stagnalis</i> (L.)	A
<i>Triaenodes bicolor</i> (Curtis)	A	<i>Asellus aquaticus</i> (L.)	C
<i>Aeshna</i> sp.	A	Chironomidae	B
<i>Aeshna mixta</i> Latreille	A	Oligochaeta	B
<i>Anabolia nervosa</i> (Curtis)	A	<i>Eurycercus lamellatus</i> (Müller)	B
<i>Crangonyx pseudogracilis</i> Bousfield	B	Ostracoda	A
<i>Ischnura elegans</i> (Van der Linden)	A	Hydracarina	A
<i>Notonecta glauca</i> L.	A		
<i>Sigara dorsalis</i> group	A		
Halipidae	A	*Now <i>Potamopyrgus antipodarum</i> (Gray)	
<i>Halilpus fluviatilis</i> Aubé	A		
Dysticidae	A		
<i>Hyphydrus ovatus</i> (L.)	A		
<i>Ilybius fenestratus</i> (Fabricius)	A		
Gyrinidae	A		
<i>Cloeon dipterum</i> (L.)	A		
<i>Sialis lutaria</i> (L.)	B		
<i>Potamopyrgus jenkinsi</i> (Smith)*	B		
<i>Bithynia tentaculata</i> (L.)	C		
<i>Lymnaea peregra</i> (Müller)	A		
<i>Physa fontinalis</i> (L.)	B		
<i>Anisus vortex</i> (L.)	B		
<i>Bathymphalus contortus</i> (L.)	A		
<i>Gyraulus albus</i> Müller	B		
<i>Planorbis carinatus</i> (Müller)	A		

Macroinvertebrate taxon list for Bulstake Stream, above Botley Stream (SP49800650) - 13/8/96

No Red Data Book 1-3 or Notable species were found in sample. Of the recorded species the following are found in <5% of the RIVPACS III reference sites; the mayfly *Ephemera vulgata*, the bivalve mollusc *Unio* sp., the crustacean *Corophium curvispinum*, the Water Scorpion *Nepa cinerea*, the Ear Snail *Lymnaea auricularia* and the snail *Physa acuta* group.

<u>Taxa</u>	<u>Abundance</u>	<u>Taxa</u>	<u>Abundance</u>
<i>Ephemera vulgata</i> L.	A	<i>Simulium (Boophthora) erythrocephalum</i> (de Geer)	A
<i>Leuctra geniculata</i> (Stephens)	A	<i>Dugesia tigrana</i> (Girard)	A
<i>Aphelocheirus aestivalis</i> (Fabricius)	A	<i>Baetis scambus</i> group	A
<i>Athripsodes aterrimus</i> (Stephens)	A	<i>Centroptilum luteolum</i> (Müller)	B
<i>Athripsodes cinereus</i> (Curtis)	A	<i>Cloeon dipterum</i> (L.)	A
<i>Mystacides nigra</i> (L.)	A	<i>Sialis lutaria</i> (L.)	B
<i>Goera pilosa</i> (Fabricius)	A	<i>Valvata piscinalis</i> (Müller)	A
<i>Calopteryx</i> sp.	A	<i>Potamopyrgus jenkinsi</i> (Smith)*	C
<i>Tinodes waeneri</i> (L.)	B	<i>Bithynia tentaculata</i> (L.)	B
<i>Caenis luctuosa</i> group	B	<i>Lymnaea auricularia</i> (L.)	A
<i>Polycentropus flavomaculatus</i> (Pictet)	A	<i>Lymnaea stagnalis</i> (L.)	A
<i>Limnephilus lunatus</i> group	A	<i>Physa acuta</i> group	A
<i>Theodoxus fluviatilis</i> (L.)	B	<i>Gyraulus albus</i> Müller	B
<i>Ancylus fluviatilis</i> Müller	A	Sphaeriidae	C
<i>Acroloxus lacustris</i> (L.)	A	<i>Glossiphonia complanata</i> (L.)	A
<i>Hydroptila</i> sp.	A	<i>Helobdella stagnalis</i> (L.)	A
<i>Unio</i> sp.	A	<i>Erbodella octoculata</i> (L.)	A
<i>Corophium curvispinum</i> Sars	C	<i>Asellus aquaticus</i> (L.)	B
<i>Gammarus pulex</i> (L.)	A	Chironomidae	C
<i>Crangonyx pseudogracilis</i> Bousfield	A	Oligochaeta	C
<i>Ischnura elegans</i> (Van der Linden)	B	<i>Chelifera</i> group	A
<i>Nepa cinerea</i> L.	A	<i>Hemerodromia</i> group	A
Dytiscidae	A	Succineidae	A
<i>Platambus maculatus</i> (L.)	A		
<i>Limnius volckmari</i> (Panzer)	A		
<i>Oulimnius</i> sp.	B	* Now <i>Potamopyrgus antipodarum</i> (Gray)	

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