

Surveyor name(s) <i>Please give full name(s) e.g. John Smith</i>	Date
Square: 4 figure grid ref <i>e.g. SP1243 (see your map)</i>	Pond: 8 figure grid ref <i>e.g. SP 1235 4325 (see your map)</i>
Pond name (if known)	
Determiner name (<i>optional</i> - if someone confirms the identity of the families you've recorded)	Voucher material (<i>optional</i> - comment if specimens kept or photographs taken to confirm identification)

Please complete a separate sheet for each pond surveyed

You need experience and time to do this survey. An average sized pond will take from 40 minutes to 1 hour to sample. Sorting through the pond sample to identify animals at family level will usually take between 3-4 hrs.

The aim of the survey is to assess the pond's quality based on the **invertebrate families** recorded in a **standard 3 minute sample**. Invertebrate family surveys are a monitoring tool and assess pond quality based on observed versus expected scores (Predictive System for Multimetrics (PSYM)). To understand the pond's invertebrate fauna to inform management decisions, identification to species level is more useful, but the same collection and sorting technique can be used.

METHOD

- Collect a 3 minute sample using a standard size pond net between May and October*
- Undertake careful bankside sorting, looking at small batches (i.e. 5-10 second sub-samples) of netted material in a clean white tray, to identify all the invertebrate families present in the 3 minute sample
- Alternatively, take the sample home and sort through the netted material a little at a time (helpful if the pond has a lot of sediment)
- **Enter the results online:** www.freshwaterhabitats.org.uk/projects/waternet, or send your results to your PondNet regional project officer and we will enter the results for you
- Receive an evaluation of your pond's quality, based on metrics calculated from your invertebrate survey and a suite of environmental variables (which can be collected by another volunteer, or you can undertake this survey by downloading a Pond Habitat Survey Form www.freshwaterhabitats.org.uk/projects/pondnet/survey-options/habitats)

EQUIPMENT

You will need: a standard pond net, a bucket with a lid (if sorting at home), a sorting tray, tweezers, a sample bottle (*optional* - for keeping specimens), and a guide to aquatic invertebrate families (e.g. the Freshwater Biological Association's [Guide to British Freshwater Macroinvertebrates for Biotic Assessment](#)).

STEP 1: IDENTIFY HABITATS WITHIN THE POND TO SURVEY

The aim of netting is to collect a representative and repeatable sample from the pond which includes as many invertebrate families as possible. **How:** Identify the different mesohabitats within the pond. **Mesohabitats** are different types of habitat which could support different invertebrates, e.g. stands of sedge, submerged aquatic plants, marginal grasses, areas overhung by willows, inflows, etc. An average pond could contain 3 to 8 mesohabitats. Divide your **3 minute sample** (net in water time) between the different habitats, i.e. if there are 6 habitats in the pond, net each one for 30 seconds. If the habitat is extensive you can further sub-divide, i.e. split the 30 seconds in each of the 6 habitats into three 10 second sub-samples.

STEP 2: COLLECT YOUR SAMPLE

Net the mesohabitat to vigorously dislodge and capture invertebrates. Lightly disturb stony or sandy substrates and sweep up any invertebrates which float out. Even very shallow water, just a few centimetres deep, can be sampled in this way. The skill is to collect animals, without collecting lots of vegetation or silt. It is worth practicing this until you are confident with your technique. Net in short bursts and empty your net frequently. A **further one-minute** can be spent searching for invertebrates on the water surface or those stuck to logs and stones.

STEP 3: SORT YOUR SAMPLE AND RECORD YOUR RESULTS

Sort by the side of the pond using a clean white tray with a small amount of water (1 cm depth) from the pond and a **walnut sized amount of material** (this could be a 5 second sub-sample or less). Discard the sorted material; fill the tray up with clean water and sort the next bit of sample. Continue in this way until the entire sample has been sorted.

If you don't have time to sort by the pond; put the sample in a sealed bucket and **take it home to sort**. Don't add any water to this bucket - it will slosh around damaging animals, and allow the predators to eat all the prey! At home, sort the sample in small walnut sized batches, using tap water in your tray. It is important to sort the sample on the same day or it will rot in the bucket.

Work through the 3 minute sample, at the pond or at home, to pick out invertebrates and **identify them to family level**. NOTE: Don't count individuals; we just need to record the presence or absence of each family. Record the results on this form. Invertebrate families are scored by BMWP groups - used to calculate a PSYM score; ponds that have at least some invertebrates in higher scoring BMWP groups, tend to have better water quality than ponds dominated only by low scoring taxa. The other metrics used to calculate pond quality include the number of Coleoptera (beetle) families, and the number of dragonfly/alderfly families (Odonata/ Megaloptera).

* If your pond is known to support Great Crested Newts you must take additional steps to prevent capture when undertaking an invertebrate survey. As a protected species, a licence is required to net for Great Crested Newts. However, if you avoid capturing them by using very careful pond dipping methods or timing, law enforcement bodies are unlikely to take action over occasional, inadvertent capture. In known Great Crested Newt ponds, we recommend that you only undertake an invertebrate survey in September, check your sample before you place it in the bucket to ensure that you have not captured any larvae, immature or adult newts. Return any captured newts immediately to the pond. For more information go to www.naturalengland.org.uk/Images/ponddipping_tcm6-10858.pdf

INVERTEBRATE FAMILY LIST

(tick all that apply)

Alderflies

Sialidae
alderflies 4

Beetles

Dryopidae
long-toed water beetles 5

Dytiscidae (Noteridae)
diving beetles 5

Elmidae
riffle beetles 5

Gyrinidae
whirligig beetles 5

Halplidae
crawling water beetles 5

Hydrophilidae (Hydraenidae)
water scavenger beetles 5

Hygrobiidae
screech beetles 5

Bivalves

Unionidae
large freshwater mussels 6

Sphaeriidae
pea & orb mussels 3

Bugs

Aphelocheiridae
a river bug 10

Corixidae
lesser water boatman 5

Gerridae
pond skaters 5

Hydrometridae
water measurers 5

Mesoveliidae
pondweed bugs 5

Naucoridae
saucer bug 5

Nepidae
water scorpions & water stick-insects 5

Notonectidae
greater water boatman 5

Pleidae
pygmy backswimmers 5

Caddisflies

Beraeidae 10

Brachycentridae
humpless casemakers 10

Goeridae 10

Lepidostomatidae
bizarre caddisflies 10

Leptoceridae
long-horned caddisflies 10

Molannidae
hood casemakers 10

Odontoceridae
mortar-joint casemakers 10

Phryganeidae
giant casemakers 10

Sericostomatidae
bush-tailed caddisflies 10

Philopotamidae
fingernet caddisflies 8

Psychomyiidae
net tube caddisflies 8

Limnephilidae
northern caddisflies 7

Polycentropodidae
tube maker caddisflies 7

Rhyacophilidae (Glossomatidae)
free-living caddis (little black caddis) 7

Hydroptilidae
micro-caddisflies 6

Hydropsychidae
net-spinning caddisflies 5

Crayfish

Astacidae
crayfish 8

Damselflies

Calopterygidae (Agriidae)
demoiselles 8

Lestidae
emerald damselflies 8

Coenagrionidae
red & blue/black damselflies 6

Platycnemididae
white-legged damselflies 6

Dragonflies

Aeshnidae
hawker dragonflies 8

Cordulegasteridae
golden-ringed dragonflies 8

Corduliidae
emerald dragonflies 8

Gomphidae
club-tailed dragonflies 8

Libellulidae
chasers, skimmers & darters 8

Flatworms

Dendrocoelidae 5

Planariidae (Dugesiidae) 5

Fly larvae

Simuliidae
black fly larvae 5

Tipulidae
crane fly larvae 5

Chironomidae
non-biting midge larvae 2

Leeches

Piscicolidae
fish leeches 4

Erpobdellidae 3

Glossiphoniidae 3

Hirudinidae 3

Mayflies

Ephemerellidae
spiny crawler mayflies 10

Ephemeridae
common burrower mayflies 10

Heptageniidae
flat-headed mayflies 10

Leptophlebiidae
prong-gilled mayflies 10

Potamanthidae
hackle-gilled burrower mayflies 10

Siphonuridae
primitive minnow mayflies 10

Caenidae
small square-gilled mayflies 7

Baetidae
small minnow mayflies 4

Shrimps

Corophiidae
mud-shrimps 6

Gammaridae (Crangonyctidae)
freshwater shrimps 6

Snails

Ancylidae (Acroloxidae)
freshwater limpets 6

Neritidae
nerites 6

Viviparidae
freshwater winkles 6

Hydrobiidae (Bithyniidae)
freshwater mud snails 3

Lymnaeidae
pond and marsh snails 3

Physidae
bladder snails 3

Planorbidae
ram's-horn snail 3

Valvatidae
valve snails 3

Stoneflies

Capniidae
small winter stoneflies 10

Chloroperlidae
green stoneflies 10

Leuctridae
rolled-winged stoneflies 10

Perlidae
golden stoneflies 10

Perlodidae
perlodid stoneflies 10

Taeniopterygidae
winter stoneflies 10

Nemouridae
spring stoneflies 7

Water Slater

Asellidae
water hoglouse 3

Worms

Oligochaeta
true worms 1

METRICS: These will be calculated automatically when you enter data on WaterNet but you can calculate them here as well if you wish.

TOTAL NUMBER OF TAXA (A)

TOTAL BMWP SCORE (B)

AVERAGE SCORE PER TAXA (= B / A)

NUMBER OF ALDERFLY, DRAGONFLY AND DAMSELFLY FAMILIES

NUMBER OF BEETLE FAMILIES