# Birmingham River Champion's Urban Riverfly guidance

## Overview

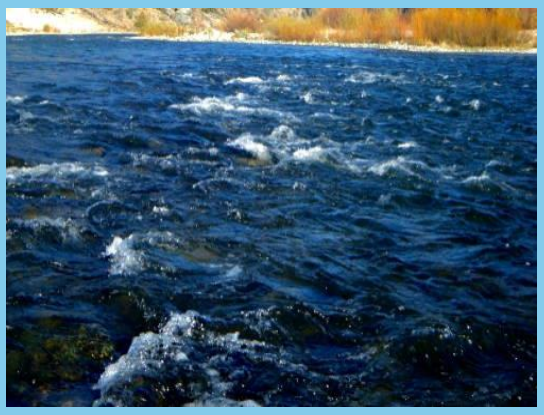
Urban Riverfly one of four citizen science techniques that volunteers are undertaking within the Birmingham River Champions. This technique is led by the Freshwater Biological Association and enables volunteers to monitor river ecosystem health by identifying **macroinvertebrates**. These little critters are great 'bioindicators', meaning that the presence of different species can indicate different pressures (e.g., the absence of sensitive species may indicate pollution). They are therefore known as the 'canaries' of our waterways as they can provide early warning indications of extreme pressures.

Urban Riverfly should take under 1 hour (less than 30-minutes in time) and sampling should ideally be performed **every month** when volunteers are willing and available and weather / flow conditions permit. The sampling should be repeated at the same site (the location of which should be sent to the Birmingham River Champions) and ideally by the same surveyor. For **biosecurity** purposes, groups sampling multiple locations (and particularly multiple rivers) on the same day should change surveyors.

## Methods

### *Site identification*

Before undertaking Urban Riverfly, you should identify a section of river that is **easy to access** and **shallow** (below welly height). Ideally, you should sample in habitats called 'riffles' - shallow waters containing fast flows and larger sediments with 'wave' like features on the water surface.



*Riffle habitats in rivers, characterised by shallow depths, fast flow velocities, coarse sediments and 'wave-like' disturbances on the water surface*

### *Kick sampling and hand search*

Volunteers should take the D-Frame net into the river and perform a **3-minute kick sample**. This involves disturbing riverbed habitats (e.g., plants, algae, sediments) using the base of your foot in a 'kicking' motion, with the net positioned just below (facing upstream) to collect the disturbed macroinvertebrates. This is easiest when you're stood 'side on' and the riverbed is disturbed in front of the net (you do not need to 'score goals'

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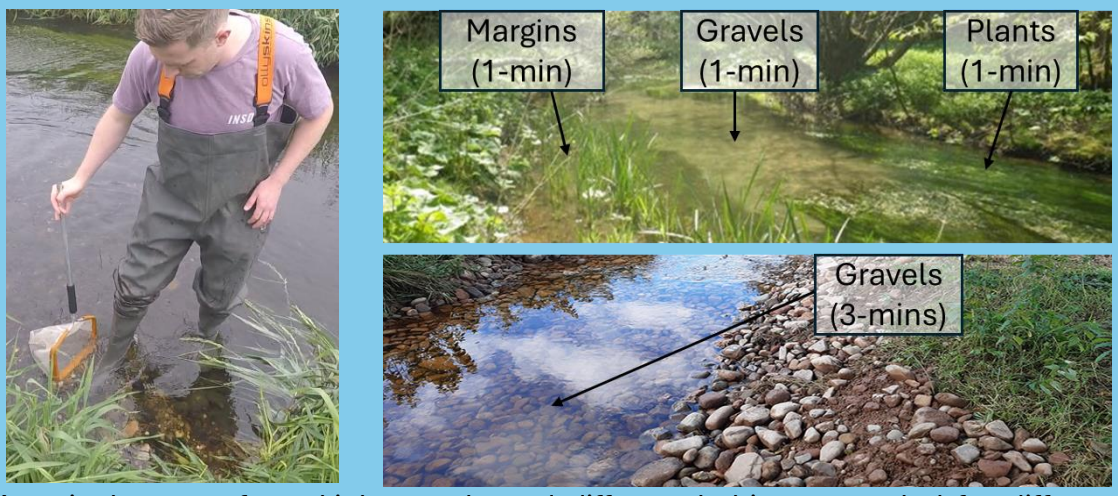
and kick into the net as this will clog up your tray). Some key things to remember:

- You should spend **approximately 15-seconds** kicking in each spot.
- You should **only time** when **actively kicking**.
- You should **divide** your time up **proportionally** based on the habitats present (e.g., if your river has equal gravels and plant coverage, you'd spend 1.5-minutes kicking in each).

After the kick sample, you should perform a **1-minute hand search.** For this, you should inspect large objects (e.g., wood or rocks) that cannot be disturbed by kicking, and the river margins for 'surface-dwelling' macroinverbrates (e.g., "pond skaters") and add these to your net (it is okay if you cannot see anything during this period).




*A typical stance for a kick sample and different habitats sampled for different time periods based on their proportional occurrence across the channel.*

### *Macroinvertebrate sampling*

You should empty your net into a tray containing river water. But if you have a large amount of material it might be easiest to place your sample into a bucket with river water and empty parts in at a time – you should ideally be able to see at least 30% of the white tray (you can wash off and remove large items likes rocks and leaves as necessary).


*The Urban Riverfly kit and a macroinvertebrate sample with roughly the maximum amount of material that should be put into a tray when identifying specimens.*

You should record the number of each identified specimen into one of the following abundance categories: **1-9; 10-99; 100-999; ≥1000**. If splitting one sample across multiple trays, you should roughly tally the number of specimens in each tray before coming up with a final abundance category value based on all the trays combined. Urban Riverfly records can be uploaded *via* our online form, where we will generate summary statistics based that will be displayed on our website.

### *'Cheats' for identifying key species*

Besides the resources already provided, see this 'cheat sheet' for IDing key species:

| Species | Identification information |
|---|---|
| Cased caddisflies | Look out for small stones arranged in a **'tube'** structure, only record if you can see the caddisfly **inside**. Other cases can be made out of plants and even snail shells. |
| Caseless caddisflies | No tails, but **posterior hooks**. Look out for a **hard head and soft body**. Two main types:<br>• 'Green sedge' caddisflies - green, spikey gills on the side of body;<br>• 'Net-spinning' caddisflies – dark brown head / light brown body, 'broom' like hooks, gills under body |
| Stoneflies | **Stoneflies = 2 tails; Mayflies = 3 tails – both have 6 legs** – but mayfly tails are lost easily, not to be mistaken for stoneflies. Also don't confuse with damselflies (see decision tree below).<br><br>These **3 species** are **uncommon** in Birmingham's rivers (pollution sensitive), so **do not** record unless you have sampled at the site before or have confirmation from the BRC project team (either email or ask about a separate whatsapp group). |
| Green drake (burrowing) mayfly | |
| Flat-bodied (stone clinger) mayfly | |
| Olive mayfly | **Most common** mayfly. Moves **rapidly** (torpedo), slimmer body, 'leaf-like' gills on side. Don't confuse with blue-winged olives! |
| Blue-winged olive mayfly | **Darker**, **wider** body than olives with **stripes**. Tail can stick up like a **scorpion**. Moves **slowly**, gills not sticking out. |
| Freshwater shrimp | Lots of **legs**, swims **on side**. Generally **peach** or **cream** colour. Contact BRC project team if you see 'striped' pattern or spikes near the appendage as this may be the invasive 'demon' shrimp. |
| Freshwater hoglouse | Lots of **legs**, crawls on **front**. Dark brown. |
| Adult beetles | Most common will be jet **black** all over and **small**. **If confident**, see the decision tree below on beetle larvae. |
| Freshwater worms | Generally **pink** colour. Unlike non-biting midges, worms have **no** visible **head** and **don't swim**, also much **longer** / **wriggly**. |
| Freshwater snails | Do not record **empty** shells. May come in different forms besides more 'typical' looking snails, such as 'ramshorn' snails (coiled and flat) and 'limpets' (wizards hat). |
| Freshwater leeches | **2 key types**. One much **larger**, **darker** that moves by expanding/contracting (elastic band). The other **smaller**, curl up in **c-shape** and have **'train track'** pattern on back. |

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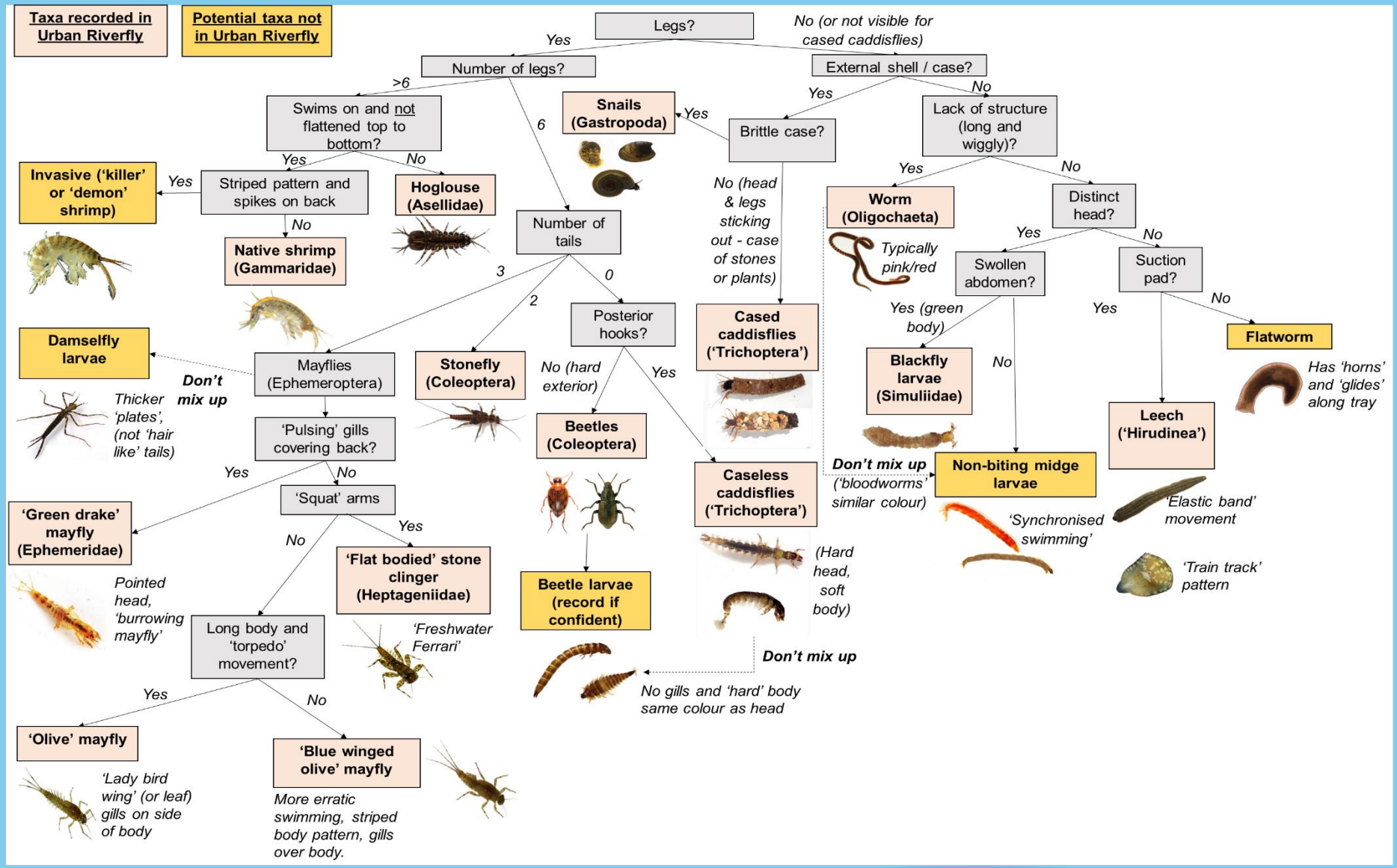
SEVERN TRENT





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