An introduction to riverfly monitoring

What are Riverflies?

Riverflies are a range of invertebrates and crustaceans that spend all or part of their life cycle in a river, stream, pond or lake. Along with other freshwater invertebrates, they are at the heart of the freshwater ecosystem and are a vital link in the aquatic food chain.

Riverflies have multiple common characteristics which include being of limited mobility, relatively long life cycle, presence throughout the year and specific tolerances to changes in environmental conditions that make them useful indicators of water quality, pollution, siltation and low flows.

What is the Riverfly Partnership?

The riverfly partnership is a network of organisations representing anglers, conservationists, entomologists, scientists, water course mangers and statutory authorities across the UK. It is hosted by the freshwater biological association, with all partner organisations working together to protect the water quality of our rivers, further the understanding of riverfly populations and actively conserve riverfly habitats.

Why do we carry out riverfly monitoring?

Routine water quality monitoring occurs on a rolling basis by regulatory authorities, such as the environment agency, on average every 3 years, as part of the water framework directive.

The EU Water Framework Directive was formed in 2000 to protect rivers, lakes, estuaries, coastal waters and groundwater. by River Basin Management Planning, which is still implemented now. This involves a 7 year cycle, part of which involves classifying ecological status in terms of wildlife (or biology present), physiochemical (so what types of chemicals are present in the water) and hydrogeomorphology (so the habitat of the river).

Monitoring every 3 years has the potential to miss events, and reduces the ability to identify potential causes of water quality incidents.

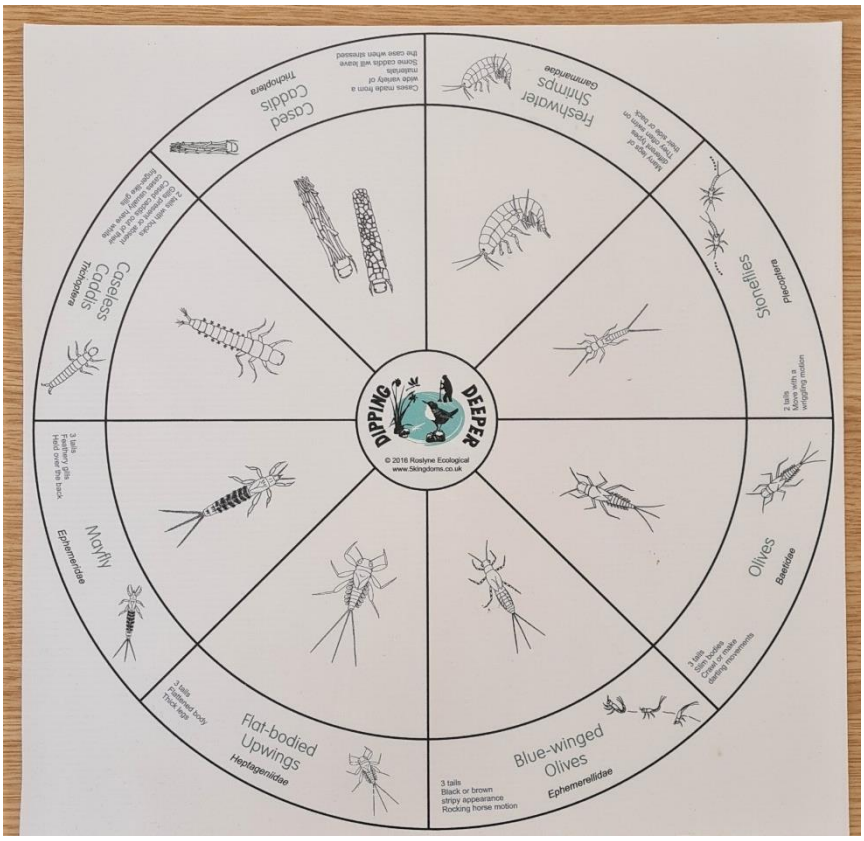
Riverfly monitoring, which occurs ideally monthly at the same site, allows for the detection of severe changes in water quality to be acted on rapidly. This is as riverfly monitoring creates long term population datasets, allowing for detection of change from normal levels. This is done by a **trigger level** being set for each site, which defines where the score recorded at a site has reached an unusually low level. If there is a population decline detected below the trigger level, the riverfly monitor would contact the riverfly coordinator, who would then contact the environment agency to send someone out to investigate.

How to conduct a riverfly survey

1. Riverfly surveys are always conducted in at least pairs, with one individual surveying in the river and the other timing and keeping lookout for the other individual in the river.

2. A riverfly net is taken to the given riverfly monitoring site, and one bucket of water is filled up from the river.
3. To sample for riverfly in the river, a 3 minute kick sample is then performed. This involves placing the net on the bottom of the river with the net facing into the flow of the river, placing one foot in front of the net, and then performing a kicking motion backwards and forwards on the bottom of the river to disturb the gravel.

4. This is carried out in PAIRS, with one individual timing the other. Roughly every 10-20 seconds the individual should stop kicking, and the timer paused, before moving to a different location in the river, to ensure the whole habitat is surveyed.
5. Following the 3 minute kick sample a 1 minute hand search is conducted. This involves picking up rocks or debris in the river and shaking this into the net.
6. Next the contents of the net is emptied into one bucket.
7. From this bucket, pour some of the water into a white tray.
8. Separate the riverflies you identify into the divider tray. Repeat until the bucket is empty.



ARMI scoring

Based on how many of each of the 8 types of riverfly you collect, a score is given for each group.

Number of the type of riverfly	ARMI score
0	0
1 – 9	1
10 – 99	2
100 – 999	3
1000+	4

Extra Notes: