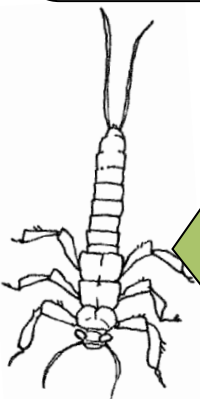


## STONEFLY NYMPH FACT CARD



- Live in and amongst the **stones on the bottom**
- Prefer **cool running water** because it has more **oxygen**
- They breathe through **gills** on the underside of the **body**, their **wings** and **antennae**!
- Each leg has **2 claws** to cling to the rocks and sticks
- Eat **vegetation and decaying matter**, but the largest ones (over 30mm) stalk their prey and are carnivores
- Live up to **3 years underwater**, then only **1 week to 1 month** as an adult!
- Very sensitive to pollution

## MAYFLY NYMPH FACT CARD



- Live in and amongst the **stones on the bottom** of rivers and ponds
- Prefer **shady spots** as they are sensitive to sunlight
- Prefer **cool running water** because it has more **oxygen**
- They breathe through **gills** which **vibrate** to get more oxygen from the water
- They eat **vegetation OR decaying matter** by either collecting floating matter or scraping it off the rocks
- Live up to **5 years underwater**, then only a **few days** as an adult because they have **no mouth**!
- Very sensitive to pollution

## CADDISFLY LARVA FACT CARD



- Usually live at the bottom of ponds and streams
- They have **6 legs** at the front and **2 hooks** at the back
- Some Caddisfly larvae **make cases** out of **stones, twigs, sand or leaves** and stick them around their body by using their **own silk**!
- They use the 2 hooks at the back to **keep hold** of the case OR to **escape backwards** away from predators.
- Some Caddisfly larvae **spin silk webs** to catch their prey!
- They eat **algae and plants** and some eat other **invertebrates** too

## DRAGONFLY NYMPH FACT CARD



- Live in the **stones and plants on the bottom** of ponds or slow moving streams
- They **prowl** around the bottom for their prey and use a special hinged mouth part called a '**mask**' to grab prey
- They have **internal gills** and **suck water** into their abdomen to get the oxygen and then **squirt it out again**
- This squirt also gives a **jet propulsion** to move forward quickly to catch their prey
- They live for up to **5 years** as a nymph, and **shed their skin** about 6 times!
- The nymphs **crawl up plants** out of the water before metamorphosing into an adult
- Adults only live for a **couple of months**

## WORM FACT CARD



- Several species of worms but the main types will be either **red or dark brown in colour**
- They are often found in the **sediment** at the bottom of ponds or in **vegetation**.
- They **burrow** in to the sediment and feed on **algae and detritus**. They can eat up to **4 times their body weight!**
- The thin dark brown worms are called **Horsehair worms** because they are **thin and wiry** like hair
- Only see the adults swimming as the **larvae are parasitic** and feed and grow **inside other nymphs and larvae**
- **VERY TOLERANT OF POLLUTION**

## FRESHWATER SHRIMP FACT CARD



- Lives amongst the **stones and plants** in ponds and slow moving rivers
- They breathe using gills
- They are **very thin and flat** which helps them move about the rocks and hide from predators
- They are usually **transparent in colour** but can also be **orange and green**
- They eat **decomposing vegetation, bacteria and algae** which grows on the rocks
- They have **7 pairs** of walking legs. The first **2 pairs collect the food**
- They have **6 pairs of appendages** under the abdomen which help with swimming
- Sensitive to **chemical** pollution

## FRESH- WATER LIMPET & BIVALVE FACT CARD



- Lives in **vegetated** ponds and slow moving rivers and move using around using a '**foot**'
- They feed by using a **long tongue** which has **teeth** on it to **scrape** off the algae
- The shell is **sloping** to one side so the water flows over it without washing it away = **streamlined!**
- Bivalves are like **mussels and cockles**. You can tell the **age** of it by the **number of ridges** on their shells – like tree rings
- They have **siphons** which **suck up** the water and the **micro algae and animals** are **extracted** by the **gills** and the water squirted out again
- Limpets are sensitive to pollution but the bivalves are more tolerant

## FLATWORM FACT CARD



- Live in shallow ponds and like **dark areas**
- They breathe by **absorbing** oxygen **through the skin**, but have **no blood**
- They can **only see changes in light e.g. day and night**
- They are **flat** with no body segments and **glide** across surfaces using **hairs down the side** of their body
- They eat **easy to capture** invertebrates and **scavenge on dead** animals
- Food is detected using **smell organs** in **grooves** on the **side of their head**
- Once the food is eaten the waste is then **thrown back out of the mouth** because they have **no bum!**
- If the body is split, each part can **re-grow** on its own into a new worm!

## WATER BEETLE FACT CARD



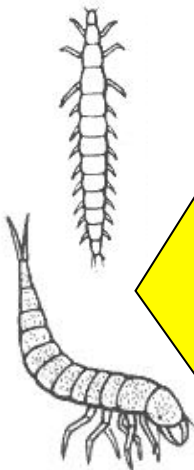
- Live in slow moving rivers and ponds, usually with lots of vegetation
- Most carry an **air bubble under their wing cases** and have special holes which absorb the oxygen
- The air bubble is taken from the surface and **kept in place** by having **hairs on their bum**
- Most beetles swim and have **hairs on their legs** to act as paddles
- They often have **hooks or claws** on the end of the legs to hold onto plants/rocks
- They eat other invertebrates of all sizes and the larger ones even **eat small fish and newts!**
- Tolerant of pollution as oxygen is taken from the air at the surface

## WHIRLIGIG BEETLE FACT CARD



- Named because it moves quickly and often in circles
- Lives on the **surface** of the water with its body **half in and half out** of the water
- They have eyes which are **split in 2** parts so it can see **ABOVE and BELOW** the water at the same time!
- The back **2 pairs of legs** are **shorter** and act as paddles to propel themselves along
- The **front pair of legs** are longer and have **pincers** to catch its prey
- They feed on **trapped insects** on the surface but they can **dive for prey or when threatened** and carry an air bubble under the wings
- Tolerant of pollution and can **fly to another** area if it becomes **unsuitable**

## BEETLE LARVA FACT CARD



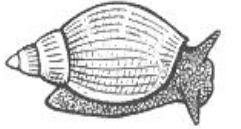
- Many varieties of beetle larvae
- They have **3 pairs of legs** towards the front of the body and often have more appendages or hairs at the back with tails at the end of the body
- They breathe in a variety of ways, either by **gills**, or **through their tails** which poke out the top of the water
- They are **very viscous** and have **pincers at the front of their head** to catch their prey. They eat most invertebrates and larger **fish and tadpoles**
- The pincers **inject an enzyme** in to the prey which **turns it into mush** and then they can **suck out** the insides!
- They can live for up to **2 years as a larva**
- Reasonably tolerant of pollution

## FRESHWATER HOG-LOUSE FACT CARD



- Live at the bottom of ponds which have **large amounts of decaying vegetation**
- They breathe through **gills under the tail section**
- They eat by **burrowing their head** in the dead and decaying vegetation and animals but keep their **tail out** so their gills can breathe
- They have **7 pairs of legs** and are similar to the woodlouse
- They have **2 pairs of antennae**, 1 longer than the other
- They can tolerate **moderately polluted** water which is rich in organic matter and low in oxygen
- They can **not tolerate chemical pollution** as it damages the gills

## WATER SNAIL FACT CARD



- Many species of snail
- They mainly live in **still water** in ponds and streams either amongst the vegetation or the rocky bottom
- Snails move about using a **large muscular foot**
- Some snails breathe using **gills** while others go to the surface to get oxygen and put an **air bubble** under the shell to be **absorbed through the skin**
- They eat **algae** and mainly **dead and decaying** vegetation
- They have lots of very **small teeth** on the tongue to **scrape off** the algae from the plants and rocks
- Tolerant of pollution as they **like nutrient rich algae** which thrive in polluted waters

## LEECH FACT CARD



- Tend to live at the bottom of ponds **except when feeding**
- They have **very muscular bodies**. They have **1 sucker at either end** of the body which they use to move along in a **looping motion**
- The body shape varies depending on whether the muscles are **relaxed or flexed**
- The majority are **scavengers or predators**
- Some **feed on the blood** of other animals. They attach themselves at the mouth and **secrete an anti-coagulant** which stops the blood clotting
- Their bodies can **more than double in size** whilst feeding!
- After feeding, some leeches can **survive up to 12 months** before needing the next meal!
- Very tolerant of pollution

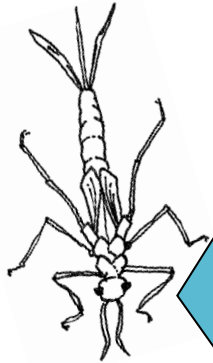
## LESSER WATER BOATMAN FACT CARD



- There are 2 main species – the **GREATER** and **LESSER** water boatman
- The **lesser water boatmen** swim on their **front**
- They are **excellent swimmers** with the 3rd pair of legs **very long like oars** with **hairs to push** the water
- The **lesser** boatmen when young, **absorb oxygen** through their skin, but as **adults** they collect an **air bubble** from the surface and store it **under their wing cases**
- The lesser boatmen eat **vegetation**
- Tolerant of pollution as they can **fly between** ponds



## DAMSEFLY NYMPH FACT CARD



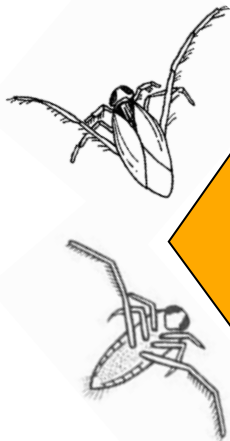
- Lives in **submerged vegetation** or on the **bottom** of slow flowing rivers
- They have an **extendable lower lip** with teeth on, which **darts out to grab** their prey – similar to the dragonfly nymph
- They have **3 long tails** which are **also their gills** and **act like paddles** to move through the water
- They can **absorb** oxygen through their **skin**
- They have **large compound** eyes made up of **lots of smaller eyes** and have excellent vision
- **80% of their brain** is given to analysing this visual data
- They live for about **1 year** as a nymph and only for a **few weeks** as an adult!

## RAT TAILED MAGGOT FACT CARD



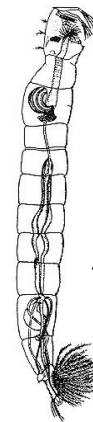
- They have **fat wrinkled bodies** which are very hard and resist being trampled
- They live in the **bottom of stagnant** ponds, pools and puddles
- They are **carnivorous** and eat other small invertebrates
- They have a **long thin tube like tail** which rises from their rear which they breathe through from the surface – like **breathing through their bum!**
- This tail can even **change length** so they can stay at the bottom and still breathe
- They are **very tolerant** of pollution and can survive in **drains, sewers** and **very nutrient enriched** ponds with very low oxygen levels.

## GREATER WATER BOATMAN FACT CARD



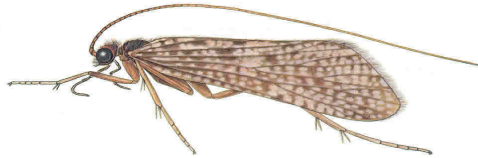
- There are 2 main species – the **GREATER** and **LESSER** water boatman
- The **greater water boatmen** swim on their **backs**
- They are **excellent swimmers** with the 3rd pair of legs **very long like oars** with **hairs to push** the water
- To breath they collect an **air bubble** from the surface and store it **under the wing case**
- Greater boatmen are **vicious predators** and **inject toxic saliva** through a beak which helps **digest their prey** so they can **suck out the fluids!**
- Tolerant of pollution as they can **fly between** ponds
- Also known as a **Backswimmer**

## MIDGE LARVA FACT CARD



- common species:
- **Phantom** larvae have 2 air bags which keep them horizontal and stop them from sinking!
- They use **antennae to catch** small crustaceans e.g. waterfleas
- **Blackfly** larvae **live on stones and plants** have a **sucker** to stay attached, but if washed away they **produce a silk thread** to catch onto rocks or plants. They eat **bacteria and rotten material**
- **Chironomus** larvae live in **still water** and even in **puddles in fields!** If the water dries up they make **slimy mud tubes** to protect themselves
- In **low oxygen** levels they produce a **red pigment called haemoglobin** to get more oxygen. **VERY TOLERANT OF POLLUTION**

Adult Caddisfly



7 – 25 mm

Adult Dragonfly



Up to 85 mm

Adult Stonefly



10 – 40 mm

Adult Mayfly



5 – 20 mm

## How to use these cards

### Identified Everything?

- Use these fact cards to support your own observations about the invertebrates you have discovered
- See what the pond inhabitants become as adult forms
- Work out how the card colours may relate to the pollution tolerance of the invertebrates

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### Adult Midge



Less than 1.5 mm

### Adult Drone Fly (Rat Tailed Maggot)



### Adult Damselfly



Up to 50 mm

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