

# Adaptations of Pond Creatures

## Feeding

A carnivore is a meat eating animal.

An animal that hunts is a predator.

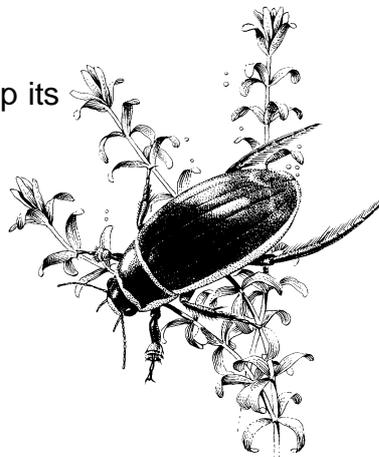
Its catch is its prey.

Predators need to catch their food and so need special adaptations to capture their prey.

### Great Diving Beetle

This large beetle is over 3cm long.

It has sharp mouth parts (mandibles) to grip its prey.



### Great Diving Beetle Larva

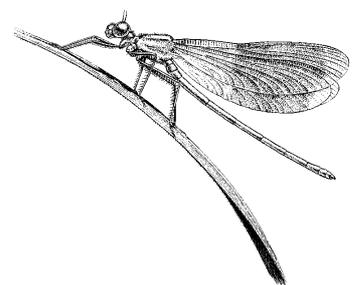
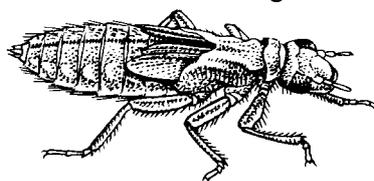
After catching its prey it pumps digestive fluid down two large curved pincers which are hollow extensions of its jaw. The internal parts of the prey are dissolved and the 'food' sucked back by the larva, leaving an empty skin.

### Water Scorpion

The two front legs of the Water Scorpion are folded in on themselves like penknives. It uses these long legs to grab its prey and put it into the sharp piercing mouth parts.

### Dragonfly and Damselfly nymph

Dragonfly and Damselfly nymphs have a modified lower lip (the mask) which is greatly elongated and hinged in the middle. They have sensory appendages (palps) which are modified to form moveable claws which grab the prey.



# Breathing in Water

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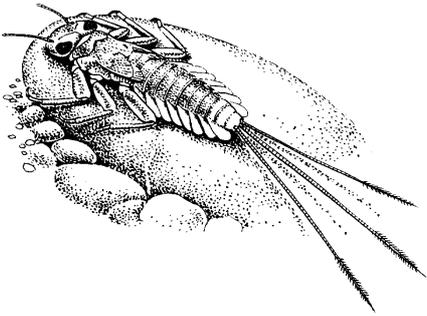
There are a number of ways in which pond animals obtain oxygen.

## Animals with gills

Many pond animals breathe dissolved oxygen in the water by using gills. This means they can breathe underwater and do not need to come up to the surface for air.

### Mayfly nymph

A Mayfly nymph has gills on its abdomen. It constantly moves its gills to obtain a fresh supply of oxygenated water.



### Damselfly nymph

The three flat tail projections of the Damselfly nymph are in fact its gills.

### Frog and Newt tadpoles

The tadpoles of frogs at first 'breathe' with gills and then develop lungs later when they begin to leave the water. Newt tadpoles have lungs but begin life by breathing through gills which are external and look like orange/pink hands on each side of their head.

## Animals that breath air from the water surface

If people swim under water they must come up to the surface to breathe, use a breathing tube, or take air down with them. The following pond animals do the same.

### Great Diving Beetle

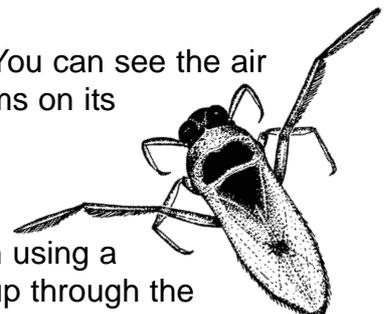
The Great Diving Beetle's method of breathing can be compared to a diver breathing from an oxygen tank. It surfaces regularly to collect a bubble of air from the surface under its hard wing coverings. The bubble is then absorbed through spiracles (breathing holes). When it has used up all the oxygen in its bubble it has to come up for a new one. You can see this as a bubble or as a thin silver line.

### Water Boatman

This animal collects and traps air around the hairs on its abdomen. You can see the air glistening silver especially on the Greater Water Boatman which swims on its back.

### Water Scorpion

The method of breathing used by the Water Scorpion is like a person using a snorkel. It pushes its tail, which is really a long thin breathing tube, up through the surface of the water to breath.



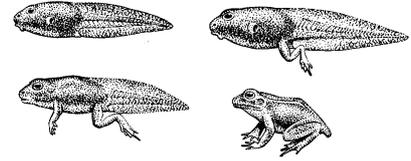
## Under the Water

### Fish

Fish use their various fins to help them to move quickly and precisely.

### Frog Tadpole

The frog tadpole uses its tail in an S shaped movement.



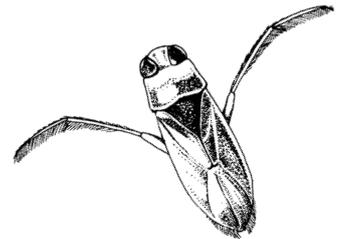
### Great Diving Beetle

The Great Diving beetle uses its two back legs as paddles. These are covered with rear facing hairs which provide resistance in one direction only like a pair of oars. Its streamlined body helps it to move smoothly.



### Water Boatman

Water Boatmen have large hairy hind legs with which they appear to 'row' themselves.

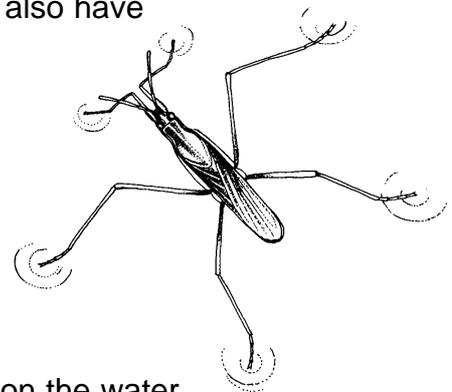


## On Top of the Water

The pond has a 'skin' on its surface produced by surface tension. Some pool animals use this skin to help them to move around.

### Pond Skater

Pond Skaters have long legs to help spread the load. They also have water repellent hairs on the ends of their legs.



### Whirligig beetles

Whirligig beetles dash around in circles and figures of eight on the water surface. Their eyes are divided into two parts - one on top of the head to see above the surface and the other on the lower side to enable the beetle to see under the water.

