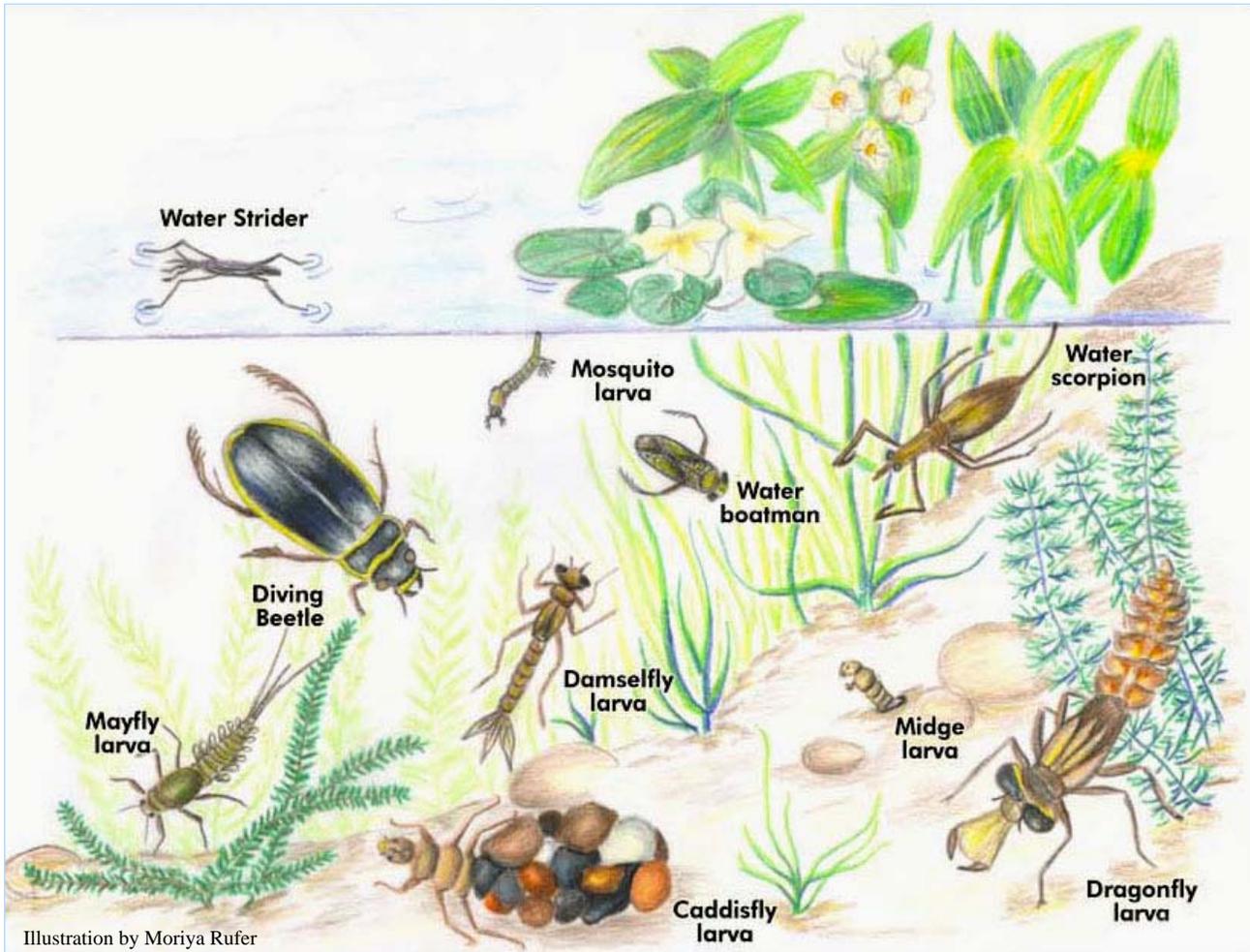


# A Children's Guide to Aquatic Insects

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Aquatic insects play a major role in the aquatic ecosystem. They help break down and decompose the dead material at the bottom of the lake such as leaves, dead fish, and other organisms. They are also a major food source for fish, frogs, birds and other animals. Without insects in the lake or stream, it wouldn't be a very nice place to fish or swim!

## A Waterbug's Life

Dragonflies, mosquitoes, midges, mayflies and many more insects live in the water during their immature life stage (nymphs and larvae) and fly on land in their adult life stage. You can think of the immature life stage and adult life stage as the equivalent of a caterpillar and butterfly. Aquatic insects that live in the lake as larvae (caterpillars) often spend a year or more in the water eating and growing before they are ready to fly away as adults. Whirligig beetles, water boatmen, and water striders use the lake all their lives.

Dragonflies, for example, live in the water during their nymph life stage. They scoot around on the bottom of the pond, eating minnows and other insects. Some of them become a tasty meal to fish, frogs and birds. Those that survive crawl on land to molt into an adult Dragonfly. When they molt, they leave their shed skins on vegetation, buildings and rocks. The adult then flies away to begin its new life on land.



Dragonfly nymph



Dragonfly shed skin



Dragonfly adult

# Mayflies (Ephemeroptera)

## Mayfly nymphs



## Mayfly adults



Mayfly nymphs have hairy looking gills attached to their abdomen. This is how they breathe under water. They also have 2 to 3 long tails extending from their back end. The nymphs eat detritus and decomposing things at the bottom of lakes and streams. They are also a favorite food for fish.

Mayfly adults have 2-3 tails extending from their back end as well. The two long limbs sticking out the front are actually their front legs, not antennae. The male uses these legs to hug the female. Mayfly adults also don't have any mouths. They only live for one or two days, so they don't need to eat anything!

## Damselflies and Dragonflies (Odonata)

Damselflies and Dragonflies are related to each other like cousins. They are both predators and eat minnows, worms and other aquatic insects. They're mouth has an extension that shoots out and catches minnows swimming by!



### Damselfly nymphs



### Damselfly adults



Damselflies have long skinny bodies with gills that look like feathers coming out the back end. This is how they breathe underwater.

The adults are very common flying around lakes and ponds. The adults look like they're flying in crazy patterns because they actually catch and eat other bugs like mosquitoes while flying in the air!

### Dragonfly nymphs



### Dragonfly adults



Dragonflies have shorter, stouter bodies with no visible gills. They breathe by sucking water into their back end, absorbing the oxygen out of it, and then shooting the water back out their back end. When they shoot water out their back end, it scoots them forward.

The adults are very common flying around lakes and ponds. The adults look like they're flying in crazy patterns because they actually catch and eat other bugs like mosquitoes while flying in the air!

## Backswimmers and Water Boatmen

Backswimmers and water boatmen look very similar to each other. The main difference is that backswimmers swim on their back and water boatmen swim on their front.

### **Backswimmers** (Notonectidae)

Backswimmers do just that – they swim on their back! Their third pair of legs are much longer than their front and middle legs. They use their back legs like oars to swim through the water.



### **Water Boatmen** (Corixidae)

Water boatmen look similar to backswimmers, but they swim on their front side. Their second and third pair of legs are similar in length, and their back has pretty stripes and speckled patterns.



## Giant Waterbug (Belostomatidae)



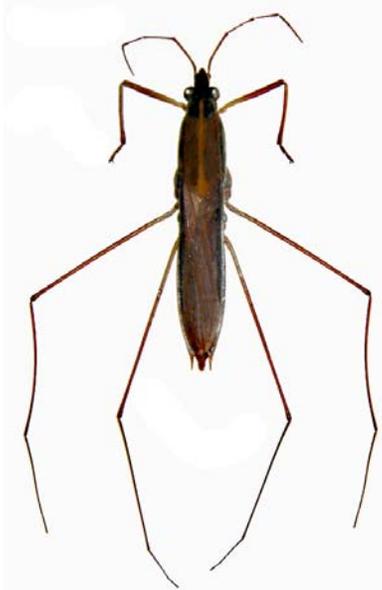
Giant water bugs can be very big - 1 to 3 inches long! They are voracious predators, and bite their prey with a sharp beak. They have even been seen attacking minnows.

They are called toe-biters, because if you accidentally step on them in a pond they may bite your toe. They usually stay away from humans in lakes though, so they shouldn't bother you while swimming.

## Water Striders and Water Scorpions

### Water Striders (Gerridae)

Water striders walk on top of the water. They have little hairs on their feet that repel water and keep them on top of the surface. If soap or oil is added to the water, it makes the surface of the water soft and the water strider is not able to stay on top anymore. It will fall into the water and drown. This is why we should not bathe and shampoo our hair in the lake.



### Water Scorpions (Nepidae)

Water scorpions are vicious predators. They catch bugs, minnows and worms with their long arms. They have a long, beak-like mouth to eat their prey. The long tube that sticks out from their back end is their breathing tube. You can think of it like a straw. They hang upside down in the water with the tube at the top of the water and breathe in air in through it. When they dive down deeper into the water, they close the tube so no water gets in it.



## Water Beetles

Water beetles live in the water their whole life. They start out as a larva, and then molt into an adult like butterflies do. The adults breathe in a unique way. They have a little air bubble stuck to their belly that they breathe from. They come up to the top of the water every few minutes to get more air into their bubble and then they dive back down underwater.

Whirligig beetle adults have eyes both on top of their head and on the underneath part of their head! This allows them to see both above and below water when they're floating on top. Whirligig beetles swim in fast little circles at the top of the water.

### **Predacious diving beetle (Dytiscidae)**

larvae

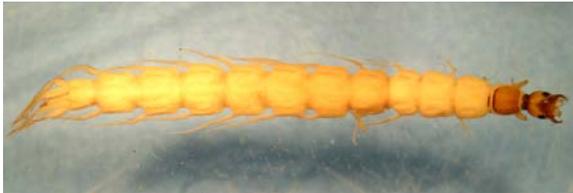


adult



### **Whirligig beetle (Gyrinidae)**

larvae



adult



### **Water scavenger beetle (Hydrophilidae)**

larvae



adult



# Caddisflies (Trichoptera)

## Caddisfly larvae



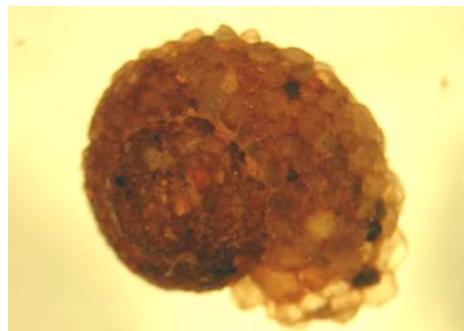
## Caddisfly adults



Caddisfly larvae build little houses for themselves out of sticks and stones. They use their saliva as glue to hold their houses together. The houses give them protection from predators.

Caddisfly adults look similar to moths, but their wings are usually held back over their body instead of to the sides. If you see what you think are a bunch of tiny moths swarming around on rocks by a lake, they're most likely caddisflies, not moths.

## Caddisfly houses



## Aquatic Flies (Diptera)

### Non-biting Midges (Chironomidae)

larvae



adult



Non-biting midges look a lot like mosquitoes as adults, but they do not bite. They don't have a long tube-like mouth attached their face for sucking blood.

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### Mosquitoes (Culicidae)

larvae



adult



Most people are familiar with mosquitoes, but not everyone knows that they live in water as larvae. The larvae like to live in stagnant water like ponds, puddles, and bird baths. They have a long tube extending from their back end to breath air from the water's surface.

As adults, the females are the only ones that suck our blood. They need the blood for nutrients for growing eggs. The males do not bite us, they drink nectar from plants.

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### Horse Flies (Tabanidae)

larvae



adult



Horseflies can leave a nasty bite. Most people don't know that they live in the water as larvae too. That is why you're most likely to get bit by a horsefly when you're in a boat or near a lake.