

Macroinvertebrates in the Onondaga Lake Watershed

Macroinvertebrates Sensitive to Pollution (Found in Good Quality Water)

Stoneflies



Facts

- About 500 species in North America
- Are found in cool, clean streams with high levels of dissolved oxygen
- Develop in the stream for period of three months to three years
- Some species are predators, others feed on fungi and bacteria associated with decaying vegetation

Description

- Two long antennae
- Always have two tails
- Gills often located on or behind each leg
- Each leg has two hooks on the end

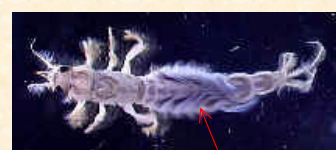


Gills



Two clawed leg

Mayflies



Feathery gills

Facts

- About 700 species in North America
- Development period may extend two weeks to two years
- Live on exposed rock surfaces in fast current or buried in soft stream beds
- Large numbers of flying adults may emerge from stream at the same time

Description

- Plate-like or feathery gills along the side of the abdomen
- Usually three long hair-like tails (sometimes only two)
- Each leg has one claw on the end



Feathery gills



Plate-like gills



Single clawed leg

Macroinvertebrates in the Onondaga Lake Watershed

Macroinvertebrates Somewhat Sensitive to Pollution (Found in Good or Fair Quality Water)

Scuds

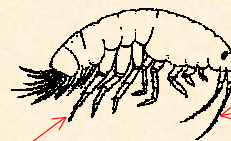


Facts

- They swim rapidly on their sides and are nicknamed "side swimmers"
- Usually found where there are plants in the water

Description

- Seven pairs of tiny segmented legs
- Two pairs of antennae
- Resemble a freshwater shrimp



Antennae

Dragonflies



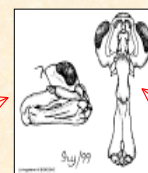
Wedge-shaped extension

Facts

- Develop over a one- to four-year period

Description

- Large eyes
- Large scoop-like lower lip
- Wide oval or round abdomen that may end in three wedge-shaped extensions
- No gills on the sides or underneath



Mouthparts of a dragonfly larva, withdrawn and extended

Macroinvertebrates in the Onondaga Lake Watershed

Macroinvertebrates Tolerant of Pollution (Found in Any Quality Water)

Aquatic Worms



Facts

- May be present in large numbers in organically polluted streams
- Move by stretching and pulling in a worm-like fashion

Description

- May be red, tan, black or brown
- Can look like an earthworm or be much narrower and thread-like
- Segmented body
- Up to five inches long
- May have short bristles or hairs that help with movement, but are not usually visible

Blood Worms

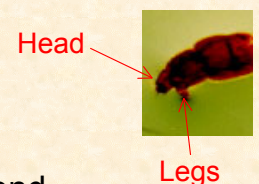


Facts

- Contain hemoglobin (the same substance in our blood that makes it red) that stores oxygen and allows them to exist in environments with little available oxygen
- Are found in all but the most polluted aquatic conditions
- Presence in large numbers may indicate organic enrichment

Description

- One pair of tiny, fleshy legs below the head and one pair on the back end
- The back end sometimes has a tiny pair of extensions that look like brushes
- A thin dark line (digestive tract) can be seen inside the body
- Thin, slightly curved, segmented and inch-worm-like body



Macroinvertebrates in the Onondaga Lake Watershed

What are Aquatic Macroinvertebrates?



Animals lacking a backbone and generally visible to the unaided eye that live at least a part of their life in water.

Why Study Aquatic Macroinvertebrates?



Aquatic macroinvertebrates differ in their sensitivity to water pollution.

Some macroinvertebrates cannot survive in polluted water. Others can survive or even thrive in polluted water. By looking at what species are present we can determine how polluted is the water.



Aquatic macroinvertebrates provide information about the quality of a stream over long periods of time.

It can be difficult to identify stream pollution with water analysis, which provides information about the stream at the time the sample was collected. Even the presence of fish may not be useful because fish can move great distances. However, most macroinvertebrates live their entire life in the same area. As a result a macroinvertebrate sample provides information about the overall quality of the water that may not be obvious from other kinds of sampling.



Macroinvertebrates are an important part of the aquatic ecosystem.

Macroinvertebrates are a link in the aquatic food chain. In most waters, the energy stored by plants is available to animal life either in the form of leaves that fall in the water or in the form of algae that grows on the bottom. The algae and leaves are eaten by macroinvertebrates. The macroinvertebrates are a source of energy for larger animals such as fish.

