WEBER BASIN WATER CONSERVANCY DISTRICT

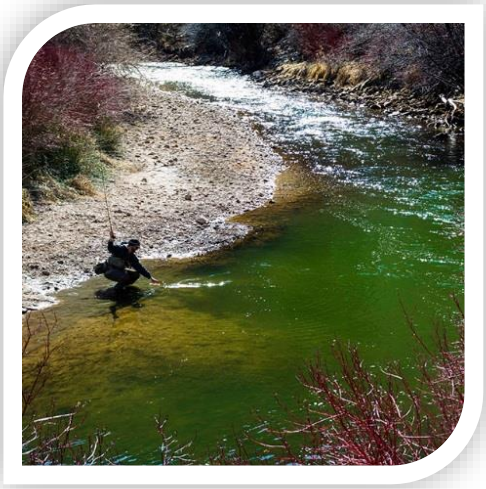
Aquatic Macroinvertebrate Fact Sheet

What are macroinvertebrates?

The term "macroinvertebrate" refers to organisms that lack a backbone (like insects and crustaceans) and are visible to the naked eye. Aquatic macroinvertebrates live in the sediment at the bottom of lakes and rivers, also known as the benthic zone. Examples of these organisms include crayfish, ostracods ("seed shrimp"), conchostraca ("clam shrimps"), the larvae of many types of flies (caddisfly, dragonfly, mayfly, stonefly, etc.), and many others. Macroinvertebrates are an important part of all aquatic food webs.

Why are aquatic macroinvertebrates important to water quality?

If you enjoy fishing you likely already know why macroinvertebrates are important for water quality. These small creatures are a natural food source for many fish and aquatic critters. If their numbers or diversity decreases, fish populations are likewise adversely affected.



Although macroinvertebrates are vitally important for fishermen, they also serve another key role in assessing water quality. The sensitivity of certain species of aquatic macroinvertebrates to environmental conditions (like spikes in pollution, elevated levels of pesticides or harmful algal blooms) makes them a good indicator, or bio-indicator, of water quality. Some species of macroinvertebrates require good water quality (high dissolved oxygen content, low turbidity, low organic carbon, etc.) and their absence may alert us to potential problems upstream.

Currently, the District collects monthly samples to test the chemistries of its surface source waters, which gives a picture of broad water quality trends. Chemical testing is limited, however, in its usefulness for determining the health of a given surface water, because it can only tell us what is in the water the moment the sample is collected. Chemical testing doesn't give an indication of what was in the water an hour ago, yesterday or last week. Every day, aquatic macroinvertebrates are surrounded by any pollutants that may be in the water. If

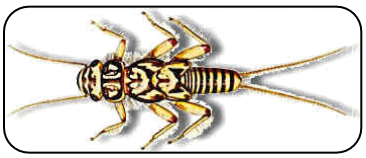
pollutants were in the water last week or yesterday, the quantity and diversity of macroinvertebrates present would reflect this.

Some aquatic macroinvertebrates are more tolerant to pollution than others. Some of the first species to disappear if water quality diminishes include stonefly larvae, caddisfly larvae, may fly larvae, riffle beetle, crane fly larvae, crayfish, and all types of bivalves (clams). Species tolerant of pollution, and thereby not necessarily indicative of water quality, include blackfly larvae, scud bugs, freshwater snails, midges, sowbugs, and aquatic worms.

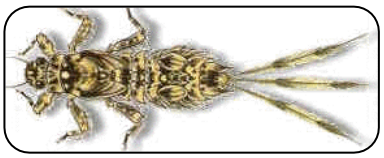
Should I worry if macroinvertebrates show up in secondary water filters?

The presence of macroinvertebrates in filters means that the secondary water you are receiving is of good quality. If high levels of pesticides, sediment or other organic and inorganic pollutants were present in the water, macroinvertebrate populations would sharply decline. There are not any "bad" macroinvertebrates, but which populations are present can us something about the conditions of the water. For images of various macroinvertebrates refer to the section below.

Examples of Macroinvertebrates:



Stonefly Larva



Mayfly Larva

Caddisfly Larva

Riffle Beetle

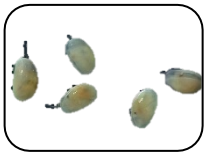
Midge Larva

Blackfly Larva

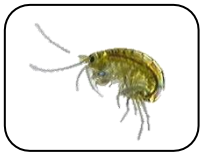
Cranefly Larva

Crayfish

Conchostraca ("Clam Shrimp")



Ostracods ("Seed Shrimp")



Scud Bugs

Sow bugs

Damselfly Larva

Dragonfly Larva