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## Furnace Brook Stream Profile

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# Furnace Brook Stream Profile

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# Biotic Index

- Used for grading a water system's quality according to the diversity and amount of the biotic fauna present. Certain species are more tolerant to pollution than others, therefore show a poor quality.
- The scale ranges from 10 (clean water with diverse fauna) to 0 (grossly polluted water with no fauna or with very few).

# Indicators of Good Water Quality (class I)

- Stonefly nymph
- Mayfly nymph
- Hellgrammite
- Water penny (larva)
- Riffle beetle (adult)
- Caddisfly larva
- These organisms are highly sensitive to any pollutants.

## Good water quality indicators found

- The high water quality indicators that we found were caddisfly nymphs and a stonefly nymph.
- Types of caddisfly casings include: 21 rock, 1 stick, 1 woven, 8 sand.

# Caddisfly

- Phylum: Arthropoda
- Class: Insecta
- Order: Trichoptera
- Family: Hydropsychidae (not positive)
  
- Caddisfly larva cannot tolerate high pollution levels or low oxygen levels.
- Species that break up leaves for food need to live in vegetated streams with overhanging trees.
- Worm-like bodies
- Four body segments (a pair of legs on the first three segments and hooks on the last segment)
- Up to 20 mm long
- Eat algae and plants (living and dead), other insects, or larvae of other Caddisfly species.
- Most build cases out of plant material, sand, pebbles, or other debris to protect selves
- Sensitive to water pollution and their presence indicates good water quality.
- Most abundant near well-aerated streams and fast flowing water

# Indicators of moderate water quality (class II)

- Beetle Larva
- Cranefly larva
- Scud
- Fish Fly larva
- Clams, mussels
- Crayfish
- Dragonfly nymph
- Damselfly nymph
- Black fly larva
- These organisms are moderately tolerant of pollutants.

# Moderate water quality indicators found

- Fishfly larva, beetle larva, and dragon fly nymphs.



# Fishfly

- Genus: *Nigronia*
- Family: Corydalidae
- Order: Megaloptera
- Moderately sensitive to pollution
- Traits: Elongate body with a pair of long thin appendages on each section of abdomen
  - Large pinching mouth parts
  - Can be up to 2 inches long
  - Very mobile and active in the sample tray
  - If picked up, will curl abdomen around finger
  - May latch onto net
  - Soft sediments in streams or lakes

# Dragonfly

- Order: Odonata
- Moderately sensitive to pollution
- Traits: Very large eyes
- - Extendable lower jaw
- - Two sets of wing pads
- - Nymph has robust body shape
- - Nymph has three short spike-like tails
- - Nymph can be up to 2 inches long
- - Mobile, moving with jet propulsion or walking
- - Common with appropriate conditions
- - Slow moving or stagnant water, vegetation or undercut banks

# Beetle larva

- Family: Dytiscidae
- Order: Coleoptera
- Moderately sensitive to pollution
- Traits: They are black, brown, or greenish
- - 0.08 to 1.57 in. (3–40 mm) long
- - Smooth oval bodies and
- - Hairy oar-like hind legs
- - Adults and larvae are entirely aquatic, and
- are common in still, fresh waters such as ponds and lakes

# Indicators of poor water quality (class III)

- Midge larva
- Snails
- Sow bug
- Water boatmen
- Leech
- Aquatic worms

# Poor water quality indicators found

- Water boatmen and Midge Larva



# Water boatmen

- Phylum:Anthropoda
- Class: Insecta
- Order:Hemiptera
- Family: Corixidae
- Water boatman are freshwater invertebrates that are very tolerant of the water quality in which they thrive. These insects are so named because of the rowing motion of their hind legs that propel them over the surface of the water. These insects are not an indication of how healthy the stream is because of their very high tolerance to water quality.
- 3-13mm long
- Oval body
- Long hind legs with fine hairs that function as oars
- Dorsal surface flattened
- Worldwide range
- Feeds on algae and tiny microscopic aquatic organisms
- Alike backswimmers but do not bite

# Midge Larva

- Order: Diptera
- Not sensitive to pollution
- Traits: <1.25 cm
- - Have a worm-like body and distinct head
- - Often C-shaped
- - Sometimes bright red
- - Swim side to side violently
- - Can survive in water with low oxygen concentrations