

# SUGAR CREEK SCOOP



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## Assessing Habitat Quality

The purpose of a habitat assessment is to characterize the present state of habitat and the processes that create and maintain it. Sugar Creek habitat was assessed using the Ohio EPA Qualitative Habitat Evaluation Index (QHEI). The QHEI method uses habitat components to formulate an overall score of habitat quality and its ability to support a healthy biotic community. The maximum score is 100 indicating excellent habitat. A score of 51 or below signifies non-sustainable poor habitat.

QHEI habitat components include substrate, instream cover, channel morphology, riparian zone, gradient, pool and riffle quality.

Substrate is the type of material found in the stream bed such as sand, gravel or rock.

Instream cover is the structure within the stream such as aquatic plants and woody debris.

## Back to Basics– What is a Habitat?

Habitat is a place where a plant or animal can get the food, water, shelter and space it needs to live. Aquatic habitats can be classified as non flowing water like lakes and ponds, slowly flowing water like marshes and swamps, and flowing waters like rivers and streams.

Vegetation is a very important component of stream habitat. Native plants protect banks from erosion, help to control the water flow, act as nutrient filters, and help control extremes in temperature. Logs, branches, bark and leaves that fall into the water provide habitat for aquatic organisms.

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Channel morphology, or stream shape, focuses on number of bends within a stream reach.

Riparian zones refer to the width of vegetated corridors adjacent to stream channels. These areas are effective natural barriers of pollution.

Gradient calculates stream drainage area.

Pools are deep areas of the stream with low flow. Riffles are shallow areas that provide oxygen to the water by flowing over surfaces such as rocks or gravel.

\*More information on habitat components is available online at:  
[www.epa.state.oh.us/dsw/bioassess/BioCriteriaProtAqLife.html](http://www.epa.state.oh.us/dsw/bioassess/BioCriteriaProtAqLife.html)

Aquatic organisms such as macroinvertebrates live in many different places in a stream. Some live on the water's surface others in the water column. Some macroinvertebrates live in the sediment or on the bottom of submerged rocks, logs, and leaf litter. Each type of habitat provides a surface or spaces where different macroinvertebrates can live.

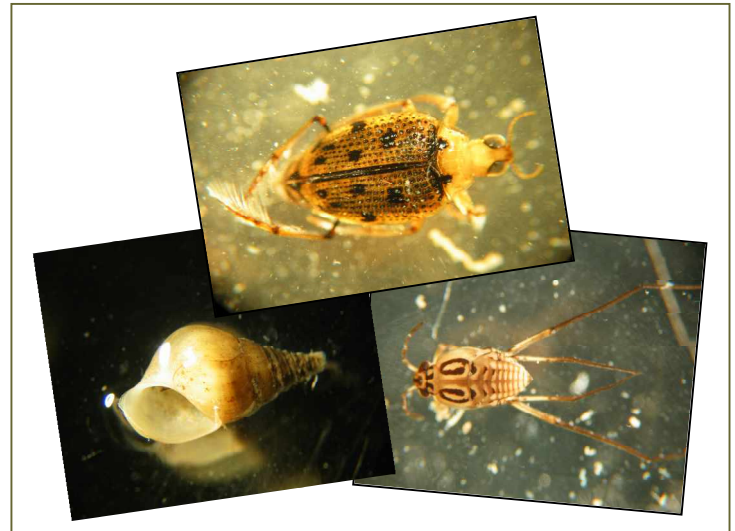
Sugar Creek provides a variety of habitats for a diverse group of aquatic species. The condition of habitat along with the evaluation of water quality and macroinvertebrates will be important in understanding the health of the watershed and what improvements are needed.

## More Bugs = Better Water Quality?

Streams, rivers, wetlands and lakes are home for many small animals called macroinvertebrates. The term macroinvertebrate describes those animals that have no backbone and can be seen with the naked eye. Some aquatic macroinvertebrates can be quite large, such as crayfish; however, most are very small.

Macroinvertebrates live in the water for all or part of their lives, so their survival is related to water quality. Macroinvertebrates are sensitive to different chemical and physical conditions. If there is a change in the water quality, perhaps because of a pollutant entering the water, or a change in the flow, then the macroinvertebrate community may also change. Therefore, the richness of macroinvertebrate community within a stream can be used to provide an estimate of health of the watershed.

Monitoring macroinvertebrates can determine changes in stream water conditions and levels of pollution over time. Some animals can act as pollution indicator species because they respond to specific changes in the water conditions. Water quality values are assigned to species based on their tolerance to changes in their environment. A diversity of species from all tolerance values is part of a healthy functioning stream ecosystem.



Macroinvertebrates Collected During Sugar Creek Sampling.

Water quality values for macroinvertebrates range from 0–10. A water quality value of 10 indicates a species is able to sustain poor water quality whereas a score of 0 indicates good water quality conditions are needed for the species to survive. Species that indicate good water quality include mayfly, caddisfly, and stonefly larvae. If the water quality is fair species such as crayfish, beetles, or dragonfly larvae will be present. Species that can tolerate poor water quality conditions include leeches, aquatic worms, and blackfly larvae.



Stonefly  
Pollution Intolerant

- Water Quality Value: 1
- Indicates ample supply of oxygen.
- Important food source for coldwater fish such as trout.
- Has two distinct “tails” called cerci that are sensory feelers.
- Length varies up to 1 inch.



Scud  
Moderately Tolerant

- Water Quality Value: 4
- Scuds are sensitive to oil pollution, absent in areas of high pollution.
- Feeds on plant and animal debris.
- Important food source for fish.
- Resemble large “fleas”; color varies but is usually gray.



Blackfly Larvae  
Pollution Tolerant

- Water Quality Value: 6
- May indicate too many nutrients (nitrogen and/or phosphorus)
- Found under rocks in swiftly flowing streams.
- Wormlike; when out of water they fold in half while wiggling.

## Macroinvertebrate Sampling

Macroinvertebrate monitoring followed IDEM's macroinvertebrate Index of Biotic Integrity (mIBI) for single habitat approach. The single habitat approach involves sampling riffle/run areas within the sampling reach.

A sample is collected by using a one meter wide D-shaped kick net. One person stands downstream of the kick net while another person disturbs an area upstream of the net by kicking the substrate. Larger substrate is picked up and rubbed by hand to dislodge the macroinvertebrates that are attached to the rocks. The collected macroinvertebrates are sorted in plastic containers and identified using appropriate field guides. The collection procedure provides data on which species of macroinvertebrates are found from riffle run substrate in each of the eight sampling reaches of Sugar Creek.



Sorting Macroinvertebrates Collected During Sampling.

Voucher specimens are taken from the field to demonstrate the species found at each sampling station. These voucher specimens are photographed under the microscope and are included in the Sugar Creek Watershed Management Plan

## What Do Macroinvertebrates Eat?

Macroinvertebrates are an important part of the aquatic food chain and can be characterized by what the animal feeds on and how it acquires it. The categories are called functional feeding groups and help describe the role each macroinvertebrate plays in an aquatic system.

Shredders feed on organic material, such as leaves and woody material, and help to convert this matter into finer particles, which then can be eaten by collectors. Shredders need lots of tree cover to supply the materials.

Collectors/Filter feeders feed on fine organic particles that have been produced by shredders, microorganisms and by physical processes. Commonly found in lower stream reaches because fine sediments accumulate.

Scrapers graze algae and other organic matter that is attached to rocks and plants. Many of these organisms are flattened to hang onto rocks while they feed in a current. Scrapers are most commonly found in parts of streams where sunlight can reach the bottom to allow algal growth.

Predators: Attack and engulf other insects as a main food source. This feeding group is often a major food source for other predators such as fish.

Habitat type is related to which functional feeding groups will be found in a stream. Streams that are heavily shaded by vegetation will have greater densities of shredders and collectors. Streams with limited cover will have greater algal growth and filter feeders and scrapers will be more dominant.

# Steering Committee Update

The Sugar Creek Watershed Steering Committee is hard at work finalizing critical areas within the watershed and selecting goals for the plan. The Steering Committee has decided on the types of sub-committees needed for the success of the Watershed Management Plan which include:

- 1) Media/Marketing/Website Sub-Committee
- 2) Monitoring Sub-Committee
- 3) Education Sub-Committee
- 4) Research/Grant-Writing Sub-Committee
- 5) Urban Sub-Committee
- 6) Agricultural Sub-Committee
- 7) Legislative/Local Advocacy Sub-Committee
- 8) Recreation Sub-Committee

We are encouraging Stakeholders in the watershed and volunteers who have an interest in improving Sugar Creek and its tributaries to attend a steering committee meeting and sign up to participate with one of the eight sub-committees. This is our watershed, and we need your participation to help improve and preserve our Sugar Creek!

In the Next Issue...

Best Management Practices: From  
Your Backyard to Your Watershed  
Back to Basics – What is a BMP?

## Upcoming Sugar Creek Meeting Dates

Upcoming meetings for the watershed planning groups are listed below.

July 9, 2008: Steering Committee Meeting 4:00–6:30pm, Public Meeting 7:00–9:00pm – Greenfield Public Library, 900 West McKenzie, Greenfield, IN 46140, Phone: 317–462–5141

August 5, 2008: Steering Committee Meeting 4:00–6:00pm – Hancock County SWCD, 1101 W Main St, Greenfield, IN 46140

September 9, 2008: Steering Committee Meeting 6:00–8:30pm – Mohawk United Methodist Church, 2045 W 400 N, Greenfield, IN 46140

October 9, 2008: Steering Committee Meeting 6:00–8:30pm, New Palestine Town Hall, 42 E Main St, New Palestine, IN 46163, Phone: 317–861–4727



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