



Monitoring Water Quality to Measure Habitat Use and Overall Stream Health

Increased runoff from developed areas around the Chicopee Woods Nature Preserve has caused significant downstream channel and streambank erosion resulting in large deposition of stream and lake sediment. In 2002, Elachee completed a watershed assessment of the Nature Preserve revealing the water quality of our streams and helping to identify problem areas to develop best strategies for stormwater management, erosion control and stream restoration. Elachee subsequently created a water quality monitoring plan – biological and chemical sampling – to collect data along the six streams within the Chicopee Woods Watershed.

Biological Monitoring involves identifying and counting macroinvertebrates and fish, to assess a stream's water and habitat quality.

Macroinvertebrates are aquatic insects, crayfish and snails that live in various stream habitats and are constantly present regardless of stream conditions. However, they are impacted by all the stresses that occur in the stream environment, both man-made and naturally occurring, making them ideal indicators of stream quality.

Healthy waterways have a diverse collection of aquatic creatures, whereas waterways with few species usually indicate conditions are less desirable. Pollution generally reduces the quality of the environment and in turn the diversity of life forms.

Chemical Monitoring is a process of performing tests to gather information about specific water quality characteristics at a specific point in time. Tests are performed for temperature, dissolved oxygen, pH, water clarity, conductivity, phosphorus, nitrogen, chlorine and alkalinity. Each variable is important in determining which species may be present in a stream system.

Restoration and Monitoring

The Chicopee Woods Stream Mitigation Bank, managed by Elachee, will restore over 21,000 linear feet of stream in the Nature Preserve. Restoration will be performed in five phases over a period of many years. Effects of restoration will be monitored over a period of seven years per phase, by collecting fish, macroinvertebrates, chemical and geomorphic data to gauge success of the Mitigation Bank.

Monitoring provides data on the biological recovery and response of the stream. After restoration a stream will resemble a natural stream, with vegetation growing on the stream banks providing shade, cover and organic material as a food source for the aquatic community. Macroinvertebrates and fish sensitive to pollution and erosion, should migrate to the newly restored stream section over time. Thus collecting and identifying samples allows us to determine the habitat use as well as the overall health of the stream.