



Watersheds
C A N A D A

The Benthic Zone

A glimpse of life within the substrate

The benthic zone is the ecological region at the lowest level of a body of water. It starts at the shoreline and continues down until it reaches the floor, encompassing the sediment surface and sub-surface layers. Although this zone may appear barren, it plays a vital role in the health of aquatic ecosystems. Tiny, microscopic benthic organisms live in this zone and act as a source of food for bottom feeding animals. Benthic organisms are very important as they are good indicators of water quality.

Photo 1: A common variety of macrobenthic species



Organisms

There are a wide range of species found living within the substrate of the benthic zone; these species are referred to as benthos. The benthos that live in this ecosystem are mainly

Source: Macrobenthics, January 2016, Wikipedia the free encyclopedia, <https://en.wikipedia.org/wiki/Benthos>

aquatic macro-invertebrates such as worms, insects and larval forms of terrestrial insects, clams, beetles, and mites. For a complete list of Ontario's benthos, visit: <http://www.desc.ca/programs/OBBN>. These species play vital roles in aquatic ecosystems; from a food source, to a monitoring tool. Without these species, aquatic ecosystems would collapse.

Ecosystem Functions

Despite being out of sight, the benthic zone is a highly important contributor to lake ecosystems. This area alone offers spawning, foraging and shelter opportunities for various aquatic species. The benthic zones in the shallow shoreline waters provide ideal conditions for fish and amphibian spawning. Aquatic vegetation provides cover while the substrate provides materials to hold the eggs to the ground along with some extra insulation to keep eggs

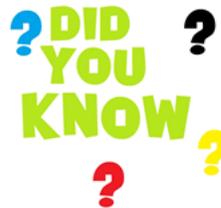
warm. However, changes in water temperatures and levels from the use of dams and industrial operations can impact shallow water spawning grounds, larvae and mature benthic dwellers.

DID YOU KNOW?
The term "**BENTHIC**" is derived from the Greek noun "**βένθος**" meaning "depth of the sea"

The benthos living in this zone act as a food source for other aquatic species, as well as humans. Benthos are also critical for the breakdown of organic matter. Species use organic matter as their food source making them a key player in nutrient cycling process. Also, the filter feeders that live in this zone, such as mussels, are responsible for removing pollutants and sediments suspended in the water. By contributing to nutrient cycling and pollutant and sediment removal, benthos are directly responsible for maintaining healthy water quality.

Benthos as an Indicator

Our benthic ecosystems are threatened due to human activity: waste, pollutants and fertilizers which alter the water chemistry and cause the development of "dead zones". Fortunately, by looking at certain benthic species populations, you can determine whether or not water quality is declining. Mayflies, Caddisflies and Stoneflies are three species to look for when determining water quality. These species are sensitive to pollutants and can be used to determine water quality by their population. The more you have of these three groups, the better the water quality. Since these species have fairly sedentary lifestyles, finding areas where their numbers are low is a good indication of where the source of the pollutant is coming from.



The Caddisfly is one of three benthos species used to determine water quality and pollution!