

SUNFISH LAKE - FACT SHEET

Sunfish Lake is a small meromictic (stratified) lake situated in rolling farmland approximately eight kilometres west of Waterloo. Several studies have recently been done by researchers from Queen's University on the algae, plankton and fish in this lake. There is also strong interest by cottagers in the health of their lake. Their concern stemmed from increasing growth of heavy algae and aquatic plant growth which are symptoms of eutrophication (i.e. enrichment) commonly associated with the deterioration of a lake.

The following are some facts about your lake obtained from the university studies.

1. Lake Statistics

Surface Area	8.3 hectares	Mean Depth	10.4 m
Volume	86.3 hectare-metres	Maximum Length	577.0 m
Maximum Depth	20.0 m	Maximum Width	189.0 m

2. The Meromictic Lake and Terminology

Two types of stratification are found in this lake:

- **thermal stratification** - results (in summer) from the sinking of denser colder water to the bottom; lake "turns over" and mixes in spring and fall;
- **chemical stratification** - more stable, bottom water in deep basin acts as a "nutrient sink" accumulating dissolved organic and inorganic material; rarely mixes because lake is too small and deep for wind energy to create currents.

The bottom layer is beneficial to the lake because it traps nutrients which foster the growth of algae and weeds.

3. Algae

The lake is rich in algae, whose two main functions are:

- producing oxygen so that higher organisms can breathe
- acting as the first link in the food chain (eaten by plankton, which are, in turn, eaten by fish)

The common Chara is also a form of algae, although an unusually large one. Most algae are microscopic and free-floating.

4. Plankton

Plankton are tiny free-floating organisms which feed on algae, and are eaten by fish and other aquatic animals (e.g. insect larvae, aquatic sowbugs and water beetles). Sunfish Lake contains 20 species, a relatively large number for a small lake.

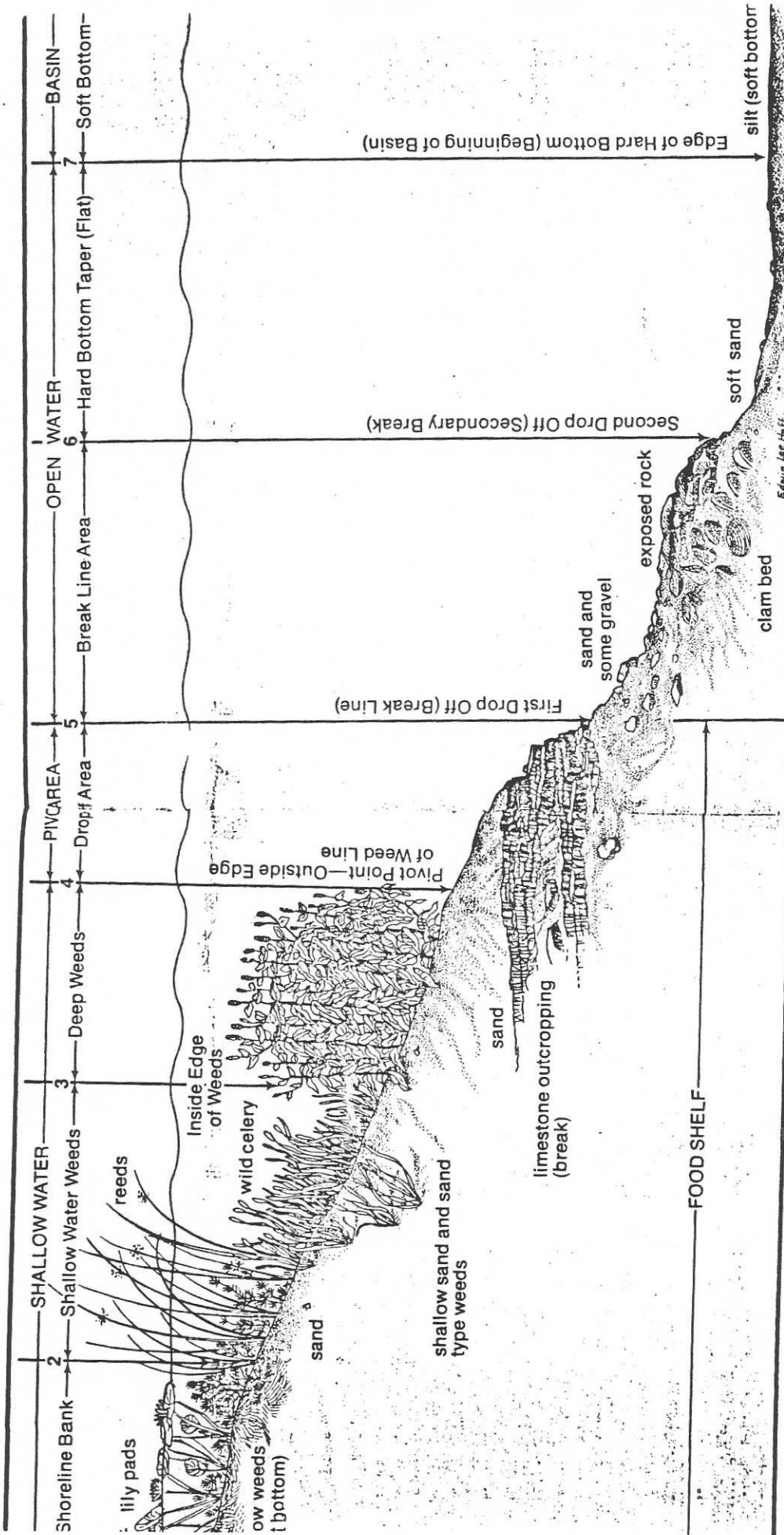
5. Fish

The 12 species found (in order of abundance) are:

Iowa darter	golden shiner
pumpkinseed sunfish	bluntnose minnow
rock bass	smallmouth bass
yellow perch	brook stickleback
largemouth bass	brown bullhead
white sucker	tadpole madtom

The dominant foods consumed are plankton which is unusual for the larger species which, in other lakes, eat bigger insect larvae and invertebrates. It is thought that these larger food organisms are able to protect themselves by taking refuge in the dense Chara mats. Fish have difficulty penetrating these mats.

**Prepared by: Jennifer Harker
M.M. Dillon Ltd.
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Elements of Structure on a Lake Bottom

THE LIFE CYCLE OF A LAKE

