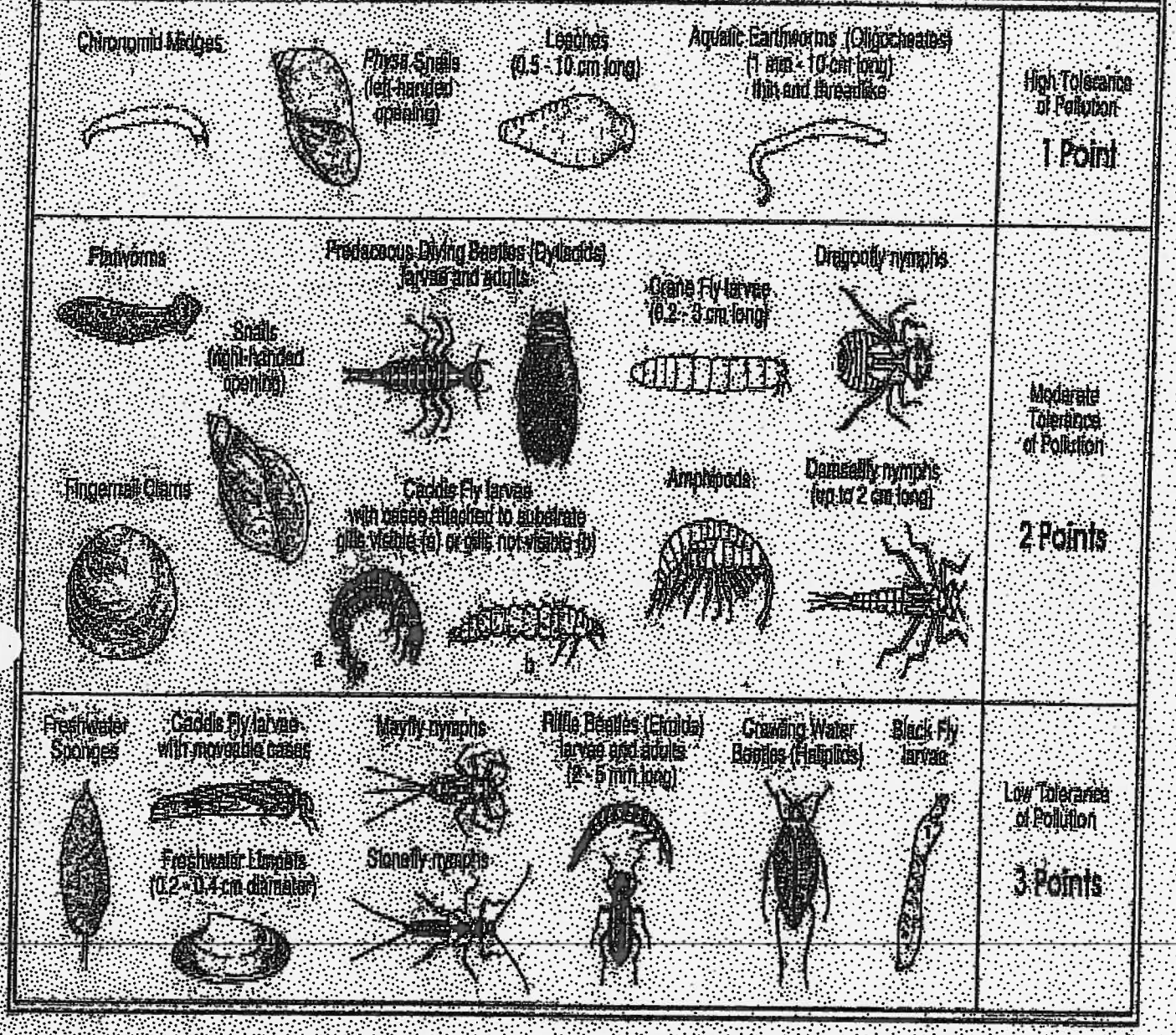
Section 8a

BIOTIC INDEX FOR WATER QUALITY



1. To determine water quality, collect 10 different types of aquatic organisms from a pond or stream.

2. Compare each different organism to the biotic index to determine its point value (1, 2, or 3 points).

3. Add the scores of all 10 organisms. Score totals will range from zero (no organisms) to a maximum of 30 (10 organisms in category 3).

0 - 10 very poor water quality; heavily polluted or highly disturbed habitat with few species (some in category 3).

10 - 16 poor to intermediate water quality; moderate pollution or highly disturbed (if most organisms are in categories 2 or 3).

17 - 22 intermediate water quality; low pollution or disturbance, or recovery from disturbance.

23 - 30 good water quality; stream with a great diversity of organisms.

Indicators of Water Quality Lab

You will have two days to sort through your water sample and identify 10 different benthic macroinvertebrates. Use your time wisely and stay focused on identifying the organisms you find.

First, identify the large benthic macroinvertebrates. You can see many of these without the microscope, or at low magnification.

Procedure:

- Use a petri dish and probe to sift through your sample.
- Use an eye dropper to select organisms and place them on slides for viewing under the microscope(s).
- Identify the organism using the biotic index.
- Record the name of the organisms you find in the table below.
- Record the pollution tolerance level and point value of the organisms you identify.
- After you identify 10 organisms, complete the water quality analysis described later.
- PASS IN and SAVE THIS INFORMATION – You need it for your water studies report.

Background Information

Benthic macroinvertebrates are organisms that are sensitive to the water quality in which they are born into. Some organisms will not survive in poor quality (polluted) water while others have a high tolerance for polluted water. Be careful not to judge your water quality until you have a good sample of organisms. High pollution tolerant organisms are also happy to live in less polluted water. For example, if you find a leech or midge that have high pollution tolerance, you will begin to think the water quality is poor. But, if you then find a mayfly nymph that has low pollution tolerance your water quality can't be poor because the mayfly would not survive.

To determine water quality survey 10 different organisms found in a water sample. Identify these organisms and record their pollution tolerance level and give organisms a point value. Organisms that have a high pollution tolerance earn 1 point, organisms with moderate pollution tolerance earn 2 point, and organisms with a low pollution tolerance earn 3 points. Next, add the scores of all 10 organisms, and record the description of water quality indicated on the *Biotic Index For Water Quality* sheet and explain how you arrived at your particular water quality. (You will do this in the lab!)