

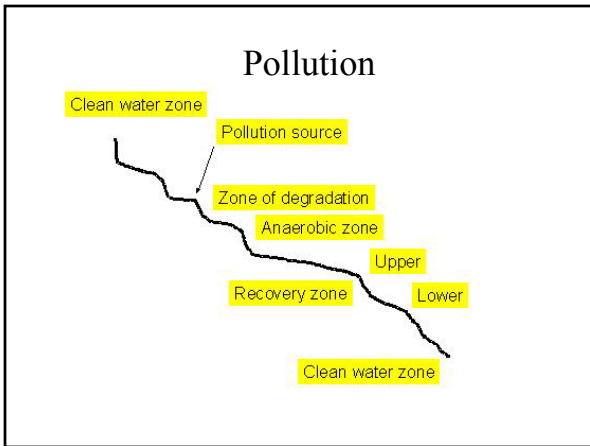
- Various aspects of terrestrial and aquatic systems can be monitored by the growth of plants and algae.
- For plants in the terrestrial system, % germination, height, weight, leaf size, length of life cycle and seed production can serve as measures of plant health.

- Populations of algae, aquatic plants, and animals can be monitored in aquatic systems.
- Changes in soil microorganism populations and soil structure can also be monitored.

Stream Order

The diagram shows a stream network with stream orders indicated by numbers. A single stream is labeled '1'. Two '1' streams joining is labeled '2'. Two '2' streams joining is labeled '3'. Two '3' streams joining is labeled '4'. The text below explains the classification.

- 1st order streams have no tributaries
- 2nd order streams are where two 1st order streams meet
- 3rd order streams are where two 2nd order streams meet
- 4th order streams are where two 3rd order streams meet



pH

A logarithmic scale for expressing the acidity or alkalinity of a solution.

The diagram shows a pH scale from 0 to 14. The scale is divided into three regions: ACID (pH 0-6.9), NEUTRAL (pH 7), and ALKALINE (BASIC) (pH 7.1-14). The text below explains the scale.

pH below 7 indicates an acid solution
 pH above 7 indicates an alkaline solution

Dissolved Oxygen

- Dissolved oxygen is an essential indicator in assessing a water-body's health.
- Oxygen enters the water from the atmosphere and through aquatic plant and phytoplankton photosynthesis.
- The oxygen is then available for aquatic organisms to utilize in basic metabolic processes.
- Most plants and animals can grow and do well when the dissolved oxygen level exceeds 5 mg/l.
 - A drop in the level to 3-5 mg/l causes organisms to become **stressed**.
 - Levels below 3 mg/l causes **death** in many species.

- Oxygen is used up during the decomposition of organic material.
- An overload of nutrients from human activities cause overgrowth of phytoplankton.
- The phytoplankton ultimately die and fall to the bottom where they decompose, using up oxygen.

- The same nutrients - phosphorus (P) and nitrogen (N) - that fertilize our lawns, also "fertilize" our river, lakes, ponds and streams.
- Many area streams, lakes and ponds are grossly over-fertilized by nutrients
 - come from storm water runoff
 - sewage treatment plant discharges

- These excess nutrients cause aquatic plants and algae to grow over abundantly in the summer
 - a condition called **eutrophication**
 - prolific plant and **algal growth** can ruin waterways for boating, fishing and swimming
 - Red Tide
- The uncontrolled growth also harms fish and other aquatic life
 - changing amount of dissolved oxygen in the water system



Ecosystems & Eutrophication

Terrestrial and Aquatic

