



Glossary of Common Lake Terms

Acidic: The condition of water or soil in which substances lowers the pH below 7.0.

Acidification: A process by which the acidity of the water is raised (pH is lowered).

Aerobic: Requiring oxygen to live or occurring in the presence of oxygen.

Anaerobic: The absence of oxygen (also anoxic).

Algae: Simple single-celled (phytoplankton), colonial, or multi-celled, mostly aquatic plants, containing chlorophyll and lacking roots, stems and leaves. Aquatic algae are microscopic plants that grow in sunlit water that contains phosphates, nitrates, and other nutrients. Algae, like all aquatic plants, add oxygen to the water and are important in the fish food chain. Algae is either suspended in water or attached to rocks and other substrates. Algae are an essential part of the lake ecosystem and provide the food base for most lake organisms, including fish. Phytoplankton populations vary widely from day to day, as life cycles are short. (Refer to Phytoplankton and Periphyton)

Algal Bloom: A heavy growth of algae in and on a body of water. This usually is a result of high nitrates and phosphate concentrations entering water bodies.

Alkalinity or Acid Neutralizing Capacity (ANC): Describes the ability of the water to buffer any acidic inputs. This is typically low in NH lakes due to the lack of calcium in our soils and bedrock which underlies our lakes.

Bedrock: The solid rock beneath the soil or loose sediments.

Benthic: Located on the bottom of a body of water or in the bottom sediments.

Bioaccumulation: The process by which the concentration of a substance is increased through successive links in a food chain which may result in toxic concentrations at the top of the chain.

Best Management Practices (BMPs): An engineered structure or management activity that eliminates or reduces adverse environmental effects of pollutants.

Biological Production: Total amount or weight of living plants and animals that an ecosystem yields.

Buffer Strip: Grass or other vegetation planted between a waterway and an area of intensive land use in order to reduce erosion.

Chlorophyll-a: The green pigment found in plants that is essential to photosynthesis. It is sometimes used to measure the amount of algae in the lake.

Chlorides: Sodium chloride (table salt) is often used in New Hampshire to de-ice roadways during winter months. The salt (chloride) may then be washed into nearby lakes and streams resulting in elevated chloride levels in the water body. Elevated chloride levels can have an adverse affect on aquatic plants and animals. In public water supplies the EPA has set a standard that requires chloride levels not to exceed 250 mg/L due to possible health concerns.

Conductivity: A measure of the electrolytes in the water, which may be elevated by the presence of salts resulting from soil composition, faulty septic systems, or road salts.

Cultural Eutrophication: When human activities lead to the premature aging of a lake or pond.

Cyanobacteria (Blue-Green Algae): Bacteria that photosynthesize (use sunlight to produce food) and are blue-green in color. While cyanobacteria occur naturally in all lakes and ponds, elevated nutrient levels may cause cyanobacteria to "bloom" or grow out of control and cover the lake surface. The concern associated with cyanobacteria is that some species produce toxins that may affect domestic animals or humans through skin contact or ingestion. These toxins may cause a variety of symptoms, including nausea, vomiting, diarrhea, fever, skin rashes, eye and nose irritations, and general malaise. If you see a cyanobacteria bloom do not go in the water, do not drink the water, and do not let pets or livestock go in or drink the water.

Dimitic: A lake that mixes freely twice a year (once in the spring and once in the fall), is thermally stratified in the summer, and has a stable temperature in the winter.

Dissolved Oxygen: The amount of oxygen in the water. Dissolved oxygen may be produced by algae and aquatic plants or mixed into the water from the air. It is used by fish, aquatic insects, crayfish and other aquatic animals. Dissolved oxygen is usually measured in milligrams per liter.

Dredging: Removing solid matter from the bottom of a water body to make a deeper channel.

E. coli: A common bacterium that is specific to the intestines of warm blooded animals. It is often used as an indicator of the possible presence of other, more harmful (pathogenic) bacteria.

Ecology: The study of the interactions between organisms and their environments.

Epilimnion: The upper, well-circulated, warm layer of a thermally stratified lake. (Refer to Hypolimnion and Metalimnion)

Erosion: The gradual wearing away of land surface materials, especially rocks, sediments, and soils, by the action of water, wind, or a glacier. Usually erosion also involves the transport of eroded material from one place to another.

Eutrophic: Nutrient rich waters, generally characterized by high levels of biological production. (Refer to Mesotrophic and Oligotrophic)

Exotic Species: A plant or animal species introduced to an area from another country or state that is not native to the area.

Food Chain: A succession of organisms in an ecological community that constitutes a continuation of food energy from one organism to another as each consumes a lower member and in turn is preyed upon by a higher member.

Groundwater: (1) water that flows or seeps downward and saturates soil or rock, supplying springs and wells. The upper surface of the saturated zone is called the water table. (2) Water stored underground in rock crevices and in the pores of geologic materials that make up the Earth's crust.

Headwater: The source and upper reaches of a stream; also the upper reaches of a reservoir.

Hypolimnion: The deep, cold, relatively undisturbed bottom waters of a thermally stratified lake. (Refer to Epilimnion and Metalimnion)

Internal Loading: The release of phosphorus from the lake bottom sediments into the bottom layer of the water; enhanced by oxygen levels on the bottom of the lake which are less than 0.5 milligrams per liter.

Kemmerer Bottle: A piece of equipment used to collect water samples from a specific depth in a lake or pond.

Lake Association: A voluntary organization made up of people who own land on or near a lake. The organization usually works towards preventing or solving any water quality concerns of the lake. A formal lake association should understand legal and tax issues, as well as keep financial records, and determine where funding will come from.

Leaching: The process by which soluble materials in the soil, such as salts, nutrients, pesticide chemicals or contaminants, are washed into a lower layer of soil or are dissolved and carried away by water.

Lentic: Referring to standing waters such as ponds and lakes.

Limiting Nutrient: An essential nutrient for plant growth, which has the least abundance in the environment relative to the needs of the plant. Phosphorous is usually the limiting nutrient in freshwater lakes and rivers.

Limnology: The study of the biology, chemistry, and physics of freshwater lakes and ponds.

Littoral: The shoreline zone of a lake where sunlight penetrates to the bottom and is sufficient to support rooted plant growth.

Lotic: Refers to running waters such as streams and rivers.

Low-Impact Development: A type of site development and design in which runoff water is allowed to infiltrate into the soil rather than flowing directly into a lake or stream. Low-impact development allows the lake or stream to function in a more natural way, with less human impact. (Refer to Runoff)

Mercury: A naturally occurring metal that may be found in rocks, soils, sediments, and the atmosphere. Human activities, such as coal burning and industrial uses, have increased the amount of mercury emitted to the environment. Mercury may enter lakes by atmospheric deposition. The mercury then enters the food chain and bioaccumulates in aquatic animals.

Mesotrophic: Waters containing an intermediate level of nutrients and biological production. (Refer to Eutrophic and Oligotrophic)

Metalimnion: The middle layer of water in a thermally stratified lake, between the epilimnion and hypolimnion, where the decrease in temperature with depth is at its greatest. (Refer to Epilimnion and Hypolimnion)

Monomictic (Cold Lakes): Lakes with water temperatures never greater than 4°C and with only one period of circulation in the summer. These lakes are typically found in the Arctic or mountains and although they may be ice-free for brief periods in the summer, they are in frequent contact with glaciers or permafrost.

Monomictic (Warm Lakes): Lakes with water temperatures that do not drop below 4°C and circulate freely in the winter. These lakes stratify directly in the summer. Warm monomictic lakes are common to warm regions of the temperate zones, in particular in areas influenced by ocean climates and in mountainous areas of subtropical latitudes.

Non-Point Pollution: Pollution originating from a diffuse area (not a single point) in the watershed, often entering the water body via surface runoff or groundwater.

Nutrients: Inorganic substances required by plants to manufacture food by photosynthesis. Phosphorus is the nutrient that usually limits the amount of aquatic plant growth in New Hampshire lakes.

Oligotrophic: Nutrient poor waters, generally characterized by low biological production. (Refer to Eutrophic and Mesotrophic)

Oxbow Lake: A crescent-shaped lake formed when a meander of a river or stream is cut off from the main channel.

Paleolimnology: The science that studies ancient lakes from their sediments and fossils.

Periphyton: An assemblage of microorganisms (plants and animals) firmly attached to and growing upon solid surfaces, such as the bottom of a stream, rocks, logs, pilings, and other structures.

pH: The measure of how acidic the water is, on a scale of 1-14; 1 is very acidic, and 14 is very basic. New Hampshire lakes tend to be acidic due to acid rain and snow.

Phosphorus: The nutrient most necessary for plant and algal growth in New Hampshire lakes, which comes from many sources including faulty septic systems, lawn fertilizers, and decaying plant matter.

Phytoplankton: Microscopic plants that float within or on top of lake water. (Refer to Algae)

Plankton Net: A fine mesh net used to collect microscopic plants and animals.

Point Source Pollution: Pollution into a water body from a specific and identifiable source, such as industrial waste or municipal sewers.

Polymictic: A term used to describe shallow lakes that mix more than twice a year. These lakes may mix on a daily basis or every few days.

Riprap: Large rocks placed along the bank of a waterway to prevent erosion.

Runoff: Precipitation that enters surface waters from overland flow and from groundwater.

Sanitary Survey: A sanitary survey is used to identify existing or potential contaminants to a water body. Normally the contaminants of concern are pathogenic (harmful) organisms known to cause a variety of human diseases. A sanitary survey is usually conducted when high levels of contamination are suspected and the source is unknown. Some common sources of contamination include: sewage spills, faulty septic systems, and agriculture.

Secchi Disk: An instrument used for measuring the transparency of lakes. It is a 20-cm diameter disk with black and white quadrants.

Sedimentation: The transport and deposition of sediment particles by flowing water.

Silt Screen: A sheet of fabric placed like a fence around a construction site to trap sediments and prevent them from entering a water body.

Thermal Stratification: A process by which a deep lake becomes layered by temperature in the summer months. The layers will separate because colder water sinks to the bottom, leaving warmer water at the surface. Because these layers form chemical and biological barriers,

limnologists sample at each layer of the lake. During the winter months, when ice forms on the lake, Inverse Thermal Stratification occurs under the ice, in which colder, less dense water overlies warmer, denser water near the maximum density of four degrees Celsius.

Thermocline: The point of maximum temperature decrease with depth in a thermally stratified lake.

Transparency: A measure of water clarity often determined by the depth at which a Secchi disk can be seen below the surface of the water. Transparency may be reduced by the presence of algae and suspended materials such as silt and pollen.

Tributary: A stream that flows to a larger stream or other body of water.

Trophic Classification: Biologically ranking the quality of lakes using a model that incorporates several parameters. In New Hampshire these parameters are: chlorophyll-a, Secchi disk transparency, aquatic plant abundance, and dissolved oxygen.

Trophic State: The trophic state of a lake is a general concept with no precise definition and no well-defined units of measure. In general, trophic state refers to the biological production, both plant and animal life, that occurs in a lake. The level of production that occurs is defined by several factors, but primarily by the phosphorus supply to the lake and the volume and residence time of the water in the lake. (Refer to Oligotrophic, Mesotrophic, Eutrophic)

Turbidity: A measure of the particles suspended in the water column which affect the clarity and transparency of the water. These particles may include silt, clay, and algae.

Vernal Pool: A contained basin lacking a permanent visual outlet. It may not contain water throughout the entire year and does not support fish.

Water Residence Time: The number of years required to completely replace the water volume of a lake by incoming water, assuming complete mixing.

Watershed: The land area draining to a particular water body. A watershed is often described as a funnel, where the lake or river is the bottom of the basin, collecting all the water that falls inside the funnel.

Watershed Districts and Ordinances: Methods of zoning that recognize watershed boundaries instead of political boundaries as a means of regulating land uses that may affect surface water quality. A watershed district or ordinance may implement regulations in the watershed in order to protect surface waters such as streams and lakes. Some of the regulations include: land use restrictions, buffer strip requirements, low-impact development, and best management practices. (Refer to Best Management Practices, Buffer Strips, and Low-Impact Development)

Watershed Management: Implementing practices within a watershed designed to protect or restore the water quality of the receiving water body. Such practices may include the implementation of Best Management Practices.

Zooplankton: Microscopic animals that live in lakes.