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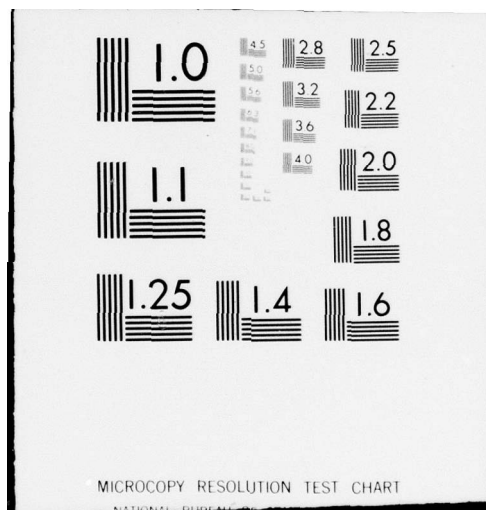
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## GLOSSARY OF BIOLIMNOLOGICAL TERMS

Some of these words have several meanings. Those given here are the ones that relate to weed control as used in this text.

**Absorption.** The process by which a chemical is taken into plants, animals, or minerals. Compare with adsorption.

**Abyssal depth (lakes).** In a limnological sense that depth at which the water remains uniform in temperature, or is "stagnant".

**Accretion.** A term denoting the process by which alluvion is made. However, the two words, accretion and alluvion, are often used synonymously.

**Acute toxicity.** Any relatively brief illness caused by a poison; the degree of acute toxicity may vary from mild to fatal depending on the amount of poison absorbed.

**Active ingredient.** The part of the pesticide which will kill pests or prevent damage by them. Usually it is the same as the "technical" material in the formulated product.

**Adsorption.** The process by which chemicals are held on the surface of a mineral or soil particle. Compare with absorption.

**Aerobic.** Living in air (oxygen). The opposite of anaerobic.

**Alga, Algae (ie).** Simple aquatic plants without true leaves, stems or roots, sometimes having brown or reddish pigments; oval or shperical one-or multiple celled green plants; with a ribbon - like thallus (body).

**Alluvion (lake).** In its legal meaning alluvion is an accretion to land, made gradually, composed of detritus deposited by streams or of deposits accumulated by the action of waves and currents. On lakes, accretions are made: by alluvial deposition on the advancing front of a delta; by filling of shoreline lake bottom by erosion detritus carried in by affluents, gullies and superficial surface run-off or rainwash; by shifting dune sand; and by waste disposal such as tailings from mine operations. Also natural accretions may be made to islands, bars and beaches of lakes. The deposits are realities, but whether or not, in specific instances, they constitute legal alluvion which involves land ownership is, ultimately, a matter for court decisions.

**Amoeba.** One-celled animals consisting of a protoplasmic mass with protruding cytoplasm providing means of locomotion, found commonly in ponds.

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**Amorphous.** Substance, without form, in biology, describing especially lower forms of life that have no specialized structure; in geology, masses that have no continuity or stratification; in chemistry, chemicals that have no crystallinity.

**Anabolism.** A plant or animal process in which food is converted to living tissue; constructive metabolism as opposed to destructive metabolism or catabolism; a building from the simple to the complex.

**Anaerobic.** Living in the absence of air (oxygen). The opposite of aerobic.

**Annual.** A plant that grows from seed, produces seed the same year, then dies. New plants are produced from the seed, the following year.

**Antagonism.** The loss of activity of a chemical when exposed to another chemical.

**Antibiotic.** A chemical substance which is used to control pest microorganisms.

**Aquatic weeds.** Weeds that grow in water, either on top or under the surface.

**Attractive nuisance.** A legal term for any object which might attract children or other persons to it and then might injure or hurt them as a result. Examples: sprayers, empty pesticide containers.

**Aufwuchs.** Aufwuchs includes all those organisms that are attached to a submerged substrate but do not penetrate into its surface. This term is broader and more inclusive than periphyton; aufwuchs includes crustaceans, insects and other forms.

**Autochthonous detritus.** Particulate matter originating in the lake.

**Bacteria.** Microscopic one-celled organisms that do not have chlorophyll; they usually multiply by simple division; very important for decay-causing functions in the soil and for disposal of sewage; disease-causing organisms in man and animals.

**Biochemical oxygen demand (BOD).** The amount of dissolved oxygen in parts per million, required by organisms for the aerobic biochemical decomposition of organic matter present in water. This determination may be made by any of several acceptable laboratory techniques. A test for biochemical oxygen demand is standard procedure for public health, pollution control and conservation agencies. Sewage treatment plant effluents are commonly tested for biochemical oxygen demand; industrial effluents are also tested by pollution control agencies in order to establish required levels of treatment.

**Biological control.** Pest control without the use of chemicals, i.e. parasites, predators, diseases, etc. are used to control pests.

**Bitter lakes.** Those containing large amounts of sulphates such as magnesium sulphate in their waters. In usage, restricted to the arid regions in the United States. In the glaciated region of northern United States, and especially in the Lake States, the bogs are commonly peat bogs, and most frequently occur in basins; representing the sites of former lakes, or occur as formations partly or completely surrounding existing lakes. Bogs are further differentiated according to the characteristic surface vegetation such as sphagnum moss, leather leaf, and the conifers black spruce, tamarack and white cedar. However, where in the ecologic succession the tree vegetation becomes dominant the term swamp often replaces "bog" in usage. Likewise marsh may replace bog for very large treeless wetland areas characterized by grasses and sedge. The term quaking bog is commonly applied to sedgegrass mats on the margins of lakes, and other semi-floating types of peat in lake basins.

**Carrying capacity (recreational).** The measure of the capacity of a lake for boating, skiing, bathing - recreational use in general - and residential occupation of the shore and shore border land without patent overcrowding, pollution and consequent danger to health and safety. Carrying capacity may be greater limited if a single use is given priority, also it may be expanded if the surface area of the lake is zoned for particular uses and the time for use in each zone is specified.

**Catabolism.** Destructive metabolic changes; process of breaking down tissue into simpler substance; opposed to anabolism; also spelled katabolism.

**Caution.** A signal word on labels of pesticides to alert users that the pesticide is toxic.

**Chelating agents.** Organic compounds as citric and tartaric acid which react with metal ions to give a chemically inert product due to the way in which the metal ions are bound into multiple ring arrangements; water softeners are chelating compounds.

**Chlorosis.** The yellowing of a plant's green tissue.

**Chronic poisoning.** Poisoning which occurs as a result of small, repeated doses of pesticide over a long period of time.

**Chronic toxicity.** How poisonous a pesticide is to an animal (or man) after small, repeated doses over a period of time.

**Common name.** A well-known, simple name of a pesticide accepted by the Pesticide Regulation Division of the Environmental Protection Agency.

Closed ecological system. An isolated environmental situation as in a spacecraft chamber, in which organisms, animals, and humans have to depend on selfcontained biochemical chemical cycles.

Closed system. A situation in science that assumes that all variables relevant to a problem are present and correctly represented.

Contaminate. Pollute; the addition of an unwanted material (often a pesticide) where it could do harm or damage.

Cryolimnion. A proposed term for a body of open water in a nearly completely frozen over, or ice covered, inland lake. On some lakes the open water may represent either the location of the deeper holes in the basin; or the location of springs on the bottom or shore.

Cyptodepressions (lakes). Lake basins whose deep parts are below sea level.

Diatoms. Microscopic plants which occur abundantly as floating forms in plankton. They sometimes occur abundantly enough to produce a water "bloom" and give a color tint yellowish or brownish, to the water. Diatoms are notable for their shells of silica, and the siliceous character imparted to bottom deposits by their remains.

Diffused water. A legal term for vagrant water on the surface of land not yet in natural watercourses or lakes. It includes overland sheet runoff and temporary puddles, or splash, occurring after a rainstorm. Vagrant water collected and stored in artificial ponds or other enclosures becomes the property of the land owner. Diffused water has no precise meaning as a hydrogeologic term.

Diluent. Any liquid or solid material used to dilute or carry an active ingredient.

Dilute. To make thinner by adding water, another liquid, or solid.

Disciplined waters. A shop term applied to a stream, or other waters which has been modified by engineering measures and structures and thereby brought under control to a degree to make it better serve some particular use.

Dismal. A term sometimes applied to fresh water swamps in eastern parts of the United States especially in the flat coastal plain region-from Virginia southward.

Disposal area (lake improvement). An area of land, usually in a marsh or swamp, where dredged material from a lake improvement project is deposited.



**Drawdown.** An engineering term for a decrease in the levels of reservoirs or other impoundments, caused by intensive use for hydroelectric power production, or to withdrawals made as a safety precaution against flooding or ice damage or for other management practices.

**Dry lakes.** This term is applied to the sites of former lakes. In usage the bed of the former lake is not necessarily literally dry, but may support a marsh type of vegetation, or in the lower part of the basin even aquatic vegetation. The desiccation, or loss of surface water, is not due mainly to loss by evaporation, as in arid regions, but by drop in level of a local water table, filling by aquatic vegetation, or by land drainage operations.

**Dam.** An engineering structure, or man-made of any kind, designed to hold back a flow of water and create an impoundment, or raise the level of a pre-existing body of water. Dam may be used in a figurative sense for a body of standing water. Where DAM is a place name, the name usually implies the impoundment of water as well as the engineering structure. Impoundments may be formed by natural dams, such as those by lodgment of driftwood across a stream channel, by alluvial deposition, by landslides, and those made by the beaver.

**Dam lake.** One created by a dam. The term is usually applied to a water body formed back of a man-made dam.

**Dam pond.** An impoundment back of a man-made dam. It is not restricted in size, and can be the equivalent of reservoir.

**Decontaminate.** To remove or break down the unwanted material (usually pesticide so it cannot do any harm or damage.

**Degree of exposure.** The amount or extent to which a person has been in contact with a toxic pesticide.

**Dehydrogenation.** Removal of hydrogen, particularly in the cell's energy transfers involving oxidation-reduction processes.

**Desiccation (of lakes).** Loss of water by direct evaporation. Desiccation usually implies thorough dryness of the whole lake bed area. Siccation of lakes may result primarily from other causes than desiccation or evaporation. Other causes are: (1) drainage by cutting outlets or by dredging natural outlet streams; (2) escape of water through opening of subterranean outlets; (4) removal or destruction of dams.

**Destratification (of a lake).** Artificial circulation or mixing of the water. A device using compressed air may be used to force the cold stagnant water of the hypolimnion up through the thermocline thus mixing it with the warmer oxygenated water of the epilimnion.

**Detention reservoir.** A basin (above a dam) constructed for the temporary storage of streamflow and superficial surface run-off. Also called retarding reservoir.

**Dystrophic lakes.** Those lakes associated with acid peat bogs, and largely filled with sediments consisting of unhumified or peaty organic matter. Typically the water is yellowish or brownish, low in calcium, often acid and low in fish productivity.

**Ecology.** Study of the interrelationships between living organisms with each other with their environment.

**Effluent.** (1) The water discharged after use in the treatment of sewage; (2) water discharged from storm and snaitary sewers; (3) water discharged after the treatment of industrial products, or from tanks or containers after any use.

**Egress (lake).** Egress is legally restricted to the act of departing from a lake. Where public access to lake waters is provided, egree from the waters, by the public, is implied or stipulated to avoid trespass on private property.

**Embankments (lake).** Depositional features along shorelines, such as spits and bars.

**Embayment.** A descriptive word for a recess in a shoreline. Rarely used in place names.

**Enriched lake.** A eutrophied lake that has received inputs of nitrates, phosphates and other nutrients, thereby greatly increasing the growth potential for algae and other aquatic plants. Most frequently, enrichment results from the inflow of sewage effluent but may sometimes be related to the movement of commercial agricultural fertilizer into the lake basin.

**Emphermeral (lakes, ponds).** Short lived lakes and ponds. Examples: beach pools and lagoons; deflation lakes; ponds in dune hollows; water bodies in river flood plains left by one flood and destroyed by succeeding floods; some lime sink ponds that have intermittent subterranean outlets.

**Epilimnion.** In a thermally stratified lake, the turbulent layer of water that extends from the surface to the thermocline or metalimnion.

**Equalizing reservoir.** Banks Lake, a large irrigation reservoir in the Grand Coulee near the Grand Coulee Dam on the Columbia River in the State of Washington, is called an equalizing reservoir. During the season of abundance of flow, in the river, water is lifted at a pumping station at the Dam to a feeder canal in the Grand Coulee

which fills the reservoir. The supply in Banks Lake thence makes it unnecessary to pump water for irrigation from the river in the spring and fall when the stage is low.

**Evaporation loss.** Water lost from a lake surface by combined effect of solar radiation and wind circulation. Evaporation losses may be as little as 24 inches but can be as high as 70 inches per year depending upon the climatic environment.

**Evaporation suppression.** Various fatty alcohols, which create monomolecular films are in use in Australia and southwestern United States to reduce evaporation losses from reservoirs. Commonly, these materials are either frequently applied or constantly applied by distributors mounted on rafts.

**Evapotranspiration losses (lakes).** The combined losses from a lake surface due to evaporation, sublimation and transpiration; exact measurements are extremely difficult. Commonly, evapotranspiration losses are stated as estimates.

**Evolution.** Development implying a slow, gradual process; in biology, organic evolution supposes gradual modification of the simplest or unicellular life forms through long time periods leading to their present existence as various species with all their differentiating characteristics; another significant aspect of the theory of evolution suggests that heredity enables animals to retain structural similarities and that variations account for making individuals different and adaptive to their environment.

**Extralegal access.** Extralegal access is involved when a person gains access to a lake over land not owned by himself, over private property without permission or over public property that is riparian in location but is devoid of riparian rights, such as the right of way of a public road. Extralegal implies that the right of the person to use the water is unsettled or moot.

**Fall overturn.** A phenomenon that may take place in a lake in early autumn. Beginning with a cooling of the surface waters and changes in density, a general circulation or mixing of the water from top to bottom takes place, resulting in physical and chemical uniformity, which may be referred to as the initial phase of winter stagnation. (The opposite of spring Turnover).

**False bottom (lake).** A colloquial term usually applied to a semi-suspended or soupy organic mass through which a weight easily sinks. Soft marl is also referred to very frequently as a false bottom.

**False ponds.** Mirage effects in desert regions, which resemble water bodies.



**False shorelie.** The line of contact between the open water of a lake and the front, or edge, or a "floating" mat of vegetation built out from the shore. Here the mat does not represent a former, and higher stage of the lake and is therefore technically a part of the lake, even though its surface may be above water level.

**Federal Waters, inland.** The designation Federal applies to inland waters, including lakes, that are used for commercial navigation. Boating on Federal Waters is subject to the navigation rules of the U.S. Coast Guard. Some of the inland lakes, connected with or tributary to the Great Lakes that are navigable by federal test may be subject to Coast Guard rules and control.

**Fen.** A British term sometimes used in the United States and often loosely as the equivalent of marsh, bog and swamp. Technically the term fen may be restricted to a marsh or bog that has an alkaline mucky or non-peaty soil. The landward, or peripheral zone of an acid bog surrounding a lake, may be called "marginal fen" because the soil is more humified.

**Fertile lake.** Lakes are often described as being fertile or infertile. A 'fertile lake' is one that has a large standing crop, that is, a profuse growth of aquatic plants and usually accompanying profuse aquatic fauna. The degree of fertility cannot be measured or determined solely by chemical analysis of the waters or bottom soil. Chemical tests of the water may reveal extreme acidity, alkalinity, salinity or presence of toxic matter and afford an explanation why a lake is unproductive, or has only a meager biomass.

**Filter dams.** Previous dams of loose stones, or stones and brush, placed in outlets of lakes to prevent fish from moving out; or at the mouths of inlet streams to prevent fish from entering.

**Finger lakes.** Long, narrow lakes occupying deep troughs in deeply eroded straight pre-glacial valleys in glaciated regions. "Finger" is frequently used as a descriptive term and in place name for lakes, regardless of origin, on the basis of a close, or only a faint, resemblance in shape to a finger of the human hand.

**Fish kill.** Destruction of fish in lakes or ponds due to prolonged ice and snow cover and resulting oxygen deficiency; or in very shallow lakes due to freezing of the water down to the bottom; or in summer due to oxygen deficiency caused by excessive amounts of organic matter in suspension. Also, fish may be killed by toxic pollutants, disease or oxygen lack due to thermal additions from effluent of power plants.

**Fish ladder.** Any device designed to facilitate the movement of migrating fish over a dam. A conventional fish ladder consists of a stair-like series of small ponds connected by flowing water. The fish may swim

from pond to pond and gain access to the lake or reservoir. Varying degrees of success are claimed by those involved with the administration of fish ladders.

**Fishery.** The term fishery of an inland lake is used in a special sense pertaining to the total game fish population and its environment. On the Great Lakes and larger inland lakes the term is ordinarily used to include the economic aspects of commercial fishing.

**Floating island.** A free floating mat of vegetation. These floating mats usually represent a mass detached from a shore of quaking bog or marsh by storms or by a rise in lake level.

**Floating sand.** A patch of floating sand is a phenomenon occasionally observed on the calm water of a lake. The dry sand particles float because they are unable to break the surface tension of the water.

**Flood zone.** Some large reservoirs, impoundments or streams are subject to a wide rise in level during a season of high precipitation. The area of shore land inundated by the rise in level above the normal operating pool level is the flood zone.

**Foodplain (of a lake).** That part of a lake basin plain, lying between the shoreline and the shore cliff and subject to submergence during a high stage of the lake.

**Floodwater (in impoundments).** A word sometimes applied as a proper name to the flooded area back of a dam, similar to reservoir, lake, pond and flowage.

**Floor (of a lake).** The lower or deeper lying part of the bottom, especially of a deep lake. The term floor is often used interchangeably with bed and bottom. However, for many particular kinds of standing water bodies it seems appropriate to make a distinction. In some instances of usage flatness or horizontality is implied; and it is also limited to the firm surface lying beneath soft autogenic deposits, but commonly these interpretations are not observed.

**Flowage easement.** The right to flow a tract of land to a designated level; usually sold voluntarily. The land owner may reserve the right to enter upon and use the entire flowage for riparian purposes but he always retains ownership to the bottomland located on his tract. Ingress and egress may be across an exclusive or semi-exclusive right of way between the uppermost contour elevation established by the easement and the waterline. The right to flow land usually embodies the right to manipulate the water level.

**Freshet (lake).** Small affluent streams which have a high rate of flow during the spring season and often carry a heavy silt load during their peak flow. (Overflowing of swallow stream).

Groin. A low narrow wall-like structure extending out into the lake normal to the shore. It may be constructed of timber, stone, concrete or steel and is usually impermeable. Its purpose is to catch littoral drift, or to trap sand, and to protect a beach from destructive erosion. Sometimes called a wing dam.

Ground water lake. One whose water represents the level of the ground water or the upper boundary of the zone of saturation.

Growth regulator. a pesticide chemical which increases, decreases or changes the normal growth or reproduction of a plant.

Habitat (lake). The total of the environmental conditions which affect the life of plants and animals. Each lake or part of a lake has its own peculiar habitat. The natural environment in which a population of organisms lives their home.

Harbor line. On the Great Lakes, a line (set by Army Corps of Engineers) beyond which no wharfs can be constructed.

Harbor of refuge. A name given to havens on the shores of the Great Lakes located in between commercail harbors, and designated primarily to be a place of refuge for small craft during storm periods.

Harbors. A place of safe anchorage for ships and pleasure craft. Harbors are geographic features on the shore lines of the Great Lakes, but havens on the inland lakes are rarely called harbors.

Head (of lake). The influent (stream) end, or where non single influent is present the end opposite the outlet. The term has no application to lakes in enclosed basins. Where an influent enters a lake very near the outlet the term is inapplicable, and also in numerous other instances where a number of small affluents enter a lake; or where a lake is nearl a perfect circle in shape.

Head of outlet. The place where the water leaves the lakes and enters the outlet stream, or effluent.

Gabion. A specially designed basket or box of corrosion resistant wire used to hold rock and other coarse aggregate. These gabions may be locked together to form groins, sea walls, revetments, deflectors and other structures. Their flexible construction permits minor adjustments of alignment resulting from undercutting, filling and settling.

Gap. A passage or narrow channel between shoreland and an island. In Lake of the Woods, Canada gap is used as a generic; Devils Gap.

Glacial lakes. The term glacial applies to those lakes formed as a result of glacial action during the Pleistocene. The sites of



extinct glacial lakes may be determined by old beach and shoreline features and lacustrine sediments. The term glacial is also applied to lakes associated with existing, or present-day, glaciers.

**Glade.** Among its several connotations, glade may mean a water covered marsh or wet prairie. However, geographic instances of glades of this kind, other than the Everglades of Florida, are very infrequent. Glade has been used as a term for a stretch of open water in the ice of a lake or river but instances of usage in this sense are not common.

**Grass lakes.** Grass as an element in a place name for a lake is common but it is also applied to very shallow marshy lakes, supporting a grassy vegetation consisting of true grasses and "false grasses", the latter mostly sedges. "Grass lake" is sometimes applied to a marsh, not water covered, occupying the bed of a former lake.

**Gravel pit lakes.** In the mining of gravel, from the glacial drift, in Michigan and other states, excavations often extend far below the level of the water table, and when mining operations are abandoned, bodies of open water, often of considerable size, are left. Usually the gravel pit lake is bordered by steep bare slopes which descend into deep water at the shoreline, and the environment is unsightly devris from mining operations. However, in favorable locations, gravel pit lakes have been successfully modified and developed for recreational uses. Bordening land may also be improved as a residential subdivision. Abandoned ponds are often used as swimming holes by youngsters but constitute a serious hazard because of deep cold water.

**Hole.** In usage in the U.S. the term has been applied to several widely different kinds of depressional features, both very small and very large, both wet and dry. In numerous locations, it is a local name for a small lake, or pond, occupying a sink, closed pit or hollow which may be either deep or shallow. Hole is also a name for a deep hollow and a deep water, in a lake basin, and for either shallow or deep pockets containing water set in the terrain of a marsh or swamp. "Holes" are often identified by a geographic name, and occasionally in such names the generic Hole Lake is used. Also locally a bay of a lake, especially if the bay is "landlocked", is sometimes called a "hole."

**Holomictic lake.** On in which the circulation, or mixing, of the waters takes place throughout the entire depth. In contrast to a meromictic lake in which circulation is only in the upper layers, as an occasional occurrence.

**Humus.** Dark-colored topsoil, formed in part by the decay of organic matter.

Hydrogen-ion concentration. A measure of acidity or alkalinity, expressed in terms of the pH of the solution. For example, a pH of 7 is neutral, from 1 to 7 is acid, and from 7 to 14 is alkaline.

Hypolimnion. The deep layer of a lake lying below the metalimnion and removed from surface influences.

Hydrophilic. Referring to colloids which are easily hydrated, and therefore not readily coagulable; opposite of hydrophobic.

Hydrophobic. Opposite of hydrophilic; refers to colloids which are not easily hydrated and therefore coagulate readily.

Ice lake. One from which ice is harvested in winter, and stored under insulation for summer, or any later use. Cutting and storage of ice from lakes once important is now a vanishing industry. The right to harvest ice from an inland lake in Michigan is the exclusive right of the riparian.

Ichthyotoxin. Any substance which kills fish. Frequently used to eliminate or control rough fish populations and to manage lakes with overstocked or stunted populations of pan fish.

Rotenone, a natural derivative of the South American derris root has been widely used throughout the world as an ichthyotoxin but today there are many synthetic materials used with variable success.

Proper use of ichthyotoxins requires technical knowledge of the lake involved and most frequently a permit is required from the conservation agency having jurisdiction over fishing.

Future availability of highly selective ichthyotoxins will perhaps facilitate the management of inland waters.

Impoundment, reservoir. One in which water is held for a considerable period of time and released to increase or maintain stream flow.

Impoundment. A body of water ponded, or held back by a dam dike, floodgate or any other barrier. The word impoundment is generally a common noun, and only rarely has an attached specific to make it a place name. Nor sharp technical distinction exists between an impoundment and a flooding.

Influent (of lake). Any surface stream flowing into a lake in contrast to an outflowing stream, or effluent. Often used synonymously with inlet and outlet-in a hydrologic sense, ground water may be influent in the form of springs or seepage.

Ingredients statement. The part of the label on a pesticide container which gives the name and amount of each pesticide chemical and the amount of inactive material in the mixture.

- Inhalation toxicity.** How poisonous a pesticide is to man or an animal when breathed in through the lungs.
- Integrated control.** A system in which two or more methods are used to control a pest. These methods may include cultural practices, natural enemies, and selective pesticides.
- Interval.** Period of time. The time period between two pesticide applications or between the last pesticide application and harvest.
- Invert emulsifier.** An agent or additive which allows water to remain suspended in oil rather than settling out. The usual emulsifier allows suspension of oil in water.
- Krebs cycle.** One last phase in the breaking down of glucose in animal and plant cells, producing carbon dioxide; also known as citric acid cycle.
- Krumatology.** The science which is concerned with the phenomena of water waves.
- Lac.** French for lake. The word appears as a generic in names of lakes (for example Lac Vienux Desert in the Upper Peninsula of Michigan) and infrequently as a common in parts of the United States where the influence of early French exploration and settlement remains.
- Lacology.** That branch of Science which is concerned with the study of lakes ponds and all other lentic water bodies - their geologic origin and evolution; hydrography; geomorphology; biologic aspects; economic and social significance; development use, management and conservation of water and shoreland. Lacology, the Science of lakes, would be analogous to Potamology, Science of rivers.
- Lacuster.** The central part of a lake.
- Lacustrine.** The person dwelling in a house on or built over the water of a lake. The term applies mainly to prehistoric lake dwellers inhabiting alakie. (Note: Not only applies to people!)
- Laurential lakes.** A geographic name for the group of great lakes drained by the St. Lawrence River.
- Limnetic zone.** Open water area of a lake, pond on marsh.
- Limited access (lake).** Access to the water surface for all riparians at a single place. Except for this limited access location the lake shore remains natural and unchanged.
- Limnetic zone.** Open water of a lake, pond or marsh.



**Limnology.** Study of fresh waters in terms of their chemical, biological, and physical aspects.

**Littoral.** The word pertains to the shore, either or both the shoreland and shore water and near shore bottom of a lake. Littoral, is also a name for the shoreland for an indeterminate distance back from the water but as such is pretty much restricted to sea coasts. Littoral, in a limnological sense, refers to shallow water in which aquatic vegetation can be present on the bottom, as contrasted with deep water or the profundal.

**Littoral currents.** Pertaining to lakes, the currents alongside, or parallel, to the shore.

**Littoral drift.** The material that moves in the littoral zone under the influence of waves and currents.

**Littoral plants.** Littoral plants are those growing on or near the shore.

**Littoral shelf.** A shallow submerged shelf, or terrace, extending lake-ward from the water line of a beach. Where a cliff or high bank, rises from the water line and is subject to the erosive action of waves, the cliff recedes under wave attack and a terrace of cutting by waves, and of deposition, by currents, is gradually formed and often extends outward a considerable distance from shore, ending in deep water with a step front or "drop-off." The beach may be regarded as the part of the shelf which lies above the water level. Also called: subaqueous terrace, submerged terrace; submerged platform; cut and built terrace; wavecut terrace; wave-built terrace; sublacustrine shelf.

**Littoral zone.** The shoreward region of a body of water in which light penetrates to the bottom; in lakes or ponds from shoreline to the lake-ward limit of rooted aquatic plants; in oceans, from shoreline to a depth of 200 meters.

**Lobe (of a lake).** The word is sometimes used as a common noun in descriptions, and also as a proper noun, a part of a geographic name, for a longish rounded segment in the nature of a bay or arm.

**Loch, loch.** Respectively Scottish and Irish words for lake.

**Marine.** Having to do with animals and plants which live in the ocean.

**Metabolism.** The chemical activities that take place in the cells of living organisms involving two fundamental procedures, catabolism, and anabolism, simultaneously at work; the former refers to the breaking up of substances into constituent parts, the latter, building up of complex substances from simpler ones.

**Metric.** A system of measurement which is used throughout the world in scientific work. It uses meters, grams and liters as units. (Note: the key word here is "scientific". It is standard in science.

**Metalimnion.** The layer of water in a lake between the epilimnion and hypolimnion in which the temperature exhibits the greatest difference in a vertical direction. Used interchangeably with thermocline.

**Meromictic lakes.** Those lakes that at the time of winter cooling undergo only partial circulation down to a depth determined by a density stratification.

**(mg) milligram.** A unit of weight in the metric system; about 28,500 mg equals one ounce.

**Monitoring system.** A regular system of keeping track of and checking up on whether pesticides are escaping into the environment.

**Multipurpose.** Doing more than one job; a pesticide which kills more than one pest.

**Multiple use lake.** When applied to water bodies, multiple use has traditionally implied that management could include more than one major category of use; flood control, hydro-electric power generation, navigation, irrigation, recreation and water supply.

Due to space demands, conflicts of interest and the intense competition of various recreational uses for lake waters, multiple use is being applied in a somewhat different sense. A lake may be classified as a multiple use lake if it is managed for fishing and water skiing. (Refer to economic classes of lakes and lakelands for other recreational uses.) Lakeshore activities are included as lake uses. On many lakes, the surface water has been zoned on a time or spatial basis to facilitate multiple use.

**Natural enemies.** The predators and parasites which exist in the environment and attack pest species.

**Natural resource.** Any material that occurs in nature and is useful to man; coal, forests, fertile land, oil, minerals of many kinds are wealth-producing materials.

**Navigable (inland lakes).** The meanings of navigable have been determined pretty largely, by statutes and court decisions and, therefore, have variations in time and place, accordingly. Navigability is not necessarily restricted to deep open unobstructed waters, and passage of large vessels engaged in trade, but on the contrary in some instances very shallow lakes, with water barely deep enough to float a saw-log, a canoe or a row boat may have been declared navigable.

**Nitrogen trap.** Lakes, marshes and swamps effectively remove a large percentage of the dissolved nitrogen from inflowing water. As a result of the nitrogen being fixed by aquatic vegetation, the outflowing water a lower concentration of nitrogen and other nutrients.

**Nitrogenous wastes.** Wastes of animal or plant origin which contain a significant concentration of available nitrogen. Excessive enrichment of lakes by nitrogenous wastes (for example: sewage effluent), called eutrophication represents one of the most serious threats to these valuable water resources in the United States.

**Non-consumptive use.** Non-consumptive uses are those that do not reduce the supply, such as recreational (bathing, fishing, boating and hunting), navigation and aquaculture.

**Non-target.** Any plant, animal or other organism at which a pesticide application is not aimed, but may accidentally be injured by the chemical.

**Non-volatile.** A pesticide chemical that does not evaporate (turn into a gas vapor) at normal temperatures.

**Oligotrophic.** Waters with a small supply of nutrients and hence a small organic production.

**Pelagic.** On an inland lake a term sometimes applied to the deeper bottom zones, 10 to 20 meters or more, characterized by the absence of aquatic vegetation and the presence of ooze or mud deposition.

**Plephyte.** A term for lake bottom deposits consisting mainly of fine non-fibrous plant remains.

**Penstock.** A closed tube used to conduct water under pressure from a reservoir to the turbine house.

**Perennial lake.** One that has water in its basin throughout the year and not subject to extreme fluctuations in level.

**Periglacial lakes.** Lakes formed during the Pleistocene, on unglaciated land, near the borders of ice sheets.

**Periphyton.** A term for the assemblage of the microorganisms which form a coating on the stems and leaves of submerged plants, stones, and other objects on lake bottoms.

**Peroxisomes.** Membrane-bounded particles found in the cytoplasm of plant cells. Peroxisomes contain oxidases and catalase and are probably the site of photorespiration.



**Permissive riparian rights.** Temporary or limited riparian rights obtained by either verbal or written request. Sometimes dependent upon the payment of a fee, for the use or enjoyment of a lake. Permissive rights normally cover short periods of time and may be terminated without prior notice or warning. No prescriptive may involve from permissive use of a lake.

**Phosphate.** Essential nutrient (see macronutrients) for plants, supplied naturally from the weathering of rocks and artificially from the mining of rock phosphate, an insoluble evaporite. Rock phosphate is processed by treatment with sulphuric acid to produce 'superphosphate', containing some soluble phosphorus pentoxide ( $P_2O_5$ ) fertiliser, and superphosphate can be treated further, with phosphoric acid, to increase the  $P_2O_5$  content, as 'triple superphosphate'. Gypsum is a by-product. Phosphates are also used industrially. They can cause eutrophication when discharged, mainly in sewage. Phosphate is fairly immobile in soils and contamination of water from phosphate fertiliser is not severe. See phosphorus cycle.

**Phosphorus cycle.** The circulation of atoms of phosphorus, brought about mainly by living organisms. Phosphorus is an essential constituent of DNA and RNA and is involved in the ADP-ATP (see ATP) process whereby energy is made available to cells. The death and decomposition of living tissues returns phosphorus to the soil in a form available to plants, so continuing the cycle.

**Photic zone.** The surface waters of a sea or lake, penetrated by sunlight. This zone includes the euphotic and dysphotic zones.

**Photochemical.** Applied to chemical reactions brought about by energy supplied to substances by light.

**Photosynthesis.** The synthesis by living cells of organic compounds from simple inorganic compounds, using light energy. In green plants the absorption of light by chlorophyll initiates photochemical reactions ('light reactions') in which oxygen is released from water and light energy is converted into chemical energy by the formation of ATP. This is photophosphorylation. Subsequent 'dark reactions' result in the reduction of carbon dioxide (using hydrogen which originated in the water) to carbohydrates, utilizing the energy stored in ATP.

**Potable water.** Water suitable for drinking purposes. Detailed laboratory tests by competent public health agencies are necessary to determine the safety of drinking water. Generally, untreated lake water is not potable water, but in wilderness areas lake water is easily rendered potable by use of chlorination kits.

**Potash lakes.** A term applied to closed and enclosed lakes, in semiarid and arid regions, whose brine contain a high proportion of salts of

potassium. In the United States such lakes occur in the western part of the Sand Hills regions of Nebraska.

**Pothole** (lake, pond). The term pothole is in current use in Michigan for small pit depressions, generally circular or elliptical, and a few feet to 40 to 50 feet deep. They are constructional in origin and most common in outwash plains and recessional moraines but are also recognized in till plains. Many have dry bottoms, but many also contain lakes, intermittent ponds, and bogs of various kinds.

**Phytotoxicity.** Injury to plant life caused by a chemical or other agent, or toxicity produced by another plant.

**Plant regulator.** Growth regulator; a chemical which increases, decreases or changes the normal growth or reproduction of a plant.

**Plankton.** Microscopic aquatic organisms which are free-floating and capable of limited movement.

**Plant.** An organism characterized chiefly by a holophytic mode of nutrition dependent upon the possession of chlorophyll. Some plants however, are parasitic (see parasitism) or saprophytic. Most have cellulose cell walls, are sedentary, and have branching bodies. The distinction between plants and animals becomes blurred in some groups (e.g. slime moulds, unicellular algae, protozoa), which are now often regarded as part of a third kingdom, the Protista.

**Plasmagenes.** Cytoplasmic particles or substances which can reproduce and pass on inherited qualities to daughter cells. Unlike genes, they are not inherited through the chromosomes of the gametes in a Mendelian way. Plasmagenes may be present in bodies such as plastids (plastogenes) or mitochondria.

**Plasmalemma.** The cell membrane. In plant cells the term is applied only to the external membrane (ectoplast) and not to the one surrounding the vacuole. See tonoplast.

**Poison control center.** An agency (usually a hospital) in all the major cities which is informed of the proper first aid and antidotes for poisoning emergencies - including pesticide poisonings.

**Precautions.** Safeguards; safety measures; warnings as stated on the pesticide label.

**Primary production.** The production of organic matter from inorganic materials within a certain period of time by autotrophic organisms with the help of radiant energy.

Productivity (of a lake). The rate of production organisms grown; expressed with reference to total, kinds, time and rate.

Profundal bottoms. The deeper bottoms of a lake in contrast to shallows shoals and littoral shelves. Also a limnological concept, the profundal is a life zone lying at greater depths than the metalimnion. Emergent and submerged plants of the littoral are absent, and the communities of flora and fauna are those adapted to a low content of oxygen, or oxygen-less conditions.

Pumped storage. A system for generating peak load electricity by turbines turned by a fall of water from a reservoir filled by pumps lifting water from a lower level. During base-load periods, when demand for electrical power is low, water is lifted from the lower to the higher level, and at times of peak demand the water is released.

Recreational pool. Residual storage over and above the required capacity of a flood control reservoir. The designed capacity of the flood control structure can be increased to provide for a permanent recreational pool without impairing its emergency flood capacity. Also called a conservation pool.

Riprap. Coarse stones, natural boulders and cobbles or artificially broken rock fragments laid (either loosely or cemented) against the basal slope of a bank for the purpose of preventing wave cutting.

Riverine lakes. An inclusive term for impoundments created by dams across rivers. Riverine includes impoundment water bodies variously called: reservoirs, ponds, basins, storage basins, flowages; flooding; and floodwaters.

Registration. Approval by the Environmental Protection Agency of a pesticide for uses as stated on its label.

Regulatory officials. Those persons working for the federal or state government who enforce the rules and laws.

Respirator. A face mask which filters out poisonous gases and particles from the air so that a person can breathe and work safely.

Salinity (of lake water). Salinity commonly signifies water containing a high concentration of salt or sodium chloride. Technically the term is not so restricted and may refer to water containing chlorides, sulphates and carbonates of sodium, potassium, calcium and magnesium or to total dissolved solids.

Salinity can be expressed also in terms of the chloride content or chlorinity. The formula is:

Salinity 0/00 = 1,8050 x chlorinity 0/00.



The salinity of certain lakes in arid regions greatly exceeds that of the oceans.

**Salt flat.** Salt-encrusted bottom of a dessicated lake.

**Salt lakes.** The term is commonly applied to those whose waters contain a high concentration of sodium chloride (NaCl).

**Saprophyte.** Organism (plant or Protista) which obtains food in solution from the dead or decaying bodies of other organisms. Many fungi and bacteria are saprophytes, so are a few Protozoa (e.g. Euglenia, see Euglenophyta) and flowering plants (e.g. Bird's Nest Orchid, Neottia). Saprophytes carry out the essential process of breaking down organic matter into simple substances such as carbon dioxide and nitrates, which are then available for synthesis by autotrophic organisms into new organic matter.

**Saturation.** A relative humidity of 100%, measured by comparing the difference in readings between a dry bulb and wet bulb thermometer. In unsaturated air, water evaporating from the wet bulb will lower its reading. In saturated air there will be no evaporation from the wet bulb, the water on the bulb will be at the same temperature as the surrounding air.

**Settling basin.** An artificial basin for collecting the sediment of a river before it flows into a reservoir, and thereby preventing the rapid siltation of the latter. The basin is designed with weirs for drawing off the clear water.

The term is also applied to industrial sedimentation structures used for the removal of pollutant materials from factory effluents.

**Severed riparian frontage (lake).** Highways and railroads built across bays or arms of lakes frequently sever riparian lands from the lake if the culverts are not large enough to provide for the passage of boats. The severed riparian frontage has little value unless adequate access to the lake can be obtained.

**Stabilisation.** (Biol.) The increase of dominance that ends in a stable climax, produced by the invasion of species leading to the establishment of a population most completely fitted for prevailing conditions. This degree of adaptation to conditions ensures that the climax is permanent and can be changed only by a change in the conditions to which the population is fitted.

**Stoichiometric.** A chemical is stoichiometric when its component elements are present in the precise proportions represented by its chemical formula. A stoichiometric mixture is one that will yield a stoichiometric compound on reaction (i.e. it consists of elements in exactly the proportion required to yield a stoichiometric compound utilizing all the components of the mixture).

Surface water. Rivers, lakes, ponds, streams, etc. which are located above ground.

Surfactant. A chemical or agent used in a pesticide formulation to make mixing easier and help the material to spread over and completely wet the surface to be sprayed. Examples: detergent, emulsifier, wetting agent.

Synecology. The study of the relationships between communities of species and their environment.

Systemic. A pesticide that is taken up by one part of a plant or animal and moved to another section where it acts against a pest.

Taxis. A locomotory response of a cell or organism in which the direction of movement is oriented with relation to the stimulus (cf. kinesis). In chemotaxis the stimulus is a chemical (e.g. a pheromone emitted by a female moth to attract a male; cane sugar exuding from the female sex organ (archegonium) of a moss plant to attract spermatozoids). In phototaxis (heliotaxis) the stimulus is light, in geotaxis it is gravity, in thermotaxis it is heat, and in rheotaxis it is flowing movements in the immediate environment (e.g. water currents).

Thermocline. In thermally stratified lakes, the layer below the epilimnion. It is the stratum in which there is a rapid rate of decrease in temperature with depth; a minimum of one degree Centigrade per meter in depth.

Tolerance. The amount of a pesticide that can remain on any food (plant or animal) that is to be eaten by livestock or humans. The tolerance is set by the Environmental Protection Agency.

Tolerant. Not susceptible to (injured by) a pesticide application.

Toxicant. A poison. The chemical in a pesticide formulation that can injure or kill the pest as well as humans, animals or plants.

Trade name. A brand name. The name given to a pesticide by a manufacturing company to identify it as their product.

Turbidity. The degree of opaqueness of the water due to the amount of fine (particles) in suspension. The particles that cause turbidity may also determine apparent color.

Carp, suckers and sturgeon commonly extract food from the bottom deposits of lakes. Their feeding involves sucking digging and rooting which creates localized turbidity, and this in turn may adversely affect the growth of certain aquatic plants. Their feeding action may also be considered as a form of cultivation that occurs in shallow water that is otherwise protected from wave and current action.

Underground water. Waterways which are located beneath soil surface which wells get their water forms.

USDA. United States Department of Agriculture.

Wetlands. The term wetlands; for a broad group of wet habitats, is in common use by specialists in the field of wild life, especially water fowl management. It includes features that are permanently wet, or intermittently water covered, such as swamps, marshes, bogs, muskegs, potholes, swales, glades, slashes, and overflow land of river valleys. Large open lakes are commonly excluded, but many kinds of ponds, pools sloughs, holes, and boyous may be included.