Glossary

Aerobic: in the presence of oxygen.

Allochthonous: originating or growing away from the place of origin; not native.

Anaerobic: absence of oxygen.

Anion: a negatively charged ion.

Anoxia: the absence of oxygen – operationally defined as dissolved oxygen levels below 1 mg/l.

Autochthonous: originating or produced within a given habitat or system; native.

Bioaccumulation: the tendency for certain chemicals to increase in concentration in living organisms.

Biomagnification: the process in which certain chemical compounds (e.g., PCBs, DDT, mercury, etc.) move up the food chain, and increase in concentration within organisms at higher trophic levels.

Cations: a positively charged ion.

Clinograde: dissolved oxygen concentrations decreasing with depth – characteristic of eutrophic lakes.

Congener: a chemical substance that is related to other chemical substances in some manner.

Epilimnion: the upper waters of a thermally stratified lake.

Eutrophic: a lake or other body of water, containing an abundant supply of plant nutrients and characterized by high levels of primary productivity.

Hydrophobic: having a strong aversion for water.

Hypolimnion: bottom waters of a thermally stratified lake.

Hypoxia: waters with dissolved oxygen concentrations of less than 2 ppm, the level generally accepted as the minimum required for most marine life to survive and reproduce.

Limnology: the study of the physical, chemical, biological, and hydrological aspects of fresh water.

Lipophilic: having a strong affinity for lipid (fat) and organic material.

Lithosphere: uppermost shell of the earth, broken into a number of tectonic plates.

Maximum Contaminant Level (MCL): the MCL is the amount of a chemical substance which must be reported to state authorities if discovered by a local water treatment plant.

Macrophyte: a large plant.

Mesotrophic: a lake or other water body having intermediate amounts of plant nutrients and levels of primary productivity.

Metalimnion: the water column layer of a thermally stratified water body characterized by a rapid change in temperature – also see thermocline.

Oligotrophic: a lake or other water body having low amounts of plant nutrients and levels of primary productivity.

Organochlorine: a class of manmade chemicals composed of carbon and chlorine.

Orthograde: dissolved oxygen concentrations increasing with depth – characteristic of oligotrophic lakes.

Paleolimnology: the study of the conditions and processes of lakes in the geologic past.

pH: a symbol representing the logarithm of the reciprocal of the hydrogen-ion concentration of an aqueous solution - used to express the relative acidity or alkalinity of an aqueous solution.

Phytoplankton: a type of free floating plant plankton, such as algae, that is the basic food source in many aquatic and marine ecosystems.

Probable Effect Level (PEL): The concentration level of a particular chemical, above which, it is believed to be frequently associated with adverse biological effects on resident biota.

Radiometric Dating: a method of determining the approximate age of certain objects based upon the ratio of a radioisotope concentration to that of a stable isotope.

Secchi Disk: a black and white disk used to measure water clarity.

Seiche: the pendulum-like movement of a body of water that continues after cessation of the originating force - usually wind but may be other atmospheric phenomena or seismic disturbances; a tide is a special case of a seiche.

Stoichiometric: the branch of chemistry that applies the laws of definite proportions and conservation of matter and energy to chemical processes.

Synoptic: obtained simultaneously over a wide area in order to afford a simultaneous overall view.

Thermal Stratification: The formation of distinct layers of different temperatures in a lake or reservoir.

Thermocline: The depth at which there is a rapid decrease in temperature in a thermally stratified lake or reservoir - usually defined as >= 1°C per meter.

Threshold Effect Level (TEL): The concentration level of a particular chemical, above which, it is believed to be occasionally associated with adverse biological effects on resident biota.

References

American Public Health Association (ASHA) (1998), Standard Methods for the Examination of Water and Wastewater, American Water Works Association and Water Pollution Control Foundation, 20th Edition.

Annin, P. (1999), "Down in the Dead Zone", Newsweek, October 18, 1999.

Birge, E.A. and Juday, C. (1914), A limnological Study of the Finger Lakes of New York, No. 791, Bull. Fish., v. 32.

Birge, E.A. and Juday, C. (1921), Further limnological observations on the Finger Lakes of New York , No. 905, Bull. Fish., v. 37.

Carlson, R.E. (1977), "A Trophic State Index for Lakes", L & O, V. 22 (2).

Carson, R. (1962), Silent Spring, Houghton-Mifflin.

Crawford, F. (1998), "Cayuga's Forbidden Paradise", Ithaca Journal, July 4, 1998.

Eaton, S.W. and Kardos, L.P. (1978), "The Limnology of Canandaigua Lake", In Lakes of New York State – Volume 1 Ecology of the Finger Lakes (J. A. Bloomfield, ed.), Academic Press.

Effler, S.W., Perkins, M.G, Wagner, B., and Greer, H. (1989a), Limnological Analysis of Otisco Lake, 1988, Upsate Freshwater Institute.

Effler, S.W., M.T. Auer, and N.A. Johnson (1989b). Modeling Cl concentration in Cayuga Lake, U.S.A. *Water, Air, and Soil Poll.* V. 44.

Effler, S.W., Perkins, M.G, Ohrazda, N. K., and O'Donnell, D.M. (2000), Optical Characteristics of the Finger Lakes in 1996, Program Review and Selected Results, Upstate Freshwater Institute, Syracuse, NY.

Finger Lakes Association (2000), Web Site, http://FingerLakes.org/fingerlakes/about.html.

Forest, H.S., Wade, J.Q., and Maxwell, T.F. (1978), "The Limnology of Conesus Lake", In Lakes of New York State – Volume 1 Ecology of the Finger Lakes (J. A. Bloomfield, ed.), Academic Press.

Gammel, B.M. (1998), http://www.t30.physik.tu-muenchen.de/lehrstuehle/T32/matpack/html/Nuclear/Elements /lithosphere.html.

Interagency Working Group on Industrial Ecology (1998), Materials and Energy Flows, Materials – A Report of the Interagency Working Group on Industrial Ecology, Materials and Energy Flows, Materials.

Knox, C.E. and Nordenson, T.J. (1955), Average annual runoff and precipitation in the New England-New York area, US Geol. Sur., Hydrol. Inv. Atlas, HA-7.

Lawrence, G.B., David, M.B., Bailey, S.W., Shortle, W.C. (1997), Assessment of calcium status in soils of red spruce forests in the northeastern United States: Biogeochemistry, v. 38, p.19-39.

Lassel, C.M. (1996), Arsenic Distribution in the Sediments of Lake Champlain, Masters Thesis, SUNY Plattsburgh.

Michel, R.L. and Kraemer, T.F. (1995), Use of isotope data to estimate water residence times of the Finger Lakes, New York, Journal of Hydrology, V 164.

Mortimer, C.H., (1941-42) "The exchange of dissolved substances between mud and water in lakes", J. of Ecology 29, 30.

Muenscher, W.C. (1927), "Plankton studies of Cayuga, Seneca and Oneida Lakes", In "A Biological Survey of the Oswego River System, NY State Cons. Dept., Albany, NY.

Mullins, H.T. and Eyles, N. (1996), Surface Geologic Investigations of New York Finger Lakes: Implications for Late Quarternary Deglaciation and Environmental Change, Geological Society of America, Special Paper 311.

NYSDEC (1993), "New York State Fact Sheet – Ambient Water Quality Value for Protection of Recreational Uses – Phosphorus".

NYSDEC (1996), The 1996 Priority Waterbodies List for the Oswego-Seneca-Oneida River Basin, September, 1996.

NYSDEC (1996), The 1996 Priority Waterbodies List for the Genesee River Basin, September, 1996.

NYSDEC (1999), Water Quality Regulations – Surface Water and Groundwater Classification and Standards, New York State Codes, Rules and Regulations, Title 6, Chapter X, Parts 700-705.

NYSDOH (1998), New York State Sanitary Code, Public Health Law.

NYSDOS (1999), State of New York Official Compilation of Codes, Rules and Regulations, NY Dept. of State.

Oglesby, R.T., (1978). "The Limnology of Cayuga Lake", In Lakes of New York State – Volume 1 Ecology of the Finger Lakes (J. A. Bloomfield, ed.), Academic Press.

Peterson, B.J. (1971), The role of zooplankton in the phosphorus cycle of Cayuga Lake, Ph.D. Thesis, Cornell Univ., Ithaca, NY.

Ramcharan, C.W., Padilla, D.K., and Dodson, S.I., (1992), "Models to predict potential occurrence and density of the Zebra mussel, Dreissena polymorpha", Canadian J. of Fish. and Aquat. Sci., V. 49.

Schaffner, W.R. and Oglesby, R.T. (1978). "Limnology of Eight Finger Lakes: Hemlock, Canadice, Honeoye, Keuka, Seneca, Owasco, Skaneateles, and Otisco", In Lakes of New York State – Volume 1 Ecology of the Finger Lakes (J. A. Bloomfield, ed.), Academic Press.

Smith, S.L., MacDonald, D.D., Keenleyside, K.A., Ingersoll, C.G., and Field, L.J. (1996), "A Preliminary Evaluation of Sediment Quality Assessment Values for Freshwater Ecosystems", J. Great Lakes Research, 22(3).

Sohrin, Y., Masakaza, M., Kawashima, M., Hojo, M. and Hasegawa, H. (1997), "Arsenic Biogeochemistry Affected by Eutrophication in Lake Biwi, Japan", Environ. Sci Technol., 31.

Spodaryk, J.G., T.L. Preddice, and S.J. Jackling (2000), PISCES Contaminant Trackdown Studies – Keuka Lake, 1998-1999, NYSDEC.

Sterns and Wheler, LLC (1997), Draft Environmental Impact Statement – Lake Source Cooling Cornell University.

Stewart, K.M. and Markello, S.J. (1974), Seasonal variations in concentrations of nitrate and total phosphorus, and calculated nutrient loading for six lakes in western New York, Hydrobiologia 44.

Thomann, R.V. and J. A. Mueller (1987), Principles of Surface Water Quality Modeling and Control. Harper and Row. New York, NY.

Wetzel, R.G., (1983), Limnology, Harcourt Brace College Publishers.

Wing, M.R., Preston, A., Acquisto, N., Ahrnsbrak, W.F. (1995), "Intrusion of saline groundwater into Seneca and Cayuga Lakes, New York", Limnol. Oceanogr., 40(4).

Wright, T.D. (1969), Transparency, In "Ecology of Cayuga Lake and the Proposed Bell Station (Nuclear Powered) (R.T. Oglesby and D.J. Allee, eds), Publ. No. 27, Chapter 9, Cornell Univ. Water Res. and Mar. Sci. Center, Ithaca, NY.

Upstate Freshwater Institute (UFI) (2000), Cayuga Lake Water Quality Monitoring, Related to the LSC Facility: 1999, http://www.utilities.cornell.edu/lsc/LakeData/CayugaLakeLSC1999Rpt.htm, March 2001.

US Army (2000), Pesticide Timeline, US Army Center for Health Promotion and Preventive Medicine, Entomological Sciences Program, http://chppm-www.apgea.army.mil/ento/timefram/overview.htm.

USEPA. (1974). An approach to a relative trophic index system for classifying lakes and reservoirs, Working Paper No. 24, National Eutrophication Survey, Corvallis, OR.

USEPA (1979) (rev. 1984), Methods for Chemical Analysis of Water and Wastes, EPA/600/4-79/020, Office of Research and Development, Wash., D.C.

USEPA (1999). Microbial and Disinfection Byproducts Rule Simultaneous Compliance Guidance Manual, EPA 815-R-99-015, Office of Water, Wash., D.C.

USPHS (1993), Toxicological Profile for Lead April 1993 Update Agency for Toxic Substances and Disease Registry United States Public Health Service.

von Engeln, O. D. (1961), The Finger Lakes Region – Its Origin and Nature, Cornell Press.

Yager, R. (2001), Estimated Sedimentation Rates in Cayuga Lake, New York from sediment profiles of 137Cs and 210Pb Activity, from A Symposium on Environmental Research in the Cayuga Lake Watershed, Cornell University.