

ROBERT W. KORTMANN, Ph.D.
Limnologist / President, Ecosystem Consulting Service, Inc.

Ph.D./Ecology-Limnology/University of Connecticut. 1981.

M.S./Plant Ecology-Limnology/University of Connecticut. 1977.

B.S./Environmental Science/Rutgers University. 1974.

RECOGNIZED EXPERTISE

Water Resource Evaluation
Limnology
Lake Restoration

Water Resource Management
Wetland Assessment
Inventor

PROFESSIONAL EXPERIENCE

Dr. Kortmann is the founder and principal investigator of E.C.S., Inc. and directs all research, consulting, and implementation projects. His undergraduate training included a comprehensive environmental science curriculum, advanced biological sciences, and education certification. While at Rutgers University, Dr. Kortmann conducted an honors research project dealing with the chemistry of aquatic systems in agricultural watersheds, research regarding intertidal zonation as effected by navigation, and coral reef studies at the West Indies Laboratory, St. Croix. Dr. Kortmann was a George H. Cook Scholar and graduated with high honors from Cook College-Rutgers University in 1974.

Dr. Kortmann completed his graduate training at the University of Connecticut. His master's and doctorate programs were interdisciplinary, with work in the Department of Biological Sciences, School of Engineering, and Natural Resources. Dr. Kortmann's research focused on the chemistry of lake-watershed ecosystems, mathematical models, and eutrophication. While at the University of Connecticut Dr. Kortmann invented a device for sediment sampling which uses dialysis technology, and he developed an analytical methodology to assess the biochemical energy content of sediment-water systems.

Dr. Kortmann and E.C.S., Inc. have conducted cooperative research projects with Environmental Engineering Companies, Water Utility Companies, University of Connecticut, Kent State University, Canada Ministry for the Environment, and Regulatory Agencies. Dr. Kortmann has taught aquatic biology and chemistry at the Hartford Graduate Center (R.P.I.), published a handbook on lake management (IWR-US Department of the Interior) and a variety of journal articles, and made presentations at international professional meetings.

Under the direction of Dr. Kortmann, the research performed by ECS, Inc. has led to the development of new diagnostic techniques and innovative lake-reservoir restoration methods including three US patents.

Major Research Grants Awarded

- * **USEPA Research Grant:** Section 314: Clean Water Act -- Research into Trophic Interactions, Microbiological Processes, Enhanced Interflow, Withdrawal, and Withdrawal-Treatment-Injection Restoration Technologies.
Research Participants: Kent State University, University of Connecticut, Ecosystem Consulting Service, Inc.
Grant Authored by: Robert.W. Kortmann, Ph.D.

- * **Institute of Water Resources** - University of Connecticut *In vitro* florimetry for water supply reservoir monitoring.
Research Participants: University of Connecticut, Regional Water Authority, Ecosystem Consulting Service, Inc.
Grant co-Authored by: R.W. Kortmann, Ph.D., Peter H. Rich, Ph.D.

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- * **USEPA** Research Grant: Section 314: Clean Water Act Phase III Mechanisms of Restoration at Lake Waramaug, CT, Innovative Hypolimnetic Management Approaches. (in progress)
EPA Region I Clean Lakes Project Award 1992

Patents

- Kortmann, R. W. 1987. Hydrologic Discharge Control Assembly and Method. U.S. Patent No. 4,669,914.
- Kortmann, R.W. 1988. Apparatus and Method for Conditioning Stratified Water Bodies. U.S. Patent No. 4,724,086.
- Kortmann, R.W. 1998. Pneumatic Bubble Aeration Reactor and Method of Using Same. U.S. Patent No. 5,755,976
- Kortmann, R.W. 2011. Wind, Solar, and Hybrid Wind-Solar Water Circulation and Aeration Methods and Apparatus. U.S. Patent No. 8,651,766.

Major Publications

- Kortmann, R.W. 1980. Benthic and atmospheric contributions to the nutrient budgets of a soft-water lake. *Limnology and Oceanography* 25(2): 229-33.
- Kortmann, R.W. 1981. Functional relationships between nutrient dynamics, oxidation-reduction capacity, and eutrophication in a soft-water lake. *University of Connecticut. Ph.D. Dissertation.*
- Jokinen, E.H., J.Guerette, and R.W. Kortmann, 1982. The natural history of an ovoviviparous snail, *Viviparus georgianus* (Lea), in a soft-water eutrophic lake. *Freshwater Invertebrate Biology* 1(4): 2-17.
- Kortmann, R.W., D.E. Henry, A. Kuether, and S. Kaufman. 1982. Epilimnetic nutrient loading by metalimnetic erosion and resultant algal responses in Lake Waramaug, Conn. *Hydrobiologia* 92: 501-10.
- Kortmann, R.W., E. Davis, C.R. Frink, and D.D. Henry. 1983. Hypolimnetic Withdrawal: Restoration of Lake Wononscopomuc, Ct. pp. 46-55 in: Lake Restoration, Protection and Management. Proceedings of the 2nd Annual Conf. of the *North American Lake Management Society*. Oct. 26-29, 1982. Vancouver, B.C., Canada. EPA-44015-83-001.
- Kortmann, R.W. 1984. The utility of a hydrograph flowstage phosphorus loading model. Lake and Reservoir Management - Practical Applications. Proceedings of the 4th International Conf. of the *North American Lake Management Society*. Oct. 16- 19, 1984. McAfee, N.J. pp. 173-179.
- Kortmann, R.W. 1984. Lakes and Reservoirs: A Comparative Limnological Perspective. Proceedings of the 4th International Conference of the *North American Lakes Management Society*. October 16-19, 1984. McAfee, New Jersey.
- Barry, T.J. and R.W. Kortmann. 1984. Overview of the effects of the landlocked alewife (*Alosa pseudoharengus*) and fisheries management on eutrophication. Proceedings of the 4th International Conference of the *North American Lake Management Society*. October 16-19, 1984. McAfee, New Jersey.
- Connors, M.E. and R.W. Kortmann. 1984. Hypolimnetic withdrawal and withdrawal-treatment-injection: Management of two deep Connecticut lakes. Proceedings of the 4th International Conference of the *North American Lake Management Society*. October 16-19, 1984. McAfee, New Jersey.
- Kortmann, R.W., "Managing Reservoir/Watershed Systems", *WaterSearch*, Vol. 5. Summer, 1987. Connecticut Section, AWWA.

- Kortmann, R.W. and D.D. Henry, 1987. "Mirrors of the Landscape: An Introduction to Lake Management". Conn. *Institute of Water Resources*, Univ. of Conn., Storrs, CT. 103 pp.
- Kortmann, R.W. 1988. Utility of Layer Aeration for Reservoir and Lake Management. *Lake and Reservoir Management Journal* 4(2):35-50.
- Kortmann, R.W. 1988. Aeration Technologies for Reservoir Management. *AWWA-WQTC Conf. Proceedings*. St. Louis, MO.
- Kortmann, R.W. "Raw Water Quality Control: An Overview of Reservoir Management Techniques". *Journal New England Water Works Association*, April 1989.
Awards: **Dexter Brackett Meritorious Paper Award**, *New England AWWA Quarternary Transatlantic Award*-1990; An award for best Water Supply Publication made by the *Institution of Water and Environmental Management* (England) every four years.
- Kortmann, R.W. and G.W. Knoecklein. "Aeration Technologies and Depth-Selective Flow Configuration for Lake Mangement, Habitat Restoration, and Supply Water Quality." *Proceedings New Jersey Academy of Science*; April, 1989.
- Kortmann, R.W. and C. H. Bonnell. "Aeration: Technologies for Fishery Management". *Proceedings New York State Department of Environmental Control, Division of Fish and Wildlife* , May 1989.
- Kortmann, R.W. and G.W. Knoecklein. "Fishery Management vs. Lake Management: Compatibility Issues." *Proceedings of the New York State Department of Environmental Control, Division of Fish and Wildlife Conference*, May 1989.
- Kortmann, R.W. 1989. Putting Stormwater to Maximum Use. *LakeLine Proceedings Virginia Regional Symposium*, April 1988.
- Kortmann, R.W. 1990. Thermal Stratification in Reservoirs: Causes, Consequences, Management Techniques. *Proceedings AWWA-WQTC*, San Diego, November 1990.
Invited Contribution to AWWA Sunday Seminar.
- Kortmann, R.W., G.W. Knoecklein, C.H. Bonnell, 1994. Aeration of Stratified Lakes: Theory and Practice. *Lake and Reservoir Management Journal*, 8(2):99-120.
- Kortmann, R.W. and P.H. Rich, 1994. Lake Ecosystem Energetics: The missing management link. *Lake and Reservoir Management Journal*, 8(2):77-97.
- Kortmann, R.W. *Lake ecosystem energetics: The ecology of raw water quality management*. *Proceedings: AWWA-Water Quality Tech. Conf.* Nov. 1994. San Francisco, CA.
- Kortmann, R.W. 1994. Lake Waramaug 1975-1993...What we've learned. *Lake and Reservoir Management Journal*, 9(1):65-71.
- Kortmann, R.W. 1994. Oligotrophication of Lake Shenipsit by Layer Aeration. *Lake and Reservoir Management Journal*, 9(1)94-97.

Professional Memberships

American Water Works Association (AWWA)

Sections: Connecticut, New England, New York, Chesapeake, Virginia, New Jersey

North American Lake Management Society (NALMS)

Program Chairman, 1990 International Conference

Liaison to AWWA and AFS

American Society of Limnology and Oceanography (ASLO)

Sigma Xi Research Society, University of Connecticut

State Advisory Board - Institute of Water Resources - CT

Chairman 1991-1993

American Fisheries Society