

Richard P. Axler

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Research Interests

Lake and water quality management and restoration; constructed wetlands; responses of aquatic eco- systems to pollutants; primary production, nutrient cycling, food chain dynamics; ecotoxicology

Current Position

1988-present Senior Research Associate and Research Limnologist; Director of Central Analytical Laboratory, NRRI; Graduate Faculty - Biology (U. of MN-Duluth) and Water Resources Science, U. of Minnesota (Twin Cities and Duluth)

Education

Ph.D. Ecology/Limnology, University of California-Davis, 1979
B.S. Physics, Temple University, 1970

Recent Grants and Contracts (Total \$ 7.90 million at NRRI)

Analysis of acid-sensitive lakes and streams and assessment of phytoplankton nutrient deficiency in northern Minnesota acid-sensitive lakes. MN Pollution Control Agency, LTV Steel Mining Company and Cyprus Northshore Mining Company. \$435,546 (1988-1999)

Limnological assessment of six mine pit lakes for aquaculture use and Commercial aquaculture: Implications for water quality in mine pit lakes. MN Technology, Inc., Iron Range Resources and Rehabilitation Board, MN Dept. of Agric., MN Dept of Natural Resources. \$368,763 (1989-94)

St. Louis and Mississippi River Sediment Assessments. MN Pollution Control Agency. \$366,460. (Co-PI) (1993-95)

Remediation of net-pen aquaculture water quality impacts: Predicted and observed effects of waste collection and fallowing. Minnesota Sea Grant-NOAA. \$97,097 (PI) (1994-1996).

Potential impacts of invading ruffe on benthic and pelagial ecosystems of the Great Lakes. Minnesota Sea Grant-NOAA. \$1,569,777 (Co-PI) (1995-1998).

Alternative individual sewage treatment systems: I. Demonstration project for northeastern Minnesota (1995-97), II. Pathogen/nutrient removal development and demonstration (1997-99), and III. Performance, outreach and demonstration (1999-01). Co-PI and PI on grants from LCMR, Minnesota Technology, Inc., St. Louis County and MN Sea Grant (\$2,393,804).

Watershed effects on stream-productivity and water quality discharge in Lake Superior tributary streams. MN Sea Grant, \$224,591. (Co-PI) 2/96-12/98. WATER-on-the-WEB: Monitoring Minnesota's Lakes on the Internet. NSF. \$658,000 (Co-PI), 7/97-6/2000.

Assessing and communicating risk: A partnership to evaluate a superfund site on Leech Lake tribal lands. (Co-PI; In Partnership w/ Leech Lake Reservation Tribal Council) EPA Environmental Justice. \$249,781 (8/97-12/00).

In Situ characterization of ultraviolet and visible radiation exposure in leopard frog (*Rana pipiens*) habitats in the upper midwest. USEPA \$200,000. (Co-PI) 4/98-3/2000.

LAKE ACCESS: Making water quality data real and relevant for Minnesotans. US EPA EMPACT Program . (Co-PI) w/ G. Host, C. Hagley and B. Munson in collaboration with Hennepin Parks Dept, Minnehaha Creek Watershed District and Apprise Technologies, Inc. \$425,000, 1/99- 12/2000.

Selected Publications (93 total, 46 peer-reviewed)

Axler, R.P., J. Henneck, D. Nordman, B. McCarthy, and S. Monson Geerts. 1999. Operation and maintenance experiences with constructed wetlands in Minnesota. *In Proc. National On-Site Wastewater Recycling Assoc. 8th Ann. Conference*, Nov 3-6, 1999 Jekyll Island, GA.

Axler, R.P., S.Yokom, C.A.Tikkanen, M.E. McDonald, H.Runkie, D.Wilcox and B.Cady. 1998. Restoration of a mine pit lake from aquacultural nutrient enrichment. *Restor. Ecol.* 6:1-19.

Ruzycki, E.R., R.P. Axler, C. J. Owen and T. R. Martin. 1998. Response of phytoplankton photosynthesis and growth to the aquatic herbicide Hydrothol 191 *Envir. Toxicol..Chem.* 17: 1530-1537.

Rose, C. and R. Axler. 1998. Uses of alkaline phosphatase activity in evaluating phytoplankton community phosphorus deficiency. *Hydrobiologia.* 361:145-156.

McCarthy, B., R.Axler, S.Monson Geerts, J.Henneck, D.Nordman, J.Crosby and P.Weidman. 1998. Performance of alternative treatment systems in Northern Minnesota. *In Proc. 8th Int. Symp.on Individual and Small Community Sewage Systems.* Amer. Soc. Agric. Eng., Orlando, FL, March 1998.

Yokom, S., R. Axler, C.A. Tikkanen and M.E.McDonald. 1997. Recovery of a mine pit lake impacted by aquaculture: Mechanisms and model predictions. *Ecol. Engineering* 59:161-172.

Axler, R., C.Larsen, C.Tikkanen, P. Aas, and M.McDonald. 1996. Water quality issues associated with aquaculture: A case study in minepit lakes. *Wat.Environ. Res.* 68:1-17.

Axler, R.P. and J.E. Reuter. 1996. Nitrate uptake by phytoplankton and periphyton: Whole-lake enrichments and mesocosm-15N experiments in an oligotrophic lake. *Limnol.Oceanogr.* 41: 659-671.

Owen, C.J., R.Axler, D.Nordman, M.Schubauer-Berigan, K.B.Lodge and J.Schubauer-Berigan. 1995. Screening for PAHs by fluorescence spectroscopy: A comparison of calibrations. *Chemosphere* 31:3345-3356.

Axler, R., C.Rose and C.Tikkanen. 1994. Phytoplankton nutrient deficiency as related to atmospheric nitrogen deposition in northern Minnesota acid-sensitive lakes. *Can. J. Fish. Aquat. Sci.* 51: 1281-1296

Reuter, J. and R. Axler. 1992. Physiological characteristics of inorganic nitrogen uptake by spatially separate algal communities in an N-deficient lake. *Freshwater Biology* 27:227-236.