

Curriculum Vitae W. Charles Kerfoot

Great Lakes Research Center and Department of Biological Sciences
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EDUCATION

B.A. Zoology, Geology (double major), University of Kansas, Lawrence, KS
Ph.D. Zoology, University of Michigan, Ann Arbor, MI

PROFESIONAL EXPERIENCE

Michigan Technological University

1991-present Professor, Department of Biological Sciences
1989-91 Associate Professor, Department of Biological Sciences
1992-2015 Director, Lake Superior Ecosystem Research Center
1990-92 Co-Director, Lake Superior Ecosystems Research Center
1998-99 Director, Remote Sensing and Ecosystems Research Institute
1993-present Adjunct Professor, Department of Geology

Max Planck Institute für Limnologie, Plön, Germany

1997-98, 2005, 2006 Visiting Senior Scientist

University of Michigan

1989-92 Associate Professor, School of Natural Resources
1987-89 Adjunct Associate Professor, School of Natural Resources
1985-89 Adjunct Associate Professor, Biology
1984-90 Associate Research Scientist
1983-84 Visiting Research Scientist

Cornell University

1981-83 Visiting Senior Scientist, Center for Ecosystem Studies

Dartmouth College

1975-82 Assistant Professor, Department of Biological Science
1982-83 Research Associate Professor
1984-86 Adjunct Associate Professor

University of Washington

1972-76 NSF Postdoctorate
1973-76 Research Associate, 1973-1976

HONORS AND AWARDS

Lifetime Achievement Award, International Association for Great Lakes Research, 2015
Michigan Tech Faculty Distinguished Research Award, 2013
Chandler-Misener Award for Outstanding Article, International Association for Great Lakes Research, 2011
Offered the Eugene P. Odum Gold Medal by the International Society for Ecological Communications, 2007
Invited "Opponent" at dissertation defense, University of Göteborg, Sweden, Dec. 2000
Men and Women in Science (1992-)
Who's Who in Science and Technology (1985)

NSF Postdoctoral Fellowship
Sigma Xi (University of Michigan)
NSF Graduate Fellow
Woodrow Wilson Scholar (Honorary)
Phi Beta Kappa (University of Kansas)
Omicron Delta Kappa (Sachem Society, University of Kansas)
Zoology Award (Zoology Department, University of Kansas)
Geology Award (Geology Department, University of Kansas)
NSF Undergraduate Fellow

PRINCIPAL RESEARCH INTERESTS

Aquatic Ecology/ Zooplankton
Population and Community Interactions

Limnology
Paleoecology

PROGRAM REVIEWS, DEVELOPMENT

Wrote proposal for \$25M Lakeside Lab Building, the Great Lakes Research Center, approved by Michigan State Legislature and Governor Granholm, 2007-2008. Involved with initial planning of laboratory design, member of the GLRC Building Committee. Completed April 2012 at Michigan Tech. Dedicated August 02, 2012.

Featured on ABC TV7 Chicago Special Segment: “Lake Invaders”, Ron Magers, co-anchor, ABC 7 News, Nov. 9, 2010 for our work on quagga mussels and the “disappearing doughnut” in Lake Michigan.

Negotiated for cooperative agreements (COE EPA, CRDA) between MTU and USACE Engineer Research and Development Center- Environmental Laboratory (ERDC-EL), June 2009.

Resurrection Ecology work is defined in [Wikipedia](#), The Free Encyclopedia and was featured in:
American Scientist, Vol. 97(4) p. 290, 2009
The Scientist, Vol. 22(2) p. 19, 2008
Michigan Science, No.4 pp 8-11, 2007
on abc.com (Lee Dye) Apr. 14, 2005
the “Science Journal” of the *Wall Street Journal* (Sharon Begley) Aug. 5, 2005.

Initiated and organized Resurrection Ecology Symposium 2009, Herzberg, Switzerland, Sept. 13-18, 2009.

Invited to review NOAA Great Lakes Environmental Research Laboratory, Ann Arbor, MI, Nov., 2008.

Organizer of ASLO special issue on plankton: Biocomplexity Symposium: Scaling Up and Down In Aquatic Systems. *Limnol. Oceanogr* Vol 49, (3), 2004.

Organizer of symposia (ASLO/NSF/NOAA 1978, 1985, 1992, 1995, 2002).

National Science Foundation, Biocomplexity Awardee Conference, October 16-17, 2001.

Research videos from my NOAA Underwater Research Program (NURP) work on Lake Superior were included in an exhibit (Fresh Water, Fresh Wonders) at the Great Lakes Aquarium, Duluth, Minnesota, opened Summer 2000.

Organizer of Symposium, NOAA Office of Sustainable Development (1997).
Panel Review of EPA Midwest Program (including EPA-Duluth and EPA-Grosse Ile Laboratories), 1997.

Collaborated with Dale Tahtinen to save NOAA GLERL by inserting funding at last moment into US House Bill, working through Newt Gingrich’s office, 1996.

Invited participant, Formulation of Isle Royale Park General Management Plan, 1996.

Invited to Workshop on the Scientific Needs for The Center for Aquatic Research and Education, University of Michigan, Ann Arbor, Michigan, October 30-31, 1996.

Worked with Office of Sustainable Development, NOAA, Washington, D.C. 1994-1997
Development of Great Lakes research issues
Sponsored Symposium 1995.

Invited participant, NOAA Great Lakes Environmental Research Laboratory Review, 1994.

- Established (with Sung Lee, VP for Research) a dual accounting process that allows both departments and Center/Institutes to receive credit for incoming grants, promoting Center/ Institute growth, 1993.
- Featured in National Geographic Films “Great Lakes: Great Seas” (WQED PBS special), contributed video footage of zooplankton, initially aired Feb. 6, 1991, later translated worldwide e.g., Germany, Turkey.
- “Predation, Polymorphism, and Survival” pp. 14-16, National Science Foundation Annual Report, 1974. (written by NSF staff, sent to Congress). Gov. Doc. 3800-00198.

STUDENT THESES

- Yousef, Foad. 2013. Application of Remote Sensing in Aquatic Ecosystems. Ph.D. Thesis, Department of Biological Sciences, Michigan Technological University.
- LeDuc, Jamie. 2012. Predator-prey: Interactions between the spiny waterflea (*Bythotrephes longimanus*) and pumpkinseed fish (*Lepomis gibbosus*). M.S. Thesis, Department of Biological Sciences, Michigan Technological University.
- Jarvie, M.M. 2005. Relationship between dorsal color and daytime foraging dispersal in the leopard frog (*Rana Pipiens*) in Houghton County, Michigan. M.S. Thesis, Department of Biological Sciences, Michigan Technological University.
- Compton, J. A. 2002. Warm-water and small size-class fish (*Lepomis*, *Notropis*): Consuming the Spiny Cladoceran: *Bythotrephes cederstroemi*. M.S. Thesis, Department of Biological Sciences, Michigan Technological University.
- Harting, S. L. 1999. Mercury in native ore deposits: An ignored and widespread source of mercury to Lake Superior sediments. Ph.D. Thesis, Department of Biological Sciences, Michigan Technological University.
- Jarnagin, S. T. 1998. Direct and indirect estimates of death rates and predator-mediated dispersal of *Bythotrephes cederstroemi*. Ph.D. Thesis, Department of Biological Sciences, Michigan Technological University.
- Lytle, R.D. 1997. The survival of *Daphnia Pulex* relative to copper toxicity in the natural waters of the Keweenaw Peninsula. M.S. Thesis, Department of Biological Sciences, Michigan Technological University.
- Budd, J. Wells. 1997. Satellite remote sensing of Great Lakes water quality: Case studies of Saginaw Bay, Lake Huron and western Lake Erie. Ph.D. Thesis, Department of Biological Sciences, Michigan Technological University.
- Hagerthey, S.E. 1996. The ecological significance of groundwater-lake interactions: epibenthic algal communities. Ph.D. Thesis, Department of Biological Sciences, Michigan Technological University, Houghton.
- Strong, M.L. 1995. Use of IHS Transformation with the Landsat thematic mapper™ imagery for detection of suspended sediments and sediment loading in freshwater systems. M.S. Thesis, School of Forestry and Wood Products, Michigan Technological University.
- Barnhisel, D.R. 1994. Ecological and evolutionary consequences of the caudal spine in the Cercopagidae (Crustacea, Branchiopoda). Ph.D. Thesis, Department of Biological Sciences, Michigan Technological University, Houghton.
- McNaught, S. 1993. Invertebrate Predators in Freshwater Lakes: Interactions Between *Leptodora* and *Chaoborus*. Ph.D. Thesis, Department of Biological Sciences, University of Michigan, Ann Arbor.
- Jipping, L.M. 1991. Advanced Very High Resolution Radiometer (AVHRR) imagery applied to Lake Superior thermal structure. MS. Thesis, Department of Biological Sciences, Michigan Technological University, Houghton.
- Barnhisel, D.R. 1990. Juvenile fish response to the cladoceran *Bythotrephes cederstroemi*. MS Thesis, Department of Biology, University of Michigan.
- Levitan, C. 1986. The structure and stability of a freshwater pelagic community. Ph.D. Thesis, Department of Biological Sciences, Dartmouth College.

- Scrimshaw, S.W. 1985. The potential influence of fish energetics and sampling behavior in reducing the effectiveness of aposematism and mimicry in chemically defended freshwater arthropods. MS Thesis, Department of Biological Sciences, Dartmouth College.
- Mort, M.A. 1983. Evolutionary implications of phenotypic genetic variation in cladoceran populations. Ph.D. Thesis, Department of Biological Sciences, Dartmouth College.
- DeMott, W.R. 1981. Competition in natural cladoceran communities: experimental manipulation and demographic analysis. Ph.D. Thesis, Department of Biological Sciences, Dartmouth College.
- Manning, J. 1978. Phenotypes and genotypes in cladoceran populations. MS Thesis, Department of Biological Sciences, Dartmouth College.

POST DOC FELLOWS

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|----------------|-------------------|
| Scot Hagerthey | A. Scott McNaught |
| Jaebong Jeong | Irina Trubetskova |
| Kevin Kirk | Foad Yousef |

PUBLICATIONS

Books

- Kerfoot, W. C.**, and A. Sih (editors). 1987. Predation: Direct and Indirect Impacts on Aquatic Communities. University Press of New England, Hanover. N.H. 386 pp.
- Kerfoot, W. C.** (editor). 1980. The Evolution and Ecology of Zooplankton Communities. University Press of New England, Hanover. N.H. 793 pp.

Journal

- Kerfoot, W.C.**, N.R. Urban, C.P. McDonald, H. Zhang, R. Rossmann, J. Perlinger, T. Khan, A. Hendricks, M. Priyadarshini, M. Bolstad, 2018, Mining Legacy Across a Wetland Landscape: High Mercury in Upper Peninsula (Michigan) Rivers, Lakes, And Fish. *Environ. Sci. Processes Impacts*. 20: 708-733. <http://dx.doi.org/10.1039/C7EM00521K>
- Staples, D.F., Maki, R.P., Hirsch, J.K., **Kerfoot, W.C.**, LeDuc, J.F., Burri, T., Moraska LaFrancois, B. Glase, J. 2017. Decrease in young-of-the-year yellow perch growth rates following *Bythotrephes longimanus* invasion. *Biol. Invasions*. 19: 2197-2205
<http://dx.doi.org/10.1007/s10530-017-1431-3>
- Kerfoot, W.C.**, M.M. Hobmeier, F. Yousef, B. Moraska LaFrancois, R.P. Maki, J.K. Hirsch. 2016. A Plague of Waterfleas (*Bythotrephes*): Impacts on Microcrustacean Community Structure, Seasonal Biomass, and Secondary Production in a Large Inland-lake Complex. *Biol. Invasions*. 18 (4): 1121-1145 <http://dx.doi.org/10.1007/s10530-015-1050-9>
- Kerfoot, W.C.**, N.R. Urban C.P. McDonald, R.Rossmann, H. Zhang 2016. Legacy mercury releases during copper mining near Lake Superior. *J. Great Lakes Res.* 42(1): 50-61
<http://dx.doi.org/10.1016/j.jglr.2015.10.007>
- Kerfoot, W.C.** and Savage, S.C. 2016. Multiple inducers in aquatic foodwebs: Counter-measures and vulnerability to exotics. *Limnol. Oceanogr.*, 61: 382–406. 12 Nov 2015
<http://dx.doi.org/10.1002/lno.10223>
- Rowe, MD., D.R. Obenour, T.F. Nalepa, H.A. Vanderploeg, F. Yousef, **W.C. Kerfoot**. 2015. Mapping the spatial distribution of invasive dreissenid mussels on the winter-spring phytoplankton bloom in Lake Michigan. *Freshwater Biology* 60: 2197-2454, 6 Aug 2015
<http://dx.doi.org/10.1111/fwb.12653>
- Kerfoot, W.C.**, M.M. Hobmeier, F. Yousef, S.A. Green, R. Regis, C.N. Brooks, R. Shuchman, J. Anderson, and M. Reif. 2014. Light Detection and Ranging (LiDAR) and Multispectral Scanner Studies (MSS) Examine Coastal Environments Influenced by Mining. *ISPRS Int. J. Geo-Inf* 3: 66-95 <http://dx.doi.org/10.3390/ijgi3010066>
- Yousef, F., **W.C. Kerfoot**, R. Shuchman, and G. Fahnenstiel. 2014. Bio-optical properties and primary production of Lake Michigan: insights from 13-years of SeaWiFS imagery. *J. Great Lakes Res.* 40: 317-324 <http://dx.doi.org/10.1016/j.jglr.2014.02.018>

- Yousef, F., **W.C. Kerfoot**, C.N. Brooks, R. Shuchman, B. Sabol, and M. Graves. 2013. Using LiDAR to reconstruct the history of a coastal environment influenced by legacy mining. *J. Great Lakes Res.* 39 Sup. 1: 205-216 <http://dx.doi.org/10.1016/j.jglr.2013.01.003>
- Kerfoot, W.C.**, F. Yousef, S.A. Green, R. Regis, R. Shuchman, C.N. Brooks, M. Sayers, B. Sabol, M. Graves. 2012. Light Detection and Ranging (LiDAR) and Multispectral Studies of Disturbed Lake Superior Coastal Environments. *Limnol. Oceanogr.* 57(3): 749-771
<http://dx.doi.org/10.4319/lo.2012.57.3.0749>
- Kerfoot, W.C.**, F. Yousef, M. Hobmeier, R.P. Maki, S.T. Jarnagin, J.H. Churchill. 2011. Temperature, Recreational Fishing and Diapause Egg Connections: Dispersal of Spiny Water Fleas (*Bythotrephes longimanus*) Biol. Invasions. 13: 2513-2531
<http://dx.doi.org/10.1007/s10530-011-0078-8>
- Cooke, C.A., P.H. Balcom, **W.C. Kerfoot**, M.B. Abbott, A.P. Wolfe. 2011. Pre-Columbian Mercury Pollution with the Smelting of Argentiferous Ores in the Bolivian Andes. *AMBIO* 40: 18-25
<http://dx.doi.org/10.1007/s13280-010-0086-4>
- Kerfoot, W.C.**, F. Yousef, S.A. Green, J.W. Budd, D.J. Schwab, and H.A. Vanderploeg. 2010. Approaching storm: Disappearing winter bloom in Lake Michigan. *J. Great Lakes Res.* 36: Supplement 3: 30-41 <https://doi.org/10.1016/j.jglr.2010.04.010>
- Kerfoot, W.C.** and A.S. McNaught. 2010. 'Two-step' dialogue between the cladoceran *Bosmina* and invertebrate predators: Induction and natural selection. *Limnol. Oceanogr.* 55(1) 403-419
<https://doi.org/10.4319/lo.2010.55.1.0403>
- Berendonk, T.U., K. Spitze, **W.C. Kerfoot**. 2009. Ephemeral metapopulations show high genetic diversity at regional scales. *Ecology.* 90(10): 2670-2675 <https://doi.org/10.1890/08-0667.1>
- Kerfoot, W.C.**, J.W. Budd, S.A. Green, J.B. Cotner, B.A. Biddanda, D.J. Schwab and H.A. Vanderploeg 2008. Doughnut in the desert: late-winter production pulse in southern Lake Michigan. *Limnol. Oceanogr.* 53: 589-604 <https://doi.org/10.4319/lo.2008.53.2.0589>
- Churchill, J.H. and **W.C. Kerfoot** 2007. The impact of surface heat flux and wind on thermal stratification in Portage Lake, Michigan. *J. Great Lakes Res.* 33(1):143-155.
- Kerfoot, W.C.** 2006. The Baltic *Eubosmina* radiation: sensitivity to invertebrate predators (induction) and observations on genetic differences. *Arch. Hydrobiol.* 167(1-4): 147-168.
- Hagerthey, S.E. and **W.C. Kerfoot**. 2005. Spatial variation in groundwater-related resource supply influences freshwater benthic algal assemblage composition. *J. N. Am. Benthol. Soc.* 24(4): 807-819.
- Kerfoot, W.C.**, G.G. Mittelbach, N.G. Hairston, Jr. and J.J. Elser. 2004. Planktonic biodiversity: Scaling up and down. *Limnol. Oceanogr.* 49: 1225-1228.
- Kerfoot, W.C.** and L.J. Weider. 2004. Experimental paleoecology (resurrection ecology): Chasing Van Valen's red queen hypothesis. *Limnol. Oceanogr.* 49: 1300-1316.
- Jarnagin, S.T., **W.C. Kerfoot** and B.K. Swan. 2004. Zooplankton life cycles: Direct documentation of pelagic births and deaths relative to diapausing egg production. *Limnol. Oceanogr.* 49: 1317-1332.
- Kerfoot, W.C.** J.W. Budd, B.J. Eadie, H A. Vanderploeg, and M. Agy. 2004. Winter storms: Sequential sediment traps record *Daphnia* ephippial production, resuspension and sediment interactions. *Limnol. Oceanogr.* 49: 1365-1381.
- Churchill, J.H., **W.C. Kerfoot**, and M.T. Auer. 2004. Exchange of water between the Keweenaw Waterway and Lake Superior: Characteristics and forcing mechanisms. *J. Great Lakes Res.* 30 (Supplement 1): 55-63.
- Kerfoot, W.C.**, S.L. Harting, J. Jeong, J.A. Robbins and R. Rossmann. 2004. Local, regional, and global implications of elemental mercury in metal (copper, silver, and gold and zinc) ores: Insights from Lake Superior sediments. *J. Great Lakes Res.* 30 (Supplement 1): 162-184.
- Kerfoot, W.C.**, X. Ma, C.S. Lorence and L J. Weider. 2004. Toward resurrection ecology: *Daphnia mendotae* and *D. retrocurva* in the coastal region of Lake Superior, among the first successful outside invaders? *J. Great Lakes Res.* 30 (Supplement 1): 285-299.
- Barnhisel, D.R. and **W C. Kerfoot**. 2004. Fitting into food webs: Behavioral and functional response of young lake trout (*Salvelinus namaycush*) to an introduced prey, the spiny cladoceran (*Bythotrephes cederstroemi*). *J. Great Lakes Res.* 30 (Supplement 1): 300-314

- Compton, J.A. and **W.C. Kerfoot**. 2004. Colonizing inland lakes: Consequences of YOY fish ingesting the spiny cladoceran (*Bythotrephes cederstroemi*). *J. Great Lakes Res.* 30 (Supplement 1): 315-326.
- Budd, J.W., **W.C. Kerfoot**, S.A. Green, and M. Julius. 2002. Donuts in the Desert? Winter production in Lake Michigan shows unexpected vertical structure. *Ocean Color Spectrum (New from the international ocean color community)* Spring/Summer pp. 33-34.
- Kerfoot, W.C.**, S.L. Harting, R. Rossmann, and J.A. Robbins. 2002. Elemental mercury in copper, silver, and gold ores: An unexpected contribution to Lake Superior sediments with global implications. *Geochemistry: Exploration, Environment, Analysis* 2: 185-202.
- Budd, J.W., A.M. Beeton, R.P. Stumpf, D.A. Culver, **W.C. Kerfoot**. 2001. Satellite observations of *Microcystis* blooms in western Lake Erie. *Intern. Verh. Int. Verein. Limnol.* 27: 3787-3793.
- Kerfoot, W.C.**, A.S. McNaught, and S.T. Jarnagin. 2001. Invertebrate predators and fish: Biogeographic patterns and a case of resting egg dispersal. *Intern. Verh. Int. Verein. Limnol.* 21: 1841-1850.
- Jarnagin, S.T., B.K. Swan, and **W.C. Kerfoot**. 2000. Fish as vectors in the dispersal of *Bythotrephes cederstroemi*: diapausing eggs survive passage through the gut. *Freshwater Biology* 43(4): 579-589.
- Kerfoot, W.C.**, J.A. Robbins, and L.J. Weider. 1999. A new approach to historical reconstruction: combining descriptive and experimental paleolimnology. *Limnol. Oceanogr.* 44(5): 1232-1247.
- Kerfoot, W.C.** and J.O. Nriagu. 1999. Copper mining, copper cycling and mercury in the Lake Superior ecosystem: An introduction. *J. Great Lakes Res.* 25(4) 594-598.
- Kolak, J.J. D.T. Long, **W.C. Kerfoot**, T.M. Beals, and S.J. Eisenreich. 1999. Near-shore versus off-shore copper loading in Lake Superior sediments: Implications for transport and cycling. *J. Great Lakes Res.* 25(4) 611-624.
- Budd, J.W., **W. C. Kerfoot**, A. Pilant, and L.M. Jipping. 1999. The Keweenaw Current and ice rafting: Use of satellite imagery to investigate copper-rich particle dispersal. *J. Great Lakes Res.* 25(4):642-662.
- Kerfoot, W.C.**, R. Rossmann, S. Harting, J.W. Budd, and J. Robbins. 1999. Anthropogenic copper inventories and mercury profiles from Lake Superior: Evidence for mining impacts. *J. Great Lakes Res.* 25(4): 663-682.
- Kerfoot, W.C.** and J.A. Robbins. 1999. Nearshore regions of Lake Superior: Multi-element signatures of mining discharges and a test of Pb-210 deposition under conditions of variable sediment mass flux., *J. Great Lakes Res.* 25(4): 697-720.
- Hagerthey, S.E. and **W.C. Kerfoot**. 1998. Groundwater flow influences the biomass and nutrient ratios of epibenthic algae in a north temperate seepage lake. *Limnol. Oceanogr.* 43 (6): 1227-1242.
- Kerfoot, W.C.**, R.M. Newman, and Z. Hanscom III. 1998. Snail reaction to watercress leaf tissues: reinterpretation of a mutualistic "alarm" hypothesis. *J. Freshw. Biol.* 40:201-213.
- Budd, J.W., **W.C. Kerfoot** and A.L. Maclean. 1998. Documenting complex surface temperature patterns from Advanced Very High Resolution Radiometer (AVHRR) imagery of Saginaw Bay, Lake Huron. *J. Great Lakes Res.* 24(2): 582-594.
- Newman, R.M., **W.C. Kerfoot** and Z. Hanscom III. 1996. Watercress alleochemical defends high nitrogen foliage against consumption: Effects on freshwater invertebrate herbivores. *Ecology.* 77(8): 2312-2323.
- Kerfoot, W.C.** 1995. *Bosmina* remains in Lake Washington sediments: Qualitative heterogeneity of bay environments and quantitative correspondence to production. *Limnol. Oceanogr.* 40(2): 211-225.
- Kerfoot, W.C.**, G. Lauster, and J.A. Robbins. 1994. Paleocological study of copper mining around Lake Superior: Artificial varves from Portage Lake provide a high resolution record. *Limnol. Oceanogr.* 39: 649-669.
- Kerfoot, W.C.** and K.L. Kirk. 1993. Why the hypolimnion is not a desert: The taste discrimination-temperature hypothesis. *Verh. Internat. Verein. Limnol.* IVL: 1-9.
- Hagerthey, S.E. and **W.C. Kerfoot**. 1992. Groundwater influences on the littoral communities of lakes: A preliminary investigation. pp.165-177.in Stanford, J. A. and J. J. Simons, eds.

- Proceedings of the First International Conference on Ground Water Ecology, U.S. EPA American Water Resources Association.
- Newman, R., Z. Hanscom, and **W.C. Kerfoot**. 1992. The watercress glucosinolate-myrosinase system: a feeding deterrent to caddisflies, snails and amphipods. *Oecologia*. 92:1-7.
- Kerfoot, W. C.** and K. L. Kirk. 1991. Degree of taste discrimination among suspension-feeding cladocerans and copepods: Implications for detritivory and herbivory. *Limnology and Oceanography* 36: 1107-1123.
- Newman, R., **W.C. Kerfoot**, and Z. Hanscom. 1990. Watercress and amphipods: potential chemical defense in a spring-stream macrophyte. *J. Chem. Ecol.* 16: 245-249.
- Kerfoot, W.C.** 1989. Glucosinolates and phenolics in aquatic macrophytes: implications for allelopathy studies and suggested practical uses for metabolic blocking agents. Proc. 23rd Annual Meeting, Aquatic Plant Control Research Program, WES, Misc. Paper A-89-1: 178-189. (reviewed internally)
- Kerfoot, W.C.** and D.L. DeAngelis. 1989. Scale-dependent dynamics: zooplankton and the stability of freshwater food webs. *Trends in Ecology and Evolution* 4: 167-171.
- Kerfoot, W.C.** 1988. Defensive spines: inverse relationship between CVs and size. *Limnol. Oceanogr.* 33: 1414-1431.
- Mort, M. and **W.C. Kerfoot**. 1988. Tropical zooplankton: phenotypic and spatial analysis of polymorphic *Ceriodaphnia cornuta* (Crustacea: Cladocera). *Freshwater Biology* 19: 29-39.
- Kerfoot, W.C.**, C. Levitan, and W.R. DeMott. 1988. *Daphnia*-phytoplankton interactions: Density-dependent shifts in resource quality. *Ecology* 69: 1806-1825.
- Kerfoot, W.C.** 1988. Role of endogenous (chemical) defenses in plant-herbivore interactions. In Proceedings, Aquatic Plant Control Research Program, Misc. Paper A-88-5: 31-47. (reviewed internally)
- Kerfoot, W.C.** 1987. Translocation experiments: *Bosmina* responses to copepod predation. *Ecology* 68: 596-610.
- Kerfoot, W.C.**, W.R. DeMott, and C. Levitan. 1985. Nonlinearities in competitive interactions: component variables or system response? *Ecology* 66: 959-965.
- Levitan, C., **W.C. Kerfoot**, and W.R. DeMott. 1985. Ability of *Daphnia* to buffer trout lakes against periodic nutrient inputs. *Intern. Verh. Int. Verein. Limnol.* 22: 3076-3082.
- Kerfoot, W.C.**, and M. Gliwicz. 1985. Thomas M. Zaret 1945-1984. *Arch. Hydrobiol. Beih. Ergebn. Limnol.* 493.(memorial statement).
- Levin, S.A. et al. 1984. New Perspectives in Ecotoxicology. Published as entire issue of *Environmental Management* 8: 375-442. (contributed sections and was on editorial committee).
- Kerfoot, W.C.** 1983. Propagated effects along food chains: Vaulting. pp. 105-109 in D.L. DeAngelis, W.M. Post, and G. Sugihara (editors). *Current trends in food web theory: Report on Food Web Workshop*. Oak Ridge National Laboratory, Report 5983. 137 pp (internal review)
- Kerfoot, W.C.** 1982. A question of taste: crypsis and warning coloration in freshwater zooplankton communities. *Ecology* 63: 538-554.
- DeMott, W.R., and **W.C. Kerfoot**. 1982. Competition among cladocerans: coexistence of *Bosmina* and *Daphnia*. *Ecology* 63: 1949-1966.
- Kerfoot, W.C.** 1982. Life in a permafrost pond. *Ecology* 63: 598-599 (book review).
- Kerfoot, W.C.** 1981. Long-term replacement cycles in cladocerans. *Bioscience* 31:139-141.
- Kerfoot, W.C.** 1981. Long-term replacement cycles in cladoceran communities: A history of predation. *Ecology* 62: 216-233.
- Kerfoot, W.C.**, and C. Peterson. 1980. Predatory copepods and *Bosmina*: Replacement cycles and further influences of predation upon prey reproduction. *Ecology* 61: 417-431.
- Zaret, R.E., and **W.C. Kerfoot**. 1980. The shape and swimming technique of *Bosmina longirostris*. *Limnol. Oceanogr.* 23: 126-133.
- Manning, J., **W.C. Kerfoot**, and E.M. Berger. 1978. Phenotypes and genotypes in cladoceran populations. *Evolution* 32: 365-374.
- Kerfoot, W.C.**, R. Pastorok. 1978. Survival versus competition: Evolutionary compromises and diversity in the zooplankton. *Verh. Internat. Verein. Limnol.* 20: 362-374.

- Kerfoot, W.C.** 1978. Combat between predatory copepods and their prey: *Cyclops*, *Epischura*, and *Bosmina*. *Limnol. Oceanogr.* 23: 1089-1102.
- Kerfoot, W.C.** 1977. Implications of copepod predation. *Limnol. Oceanogr.* 22: 316-325.
- Kerfoot, W.C.** 1977. Competition in cladoceran communities: The cost of evolving defenses against copepod predation. *Ecology* 58: 303-313.
- Kerfoot, W.C.** 1975. Seasonal changes of *Bosmina* (Crustacea, Cladocera) in Frains Lake, Michigan: Laboratory observations of phenotypic change induced by inorganic factors. *Freshwat. Biol.* 5: 227-243.
- Kerfoot, W.C.** 1975. The divergence of adjacent populations. *Ecology* 56: 1298-1313.
- Zaret, T. and **W.C. Kerfoot.** 1975. Fish predation on *Bosmina longirostris* body-size selection versus visibility selection. *Ecology* 56: 232-237.
- Kerfoot, W.C.** 1974. Net accumulation rates and the history of cladoceran communities. *Ecology* 55: 51-61.
- Kerfoot, W.C.** 1974. Egg-size cycle of a cladoceran. *Ecology* 55: 1259-1270.
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Posters

- Yousef, F., **Kerfoot, W.C.**, Shuchman, R., Green, S.A., Sabol, B., "LiDAR (Light Detection and Ranging) And MSS (Multi-spectral Scanner) Studies of Lake Superior Coastal Environments." IAGLR's 54th Annual Conference on Great Lakes Research, International Association for Great Lakes Research, Duluth, MN, May 30- June 3, 2011.
- Churchill, J., C. Chen, L. Wang, **W.C. Kerfoot**, M.T. Auer. 2003 Exchange of water between the Keweenaw Waterway and Lake Superior: Modeling and observations. AGU Conference, France.
- Kerfoot, W.C.**, S.L. Harting, R. Rossmann and J.A. Robbins. Mercury in native ore deposits: "Focusing troughs" reveal an unexpected source to Lake Superior sediments. Presented at the workshop on the Fate, Transport, and Transformation of Mercury in Aquatic and Terrestrial Environments. West Palm Beach, Florida. May 8-10, 2001.
- Kerfoot, W.C.**, X. Ma and L. Weider. Bay and Nearshore Communities: Rapid Species Replacement and Evolution in *Daphnia* and
- Kerfoot, W.C.**, and S.L. Harting. Mercury in Keweenaw Waterway and Lake Superior Sediments: Sources, Dispersal, and Behavior. Posters presented at:
EEGLE (NSF/NOAA Co-OP Episodic Events Great Lakes Experiment) All-hands meeting at the Homestead Conference Center, MI. Sept. 25-28, 2000 and
EEGLE/KITES (NSF/NOAA Co-OP Keweenaw Interdisciplinary Transport Experiment in Superior All-hands meeting at Argonne National Laboratory, Chicago, IL. Sept. 29-30, 2000.

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- W.C. Kerfoot**, Stamp Sand Threat to Buffalo Reef & Grand Traverse Bay; LiDAR/MMS Assessments Prior to "Trough" Dredging. US DOD. 9/1/2016-5/31/2017. \$107,499.
- R.A. Shuchman, **W.C. Kerfoot**, G.A. Meadows. Implementation of 2013 GLOS Nearshore Observing Network. University of Michigan 07/2012-06/2017. \$660,550.
- W.C. Kerfoot**, S.A. Green and G.A. Meadows. Lake Superior Mining Restoration Project: Ground Truth for LiDAR Overflight at Grand Traverse Bay Lake Superior. 05/2013-09/2013. Northrup Grumman Information Systems. \$37,220.
- N.R. Urban and **W.C. Kerfoot**. Inventory of Mining Impacted Streams in the Coastal Zone of the Keweenaw. 1/1/2012-3/31/2013 US NOAA. \$55,560. sx
- W.C. Kerfoot**, C.N. Brooks, S.A. Green R.A. Shuchman. Innovative Analysis of CHARTS Data of Grand Traverse Bay, Keweenaw Peninsula: Mine Tailings (Gay Stamp Sand) Dispersal 12/16/2009 – 12/15/2010 US DOD. \$40,000
- W.C. Kerfoot** Determine Invasive Status and Ecological Effects of an Exotic Zooplankter in Several Great Lakes Area Parks, 5/1/08-4/30/11. National Park Service. \$189,280.
- R.L. Gauthier, PI** and others, **W.C. Kerfoot**, Co-PI, Implementation of the Great Lakes Observing System (GLOS), 2008-2011, 08/2009-06/2013. NOAA Coastal Services Center, requested \$10.5M, MTU awarded \$372,198K.
- W.C. Kerfoot**, J. W. Budd, S.A. Green, H.A. Vanderploeg, B.J. Eadie, and D.J. Schwab. Ship time for Ecosystem Mosaics and the Lake Michigan "Doughnut": Modeling Pattern and Process NSF Biological Oceanography Using Remotely Sensed Imagery. 4/30/06-5/31/08. Michigan Sea Grant. \$10,728
- W.C. Kerfoot**, J.W. Budd, S.A. Green, H.A. Vanderploeg, B.J. Eadie, and D.J. Schwab. Ecosystem Mosaics and the Lake Michigan "Doughnut": Modeling Pattern and Process Using Remotely Sensed Imagery. 3/1/05-2/28/08. Michigan Sea Grant. \$237,261
- W.C. Kerfoot**, N. Urban, S.A. Green. Sediment Core Studies of Biotic Recovery Following Mining Perturbations in Torch Lake (Superfund Site). MI DEQ-MacTec. 7/21/04-3-31-07 \$105,466.
- W.C. Kerfoot**. Studies of Mining-contaminated Sediment Resuspension Following Buried Log Retrieval. 1/1/02-2/28/05 Keweenaw Bay Indian Community. \$58,873.

- J.W. Budd, C. Chen, **W.C. Kerfoot**, S. A. Green. Ecosystem Mosaics: Modeling Pattern and Process Using Remotely Sensed Imagery. 3/1/01-2/28/06. Michigan Sea Grant. \$208,353.
- W.C. Kerfoot**, C. Chen, J.H. Churchill, and T.M. Frost. Biocomplexity Incubation Proposal: Biocomplexity Incubation and Aquatic Food Webs: Algal and Zooplankton Diversity Against a Backdrop of Human Stoichiometric Disturbances. 9/1/00-5/31/04 NSF.Grant DEB-0083731 \$98,890.
- S.A.Green, N. Urban, M. Auer, N. Auer, J.W. Budd, and **W.C. Kerfoot**, E.A. Ralph, K Aagaard, E. T. Brown, C. Chen, and A Vodacek. Impact of the Keweenaw Current on Cross-Marginal Transport in Lake Superior: Physical Processes, Chemical Gradients, and Biological Communities. 9/15/97-8/31/03. NSF/ NOAA CoOp. OCE-9712872. \$2,097,428 (MTU portion); \$6.5M (project total). WCK Co-PI total \$320,684.
- W.C. Kerfoot**, J.W. Budd, and R. Stumpf. Retrospective Analysis: Measuring the historical magnitude of turbidity plumes using archived imagery and application of lake surface temperature/water quality algorithms. Part of \$14.5M Lake Michigan Plume proposal. 9/1/97-5/31/04. NSF NOAA Co-Op. OCE-9726680. WCK PI total \$569,055.
- W.C. Kerfoot** and S. Harting. Atmospheric and Mining-Related Contributions of Mercury and Other Heavy Metals to Watersheds around the Keweenaw Peninsula. 5/1/98-12/31/99. Lake Superior Basin Trust. \$50,200.
- W.C. Kerfoot** and S.E. Hagerthey. Groundwater Influences on the Littoral Communities of Lakes: Recent and Long Term Impacts. 10/1/95 - 9/30/99. NSF Grant DEB 95-27358, LTER Program, Ecosystems. \$244,628.
- W.C. Kerfoot** and A.L. Maclean. Remote Sensing Studies of Zebra Mussel Impacts in Saginaw Bay. 7/1/93-6/31/97. NOAA National Sea Grant Office, Washington, D.C. \$171,704.
- W.C. Kerfoot**. Outstanding Natural Resource Water Monitoring Protocol. 6/1/96-3/15/97. National Park Service. \$6950.
- W.C. Kerfoot** and S. Hagerthey. An in situ Chamber Design for Measuring the Effect of Groundwater Lake Interactions on the Community Structure of Benthic Algal Assemblages. 9/1/95 - 8/31/96. NSF, Dissertation Enhancement. \$5335.
- W.C. Kerfoot**. The Conference on Sustainable Development and Mining Around Lake Superior. 5/20/95/ - 6/1/96. Dept. of Commerce, NOAA. \$18,000.
- W.C. Kerfoot**. Monitoring Program for Deer Lake. 1/6/95 - 12/31/95. Cliffs Mining Services Co. \$15,894.
- W.C. Kerfoot**. The Temperature-Taste discrimination hypothesis. Summer 1994. NOAA National Underwater Research Program. \$40,000 ship time on RV Johnson Sea Link II.
- W.C. Kerfoot**. Apostle Islands Archipelago Foodweb Study: Monitoring Program. 7/24/94 - 12/31/94. National Park Service. \$5990.
- W.C. Kerfoot** and K. Pregitzer. Sustainable Development in the Lake Superior Basin: a Program for Enhancing LaSER. 12/1/94 - 11/30/97. Michigan Research Excellence Funds. \$167,982.
- W.C. Kerfoot**, and A.L. Maclean. Satellite Remote Sensing of Zebra Mussel (*Dreissena polymorpha*) Impacts in the Great Lakes. 9/1/93-8/31/96. NASA. \$66,000.
- W.C. Kerfoot**. Lake Superior Food Web-Apostle Islands ONRW (Outstanding Natural Resource Water). 11/1/93-3/31/94. National Park Service. \$7,510.
- W. C. Kerfoot** and A.L. Maclean. Remote Sensing Studies of Zebra Mussel Impacts in Saginaw Bay. 7/1/92-6/31/93. Michigan Sea Grant. \$45,000.
- W. C. Kerfoot**. Discriminating and nondiscriminating zooplankton: Implications for food webs. 2/1/92-1/31/93. NOAA National Undersea Research Program (NURP). \$12,751.
- W.C. Kerfoot** and J.A. Robbins. The legacy of mining around Lake Superior: Ecosystem effects of copper mining. 10/1/91-3/31/94. Michigan Great Lakes Protection Fund. \$132,927 (1st yr), \$143,534 (2nd yr).
- W. C. Kerfoot** and D.R. Barnhisel. Introduced invertebrate predator and YOY fish recruitment: Components of fish responses. 7/1/91 - 7/1/93. Michigan Sea Grant. \$84,721.

- W. C. Kerfoot.** Plankton Communities: Influence of suspended clay particles and adsorbed organics. 3/1/90-3/1/92. Environmental Protection Agency, Exploratory Research Program, Grant 816894-01. \$173,632.
- W.C. Kerfoot** (Co-PI). Establishment of a GEM Center at MTU. (11/1/90-10/31/93). \$1,010,520 (\$595,400. W.K. Kellogg Foundation; \$415,119 MTU Match). N. Hutzler (PI, Civil Engineering), **W. C. Kerfoot** (Biological Sciences), A. MacLean (Forestry), and T. Bornhorst (Geology).
- W.C. Kerfoot.** Discriminating and nondiscriminating zooplankton: Implications for food webs. 3/1/90 - 2/28/91. NOAA National Undersea Research Program (NURP). \$12,800.
- W.C. Kerfoot** and A. Solomon (Co-Directors). Ecological systems and economic development in the Lake Superior Basin. 10/1/90-10/1/91. Research Excellence Fund, State of Michigan. \$80,000.
- J. T. Lehman (PI) and **W. C. Kerfoot** (Co-PI). Workshop: Long-range plan for Great Lakes Research. 1986-1987. NSF Grant OCE86-11947 (Biological Oceanography).
- W. C. Kerfoot** and A. Kluge (Co-PI). Roginskii-Yablokov Effect. 5/1/85 - 5/1/86. NSF Grant BSR85-01252 (Population Biology).
- W. C. Kerfoot.** Multivariate Evolution: Selection Experiments with *Bosmina longirostris*. 5/15/84 - 5/15/86. NSF Grant BSR84-00244, (Population Biology).
- W. C. Kerfoot.** Chemical Defenses of Zooplankton. 11/1/82 - 10/30/85. NSF Grant DEB82-07007 (General Ecology).
- W. C. Kerfoot.** Zooplankton and Biological Control. 5/15/80 - 5/30/83. NSF Grant DEB80-04654 (General Ecology).
- W. C. Kerfoot.** Armor and Bad Taste: Two Aspects of Defense by Freshwater Zooplankton. 1/1/79 - 6/30/81. NSF Grant DEB76-20238 (Amendment, General Ecology).
- W. C. Kerfoot.** Symposium: Structure of Zooplankton Communities. 8/1/78 - 1/31/79. NSF Grant DEB78-19557 (General Ecology).
- W. C. Kerfoot.** Clonal Replacement, Predation, and Competition in Zooplankton Communities. 9/1/76 - 2/28/79. NSF Grant DEB76-20238 (General Ecology and Ecosystems).
- W. C. Kerfoot** and W. T. Edmondson(Co-PI). Strategies for Survival: The Competitive Cost of Predator Defense. 3/1/73 - 8/31/79. NSF Grant (General Ecology)
- W. C. Kerfoot** and W. T. Edmondson(Co-PI). Trophic Niches and Genetic Mosaics: Parthenogenetic *Bosmina* in Union Bay, Washington. NSF Grant BMS72-06845 (General Ecology).

Instrument and Co-operative Grants

- K.S. Pregitzer, D.J. Flaspohler, S.A. Green, A. Burton, **W.C. Kerfoot.** The Movement of Elements through Ecosystems: Major Research Instrumentation for the Integration of Research and Education. NSF. 10/1/00-09/30/03. \$693,137.
- J. Teeri et. al. Equipment for the University of Michigan Biological Station. 7/15/87 - 12/31/88. NSF Facilities Upgrade (2 CHN Analyzers), \$72,000.
- J.J. Gilbert and **W.C. Kerfoot.** Particle Data Analyzer. 6/01/78-79. NSF Equipment Grant (Coulter Counter Grant), \$65,000.
- R.D. Allen, **W.C. Kerfoot** and J.J. Gilbert. Scanning Electron Microscope for Biomedical Ecological Research. 6/01/76-77. NSF Equipment Grant (Scanning EM Grant); \$104,200.
- Hazlett, B. et. al. Undergraduate Research Program, Biological Station. 6/15/88 - 89, 90 - 91. NSF URE Program (Cooperative; mentor in), \$104,000.
- Dartmouth College. Comprehensive Assistance to Undergraduate Science Education. 7/1/80 - 6/30/83. NSF (Cause Grant), \$97,000.