# Refereed Publications

***Publications in recognized scientific journals***

Kidd, K.A., **M.J. Paterson**, M.D. Rennie, C.L. Podemski, D.L. Findlay, P.J. Blanchfield, and K. Liber. Direct and indirect responses of a freshwater food web to a potent synthetic estrogen. Phil. Trans. Royal Soc. B. 369: in press dx.doi.org/101098/rstb 2013.0578.

Vasseur, D.A., J.W. Fox, A. Gonzalez, R .Adrian, B.E. Beisner, M.R. Helmus, C. Johnson, P. Kratina, C. Kremer, C. de Mazancourt, E. Miller, W.A. Nelson, **M. Paterson**, J.A. Rusak, J.B. Shurin and C.F. Steiner. Synchronous dynamics of zooplankton competitors prevail in temperate lake ecosystems. Proceedings of the Royal Society B 2104 281, 20140633

Mailman, M., R.A. Bodaly, **M.J. Paterson**, S. Thompson, and R.J. Flett. 2014. Low-level experimental selenite additions decrease mercury in aquatic food chains and fish muscle but increase selenium in fish gonads. Arch. Environ. Contam. Toxicol. 66: 32-40.

Quinlan, R., **M.J. Paterson**, and J.P. Smol. 2012. Climate-mediated changes in small lakes inferred from midge assemblages: the influence of thermal regime and lake depth. J. Paleolimnology 48: 297-310.

Hrenchuk, L., P. Blanchfield, **M. Paterson**, H. Hintelmann. 2011. Dietary and waterborne mercury accumulation by yellow perch: a field experiment. Environmental Science and technology 46: 509-516.

Rolfhus, K.R., B.D. Hall, B. Monson, **M. Paterson**, J. Jeremiason. 2011. Assessment of mercury bioaccumulation within the pelagic food web of lakes in the western Great Lakes Region. Ecotoxicology 20: 1520-1529.

**Paterson, M.J.**, D.W. Schindler, R.E. Hecky, D.L. Findlay, and K.J. Rondeau. 2011. Comment: Lake 227 shows clearly that controlling inputs of nitrogen will not reduce or prevent eutrophication of lakes. Limnology and Oceanography 56: 1545-1547.

**Paterson, M.J.**, C.L. Podemski, L.J. Wesson, and A.P. Dupuis. 2011. The effects of an experimental freshwater cage aquaculture operation on *Mysis diluviana*. Journal of Plankton Research 33(1): 25-36.

**Paterson, M.J.**, C.L. Podemski,W.J. Findlay, D.L. Findlay, A.G. Salki. 2010. The response of zooplankton in a whole-lake experiment on the effects of a cage aquaculture operation for rainbow trout (*Oncorhynchus mykiss*). Canadian Journal of Fisheries and Aquatic Sciences 67: 1852-1861.

Shurin, J., M. Winder, R. Adrian, W. Keller, B. Matthews, A. Paterson, **M. Paterson**, B. Pinel-Alloul, J. Rusak, N. Yan. 2010. Environmental stability and lake zooplankton diversity-contrasting effects of chemical and thermal variability. Ecology Letters 13:453-463.

Helmus, M.R., W. Keller, **M.J. Paterson**, N.D. Yan, C.H. Cannon and J.A. Rusak. 2010. Communities contain closely related species during ecosystem disturbance. Ecology Letters 13: 162-174.

Blanchfield, P.J., **M.J. Paterson**, J.A. Shearer, and D.W. Schindler. 2009. Johnson and Vallentyne's legacy: 40 years of aquatic research at the Experimental Lakes Area. Canadian Journal of Fisheries and Aquatic Sciences 66: 1831-1836.

Kullman, M.A., K.A. Kidd, C.L. Podemski, **M.J. Paterson**, and P.J. Blanchfield. 2009. Assimilation of freshwater salmonid aquaculture waste by native aquatic biota. Canadian Journal of Fisheries and Aquatic Sciences 66: 1965-1975.

Hall, B.D., K. Cherewyk, **M.J. Paterson**, R.A. Bodaly. 2009. Changes in methyl mercury concentrations in zooplankton from four experimental reservoirs with differing amounts of carbon in the flooded catchments. Canadian Journal of Fisheries and Aquatic Sciences 66: 1910-1919.

Vinebrooke, R.D., M.A. Turner, D.L. Findlay, and **M.J. Paterson**. 2009. A stressor-independent test for biodiversity-ecosystem function relationships during a 23-year whole-lake experiment. Canadian Journal of Fisheries and Aquatic Sciences 66: 1903-1909.

Schindler, D.W., R.E. Hecky, D.L. Findlay, M.P. Stainton, B.R. Parker, **M. Paterson**, K.G. Beaty, M. Lyng, and S.E.M. Kasian. 2008. Eutrophication of lakes cannot be controlled by reducing nitrogen input: Results of a 37-year whole ecosystem experiment. Proceedings of the National Academy of Sciences 105: 11254-11258.

Orihel, D.M., **M.J. Paterson**, P.J. Blanchfield, R.A. Bodaly, C.C. Gilmour, H. Hintelmann. 2008. Temporal changes in the distribution, methylation, and bioaccumulation of newly deposited mercury in an aquatic ecosystem. Environmental Pollution 154: 77-88.

Harris, R.C., J.W.M. Rudd, M. Amyot, C.L. Babiarz, K.G. Beaty, P.J. Blanchfield, R.A. Bodaly, B.A. Branfireun, C.C. Gilmour, J.A. Graydon, A. Heyes, H. Hintelmann, J.P. Hurley, C.A. Kelly, D.P. Krabbenhoft, S.E. Lindberg, R.P. Mason, **M.J. Paterson**, C. L. Podemski, A. Robinson, K.A. Sandilands, G.R. Southworth, V. L. St. Louis, and M.T. Tate. 2007. Whole-Ecosystem Study Shows Rapid Fish Mercury Response to Changes in Mercury Deposition. Proceedings of the National Academy of Sciences 104: 16586-16591.

Orihel, D.M., **M.J. Paterson**, P.J. Blanchfield, R.A. Bodaly, and H.H. Hintelmann. 2007. Experimental evidence of a linear relationship between inorganic mercury loading and methylmercury accumulation by aquatic biota. Environmental Science and Technology 41: 4952-4958.

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mesocosms. Environmental Science and Technology 40: 5592-6000.

**Paterson, M.J.**, P.J. Blanchfield, C. Podemski, H.H. Hintelmann, C.C. Gilmour, R. Harris, N. Ogrinc, J.W.M. Rudd, and K.A. Sandilands. 2006. Bioaccumulation of newly-deposited mercury by fish and invertebrates: an enclosure study using stable mercury isotopes. Canadian Journal of Fisheries and Aquatic Sciences 63: 2213-2224.

Poulain, A.J., D.M. Orihel, M. Amyot, **M.J. Paterson**, H. Hintelmann, and G.R. Southworth. 2006. Relationship between the loading rate of inorganic mercury to aquatic ecosystems and dissolved gaseous mercury production and evasion. Chemosphere 65: 2199-2207.

Christensen, M.R. M.D. Graham, R.D. Vinebrooke, D. L. Findlay, **M.J. Paterson**, and M.A. Turner. 2006. Multiple anthropogenic stressors cause ecological surprises in boreal lakes. Global Change Biology 12: 1-7.

Baulch, H.M., D.W. Schindler, M.A. Turner, D.L. Findlay, **M.J. Paterson**, and R.D Vinebrooke. 2005. Effects of warming on benthic communities in a boreal lake: Implications of climate change. Limnology and Oceanography 50:1377-1392.

Hall, B.D., V.L. St. Louis, K.R. Rolfhus, R.A. Bodaly, K.G. Beaty, **M. Paterson,** and K.A. Peech Cherewyk. 2005. Impacts of reservoir creation on the biogeochemical cycling of methyl and total mercury in boreal upland forests. Ecosystems 8: 248-266.

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Findlay, D.L., M.J. Vanni, **M. Paterson**, K.H. Mills, S.E.M. Kasian, W.J. Findlay and A.G. Salki. 2005. Dynamics of a boreal lake ecosystem during a long-term manipulation of top predators. Ecosystems 8: 603-618.

Bodaly, R.A., K.G. Beaty, L.L. Hendzel, A.R. Majewski, **M.J. Paterson**, K.R. Rolfhus, A.F. Penn, V.L. St.Louis, B.D. Hall, C.J.D. Matthews, K.A. Cherewyk, , M. Mailman, J.P. Hurley, S.L. Schiff, and J.J. Venkiteswaran. 2005. Mercury and the FLUDEX project: response. Environmental Science and Technology 39: 185A-186A.

Bodaly, R.A., K.G. Beaty, L.H. Hendzel, A.R. Majewski, **M.J. Paterson**, K.R. Rolfhus, A.F. Penn, V.L. St.Louis, B.D. Hall, C.J.D. Matthews, K.A. Cherewyk, M. Mailman, J.P. Hurley, S.L. Schiff, and J.J. Venkiteswaran. 2004. Experimenting with hydroelectric reservoirs. Environmental Science and Technology 38: 346A-352A.

St.Louis, V.L., J.W.M. Rudd, C.A. Kelly, R.A. Bodaly, **M.J. Paterson**, K.G. Beaty, R.H. Hesslein, A. Heyes, and A.R. Majewski. 2004. The rise and fall of mercury methylation in an experimental reservoir. Environmental Science and Technology 38: 1348-1358.

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Fisheries Society 133: 568-576.

Arnott, S.E., W. Keller, P.J. Dillon, N.D. Yan, **M. Paterson**, and D. Findlay. 2003. Using temporal coherence to determine the response to climate change in boreal shield lakes. Environmental Monitoring and Assessment 88: 365-388.

**Paterson, M.J.**, D.L. Findlay, A.G. Salki, L.L. Hendzel, and R.H. Hesslein. 2002. The effects of *Daphnia* on nutrient stoichiometry and filamentous cyanobacteria: a mesocosm experiment in a eutrophied lake. Freshwater Biology 47: 1217-1233.

Vinebrooke, R.D. D.W. Schindler, D.L. Findlay, M. A. Turner, **M. Paterson**, and K. H. Mills. 2002. Trophic dependence of ecosystem resistance and species compensation in experimentally acidified Lake 302S (Canada). Ecosystems 6: 101-113.

Rusak, J.A., N.D. Yan, N.D., K.M. Somers, K.L. Cottingham, F. Micheli, S.R. Carpenter, T.M., Frost, **M.J. Paterson**, and D.J. McQueen. 2002. Temporal, spatial, and taxonomic patterns of crustacean zooplankton variability in unmanipulated north-temperate lakes. Limnology and Oceanography 47: 613-625.

Elser, J.J., R.W. Sterner, A.E. Galford, T.H. Chrzanowski, D.L. Findlay, K.H. Mills, **M.J. Paterson**, M.P. Stainton, and D.W. Schindler. 2000. Pelagic stoichiometry in a eutrophied lake: responses to a whole-lake food-web manipulation. Ecosystems 3: 293-307.

Kidd, K.A., **M.J. Paterson**, R.H. Hesslein, D.C.G. Muir, and R.E. Hecky. 1999. Effects of pike additions on pollutant accumulation and food web structure, as determined by $\delta^{13}C$ and $\delta^{15}N$, in a eutrophic and an oligotrophic lake. Canadian Journal of Fisheries and Aquatic Sciences 56: 2193-2202.

Jeremiason, J.D., S.J. Eisenreich, and **M.J. Paterson**. 1999. Accumulation and recycling of PCBs and PAHs in artificially-eutrophied lakes. Canadian Journal of Fisheries and Aquatic Sciences 56: 650-660.

Jeremiason, J.D., S.J. Eisenreich, **M.J. Paterson**, K.G. Beaty, R.E. Hecky, and J.J. Elser. 1999. Biogeochemical cycling of atmospherically-derived PCBs in lakes of variable trophic status: a paired-lake experiment. Limnology and Oceanography 44: 889-902.

**Paterson, M.J.**, D.C.G. Muir, B. Rosenberg, E.J. Fee, C.Anema, and W. Franzin. 1998. Does lake size affect concentrations of atmospherically-derived PCBs in water, sediment, zooplankton, and fish? Canadian Journal of Fisheries and Aquatic Sciences 55: 544-553.

**Paterson, M.J.**, J.W.M. Rudd, and V. St.Louis. 1998. Increases in total and methylmercury in zooplankton following flooding of a peatland reservoir. Environmental Science and Technology 32: 3868-3874.

**Paterson, M.J.**, D. Findlay, K. Beaty, W. Findlay, E.U. Schindler, M. Stainton, and G. McCullough. 1997. Changes in the planktonic food web of a new experimental reservoir.

Canadian Journal of Fisheries and Aquatic Sciences 54: 1088-1102.

**Paterson, M.J.** 1994. Paleolimnological reconstruction of recent changes in assemblages of Cladocera from acidified lakes in the Adirondack Mountains (New York). J. Paleolimnology 11: 189-200.

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**Paterson, M.J**. 1993. The distribution of microcrustacea in the littoral zone of a freshwater lake. Hydrobiologia 263: 173-183.

France, R.L., E.T. Howell, **M.J. Paterson**, & P.M. Welbourn. 1993. Relationship between littoral grazers and metaphytic alga in five softwater lakes. Hydrobiologia 220: 9-27.

Charles, D.F., M.W. Binford, E.T. Furlong, R.A. Hites, M.J. Mitchell, S.A. Norton, F. Oldfield, **M.J. Paterson**, J.P. Smol, A.J. Uutala, J.R. White, D.R. Whitehead, R.J. Wise. 1992. Paleoecological investigation of recent lake acidification in the Adirondack Mountains, N.Y. J. Paleolimnology 3: 195-241.

***Book chapter***

Bodaly, R.A., V.L. St. Louis, **M.J. Paterson**, R.J.P. Fudge, B.D. Hall, D.M. Rosenberg, and J.W.M. Rudd. 1997. Bioaccumulation of mercury in the aquatic food chain in newly flooded areas in H. Sigel, and A. Sigel (eds) Mercury and its effects on environment and biology. Marcel Dekker, New York, pp. 259-287. (24)

***Refereed Conference Proceedings***

Blanchfield, P.J., **M.J. Paterson**, H. Hintelmann and R.C Harris. 2004. Growth rates and the bioaccumulation of mercury by a predatory fish: whole-lake experimental approaches. RMZ - Materials and Geoenvironment 51: 835-837.

Blanchfield, P., **M. Paterson**, C. Podemski, and H. Hintelmann. 2004. The movement of newly deposited mercury through an aquatic food web. RMZ - Materials and Geoenvironment 51: 838-840..

Ogrinc, N., H. Hintelmann and **M.J. Paterson**. 2004. The importance of different sources of particulate organic matter in the transfer of methylmercury to biota in an oligotrophic lake using carbon and nitrogen stable isotopes. RMZ - Materials and Geoenvironment 51: 1279.

Orihel, D.M., **M.J. Paterson**, P. Blanchfield, H. Hintelmann, C. Gilmour, and R.A. Bodaly. 2004. Bioaccumulation of methylmercury in aquatic food webs in response to increases in atmospheric mercury deposition. RMZ - Materials and Geoenvironment 51: 1281-1284.

Poulain, A., D. Orihel, M. Amyot, **M. Paterson**, G. Southworth, and H.H. Hintelmann. 2004. Dissolved gaseous mercury formation and evasion in boreal lake enclosures spiked with inorganic mercury. RMZ - Materials and Geoenvironment 51: 1320-1323

***Peer-reviewed reports***

Havens, S., M.D. Rennie, P.J. Blanchfield, **M.J. Paterson**, S. Higgins. 2014. Evaluation of eutrophication and water level drawdown on Lake Whitefish (Coregonus clupeaformis) productivity; Fish habitat assessment. Canadian Technical Report Fisheries and Aquatic Sciences 3110: vii + 40 pp.

**Paterson, M.J.** 2012. The Influence of reservoir creation on mercury transport, methylation and bioaccumulation. CARA Mercury Assessment.

Rooney, R. C. and **M.J. Paterson**. 2009. Ecosystem effects of Rainbow Smelt (*Osmerus mordax*) invasions in inland lakes: A literature review. Canadian Technical Report of Fisheries and Aquatic Sciences 2845: 33 + iv pp.

Rosenberg, D.M., and **M.J. Paterson**, Cooperative research at the Experimental Lakes Area: Proceedings of a workshop between Environment Canada and Fisheries and Oceans Canada, 27-28 February 2007, Winnipeg Manitoba. Canadian Manuscript Report of Fisheries and Aquatic Sciences 2844: 65 pp.

**Paterson, M.J.** 2001. Ecological monitoring and assessment network (EMAN) protocols for measuring biodiversity: zooplankton in fresh waters. EMAN protocols. http://eqb-dqe.cciw.ca/eman/ecotools/protocols/freshwater/zooplankton

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