

Curriculum Vitae

Dr. Jim Muirhead

Smithsonian Environmental Research Center
647 Contees Wharf Road
Edgewater, MD, USA 21037
Phone: +1 (443) 482.2450
Email: muirheadj@si.edu

Research Interests

- Invasive species
- Plant and animal dispersal
- Biogeography
- Landscape ecology
- Network Theory
- Mathematical Biology

Education

Ph.D. in Environmental Science: University of Windsor, Windsor, Ontario 2002–2007. Dissertation Title: Forecasting dispersal of nonindigenous species.

M.Sc. in Zoology, University of Toronto at Mississauga, Mississauga, Ontario 1996–1999. Thesis title: Feeding and swimming behaviour of *Bythotrephes cederstroemi* Schoedler.

B.Sc.: University of Alberta, Edmonton, Alberta 1991–1994, Specialization in Zoology.

Academic Experience

Postdoctoral Fellow

2010–2015. Smithsonian Environmental Research Center, Edgewater, MD.

2007–2010. Centre for Mathematical Biology, University of Alberta, AB.

Teaching Assistant

University of Windsor

2005–2006. Experimental Principles (Bio 320), Multiple Stressors and Environmental Modelling (GLIER 680).

2004–2005. Experimental Principles (BIO 320).

2003–2004. Introductory Biology (BIO 141), Experimental Principles (BIO 320).

2002–2003. Introductory Biology (BIO 140), Introductory Biology (BIO 141).

University of Toronto at Mississauga

1997–1998. Biostatistics I (BIO360F), Biostatistics II (BIO 361S).
1996–1997. Ecology (BIO 205F), Biostatistics II (BIO 361S).

Professional Experience

Aquatic Ecologist, September 2000–2002. Great Lakes Laboratory for Fisheries and Aquatic Sciences
Department of Fisheries and Oceans, Sault Ste. Marie, ON.

Research Assistant, Fish Systematics and Ecology 1991–1995. Department of Zoology, University of
Alberta.

Publications Published or in Press

Muirhead, J. R., M. S. Minton, A. W. Miller and G. M. Ruiz. 2015. Projected effects of the Panama Canal
expansion on shipping traffic and biological invasions. *Diversity and Distributions* 21, 75–87.

Fowler, A.E, J. R. Muirhead and R. B Taylor. 2014. Early stages of a New Zealand invasion by *Charybdis*
japonica (A. Milne-Edwards, 1861) (Brachyura: Portunidae) from Asia: Behavioral interactions with a
native crab species. *Journal of Crustacean Biology* 33, 672–680.

Potapov, A., J. Muirhead, N. Yan, S. Lele and M. Lewis. 2011. Models of lake invasibility by *Bythotrephes*
longimanus, a non-indigenous zooplankton. *Biological Invasions* 13: 2459–2476.

Muirhead, J. R. and H. J. MacIsaac. 2011. Evaluation of stochastic gravity model selection for use in
estimating non-indigenous species dispersal and establishment. *Biological Invasions* 13: 2445–2458.

Muirhead, J.R., M.A., Lewis and H. J. Macisaac. 2011. Prediction and error in multi-stage models for
spread of aquatic non-indigenous species. *Diversity and Distributions* 17, 323–337.

Potapov, A., J. R. Muirhead, S. R. Lele, and M. A. Lewis. 2011. Stochastic gravity models for modeling
lake invasions. *Ecological Modelling* 222(4): 964–972.

Muirhead, J. R., A. Bobeldyk, J. Bossenbroek, K. Egan, C. Jerde. 2009. Estimating dispersal and
predicting spread of nonindigenous species in *Bioeconomics of Invasive Species: Integrating ecology,*
economics, policy and management. Reuben P. Keller, David M. Lodge, Mark A. Lewis and Jason F.
Shogren, eds. pp. 197–238. Oxford University Press.

Steinberg, A., J. Ejsmont-Karabin, J. R. Muirhead, C.T. Harvey and H. J. MacIsaac. 2009. Consistent,
long-term change in rotifer community composition across four Polish lakes. *Hydrobiologia*
624(1):107–114.

Muirhead, J. R. D. K. Gray, D. W. Kelly, S. M. Ellis and H. J. MacIsaac. 2008. Identifying the source of
species invasions: sampling intensity vs. genetic diversity. *Molecular Ecology* 17:1020–1035.

MacIsaac, H. J. L. - M. Herborg, and J. R. Muirhead. 2007. Modeling biological invasions of lakes. In:
Freshwater Bioinvaders: Profiles, Distribution and Threats. Edited by F. Gherardi.

Kelly, D.W., J. R. Muirhead, D. D. Heath, and H. J. MacIsaac, H. J. 2006. Contrasting patterns in genetic
diversity following multiple invasions of fresh and brackish waters. *Molecular Ecology* 15: 3641–3653.

- Muirhead, J. R., J. Ejsmont-Karabin and H. J. MacIsaac. 2006. Quantifying rotifer species richness in temperate lakes. *Freshwater Biology* 51:1696–1709.
- Muirhead, J. R., B. Leung, C. van Overdijk, D. Kelly, K. Nandakumar, K. Marchant and H.J. MacIsaac. 2006. Modeling local and long-distance dispersal of the emerald ash borer *Agrilus planipennis* (Coleoptera) in North America. *Diversity and Distributions* 12:71–79.
- Pratt, T. C., K. E. Smokorowski, and J. R. Muirhead. 2005. Development and experimental assessment of an underwater video technique for assessing fish-habitat relationships. *Archiv für Hydrobiologie* 164: 547–571.
- Colautti, R., J. R. Muirhead, R. N. Biswas, and H. J. MacIsaac. 2005. Realized versus apparent enemy release in the European starling. *Biological Invasions* 7:723–732.
- Muirhead, J. R. and H.J. MacIsaac. 2005. Development of inland lakes as hubs in an invasion network. *Journal of Applied Ecology* 42:80–90.
- MacIsaac, H. J., J. Borbely, J. R. Muirhead and P. Graniero. 2004. Backcasting and forecasting biological invasions of inland lakes. *Ecological Applications* 14: 773–783.
- Orlova, M. I., J. R. Muirhead, P. I. Antonov, G. K. Shcherbina, Y. I. Starobogatov, G. I. Biochino, T. W. Therriault, H. J. MacIsaac. 2004. Range expansion of quagga mussels *Dreissena rostriformis bugensis* in the Volga River and Caspian Sea basin. *Aquatic Ecology* 38:561–573.
- Muirhead, J. R. and W. G. Sprules. 2003. Reaction distance of *Bythotrephes longimanus*, encounter rate and index of prey risk for Harp Lake, Ontario. *Freshwater Biology* 48:135–146.

Manuscripts reviewed

Invited to review manuscripts in *Diversity and Distributions*, *Ecological Applications*, *Trends in Ecology and Evolution*, *Freshwater Biology*, *BioScience*, *Ecography*, *Journal of Applied Ecology*, *Water Research*, *Biological Invasions*, *Journal of Theoretical Ecology*, *Archives of Environmental Contamination and Toxicology*, *Journal of Great Lakes Research*.

Recent conferences and workshops

Muirhead, J. R., H. J. MacIsaac and M.A. Lewis. Prediction and error in multi-stage models for spread of aquatic invasive species. Canadian Aquatic Invasive Species Network meeting, Victoria, Canada. April 27, 2010.