

GREG M. SILSBE

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I. Education

- 1999 B. App. Sci. (Civil Environmental Engineering). Queen's University
- 2004 M.Sc. (Biology). University of Waterloo.
- 2010 Ph.D. (Biology). University of Waterloo.

II. Professional Experience

- 1999-2000 Research consultant. Lake Victoria Fisheries Research Project. Jinja, Uganda.
- 2010-2014 Postdoctoral Research Associate. Royal Netherlands Institute of Sea Research. Yerseke, NL.
- 2015 Research Faculty Associate. Oregon State University. Corvallis OR.

III. Research

A. Area of professional expertise

Phytoplankton ecophysiology with a specific focus on high-resolution techniques that can help elucidate ecosystem scale drivers and responses. Application, development and interpretation of active fluorescence measurements of phytoplankton physiology. Advanced techniques in remote-sensing from satellites and ship-based hyperspectral radiometers. Tropical limnology with a focus on physical-biological interactions in large lakes.

B. Publications

1. Peer-reviewed publications

Silsbe, G.M., and S.Y. Malkin. *In press*. Where light and nutrients collide: The global distribution and activity of subsurface chlorophyll maximum layers. In [eds.] Glibert, P. and T. Kana: Aquatic Microbial Ecology and Biogeochemistry: A Dual Perspective.

Silsbe, G.M., K. Oxborough, D.J. Suggett, R.M. Forster, S. Ihnken, O. Komarek, E. Lawrenz, O. Prasil, R. Rottgers, M. Sicner, S.G.H. Simis, M. Van Dijk, and J.C. Kromkamp. 2015. Towards autonomous measures of photosynthetic electron transport: Evaluating fluorescence-based measures of photosystem II absorption. *Limnology and Oceanography: Methods*. 13: 138-155.

Silsbe, G.M., R.E.H. Smith, and M.R. Twiss. 2015. Quantum efficiency of phytoplankton photochemistry measured continuously across gradients of nutrients and biomass in Lake Erie (CA,

US) is strongly regulated by light but not nutrient deficiency. *Canadian Journal of Fisheries and Aquatic Sciences*. 72: 651-660.

Harrison, J.W., G.M. Silsbe, and R.E.H. Smith. 2015. Photophysiology and its response to visible and ultraviolet radiation in freshwater phytoplankton from contrasting light regimes. *Journal of Plankton research*. 37: 472-488.

Doubourg, P. et al. Light and nutrient co-limitation of phytoplankton communities in a large reservoir: Lake Diefenbaker, Saskatchewan, Canada. *Journal of Great Lakes Research*. 41 S2: 129-143.

van Zwieten, P., J. Kolding, M.J. Plank, R.E. Hecky, T.B. Bridgeman, S. MacIntyre, O. Seehausen, and G.M. Silsbe. 2015. The Nile perch invasion: Cause or consequence of the haplochromine demise? *Canadian Journal of Fisheries and Aquatic Sciences*. 73: 1-22.

Cornelissen, I.J.M., G.M. Silsbe, J.A.J. Verreth, E. van Donk, and L.A.J. Nagelkerke. 2014. Dynamics and limitations of phytoplankton biomass along a gradient in Mwanza Gulf, southern Lake Victoria (Tanzania). *Freshwater Biology*. 59: 127-141.

MacIntyre, S., J.R. Romero, G.M. Silsbe and B.M. Emery. 2014. Stratification and horizontal exchanges in Lake Victoria, East Africa. *Limnology and Oceanography*. 59(6). 1805-1836.

S. Ihnken, J.C. Kromkamp, J. Beardall and G.M. Silsbe. 2014. State-transitions facilitate robust quantum yields and cause an over-estimation of electron transport in *Dunaliella tertiolecta* cells held at the CO₂ compensation point and re-supplied with DIC. *Photosynthesis Research*. 119(3): 257-272.

Downing, A.S. et al. 2014. Coupled human and natural system dynamics as key to the sustainability of Lake Victoria's ecosystem services. 2014. *Ecology and Society*. 19(4): 31.

Lawrenz, E., G.M. Silsbe, E. Capuzzo, P. Ylotsalo, R.M. Forster, S.G.H. Simis, O. Prasil, J.C. Kromkamp, R.J. Geider, and D.J. Suggett. 2013. Predicting the minimum electron requirement for carbon fixation in seas and oceans. *PLoS One*. 8(3): e58137.

Silsbe, G.M. and J.C. Kromkamp. 2012. Modeling the irradiance dependency of the quantum efficiency of photosynthesis. *Limnology and Oceanography: Methods*. 10: 645-652.

Silsbe, G.M., R.E.H. Smith, and R.E. Hecky. 2012. Improved estimation of carbon fixation rates from active fluorometry using spectral fluorescence in light-limited environments. *Limnology and Oceanography: Methods*. 10: 736-751.

Malkin, S.Y., G.M. Silsbe, R.E.H. Smith, and E.T. Howell. 2012. A deep chlorophyll maximum nourishes benthic filter feeders in the coastal zone of a large clear lake. *Limnology and Oceanography*. 57(3): 735-748.

Witte, F., G.M. Silsbe, R.E. Hecky, P.C. Goudswaard, S.J. Guildford, M.A. Kische-Machumu, and J.H.

Wanink. 2012. Did the loss of phytoplanktivorous fish contribute to algal blooms in the Mwanza Gulf of Lake Victoria? *Hydrobiologia*. 679: 283-296.

Havens, S.M., C.S. Hassler, R.L. North, S.J. Guildford, G.M. Silsbe, S.W. Wilhelm, and M.R. Twiss. 2012. Iron plays a role in nitrate drawdown by phytoplankton in Lake Erie surface waters as observed in lake-wide assessments. *Canadian Journal of Fisheries and Aquatic Sciences*. 69(2): 369-381.

Kolding, J., P. van Zwieten, O. Mkumbo, G.M. Silsbe, and R.E. Hecky. 2008. Are the Lake Victoria fisheries threatened by exploitation or eutrophication? Towards an ecosystem based approach to management. In [eds.] Bianchi, G. and J.R. Skjoldal: *The Ecosystem Approach to Fisheries*.

Pemberton, K.L., R.E.H. Smith, G.M. Silsbe, E.T. Howell, and S.B. Watson. 2007. Controls on phytoplankton physiology in Lake Ontario during the late summer: Evidence from new fluorescence methods. *Canadian Journal of Fisheries and Aquatic Sciences*. 64(1): 57-73.

Silsbe, G.M., R.E. Hecky, S.J. Guildford, and R. Mugidde. 2006. Variability of chlorophyll *a* and photosynthetic parameters in a nutrient saturated tropical great lake. *Limnology and Oceanography*. 51(5): 2052-2063.

C. Grants and Awards

- 2007 Rob Peter's Award (Best Limnology Publication Written by a Canadian Student)
- 2007 Davis Memorial Scholarship in Ecology (\$5,000)
- 2006-2007 Postgraduate Scholarship Award, NSERC (\$42,000)
- 2006 TD Trust Environmental Scholarship (\$10,000)
- 2005 Ontario Graduate Scholar in Science and Technology (\$10,000)
- 2005 Dean of Science Award (Best M.Sc. Thesis in Biology Department)
- 2003 Canadian International Development Agency Innovative Research Grant (\$10,000)
- 2002 Learning and Teaching through Technology Grant (\$7,000)

D. Seminars and conference presentations (First Author Only)

2015. International Ocean Colour Meeting. San Francisco, CA. The CAFE Model: An absorption-based net primary production model.

2015. NASA MODIS Science Team Meeting. Silver Spring, MD. The CAFE Model: A next-generation primary production model for the global ocean.

2013. International Liege Colloquium on Ocean Dynamics. Liege, Belgium. Diel patterns of phytoplankton photosynthesis in European coastal waters.

2012. American Society for Limnology and Oceanography. Otsu, Japan. Photophysiological

optimization of photosynthesis in European coastal waters.

2011. European Phycological Society. Rhodos, Greece. Photosynthetic physiology in European coastal waters.

2011. Society for Canadian Limnologists. Toronto, ON. The deep algal bloom: Seasonal evolution and production of deep chlorophyll maxima in the Laurentian Great Lakes.

2007. International Association of Theoretical and Applied Limnology. Montreal, PQ. Excessive nutrient loading threatens the sustainability of the world's largest freshwater commercial fishery.

2007. International Association of Great Lakes Research. Penn State, PA. Spatial and seasonal patterns of phytoplankton production and community composition in the Central Basin of Lake Erie.

2006. International Association of Great Lakes Research. Windsor, ON. Spatial and seasonal patterns of phytoplankton physiology and photosynthesis in Lake Erie as measured by Fast Repetition Rate Fluorometer (FRRF).

2006. Lake Erie Millennium Network. Windsor, ON. Nutrients and photoinhibition as controls on Lake Erie phytoplankton and their fluorescence properties.

2005. World Lake Conference. Nairobi, Kenya. The upper limit of phytoplankton production in Lake Victoria, East Africa : Implications for the lake's fishery.

2004. International Association of Great Lakes Research. Waterloo, ON. Inshore phytoplankton production in Lake Victoria, East Africa : Insights into lakewide phytoplankton production.

2003. American Society for Limnology and Oceanography. Salt Lake City, UT. Spatial and seasonal patterns of the thermal structure, dissolved oxygen and chlorophyll concentrations of Lake Victoria, East Africa.

2002 International Association of Great Lakes Research. Winnipeg, MB. Phytoplankton production modeling of Lake Victoria, East Africa.

IV. Teaching and Training

A. Courses Taught

Aquatic Ecology (Biology 351). University of Waterloo.

Co-taught with Sairah Malkin. Developed and presented 16 one-hour lectures focusing on phytoplankton ecology, and physical and optical limnology. Prepared literature review assignments and two exams.

B. Advising and Mentoring

Graduate Committee member for:

Fan Zhang (PhD in progress at UMCES HPL)

V. Outreach and Service

A. Peer Reviewer

Proceedings of the National Academy of Sciences; Journal of Geophysical Research; Limnology and Oceanography; Limnology and Oceanography: Methods; Freshwater Biology; Marine Ecology Progress Series; Journal of Plankton Research; Biogeosciences Journal of Great Lakes Research.