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**Larissa L. Sano, Ph.D.**

Sweetland Center for Writing  
The University of Michigan  
1320 North Quad  
105 S. State St.  
Ann Arbor, Michigan 48109-1285  
ph: 734-647-4532  
e-mail: llubomud@umich.edu

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## EDUCATION

**University of Michigan**, School of Natural Resources and Environment, Ann Arbor, MI.  
Ph.D. in Resource Ecology and Management. 2005. Dissertation: *Aquatic toxicity, ecological risks, and risk tradeoff analysis of biocide treatment for unballasted vessels.*

**Oregon State University**, College of Oceanic and Atmospheric Sciences, Corvallis, OR.  
M.S. in Marine Resource Management, Minor in Information Science & Technology. 1997.

**Stanford University**, Program in Human Biology, Stanford, CA.  
B.A. in Human Biology, with a focus on Marine Ecology. 1993.

## TEACHING

**Lecturer III**, Sweetland Center for Writing, University of Michigan, Ann Arbor, 09/15-present

**Lecturer**, Biology Department, Eastern Michigan University, Ypsilanti MI, part-time, 06/12 – 08/15  
Develop and deliver lectures, identify reading materials, and create course assignments for undergraduate-level lectures and labs including Ecology (BIO310), Laboratory in Ecology (BIO311W – writing intensive) and a graduate-level course in Proposal Development (BIO501).

**Lecturer I**, Department of Natural Sciences, University of Michigan – Dearborn, part-time, 01//11 – 05/13. Develop and deliver lectures, identify reading materials, and create course assignments for an undergraduate-level lecture and lab, Ecology (BIOL/ESCI 304), Aquatic Ecosystems (BIOL/ESCI 315), Limnology (BIOL 414/516), and two graduate-level courses, Applied Ecology (BIOL/ESCI 514) and Watershed Analysis (LIBS585). Teaching opportunities ongoing, as time permits.

**Lecturer and graduate teaching assistant**, Introduction to Oceanography (OC331), College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR, 03/96 - 06/96.  
Developed curriculum and presented lectures for the biological oceanography portion of class.  
Conducted review sessions, graded written exams, and assisted students during office hours.

**Graduate teaching assistant**, Principles of Physical Oceanography (OC 430/530), College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR, 09/95 - 12/95.  
Taught weekly problem solving sessions, developed practice problems, and graded problem sets for graduate and undergraduate students.

**Graduate teaching assistant**, Introduction to Oceanography (OC331), College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR, 01/95 – 03/95 and 01/96 - 03/96.  
Taught review sessions, graded written exams, and assisted students during office hours.

## PROFESSIONAL EXPERIENCE

**Researcher & Program Officer**, School of Natural Resources and Environment and the UM-Water Center, University of Michigan, 01/13 – present. Responsibilities include research to evaluate the ecological risks of contaminants and other freshwater stressors as well as administration and management of educational efforts of a cooperative research institute. Current research projects include evaluating the community-level impacts of invasion by the round goby, assessing the uptake and exposure of Great Lakes fishes to microplastic debris, and evaluating approaches to removing beneficial use impairments at Great Lakes areas of concern. Program officer duties include coordinating, overseeing, and implementing programs to improve student-training opportunities at the University of Michigan, including a summer student fellows program, a postdoctoral research program, an experiential-learning stream restoration course, and a seminar series.

**Contract Research Scientist**, University of Michigan, 09/07 – 09/10. Co-investigator of causes and consequences of fish consumption advisories in the Detroit River. Job duties included organizing and facilitating stakeholder workshops, working with student group on environmental justice issues, developing Monte Carlo algorithms to characterize parameters driving consumption advisories, and writing up results for publication and a final report.

**Senior Scientist**, Marine Conservation Biology Institute (MCBI), 04/07 – 10/09. Implemented a range of programs for a marine biology non-profit institutes. Job duties included administering a historical marine ecology grants program, overseeing a student intern program, facilitating stakeholder workshops, and collaborating with a range of Federal and non-governmental organizations on ocean conservation issues. Other job duties included co-editing a special topics publication (Current: Journal of Marine Education), organizing a session for the American Association for the Advancement of Science conference, and writing grants and fact sheets.

**Assistant Director**, Cooperative Institute for Limnology and Ecosystem Research (CILER), University of Michigan, 06/05 – 08/07. Assisted with program management for a University-based Cooperative Institute. Job duties focused on enhancing research opportunities and strengthening partnerships between researchers from Great Lakes universities and the NOAA-Great Lakes Environmental Research Lab. Specific efforts included: 1) writing proposals for research grants, including identifying funding opportunities, developing research objectives, facilitating collaborations between NOAA and university investigators, writing text, and developing budgets; 2) administering a NOAA-University of Michigan student fellows program, including recruiting Federal and university principal investigators to sponsor projects, advertising the program, and managing student applications; 3) implementing a Great Lakes Research Investigator Program, including advertising the program, managing applications, and interviewing candidates; and 4) organizing seminar series and workshops.

**Graduate Student Research Assistant**, CILER, University of Michigan. 09/98 – 06/05. Coordinated and led a research project to assess the aquatic toxicity and potential environmental impacts of using a biocide for treating ballast water in order to reduce the risk of release of aquatic nonindigenous species. Responsibilities included conducting aquatic toxicity experiments, analyzing toxicity data, supervising technicians, and writing reports, manuscripts, and grants.

**Graduate Research Assistant**, Oregon State University, Corvallis, OR. 01/96 - 09/96. Evaluated application of scientific principles to the design of marine protected areas.

**Research Assistant**, Department of Physiology, University of Utah, 09/93 - 06/94. Conducted research characterizing the sensitivity and specificity of the zebrafish (*Danio rerio*) olfactory system.

## PEER-REVIEWED PUBLICATIONS

- Syberg, K., F.R. Khan, H. Selck, A. Palmqvist, G. Banta, J. Daley, **L. Sano**, M.B. Duhaime. 2015. Microplastics: Addressing ecological risk through lessons learned. *Environmental Toxicology and Chemistry* 34:945-953.
- Kashian, D.R., A. Krause, **L. Sano**, B. Nowell, and K. Drouillard. 2014. Capacity building in stakeholders around Detroit River Fish Consumption Advisory Issues. *Freshwater Science* 33:674-778.
- Sano, L.L.**, S.M. Bartell, and P.F. Landrum. 2005. Decay model for biocide treatment of unballasted vessels: Application for the Laurentian Great Lakes. *Marine Pollution Bulletin* 50:1050-1060.
- Sano, L.L.**, A. Krueger, and P.F. Landrum. 2005. Chronic toxicity of glutaraldehyde: Differential sensitivity of three freshwater organisms. *Aquatic Toxicology* 71:283-296.
- Sano, L.L.**, M. A. Mapili, A. Krueger, E. Garcia, D. Gossiaux, K. Phillips, and P.F. Landrum. 2004. Comparative efficacy of potential chemical disinfectants for treating unballasted vessels. *Journal of Great Lakes Research* 30:201-216.
- Sano, L.L.**, R.A. Moll, A. Krueger, and P.F. Landrum. 2003. Assessing the potential efficacy of glutaraldehyde for biocide treatment of un-ballasted transoceanic vessels. *Journal of Great Lakes Research* 29:545-557.
- Michel, W.C. and **L.M. Lubomudrov**. 1995. Specificity and sensitivity of the olfactory organ of the zebrafish, *Danio rerio*. *Journal of Comparative Physiology A – Sensory Neural and Behavioral Physiology* 177:191-199.

## OTHER PUBLICATIONS

- Kirkwood, W. and **L. Sano**. 2009. Developing new instrumentation for *in situ* experimentation related to ocean acidification – scaling up pH effects from lab to the field. *Current: The Journal of Marine Education* 25: 13-14.
- Smith, J., E. Rauer, **L. Sano**. 2009. Resilient coral reef ecosystems provide a glimmer of hope for the future. *Current: The Journal of Marine Education* 25: 33-36.
- Lentsch, L.D., B.G. Hoskins, and **L.M.Lubomudrov**. 1998. The White River and endangered fish recovery: A hydrological, physical, and biological synopsis. Prepared for the Recovery Implementation Program for Endangered Fish Species of the Upper Colorado River Basin, Project No. 21. Publication of the Utah Division of Wildlife Resources, Salt Lake City, Utah.

## GRANTS

- Cotel, Riseng, Sano (team member). Stream Restoration for Graduates: Enhancing multidisciplinary learning through course augmentation and in-stream experiential activities. University of Michigan Water Center. \$9,996, 04/14 – present.
- Sano, Saarinen, Napieralski, Petrella et al. Monitoring fish community responses to restoration activities in the Rouge watershed. University of Michigan Water Center, \$49,901, 05/13 – present.
- Duhaime, Wigginton, Beletsky, Chen, Sano (team member) et al. Microplastics in the Great Lakes: Towards establishing a long-term multidisciplinary research platform to assess the impact of microplastics on Laurentian Great Lakes ecosystem health. \$272,244, University of Michigan Water Center, 12/13 – present.
- Guinotte, Sano, et al. Climate Change and Marine Ecosystems: Science, Education, and Potential Alternatives. Educational Foundation of America. \$125,000, 02/08 – 01/10.

Kashian, Sano, Krause, et al. What are the Causes, Consequences, and Correctives of fish contamination in the Detroit River AOC that cause health consumption advisories? Michigan Sea Grant. \$220,000, 02/07-08/10.

Scavia, Sano, et al. Biological Monitoring Program – Great Lakes National Program Office, Environmental Protection Agency. \$3,499,801, 03/07 – 02/12.

Scavia, Hook, Sano, et al. Great Lakes Workshop Series. Office of the Vice President for Research. University of Michigan, \$8,000, 09/06 – 04/07.

Scavia, Sano, et al. Forecasting the causes, consequences, and potential solutions for hypoxia in Lake Erie. \$ 2,505,746, 09/06 – 04/11.

Rutherford, Bartell, Sano. Forecasting hypoxia effects on food web dynamics in the central basin of Lake Erie. NOAA-GLERL. \$39,900, 07/05 – 07/06.

Landrum, Bartell, Sano. Assessing ecological risks posed by a ballast water disinfectant. NOAA. \$71,257, 12/02 – 03/04.