

## SHANE C. LISHAWA

Institute of Environmental Sustainability  
Loyola University Chicago  
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## Research Associate

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## Education

M.S. Forestry, University of Vermont, 2005  
B.S. Resource Ecology and Management, University of Michigan, 2001

## Professional Experience

*Research Associate:* Loyola University Chicago. Chicago, Illinois: 2007-present  
*Adjunct Instructor:* University of Michigan Biological Station. Pellston, Michigan: 2007  
*Field Biologist / GIS specialist:* Wisconsin Department of Natural Resources. Madison, Wisconsin: 2005-2007  
*Research Assistant:* University of Vermont, School of Environment and Natural Resources.  
Burlington, Vermont: 2003-2005  
*Ecology Educator:* Ferry Beach Ecology School. Saco, Maine: 2002-2003  
*Research Assistant:* University of Michigan. Ann Arbor, Michigan: 2002-2003

## Courses Taught

Solutions to Environmental Problems	Field Natural History
Advanced STEP: Renewable Energy	Field Botany
General Ecology	Field Ornithology
Biological Research	Independent Study in Biology

## Professional Contributions

### Peer reviewer

Wetlands Ecology and Management: 2018  
Aquatic Botany: 2017  
Journal of Great Lakes Research (*Journal of the International Association for Great Lakes Research*): 2016  
Freshwater Biology: 2016  
Aquatic Sciences: 2015  
Wetlands (*Journal of the Society of Wetland Scientists*): 2010-present  
Hydrobiologia (*The international journal of aquatic sciences*): 2012  
Environmental Engineering (*The journal of ecosystem restoration*): 2013

### Grant reviewer

United States Environmental Protection Agency; Environmental Education grants: 2011-2012

## Experience Narrative

Shane is driven to find sustainable solutions to environmental problems through innovation and collaboration between managers, academics and community organizations. He has conducted invasive species research since 2003. Since 2008, he has examined the ecological impacts of invasive cattails on Great Lakes coastal wetlands, evaluated potential restoration strategies and has conducted renewable energy research and teaching.

## Synergistic Activities

Faculty co-mentor: *Loyola Undergraduate Research Opportunities Program* (2008-present).  
Wetland soils presenter: *Taller de Metodos y Estimacion de Carbono en Suelos* (5th annual US Forest Service International Program: *Belowground Carbon Methods Workshop*, 2017). Taught 15 forestry professionals from Latin American and the Caribbean about sampling soils from Great Lakes coastal wetland ecosystems.  
Research mentor for NSF funded Research Experience for Undergraduates, *Biosphere-Atmosphere interactions in a Changing Global Environment* at UMBS (2009-present).  
Environmental educator: Developed and delivered curriculum presenting Great Lakes ecological research to Michigan Native American Tribal students for the *Native Youth Program, Camp Kinomaage* (2011-2017).  
Co-developed a biodiesel outreach education program; worked with 25 local high schools (2008).

*Synergistic Activities cont.*

Developed curricula for and co-taught Solutions to Environmental Problems (STEP) courses through the Loyola Center for Urban Environmental Research and Policy (2007-2008). In STEP, students from diverse majors, including Natural Sciences, Social Sciences, Communication, Business, Economics, Education, and Law, work collaboratively to address environmental issues on campus and in the community.

**Grants and Awards**

*Extramural Grants Received*

- Michigan Departments of Natural Resources, Environmental Quality and Agricultural and Rural Development: Invasive Species Grant Program. \$386,083 (February 2018) *Statewide risk assessment and adaptive management of European frogbit*. **Shane Lishawa**, Jodi Brandt, Eric Clark, Andrew Monks.
- Environmental Protection Agency: People, Prosperity, and the Planet Award. Phase I. \$15,000 (2017) *Anaerobic digestion for a zero waste urban campus*. **Shane C. Lishawa**, Zach Waickman, Andrew Monks, Brendan Carson, Zhenwei Zhu. Grant funds will be used to assess the potential to establish an anaerobic digester on the Loyola campus and to support undergraduate research experiences.
- United States Department of Agriculture: Michigan Conservation Innovation Grant 2017. \$74,976 (2017, Notice of Award Pending). *Recycling watershed nutrients by using wetland invasive plants to improve crop soil health and fertility, while reducing downstream nutrient loads*. Douglas R. Pearsall, **Shane C. Lishawa**, Eric Dunton, Dennis Albert.
- Wisconsin Department of Natural Resources. \$8,000 (August 2016) *Horicon Marsh invasive cattail harvest and anaerobic digestion*. **Shane Lishawa** and Brendan Carson.
- Environmental Protection Agency: Great Lakes Restoration Initiative. \$649,695 (July 2016) *Increasing biodiversity and habitat complexity in invaded wetlands*. **Shane Lishawa**, Nancy Tuchman, Eric Clark, Amy Schrank, Dennis Albert, Nicholas Reo, Beth Lawrence.
- Michigan Departments of Natural Resources, Environmental Quality and Agricultural and Rural Development: Invasive Species Grant Program. \$283,510 (March 2016) *Novel approaches to European frogbit detection and management*. **Shane Lishawa**, Eric Clark, Dennis Albert, Jodi Brandt, Nick Cassel.
- Saginaw Bay Watershed Initiative Network. \$10,000 (December 2015) *Managing nutrients at Shiawassee National Wildlife Refuge through invasive cattail harvesting*. **Shane Lishawa**, Brendan Carson, Dennis Albert.
- Cleveland Museum of Natural History. \$4,895 (September 2015) *Harvesting Phragmites from Mentor Marsh*. **Shane Lishawa** and Brendan Carson. Grant funds used for a *Phragmites australis* harvest and biomass utilization pilot project.
- Environmental Protection Agency: Great Lakes Restoration Initiative. Invasive species prevention and control. \$499,727 (February 2014) *Furthering capacity to maintain high quality coastal wetlands in northern Michigan*. Nancy Tuchman, **Shane Lishawa**, Dennis Albert, Beth Lawrence, Gregory Zimmerman, and Knute Nadelhoffer.
- Environmental Protection Agency: People, Prosperity, and the Planet Award. Phase II. \$90,000 (June 2013) *From pollution to possibility: A sustainable and interdisciplinary solution to biodiesel production wastewater*. David Crumrine, Lane Vail, and **Shane Lishawa**. Grant funds used to develop an integrated biological waste-water treatment facility and to support undergraduate research experiences.
- United States Department of Agriculture. \$28,500 (September 2012) *Sustainable urban agricultural education for a food secure and sustainable future: A workshop series*. Nancy Tuchman, Lane Vail, **Shane Lishawa**, Stephen Mitten, and Christopher Peterson. Seed-grant for curriculum development and the development of a Large-scale Comprehensive Initiative grant proposal in 2014.
- Environmental Protection Agency: People, Prosperity, and the Planet Award. Phase I. \$15,000 (September 2012) *From pollution to possibility: A sustainable and interdisciplinary solution to biodiesel production wastewater*. David Crumrine, Lane Vail, and **Shane Lishawa**. Grant funds used to develop an integrated biological waste-water treatment facility and to support undergraduate research experiences.

**Extramural Grants Received cont.**

Environmental Protection Agency: Great Lakes Restoration Initiative. Innovative Environmental approaches. \$449,603 (September 2010) *A sustainable approach for restoring wetland biodiversity*. Nancy Tuchman, Dennis Albert, and **Shane Lishawa**.

Environmental Protection Agency: People, Prosperity, and the Planet Award. \$75,000 (April, 2008) *Biodiesel Education: Green-collar recruiting and environmental education for the next generation (BE:GREEN)*. Nancy Tuchman, Daniel Larkin, **Shane Lishawa**, Alison Varty, and Luke Beasley. Grant funds used start a comprehensive renewable energy high school outreach program.

**Intramural Grants Received**

Office of Research Services Manuscript Publication Assistance grant \$1,000 (2017). Partially supported the publication fees for the *Frontiers in Plant Science* article: *Mechanical harvesting effectively controls young *Typha* spp. invasion and unmanned aerial vehicle data enhances post-treatment monitoring*.

Provost's Summer Research Fellowship \$60,000 (2015-2017) Increasing the resilience of Great Lakes coastal wetlands to invasive species through Indigenous community-researcher collaboration. Shane Lishawa, Nancy Tuchman and Brian Ohsowski.

Institute of Environmental Sustainability. Undergraduate Research Fellowship \$2000 (2013). From invasives to energy: Methane production potential of invasive plant species and food waste. Awarded with Tapas Patel (student fellow), and David Crumrine.

Center for Urban Environmental Research and Policy CUERP Undergraduate Fellowship \$2,000 (2011) Characterizing the potential of Great Lakes wetland invaders to produce biogas. Awarded with Erin Throop (student fellow), Beth Lawrence, and Nancy Tuchman.

Mulcahy Scholars Program \$2,000 (2009) Invasive plant species and wetland denitrification rates: Effects of water level and time since invasion. Awarded with Owen McKenna (student fellow) and Nancy Tuchman.

Core Curriculum Innovation Award. \$5,000 (May 2008) Core Curriculum Committee and the Provost's Office. Shane Lishawa and Alison Varty. For designing an environmental studies course that fulfills the University's Civic Engagement and Leadership core value area.

**Publications and presentations**

**Peer-reviewed journal**

Keyport S, Carson BD, Johnson O, Lawrence BA, Lishawa SC, Tuchman NC, Kelly JJ. *In Press*. Effects of harvesting an invasive hybrid cattail on abiotic and biotic wetland properties. **Restoration Ecology**.

Carson, BD, Lishawa SC, Tuchman NC, Monks AM, Lawrence BA, Albert DA. Harvesting invasive plants to reduce nutrient loads and produce bioenergy: an assessment of Great Lakes coastal wetlands. **Ecosphere**. 9 (6): e02320. 10.1002/ecs2.2320

Lishawa SC, Carson BD, Brandt JS, Tallant JM, Reo NJ, Albert DA, Monks AM, Lautenbach JM, Clark E. 2017. Mechanical harvesting effectively controls young *Typha* spp. invasion and unmanned aerial vehicle data enhances post-treatment monitoring. **Frontiers in Plant Science**. 8 (619): 1-14.

Lawrence BA, Lishawa SC, Hurst N, Castillo BT, Tuchman NC. 2017. Wetland invasion by *Typha × glauca* increases soil methane emissions. **Aquatic Botany**. 137 (1): 80-87.

Lawrence BA, Bourke K, Lishawa SC, Tuchman NC. 2016. *Typha* invasion associated with reduced aquatic macroinvertebrate abundance in northern Lake Huron coastal wetlands. **Journal of Great Lakes Research**. 42 (6): 1412-1419.

Lawrence BA, Lishawa SC, Rodriguez Y, Tuchman NC. 2016. Herbicide management of invasive cattail (*Typha × glauca*) increases porewater nutrient concentrations. **Wetlands Ecology and Management**. 24 (4): 457-467.

Lishawa SC, Lawrence BA, Albert DA, Tuchman NC. 2015. Biomass harvest of invasive *Typha* promotes plant diversity in a Great Lakes coastal wetland. **Restoration Ecology**. 23 (3): 228-237.

Lishawa SC, Jankowski-Giefer KJ, Geddes P, Larkin DJ, Monks AM, Tuchman NC. 2014. Denitrification in a Laurentian Great Lakes coastal wetland invaded by hybrid cattail (*Typha × glauca*). **Aquatic Sciences**. 76 (4): 483-495.

**Peer-reviewed journal publications cont.**

- Lishawa SC, Treering DJ, Vail LM, McKenna O, Grimm EC, Tuchman NC. 2013. Reconstructing plant invasions using historical aerial imagery and pollen core analysis: *Typha* in the Laurentian Great Lakes. **Diversity and Distributions**. 19 (1): 14-28.
- Larkin DJ, Lishawa SC, Tuchman NC. 2012. Appropriation of Nitrogen by the invasive cattail *Typha* × *glauca*. **Aquatic Botany**. 100 (1):62-66.
- Larkin DJ, Freyman MJ, Lishawa SC, Geddes P, Tuchman NC. 2012. Mechanisms of dominance by the invasive hybrid cattail *Typha* X *glauca*. **Biological Invasions**. 14 (1): 65-77.
- Mitchell ME, Lishawa SC, Geddes P, Larkin DJ, Treering DJ, Tuchman NC. 2011. Time-dependent impacts of cattail (*Typha* x *glauca*) invasion in a Great Lakes coastal wetland complex. **Wetlands**. 31 (6): 1143-1149.
- Lishawa SC, Albert DA, Tuchman NC. 2010. Water level decline promotes *Typha* X *glauca* establishment and vegetation change in Great Lakes coastal wetlands. **Wetlands**. 30 (6): 1085-1096.
- Lishawa SC, Schubel AT, Tuchman NC, Varty AK. 2010. Sustainability education as a catalyst for university and community partnerships. **Metropolitan Universities**. 21 (1): 58-72.
- Lishawa SC, Bergdahl DR, Costa S. 2007. Winter conditions in eastern hemlock and mixed hardwood deer wintering areas of Vermont. **Canadian Journal of Forest Research**. 37 (3): 697-703.

**Book chapters**

- Varty AK, Lishawa SC, Tuchman NC. 2011. Sustainability education through an interdisciplinary and service-learning approach. In **Social Responsibility and Sustainability: Multidisciplinary Perspectives Through Service Learning**. Ed. T. McDonald. Stylus Publishing. New York, NY. 35-58.
- Varty A, Lishawa S. Biodiesel education in high schools. 2009. **Teaching green: The high school years**. Eds. Tim Grant and Gail Littlejohn. New Society Publishers. Gloria Island, Canada. March 2009.

**Papers presented and published abstracts**

- Lishawa SC. 2018. Invasive *Typha* spp. Facilitates Invasive European Frogbit (*Hydrocharis morsus-ranae*) in Great Lakes Coastal Wetlands. **Society of Wetland Scientists Annual Meeting, Denver, CO. May 29-June 1, 2018**.
- Johnson O, Lishawa SC, Lawrence BA. How does Invasive Plant Management affect Carbon Cycling in a Great Lakes Coastal Wetland? **Society of Wetland Scientists Annual Meeting, Denver, CO. May 29-June 1, 2018**.
- Tuchman NC, Lishawa SC. 2018. Nutrient uptake potential by invasive *Typha* × *glauca* in Great Lakes coastal wetlands: A 10-year longitudinal study. **Society of Freshwater Science Annual Meeting, Detroit, MI. May 20-24, 2018**.
- Lishawa SC. 2017. Ecological impacts of invasive cattails in the Great Lakes. **3<sup>rd</sup> International Sustainable Wetland Plant Management Conference: Hybrid cattail management- Promises and perils, Fargo, ND. (May 2017)**.
- Lishawa SC. 2017. Sustainable *Typha* management in the Great Lakes. **3<sup>rd</sup> International Sustainable Wetland Plant Management Conference: Hybrid cattail management- Promises and perils, Fargo, ND. (May 2017)**.
- Berke K, Carson B, Lishawa S, Monks A, Tuchman N. 2017. Nutrient removal in Great Lakes coastal wetlands through successive harvesting of the invasive hybrid cattail (*Typha* × *glauca*). **Loyola University Chicago Climate Change Conference, Chicago, IL (March, 2017)**.
- Lishawa SC, Carson BD, Brandt J, Tallant J, Reo N, Albert D, Monks A, Lautenbach J, Clark E. 2017. Control of *Typha* × *glauca* invasion by mechanical harvesting: comparing field to remotely-sensed data. **Loyola University Chicago Climate Change Conference, Chicago, IL (March, 2017)**.
- Berke K, Carson B, Lishawa S, Monks A, Tuchman N. 2017. Nutrient removal in Great Lakes coastal wetlands through successive harvesting of the invasive hybrid cattail (*Typha* × *glauca*). **Midwest-Great Lakes Chapter Society of Ecological Restoration Conference, Grand Rapids, MI (March 2017)**.
- Lishawa SC. 2016. Adaptive restoration of Great Lakes coastal wetland ecosystems. Invited guest speaker. **University of Michigan Biological Station Winter Research Meeting, Ann Arbor, MI. (February 2016)**.

**Papers presented and published abstracts cont.**

- Lishawa SC. 2016. Harvesting invasive plants from Great Lakes coastal wetlands increases biodiversity, removes nutrients, and provides biomass for green energy. Invited guest speaker. **Water and Land Management in the Bioeconomy Workshop. A regional bioeconomy approach: Partnerships for natural solutions. Winnipeg, Manitoba, Canada** (February 2016).
- Lishawa SC. 2015. Harvesting invasive plants from Great Lakes coastal wetlands increases biodiversity, removes nutrients, and provides biomass for green energy. Invited guest speaker. **Interagency Ecological Restoration Quality Committee** (October 2015).
- Lawrence BA, Lishawa SC, Tuchman NC, Albert DA. 2013. Promoting biodiversity and biofuels through *Typha* harvest. **Society for Ecological Restoration World Conference. Madison, WI.** (October 2013).
- Albert DA, Lishawa SC, Lawrence BA, Tuchman NC. 2013. Great Lakes Coastal Monitoring Provides Baseline Plant Data for Sustainable Wetland Restoration Project. **5th Annual Conference on Ecosystem Restoration, Schaumburg, IL.** (July 2013).
- Lawrence BA, Lishawa SC, Tuchman NC, Albert DA. 2013. Converting invasive plants to bioenergy: An innovative approach to restoring Great Lakes coastal wetlands. **Society for Wetland Scientists annual meeting. Duluth, MN.** (June 2013).
- Lawrence BA, Lishawa SC, Tuchman NC, Albert DA. 2013. Converting invasive plants to bioenergy: an innovative approach to restoring Great Lakes coastal wetlands. **University of Michigan Biological Station Winter Meeting. Ann Arbor, MI.** (February 2013).
- Lishawa SC, Lawrence BA, Albert DA, Tuchman NC. 2012. Plant community response to experimental *Typha* × *glauca* restoration in Great Lakes coastal wetlands. **Chicago Wilderness Congress. Chicago, IL.** (November 2012).
- Greene K, Tuchman NC, Lawrence B, Lishawa SC. 2012. Effects of *Typha x glauca* on aquatic macroinvertebrate communities in Northern Lake Huron Coastal Wetlands. **17<sup>th</sup> Annual Conference of the Wisconsin Wetlands Association, Lake Geneva, WI.** (February 2012).
- McKenna, O, Treering D, Miceli D, Vail L, Lishawa S, Tuchman NC. 2010. Reconstructing the history of emergent wetland plant invasions using aerial photo interpretation. **Joint annual meeting of the North American Benthological Society and the American Society of Limnology and Oceanography, Santa Fe, NM.** (June 2010).
- Mitchell, ME., Geddes P, Larkin D, Lishawa S, Treering D, Tuchman NC. 2010. Constructing a timeline of *Typha x glauca* invasion: Ecological impacts after more than fifty years of invasion in Great Lakes coastal wetlands. **Joint annual meeting of the North American Benthological Society and the American Society of Limnology and Oceanography, Santa Fe, NM.** (June 2010).
- Varty A, Lishawa S, Tuchman N. 2008. Engaging students in campus sustainability initiatives through innovative courses. **Proceedings of the Association for the Advancement of Sustainability in Higher Education 2nd Biennial Expo. Raleigh, NC.** (November 2008).
- Lishawa SC, Bergdahl DR. 2005. Hemlock woolly adelgid risk assessment in deer wintering areas of southern Vermont. **Proceedings of the Third Symposium on Hemlock Woolly Adelgid in the Eastern United States. Asheville NC.** (February 2005).

**Professional Society Memberships**

- The Society for Wetland Scientists (SWS)  
Society for Ecological Restoration (SER)

**Undergraduate Student Supervision**

- 2018 Olivia Niosi. LUROP IES Fellow. Using watershed mapping to examine nutrient inputs of Great Lake coastal wetlands (co-mentor).
- 2018 Maggie O'Brien. LUROP IES Fellow. Evaluating the seed banks of *Typha*-invaded wetlands (co-mentor).
- 2018 Rene Belleville. LUROP IES Fellow. *Typha* × *glauca* and waterfowl food availability in Great Lakes coastal wetlands (co-mentor).
- 2017 Mason Majszak. LUROP Mulcahy Fellow. Curation and database design for 15 years of multi-institution wetland restoration data in Great Lakes Coastal Wetlands (co-mentor).

**Undergraduate Student Supervision cont.**

- 2015-2016 Leanne Ngo. LUROP Carbon Fellow. Invasive plant biomass harvesting as a means of conducting phytoremediation of contaminated sediments in the Grand Calumet River (co-mentor).
- 2015 Samantha Keyport. IES Undergraduate Fellow. Microbial community structures in the Cheboygan Marsh (co-mentor).
- 2015 Olivia Johnson. University of Michigan Biological Station summer research fellow. Effects of *Typha* management on wetland greenhouse gas emissions (co-mentor).
- 2015 Matt Connors. University of Michigan Biological Station summer research fellow. Effects of *Typha* management on wetland carbon storage (co-mentor).
- 2013 – 2014 Emily Tuchman. Student in Loyola University Chicago *Biological Research* and *Independent Study in Biology* courses (mentor).
- 2013 Yarency Rodriguez. University of Michigan Biological Station. National Science Foundation Research Experience for Undergraduates (mentor).
- 2013 Nia Hurst. University of Michigan Biological Station. National Science Foundation Research Experience for Undergraduates (mentor).
- 2013 – 2014 Tapas Patel. Loyola University Chicago. Institute of Environmental Sustainability. Undergraduate Research Fellow (mentor).
- 2011 – 2013 Erin Throop CUERP Undergraduate Fellow (co-mentor).
- 2011 Buck Castillo. University of Michigan Biological Station. National Science Foundation Research Experience for Undergraduates (mentor).
- 2008 – 2011 Owen McKenna. Undergraduate research assistant (co-mentor).
- 2010 Anna Sjodin. University of Michigan Biological Station. National Science Foundation Research Experience for Undergraduates (mentor).
- 2008 –2010 Michal Olszewski. Undergraduate research assistant (co-mentor).
- 2009 Andrew Monks. University of Michigan Biological Station. National Science Foundation Research Experience for Undergraduates (mentor).
- 2008 – 2009 David Miceli. Undergraduate research assistant (co-mentor).
- 2008 Kaitlin Koch. Undergraduate research assistant (co-mentor).