

Joseph Stachelek

CONTACT INFORMATION

Department of Fisheries and Wildlife
Michigan State University
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East Lansing, MI 48824 USA

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EDUCATION

PhD, Fisheries and Wildlife, Michigan State University	2016 to 2020 (expected)
MS, Marine Science, University of Texas at Austin	2009 to 2012
BS, Marine Science, University of Maine	2004 to 2008

PROFESSIONAL EXPERIENCE

Research Scientist, South Florida Water Management District	2012 to 2016
<i>Water quality modelling, data curation, and GIS tool development.</i>	
Research Technician, University of Texas Marine Botany Lab	2008 to 2009
<i>Laboratory nutrient assays, wetland surveys, and database management.</i>	

REFEREED PUBLICATIONS

- [17] Hanson, P., Stillman, A.B., Jia, X., Karpatne, A., Dugan, H.A., Carey, C.C., **Stachelek, J.**, Ward, N.K., Zhang, Y., Read, J.S., Kumar, V., 2020. Predicting lake surface water phosphorus dynamics using process-guided machine learning. *Ecological Modelling*, 10.1016/j.ecolmodel.2020.109136.
- [16] **Stachelek, J.**, Weng, W., Carey, C.C., Kemanian, A.R., Cobourn, K.M., Wagner, T., Weathers, K.C., Soranno, P.A., 2020. Granular measures of agricultural land-use influence lake nitrogen and phosphorus differently at macroscales. *Ecological Applications*, 10.1002/eap.2187.
- [15] Servais, S., Kominoski, J.S., Coronado-Molina, C., Bauman, L., Davis, S.E., Gaiser, E.E., Kelly, S., Madden, C., Mazzei, V., Rudnik, D., Santamaria, F., Sklar, F.H., **Stachelek, J.**, Troxler, T.G., Wilson, B.J., 2020. Effects of saltwater pulses on soil microbial enzymes and organic matter breakdown in freshwater and brackish coastal wetlands. *Estuaries and Coasts*, 10.1007/s12237-020-00708-1.
- [14] Soranno, P.A., Cheruvilil, K.S., Liu, B., Wang, Q., Tan, P.N., Zhou, J., King, K.B.S., McCullough, I.M., **Stachelek, J.**, Bartley, M., Filstrup, C.T., Hanks, E.M., Lapierre, J.F., Lottig, N.R., Schliep, E.M., Wagner, T., Webster, K.E., 2020. Ecological prediction at macroscales using big data: Does sampling design matter? *Ecological Applications*, 10.1002/eap.2123.
- [13] Wagner, T., Lottig, N., Bartley, M.L., Hanks, E.M., Schliep, E.M., Winkle, N.B., King, K.B.S., McCullough, I., **Stachelek, J.**, Cheruvilil, K.S., Filstrup, C.T., Lapierre, J.F., Liu, B., Soranno, P.A., Tan, P.N., Wang, Q., Webster, K., Zhou, J. 2019. Increasing accuracy of lake nutrient predictions in thousands of lakes by leveraging water clarity data. *Limnology and Oceanography: Letters*, 10.1002/lol2.10134.

- [12] McCullough, I., King K., **Stachelek, J.**, Diaz, J., Soranno, P.A., Cheruvilil K.S. 2019. Applying the patch-matrix model to lakes: a connectivity-based conservation framework. *Landscape Ecology*, [10.1007/s10980-019-00915-7](https://doi.org/10.1007/s10980-019-00915-7).
- [11] Qian, S.S., Stow, C.A., Nojavan, F., **Stachelek, J.**, Cha, Y., Alameddine, I., Soranno, P.A. 2019. The Implications of Simpson's Paradox for Cross-Scale Inference Among Lakes. *Water Research*, [10.1016/j.watres.2019.114855](https://doi.org/10.1016/j.watres.2019.114855).
- [10] McCullough, I., Cheruvilil, K.S, Lapierre, J.F., Lottig, N., Moritz, M., **Stachelek, J.**, Soranno, P.A. 2019. Do lakes feel the burn? Ecological consequences of increasing exposure of lakes to fire in the continental United States. *Global Change Biology*, 25(9), 2841-2854. [10.1111/gcb.14732](https://doi.org/10.1111/gcb.14732).
- [9] Collins, S.M., Yuan, S., Tan, P.N., Oliver, S.K., Lapierre, J.F., Cheruvilil, K.S., Fergus, C.E., Skaff, N.K., **Stachelek, J.**, Wagner, T., Soranno, P.A. 2019. Winter Precipitation and Summer Temperature Predict Lake Water Quality at Macroscales. *Water Resources Research*, 55(4), 2708-2721. [10.1029/2018WR023088](https://doi.org/10.1029/2018WR023088).
- [8] **Stachelek, J.**, Soranno, P.A. 2019. Does freshwater connectivity influence phosphorus retention in lakes? *Limnology and Oceanography*, 64(4), 1586-1599. [10.1002/lno.11137](https://doi.org/10.1002/lno.11137).
- [7] Ward, N.K., Fitchett, L., Hart, J.A., Shu, L., **Stachelek, J.**, Weng, W., Zhang, Y., Dugan, H., Hetherington, A., Boyle, K., Carey, C.C., Cobourn, K.M., Hanson, P.C., Kemanian, A.R., Sorice, M.G., Weathers, K.C. 2018. Integrating fast and slow processes is essential for simulating human-freshwater interactions. *Ambio*, 48(10), 1169-1182 [10.1007/s13280-018-1136-6](https://doi.org/10.1007/s13280-018-1136-6).
- [6] Wilson, B.J., Servais, S., Mazzei, V., Kominoski, J.S., Hu, M., Davis, S.E., Gaiser, E., Sklar, F., Bauman, L., Kelly, S., Madden, C., Richards, J., Rudnick, D., **Stachelek J.**, Troxler, T. 2018. Salinity pulses interact with seasonal drydown to increase ecosystem carbon loss in marshes of the Florida Everglades. *Ecological Applications*, 28(8), 2092-2108. [10.1002/eap.1798](https://doi.org/10.1002/eap.1798).
- [5] Mazzei, V., Gaiser, E., Kominoski, J., Wilson, B.J., Servais, S., Bauman, L., Davis, S.E., Kelly, S., Sklar, F.H., Rudnick, D.T., **Stachelek J.**, Troxler, T. 2018. Functional and compositional responses of periphyton mats to simulated saltwater intrusion in the southern Everglades. *Estuaries and Coasts*, 41(7), 2105-2119. [10.1007/s12237-018-0415-6](https://doi.org/10.1007/s12237-018-0415-6).
- [4] **Stachelek J.**, Kelly, S.P, Sklar, F., Coronado, C.M., Troxler, T., Bauman, L. 2018. In-situ simulation of sea-level rise impacts on coastal wetlands using a flow-through mesocosm approach. *Methods in Ecology and Evolution*, 9(8), 1908-1915. [10.1111/2041-210X.13028](https://doi.org/10.1111/2041-210X.13028).
- [3] Cobourn, K.M., Carey, C.C., Boyle, K.J., Duffy, C., Dugan, H.A., Farrell, K.J., Fitchett, L., Hanson, P.C., Hart, J.A., Henson, V.R., Hetherington, A.L., Kemanian, A.R., Rudstam, L.G., Shu, L., Soranno, P.A., Sorice, M.G., **Stachelek J.**, Ward, N.K., Weathers, K.C., Weng, W., Zhang, Y. 2018. From concept to practice to policy: modeling coupled natural and human systems in lake catchments. *Ecosphere*, 9(5):e02209 [10.1002/ecs2.2209](https://doi.org/10.1002/ecs2.2209).
- [2] **Stachelek J.**, Ford, C., Kincaid, D., King, K., Miller, H, and Nagelkirk, R. 2018. The National Eutrophication Survey: lake characteristics and historical nutrient concentrations. *Earth Syst. Sci. Data*, 10, 81-86. [10.5194/essd-10-81-2018](https://doi.org/10.5194/essd-10-81-2018).

- [1] Rougier NP, Hinsén K, <34 alphabetical authors>, **Stachelek J**, <8 alphabetical authors>. 2017. Sustainable computational science: the ReScience initiative. *PeerJ Computer Science*. 3:e142 [10.7717/peerj-cs.142](https://doi.org/10.7717/peerj-cs.142).

PUBLIC DATASETS [3] **Stachelek J**. 2019. Freshwater connectivity and stream morphology metrics for Northeast and Midwestern US lakes. <https://doi.org/10.5281/zenodo.2554212>

- [2] **Stachelek J**, Ford C., Kincaid D., King K., Miller H., Nagelkirk R. 2017. The National Eutrophication Survey: lake characteristics and historical nutrient concentrations. *KNB Data Repository* <http://dx.doi.org/10.5063/F10G3H3Z>

- [1] Madden C, **Stachelek J**, Kelly S, Blaha M. 2017. Florida Bay water quality estimated by underway flow-through measurement. *KNB Data Repository* <http://dx.doi.org/10.5063/F11R6NGR>

SOFTWARE AND
PACKAGE
DEVELOPMENT
(SEE DATA SCIENCE PORTFOLIO)

- [8] **Stachelek, J**. 2019. gssurgo: Python toolbox enabling an open source gSSURGO workflow. Python toolbox.

- [7] **Stachelek, J**. 2019. nhdR: Tools for working with the National Hydrography Dataset. R package.

- [6] **Stachelek J**, Oliver S. 2019. LAGOSNE: Interface to the Lake Multi-scaled Geospatial and Temporal Database. R package.

- [5] **Stachelek J**. 2019. dbhydroR: Everglades Hydrologic and Water Quality Data from R. R package.

- [4] Chamberlain, S., Anderson, B., Salmon, M., Erickson, A., Potter, N., **Stachelek, J**, Simmons, A., Ram, K., Hart, E. 2019. rnoaa: 'NOAA' Weather Data from R. R package.

- [3] **Stachelek J**. 2018. wikilake: Scrape Lake Metadata Tables from Wikipedia. R package.

- [2] **Stachelek J**. 2018. ipdw: Interpolation by Inverse Path Distance Weighting. R package.

- [1] Hollister, J.W., **Stachelek J**. 2018. lakemorpho: Lake Morphometry Metrics in R. R package.

CONFERENCE
PRESENTATIONS

- [27] **Stachelek, J**, Rodriguez L., Soranno P.A. 2019. Spatial patterning and prediction of lake depth at continental scales. Poster Presentation at the Global Lake Ecological Observatory Network Meeting, Huntsville, ON, CA. Nov 6 2019.

- [26] **Stachelek, J**, <8 authors>. 2019. Analysis of 500 lake catchments reveals the relationship between crop type, fertilizer and manure inputs and lake nutrient concentrations. Oral Presentation at the Ecological Society of America Meeting, Louisville, Kentucky, USA. Aug 13 2019.

- [25] McCullough, I.M., King, K., **Stachelek, J**, <3 authors>. 2019. No lake left behind: Do protected areas facilitate biological connectivity among lakes? Oral Presentation at the Ecological Society of America Meeting, Louisville, Kentucky, USA. Aug 13 2019.

- [24] Kelly, S.P., **Stachelek, J**, Strazisar, T. 2019. Examining the effects of sea-level rise on Everglades coastal marshes using coupled mesocosm and in-situ field manipulations: design and implementation. Oral Presentation to the Greater Everglades Ecosystem Restoration Conference, Coral Springs, Florida, USA. Apr 2019.

- [23] **Stachelek, J.**, Soranno, P.A. 2018. [Does Lake and Stream Connectivity Control Phosphorus Retention in Lakes?](#) Oral Presentation to the Association for the Sciences of Limnology and Oceanography, Victoria, British Columbia, CA. Jun 15 2018.
- [22] Smith, N., Soranno, P.A., Cheruveill, K., Gries, C., **Stachelek, J.** 2018. Mapping a Journey Towards Open Science: Lessons Learned Building a Lake Water Quality Geodatabase. Oral Presentation at the American Water Resources Association GIS & Water Resources X Conference, Orlando, Florida, USA. Apr 23 2018.
- [21] **Stachelek, J.**, Soranno, P.A. 2017. [Does Connectivity Control Lake Phosphorus Retention?](#) Poster Presentation at the Global Lake Ecological Observatory Network Meeting, New Paltz, New York, USA. Nov 29 2017.
- [20] Collins, S.M., Cheruvilil, K.S., Fergus, C.E., Lapierre, J.F., Oliver, S.K., Scott, C.E., Skaff, N.K., Soranno, P.A., **Stachelek, J.**, Tan, P., Yuan, S. and Wagner, T. 2017. Which measures of climate are the best predictors of lake water quality at sub-continental scales? Oral Presentation at the Ecological Society of America Meeting, Portland, Oregon, USA. Aug 06 2017.
- [19] Nowosad, J., Teucher A., **Stachelek, J.**, Cotton, R., Vitolo, C. 2017. The State of Data on CRAN: Discovering Good Data Packages. Oral Presentation at the rOpenSci Unconference, Los Angeles, CA, USA. May 26 2017.
- [18] Madden, C.J., M. Koch, T. Strazisar, T. Troxler, Y. Shangguan, S.P. Kelly, **J. Stachelek**, R.M. Price, and F.H. Sklar, 2017. Interconnections in the Everglades and Florida Bay Watershed: Implications for Ecosystem Integrity. 2017 American Water Resources Association Spring Conference, Snowbird, Utah, May 3, 2017.
- [17] Sklar, F.H., C. Coronado-Molina, **J. Stachelek**, S.P. Kelly, and T. Troxler, 2017. Coastal Subsidence as a Function of Salinity Intrusion and Peat Decomposition in a Karst Environment. Greater Everglades Ecosystem Restoration Meeting, Coral Springs, Florida, April 20, 2017.
- [16] **Stachelek, J.** 2017. [Lake Connectivity Effects on Phosphorus in 1,000s of Lakes.](#) Oral Presentation at the Michigan State University Fisheries and Wildlife Graduate Research Symposium. Feb 24 2017.
- [15] Kominoski, J, Evelyn Gaiser, Tiffany Troxler, <12 others>, **Stachelek, J.**, <20 others>. 2016. Saltwater intrusion and carbon loss: identifying the biogeochemical attributes that drive differential responses among coastal wetlands. Poster Presentation at the International Long Term Ecological Research Meeting, Kruger National Park, South Africa. Oct 09 2016.
- [14] **Stachelek, J.**, Madden, C.J., Kelly, S., Blaha, M. 2016. [Fine-scale spatial patterning of phytoplankton abundance in a coastal estuary.](#) Oral Presentation at the Ecological Society of America Meeting, Fort Lauderdale, Florida, USA. Aug 07 2016.
- [13] Troxler, T.G., <12 others>, **Stachelek, J.**, Wilson, B.J. 2016. Carbon cycle science in the Florida Coastal Everglades: Research to inform carbon and water management. Oral Presentation at the Ecological Society of America Meeting, Fort Lauderdale, Florida, USA. Aug 07 2016.
- [12] Sklar, F.H., Coronado, C., Troxler, T.G., **Stachelek, J.**, Kelly, S., Kominoski, J.S. 2016. Coastal subsidence as a function of salinity intrusion and peat decomposition in a karst

environment. Oral Presentation at the Ecological Society of America Meeting, Fort Lauderdale, Florida, USA. Aug 07 2016.

- [11] **Stachelek, J.** 2015. Resolving Fine-Scale Patterning and Restoration Outcomes in the Coastal Everglades. Oral Presentation at the Greater Everglades Ecosystem Restoration Meeting, Coral Springs, Florida, USA. Apr 21 2015.
- [10] Kominoski, J., Servais, S., B.J. Wilson, V. Mazzei, E.E. Gaiser, T. Troxler, C. Coronado-Molina, S.E. Davis, S.P. Kelly, **J. Stachelek**, F.H. Sklar, C.J. Madden, and L. Bauman. 2015. Effects of increased water salinity and inundation on microbial processing of carbon and nutrients in oligohaline wetland soils. Oral Presentation at the Ecological Society of America 100th Annual Meeting, Baltimore, Maryland, USA. Aug 09 2015.
- [9] Troxler, T., F.H. Sklar, S.E. Davis, E.E. Gaiser, S.P. Kelly, J. Kominoski, C.J. Madden, V. Mazzei, C. Coronado-Molina, D.T. Rudnick, S. Servais, **J. Stachelek**, and B.J. Wilson. 2015. The effects of projected sea-level rise on Everglades coastal ecosystems: Evaluating the potential for and mechanisms of peat collapse. Oral Presentation at the Ecological Society of America 100th Annual Meeting, Baltimore, Maryland, USA. Aug 09 2015.
- [8] Wilson, B., Troxler, T., Gaiser, E., Kominoski, J., Richards, J., Servais, S., **Stachelek, J.**, Kelly, S. Kelly, Sklar, F., Coronado-Molina, C., Madden, C., Davis, S.E., Mazzei, V., Schulte, N., Bauman, L. 2014. Ecosystem Productivity Responses to Saltwater Intrusion and P Loading As a Result of Future Sea Level Rise in the Coastal Everglades. Poster Presentation at the American Geophysical Union Meeting, San Fransisco, California, USA. Dec 15 2014.
- [7] **Stachelek, J.**, Madden, C.J. 2013. High Density Spatial Mapping of Water Quality Patterns Reveals Impacts of Freshwater Inputs in Florida Bay, USA. Poster Presentation at the Coastal and Esutarine Reserach Federation, San Diego, California, USA. Nov 03 2013.
- [6] Madden, C.J., McDonald, A.A., Koch-Rose, M., Glibert, P., Kelly, S.P., **Stachelek, J.** 2013. Exploring Linkages Among Watershed-Estuary Processes in the Southern Everglades, Florida Bay Using Model Synthesis. Oral Presentation at the Coastal and Esutarine Reserach Federation, San Diego, California, USA. Nov 03 2013.
- [5] **Stachelek J.**, Dunton K.H. 2012. [Porewater salinity dynamics in an irregularly flooded marsh](#). Poster Presentation at the Texas Bays and Estuaries Meeting, Port Aransas, Texas, USA. April 2012.
- [4] **Stachelek J.**, Dunton, K.H. 2011. Estimation of freshwater inflow requirements for a semi-arid salt marsh using emergent plants as indicators of ecosystem condition. Oral Presentation at the Coastal and Esutarine Reserach Federation, Daytona Beach, Florida, USA. Nov 06 2011.
- [3] Park, S.R., **Stachelek J.**, Dunton, K.H. 2011. Seasonal variations in photosynthetic characteristics of three major emergent salt marsh plants in the Southwestern Gulf of Mexico. Oral Presentation at the Coastal and Esutarine Reserach Federation, Daytona Beach, Florida, USA. Nov 06 2011.
- [2] **Stachelek J.**, Dunton, K.H. 2011. Porewater salinity dynamics within emergent salt marsh vegetation. Oral Presentation at the Benthic Ecology Meeting, Mobile, Alabama, USA. Mar 16 2011.

- [1] **Stachelek, J.**, Brawley, S.H. 2008. Constructing a guide to intertidal algae of Acadia and testing DNA barcoding. Poster Presentation at the Northeast Algal Society Meeting, Durham, New Hampshire, USA. Apr 18 2008.

WORKSHOPS GIVEN

- Basics of geospatial analysis for research computing. Feb 27 2020, Great Lakes Acoustic Telemetry Observation System (GLATOS) Coordination Meeting.
- Basics of editing Wikipedia, recommended practices, and reasonable workflows. Jun 12 2018, Association for the Sciences of Limnology and Oceanography (ASLO) Meeting.
- Version control software (Git) for application in academic research. Apr 28 2017. MSU EEBB Programming Group.
- Basics of Python and the Linux command line for research computing. Jan 12 2017. MSU Institute for Cyber-enabled Research.

Software Carpentry (certified instructor)

- Lesson Maintainer, (2015 - present), [Geospatial Data Analysis with R](#). Data Carpentry.
- Basics of geospatial analysis for research computing. Sep 26 2017, Lawrence Berkeley National Laboratory.
- Basics of geospatial analysis for research computing. Jul 21 2016, South Florida Water Management District.
- Basics of geospatial analysis for research computing. May 26 2016, South Florida Water Management District.

TEACHING EXPERIENCE

Michigan State University, East Lansing, MI

Teaching Assistant for Water in the Environment

Spring 2019 to Fall 2019

- Taught lectures, administered laboratory practicals, marked assignments and exams.

University of Texas Marine Science Institute, Port Aransas, TX

National Science Foundation GK/12 Graduate Fellow

Fall 2010 to Spring 2011

- Developed GIS lesson material, delivered lessons, evaluated student work.

University of Texas

Teaching Assistant for Introduction to Oceanography

Fall 2009 to Spring 2010

- Taught lectures, administered laboratory practicals, marked assignments and exams.

PROFESSIONAL SERVICE

Journal Referee

- *BioScience*, *rOpenSci*, *Texas Water Journal*, *Journal of Open Source Software* [2], *Journal of Atmospheric and Oceanic Technology*, *Ecological Modelling*, *Frontiers in Ecology and Evolution* [2], *Peerage of Science*, *ReScience*, *Methods in Ecology and Evolution*, *Journal of Open Source Education*

Other Activities

- Provided comments for: Soranno, P., King, K., Poisson, A., **Stachelek, J.**, Boudreau, C., Skaff, N., Smith, N. (2017) Cyberinfrastructure support for collaboration and open science in ecology. NSF Request for Information on Future Needs for Advanced Cyberinfrastructure to Support Science and Engineering Research. <https://www.nsf.gov/cise/oac/ci2030/pdf/RFI-Soranno-261.pdf>
- Participated in the NEON spatio-temporal hackathon (2015) - developed tutorials and assessment instruments to teach fundamental big data skills needed to work efficiently with large spatio-temporal data using open tools, such as R and Python. [link](#)

OUTREACH	<ul style="list-style-type: none"> • Stachelek, J., Hondula, K., Kincaid, D., Shogren, A., Zwart, J., <i>Pending</i>, Ripples on the web: spreading lake information via Wikipedia. LakeLine Magazine. • WikiProject Lakes, Apr 07 2017 - Present, Contributions. • Everglades Day, Feb 20 2016, Guided tours of science activities at the Loxahatchee Impoundment Landscape Assessment, 17th Annual Everglades Day, Loxahatchee National Wildlife Refuge. • Interviewed for: National Public Radio, May 25 2016, Rising Seas Push Too Much Salt Into the Florida Everglades. • Interviewed for: PBS Newshour, June 10 2015, Florida's Everglades face new invasive threat: rising sea levels.
OTHER SOFTWARE SKILLS	<ul style="list-style-type: none"> • Operating Systems: Debian/Ubuntu/Fedora Linux, Windows • Coding languages: R, Python, Fortran • Data management: SQLite, netcdf • Version control systems: Git, GitHub • Web development: 'shiny', css • Data science: HPC, AWS, GNU Make
GRANTS	<ul style="list-style-type: none"> • National Oceanic & Atmospheric Administration, Florida Sea Grant, <i>The effects of projected sea-level rise on Everglades coastal ecosystems: Evaluating the potential for and mechanisms of peat collapse using integrated mesocosm and field manipulations</i>. Assisting Author, PI Tiffany Troxler (FIU) (\$279,216)
HONORS AND AWARDS	<ul style="list-style-type: none"> • MSU Dissertation Completion Fellowship. Summer 2020. • GLEON G21 Student Travel Award. Nov 4 2019. • GLEON G19 Student Travel Award. Nov 27 2017. • Invited participant at the 2017 rOpenSci Conference. May 25 2017. • Finalist for the 2012 NOAA Coastal Management Fellowship for Texas. • Best poster award at the 2012 Texas Bays and Estuaries Meeting. Apr 11 2012. <i>Porewater Water Salinity Dynamics within the Creekbank Areas of an Irregularly Flooded Salt Marsh</i>.
PROFESSIONAL MEMBERSHIPS	<p>Coastal and Estuarine Research Federation Association for the Sciences of Limnology and Oceanography Ecological Society of America Global Lake Ecological Observatory Network Foundation for Open Access Statistics</p>