

STUART A. LUDSIN

Curriculum Vita

PERSONAL INFORMATION

1314 Kinnear Rd., 222 Research Center
Aquatic Ecology Laboratory
Dept. of Evolution, Ecology & Organismal Biology (EEOB)
The Ohio State University (OSU)
Columbus, Ohio 43212

Office: 614-292-1613
Fax: 614-292-0181
Email: ludsin.1@osu.edu
Web: <http://www.ludsinlab.com>
<http://www.ael.osu.edu>

EDUCATION

Ph.D. The Ohio State University, Evolution, Ecology and Organismal Biology (EEOB), Columbus, 2000
M.S. Auburn University, Fisheries and Allied Aquacultures, Auburn, AL, 1994
B.S. Miami University, Zoology, Oxford, OH, 1992

RESEARCH/WORK EXPERIENCE

Professor, EEOB, OSU, Columbus, 2019-present.
Associate Professor, EEOB, OSU, Columbus, 2013-2019.
Assistant Professor, EEOB, OSU, Columbus, 2007-2013.
Research Fishery Biologist, Department of Commerce, National Oceanic and Atmospheric Administration, Great Lakes Environmental Research Laboratory, Ann Arbor, MI, 2002-2007.
Post-doctoral Fellow, Great Lakes Institute for Environmental Research (GLIER), Department of Biological Sciences, University of Windsor, Windsor, ON, Canada, 2001-2002.
Graduate Research Associate, OSU, EEOB, Columbus, 1995-2000.
Graduate Research Associate, Auburn University, Fisheries, Auburn, AL, 1992-1994.
Undergraduate Research Assistant, OSU, Zoology, Columbus, May-July 1991.

PREVIOUS UNIVERSITY APPOINTMENTS

Assistant Professor. OSU, Environmental Sciences Graduate Program, Columbus.
Adjunct Associate Professor. University of Michigan, School of Natural Resources and the Environment, Ann Arbor.
Adjunct Assistant Professor. University of Toledo, Biology, Toledo, OH.
Adjunct Assistant Professor. University of Windsor, Biological Sciences, Windsor, ON.
Adjunct Faculty Member. Bowling Green State University, Biological Sciences, Bowling Green, OH.

SELECTED RECENT RESEARCH GRANTS (TOTAL AWARD AMOUNT: (N = 49 TOTAL)

Funding Source	Award Totals
State	\$20,417,997
U.S. Federal	\$ 6,535,728
International	\$ 3,145,161
NGO	\$ 76,000
Total	\$30,174,886

Ongoing

1. Great Lakes Fishery Commission. "Moving toward ecosystem-based fisheries management: Conceptualizing Lake Erie's dynamic ecosystem." Co-PI, 2023-2026, \$330,268.
2. Great Lakes Fishery Commission. "Do summer cyanobacterial blooms negatively affect prey and commercial fish recruitment in the Great Lakes?" Co-PI, 2020-2024, \$364,350 (CAN).
3. Ohio Department of Higher Education. "Toward the improvement of methods to quantify total microcystins and microcystin congeners in fish". PI, 2020-2023, \$63,662.

4. Ohio Department of Natural Resources-Division of Wildlife, Federal Aid in Sport Fish Restoration Program. “Fish Management in Ohio”. PI, 2023-2024, \$1,500,000.
 - Understanding interactions between blue catfish and channel catfish in Ohio. PI, 2023-2024
 - Understanding yellow angling success in western Lake Erie. PI, 2023-2024
 - Understanding central Lake Erie Yellow Perch recruitment dynamics. PI, 2023-2024

Completed

1. NOAA Fisheries. “Great Lakes Fisheries Science Training (FST) workshop for undergraduates.” PI, 2020-2023, \$139,802.
2. Ohio Lake Erie Commission. “HAB & hypoxia impacts on Lake Erie food webs and fisheries.” PI, 2019-2021, \$49,924.
3. National Science Foundation, Division of Integrative Organismal Systems. “The influence of the prey physiological stress response on predator-prey interactions”. Co-PI, 2016-2021, \$652,556.
4. Great Lakes Fishery Commission, Fisheries Research Program. “Moving toward ecosystem-based fisheries management: developing an integrated ecosystem assessment of Lake Erie as a case study”. Co-PI, 2019-2020, \$136,582.
5. NOAA, Ohio Sea Grant College Program. “Stock structure and contribution of west and east basin walleye to recreational and commercial fisheries in Lake Erie”. PI, 2018-2020, \$119,724.
6. Ohio Department of Higher Education. “Physiological, growth and survival response of age-0 yellow perch and walleye to toxic cyanobacteria”. PI, 2018-2020, \$152,886.
7. Ohio Department of Higher Education. “Development of the MMPB method for quantifying total microcystins in edible fish tissues”. PI, 2016-2018, \$156,617.
8. USDA, Natural Resources Conservation Service. “Integrating the cropland and wildlife components of the conservation effects assessment project (CEAP) to assess and forecast benefits of agricultural BMPs to biological endpoints across the western Lake Erie basin watershed”. Co-PI, 2013-2016, \$271,416.
9. NOAA, Ohio Sea Grant College Program. “Impacts of climate change on public health in the Great Lakes through harmful algal blooms”. Co-PI, 2012-2016, \$189,506.
10. NSF, Coupled Natural and Human Systems Program. “Co-evolution of upstream human behavior and downstream ecosystem services in a changing climate”. Co-PI, 2011-2017, \$1,499,995.

SELECTED REFEREED PUBLICATIONS (OUT OF N = 124 IN PRESS OR PUBLISHED)

1. Krabbenhoft, C.A., **S.A. Ludsin**, E.A. Marschall, R.R. Budnik, L.Z. Almeida, C.L. Cahill, H.S. Embke, Z.S. Feiner, P.J. Schmalz, M.J. Thorstensen, M.J. Weber, M.R. Wuellner, and G.J.A. Hansen. 2023. Synthesizing professional opinion and published science to build a conceptual model of Walleye recruitment. *Fisheries* 48:141-156.
2. Robert, D., J. Shoji, P. Sirois, A. Takasuka, I.A. Catalán, A. Folkvord, **S.A. Ludsin**, M.A. Peck, S. Sponaugle, P.M. Ayón, R.D. Brodeur, E.Y. Campbell, E.K. D'Alessandro, J.F. Dower, L. Fortier, A.G. García, K.B. Huebert, M. Hufnagl, S. Ito, M. Joh, F. Juanes, M. Nyuji, Y. Oozeki, G. Plaza, M. Takahashi, Y. Tanaka, N. Tojo, S. Watari, N. Yasue, and P. Pepin. 2023. Life in the fast lane: Revisiting the fast growth—High survival paradigm during the early life stages of fishes. *Fish and Fisheries* 24:863-888.
3. Sinclair, J.S., M.E. Fraker, J.M. Hood, E.D. Reavie, and **S.A. Ludsin**. 2023. Eutrophication, water quality, and fisheries: a wicked management problem with insights from a century of change in Lake Erie. *Ecology and Society* 28(3): 10.
4. Bade, A.P., D.A. Dippold, B.A. Schmidt, M.R. DuFour, T.J. Hartman, and **S.A. Ludsin**. 2022. Angler choices that help catch lots of big fish. *Fisheries* 47:200-212.
5. Dillon, R.A., J.D. Conroy, K.J. Lang, K.L. Pangle, and **S.A. Ludsin**. 2021. Bottom hypoxia alters the spatial distribution of pelagic intermediate consumers and their prey. *Canadian Journal of Fisheries and Aquatic Sciences* 78:522-538.
6. Euclide, P.T., T. MacDougall, J.M. Robinson, M.D. Faust, C.C. Wilson, K.Y. Chen, E.A. Marschall, W. Larson, and **S. Ludsin**. 2021. Mixed-stock analysis using Rapture genotyping to evaluate stock-

- specific exploitation of a walleye population despite weak genetic structure. *Evolutionary Applications* 14:1403-1420.
7. Marcek, B.J., T.M. Farmer, E.A. Marschall, G. Petris, and **S.A. Ludsin**. 2021. Ecosystem change as a driver of fish recruitment dynamics: A case study of two Lake Erie yellow perch populations. *Freshwater Biology* 66:1149-1168.
 8. Sinclair, J.S., M.E. Fraker, J.M. Hood, K.T. Frank, M.R. DuFour, A.M. Gorman, and **S.A. Ludsin**. 2021. Functional traits reveal the dominant drivers of long-term community change across a North American Great Lake. *Global Change Biology* 27:6232–6251.
 9. Briland, R., J.P. Stone, M. Manubolu, J. Lee, and **S.A. Ludsin**. 2020. Cyanobacterial blooms modify food web structure and interactions in western Lake Erie. *Harmful Algae* 92:101586.
 10. Dippold, D.A., N. Aloysius, S.C. Keitzer, H. Yen, J.G. Arnold, P. Daggupati, M.E. Fraker, J.F. Martin, D.M. Robertson, S.P. Sowa, M.V. Johnson, M.J. White, and **S.A. Ludsin**. 2020. Forecasting the combined effects of anticipated climate change and agricultural conservation practices on fish recruitment dynamics in Lake Erie. *Freshwater Biology* 65:1487-1508.
 11. Kua, Z.X., I.A. Hamilton, A.L. McLaughlin, R.M. Brodnik, S.C. Keitzer, J. Gilliland, E.A. Hoskins, and **S.A. Ludsin**. 2020. Water warming increases aggression in a tropical fish. *Scientific Reports* 10:20107.
 12. Stone, J.P., K.L. Pangle, S.A. Pothoven, H.A. Vanderploeg, S.B. Brandt, T.O. Höök, T.H. Johengen, and **S.A. Ludsin**. 2020. Hypoxia's impact on pelagic fish populations in Lake Erie: a tale of two planktivores. *Canadian Journal of Fisheries and Aquatic Sciences* 77:1131-1148.
 13. Chen, K.Y., E.A. Marschall, M.G. Sovic, A.C. Fries, H.L. Gibbs, and **S.A. Ludsin**. 2018. assignPOP: An R package for population assignment using genetic, non-genetic, or integrated data in a machine-learning framework. *Methods in Ecology and Evolution* 9:439-446.
 14. Collingsworth, P.D., D.B. Bunnell, M.W. Murray, Y.C. Kao, Z.S. Feiner, R.M. Claramunt, B.M. Lofgren, T.O. Höök, and **S.A. Ludsin**. 2017. Climate change as a long-term stressor for the fisheries of the Laurentian Great Lakes of North America. *Reviews in Fish Biology and Fisheries*. 27:363-391.
 15. Keitzer, S.C., **S.A. Ludsin**, S.P. Sowa, G. Annis, J.G. Arnold, P. Daggupati, A.M. Froehlich, M.E. Herbert, M.V. Johnson, A.M. Sasson, H. Yen, M.J. White, and C.A. Rewa. 2016. Thinking outside of the lake: Can controls on nutrient inputs into Lake Erie benefit stream conservation in its watershed? *Journal of Great Lakes Research* 42:1322-1331
 16. Farmer, T.M., E.A. Marschall, K. Dabrowski, and **S.A. Ludsin**. 2015. Short, warm winters threaten fish populations. *Nature Communications* 6:7724. doi:10.1038/ncomms8724.
 17. Bunnell, D.B., R.P. Barbiero, **S.A. Ludsin**, C.P. Madenjian, G. Warren, D. Dolan, T. Brenden, R. Briland, O.T. Gorman, J.X. He, T.H. Johengen, B.F. Lantry, T.F. Nalepa, S.C. Riley, C.M. Riseng, T.J. Treska, I. Tsehaye, D.M. Warner, M.G. Walsh, and B.C. Weidel. 2014. Changing ecosystem dynamics in the Laurentian Great Lakes: bottom-up and top-down regulation. *BioScience* 64:26-39.
 18. Carreon-Martinez, L.B., K.W. Wellband, T.B. Johnson, **S.A. Ludsin**, and D.D. Heath. 2014. Novel molecular approach demonstrates turbid river plumes reduce predation mortality on larval fish. *Molecular Ecology* 23:5366–5377.
 19. **Ludsin, S.A.**, K.M. DeVanna, and R.E.H. Smith. 2014. Physical-biological coupling and the challenge of understanding fish recruitment in large lakes. *Canadian Journal of Fisheries and Aquatic Sciences* 71:775-794.
 20. Scavia, D., J.D. Allan, K.K. Arend, S. Bartell, D. Beletsky, N.S. Bosch, S.B. Brandt, R.D. Briland, I. Daloğlu, J.V. DePinto, D.M. Dolan, M.A. Evans, T.M. Farmer, D. Goto, H. Han, T.O. Höök, R. Knight, **S.A. Ludsin**, D. Mason, A.M. Michalak, R.P. Richards, J.J. Roberts, D.K. Rucinski, E. Rutherford, D.J. Schwab, T. Sesterhenn, H. Zhang, and Y. Zhou. 2014. Assessing and addressing the re-eutrophication of Lake Erie: central basin hypoxia. *Journal of Great Lakes Research* 40: 226–246.
 21. Zhang, H., D.M. Mason, C.A. Stow, A.T. Adamack, S.B. Brandt, X. Zhang, D.G. Kimmel, M.R. Roman, and W.C. Boicourt, and **S.A. Ludsin**. 2014. Hypoxia, habitat quality, and the spatial distribution of pelagic fishes in the northern Gulf of Mexico. *Marine Ecology Progress Series* 505:209-226.
 22. Pangle, K.L., T.D. Malinich, D.R. DeVries, D.B. Bunnell, and **S.A. Ludsin**. 2012. Context-dependent planktivory: interacting effects of turbidity and predation risk on adaptive foraging. *Ecosphere* 3: 114.

23. Pangle, K.L., **S.A. Ludsin**, and B.J. Fryer. 2010. Otolith microchemistry as a stock identification tool for freshwater fishes: testing its limits in Lake Erie. *Canadian Journal of Fisheries and Aquatic Sciences* 67:1475–1489.
24. Reichert, J.M., B.J. Fryer, K.L. Pangle, T.B. Johnson, J.T. Tyson, A.B. Drelich, and **S.A. Ludsin**. 2010. River-plume use during the pelagic larval stage benefits recruitment of a lentic fish. *Canadian Journal of Fisheries and Aquatic Sciences* 67:987-1004.
25. **Ludsin, S.A.**, X. Zhang, S.B. Brandt, M.R. Roman, W.C. Boicourt, D.M. Mason, and M. Costantini. 2009. Hypoxia-avoidance by planktivorous fish in Chesapeake Bay: Implications for food web interactions and fish recruitment. *Journal of Experimental Marine Biology and Ecology* 381(Suppl. 1):S121-S131.
26. **Ludsin, S.A.**, B.J. Fryer, and J.E. Gagnon. 2006. Comparison of solution-based versus laser-ablation ICPMS for analysis of larval fish otoliths. *Transactions of the American Fisheries Society* 135:218–231.
27. Mora, C., P.M. Chittaro, P.F. Sale, J.P. Kritzer, and **S.A. Ludsin**. 2003. Patterns and processes in reef fish diversity. *Nature* 421:933-936.
28. **Ludsin, S.A.**, and A.D. Wolfe. 2001. Biological invasion theory: Darwin's contributions from The Origin of Species. *BioScience* 51:780-789.
29. **Ludsin, S.A.**, M.W. Kershner, K.A. Blocksom, R.L. Knight, and R.A. Stein. 2001. Life after death in Lake Erie: nutrient controls drive fish species richness, rehabilitation. *Ecological Applications* 11:731-746.
30. **Ludsin, S.A.**, and D.R. DeVries. 1997. First-year recruitment of largemouth bass: the interdependency of early life stages. *Ecological Applications* 7:1024-1038.

SELECTED AWARDS & HONORS RECEIVED

Invited Keynote Address. Center for Ecosystem Management Symposium, Inaugural Conference, University of Guelph, Guelph, Ontario, Canada, 2023

Invited Keynote Address. Great Lakes of the World Symposium, 10th Annual Conference (Jubilee Celebration), Dar es Salaam, Tanzania, 2023

Invited Keynote Address. Ontario Commercial Fisheries' Association, 75th Annual Conference, Niagara Falls, Ontario, Canada, 2020

Best student presentation. Indiana & Ohio Chapters of the American Fisheries Society, Muncie, IN, 2017.

- Dillon, R., J.D. Conroy, and **S.A. Ludsin**. 2017. Determining potential bias by *Chaoborus* during hydroacoustic surveys of prey fish biomass in Ohio reservoirs.

Chandler-Misener Award, International Association of Great Lakes Research, 2015.

- Most notable paper in the *Journal of Great Lakes Research* during 2014.

Keynote Speaker. Larval Fish Conference, American Fisheries Society, Québec City, Canada, 2014.

Most outstanding poster. Natural and Mathematical Sciences Undergraduate Research Forum, Organismal Biology Division, OSU, 2014.

- Corey, M.M., K.Y. Chen, E.A. Marschall, J.W. Olesik, and **S.A. Ludsin**. Otolith microchemistry as a tool to discriminate between river-spawning populations of walleye in Lake Erie.

Best student presentation. American Fisheries Society – Ohio Chapter, Columbus, 2014.

- Farmer, T.M., E.A. Marschall, K. Dabrowski, and **S.A. Ludsin**. Climate change effects on Lake Erie yellow perch reproduction and recruitment.

Faculty Recognition Award for Outstanding Research Mentorship, Undergraduate Research Opportunities Program (UROP), University of Michigan, 2007.

Employee of the Year. NOAA-GLERL, 2005.

SELECTED PROFESSIONAL SERVICE & SYNERGISTIC ACTIVITIES

Co-organizer. Special issue series on the ecology of Lake Erie (n=4 journal issues, *Aquatic Ecosystem Health and Management*, 2023-present

Editorial Advisor. *Aquatic Ecosystem Health and Management*, Michigan State University Press, 2023-present

Scientific Committee Co-chair. 10th Great Lakes of the World Symposium (GLOW10), Dar es Salaam, Tanzania, 2022-2023

Co-organizer/Moderator. “History & Origin of the Ecosystem Approach” Workshop, Windsor, ON, 2022

Co-organizer/Facilitator. “Great Lakes Fisheries Science Training” Workshop, Stone Laboratory, Gibraltar, Island, Lake Erie, 2022

Board of Technical Experts (BOTE), Great Lakes Fishery Commission, 2007-2020.

- Co-developed the research theme “Physical Processes and Fish Recruitment in Large Lakes”.

Associate Editor

- *Journal of Great Lakes Research*, 2015-2019.
- *Transactions of the American Fisheries Society*, 2005-2008.

Plenary Session Co-organizer. Midwest Fish and Wildlife Conference, Cleveland, OH, 2018-2019.

Coordinator and moderator, OSU-Ohio DNR-Division of Wildlife Lake Erie-Inland Waters Annual Research Review Meeting, Columbus, OH, 2009-2020.

Workshop Developer. Demystifying Proposal Writing. Early Career Event, Larval Fish Conference, Victoria, BC, 2018.

ACADEMIC MENTORING

Post-doctoral Researcher Supervisor (1 current, 17 past)

M.S. and Ph.D. Graduate Student Advisor (3 current, 17 past)

Undergraduate Thesis Researcher Advisor (2 current, 16 past)

SELECTED PROFESSIONAL ORGANIZATION MEMBERSHIP

American Fisheries Society

- **Member, Governing Board, 2022-present**
- **President, Early Life History Section**, AFS, 2022-present
- **Scientific Program Committee Member**, North Central Division Representative, 2019-2020
 - Symposia Chairperson, 2019-2020
- **President**, Auburn University Chapter of AFS, Auburn, AL, 1993-1994
- **Treasurer**, Auburn University Chapter of AFS, 1992-1993

Ecological Society of America (ESA)

- **Appointed ESA Scientific Planning Committee Representative**, EcoSummit 2012 International Conference, 2011-2012

International Association for Great Lakes Research

- **Publications Committee member**, 2014-present
- **Board of Directors**, elected U.S. representative, 2012-2015
- **Nominations Committee Chair**, 2012-2015

SELECTED UNIVERSITY, COLLEGE & DEPARTMENTAL SERVICE

Steering Committee Member. Water Collaboratory: Water@OhioState. OSU, 2020-present

Co-facilitator. “Addressing Equity & Inclusion in Your Research Mentoring” workshops. OSU, Columbus, 2021-2022.

Steering Committee Member. College of Arts and Sciences, OSU, 2020-2021

Faculty Senate. College of Arts and Sciences, OSU

- **Steering Committee Member**, 2021-2022
- **Faculty Chair**, 2019-2021
- **Ex Officio Member**, Focus on Institutional Racism and Sexism for Transformative Teaching (FIRSTT) Committee, 2020-2021

Chair, Committee of Diversity, Equity, and Inclusion, EEOB, OSU, 2020-2021

- Coordinator and Moderator. EEOB Diversity, Equity, and Inclusion Book Club

Steering Committee Member. Ohio Water Consortium, OSU, 2019

Chair. Communications Committee. EEOB, OSU, 2016-2017