BRENDA M. PRACHEIL

Aquatic Ecologist
Environmental Sciences Division
Oak Ridge National Laboratory
P.O. Box 2008, Oak Ridge, TN 37831
Email: pracheilbm@ornl.gov *Phone*: 865-241-5622
Cell: 402-613-0315

EDUCATION

PhD University of Nebraska; Natural Resources & Applied Ecology
Dissertation: Multiscale Perspectives on Paddlefish Populations: Implications for Conservation and Management; Advisor: M.A. Pegg

MS Michigan State University; Zoology & Ecology, Evolutionary Biology, & Behavior
Thesis: Parasite Population and Community Dynamics of Juvenile Bluegill and Largemouth Bass from Three Lakes II and Gull Lake, Michigan; Advisor: P.M. Muzzall

BS & BA University of Nebraska; Biological Sciences & Philosophy
Honors Thesis: Susceptibility of Northern Pike to *Leptorhynchoides thecatus* Infections; Advisors: B.B. Nickol & J.J. Janovy

PROFESSIONAL EXPERIENCE

2014-present	Aquatic Ecologist, Environmental Sciences Division, Oak Ridge National Laboratory
2013	Postdoctoral Research Associate, School of Natural Resources, University of Nebraska-Lincoln
2011-2013	Postdoctoral Research Associate, Center for Limnology, University of Wisconsin-Madison
2006-2010	Research Assistant, School of Natural Resources, UNL
2003-2006	Teaching Assistant, Department of Zoology, MSU
2002	Fisheries Technician I, Missouri River Program, Nebraska Game and Parks Commission
2000-2001	Laboratory Technician, School of Biological Sciences, UNL

PEER-REVIEWED PUBLICATIONS

*Student author

45. R.S. Wood*, A.M. Fortner, K. Gillies-Rector, B.C. Chakoumakos, M. Frontzek, I.N. Ivanov, L.C. Kah, B.P. Kennedy, B.M. Pracheil. *In press*. Quantitative mineralogic assessment of Chinook salmon otolith pairs. **Scientific Reports.**

44. Pracheil, B. M., Levine, A. L., Curtis, T. L., Aldrovandi, M. S., Uría-Martínez, R., Johnson, M. M., & Welch, T. (2022). Influence of project characteristics, regulatory pathways, and environmental complexity on hydropower licensing timelines in the US. **Energy Policy,** *162*, 112801.

43. Levine, A., Pracheil, B.M, Curtis, T., Smith, L., Cruce, J., Aldrovandi, M., Brelsford, C., Buchanan, H. Fekete, E., Parish, E., Uria-Martinez, R. Johnson, M., & Singh, D. (2021). An Examination of the Hydropower Licensing and Federal Authorization Process (No. NREL/TP-6A20-79242). National Renewable Energy Lab (NREL), Golden, CO (United States).

42. A.R. Loeppky*, Belding, L. D.*, Quijada-Rodriguez, A. R., Morgan, J. D., Pracheil, B. M., Chakoumakos, B. C., & Anderson, W. G. (2021). Influence of ontogenetic development, temperature, and pCO_2 on otolith calcium carbonate polymorph composition in sturgeons. **Scientific Reports,** *11*(1), 1-10.

41. Long, J. M., Snow, R. A., Pracheil, B. M., & Chakoumakos, B. C. (2021). Morphology and composition of Goldeye (Hiodontidae; Hiodon alosoides) otoliths. **Journal of Morphology,** *282*(4), 511-519.

40. Aldrovandi, M. S., Parish, E. S., & Pracheil, B. M. (2021). Understanding the Environmental Study Life Cycle in the United States Hydropower Licensing and Federal Authorization Process. **Energies** 14, 1-17.

39. R. Saylor*, D. Sterling*, M.S. Bevelhimer, B.M. Pracheil. 2020. Within and among fish species differences in simulated turbine blade strike mortality: limits on the use of surrogacy for untested species. **Water** 12 701.

38. M.A. Gunn*, Z.S. Moran*, B.M. Pracheil, P.J. Allen. 2019. Spatial changes in trace element and strontium isotope water chemistry in a temperate river system with application to sturgeon movement. **Journal of Freshwater Ecology** 34 739-755.

37. B.M. Pracheil, R.A. McManamay, E.S. Parish, S.L. Curd, B.T. Smith, C.R. DeRolph, A.M. Witt, S. Ames, M.B. Day, W. Graf, D. Infante, D.L. McCoskey, K. Rugani, C. Vezina, T. Welch, A. West. 2019. A checklist of river function indicators for hydropower ecological assessment. **Science of the Total Environment** 687: 1245-1260.

36. M.W. Archer, B.M. Pracheil, A.E. Otto*, M.A. Pegg. 2019. Fish community response to in-channel woody debris. **Journal of Freshwater Ecology** 34: 351-362.

35. B.C. Chakoumakos, B.M. Pracheil, R.S. Wood*, A.R. Loeppky*, W.G. Anderson, R. Koenigs, R. Bruch. 2019. Texture analysis of polycrystalline vaterite spherulites from lake sturgeon otoliths. **Scientific Reports** 9: 7151.

34. A.R. Loeppky*, B.C. Chakoumakos, B.M. Pracheil, W.G. Anderson. 2019. Otoliths of juvenile lake sturgeon, *Acipenser fulvescens*, contain aragonite and vaterite calcium carbonate polymorphs. **Journal of Fish Biology** 94: 810-814.

33. B.M. Pracheil, R.S. George*, B.C. Chakoumakos. 2019. Significance of otolith calcium carbonate crystal structure diversity to microchemistry studies. **Reviews in Fish Biology and Fisheries** 29: 569-588.

32. M.S. Bevelhimer, B.M. Pracheil, A.M. Fortner, R. Saylor*, K.L. Deck*. 2019. Mortality and injury assessment for three species of fish exposed to simulated turbine blade strike. **Canadian Journal of Fisheries and Aquatic Sciences** doi: 10.1139/cjfas-2018-0386

31. E.S. Parish, B.M. Pracheil, R.A. McManamay, S.L. Curd, C.R. DeRolph, B.T. Smith. 2019. Review of environmental metrics used across multiple sectors and geographies to evaluate the effects of hydropower development. **Applied Energy** 238 (C).

30. B.M. Pracheil, J.D. Lyons, E.J. Hamann, P.H. Short, P.B. McIntyre. 2019. Lifelong population connectivity between large rivers and their tributaries: a case study of shovelnose sturgeon from the Mississippi and Wisconsin rivers. **Ecology of Freshwater Fish** 28: 20-32.

29. D. Mathur, P.G. Heisey, D.D. Royer, E.J. White, A. Slowick, R.A. Bleistine, K.A. Long, T.J. Sullivan, B.M. Pracheil. 2018. Entrainment of juvenile and adult American Shad at a pumped storage facility. **North American Journal of Fisheries Management** 38: 56-75.

28. R.A. McManamay, N.A. Griffiths, C.R. DeRolph, B.M. Pracheil. 2018. A synopsis of global mapping of freshwater habitats and biodiversity: implications for conservation. Pure and Applied Biogeography. ISBN 978-953-51-5222-4. InTech Open Publishers.

27. J.J. Hoover, P. Bailey, S.R. Januchowski-Hartley, J. Lyons, B.M. Pracheil, and S. Zigler. 2018. Anthropogenic obstructions to paddlefish movement and migration. **Proceedings of the 2017 Paddlefish Symposium**. J. Schooley and D. Scarnecchia eds.

26. B.M. Pracheil, B.C. Chakoumakos, M. Feygenson, R. Koenings, R. Bruch. 2017. Sturgeon sagittal otoliths are comprised of vaterite and calcite calcium carbonate polymorphs. **Journal of Fish Biology** 90: 549-558.

25. B.C. Chakoumakos, B.M. Pracheil, R.P. Koenigs, R.M. Bruch, M. Feygenson. 2016. Empirically testing vaterite structural models using neutron diffraction and thermal analysis. **Scientific Reports** 6: 36799

24. J.D. Lyons, D. Walchak, J. Hagland, P. Kanehl, B.M. Pracheil. 2016. Reproductive ecology of shovelnose sturgeon (*Scaphirhynchus platorynchus*), blue sucker (*Cycleptus elongatus*), and

associated species in the Lower Wisconsin River, USA. **Journal of Applied Ichthyology** 32: 1003-1015.

23. B.M. Pracheil, M.S. Bevelhimer, G.F. Cada, C.R. DeRolph, and R.A. McManamay. 2016. A traits-based approach for prioritizing species for monitoring and surrogacy selection. **Endangered Species Research**. 31: 243-258.

22. L.R. Bock, G.W. Whitledge, B.M. Pracheil, and P. Bailey. 2016. Relationships between water and paddlefish *Polyodon spathula* dentary elemental and stable isotopic signatures: potential application for reconstructing environmental history. **Journal of Fish Biology** 90: 595-610.

21. B.M. Pracheil, T.J. Mathews, M.S. Bevelhimer, M.J. Peterson, M.S. Greeley, Jr., A.M. Fortner, and C.A. Murphy. 2016. Relating Fish Health and Reproductive Metrics to Metal Bioaccumulation at the Tennessee Valley Authority Kingston Coal Ash Spill Site. **Ecotoxicology** 25:1136-1149.

20. S.R. Januchowski-Hartley, L.A. Holtz, S. Martinuzzi, P.B. McIntyre, V.C. Radeloff, B.M. Pracheil. 2016. Future land use threats to intrinsically vulnerable freshwater fishes in the coterminous United States. **Diversity and Distributions** 22: 663-671.

19. H.I. Jager, M. Parsley, J.J. Cech, Jr., R.L. McLaughlin, P.S. Forsythe, R.S. Elliott, and B.M. Pracheil. 2016. Reconnecting fragmented sturgeon populations in North American rivers. **Fisheries** 41:140-148.

18. B.M. Pracheil, C.R. DeRolph, M.P. Schramm, and M.S. Bevelhimer. 2016. A fish-eye view of riverine hydropower systems: the current understanding of the biological response to turbine passage. **Reviews in Fish Biology and Fisheries** 2016: 1-15.

17. McIntyre P.B., C. Reidy Liermann, E. Childress, E.J. Hamann, J.D. Hogan, S.R. Januchowski-Hartley, A.A. Koning, T.M. Neeson, D.L. Oele, and B.M. Pracheil. 2015. Conservation of migratory fishes in freshwater ecosystems. In Closs G, Krkosek M, & Olden JD: **Conservation of Freshwater Fishes**. 324 p.

16. S.V. Amaral, M.S. Bevelhimer, G.F. Cada, D. Giza, P. Jacobson, B.J. McMahon and B.M. Pracheil. 2015. Evaluation of behavior and survival of fish exposed to an axial-flow hydrokinetic turbine. **North American Journal of Fisheries Management** 35: 97-113.

15. R.B. Gagne, J.D. Hogan, M.J. Blum, B.M. Pracheil**,** P.B. McIntyre, E.F. Hain, J.F. Gilliam. 2015. Spread of an introduced parasite among populations of an endemic Hawaiian stream fish. **Freshwater Biology**. 60: 311-322.

- Featured on journal cover

14. B.M. Pracheil, G.E. Mestl, and M.A. Pegg. 2015. Movement through dams facilitates population connectivity in a large river. **River Research and Applications** 31: 517-525.

13. B.C. Neely, B.M. Pracheil, and S.T. Lynott. 2014. Hydrologic variables predict harvest in a recreational paddlefish fishery. **Fisheries Management and Ecology** 32: 259-263.

12. B.M. Pracheil, J.D. Hogan, J. Lyons, and P.B. McIntyre. 2014. Conservation and management applications of hard part microchemistry for freshwater fishes **Fisheries.** 39: 451-465.

- Featured on journal cover

11. S. Martinuzzi, S.R. Januchowski-Hartley, B.M. Pracheil, P.B. McIntyre, A.J. Plantinga, D.J. Lewis, and V. Radeloff. 2014. Threats and opportunities for freshwater conservation under future land use change scenarios in the United States. **Global Change Biology** 20: 113-124.

10. B.M. Pracheil, P.B. McIntyre, and J.D. Lyons. 2013. Enhancing conservation of large-river biodiversity by accounting for tributaries. **Frontiers in Ecology and the Environment** 11: 124-128.

9. B.M. Pracheil**,** L.A. Powell, M.A. Pegg, and G.E. Mestl. 2012. Swimways: protecting paddlefish through movement-centered management. **Fisheries** 37: 449-457.

- Featured on journal cover

8. D.R. Martin, B.M. Pracheil, J. DeBoer, K.L. Pope, and G. Wilde. 2012. Using internet technology to reveal patterns of angler behavior. **Fisheries** 37: 458-463.

7. B.M. Pracheil, D.D. Snow, and M.A. Pegg. 2010. Distribution of selenium, mercury, and methylmercury in surficial Missouri River sediments. **Bulletin of Environmental Contamination and Toxicology** 84: 331-335.

6. B.M. Pracheil and P.M. Muzzall. 2010. Population dynamics of larval trematodes in juvenile bluegills from Three Lakes II, Michigan and potential of overwinter parasite induced host mortality. **Transactions of the American Fisheries Society** 139: 652-659.

5. M.A. Pegg, J.H. Chick, and B.M. Pracheil. 2009. The influence of non-native species on paddlefish. Pages 185-202 in C. Paukert and G. Scholten editors. Paddlefish management, propagation, and conservation in the 21st century: building from 20 years of research and management. American Fisheries Society, Symposium 66, Bethesda, Maryland.

4. B.M. Pracheil, M.A. Pegg, and G.E. Mestl. 2009. Tributaries influence recruitment of fish in large rivers. **Ecology of Freshwater Fish** 18:603-609.

3. B.M. Pracheil and P.M. Muzzall. 2009. Chronology and development of juvenile bluegill parasite communities. **Journal of Parasitology** 95: 838-845.

2. P.M. Muzzall and B.M. Pracheil. 2007. Parasites of tadpole madtom, *Noturus gyrinus* (Mitchill, 1817) (Ictaluridae), from Silver Creek, Michigan, U.S.A. with a checklist of North American parasites of tadpole madtom. **Comparative Parasitology** 74:154-159.

1. B.M. Pracheil**,** G.E. Mestl, and P.M. Muzzall. 2005. Metazoan parasites of young-of-the-year paddlefish from Lewis and Clark Lake, Nebraska, U.S.A. **Comparative Parasitology** 72:227-229**.**

DATASETS

Pracheil, B.M., Levine, A., Aldrovandi, M., & Cruce, J. (2021). Hydropower Licensing Timeline and Cost Dataset. Oak Ridge National Lab.(ORNL), Oak Ridge, TN (United States). https://doi.org/10.21951/Regulatory/1826526

Aldrovandi, M., Parish, E., & Pracheil, B. (2021). *FERC Licensing Proceeding Environmental Study Life Cycle* (No. 1). Oak Ridge National Lab.(ORNL), Oak Ridge, TN (United States). https://doi.org/10.21951/FLPESLC/1822907

FUNDED PROJECTS LED

B.M. Pracheil, V.H. Chalishazar, J. Macknick, T. Veselka, T. Mosier. 2021. Hydropower Energy Flexibility- Environment Tradeoff Tool. Department of Energy Office of Energy Efficiency and Renewable Energy Water Power Technologies Office. (FY 2022-24: $4M total/ $1.9M ORNL).

B.M. Pracheil and K.N. Moody. Monitoring Fish Passageways Using eDNA. Department of Energy Office of Energy Efficiency and Renewable Energy Water Power Technologies Office. FY2022-23 ($700,000).

B.M. Pracheil, P. Wang, K. Moody, P. Chesser, B.T. Smith, N. Griffiths, B. Post. Remote autonomous environmental DNA sampling and analysis—eDNA-bot. ORNL Laboratory Directed Research and Development (LDRD) Seed Fund. FY21-22 ($190,000).

B.M. Pracheil and K.N. Moody. Using eDNA for Hydropower Biological Monitoring Assessments. Department of Energy Office of Energy Efficiency and Renewable Energy Water Power Technologies Office. FY2021 $150,000

B.M. Pracheil, K. Studarus, J. Macknick, T. Veselka, T. Mosier. 2019. Improving Hydropower Benefits by Linking Environmental and Power System Trade-offs Through Flow Release Decisions. Department of Energy Office of Energy Efficiency and Renewable Energy Water Power Technologies Office. (FY 2020-21: $2,000,000 total/ $840,000 ORNL).

B.M. Pracheil and A. Levine. 2019. An examination of the hydropower regulation and federal authorization project. Department of Energy Office of Energy Efficiency and Renewable Energy. (FY 2020: $655,000).

B.M. Pracheil. 2019. Environmental decision support: science-based tools for hydropower stakeholder collaboration. Department of Energy Office of Energy Efficiency and Renewable Energy. (FY 2020: $500,000).

B.M. Pracheil. 2018. Environmental decision support: science-based tools for hydropower stakeholder collaboration. Department of Energy Office of Energy Efficiency and Renewable Energy. (FY 2019: $700,000).

B.M. Pracheil. 2017. Environmental metrics for hydropower. Department of Energy Office of Energy Efficiency and Renewable Energy. (FY 2018: $700,000).

B.M. Pracheil and B.C. Chakoumakos. 2016. Merging ecology and materials science to trace environmental energy contamination using biogenic calcium carbonates. ORNL LDRD Seed Fund. (FY 2018: $189,435).

B.M. Pracheil. FY 2014-2017. Tennessee Valley Authority Kingston Coal Ash Spill Fish Health Monitoring. Tennessee Valley Authority ($240,000).

PROFESSIONAL ACTIVITIES AND SERVICE

2019-present Governing Board, Low Impact Hydropower Institute

2019-present Technical Committee, Low Impact Hydropower Institute

2018-present Publication Oversight Committee, American Fisheries Society Publications

2017-present Associate Editor, *Methods in Ecology and Evolution*

2019 University of Tennessee Bredesen Center Faculty Appointment

2019 Past-President, American Fisheries Society, Tennessee Chapter

2017-2019 Oak Ridge National Laboratory Research and Development Initiative Seed Money Committee

2018 Science and Technology in Society Forum Future Leaders Program, Kyoto, Japan

2018 President, American Fisheries Society, Tennessee Chapter

2017 President-elect, American Fisheries Society, Tennessee Chapter

2014-2017 Associate Editor, *North American Journal of Fisheries Management*

2013-2014 Eastern Tallgrass Prairie and Big Rivers Landscape Cooperative river restoration science advisory group

2008-2013 Mississippi Interstate Cooperative Resource Association Paddlefish and Sturgeon Committee technical advisor

2007-2010 South Dakota-Nebraska paddlefish working group

AWARDS

B.M. Pracheil. 2019. YWCA of Knoxville Women Tribute to Women Finalist: Science and Technology category.

B.M. Pracheil. 2019. Oak Ridge National Laboratory Environmental Science Division Stanley L. Auerbach Award for Outstanding Early Career Scientist.

TECHNICAL REPORTS

14. Levine, A., B.M. Pracheil, T. Curtis, L. Smith, J. Cruce, M.S.P. Aldrovandi, C. Brelsford, H. Buchanan, E. Fekete, E.S. Parish, R. Uria Martinez, M. Johnson, D. Singh. 2021. *An Examination of the Hydropower Licensing and Federal Authorization Process*. Golden, CO: National Renewable Energy Laboratory (NREL). NREL/TP-6A20-79242.

13. R.A. McManamay, B.M. Pracheil, S.L. Curd, B.T. Smith, E.S. Parish, A.M. Witt, A. West, K. Rugani, C.R. DeRolph, M.B. Day. 2019. Instruction Manual: River Function Questionnaire. ORNL TM-2019/1184.

12. B.M. Pracheil, A. Witt, R.A. McManamay, E.S. Parish, C.R. DeRolph, S.L. Curd, B.T. Smith. 2018. Development of a river function framework to inform environmental aspects of hydropower project design and licensing. ORNL TM-2018/975.

11. Saylor, R., Bevelhimer, M., Fortner, A.M., Pracheil, B.M. 2017. Species-specific Susceptibility to Scale Loss: Using Simulated Shear to Understand Among Species Differences in Turbine Passage Injury ORNL TM-2017/723.

10. Curd, S.L., DeRolph, C.R., McManamay, R.A., Parish, E.S., Pracheil, B.M., Smith, B.T. 2018. Catalog of Environmental Metrics for Hydropower. ORNL TM-2018/818

9. B.M. Pracheil, M.S. Bevelhimer, C.R. DeRolph, M.S. Schramm, D. Mathur, P. Heisey. 2017. Relating factors affecting fish survival during downstream turbine passage at hydropower dams. ORNL TM-2017/158.

8. B.M. Pracheil, C.R. DeRolph, M.P. Schramm, and M.S. Bevelhimer. 2014. A fish-eye view of riverine hydropower systems: understanding the biological response to turbine passage. ORNL/TM-2015/65.

7. B.M. Pracheil and J.D. Lyons. 2013. Early life history of blue sucker below Prairie Du Sac Dam, Wisconsin River. Final Project Report.

6. B.M. Pracheil and P.B. McIntyre. 2012. Early life history of shovelnose sturgeon and blue sucker below Prairie Du Sac Dam, Wisconsin River. Annual Progress Report. 81 pp.

5. B.M. Pracheil and P.B. McIntyre. 2011. Early life history of shovelnose sturgeon and blue sucker below Prairie Du Sac Dam, Wisconsin River. Annual Progress Report. 7 pp.

4. B.M. Pracheil and M.A. Pegg. 2010. Habitat Use of Nebraska Paddlefish in the Missouri River. Final Performance Report submitted to The Nebraska Environmental Trust. 135 pp.

3. B.M. Pracheil and M.A. Pegg. 2009. Population Dynamics, Habitat Use and Response to Changes in Flow by Paddlefish in the Ft. Randall Dam to Gavins Point Dam Reach of the Missouri River. Annual Performance Report submitted to Nebraska Game and Parks Commission, 21 pp.

2. B.M. Pracheil and M.A. Pegg. 2008. Habitat Use of Nebraska Paddlefish in the Missouri River. Annual Performance Report submitted to The Nebraska Environmental Trust. 21 pp.

1. B.M. Pracheil and M.A. Pegg. 2008. Population Dynamics, Habitat Use and Response to Changes in Flow by Paddlefish in the Ft. Randall Dam to Gavins Point Dam Reach of the Missouri River. Annual Performance Report submitted to Nebraska Game and Parks Commission, 18 pp.

STUDENTS AND POST-GRADUATES MENTORED

2021 Kim Fenin—Howard University
Project: Using bioinformatics to decode eDNA information from water samples

2021 Lily Fenton—College of William and Mary SULI student
Project: Using occupancy modeling from traditional fish sampling and eDNA for biodiversity inventories

2021 Katie Sparks—Missouri State University SULI student
Project: Using occupancy modeling to supplement eDNA analyses
Katie is currently pursuing her MS at Montana State University

2019 Ryan Saylor—University of Tennessee Bredesen Center PhD student
Project: Impacts of turbine stressors on fish during downstream hydropower turbine passage

2019 Nicholas Oschman—Post-MS
Project: Understanding timelines to major decision points in FERC hydropower licensing.

2019 Matt Aldrovandi—Post-MS
Project: Environmental impact study evolution during FERC hydropower licensing.

2019 Anna Cameron—Post-BS
Project: Cataloging the diversity of instream flow requirements in hydropower regulation

2019 Dustin Sterling—Post-BS
Project: Understanding fish traits associated with fish turbine entrainment and mortality

2018 Brooke Redmond—Clemson University Undergraduate
Project: Microstructure of fish calcified structures

2017-2018 R. Seth Wood—University of Tennessee Geology Undergraduate (Mentored with B. Chakoumakos, ORNL)
Project: Effects of organic compounds on the precipitation and stabilization of vaterite

2017 Robert George—Furman University Biology Post-BS Student
Project: Understanding fish otolith calcium carbonate diversity in a phylogenetic context

2017 Hailey Russell—North Carolina State University Chem Engineering Undergrad (Mentored with A. Witt, ORNL)
Project: Comparing environmental metrics used in FERC hydropower licenses at 5 projects across the CONUS

2017 Joshua Benjamin—University of Florida Post-BS Student (Mentored with A. Witt, ORNL)
Project: Understanding how hydropower development alters the trajectory of river functionality

2010 Evy Santiago—University of Nebraska Natural Resources Undergrad
Project: Using Dual-frequency Identification Sonar (DIDSON) as a Tool for Estimating Paddlefish Abundance in Reservoirs

2005 Ai Shimizaki—Michigan State University Zoology Undergrad
Project: Is Parasite Community Development in Young-of-Year Largemouth Bass Ontogenetically Mediated?

PROFESSIONAL MEDIA FEATURES

2019 "The Fisheries Podcast" guest

2019 North Carolina State University WUNC Radio "Mystery Roach" guest on watershed conservation

2019 ORNL Women's Leadership Month Video "Be a Leader Where you Are"

2016 Research on using materials science techniques to understand biological calcium carbonates featured by Oak Ridge National Lab Blog

2016 Research on sturgeon conservation featured on Oak Ridge National Lab Blog

2016 Research on impacts of hydropower on fish featured in *Hakai Magazine*

2015 Research on parasites and land-use change featured on the cover of *Freshwater Biology*

2014 Research on otolith microchemistry featured by
Fisheries journal cover photo
Oak Ridge National Lab Blog

2013 Research on large-river conservation featured by
Ecological Society of America Blog
University of Wisconsin Center for Limnology Blog
University of Wisconsin News
Tennessee Aquarium Conservation Institute Blog

2012 Research on migratory fish management featured by
Fisheries journal cover photo
University of Wisconsin News
The Daily Cardinal Science Feature 24 October 2012

2010 Research on large-river conservation featured by
The Nature Conservancy Blog

2010 Nebraska's Paddlefish by Eric Fowler. Nebraskaland Magazine. pp. 36-43.
2010 Year of the Walleye by Eric Fowler. Nebraskaland Magazine. pp 40-41.

TEACHING EXPERIENCE

2019 Fisheries Age and Growth Techniques and Age and Growth Data Analysis. Tennessee Chapter of American Fisheries Society Continuing Education Course.

2018 Introduction to R and R graphics for fisheries biologists. Tennessee Chapter of American Fisheries Society Continuing Education Course.

2013 Stable isotope and heavy metal microchemistry in fish hard structures, University of Nebraska-Lincoln fisheries management course.

2013 Guest lecture "Fish, people, sediment, and water: a case study from the Grand Canyon Adaptive Management Program": Virginia Polytechnic and State University fisheries management course.

2011-13 Guest lecture fish parasite ecology: U. Wisconsin-Madison Fish Ecology course.

2010 Lecturer, School of Natural Resources, UNL Introduction to Agriculture and Natural Resources Recitation.

2009-10 Guest lectures telemetry, mark-recapture and conservation implications of stocking. U. Nebraska Fisheries Science course

2008-09 Guest lectures fish osmoregulation, buoyancy, and circulation U. Nebraska Ichthyology

2003-06 Graduate Teaching Assistant, Department of Zoology, MSU
General Biology—3 semesters
Integrative Studies Biology—2 semesters
General Parasitology—3 semesters

2001 Teaching Assistant, School of Biological Sciences, UNL
General Biology—1 semester (BIOS 101L)
General Parasitology—1 semester (BIOS 386L)

INVITED PRESENTATIONS

20. B.M. Pracheil. September 2019. Characterization and visualization of fish otoliths towards a mechanistic understanding of calcium carbonate polymorph growth and nucleation. ORNL Energy and Environmental Sciences Directorate Monthly Energy Talk.

19. B.M. Pracheil. May 2019. Characterization and visualization of fish otoliths towards a mechanistic understanding of calcium carbonate polymorph growth and nucleation. ORNL Environmental Sciences Division Stanley Auerbach Award Talk.

18. B.M. Pracheil. April 2019. Linking Environmental Data Tools and Materials Science for Fish Conservation in Hydropower-Impacted Systems. Michigan State University Department of Fisheries and Wildlife.

17. B.M. Pracheil. October 2016. New tools to answer old questions about sturgeon and paddlefish. Biological Sciences Seminar Series. Michigan Technological University.

16. B.M. Pracheil. February 2016. Managing riverine connectivity for biodiversity conservation. University of Tennessee-Knoxville Department of Forestry, Wildlife and Fisheries.

15. B.M. Pracheil. April 2015. Fish, laser beams and the Kingston ash spill: an introduction to fish hard-part microchemistry. Tennessee Technological University Environmental Sciences Spring Colloquium.

14. B.M. Pracheil. January 2015. Conservation and constraint: balancing the needs of people with the needs of fish. Furman University.

13. B.M. Pracheil. December 2014. Fish, laser beams, and the Kingston ash spill, Oak Ridge National Lab, student–selected speaker for visiting high school science students.

12. B.M. Pracheil. May 2013. Managing connectivity to protect riverine biodiversity. Oak Ridge National Laboratory.

11. B.M. Pracheil. April 2013. Managing connectivity to protect large river biodiversity. University of Missouri Department of Fisheries and Wildlife.

10. B.M. Pracheil. February 2013. Managing connectivity to protect freshwater biodiversity. Virginia Polytechnic and State University Department of Fisheries and Wildlife Conservation.

9. B.M. Pracheil, P.B. McIntyre and J.D. Lyons. August 2012. Movements of shovelnose sturgeon in the Mississippi and Wisconsin rivers inferred from otolith microchemistry. Riverscapes symposium. American Fisheries Society Annual Meeting. Minneapolis, MN.

8. B.M. Pracheil and G.E. Mestl. August 2012. Opportunities, challenges, and considerations for large scale stock assessment: lessons learned from the MICRA paddlefish stock assessment. Symposium. American Fisheries Society Annual Meeting. Minneapolis, MN.

7. B.M. Pracheil. March 2012. Managing connectivity to protect Great River biodiversity. Seminar: University of Wisconsin Center for Limnology Seminar Series.

6. B.M. Pracheil. March 2012. Managing connectivity to protect Great River biodiversity. Seminar: Wisconsin Department of Natural Resources Bureau of Science Services Seminar Series.

5. B.M. Pracheil. March 2012. Managing connectivity to protect Great River biodiversity. Seminar: Fisheries and Wildlife Graduate Student Organization Seminar Series, Michigan State University.

4. B.M. Pracheil**.** October 2011. Multi-scale perspectives on managing connectivity in Great River ecosystems. Seminar: United States Geological Survey Upper Midwest Environmental Science Center Seminar Series.

3. B.M. Pracheil**,** P.B. McIntyre, M.A. Pegg, and J.D. Lyons. September 2011. Defining the riverscape: tributaries as a key to great river fish conservation. Symposium oral presentation. American Fisheries Society Annual Meeting, Seattle, WA.

2. B.M. Pracheil. September 2010. Paddlefish from a multi-scale perspective: Implications for management and conservation. Seminar: University of Wisconsin-Madison Center for Limnology Seminar Series.

1. B. M. Pracheil. April 2009. Potential implications of stocking to the United States paddlefish population. Seminar: UNL School of Natural Resources Ecology Seminar.

CONTRIBUTED PRESENTATIONS

40. B.M. Pracheil, M. Aldrovandi, R.A. McManamay, N. Oschman, E.S. Parish, A. West, K. Rugani, S.L. Curd, B.T. Smith. September 2019. Understanding the environmental impact study and mitigation life cycle in FERC hydropower licenses. American Fisheries Society Environmental Assessment in Hydropower Regulation Symposium.

39. B.M. Pracheil, D.N. McCoskey, K. Buenau. September 2019. Environmental impact assessment for hydropower regulation. American Fisheries Society Opening Remarks for symposium on Environmental Assessment in Hydropower Regulation co-organized by B. Pracheil and K. Buenau.

38. B.M. Pracheil, B.C. Chakoumakos, R.S. Wood, A.M. Fortner, A.R. Loeppky, W.G. Anderson. September 2019. Characterization and visualization of fish otoliths towards a mechanistic understanding of calcium carbonate polymorph growth and nucleation**.** American Fisheries Society, Reno, NV.

37. B.M. Pracheil, B.C. Chakoumakos, R.S. Wood, A.M. Fortner, A.R. Loeppky, W.G. Anderson. 2018. Characterization and visualization of fish otoliths towards a mechanistic understanding of calcium carbonate polymorph growth and nucleation. Energy landscapes in biomineralization, geochemistry, and materials science: a celebration of Alex Navrotsky's 75th birthday symposium, Goldschmidt Conference, Boston, MA.

36. B.M. Pracheil, A.M. Fortner, R.S. Wood, I. Ivanov, A. Lanzarotti, M. Newville, B.C. Chakoumakos. 2018. Otolith strontium concentrations in vaterite and calcite. Southern Division of the American Fisheries Society Annual Meeting. San Juan, PR.

35. B.M. Pracheil, R.S. George, B.C. Chakoumakos. 2018. Phylogenetic patterns of otolith calcium carbonate crystal structure diversity. American Fisheries Society Tennessee Chapter Annual Meeting, Knoxville, TN.

34. B.M. Pracheil, R.S. George, B.C. Chakoumakos. 2017. Phylogenetic patterns of otolith calcium carbonate crystal structure diversity. American Fisheries Society Annual Meeting, Tampa, FL.

33. B.M. Pracheil, C.R. DeRolph, M.S. Bevelhimer, D. Mathur, P. Heisey, M.P. Schramm. 2017. Sources of injury and mortality during downstream hydropower turbine passage. International Conference on Fish Passage and Ecohydrology, Corvallis, OR.

32. M.S. Bevelhimer, B.M. Pracheil, A.M. Fortner, K.L. Deck. 2017. Simulating turbine blade strike in the laboratory to better assess injury and mortality during turbine passage. International Conference on Fish Passage and Ecohydrology, Corvallis, OR.

31. A.M. Fortner, T.J. Mathews, M.G. Greeley, and B.M. Pracheil. 2017. Reconciling various metrics of fish health following coal ash exposure. American Fisheries Society, Tennessee Chapter Annual Meeting, Knoxville, TN.

30. B.M. Pracheil and B.C. Chakoumakos. 2017. Otoliths: more than just for ageing. American Fisheries Society, Tennessee Chapter Annual Meeting, Knoxville, TN.

29. B.M. Pracheil, C.R. DeRolph, M.P. Schramm, D. Mathur, P. Heisey, and M.S. Bevelhimer. 2017. Sources of Injury and mortality during downstream hydropower turbine passage. American Fisheries Society, Tennessee Chapter Annual Meeting, Knoxville, TN.

28. B.M. Pracheil, T. Mathews, A. Fortner, M.J. Peterson, M. Greeley, M.S. Bevelhimer, and C.A. Murphy. Relating Fish Health and Reproductive Metrics to Metal Bioaccumulation at the Tennessee Valley Authority Kingston Coal Ash Spill Site. American Fisheries Society National Meeting, Portland, OR.

27. B.M. Pracheil, B.C. Chakoumakos, R. Koenings, R. Bruch. Structure and Nanostructure of Sturgeon Otoliths and Implications for Microchemistry Studies. American Fisheries Society National Meeting, Portland, OR.

26. B.M. Pracheil, M.S. Bevelhimer, G.F. Čada, C.R. DeRolph, R.A. McManamay. 2015. A quantitative traits-based approach for choosing and prioritizing study species and surrogate species in altered ecosystems. International Fish Passage Conference, Groningen, The Netherlands.

25. B.M. Pracheil, M.S. Bevelhimer, G.F. Čada, C.R. DeRolph, R.A. McManamay. 2015. A quantitative traits-based approach for choosing and prioritizing study species and surrogate species in altered ecosystems. Southern Division of the American Fisheries Society Annual Meeting, Savannah, GA.

24. B.M. Pracheil, P.B. McIntyre, and J.D. Lyons. Connectivity of large-river networks is important throughout fish life history. American Fisheries Society Annual Meeting. Little Rock, AR.

23. B.M. Pracheil, L.A. Winslow, S.R. Januchowski-Hartley, A. Cooper, D. Infante, and P.B. McIntyre. Movements of a mega-fish across its species range. American Fisheries Society Annual Meeting. Little Rock, AR.

22. B.C. Neely, B.M. Pracheil, and S.T. Lynott. Hydrologic variables predict harvest in a recreational paddlefish fishery. American Fisheries Society Annual Meeting. Little Rock, AR.

21. J.S. Perkin and B.M. Pracheil. Threats and opportunities for fish habitat connectivity conservation in the Missouri River Basin at multiple scales. American Fisheries Society Annual Meeting. Little Rock, AR.

20. S.R. Januchowski-Hartley, B.M. Pracheil, M. Diebel, and P.B. McIntyre. August 2012. Connections and cost: important considerations for effective broad-scale freshwater conservation. American Fisheries Society Annual Meeting. Minneapolis, MN.

19. B.M. Pracheil, P.B. McIntyre, and J.L. Lyons. Inferred movement and habitat use of shovelnose sturgeon and blue sucker from otolith microchemistry. February 2011. Wisconsin-Michigan American Fisheries Society Conference.

18. J. DeBoer, D.M. Martin, B.M. Pracheil, K.L. Pope, and G.W. Wilde. December 2011. A LK @ 2DAYS ANGLR: How technology reveals patterns in the internet age. Midwest Fish and Wildlife Conference.

17. B.M. Pracheil, M.A. Pegg, L.A. Powell, and G.E. Mestl. September 2011. Range-wide movements of paddlefish demonstrate need for interjursdictional management. American Fisheries Society Annual Meeting, Seattle, WA.

16. B.M. Pracheil, M.A. Pegg, L.A. Powell, and G.E. Mestl. April 2011. Range-wide movements of paddlefish demonstrate need for interjursdictional management. Upper Mississippi River Research Consortium.

15. B.M. Pracheil, M.A. Pegg, L.A. Powell, and G.E. Mestl. December 2010. Range-wide movements of paddlefish demonstrate need for interjursdictional management. Midwest Fish and Wildlife Conference.

14. B.M. Pracheil, M. A. Pegg, and G. E. Mestl. September, 2010. Examination of movement of stocked paddlefish demonstrates need for cohesive interjurisdictional management. International Large River Symposium.

13. B.M. Pracheil, D.D. Snow, and M.A. Pegg. March 2010. Distribution of selenium, mercury, and methylmercury in surficial Missouri River sediments. Missouri River Natural Resources Conference.

12. B.M. Pracheil, M. A. Pegg, and G. E. Mestl. March 2010. Paddlefish Population Viability between Ft. Randall Dam and Gavins Point Dam. Missouri River Natural Resources Conference.

11. B.M. Pracheil, D.D. Snow, and M.A. Pegg. February 2010. Distribution of selenium, mercury, and methylmercury in surficial Missouri River sediments. Nebraska Chapter of the American Fisheries Society Conference.

10. B.M. Pracheil, M. A. Pegg, T. K. Porter, and G. E. Mestl. March 2009. Status of Missouri River paddlefish in Nebraska: What we know and what we don't know. Missouri River Natural Resources Conference.

9. B.M. Pracheil, M. A. Pegg, T. K. Porter, and G. E. Mestl. February 2009. Status of Missouri River paddlefish in Nebraska: What we know and what we don't know. Nebraska American Fisheries Society Conference.

8. B.M. Pracheil, M. A. Pegg, and G. E. Mestl. December 2008. Relative impacts of mainstem and tributary flow on paddlefish recruitment. Midwest Fish and Wildlife Conference.

7. B.M. Pracheil. March 2008. Production area contribution and broad-scale movement patterns of paddlefish using stable isotopes. Midwest Student American Fisheries Society Symposium.

6. B.M. Pracheil and M.A. Pegg. February 2008. Impacts of Missouri River and Niobrara River flows on paddlefish recruitment. Missouri River Natural Resources Conference.

5. B.M. Pracheil and M.A. Pegg. February 2008. Impacts of Missouri River and Niobrara River flows on paddlefish recruitment. Nebraska American Fisheries Society Conference.

4. B.M. Pracheil and P.M. Muzzall. June 2006. Importance of lake trophic status and host trophic status as parasite community determinants in juvenile bluegill and largemouth bass from two Michigan lakes. Annual Midwest Conference of Parasitologists (AMCOP).

3. B.M. Pracheil and P.M. Muzzall. June 2005. Parasites of juvenile bluegill from two Michigan lakes. AMCOP.

2. B. M. Pracheil and P.M. Muzzall. June 2003. Parasites of age-0 paddlefish, *Polyodon spathula*, from Lewis and Clark Lake, Nebraska. AMCOP.

1. B.M. Pracheil and B.B. Nickol. April 2001. Assessment of the role of the northern pike as a host for the acanthocephalan parasite, *Leptorhynchoides thecatus*, University of Nebraska-Lincoln Undergraduate Creative Activities and Research Experience (UCARE) Conference.

CURRENT PROFESSIONAL MEMBERSHIPS

2017-present British Ecological Society

2017-present Geological Society of America

2007-present American Fisheries Society

REFERENCES

Dr. Bryan Chakoumakos
Distinguished Scientist
Oak Ridge National Laboratory

Dr. Dan Daugherty
Fisheries Research Scientist
Texas Parks and Wildlife
Editor-in-Chief, North American Journal of Fisheries Management

Dr. Dana Infante
Associate Professor
Department of Fisheries and Wildlife
Michigan State University