BRYAN M. MAITLAND

Research Associate, University of Wisconsin–Madison

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EDUCATION

UNIVERSITY OF WYOMING, Laramie, WY
Ph.D. Ecology. 2020. Dissertation: Isotopic Ecology of Aquatic Communities Along the Rocky Mountains—Great Plains Ecotone.

UNIVERSITY OF ALBERTA, Edmonton, AB
M.Sc. Conservation Biology. 2015. Thesis: Stream Crossings in the Western Boreal Forest: Assessing Impacts and Prioritizing Restoration for Native Freshwater Fishes.

SUNY–COLLEGE OF ENVIRONMENTAL SCIENCE AND FORESTRY, Syracuse, NY
B.S. Conservation Biology. 2011. Thesis: Using GIS for broad scale for prioritizing conservation potential of wetlands in New York.

PROFESSIONAL APPOINTMENTS

UNIVERSITY OF WISCONSIN, Civil and Environmental Engineering, Madison, WI 2023-present
Research Associate

UNIVERSITY OF WISCONSIN, Center for Limnology, Madison, WI 2022-2023
Postdoctoral Research Fellow

UNIVERSITY OF WISCONSIN, Center for Limnology and Wisconsin DNR, Madison, WI 2020-2022
Wisconsin Water Resources Science-Policy Fellow

PUBLICATIONS: (citations = 351, h-index = 9; source: Google Scholar)

Pre-prints & In review

Maitland, B.M., Bootsma, H.A., Bronte, C.R., Bunnell, D.B., Feiner, Z.F., Fenske, K.H., Fetzer, W.W., Foley, C.J., Gerig, B.S., Happel, A., Höök, T.O., Keppeller, F.W., Kornis, M.S., Lepak, R.F., McNaught, A.S., Roth, B.M., Turschak, B.A., Hoffman, J.C., Jensen, O.J. Testing food web theory in large lakes: the role of body size in habitat coupling in Lake Michigan. *In review at Ecology*.

In press

Published

Ward, N.K., Lynch, A.J., Beever, E.A., Bouska, K., Embke, H., Kocic, J., Limpinsel, D., Magee, M.R., **Maitland, B.M.**, Morton, J.M., Muelbauer, J.D., Oliver, D.C., Rantala, H.M., Sass, G.G., Schultz, A., Thompson, L.M., Wilkening, J. Reimagining Large River Management using the Resist-Accept-Direct (RAD) Framework in the Upper Mississippi River. *Ecological Processes* 12(1): 48.

Maitland, B.M., Rahel, F.J. 2023. Food web expansion and trophic redundancy across the Rocky Mountain—Great Plains ecotone. *Ecology* 104(7): e4103.

Maitland, B.M., Latzka, A.L. 2022. Shifting climate conditions affect recruitment in Midwestern stream trout, but depend on seasonal and spatial context. *Ecosphere* 13(12): e4308.

Medinski, N.A., **Maitland, B.M.**, Jardine, T.D., Drake, D.A.R., Poesch, M.S. 2022. Industrial disturbance induces isotopic niche shifts in an endangered and a non-native fish species. *Canadian Journal of Fisheries and Aquatic Sciences* 79(8): 1321-1334.

Feiner, Z., Embke, H., Latzka, A.L., **Maitland, B.M.,** Sass, G., Schltz, A., Trudeau, A., Dassow, C., Mitro, M., Homola, J., Isserman, D. 2022. RAD considerations for climate change adaptation in fisheries: the Wisconsin experience. *Fisheries Management and Ecology* 29(4): 346-363.

Lapides, D.A., **Maitland, B.M.**, Zipper, S.C., Latzka, A.W. 2022. Environmental flows approaches to stream depletion management--a literature review. *Journal of Hydrology* 607: 127447.

Kirk, M.A., **Maitland, B.M.**, Hickerson, B.T., Walters, A.W., Rahel, F.J. 2022. Climatic drivers and ecological impact of a rapid range expansion by non-native smallmouth bass in a Wyoming river. *Biological Invasions* 24: 1311-1326.

Voter, C.B., Guerrero-Bolano, F.J., Latzka, A.W., **Maitland, B.M.**, Hauxwell, J. 2021. Adaptable university-agency early-career fellowship program creates win-win-win for Wisconsin's Waters. Special issue in *Journal of Contemporary Water Research and Education* 178(1): 139-154.

Maitland, B.M., Martínez del Rio, C., Rahel, F.J. 2021. Effects of temperature on ^{13}C and ^{15}N incorporation rates and discrimination factors in two North American fishes. *Canadian Journal of Fisheries and Aquatic Science* 78(12): 1833-1840.

Maitland, B.M., Rahel, F.J. 2020. Non-lethal fin sampling of North American freshwater fishes for food-web studies using stable isotopes. *North American Journal of Fisheries Management* 41(2):410-420.

Kirk, M.A., **Maitland**, **B.M.**, Rahel, F.J. 2019. Spatial scale, reservoirs and nonnative species influence the homogenization & differentiation of Great Plains—Rocky Mountain fish faunas. *Hydrobiologia* 847: 3743-3757.

Maitland, B.M., O'Malley, B.P., Stewart, D.J. 2019. Subsurface water piping prevents meromixisis in a deep volcanic crater lake (Dominica, W.I.). *Hydrobiologia* 839: 119-130.

Hickerson, B.H., **Maitland, B.M.**, Walters, A.W. 2019. Effects of multiple non-native predatory fish on an imperiled cyprinid, Hornyhead Chub (*Nocomis biggutus*). *Transactions of the American Fisheries Society* 148 (6): 1132-1145.

Alston, J.M., **Maitland, B.M.**, Brito, B.T., Ford, A.T., Hays, B., Jesmer, B.R., Molina, F.J., Goheen, J.R. 2019. Reciprocity in restoration ecology: when might large carnivore reintroductions restore ecosystems? *Biological Conservation* 234: 82-89.

Walker, R.H., **Maitland, B.M**., LaSharr, T.N., Rosin, M., Ben-David, M. 2018. Fate of juvenile salmonids stranded in flood pools: implications for nutrient transfers. *Aquatic Sciences* 80: 1-10.

Craig, L., Olden, J., Arthington, A., Entrekin, S., Hawkins, C., Kelly, J., Kennedy, T., **Maitland, B.M.**, Rosi-Marshall, E., Roy, A., Strayer, D., Tank, J., West, A., Wooten, M. 2017. Challenges, opportunities, and trade-offs associated with multiple threats in freshwater ecosystems. *Elementa: Science of the Anthropocene 5:72.*

Pandit, S.N., **Maitland, B.M.**, Pandit, L.K., Poesch, M., Ender, E.V. 2017. Climate change risks, extinction debt, and conservation implications for an endangered freshwater fish: Carmine Shiner (*Notropis percobromus*). *Science of the Total Environment*. 598: 1-11.

Maitland, B.M., Poesch, M., Anderson, A.E. 2016. Prioritizing culvert removals to restore habitat for at-risk salmonids in the boreal forest. *Fisheries Management and Ecology*. 23: 489-502.

Maitland, B.M., Poesch, M., Anderson, A.E., Pandit, S.N. 2016. Stream crossings drive changes in fish assemblages in an industrializing boreal watershed. *Freshwater Biology* 61: 1-18.

Maitland, B.M., Cooke, S.J., Poesch, M. 2015. Finding the path to success: advice for early career researchers. *Fisheries*. 40(8): 399-403.

O'Malley, B.P., **Maitland, B.M.** 2014. Observations on the freshwater zooplankton of Dominica, West Indies, including records from the former Matthieu landslide-dam Lake. *Pan-American Journal of Aquatic Science*. 9(3): 228-233.

In preparation (manuscript available upon request)

Barrus, N.T., **Maitland, B.M**., Rahel, F.J. Assessing a standardized method to identify optimal baselines for trophic position estimation in stable isotope studies of stream ecosystems. Target: *Freshwater Biology*.

Maitland, B.M., Walker, R.H., Kirkeeing, C., Compton, R., Gale, S., Rahel, F.J., Cook, C. Food web response to tiger muskellunge biocontrol in a Western US reservoir. Target: *North American Journal of Fisheries Management*.

Kleve, L., Daly, A., **Maitland, B.M.**, Rosinski, C., Fetzer, W. Stable isotope trophic discrimination factors of hatchery fish-eye lenses and other tissues. Target: *Ecology of Freshwater Fish*.

Technical reports

2. Mitro, M., Fiener, Z., Latzka, A.L., Barta, Embke, H., Homola, J., Isserman, D., Lyons, J., **Maitland, B.M.,** Sass, G., Shaw, S., Shultz, A., Tsyehaye, I., Vander Zanden, J. 2021. *Wisconsin Initiative on Climate Change Impacts: Fisheries Working Group Report*. Nelson Institute for Environmental Studies, University of Wisconsin-Madison, WI Department of Natural Resources, Madison, WI.

1. Roseman, E.F., Riley, S.C., Farha, S.A., **Maitland, B.M.,** Tucker, T.R., Provo, S.A., McLean, M.W. 2013. Status and Trends of the Lake Huron Offshore Demersal Fish Community, 1976-2012. *Report to the Great Lakes Fishery Commission Lake Huron Committee Meeting*, Duluth, Minnesota, U.S. Geological Survey, Great Lakes Science Center, Ann Arbor, Michigan.

FUNDING

Awarded

2022 $37,800. EPA-UW Postdoctoral Fellowship, UW-Madison Center for Limnology & US EPA.

2021 $100,833. Wisconsin Water Resources Science-Policy Postdoctoral Fellowship, UW-Madison Aquatic Sciences Center & WI Department of Natural Resources.

2020 $19,866. Novel Outreach and Education Grant, Biodiversity Institute. "Seeing the unseen: using video and in-stream sampling to make underwater landscapes and their biodiversity

accessible and understandable to non-STEM audiences through the visual arts." PIs: F. Rahel, K. Fryre, and B. Maitland.

2020 $1,000. CO-WY American Fisheries Society Small Grant. Food web response to Tiger Muskellunge biocontrol in a Wyoming Reservoir: a multi-year perspective.

2019 $22,000. Menken's Graduate Fellowship, University of Wyoming. Food web expansion and diet specialization along longitudinal stream gradients. PIs: B. Maitland

2019 $1,000. CO-WY American Fisheries Society Small Grant. "Validating fin tissue as a non-lethal proxy to muscle tissue for stable isotope analysis in Wyoming Fishes." PIs: B. Maitland and F. Rahel.

2018 $6,000. Ecology Grant. Biodiversity Institute, University of Wyoming. "Refining the use of stable isotopes in aquatic ecology: assimilation and discrimination of C and N in prairie stream fishes." PIs: B. Maitland and F. Rahel.

2017 $4,000. Berry Research Grant. Biodiversity Institute, University of Wyoming. "Applying the isotopic niche to identify factors that influence the diversity of fish assemblages in Rocky Mountain rivers." PIs: B. Maitland and F. Rahel.

2015 $25,207. Research Grant. Biodiversity Institute, University of Wyoming. "Factors that influence the diversity of fish assemblages in Rocky Mountain-Great Plains streams: a food web approach." PIs: B. Maitland and F. Rahel.

Invited, not awarded

2023 $258,571. Wisconsin Sea Grant. Understanding aquatic food web resilience: A cross-lake comparison of food web structure and habitat coupling in Lakes Michigan and Superior. PIs: O. Jensen and B. Maitland.

2021 $399,853. USGS Midwest Climate Adaptation Center. Climate change and groundwater pumping impacts on Wisconsin trout fisheries. PIs: O. Jensen and B. Maitland.

INVITED PRESENTATIONS

2023 Fish & Freshwater in a Changing World: Science for Management and Conservation. Rocky Mountain Research Station, US Forest Service. 14 April.

2022 Climate change, extreme weather, and stream trout in Wisconsin. Wisconsin Chapter of Trout Unlimited. 15 September.

2022 Coldwater Fish in a Changing World: Actionable Ecology for Management and Policy. Department of Ecology, Montana State University. 19 March.

2021 Tackling Wisconsin's water challenges through UW Water Science-Policy Fellowships and agency partnerships, Invited Plenary Session, Wisconsin Water Week, 16 March.

2017 Stream Culverts & Fish: The Good, the Bad & the Ugly. Invited seminar, Pinedale Science Café

2016 Culverts as culprits: how road crossings affect fish. Invited seminar, Laramie Science Café

CONTRIBUTED PRESENTATIONS

Lead author: (#best paper award)

Maitland, B.M., and others. 2023. Testing food web theory in large lakes: the role of body size in habitat coupling in Lake Michigan. American Fisheries Society Annual Meeting. Grand Rapids, MI.

Maitland, B.M., Jensen, O., Hoffman, J., Keppeler, F., Bunnell, D., McNaught, S., Gerig, B., 2023. Body size, trophic position, and energy coupling in Lake Michigan. Wisconsin Chapter of the American Fisheries Society, Annual Meeting. Stevens Point, WI.

Maitland, B.M. and Latzka, A. 2022. Shifting climate conditions affect recruitment in Midwestern stream trout, but depend on seasonal and spatial context. JASM Meeting, Grand Rapids, MI.

Maitland, B.M. and Latzka, A. 2021. Long-term trends of Midwestern stream trout populations in a changing climate, and the effects of seasonal weather. AFS Annual Meeting, Baltimore, MD.

Maitland, B.M. Latzka, A., Mitro, M., Frater, P. 2021. Untangling the effects of hydrologic change on trout in Wisconsin streams. 2021 Wisconsin Water Week Conference. Virtual.

#Maitland B.M., Latzka, A., Frater, P., and Mitro, M. 2021. Long-term trout trends in Wisconsin and the role of hydrologic change. Wisconsin Chapter of the American Fisheries Society, Annual Meeting. Virtual.

Maitland B.M., Fetzer, W., Collins, S., and Rahel F.J. 2020. Non-lethal approaches for obtaining stable isotope data for diet studies of North American fishes. CO/WY AFS. Laramie, WY.

Maitland B.M. and Rahel F.J. 2019. Non-lethal sampling of North American native non-game fishes for stable isotope analysis in food webs studies. Joint Meeting of the Wildlife and American Fisheries Society. Reno, NV.

Maitland B.M., Rahel F.J. 2018. Stream food web expansion in response to changing environmental conditions. CO/WY AFS Chapter Annual Meeting. Laramie, WY.

#Maitland B.M., Rahel F.J. 2018. (Poster) Niche partitioning in fish assemblages along longitudinal stream gradients. Canadian Conference for Freshwater Fisheries Research. Edmonton, AB, CAN.

Maitland B.M., Rahel F.J. 2017. Isotopic niches and the longitudinal gradient in Rocky Mountain-Great Plains streams. Society for Freshwater Science Annual Meeting. Raleigh, NC.

Maitland B.M., Rahel F.J. 2017. Exploring isotopic niches in Rocky Mountain Great Plains stream fish. Zoology & Physiology Brown Bag Lecture Series. Laramie, WY.

Maitland B.M. 2017. Culverts & steam fish: the good, the bad, and the ugly. Pinedale Science Café, *invited speaker*. Pinedale, WY.

Maitland B.M., Walker R.H., LaSharr T.N., Rosin M., Ben-David M. 2017. The fate of juvenile salmonids stranded in flood ponds: implications for nutrient transfers. CO/WY AFS chapter Annual Meeting. Grand Junction, CO.

#Maitland B.M., Walker R.H., LaSharr T.N., Rosin M., Ben-David M. 2017. Juvenile salmonids stranded in flood ponds of Alaska. U Wyoming Program in Ecology Symposium. Laramie, WY.

Maitland, B.M., Poesch, M.S., Anderson, A.E. 2016. Culverts in the boreal forest: impacts and restoration methods for native freshwater fishes. Society for Freshwater Science Annual Meeting, Rivers at Risk special symposia. Sacramento, CA.

Maitland, B.M., Poesch, M.S., Anderson, A.E. 2016. Culverts in forested watersheds: impacts and restoration methods for native freshwater fishes. CO/WYAFS Annual Meeting. Laramie, WY.

Maitland, B.M., Poesch, M.S., Anderson, A.E. 2014. Stream Crossing Impacts on Freshwater Fish Communities and in-Stream Habitat in West-Central Alberta: Implications for Management and Conservation. American Fisheries Society Meeting, Roads and Rivers Symposium. Quebec

Maitland, B.M., Poesch, M.S., Anderson, A.E. 2014. Stream crossing assessment procedures as a tool for mitigating impacts on freshwater fish. CMI Resource Roads Conference. Nelson, BC.

Maitland, B.M., Poesch, M.S., Anderson, A.E. 2014. Stream crossing impacts on freshwater fish and instream habitat in Alberta. Canadian Conference for Fisheries Research. Yellowknife, NWT.

Maitland, B.M., O'Malley, B.P., O'Brien, T.P., Armenio, P.M., Watson, N.M., Roseman, E.F. 2014. Zooplankton community dynamics in a northern Lake Huron embayment: The influence of water temperature and larval fish abundance. Conference on Great Lakes Research. Hamilton, ON.

Maitland, B.M., Poesch, M.S., Anderson, A.E. 2014. Stream crossing impacts on freshwater fishes: implications for management. Forest Industry Lecture Series. Edmonton, AB, Canada.

Maitland, B.M., S.A. Farha, R.W. Darnton, K.R. Smith, and S.C. Riley. 2012 Avian botulism environmental sampling in Sleeping Bear Dunes National Lakeshore. GLRI Project no. 73 and 91 USGS/NPS Meeting. Empire, MI.

Co-author:

Kleve, L., Daley, A., **Maitland, B.M**., Rosinski, C., Fetzer, W. 2023. Stable isotope trophic discrimination factors of hatchery fish eye lenses and other tissues. Annual Meeting of the American Fisheries Society. Grand Rapids, MI.

Sass, G.G., ..., **Maitland B.M.**, et al. 2023. Depensatory recruitment in Wisconsin walleye: mechanisms and management. Wisconsin DNR Office of Applied Science Webinar Series. Virtual.

Ward, N.K., Lynch, A.J., Beever, E.A., Bouska, K., Embke, H., Kocic, J., Limpinsel, D., Magee, M.R., **Maitland, B.M**., Morton, J.M., Muelbauer, J.D., Oliver, D.C., Rantala, H.M., Sass, G.G., Schultz, A., Thompson, L.M., Wilkening, J. 2022. Using the Resist-Accept-Direct (RAD) Framework to Reimagine Large River Management. AFS Annual Meeting. Spokane, WA.

Lapides, D., **Maitland B.M.,** and Pruitt, A. 2021. Assessing approaches to quantify hydrological alteration on Wisconsin's streams. American Water Resources Association, Wisconsin section Annual Meeting. Virtual.

Barrus, N., **Maitland, B.M.,** and F.J. Rahel. 2019. Identification of an ideal baseline organism for stream food web studies. Joint Meeting of the Wildlife and American Fisheries Society. Reno, NV.

Daniels S.E., Fitzpatrick T.A., **Maitland B.M**. 2015. Idiosyncratic resource use by Laramie raccoons: are trash pandas, *trash* pandas? Stable Isotope Ecology Symposium. Laramie, WY.

Annear A.A., **Maitland B.M**., Rahel F.J. 2016. Stable isotope quantification of resource use by crayfish in the Laramie River to inform lotic food web analyses. CO/WY AFS Annual Meeting. Laramie, WY.

Hirshfield F., Anderson A.E., **Maitland B.M.,** Wagner, M., Zaichkowsky, M., Mottishaw, C. 2014. Integrating science and management to improve sustainability of forested watersheds in Northwestern Canada. Society for American Foresters National Convention and IUFRO World Congress. Salt Lake City, UT.

Discenza JD, BP **O'Malley**, BM Maitland, and D Fernando. 2011. Analyzing the genetic variation in American Hart's tongue fern. Spotlight on Student's Research. SUNY-ESF, Syracuse, NY.

PROFESSIONAL SERVICE

Reviews:

- **Reviewer for granting organizations:** National Science Foundation.
- **Journal Referee (n = 32 from 2016-2023; Mean = 4 per year)**: *Oecologia, Global Change Biology, Ecological Applications, Freshwater Biology, Freshwater Science, Frontiers in Ecology and Evolution, Hydrobiologia, Journal of Ecology, Fisheries Research, Environmental*

Biology of Fishes, Restoration Ecology, PeerJ, River Research and Applications, Diversity and Distributions, Transportation Research: Part D.

Working groups:

- Member, *Freshwater Working Group*, Society for Conservation Biology (2015-present)
- Member, Fisheries Working Group, *Wisconsin Initiative on Climate Change Impacts*, Nelson Institute for Environmental Studies and Wisconsin DNR (2021-2022)
- Member, *Trout Species Team*, Wisconsin Department of Natural Resources (2020-2022)
- President, *UWyo Student Chapter*, American Fisheries Society (2016-2017)
- Ex Comm member, *CO-WY State Chapter*, American Fisheries Society (2016-2018)

Society memberships:

- Society for Conservation Biology – National (2010-present)
- American Fisheries Society – National (2010-present), North Central Division (2020-present), Wisconsin Chapter (2020-present), Western Division (2015-2020), CO-WY Chapter (2015-2020), University of Wyoming Student Subunit (2015-2020), Canadian Aquatic Resource Section (2013-2015), New York Chapter (2010-2011), SUNY:ESF Student Unit (2010-2011)
- Ecological Society of America – National (2015-present)
- Society for Freshwater Science (2016-present)
- Galápagos Conservancy (since 2019)
- Association for the Science of Limnology & Oceanography (2016-2019)
- International Association of Great Lakes Research (2010-2016)

Departmental and University:

2022-2023	Field Operation Facilitation and Boat Committee, Center for Limnology, UW-Madison
2016-2020	Social Media Coordinator, Program in Ecology, University of Wyoming
2019-2020	Member, faculty search committee, Dept. Zoology & Physiology, U Wyoming
2017-2018	Student representative, University of Wyoming Graduate Council
2016-2017	President, Program in Ecology, University of Wyoming
2015-2020	Student representative to faculty, Zoology & Physiology, University of Wyoming

Knowledge translation and dissemination to the public, policymakers, and resource managers:

- Climate change and Wisconsin trout. 2023. On-air interview, WPR, Madison, WI.
- Regular meetings with trout fisheries managers in Wisconsin, 2020-2022.
- Meeting with Wisconsin Trout Unlimited. 2022.
- Research advances and priorities panel discussion, Wisconsin Chapter American Fisheries Society annual meeting, virtual event, February 2021.
- Regular meetings with fisheries managers in Wyoming, 2015-2020.

Media coverage

- Milwaukee Journal Sentinel, Jan 2023. Climate change is making Wisconsin trout more vulnerable to floods and heat. (Also covered in separate stories on WPR Public Radio).
- Water Blogged, Dec 2022. A Tale of Two Fishes: Study Maps the Future of Trout Populations in Wisconsin.
- UW-Madison News, Dec 2022. Study maps uneasy future of Wisconsin trout populations.

- "Stuck in a rut in Anaconda? Crash a cutthroat spawning party!" 2017. Featured article, The Tributary.

TEACHING AND MENTORING

Classroom

- Instructor, *Programing with R*, Annual Meeting of the WI AFS, online (spring 2021, 2022, 2023)
- Instructor, *Aquatic ecology*, Wyoming Naturalists Program, Biodiversity Inst. (spring 2021)
- Instructor, *Ichthyology*, University of Wyoming (spring 2020)
- Instructor, *Mixing models in R workshop*, Stable Isotope Ecology (fall 2018)
- TA, *Ichthyology*, University of Wyoming (springs of 2016-2020)
- TA, *Fisheries Management*, University of Wyoming (fall 2015)
- TA, *Fisheries and Wildlife Management*, University of Alberta (fall 2015)

Guest lectures

2020	*Aquatic Ecology*. General Ecology, Life Sciences Program, University of Wyoming
2018-2020	*Application of stable isotope ecology to fisheries management*. Fisheries Management, Dept. Zoology & Physiology, University of Wyoming

Undergraduate supervision

2023	Jonathan Martin (UW-Madison)
2018-2020	Nathan Barrus (University of Wyoming)
2019-2020	Russell Brubaker (University of Wyoming)
2018-2019	Reilly Davis (University of Wyoming)
2017	Brynn Hirschman (University of Wyoming)
2017	Austin Jacobson (University of Wyoming)
2016	Shaun Helsper (University of Wyoming)
2016-2017	Travis Allison (University of Wyoming)
2016	Andrew Annear (University of Wyoming)
2015	Jake Werner (University of Wyoming)

HONORS & AWARDS

2021	$6,000	Travel Award to AFS 2021, Baltimore. Wisconsin Chapter AFS
2020	$1,000	Conservation Research Grant. North American Native Fish Association
2019	$2,500	Dean's Graduate Scholar Award, University of Wyoming College of Arts & Sciences
2018	$2,500	Eugene Maughan Graduate Scholarship, Western Division AFS
2018	$6,016	Hank Gardner Physiology Graduate Scholarship, University of Wyoming
2017	$500	Clemens-Rigler Student Travel Grant, 2017 CCFFR conference, Edmonton, AB, CAN
2017	$400	Board of Visitors Award, University of Wyoming College of Arts & Sciences

2017 $4,350 Dennis Anderson Fisheries Award, University of Wyoming
2017 $900 William Trachtenberg Scholarship, Sustainable Fisheries Foundation
2017 $6,200 Vern Bressler Fisheries Award, University of Wyoming
2015 $200 Excellence in Fisheries at a Canadian Institution, AFS CARS
2015 $600 Clemens-Rigler Student Travel Grant, 2017 CCFFR conference, Yellowknife, NWT

SPECIALIZED SKILLS & TRAININGS

Project Management:

- University, state, and federal agency collaborations, hiring and training of personnel, budgeting and supplies management, data management and analysis, protocol development, land-owner contacts, and site selection.

Leadership Training

2021 Equity and Inclusion Workshop (3 workshops over 3 months), EQT By Design via WI Sea Grant
2008 Leave No Trace Master Educator, Center for Outdoor Ethics, NOLS
2007 Environmental Ethics. University of Utah and NOLS
2007 Group Leadership Skills. University of Utah and NOLS

Software Competency

- Operating systems: MacOS, Windows OS
- Programming languages: R, Python, JAGS, C++, SQL, VisualBasic, HTML
- Relational database management: Oracle, MS SQL Server, PostgresSQL, SQLite, MS Access
- Geographic Information Systems: QGIS, ESRI ArcMap
- GPS systems/navigation software.

Field and Lab Skills

- >18 years of field experience in diverse ecosystems (Great Lakes, Caribbean, Adirondacks, North Canadian Boreal Forest, Northern/Southern Rocky Mountain backcountry, Pacific Northwest).
- Broad basic and applied background in natural history, especially freshwater fishes, benthic invertebrates, aquatic birds, trees, and fungi)
- Piloting (150+ days) and trailering small vessels (to 40')
- Trap nets, gill nets, fyke nets, seines, set lines, trawling, benthic dredges, boat, raft, and backpack electrofishing, fish tagging (visible implant (VIE), coded wire, PIT, T-bar/dart floy tags), gastric lavage, tissue biopsy, benthic invertebrate collections, plankton tows, sediment coring systems, environmental and water quality data collection
- Flight experience (Bell and Robinson helicopters, Banff AB)
- Molecular techniques (DNA extraction, PCR)
- Fishing, backcountry travel, orienteering (map, compass, GPS and Trimble)
- Light machinery operation, small power equipment repair, minor electrical repair, handiwork

Certifications

2020 Advanced CPR, American Red Cross
2014 Wilderness Advanced First Aid, Raven Rescue, Wilderness Medical Associated International
2018 Avalanche Safety Level 1, National Ski Patrol
2013 Electrofishing certificate, Alberta Provincial Standard

2013 ATV Training Certificate, Canada Safety Counsel
2012 MOCC Federal motor boat operator, US Department of Interior

COMMUNITY SERVICE AND OUTREACH

2022-2023 Food service volunteer, Ronald McDonald House, Madison, Wisconsin
2016-2020 Science outreach and stream ecology field trips, Laramie High School
2016-2019 Group leader, Wyoming Bio-Blitz, Biodiversity Institute, University of Wyoming
2016-2018 Big Brother, Big Brothers Big Sisters of Wyoming
2017-2018 Habitat restoration projects, Girl Scouts of America
2016-2017 Science judge, Wyoming State Science Fair

PRE-DOCTORAL RESEARCH AND FIELD EXPERIENCE

2015-2020 **Ph.D. Student**. University of Wyoming. Experience with formulating and designing a research program; laboratory diet-switch experiments; building and maintaining partnerships with agency and non-governmental organizations; providing technical leadership, advisory, planning and reviewing services for undergraduate students; preparing and publishing results and findings in high impact journals; mentoring undergraduate students. Became proficient in statistical software R, including mastery of mixed-effects and generalized mixed models, and data management.

2013-2015 **M.Sc. Student**. University of Alberta. Surveyed 66 remote stream sites in the Alberta's Northern Boreal Forest. Experience with backpack electrofishing, habitat surveys, public relations, industry relations, and road crossing inspections. Became proficient in ArcGIS, linear and non-linear modeling, and multivariate statistics.

2014 **Research Technician**. Upper Athabasca River Oil Sands Project. Served as boat electrofishing pilot (Smith-Root GPP, 20 ft.) for fish community surveys and sample collections on the upper Athabasca River near Fort McMurry, Alberta.

2013-2014 **Research Technician**. Aquatics Division, Parks Canada, Banff, AB, CAN. Experience traveling in helicopters, developing logistics for field work over mountainous terrain, and collecting limnological data from high elevation lakes in Banff National Park.

2011-2013 **Fisheries Research Technician**. USGS Great Lakes Science Center, Ann Arbor, MI. Conducted research investigating the proliferation of botulinum toxin (type E) in the Great Lakes. Fieldwork consisted of extended deployments (~2-3 weeks/mo.) to Leland, MI, where data were collected in offshore waters near Sleeping Bear Dunes National Lakeshore. Extensively piloted 30' research vessel for sample collection and SCUBA support. Managed three crew members as field supervisor. Deployed gill nets, set lines, plankton tows, and benthic dredges. Maintained, serviced, and deployed multi-parameter datalogging sondes.

2011 **Laboratory Assistant**. Conservation Genetics Lab, SUNY—ESF. Experience extracting and amplifying DNA samples, and running gel electrophoresis.

2010 **Laboratory Assistant**. Aquatic Ecology Lab, SUNY—ESF. Experience sorting benthic samples and identifying invertebrates to family.

2009-2010 **Research Technician**. SUNY—ESF Thousand Island Biological Research Station, Clayton, NY. Daily navigation and sampling high traffic reaches of the St. Lawrence River. Continued ongoing muskellunge monitoring program, including trap-netting for genetic samples, gastric lavage, aging and reproductive stage assessment, and seining YOY for recruitment index. Assessed fish communities via trap-netting, seining, and boat electrofishing. Maintained four research vessels (12-19'), vehicles, ATVs, sampling equipment, and field station. Assisted NYDEC with gillnet survey on Lake Ontario aboard the R/V Seth Green (46').

LANGUAGES

English (native)
Spanish (conversational)