Quinnlan C. Smith

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RESEARCH INTERESTS

I am a fisheries ecologist with interests relating to the conservation and management of fish communities, the influence of climate change on the ecology, fisheries, and population dynamics within lake systems, human effects on ecosystems, and water column effects due to changing light conditions. I am currently a Ph.D. candidate at the University of Wisconsin – Madison examining climate change and habitat use of walleye. My Master's research focused on sportfish behavioral responses to a coarse woody habitat introduction in northern Wisconsin, a common management option in ecosystems influenced by increased lakeshore residential development. In the past, I have worked on predictive models to help conceptualize future ecological conditions on Lake Superior relating to changing water column light conditions given trends in increased wind over the lake surface and ice cover decline.

EDUCATION

Graduate-
University of Wisconsin Madison (UW) start date August 2022
Freshwater and Marine Sciences, Ph.D.
PIs: Jake Vander Zanden (UW) and Olaf P. Jensen (UW)

University of Minnesota Duluth (UMD)
Integrated BioSciences, M.S., May 2021
PIs: Thomas R. Hrabik (UMD) and Greg G. Sass (WDNR)

Undergraduate-University of Minnesota Duluth (UMD)
Bachelor of Science in Biology, May 2018
Bachelor of Arts in Hispanic Studies, May 2018
Swenson College of Science and Engineering Dean's List, Fall 2017
College of Liberal Arts Dean's List, Fall 2017

PROFESSIONAL EXPERIENCE

Graduate Research Assistant — August 2022-January 2023; May 2023-Janurary 2024; May 2024-Present

University of Wisconsin – Madison
Center for Limnology

Graduate Teaching Assistant — January 2023-May 2023; January 2024-May 2024

University of Wisconsin – Madison
Ecology of Fishes (laboratory sections)

University of Wisconsin LTE — May 2022-August 2022
University of Wisconsin – Trout Lake Station
Aquarist and Researcher — August 2021-May 2022
Great Lakes Aquarium
Graduate Teaching Assistant — August 2018-May 2019, August 2020-May 2021
University of Minnesota Duluth
General Biology II (lecture and laboratory sections)
Graduate Research Assistant — August 2019-May 2020
University of Minnesota Duluth
Wisconsin Department of Natural Resources LTE — May 2019-August 2019
Escanaba Research Station
Wisconsin Department of Natural Resources Volunteer — May 2018-August 2018
University of Wisconsin - Trout Lake Station — May 2020-August 2020

RESEARCH EXPERIENCE

- PhD Graduate Studies, University of Wisconsin Madison, "Walleye Fisheries, Bright Spots in a Changing Climate" PIs: Dr. Jake Vander Zanden (UW) and Dr. Olaf P. Jensen (UW), Fall 2022 – Present
- Sapelo Island Research (ZOO 750), University of Wisconsin Madison / Sapelo Island - UGAMI, "Effects of short-term anthropogenic disturbances on ghost crab burrow density and diameter" Fall 2022
- M.S. Graduate Studies, University of Minnesota Duluth, "Sport Fish Behavioral Responses to a Littoral Coarse Woody Habitat Addition in a North-temperate Lake" PIs: Dr. Thomas R. Hrabik (UMD) and Dr. Gregory G. Sass (WDNR), Spring 2018 – May 2021
- Undergraduate Research Opportunities Program, University of Minnesota Duluth, "Assessing the Effect of Climate Change on Surface Ice Cover Regarding Siscowet Lake Trout Feeding Habits in Lake Superior", Biology Faculty Sponsor: Dr. Thomas Hrabik, Spring 2018
- Undergraduate Research, University of Minnesota Duluth, "Assessing the Effect of Variable Surface Ice Cover Regarding Algal Productivity in Lake Superior", Biology Faculty Sponsor: Dr. Thomas Hrabik, Spring 2018
- Undergraduate Research, University of Minnesota Duluth, "Assessing the Effect of Waves on Siscowet Lake Trout Feeding Habits", Biology Faculty Sponsor: Dr. Thomas Hrabik, Fall 2017

FIELD AND LAB EXPERIENCE

PhD Research project work (University of Wisconsin – Madison, Trout Lake Station and Hasler Center for Limnology, May-September 2022, 2023, 2024)

- Operated boom electrofishing boat
- Deployed HOBO light and temperature strings
- Deployed and maintained PME MiniDOT oxygen sensors
- Collected total phosphorus, total nitrogen, dissolved organic carbon and nitrogenous waste samples

- Counted, identified, and categorized aquatic coarse woody habitat based on species, length, complexity, and degradation

Sapelo Island Research project work (ZOO 750) (Sapelo Island, GA, October 2022)

- Designed short term research project for week-long sampling in marine ecosystem
- Constructed experimental plots and performed anthropogenic disturbance treatments
- Quantified and measured ghost crab burrows
- Identified marine crustaceans, fishes, and coastal macrophytes

Walleye husbandry and light experiments (University of Minnesota Duluth, October 2019 – Spring 2020)

- Monitored walleye health, water conditions, and feeding habits
- Performed routine water changes to ensure water quality
- Tagged walleye to be used in light experiments
- Adjusted foraging arena to be fit for certain light levels and water clarity

Hydroacoustic/fish technician, DNR Lake Superior cruise (R/V Blue Heron, October 27th – 30th, 2019)

- Assisted with setting up of hydroacoustic sonar unit
- Calibrated hydroacoustic sonar unit
- Performed nightly trawls for fish sampling
- Identified native and invasive species
- Processed Coregonid fish including length/weight, sexes, and otolith extractions

M.S. Research project work (University of Wisconsin Madison – Trout Lake Station and Escanaba Research Station, May-August 2018, 2019, 2020)

- Placed and retrieved mini fyke nets, fyke nets, clover traps, and vertical/horizontal gill nets
- Processed Centrarchidae, Ictalurid and Salvelinus fish including length/weight, diets, flesh samples, and otolith extractions
- Performed boom electrofishing
- Processed invertebrate samples from sediment
- Collected macroinvertebrates using kick nets and Ekman grabs
- Collected water column zooplankton tows
- Processed zooplankton samples
- Collected aquatic macrophyte samples for scientific research while SCUBA diving
- Measured temperature, dissolved oxygen, pH and chlorophyll A using a YSI probe
- Sampled environmental DNA
- Sampled native and invasive crayfish populations
- Sampled fish populations and density using hydroacoustics
- Performed radio telemetry data collection and data analysis
- Performed PIT tag data collection and data analysis
- Surgically implanted fish with radio telemetry tags and PIT tags

- Identified and sampled big tooth aspen, white pine, and red pine leaves
- Trailered, loaded, launched, navigated and removed 18-foot boats
- Carried 30 pound batteries in rugged terrain

Ichthyology (UMD-BIOL 4761, January-May 2019)
- Measured physiologic aspects of fishes
- Classified native Great Lakes region fishes to species level based on physiology
- Studied economic and behavioral aspects of fish
- Applied lecture material during independent field study

Lake Ecology (UMD-BIOL 4861, January-May 2018)
- Measured temperature, dissolved oxygen, pH and chlorophyll A using a YSI probe
- Collected water column light measurements using a light meter and Secchi Disk
- Sampled different portions of the water column using a Van Dorn Bottle
- Performed Winkler titrations in lab
- Sampled zooplankton in the water column and performed lab analysis
- Sampled sediments using a ponar grab and analyzed sediments and invertebrates
- Analyzed phytoplankton samples in lab

PUBLICATIONS

Peer-reviewed Journal Articles

Holly S. Embke, Zachary S. Feiner, Gretchen J.A. Hansen, Daniel Isermann, Olaf P. Jensen, Christopher Rounds, Quinnlan C. Smith, M. Jake Vander Zanden: Bright spots for advancing ecological understanding and conservation decision-making, *Conservation Biology*

Noland O. Michels, Thomas R. Hrabik, Quinnlan C. Smith, Greg G. Sass, Allen F. Mensinger: The Effects of Light Intensity and Water Clarity on Growth Rates of Juvenile Walleye (*Sander vitreus*), *Fisheries Research*

Jack M. Abel, Sean E. Sass, Vincent G. Sass, Quinnlan C. Smith, Greg G. Sass: Hungry Like the Bass: Observations of Pack Hunting in Rock Bass (*Ambloplites rupestris*), *Northeastern Naturalist*

Noland O. Michels, Quinnlan C. Smith, Loranzie S. Rogers, Thomas R. Hrabik, Greg G. Sass, Allen F. Mensinger (2025): Foraging Behavior and Success of Walleye (*Sander vitreus*) Under Ecologically Relevant Downwelling Light, *Biology of Fishes*

Quinnlan C. Smith, Greg G. Sass, Thomas R. Hrabik, Stephanie L. Shaw, Joshua K. Raabe (2024): Sport fish movement and habitat use responses to a littoral coarse woody habitat addition in a north-temperate lake, *North American Journal of Fisheries Management*

Quinnlan C. Smith, Greg G. Sass, Thomas R. Hrabik, Stephanie L. Shaw, Joshua K. Raabe (2021): Sport fish home range responses to a littoral coarse woody habitat addition in a north-temperate lake, *Ecology of Freshwater Fish*

Greg G. Sass, Stephanie L. Shaw, Thomas P. Rooney, Andrew L. Rypel, Joshua K. Raabe, Quinnlan C. Smith, Thomas R. Hrabik & Scott T. Toshner (2019): Coarse woody habitat and glacial lake fisheries in the Midwestern United States: knowns, unknowns, and an experiment to advance our knowledge, *Lake and Reservoir Management*

Benjamin R. Vasquez, Daniel J. Dembkowski, Olaf P. Jensen, Stephanie L. Shaw, Greg G. Sass, Quinnlan C. Smith, Holly S. Embke, M. Jake Vander Zanden, Zachary S. Feiner, Joseph T. Mrnak, Gretchen J.A. Hansen, Daniel A. Isermann: An empirical evaluation of preferred walleye habitat in northern Wisconsin Lakes (submitted)

Quinnlan C. Smith: Effects of short-term anthropogenic disturbances on ghost crab (*Ocypode quadrata*) burrow density and diameter (in prep)

EXTERNAL REVIEWING

Participated as a Reviewer for:

Animal Biotelemetry (2025)
Environmental Monitoring and Assessment (2025)
Canadian Journal of Fisheries and Aquatic Sciences (2025)
Journal of Great Lakes Research (2024, 2024)
North American Journal of Fisheries Management (2020, 2021)

PROFESSIONAL PRESENTATIONS (Primary Author)

- "Walleye in Wisconsin: Past, Present, Future and What You Can Do to Support Them" Presented in 60 minute discussion format to members of the public at Two Sisters Lake Property Owners Association annual meeting, 2025
- "Juvenile Walleye (Sander vitreus) Foraging Behavior and Growth Under Varying Light and Water Conditions" Presented in 20 minute scientific talk format to researchers and DNR staff at Wisconsin American Fisheries Society, 2025
- "From Physics to Fish: Vol. 4. Differences in pelagic and littoral water temperature and oxygen – applications to inform our evaluation of lake habitat" Presented in 45 minute scientific talk format to undergraduate students, graduate students, and faculty at University of Wisconsin Madison Center for Limnology, 2024
- "Evaluating Available Habitat and Walleye Selection in a North-Temperate Lake" Presented in 15 minute scientific talk format to professionals at National American Fisheries Society Annual Meeting, 2024
- "From Physics to Fish: Vol 3. The Influence of Aquatic Macrophytes on Temperature in Lake Littoral Zones" Presented in 30 minute scientific talk format to undergraduate students, graduate students, and faculty at University of Wisconsin Madison Trout Lake Research Station, 2024

- “The Role of Aquatic Macrophytes in Providing Thermal Refugia for Walleye” Presented in 15 minute scientific talk format to researchers at ASLO Annual Meeting, 2024
- “The Role of Aquatic Macrophytes in Providing Thermal Refugia for Walleye” Presented in poster format to undergraduate students, graduate students and faculty at University of Wisconsin Water Atmospheric Oceanic and Space Sciences Reid Bryson poster event, 2024
- “Long-term Trends and Effects of Coarse Woody Habitat on Fish Communities in a North-Temperate Lake” Presented in 20 minute scientific talk format to researchers and DNR staff at Wisconsin American Fisheries Society, 2024
- “Walleye Fisheries of the Upper Great Lakes Region: Bright Spots in a Changing Climate” Presented in poster format to undergraduate students, graduate students and faculty at University of Wisconsin Water @ UW Networking Event, 2023
- “Integrated Approaches to Fisheries Management: Walleye ‘Bright Spots’ in the Upper Great Lakes Region” Presented in 5 minute scientific talk format to graduate students, researchers and professional at Science in the Northwoods Conference, 2023
- “From Physics to Fish: Vol. 2 Intensive Thermal and Optical Habitat Sampling of Lakes to Inform Fisheries Management Practices” Presented in 45 minute scientific talk format to undergraduate students, graduate students, and faculty at University of Wisconsin Madison Center for Limnology, 2023
- “Walleye Fisheries of the Upper Great Lakes Region: Bright Spots in a Changing Climate” Presented in poster format to graduate students and faculty at University of Wisconsin Madison Trout Lake Research Station, 2023
- “From Physics to Fish: Vol. 1 Evidence for Fine-scale Littoral Temperature Variation in a Small Glacial Lake” Presented in 30 minute scientific talk format to undergraduate students, graduate students, and faculty at University of Wisconsin Madison Trout Lake Research Station, 2023
- “Walleye Fisheries of the Upper Great Lakes Region: Bright Spots in a Changing Climate” Presented in poster format to graduate students and faculty at University of Wisconsin Madison, 2023
- “Walleye Fisheries of the Upper Great Lakes Region: Bright Spots in a Changing Climate” Presented in poster format to researchers and DNR staff at Wisconsin American Fisheries Society, 2023
- “Sturgeon Scutes and Shark Scales – A General Overview of Fish Evolution” Presented in lecture/discussion format to Great Lakes Aquarium staff 2022
- “Sport Fish Behavioral Responses to a Littoral Coarse Woody Habitat Addition in a North-temperate Lake” Presented in 45 minute online scientific talk format to undergraduate students, graduate students, and faculty at University of Minnesota, 2022
- “Sport Fish Behavioral Responses to a Littoral Coarse Woody Habitat Addition in a North-temperate Lake” Presented in 45 minute online scientific talk format to undergraduate students, graduate students, and faculty at University of Wisconsin Madison, 2022
- “Fish Evolution: Sturgeons, Sharks, and Their Ancestors” Presented in 1 hour online lecture/discussion format to Great Lakes Aquarium staff 2021

- “Sport Fish Behavioral Responses to a Littoral Coarse Woody Habitat Addition in a North-temperate Lake” Presented in 45 minute online scientific talk format to undergraduate students, graduate students, and faculty at University of Minnesota Duluth, 2021
- “Coarse Woody Habitat Effects on Sport Fish Behavior” Presented in 20 minute online scientific talk format to researchers and managers at Midwest Fish and Wildlife Conference, 2021
- “Coarse Woody Habitat Effects on Sport Fish Behavior” Presented in 20 minute scientific talk format to researchers and DNR staff at Wisconsin American Fisheries Society, 2020
- “Fish Evolution: From Sharks to Sturgeon” Presented in 45 minute lecture format to undergraduate students and Great Lakes Aquarium staff at Great Lakes Aquarium, 2019
- “Multidimensional Sonar in Lake Superior” Presented in 20 minute scientific talk format to researchers and DNR staff at MNDNR Fisheries Research Unit Meeting, 2019
- “Woody Debris as Habitat” Presented in 20 minute scientific talk format to researchers and DNR staff at MNDNR Fisheries Research Unit Meeting, 2019
- “Fish and Oxygen in Winter” Presented in 45 minute lecture format to undergraduate students for the Partners in Education program at University of Minnesota Duluth, 2019
- “Models: From Lab to Field Data” Presented in 45 minute lecture format to undergraduate students, graduate students, and faculty at University of Wisconsin Madison Trout Lake Research Station, 2019
- “Assessing the Effect of Waves and Climate Change on Siscowet Foraging Habitats in Lake Superior” Presented in scientific talk format to researchers at the State of Lake Superior Conference, 2018
- “Diving in Deeper: A Look at Light, Waves, and Climate Change, and Their Effects on Siscowet Lake Trout Feeding Habitats” Presented in 45 minute lecture format to undergraduate students, graduate students, and faculty at University of Wisconsin Madison Trout Lake Research Station, 2018
- “The Hard Science of Ice: Its Effects on Light and Foraging Habitats of Siscowet Lake Trout”, Presented in poster format to undergraduate students, graduate students, and faculty at University of Minnesota Duluth, 2018
- “Assessing the Effect of Variable Surface Ice Cover Regarding Algal Productivity in Lake Superior”, Presented in poster format to undergraduate students, graduate students, and faculty at University of Minnesota Duluth, 2017
- “Assessing the Effect of Climate Change on Surface Waves Regarding Siscowet Lake Trout Feeding Habitats in Lake Superior”, Presented in 20 minute scientific talk format to undergraduate students, graduate students, and faculty at University of Minnesota Duluth, 2017
- “Assessing the Effect of Climate Change on Surface Waves Regarding Siscowet Lake Trout Feeding Habitats in Lake Superior”, Presented in 20 minute poster format to undergraduate students, graduate students, and faculty at University of Minnesota Duluth, 2017

AWARDS & FELLOWSHIPS

- AFS Carrol Norden Memorial Scholarship ($1000) – 2025
- Center for Limnology C-R Birge Award ($390, $1100) – 2024, 2024
- AFS John E. Skinner Memorial Fund Award ($1000) – 2024
- UW Trout Lake Station – Center for Limnology Gillum Award ($2000) – 2024
- John Jefferson Davis Integrated Biology Travel Award ($800, $900) – 2024, 2025
- Anna Grant Birge Scholarship ($1063.26) – 2024
- Center for Limnology Maleug Award ($2000) – 2024
- Steve Yeo Wisconsin American Fisheries Society Student Paper Award – 2024
- Juday/Lane Family Graduate Fellowship ($6500) – 2022, 2023
- Anna Grant Birge Scholarship ($2090) – 2023
- Center for Limnology Charlotte Stein Travel Award ($500) – 2023
- Outstanding Graduate Teaching Assistant Award – 2021

MENTORING AND MENTEES

Graduate Student Mentor, Directed Studies in Zoology (ZOO 699) (University of Wisconsin - Madison)

- Julia Cohen, Identifying and enumerating macroinvertebrates from a North-Temperate Lake, Fall 2024, Biology Faculty Sponsor: Dr. Jake Vander Zanden
- Ari Maurer, Identifying and enumerating macroinvertebrates from two Northern Wisconsin lakes, Spring 2023, Biology Faculty Sponsor: Dr. Jake Vander Zanden
- Claudia Mushel, Aging largemouth bass using dorsal spines, Spring 2024, Biology Faculty Sponsor: Dr. Jake Vander Zanden
- Ari Maurer, Identifying and enumerating zooplankton from two Northern Wisconsin lakes, Fall 2023, Biology Faculty Sponsor: Dr. Jake Vander Zanden

Midwest Climate Adaptation Science Center REU Mentor (University of Wisconsin – Madison, Summer 2023)

- Educated visiting REU students on common fisheries sampling methods and performed boom electrofishing with REU students and university undergraduates

Lane and Juday Co-Mentor Fellow, Center for Limnology (University of Wisconsin – Madison, Summer 2022, 2023)

- Graduate Student fellow responsible for mentoring and guiding 5 Undergraduate Fellows during summer 2022 & 2023 at UW – Trout Lake Station on independent research projects with a final result of scientific presentations to donors and faculty
- Led and facilitated bi-weekly research meeting with Undergraduate Fellows to develop research skills, communication skills, and foster a collaborative research environment
- Led summer workshop series open to all Undergraduate Students (n=30) living at Trout Lake Station that included workshops on R, Professional Societies, Professional Meetings, and Applying to Graduate School

Graduate Research Mentor of Undergraduate Students (University of Wisconsin – Madison, Summer 2022, 2023, 2024)

*denotes a mentorship with another graduate student or faculty member through the Lane Graduate Fellowship and Juday Graduate Fellowship

- Max Monfort (2022), Austin Mannigel (2022), *Christina Weatherford (2022), *Elle Krellwitz (2022), *Max Wilkinson (2022), *Mason Polencheck (2022) Jack Abel (2023), Emma Millsap (2023), *Jumana Tanner (2023), *Emma Squires (2023), *Maddie Gamble (2023), *Kayla Witliff (2023), Jack Abel (2024), *Adam Pickhardt (2025)

Graduate Student Mentor, Undergraduate Research Opportunities Program (University of Minnesota – Duluth, Spring 2020)

- Nathan Kamm, "*Assessing the Foraging Abilities of Juvenile Walleye in Differing Light Intensities"*, Biology Faculty Sponsor: Dr. Thomas Hrabik

MEMBERSHIPS

- Association for the Sciences of Limnology and Oceanography, 2020-present
- American Fisheries Society, 2015-present

INVITED LECTURES AND PANELS

- UW-Madison, Strategies for Ecology, Education, Diversity and Sustainability, Guest Lecturer, 2025
- UW-Madison, The Wildlife Society, Graduate Student Panel, 2024
- UW-Madison, Introduction to Ecology Research at UW-Madison, Graduate Student Panel, 2024
- UW-Madison, Introduction to the Waters of Wisconsin, Guest Lecturer, 2023
- UW-Madison, Undergraduate Zoological Society, Graduate Student Panel, 2023
- University of Minnesota Duluth, Partners in Education, Guest Lecturer, 2019

ADDITIONAL EXPERIENCE

Frozen Assets Scientist & Volunteer, Spring 2025
Aquarist and Researcher, August 2021 – May 2022
Great Lakes Aquarium, Duluth MN

- Perform aquatic animal care for freshwater and saltwater animals
- Establish and maintain life support for small and large aquaria
- Perform regular maintenance of small and large aquaria
- Conduct scientific behavioral research on animals
- Perform outreach within the local community
- Dive in exhibits for maintenance and animal feeding
- Measure and maintain water quality in aquaria

Science Fair Judge, Spring 2018, Spring 2020, Spring 2021
University of Minnesota Duluth, Duluth, MN

- Judge and distribute awards for Great Lakes Aquarium
- Judge and distribute awards for American Fisheries Society

Young Professional, Spring 2020
Minnesota DNR Roundtable, Minneapolis, MN

Volunteer Diver, Spring 2018-Present
Great Lakes Aquarium, Duluth, MN
Educator, September 2016-May 2021
Great Lakes Aquarium, Duluth, MN

ACTIVITIES

Native Fish Coalition WI Chapter, Board Member Fall 2024-Present

WI Chapter of the American Fisheries Society, Continuing Education Committee, Spring 2025-Present

Fisheries Bootcamp Supervisor Spring 2024, 2025

Integrative Biology Graduate Organization, Fall 2022-Present, Treasurer Fall 2023-Spring 2024, President Summer 2024-Present

American Fisheries Society, UW-Madison Subunit, Fall 2022-Present, President Fall 2023-Present

Center for Limnology Seminar co-chair, Fall 2023-Spring 2024

American Fisheries Society, UMD Subunit, Fall 2015-Spring 2021, General Officer Fall 2016-Spring 2017, President Fall 2017-Spring 2018, Treasurer Fall 2018-Spring 2019, Vice President Fall 2019-Spring 2021