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## RESEARCH INTERESTS

I am a student in the College of Biological Sciences at the University of Minnesota Twin Cities, fascinated by aquatic ecosystems and how global and local processes influence those ecosystems. In particular, I am interested in fish population behaviors and dynamics in the face of climate change. The aspect of directly interacting with nature and physically collecting data is what draws me to this field, and I hope to continue to expand my knowledge and experience in as many different niches of aquatic ecology as possible.

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## EDUCATION

**Undergraduate** - University of Minnesota Twin Cities September 2022 - Present

Anticipated graduation May 2025

B.S. in Ecology, Evolution, and Behavior

Minor in Marine Biology

University Honors Program

3.952 cumulative GPA

**High School** - Liberty High School (North Liberty, IA)

August 2018 - May 2022

Graduated summa cum laude May 2022

4.41 cumulative GPA

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## PROFESSIONAL EXPERIENCE

Undergraduate Laboratory Assistant February 2023 - Present

Hansen Fisheries Systems Ecology Lab - University of Minnesota Twin Cities

Field and Laboratory Assistant

May - August 2023

University of Wisconsin - Trout Lake Station

Undergraduate Research Fellow & Technician

May - Present

University of Wisconsin - Trout Lake Station

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## RESEARCH EXPERIENCE

Undergraduate Research, University of Wisconsin - Trout Lake Station, "*The Influence of Foraging Habitat on Largemouth Bass Body Condition*", Supervisor: Quinnlan Smith, Summer 2024

Undergraduate Research, University of Wisconsin - Trout Lake Station, "*Long-term Effects of Coarse Woody Habitat Addition on Largemouth Bass Diets*", Supervisor: Quinnlan Smith, Summer 2023

Undergraduate Research, University of Minnesota Twin Cities, *"Phytoplankton Get SA:D Sometimes - The Impact of Lake Surface Area:Depth Ratio on Chlorophyll a Concentration"*,  
Biology Lab Section Instructor: Andie Wood, Spring 2023

## **FIELD AND LABORATORY EXPERIENCE**

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### **~Professional~**

Undergraduate Research Fellow & Technician on Bright Spots Project, University of Wisconsin - Madison Trout Lake Station and Hasler Center for Limnology, May - Present

- Led crews of up to 3 people for limnological sampling on 4 different WI lakes
- Extracted centrarchid otoliths
- Performed gastric lavage on centrarchid species to collect diets for lab analysis
- Identified, quantified, and weighed contents of centrarchid diets
- Performed weekly SCUBA diving to deploy/clean/retrieve littoral HOBO and O<sub>2</sub> sensors in 3 different WI lakes
- Cleaned pelagic HOBO and O<sub>2</sub> sensors via SCUBA diving down to 6 meters deep in 3 different WI lakes
- Participated in and helped assemble equipment for nighttime hydroacoustic sampling

Undergraduate Laboratory Assistant in Dr. Gretchen Hansen's Fisheries Systems Ecology Lab, University of Minnesota Twin Cities, February 2023 - Present

- Manipulate and generate R code to visualize data
- Read and annotate papers pertaining to lab projects, and provide notes/figures during meetings
- Built and assembled invasive crayfish traps using manual and power tools
- Deployed and collected 36 crayfish traps in 3 different MN lakes
- Assisted with instruction design for civilian aquatic invasive species eDNA sampling project in MN lakes
- Launched, operated, and landed 18-foot jon boats with outboard motors
- Filmed instructional videos for collecting eDNA samples
- Assembled eDNA sampling kits

Field and Laboratory Assistant on Bright Spots Project, University of Wisconsin - Madison Trout Lake Station and Hasler Center for Limnology, May - August 2023

- Performed boom electrofishing
- Identified, sexed, and took length/weight measurements of centrarchidae, percidae, esocidae, cyprinidae, and other freshwater fish species
- Recorded, entered, and organized data both in field and in lab settings from various sampling events
- Communicated information about ongoing projects to public, during scheduled events and daily work

- Collected daytime and nighttime water column zooplankton tow samples
- Collected benthic macroinvertebrate samples using Ekman grabs
- Processed and counted invertebrate samples from lake sediment
- Identified zooplankton species and counted abundance under microscope
- Measured water column dissolved oxygen and temperature using YSI probe
- Measured water column light levels using light meter and Secchi Disk
- Collected and measured water column turbidity levels using Van Dorn Bottle and turbidity spectrophotometer
- Set and retrieved fyke nets, mini fyke nets, clover traps, minnow traps, and vertical gill nets
- Sampled native and invasive crayfish species
- Processed and extracted otoliths from coregonid fishes
- Collected macrophyte biomass samples while SCUBA diving
- Deployed thermal and optical sensors while SCUBA diving
- Collected largemouth and smallmouth bass samples via angling
- Surgically implanted fish with PIT tags
- Extracted diets, tissue samples, and spines from largemouth bass
- Identified and quantified contents of largemouth bass diets
- Visualized data and performed statistical tests in R
- Located, identified, and quantified logs in aquatic coarse woody habitat surveys
- Launched, operated, and landed 18-foot jon boats with outboard motors
- Cleaned boats using power washer
- Performed limnological data collection in all kinds of weather conditions

### ***~Coursework & Extracurriculars~***

Fisheries, Wildlife, and Conservation Biology Club, August 2023 - Present

- Ethically implemented Clemson pond-leveler in beaver dam to preserve integrity of upstream native prairie habitat
- Used saws, shovels, pickaxes to remove logs from and repair beaver dam
- Performed intensive manual labor in waders in 1' deep muck and running water
- Seined for stream fish species
- Identified bird species using field guide and binoculars

Ecology Lab (UMN - EEB 3407, September - December 2023)

- Visualized and manipulated data in R
- Conducted 3-week long experiment tracking aquatic plant growth, gathering data in Excel and visualizing data in R
- Read and annotated scientific papers, and shared notes during discussions

Animal Diversity & Evolution Lab (UMN - BIOL - BIOL 3012, September - December 2023)

- Dissected animals belonging to wide variety of phyla in kingdom animalia
- Operated and viewed specimens under light microscope

#### Foundations of Biology II Lab (UMN - BIOL 3004, January - May 2023)

- Located public dataset on lake variables for research project
- Manipulated data sets in Google Sheets and Excel
- Created scatter plots and ran linear regression analyses in JMP Pro 16
- Designed and formatted scientific poster

#### Introduction to Statistics (UMN - STAT 3011, January - May 2023)

- Conducted one-sided and two-sided T and Z tests for statistical significance in R
- Conducted one-way ANOVA, Tukey tests, and linear regression analyses in R
- Created confidence intervals, box plots, scatter plots, and bar charts in R

#### Foundations of Biology I Lab (UMN - BIOL 1961, September - December 2022)

- Plated *e. Coli* on agar plates using streak plate protocol
- Pipetted solutions onto plates, in test tubes, and centrifuge tubes
- Prepared samples for polymerase chain reaction (PCR) and gel electrophoresis
- Performed Gram stain procedure on two bacteria species
- Performed statistical analysis using Nutrient Network data in JMP Pro 16
- Visualized and manipulated data in R

### **TECHNICAL SKILLS**

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R, JMP Pro 16, Excel, Sheets, Slides, Docs

### **PROFESSIONAL PRESENTATIONS**

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*"Simple = Skinny, Complex = Chunky; The Influence of Foraging Habitat on Largemouth Bass Body Condition"*, Presented in 5 minute scientific talk format at the 2024 Trout Lake Station and Hasler Center for Limnology Fellows Luncheon to undergraduate students, graduate students, faculty, and donors at University of Wisconsin - Trout Lake Station, August 2024

*"Fishing, Puking, Baking: Foraging Habitat and Bass Body Condition"*, Presented in interactive poster format for 3 hours to public and faculty at Open House event at University of Wisconsin - Trout Lake station, August 2024

*"Long-term Effects of Coarse Woody Habitat Addition on Largemouth Bass Diets"*, Presented in 5 minute scientific talk format to undergraduate students, graduate students, and faculty at University of Wisconsin - Trout Lake Station, August 2023

*"Walleye Bright Spots"*, Presented in interactive poster format for 3 hours to public and faculty at Open House event at University of Wisconsin - Trout Lake station, August 2023

*"Phytoplankton Get SA:D Sometimes - The Impact of Lake Surface Area:Depth Ratio on Chlorophyll a Concentration"*, Presented in poster format for 40 minutes to undergraduate students and faculty at University of Minnesota Twin Cities, April 2023

*"Excessive Exercise: Too Much of a Good Thing"*, Presented in 18 minute informational talk format to undergraduate students in Exercise is Medicine honors seminar (HSEM 3701H) at University of Minnesota Twin Cities, November 2023

## **ACTIVITIES**

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### ***~University of Minnesota Twin Cities~***

Fisheries, Wildlife, and Conservation Biology Club Member	August 2023 - Present
Ecology, Evolution, and Behavior Club Secretary	April 2024 - Present

### ***~Liberty High School~***

National Honors Society	March 2020 - May 2022
Varsity Cross Country	August 2018 - October 2022
Varsity Basketball	November 2018 - November 2021
Varsity Track and Field	March 2021 - May 2022
Symphonic Orchestra	August 2018 - September 2019

## **AWARDS**

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National Scholarship recipient (University of Minnesota Twin Cities) - 2022

John and Patricia Lane Award in Limnology (University of Wisconsin - Madison) - 2024

College of Biological Sciences Dean's List Fall 2022, Fall & Spring 2023, Spring 2024 (University of Minnesota Twin Cities)