KADIE BLAINE HEINLE

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EDUCATION

JAN 2020 – JUNE 2025

PH.D. OF FISH AND WILDLIFE BIOLOGY MONTANA STATE UNIVERSITY

Defended on June 4, 2025; GPA: 4.0

Chapter 1: Investigating effects of hydroclimatic conditions (expected to shift with climate change) and the presence of non-native brown trout (*Salmo trutta*) on native Yellowstone cutthroat trout (*Oncorhynchus virginalis bouvieri*) growth rates and apparent survival.

Chapter 2: Exploring how riverscape factors affect patterns of genetic variation in populations of Yellowstone cutthroat trout *(Oncorhynchus virginalis bouvieri)* and westslope cutthroat trout *(Oncorhynchus lewisi)* within Montana.

AUG 2015 – MAY 2019

B.S. IN WILDLIFE BIOLOGY (AQUATICS) UNIVERSITY OF MONTANA

I graduated with honors, *summa cum laude* (GPA: 3.95), from the University of Montana, with double minors in climate change studies and mathematics. I was also awarded the Outstanding Senior Award for the aquatic emphasis Wildlife Biology degree in 2019.

EXPERIENCE

JAN 2020 – JUNE 2025

PH.D. STUDENT MONTANA STATE UNIVERSITY

For my doctoral dissertation I investigated cumulative threats to cutthroat trout population persistence including effects from climate change, non-native species, and overall genetic structure. To do so, I am using a combination of observational and experimental fieldwork, simulation modelling, and quantitative analyses. I am proficient in data analysis and visualization in R.

AUG 2022 – DEC 2022

VISITING SCHOLAR UTAH STATE UNIVERSITY

I spent a semester working with Dr. Timothy Walsworth in the Quantitative Fisheries and Aquatic Ecology Lab building an ecological-evolutionary simulation model to assess how adaptive capacity may influence the ability of native Bonneville cutthroat trout to persist under climate change and the presence of non-native brown trout into the future. With this model we are also comparing the efficacy of different management strategies at increasing cutthroat trout persistence into the future.

JAN – MAY 2022; JAN – MAY 2023; JAN – MAY 2025

GRADUATE TEACHING ASSISTANT MONTANA STATE UNIVERSITY

As a graduate teaching assistant for the Fish and Wildlife Capstone (WILD 401) course, I assisted with a variety of labs focused on citation styles, database management, navigation, and various forms of fieldwork (mostly in the aquatics realm). In 2023, I also taught a lecture on aquatic habitat management and led the associated lab in both 2022 and 2023.

OCT 2019 – DEC 2019

SPAWNING GROUND TECHNICIAN OREGON DEPARTMENT OF FISH AND WILDLIFE

In this position, I conducted float surveys of spawning Chinook salmon on Cow Creek and the South Umpqua River. We sampled carcasses and counted redds and live fish. I also assisted with educational outreach events for Salmon Watch, sorted invertebrate samples, and prepared for the upcoming steelhead sampling season by scouting survey reaches and contacting landowners.

AUG 2019 – SEPT 2019

FLOW PERMANENCE TECHNICIAN TROUT UNLIMITED

In this position, I navigated to and collected stream temperature loggers placed in remote streams throughout Nevada and California two years prior. We took habitat data at each relocated site including stream width, groundwater/bedrock levels, substrate, and surface water depth.

MAY 2019 – AUG 2019

FIELD AND HATCHERY TECHNICIAN MICHIGAN STATE UNIVERSITY/MICHIGAN DEPARTMENT OF NATURAL RESOURCES

In this position, I assisted with field sampling and spawning of lake sturgeon, backpack and barge electrofishing, hatchery rearing of lake sturgeon, larval drift sampling, and assisted with the data analysis and manuscript preparation for a previous research project.

SEPT 2018 – DEC 2018

HATCHERY INTERN JOCKO RIVER TROUT HATCHERY – MONTANA FISH, WILDLIFE & PARKS

As an intern at the Jocko River Trout Hatchery, I was responsible for feeding fish, cleaning raceways, assisting with spawning (collecting eggs and milt), picking eggs, sorting fish for spawning, and other related tasks. I worked with rainbow trout (Oncorhynchus mykiss) that have been artificially selected to spawn in the fall.

MAY 2018 – AUG 2018

BIOLOGICAL AIDE IDAHO FISH & GAME

My duties as a fisheries biological aide were to navigate to stream reaches using GPS units, snorkel 50 to 150 m stream reaches, record sizes and numbers of salmonid fishes encountered as well as presence/absence of non-salmonid fish species, take habitat data for sites, and conduct mark-recapture surveys on select reaches. Additionally, I was responsible for naming and organizing the site photos for each reach according to the river drainage. This work provided experience working in cold, swift streams and with salmonid identification at different life stages (from fry to adults).

MAY 2017 – JULY 2017

NSF REU INTERN MOTE MARINE LABORATORY

As an NSF REU intern, I worked in the Fisheries Habitat Ecology and Acoustics lab at Mote Marine Laboratory in Sarasota, Florida. I focused on a proof-of-method project where I helped build an underwater autonomous acoustic array and used the acoustic data to pinpoint locations of snapping shrimp in a nearby canal. Overall, I gained experience in oral and poster presentations, database management, displaying data from acoustic telemetry receivers, soldering, analyzing audio files in Adobe Audition and further data analysis in MS Excel.

MAY 2016 – AUG 2016

CONSERVATION AIDE MONTANA FISH, WILDLIFE & PARKS

As a conservation aide for the Montana Fish, Wildlife & Parks (FWP), I assisted with a variety of projects including the native species project (tagging and radio tracking native fish species), pond/reservoir work (conducting surveys to assess species presence and size in FWP managed ponds and reservoirs), as well as collecting fish (shovelnose sturgeon and channel catfish) for fish hatchery purposes.

JUNE 2015 – AUG 2015

HUTTON SCHOLAR BUREAU OF LAND MANAGEMENT VIA AMERICAN FISHERIES SOCIETY

As a Hutton Scholar I conducted prairie stream seine surveys, reservoir assessments, stream inventories, and helped host a table at a local community kids learning day. I gained experience in warm-water fish identification (primarily native prairie fishes), data collection, and data entry.

ACTIVITIES

CO-HOST OF THE FISHERIES PODCAST (2021-2024)

I served as a monthly rotating co-host of The Fisheries Podcast from July 2021 through December 2024. Throughout my tenure as a host, I produced 42 podcast episodes featuring fisheries professionals and projects. The Fisheries Podcast highlights the amazing people and projects that make up fisheries science and in total has published over 275 episodes that have been downloaded nearly 180K times (my episodes as host have been downloaded over 23K times). In 2022, The Fisheries Podcast was awarded the American Fisheries Society's Excellence in Public Outreach Award.

HUTTON LIAISON FOR THE STUDENT AND EARLY CAREER PROFESSIONAL SUBSECTION OF AFS (2021-2023)

In my role as the Hutton liaison for the AFS SECP subsection, I have coordinated two webinars for the Hutton Scholars, one was a career panel with four fisheries professionals across the world, and for the second I compiled advice from 40 graduate students/fisheries professionals on “How to get the most out of Undergrad” and an in-person career panel during the Hutton Scholar Summit hosted at Montana State University in 2022. Additionally in 2022 and 2023 I matched the Hutton Scholars with graduate students and early career professionals as part of the Hutton Pen Pal program.

REVIEWER FOR THE AFS HUTTON SCHOLAR PROGRAM (2023-CURRENT)

For the last two years I have served as a reviewer for the American Fisheries Society Hutton Scholar program, where I am responsible for reviewing 10+ applications from high school students applying to the internship program.

MSU ECOLOGY R GROUP CO-LEADER (2023-2024)

From 2023-24 I co-led an R working group for Montana State University graduate students in the Ecology department (and related environmental programs). I was responsible for sending out weekly reminders to the group, as well as securing a space each semester where we met weekly to work on data analysis in R and troubleshoot coding/data analysis problems as a group.

MSU ECOLOGY GRADUATE STUDENT ASSOCIATION (2023-24)

SECRETARY 2023-2024; PRESIDENT 2024

As secretary of the Ecology Graduate Student Association, I was responsible for taking and distributing minutes from each meeting and ensuring that new graduate students in the department were included in student specific communications. I also helped secure a $500 community building grant to support a graduate community event in 2024. As president I ran monthly executive committee and member meetings, and delegated tasks among the other executive committee members and subcommittees.

MSU STUDENT SUB-UNIT OF AMERICAN FISHERIES SOCIETY (2020-2023)

TREASURER, 2020-21; PRESIDENT, 2021-2022; COMMUNICATIONS COORDINATOR, 2022-2023

As an officer of the MSU student sub-unit of the American Fisheries Society (AFS), I helped coordinate professional development events/activities for undergraduates and graduate students in fisheries, such as skills-based workshops, career panels, stream cleanup events, and hosting talks with fisheries professionals.

MENTOR IN THE MSU-AFS UNDERGRADUATE MENTORSHIP PROGRAM (2020-21, 2023)

I have mentored four Montana State University undergraduate students through the MSU-AFS student subunit undergraduate mentorship program, which included career advice and practice job interviews.

ECOLOGY SEMINAR COMMITTEE (2021)

As a member of the Ecology Seminar Committee, I helped coordinate the Fall Ecology Seminar series by inviting speakers from a wide variety of on behalf of labs in the Ecology Department, scheduling the accepted speakers, and advertising for the series by producing flyers for each event.

GALLATIN STREAM TEAMS VOLUNTEER (2020-2021)

As a volunteer for the Gallatin Stream Teams, I volunteered 3-4 times/year and helped collect water quality and stream flow measurements for the Gallatin Local Water Quality District.

PEER-REVIEWED PUBLICATIONS

Heinle, K. B., Al-Chokhachy, R., Sepulveda, A., & Verhille, C. (2025). Native Yellowstone cutthroat trout *Oncorhynchus virginalis bouvieri* growth and survival in a headwater stream primarily driven by warming stream temperatures, with non-native brown trout *Salmo trutta* posing an additional threat to survival. *Canadian Journal of Fisheries and Aquatic Sciences*, 82: 1-17.

Walsworth, T. E., Fadlovich, R., Fonken, D., **Heinle, K. B.**, May, E., Rousseau, S., Wallace, E., & Landom, K. (2024). Interactions between runoff volume, timing and annual temperatures shape migration phenology of a threatened adfluvial sucker. *Ecology of Freshwater Fish,* e12791.

Heinle, K. B., Eby, L. A., Muhlfeld, C. C., Steed, A., Jones, L., D'Angelo, V., Whiteley, A. R., & Hebblewhite, M. (2021). Influence of water temperature and biotic interactions on the distribution of westslope cutthroat trout (*Oncorhynchus clarkii lewisi*) in a population stronghold under climate change. *Canadian Journal of Fisheries and Aquatic Sciences*, *78*(4), 444-456.

Heinle, K. B., Larson, D. L., Lockwood, A. M., Baker, E. A., & Scribner, K. T. (2020). Rainbow Darter (*Etheostoma caeruleum*, Storer, 1845) predation on early ontogenetic stages of Lake Sturgeon (*Acipenser fulvescens*, Rafinesque, 1817). *Journal of Applied Ichthyology*, *36*(2), 151-158.

PRESENTATIONS

ORAL PRESENTATIONS

Heinle, K. (2025, June). *Death of a thousand cutts: Investigating cumulative threats to native cutthroat trout.* Doctoral Dissertation Defenses. Montana State University, Bozeman, MT.

Heinle, K., Walsworth, T.E., Verhille C., and Al-Chokhachy, R. (2024, September). *Can evolutionary adaptation promote cutthroat trout persistence under climate change and competition?.* Contributed oral presentation at the 2024 Annual American Fisheries Society Meeting, Honolulu, HI.

Heinle, K., Al-Chokhachy, R., Verhille C., and Sepulveda, A. (2024, March). *Investigating cumulative threats to native Yellowstone cutthroat trout in Montana headwaters.* Contributed oral presentation at the 2024 World Fisheries Congress, Seattle, WA.

Heinle, K., Al-Chokhachy, R., Verhille C., and Sepulveda, A. (2023, February). *Mimicking drought in headwaters: Cumulative effects and diverging responses of native and non-native trout.* Oral presentation at the 2023 Annual Meeting of the Montana Chapter of the American Fisheries Society, Butte, MT.

Heinle, K., Al-Chokhachy, R., Verhille C., and Sepulveda, A. (2023, February). *The cascading negative effects of brown trout on native cutthroat trout in Montana headwaters.* Oral presentation at the 2023 Westslope Cutthroat Trout conference, Missoula, MT.

Heinle, K., Al-Chokhachy, R., Sepulveda, A., and Verhille C. (2022, December). *Duck Creek Drought Experiment & fry trap updates*. Oral presentation at the Yellowstone Cutthroat Trout Interstate Working Group Meeting, Bozeman, MT.

Heinle, K., Al-Chokhachy, R., Sepulveda, A., and Verhille C. (2022, August). *Death of a thousand Cutts: Brown Trout impacts on Yellowstone Cutthroat Trout.* Oral presentation in the Western Native Trout Symposium at the 2022 Annual American Fisheries Society Meeting, Spokane, WA.

Heinle, K., Al-Chokhachy, R., Sepulveda, A., Bouwes, N., and Verhille C. (2021, April). *Investigating the effects of environmental covariates and non-native Brown Trout (Salmo trutta) on native Yellowstone Cutthroat Trout (Oncorhynchus clarkii bouvieri) growth rates and body condition in Duck Creek, MT.* Virtual presentation at 2021 Virtual Annual Meeting of the Western Division of the American Fisheries Society.

Heinle, K., Al-Chokhachy, R., Sepulveda, A., Bouwes, N., and Verhille C. (2021, March). *Investigating the effects of streamflow and non-native Brown Trout (Salmo trutta) on native Yellowstone Cutthroat Trout (Oncorhynchus clarkii bouvieri) in Duck Creek, MT, USA.* Virtual presentation at 2021 Virtual Annual Meeting of the Montana Chapter of the American Fisheries Society.

Heinle, K., Eby, L., Muhlfeld, C., D'Angelo, V., Steed. A., Whiteley, A., Hebblewhite, M. and Jones, L. (2019, April). *Biotic and Abiotic Associations with Westslope Cutthroat Trout (Oncorhynchus clarkii lewisi) in the North Fork Flathead River Basin in northwestern Montana, USA and southeastern British Columbia, CAN under current and future climate scenarios.* Oral presentation at the University of Montana Conference on Undergraduate Research, Missoula, MT.

POSTERS

Heinle, K., Al-Chokhachy, R., Sepulveda, A., Verhille, C., Muhlfeld, C. (2020, February). *Effects of non-native Brown Trout (Salmo trutta) on native Yellowstone Cutthroat Trout (Oncorhynchus clarkii bouvieri) in Duck Creek, MT, USA.* Poster session presented at the 2020 Annual Meeting of the Montana Chapter of the American Fisheries Society, Kalispell, MT.

Heinle, K., Eby, L., Muhlfeld, C., D'Angelo, V., Steed. A., Whiteley, A., Hebblewhite, M., Jones, L. (2019, September). *Biotic and Abiotic Associations with Westslope Cutthroat Trout (Oncorhynchus clarkii lewisi) in the North Fork Flathead River Basin in northwestern Montana, USA and southeastern British Columbia, CAN under current and future climate scenarios.* Poster session presented at the 2019 Annual American Fisheries Society, Reno, NV.

Heinle, K., Eby, L., Muhlfeld, C., D'Angelo, V., Steed. A., Whiteley, A., Hebblewhite, M., Jones, L. (2019, January). *Biotic and Abiotic Associations with Westslope Cutthroat Trout (Oncorhynchus clarkii lewisi) in the North Fork Flathead River Basin in northwestern Montana, USA and southeastern British Columbia, CAN under current and future climate scenarios.* Poster session presented at the 2019 Annual Meeting of the Montana Chapter of the American Fisheries Society, Billings, MT.

Heinle, K. and Locascio, J. (2017, July). *Localization and Source Level Estimates of Environmental Sounds in Sarasota Bay, Florida*. Poster presented at the Mote Marine Laboratory National Science Foundation Research Experience for Undergraduates Poster Session, Sarasota, FL.

AWARDS

- Montana AFS Communicator of the Year – 2025
- John E. Skinner Memorial Scholarship – 2024 ($1000)
- Daniel Goodman Conservation Biology Scholarship – 2023 ($2500)
- Western Division AFS Travel/Registration Award – 2021 ($30), 2022 ($625), 2024 ($1000)
- Montana AFS Wally McClure Scholarship for Graduate Students – 2022 ($1250)
- Jim Belsey Graduate Student Scholarship – 2021 ($2500)
- Honorable Mention, Best Student Poster at the National AFS meeting, 2019
- President's Outstanding Senior Award – Wildlife Biology, Aquatic Option, 2019
- UMT Conference on Undergraduate Research: Best Oral Presentation – Life Sciences, 2019
- Montana AFS Wally McClure Scholarship for Undergraduates – 2019 ($750)

GRANTS

- SITKA Ecosystem Grant for Montana State Ecology Graduate Students, 2020 ($2200); 2021 ($1017); 2022 ($2000)
- Montana State University Graduate Student Community Building Grant, 2024 ($500)