Teaching Statement Thomas A. Lake

Motivating philosophy - At the core of my research and teaching philosophy is a passion for conservation biology. As a biologist, I use the scientific process to understand the natural world, and as a conservationist, I address society's pressing ecological challenges. My research focuses on confronting invasive species, whose spread impacts ecosystems globally. My work investigates the ecological and evolutionary mechanisms driving invasions, and I develop data-driven solutions for predicting their spread. These approaches also inform my teaching. I aim to inspire curiosity and critical thinking through field research and data science, engaging students with real-world conservation challenges and equipping them with tools to solve ecological problems. Overall, I strive to cultivate creativity and analytical skills in future biologists. As such, I continue to prioritize my development as a mentor and educator alongside my research.

Teaching experiences - My central teaching goal is to engage students through hands-on, experiential learning by integrating lab and field experiences into the classroom. At the University of Minnesota, I led several undergraduate lab sections designed to both teach biology and train future biologists. As a teaching assistant for a Foundations of Biology course, I guided students through the process of formulating scientific questions, developing hypotheses, designing and conducting experiments, and performing independent data collection. As part of the course, students worked closely in groups and were encouraged to confront the unexpected challenges of team research. My role focused on fostering collaboration and communication, allowing students to gain the skills necessary for both scientific inquiry and group work.

I also taught a writing-intensive and experiential course designed for upper-level undergraduates: *Plant, Algal, and Fungal Diversity and Adaptation*. This course explored the phylogenetic diversity of plants, fungi, and algae, and their adaptations to environmental change. I engaged students in organismal biology through hands-on microscopy and data collection, while also introducing them to the R programming language for scientific computing. I also guided students in scientific writing, helping them craft research papers that synthesized their lab work and conceptual understanding. These experiences allowed me to teach and mentor students in both practical laboratory techniques and communication through scientific writing, equipping them with skills to thrive as future biologists.

Mentorship experiences - Outside of the classroom, I am a dedicated mentor for undergraduate and graduate researchers. I have led students in both field and computational research, helping them navigate their first independent projects and build critical scientific skills. I have formally supervised five students at the University of Minnesota through the CFANS Mentorship Program, where I provided guidance on career development, research methods, and professional networking. I also chaired guidance committees to match students and mentors across academic and professional disciplines. My approach to mentoring focuses on instilling confidence in students' abilities, fostering intellectual growth, and preparing them for success in academic and professional spheres.