Teaching & Mentoring Statement

My primary goal is to inspire a new generation of scientists who are equipped to fully to engage in the practice of science but who also possess a breadth of understanding of the context in which science is practiced. Specifically I plan to improve the ability of students to make clear, reasoned judgments that are supported by a nuanced and critical reading and evaluation of the primary literature and to effectively communicate these ideas through both written and oral communication. I have had extensive teaching experience covering a broad array of lecture, laboratory and field courses and spanning a diversity of topics, primarily as a Teaching Assistant but also as a guest lecturer and instructor. My student evaluations were strong (averaging 4.8/5.0) and I was honored to receive a College of Agriculture and Life Sciences Excellence in Teaching Award in 2017. As a fellow at the Center for Teaching Excellence, I led workshops on integrated course design, supporting struggling students, and creating engaging classrooms for graduate TAs. I have mentored thirteen undergraduate students, many of whom have gone on to pursue Masters or PhDs, resulting in three student lead-author manuscripts published or in preparation. My broad research and teaching experience has prepared me to teach graduate and undergraduate level courses in Entomology, Insect Ecology, IPM, Agricultural Ecology and Spatial Ecology.

Scientific inquiry is central to my teaching philosophy and, therefore, to the way I design my courses. Students come into the classroom with an incredible diversity of abilities and interests. I believe that effective teaching requires meeting a student at their level and fostering their development in a way that respects their interests and abilities without being authoritarian. In my courses, I strongly encourage students to ask questions and explore topics of their own interest within a field. I have found this strategy to increase both engagement with the material as well as comprehension. In class research assignments, I give students the freedom to explore any line of questioning they find interesting as long as it is within the limitation of the materials and timeframe available in the course. For example, in the insect ecology module I designed for the Department of Natural Resources' Field Biology course, I pose a question to students about the effect of galls on seed set in fall goldenrod (*Solidago spp.*). Students then work in groups to develop hypotheses and design experiments directed by their own interests in insect behavior, pollinator ecology, host plant resistance, or plant physiology. This technique has translated will into skills based courses as well. Mastery of a skill such as statistical analysis is often not fully realized until the student applies the skills to a dataset they have collected themselves. Similarly, creativity in assignment formats (blog, videos, art etc.) allows students to engage with the material in a way that highlights their own strengths.

From my experience in survey courses like General Entomology and Introductory Biology, I have found that no one instructor can be an expert in all topics, therefore, I am especially interested in team taught courses and in designing courses that incorporate guest lectures from experts and practitioners that are applying knowledge on the ground. In this age of technology, knowledge in almost any subject area exists and is accessible. My goal as an instructor is to show students where to find it, how to interpret it, evaluate it, place it in context and how to contribute to it. In this way I help my students learn to teach themselves. I believe that great mentors and great teachers inspire their students to ask interesting and important questions. Rather than giving their students the answer, they provide them with the tools to answer the questions themselves.

Establishing a culture of collaboration in the classroom also means balancing lecturing with student-driven discussions and having the flexibility to tailor coursework towards areas of interest identified by the students. Flexibility is also essential in the balance between creating a comfortable classroom environment and encouraging students to move out of their comfort zones to learn new skills. For example, I am especially interested in helping undergraduate learners develop their skills in reading and evaluating primary literature. Approaching the primary literature can be intimidating for undergraduate learners, but by starting with foundation skills like of breaking down the abstract and introduction, then moving to interpretation of figures and tables, evaluating the methods, and finally pacing the work in the context of the field, I hope to develop the skills and confidence of students in my courses. I use formative teaching practices based on regular feedback to develop these skills by assigning an article for each lecture or module in a course, which is associated with a set of comprehension questions due before the start of class. I expect students to incorporate primary literature in their writing assignments, which are generally modeled after scientific papers, and in their presentations, which take the form of a talk presented at a scientific meeting.

I hope to teach a combination of survey or topic-based courses and skills-based courses. In a survey course like Insect Ecology or General Entomology, the student should gain a general sense of the field including its history and the current state of knowledge, how new information is generated in the field and the field's important contributions in the context of the larger body of scientific knowledge. I strive to incorporate both the foundational and current literature in the field including examples from my own research. In an advanced survey course such as Agroecology, I expect students to develop their sophistication as critical thinkers, make connections between related concepts and write concise and well-supported arguments.

In a skills course, I will engage students in the full scientific inquiry process from evaluating published literature and forming testable hypotheses to statistical analysis and scientific writing. I build the foundations of these skills in classes like Introductory biology labs and explore them more fully in an upper-level course for advanced undergraduates and beginning graduate students. In upper level courses, I have integrated teaching and research in innovative ways. For example, as a TA in Applied Statistics and Experimental Design, students used my study system (cultivated strawberry) to ask novel questions and design their own experiments.

In both coursework and mentoring, the most challenging aspect is encouraging students to become independent thinkers. My approach in both is to first show students a skill, do it with them and then encourage them to do it on their own. During a student's first weeks working with me on a research project we read classic and important papers before narrowing down a research topic based on the student's interests. I believe that students at all levels from undergraduates to PhDs should be given the opportunity to develop their own projects rather than having one assigned to them. This model has worked well for the thirteen undergraduate students I have mentored and in my own dissertation research. These types of collaborations with students have lead to three co-authored publications.

I believe it is important to continue developing my own pedagogical skills throughout my career. As part of my professional development I have developed a portfolio where I track and reflect on my experiences and progress. I keep track of student feedback and document my experiences in teaching and guest lectures in more detail on my website at www.landscape-agroecology.com/