

AY 2017-2018 Graduate Student Outcomes Assessment Report

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Learning Outcomes and Assessment Rubrics for MS and PhD students*

Learning Outcomes:

1. Demonstrate a substantive breadth of knowledge of the field and sub-disciplines of ecology
2. Demonstrate effective written and oral communication of scientific material, both from original and other sources
3. Conduct substantive original research and produce written and oral reports of the body of work
4. Conduct scholarly and professional activities in an ethical manner

Additional Program Learning Outcomes for PhD students:

5. Contribute to the development of the field of ecology and/or scientifically based natural resource management

Assessment Rubrics:

1. Qualifying Exams, Foundations course
2. Qualifying Exams, Communications course, Thesis/Dissertation Defense
3. Comprehensive Exams, Thesis/Dissertation Defense
4. Comprehensive Exams, Thesis/Dissertation Defense/CITI Course Completion (if required)
5. Publication in Scientific Literature, Presentation at Scientific Meeting, Outreach to Professional Practitioners

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1. Demonstrate a substantive breadth of knowledge of the field and sub-disciplines of ecology

In AY 2017-2018, 12 M.S. students and 2 Ph.D. students took and passed their qualifying exam which focuses on broad ecological knowledge. All students passed without any recommended remedial coursework assignments or actions. In addition, 6 Ecology students and 2 students from other departments took BIOE 554 – Foundations of Ecology and Management, which emphasizes the breadth of the field of ecology. All 8 students in the class surpassed the minimum requirements on oral presentations and literature synthesis, exhibiting a successful demonstration of their breadth of knowledge of the field and sub-disciplines of ecology.

2. Demonstrate effective written and oral communication of scientific material, both from original and other sources

In 2017-2018, 5 M.S. students took and passed their comprehensive exam and successfully defended their thesis, and 4 Ph.D. students took and passed their written & oral comprehensive

exam. 3 Ph.D. students successfully defended their dissertation. All defending students then completed their written thesis or dissertation to the standards required of their graduate committee.

In addition, in Spring 2018, 11 Ecology students and 1 student from another department took BIOE 555 – Communication in Ecological Sciences, and demonstrated effectiveness in oral presentations in multiple formats (powerpoint-based scientific presentation, whiteboard based presentation, and presentation geared towards the general public). Presentations were reviewed by faculty and other graduate students in the department.

Dr. Shannon Willoughby in Physics was awarded an NSF grant to train STEM graduate students to improve their communication skills. Ecology PhD student Katie Carroll was awarded a “STEM Storytellers Fellowship” and has participated in this program during the past year. Details are found here: <http://www.montana.edu/stemstorytellers/>

Collectively, these data sources demonstrate effective written and oral communication of scientific material, both from original and other sources.

3. Conduct substantive original research and produce written and oral reports of the body of work

In AY 2017-2018, 5 M.S. students successfully defended their thesis and 3 Ph.D. students defended their dissertation in a public oral presentation. All were successful, demonstrating their ability to conduct substantive original research and produce written and oral reports of the body of work.

4. Conduct scholarly and professional activities in an ethical manner

Ethical behavior is assessed in the comprehensive exam and defense. All students taking their comprehensive exam or defending their dissertation exhibited good understanding of the ethical conduct of research. We do not have data on which federally funded graduate students completed the CITI Responsible Conduct of Research training during 2017-2018.

5. Contribute to the development of the field of ecology and/or scientifically based natural resource management

We do not have data on graduate student authored refereed publications, however in AY 2017-2018, graduate students in multiple labs presented papers or posters at national and international meetings from the Ecological Society of America to state Wildlife Society meetings, and several participated in the International Association for Vegetation Science 61st Annual Symposium, hosted by our department in July, 2018. Three Ecology students also engaged in discussion with students in several other departments through the WILD 548 – Research Perspectives course in Spring 2018, which provides an introduction to philosophical underpinnings of resource science and management with the goal of helping students to develop their own ideological perspective.

Overall: The Ecology Department continues to produce highly accomplished, successful graduate students who are able to manage research projects in collaboration with academic, agency, and NGO partners, who can defend their research approach and findings in oral and written presentations, and who engage in professional national and international meetings with other scientists in their fields. These students have a vibrant, collegial community, and contribute significantly to departmental endeavors. During the 2017-2018 year, graduate students volunteered in local classrooms, assisted with the Science Olympiad held on campus, and coordinated major events for the department. Notably, graduate students plan and orchestrate the weekly fall seminar, they plan much of the annual awards BBQ event in the fall, as well as a spring awards brunch to celebrate student and staff achievements. PhD student Leo Calle planned a Career Panel in the fall where professionals from several fields were invited to describe their jobs and give students insights into non-academic employment post-graduate school. They regularly discuss ways they can improve communication of their science to their peers and to the public through creating intentional events for both formal and information discussion of their research with academic peers and professionals in non-academic positions.

*Assessment Report based on the [2014 Ecology Department Graduate Assessment Plan](#)