

to the examining committee one week before the oral examination date. The student will also prepare a 15-minute presentation describing and critiquing the article. The oral assessment will start with the 15-minute oral presentation on the article by the student, followed by questions from the committee. Each member of the committee will be asked to evaluate the candidate's writing and speaking competency.

Wildlife and Fisheries Sciences

The exam will consist of written and oral components. One month prior to the oral examination the Qualifying Exam Committee will assign a scientific article for the student to read and then prepare a written document that explains how the article furthers our scientific understanding or methods. In particular, the student should identify and explain how this work builds on previous scientific research. This should be completed and submitted to all members of the Qualifying Exam Committee at least one week before the oral examination. The student's responses on the written document may serve as the basis for questions during the oral examination.

In the oral examination, the committee will ask a series of questions that assess the student's understanding of the scientific method. The student should possess a basic knowledge in the design of experiments, which includes such topics as treatments and controls, replication, and randomization. The student is expected to have a basic understanding of statistical inference, including topics such as random variables, the role of probability in rejecting hypotheses, measures of precision, accuracy (bias), and hypothesis testing versus model selection. Wildlife and fisheries management is the application of ecological principles to solve management problems. The student will be asked to demonstrate an understanding of basic spatial ecology (with respect to resource selection, movement, dispersal, and connectivity), landscape ecology, principles affecting the management of fish and wildlife (including management of harvest, nuisance and invasive species, conservation and diversity, and threatened and endangered species), and population genetics. The committee will evaluate the student using the "Wildlife and Fisheries Science Qualifying Exam Scoring Sheet" (Appendix P).

Comprehensive Examination

The structure of the Comprehensive Examination is the same for all three ESM programs. The Comprehensive Examination should be scheduled within 1 year after the Ph.D. candidate completes course requirements. The Comprehensive Exam is administered by the student's graduate committee. It is scheduled by the Graduate School through the Department's Office of Graduate Programs with the Graduate Program Coordinator's approval. **At least four weeks (in advance of the exam) should be allowed** for receiving exam reporting forms from the Graduate School. The student must be registered during the semester of the Comprehensive Exam. Check the Graduate Schools policies regarding the examination (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-606-comprehensive-examination-research-doctorate/>).

- The purpose of the Comprehensive Examination is to evaluate whether the doctoral candidate has acquired sufficient knowledge in his/her field, has the ability to design and evaluate significant research, has resourcefulness in formulating and solving problems in his/her field, and has the ability to communicate effectively with both scientists and laypeople. The Comprehensive Examination will probe the student's scientific and general knowledge and ability to do original thinking.
- The committee should confer prior to the Comprehensive Examination to review the

objectives of the candidate's program and the structure of the examination. The candidate should provide copies of his/her dissertation research proposal prior to the examination. Questions should examine the candidate's knowledge of his/her major and minor fields of specialization.

- The examination can consist of both written and oral components, with the written component preceding the oral component. A committee member may choose to not require a written component for their portion of the exam.
- Each set of written questions is not to take more than 3 hours to complete.
- No more than 2 sets of questions may be assigned a student in a single day.
- Each committee member may require their written questions be responded to either as an open book or a closed book exam.
- The oral exam should be scheduled within ten days following the last written exam.
- A two-thirds favorable vote of the student's committee is required for successful completion of the Comprehensive Examination. The committee Chair notifies the Department's Office of Graduate Programs (the Graduate Program Coordinator) of the results of the examination by completing the forms supplied by Graduate School at the time of scheduling. The Report on Comprehensive Examination is forwarded to the Graduate School and a copy is added to the student's academic file. In the case where a student does not pass the Comprehensive Examination, the committee is responsible for deciding if a second examination will be permitted.
- Students must be registered continuously (SUBJ 601 full-time; SUBJ 611 part-time) each semester (excluding summers) beginning with the semester following the passing of the Comprehensive Examination and continuing each semester until the Final Oral Examination (Defense) is passed. International Ph.D. students should contact Global Programs regarding their visa status after passing the Final defense.

Final Oral Examination

The "Ph.D. Final Oral Exam Check Sheet" (Appendix Q) should be consulted prior to scheduling the exam as well and the Graduate School's policy regarding the exam (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-600/gcac-608-final-oral-examination-research-doctorate/>).

The **semester prior** to scheduling the Final Oral Examination, the student and her/his adviser should request a written transcript audit from the Graduate Program Coordinator (Monteith) to confirm that the student is on track for the defense, verifying that there are no missing grades and no missing credit requirements, and that there are not too many graded thesis 600-level credits.

The structure of the final oral exam is the same for all three ESM graduate programs. Students and faculty advisers should prepare for the Final Oral Examination for the Ph.D. months in advance.

The Final Examination is oral and related in large part to the thesis/dissertation, but it may cover the candidate's whole program of study. It is scheduled after completion of other requirements for the degree.

- The student meets with the adviser to 1) ascertain if all requirements for the degree have been met (use the PhD Final Oral Exam Check Sheet, Appendix Q); 2) verify that the