WILDLIFE AND FISHERIES SCIENCE

Graduate Program Head: Michael G. Messina
Program Code: WFS
Campus(es): University Park (Ph.D., M.S.)
Degrees Confired: Doctor of Philosophy (Ph.D.), Master of Science (M.S.)
The Graduate Faculty: View (https://secure.gradsch.psu.edu/gpms/index.cfm?searchType=fac&prog=WFS)

Programs are designed to give students an understanding of the biology and management of terrestrial or aquatic wildlife species and their environments, and include training in fish and wildlife ecology, nutrition, physiology, behavior, and pathology of wildlife species; study of successional stages, land use, and management of various habitats and their impact on fish and wildlife populations; population dynamics and manipulation of animal numbers; and studies of recreational, aesthetic, and socioeconomic values of fish and wildlife. Most programs of study are strengthened by including appropriate courses offered by related departments.

Admission Requirements
Applicants apply for admission to the program via the Graduate School application for admission (http://gradschool.psu.edu/prospective-students/how-to-apply). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions (http://gradschool.psu.edu/graduate-education-policies).

Scores from the Graduate Record Examinations (GRE) are required for admission. A student may be admitted provisionally without GRE scores.

Application materials should be submitted before February by those who want to begin in summer or fall. For admission, an applicant should have at least a 2.75 grade-point average, a 3.00 junior/senior average, and courses that are basic to the individual's field of specialization. Ordinarily these include:

- 12 credits in communication,
- 12 credits in social sciences and humanities,
- 10 credits in quantification including calculus and statistics,
- 8 credits in chemistry and/or physics,
- 8 credits in biological sciences, and
- 18 credits in fish, wildlife, forestry, or related courses.

Three reference reports (forms supplied on request), and a brief statement describing the applicant's academic goals, career interests, and special qualifications are required. The best-qualified applicants will be accepted up to the number of spaces available. Exceptions to admission requirements may be made for students with special backgrounds, abilities, and interests.

Admission to the Ph.D. program in Wildlife and Fisheries Science requires a master's degree in wildlife and fisheries science or a closely related field, or a bachelor's degree with a minimum grade-point average of 3.30 and demonstrated research ability.

Degree Requirements
Master of Science (m.S.)
Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Requirements. (http://gradschool.psu.edu/graduate-education-policies)

In addition to Graduate Council requirements, 6 credits of statistics and 2 credits of colloquium are required.

Each entering student receives individual guidance from an adviser, and later from his or her committee, in designing a program of studies and research based on his or her own interests. The student is responsible for conforming to all requirements summarized in the "Graduate Studies Handbook" of the School of Forest Resources, and for completing the degree program within a reasonable time, i.e., two years for a master's degree.

Doctor of Philosophy (Ph.D.)
Requirements listed here are in addition to Graduate Council policies listed under GCAC-600 Research Degree Requirements. (http://gradschool.psu.edu/graduate-education-policies)

Doctoral students would normally emphasize either wildlife or fisheries in their course selection. Course work shall include at least 15 graduate credits beyond those required for an M.S. in Wildlife and Fisheries Science. At least 9 of these credits must include courses at the 500 level with a Wildlife and Fisheries Science designation.

An international communications or cultural requirement is required for the Ph.D. degree. This requirement may be satisfied by demonstrating competence in one foreign language equivalent to passing two or three college-level courses. It also may be met by two courses in one or two contemporary foreign cultures. With approval of the Ph.D. committee, a student may petition the Graduate Faculty of the school for waiver of the international communications or culture requirement.

Students must pass the qualifying examination during their first year of residence and a comprehensive examination which is given after all course requirements have been completed. The final examination is oral; all doctoral students are required to present a public seminar on their dissertation prior to the final examination.

Each entering student receives individual guidance from an adviser, and later from his or her committee, in designing a program of studies and research based on his or her own interests. The student is responsible for conforming to all requirements summarized in the "Graduate Studies Handbook" of the School of Forest Resources, and for completing the degree program within a reasonable time, i.e., three years for a Ph.D.

Watershed Stewardship Option
The Graduate Option in Watershed Stewardship is intended to provide enhanced educational opportunities for students with an interest in water resources management who are enrolled in a graduate degree program within Wildlife and Fisheries Science. The objective of the Graduate Option in Watershed Stewardship is to educate students to facilitate team-oriented, community-based watershed management planning directed at water resources problems encountered in Pennsylvania communities, especially nonpoint source water pollution. The Graduate Option in Watershed Stewardship requires 22 credits of graduate course work:
Graduate assistantships available to students in this program and other forms of student aid are described in The Graduate School’s Tuition & Funding section of The Graduate School’s website. Students on graduate assistantships must adhere to the course load limits set by The Graduate School.

The following awards typically have been available to graduate students in this program:

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tr>
<td>FOR 591A &amp; FOR 591B or LARCH 510</td>
<td>Seminar in Watershed Stewardship Issues and Seminar in Watershed Stewardship Planning</td>
<td>2</td>
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<tr>
<td>FOR 570 &amp; FOR 571</td>
<td>Watershed Stewardship Practicum I and Watershed Stewardship Practicum II</td>
<td>2</td>
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<tr>
<td>LARCH 817 &amp; LARCH 550</td>
<td>Grad Studio III and Master of Landscape Architecture Project Studio</td>
<td>8</td>
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Total Credits 22

1. Breadth courses will consist of three graduate credits of course work from each of four subject matter areas:
   1. water resources science
   2. social science, public policy and economics
   3. humanities
   4. communications and design

2. One credit of FOR 591A or FOR 591B would count as a colloquium course toward degree requirements, but at least 1 additional credit of FOR 590 is required.

In the watershed stewardship practicum courses students work in teams with community, government and business leaders to analyze and understand natural resources problems and creatively synthesize appropriate solutions in the form of a written watershed management plan.

A list of acceptable breadth courses from each discipline is provided in the Graduate Option in Watershed Stewardship Handbook. Students will be allowed to petition to the Center for Watershed Stewardship to substitute higher level or equivalent courses in a major field to suit their specific backgrounds and goals. Courses taken for the Graduate Option in Watershed Stewardship may be used to satisfy other equivalent (400- or 500-level) degree requirements with concurrence of their adviser and Ph.D. committee. The Ph.D. committee for a student enrolled in the Option in Watershed Stewardship must include a faculty representative from the Center for Watershed Stewardship.

Students enrolled in M.S. or Ph.D. degree programs within Wildlife and Fisheries Sciences may apply to participate in the Graduate Option in Watershed Stewardship.

**Learning Outcomes**

**Master of Science (m.S.)**

1. **KNOW:** Graduates in these three masters programs will have obtained knowledge of core theories and methods as demonstrated by courses completed and grades earned at the bachelor's level. Graduates will exhibit breadth and depth of understanding in their respective disciplines in courses completed at the master's level.

2. **APPLY/CREATE:** Graduates in these three masters programs will be able to clearly synthesize literature and theories in their disciplinary areas and/or in their specialized thesis topics. Such synthesis will help generate new ideas or methods to develop unique solutions to the problems in the three disciplinary programs.

3. **COMMUNICATE:** Graduates in these three masters programs will effectively communicate ideas, arguments, and rationales in clear, concise, well-organized publications (abstracts, papers, proposals) and presentations (conferences, seminars, and research meetings).

4. **THINK:** Graduates in these three masters programs will be able to critically analyze the work of others in their field of specialty. Such analyses will help graduate students to demonstrate proficiency in designing a research strategy to answer important questions and to improve their own work.

5. **PROF. PRACTICE:** Graduates in these three masters programs will demonstrate the highest ethical standards and core values (including Penn State Core Values) within their discipline and other diverse scientific backgrounds.

**Doctor of Philosophy (Ph.d.)**

1. **KNOW:** Graduates in these three doctoral programs will have obtained the knowledge of the core theories and methods at the bachelors and/or master's levels. Graduates will exhibit breadth and depth of understanding in their respective disciplines in courses completed at the doctoral level.

2. **APPLY/CREATE:** Graduates in these three doctoral programs will be able to clearly synthesize literature and theories in their disciplinary areas and/or in their specialized thesis/dissertation topics. Such synthesis will help generate new ideas or methods to develop unique solutions to the problems in the three disciplinary doctoral programs.
3. **COMMUNICATE:** Graduates in these three doctoral programs will effectively communicate ideas, arguments, and rationales in clear, concise, well-organized publications (abstracts, papers, proposals) and presentations (conferences, seminars, and research meetings).

4. **THINK:** Graduates in these three doctoral programs will be able to critically analyze the work of others in their field of specialty. Such analyses will help graduate students to demonstrate proficiency in designing a research strategy to answer important questions and to improve their own work.

5. **PROF. PRACTICE:** Graduate students in these three doctoral programs will demonstrate the highest ethical standards and core values (including Penn State Core Values) within their discipline and other diverse scientific backgrounds.

**Contact**

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<tr>
<td>Graduate Program Head</td>
<td>Michael Gerard Messina</td>
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<td>Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)</td>
<td>Victoria Anne Braithwaite-Read</td>
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Program Contact

Diane Monteith  
Dept of Ecosystems Sci Mngmt  
319 Forest Resources Building  
University Park PA 16802  
dxm66@psu.edu  
(814) 863-7221

Program Website  
View (http://ecosystems.psu.edu/graduateprograms/wfs)