

ECOLOGY, MASTER OF SCIENCE

Master of Science in Ecology with emphasis in Ecology and Conservation

The Ecology and Conservation emphasis prepares students for careers and advanced research in Ecology. This track broadly covers the fields of ecology and conservation but is expected to facilitate student specialization in a range of topics, including, but not limited to, molecular ecology, population ecology, community ecology, landscape ecology, biogeochemistry, ecosystem ecology, restoration, conservation, and modeling. Students may also work on any number of organisms or ecological processes (e.g., invertebrates, plants, wildlife, fire, and climate).

The Ecology and Conservation emphasis will provide content and theoretical understanding of ecology and hands-on experience developing and conducting ecological research in a way unique to Western's liberal arts traditions. The program takes full advantage of the biogeographic setting of Colorado's western slope and beyond and includes both the development of new scientific insight and the application of ecological knowledge toward broader social-ecological impacts. The Ecology and Conservation Emphasis is a 33-credit track with topical coursework in biology, research methods, and MS proposal development and thesis research. MS students in Ecology and Conservation must complete an MS Thesis. Upon the acceptance of MS proposals (BIOL 690), Ecology and Conservation students must continuously enroll in at least one credit of BIOL 695 until a successful thesis defense.

Master of Science in Ecology with emphasis in Fisheries and Wildlife Management

The Fisheries and Wildlife Management emphasis prepares students for careers in the fields of fisheries, wildlife, and their management. This emphasis focuses on the study of fisheries, wildlife, and selected current topics in their management.

The Fisheries and Wildlife Management Emphasis will provide graduate-level content and theoretical, ecological understanding of fisheries and wildlife management with experience developing and conducting ecological research in a way that is unique to Western's liberal arts traditions. The program takes full advantage of the biogeographic setting of Colorado's western slope and beyond and includes both the development of new scientific insight as well as the application of scientifically based knowledge towards broader social-economic-ecological-ethical impacts of fisheries and wildlife management. The Fisheries and Wildlife Management Emphasis is a 33-credit track with topical coursework in biology, management, research methods, and MS proposal development and thesis research. MS students in Fisheries and Wildlife Management must complete an MS Thesis. Upon the acceptance of MS proposals (BIOL 690), Fisheries and Wildlife Management students must continuously enroll in at least one credit of BIOL 696 until a successful thesis defense.

Program Goals

- Improving student understanding of biology, particularly concepts in ecology, evolution, conservation, wildlife, and/or fisheries.
- Developing students' capacities for basic and applied research in ecology, including acquiring information, developing methods, conducting sampling and data analysis, demonstrating scientific communication, and advancing broader impacts.
- Advancing the role of science in society, through training ecologists prepared to elevate the ability of agencies, organizations, and communities to address ecological problems.
- Enhancing opportunities for careers and advanced research in ecology.

Admissions Criteria

- Admissions packages will include: academic transcripts; a resume outlining related research, leadership, and volunteer experience; a statement of purpose describing the student's intellectual and professional interests in ecology; and three letters of recommendation from professors or supervisors in related fields.
- Applicants are expected to have been in contact with a faculty advisor prior to submission of application.

Program Prerequisites:

- BA or BS degree in biology or related field with college courses in Statistics and upper-level Ecology with minimum grade of B, completed prior to the student's first fall in the program.

Program goals include:

- Improving student understanding of biology, particularly concepts in ecology, evolution, conservation, wildlife, and/or fisheries.
- Developing students' capacities for basic and applied research in ecology, including acquiring information, developing methods, conducting sampling and data analysis, demonstrating scientific communication, and advancing broader impacts.
- Advancing the role of science in society, through training ecologists prepared to elevate the ability of agencies, organizations, and communities to address ecological problems.
- Enhancing opportunities for careers and advanced research in ecology.

All Master of Science in Ecology emphases require the Core Ecology MS Courses.

Code	Title	Credits
Core Ecology MS Courses		
BIOL 606	Ecological Research Methods	3
BIOL 613	Advanced Ecological Analysis	3
BIOL 690	Ecology MS Proposal Development	3
BIOL 695 or BIOL 696	Ecology/ Conservation Thesis Research Fisheries/ Wildlife Thesis Research	3-9
Total Credits		12-18

Ecology and Conservation Emphasis (beyond required Core courses)

Code	Title	Credits
15-21 credits of the following electives to be chosen in consultation with thesis committee:		
BIOL 620	Ornithology	

BIOL 622	Mammalogy
BIOL 625	Invertebrate Zoology with laboratory
BIOL 627	Field Entomology
BIOL 630	Wildlife Ecology and Management
BIOL 633	Wildlife Population Analysis
BIOL 631	WILDLIFE TECHNIQUES WORKSHOP
BIOL 640	Conservation Biology
BIOL 652	Botany
BIOL 653	Rocky Mountain Flora
BIOL 662	Evolution
BIOL 667	Biology of Fishes
BIOL 668	Ichthyology Laboratory
BIOL 670	FISHERIES MANAGEMENT
BIOL 676	Aquatic Ecology with lab
BIOL 681	Forest Ecology
BIOL 692	Independent Study
BIOL 697	SPECIAL TOPICS IN ECOLOGY
ENVS 608	ENVIRONMENTL POLITICS & POLICY
ENVS 611	Integrative Skills for Environmental Management
ENVS 615	From Climate Science to Action
ENVS 618	PUBLIC LANDS MANAGEMENT
ENVS 623	Studies in Environmental Management
ENVS 625	Studies in Integrative and Public Land Management
Total Credits	15-21

Conferral of the MS degree requires a total of 33 credits of 600-level coursework, each with a grade of a B- or above, and the completion and acceptance of an MS thesis.

Fisheries and Wildlife Management Emphasis (beyond required Core courses)

Code **Title** **Credits**
15-21 credits of the following electives to be chosen in consultation with thesis committee:

BIOL 620	Ornithology
BIOL 622	Mammalogy
BIOL 625	Invertebrate Zoology with laboratory
BIOL 627	Field Entomology
BIOL 630	Wildlife Ecology and Management
BIOL 633	Wildlife Population Analysis
BIOL 631	WILDLIFE TECHNIQUES WORKSHOP
BIOL 640	Conservation Biology
BIOL 652	Botany
BIOL 653	Rocky Mountain Flora
BIOL 662	Evolution
BIOL 667	Biology of Fishes
BIOL 676	Aquatic Ecology with lab
BIOL 668	Ichthyology Laboratory
BIOL 670	FISHERIES MANAGEMENT
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Total Credits	15-21

Conferral of the MS degree requires a total of 33 credits of 600-level coursework, each with a grade of a B- or above, and the completion and acceptance of an MS thesis.