

# DEPARTMENT OF ECOLOGY



The department's teaching and research address critical ecological and natural resources issues for Montana but also tackle fundamental and applied questions around the globe. This ecological knowledge is critical to the conservation and management of the State's resources, including fish, wildlife, plants, and the ecosystems and landscapes that sustain them.



## DEGREES OFFERED

M.S. IN BIOLOGICAL SCIENCES

M.S. IN FISH AND WILDLIFE  
MANAGEMENT

M.S. IN ECOLOGICAL AND  
ENVIRONMENTAL STATISTICS  
(INTERDEPARTMENTAL WITH  
MATHEMATICAL SCIENCES)

PH.D. IN FISH AND WILDLIFE  
BIOLOGY

PH.D. IN BIOLOGICAL SCIENCES

PH.D. IN ECOLOGY AND  
ENVIRONMENTAL SCIENCES  
(INTERDEPARTMENTAL WITH  
LRES, ESCI, ARNR AND PSPP)

Our faculty advises an average of five graduate students per tenure track faculty member. Graduate students in Ecology comprise over 15 percent of

all graduate students in the College of Letters and Science and over 10 percent of all Ph.D. students on campus. Our teaching and research programs address issues that are central to the purpose of a land-grant institution, particularly to Montana.

The Department of Ecology is extremely research active with the largest research-based graduate program in science at MSU. The department conducts research for over 50 federal, state and NGO agencies in Montana, the Greater Yellowstone Ecosystem, and around the world in areas as far flung as eastern Africa and Antarctica. The faculty and location of the Department of Ecology make us highly competitive with peer institutions to meet the challenges of scientific inquiry and natural resource management in the 21st century.

## DEPARTMENT OF ECOLOGY MONTANA STATE UNIVERSITY

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## ADMISSION

Only a limited number of graduate students are admitted to our program each year. There is an excellent article written by Dr. Al Zale, Director of the Fishery Cooperative Research Unit, entitled *How to Surpass the Competition*, which you may find helpful as you think about applying for admission ([www.montana.edu/mtcfru/MTCFRU\\_main/pdfs/zalejob.pdf](http://www.montana.edu/mtcfru/MTCFRU_main/pdfs/zalejob.pdf)). We accept students into the program based on their academic performance, graduate record examination (GRE) scores, recommendation letters, experience, and potential for scientific and professional excellence. Students must meet the minimum entrance requirements to be considered by an advisor.

Qualified students must secure an agreement from a faculty member who is willing to serve as their major professor or graduate academic advisor. We do not accept students into the program unless an advisor has agreed to supervise the student. Generally, the major professor will identify a research project and possible sources of funding as part of the admission process. We highly recommend that you formally apply only after a faculty member indicates that he or she is willing to serve as your graduate advisor.

## PROGRAM REQUIREMENTS

The minimum credit requirement for a master's degree is 30 credits, and at least 20 credits must be from course work other than thesis work. A minimum of 10 thesis credits must be successfully completed.



The minimum credit requirement for a doctoral degree is 60 credits beyond the bachelor's degree, and at least 42 credits must be from course work other than thesis work. A minimum of 18 thesis credits must be successfully completed. A maximum of 30 credits from a previously earned Master's degree may be applied toward the 60 credit requirement.

## FINANCIAL ASSISTANCE

Most graduate students in the program are supported on Graduate Research Assistantships (GRAs) provided by their major professor from grant funds. A limited number of Graduate Teaching Assistantships (GTAs) are available and are chosen in the semester before the next academic semester and reflect teaching needs and financial assistance needs.



## FACULTY

DEPARTMENT HEAD  
David Roberts

### PROFESSORS

Scott Creel - Behavioral endocrinology, conservation biology, population biology, social evolution, biology of carnivores

Robert Garrott - Ecology, population dynamics, management and conservation of mammalian species

Daniel Goodman - Applied mathematical demography, evolutionary demographic theory, environmental statistics, environmental modeling

Andrew Hansen - Landscape ecology and management, land use effects on biodiversity, sustaining greater park ecosystems, conservation biology

Thomas McMahon - Wild trout management, fish-habitat relationships, winter ecology, conservation biology of salmonids

David Roberts - Vegetation ecology, ecological modeling, multivariate analysis of ecological data

Jay Rotella - Ecology, population dynamic, habitat relationships, management of avian species

T. Weaver - Physiological, community and ecosystem ecology of the Northern Rocky mountains, long-term field experiments

Alexander Zale - Applied aquatic ecology, effects of hydropower and reservoirs on fish populations, fisheries management

### ASSOCIATE PROFESSORS

Christopher Guy - Applied fisheries science, population ecology, predator-prey interactions, fisheries management

Steven Kalinowski - Conservation and evolutionary genetics

Billie Kerans - Behavior, ecology and evolution of freshwater macro invertebrates, assessing the impact of human disturbances on freshwater ecosystems

### ASSISTANT PROFESSORS

Wyatt Cross - Aquatic food webs and ecosystems, ecological stoichiometry, cross-ecosystem material subsidies

Top, right photo by Kelly Gorham (MSU News).