Ecology, MS, PhD

Department: Biology Department; Environment and Society Department; Plants, Soils, and Climate Department; Watershed Sciences Department; Wildland Resources Department
College: College of Science; S.J. & Jessie E. Quinney College of Natural Resources; College of Agriculture and Applied Sciences; S.J. & Jessie E. Quinney College of Natural Resources; S.J. & Jessie E. Quinney College of Natural Resources

Overview

About This Degree

Ecology is the scientific discipline concerned with the relationships between organisms and their past, present, and future environments. The Ecology Center at USU has had a string of directors known nationally and worldwide as premier scientists in the field of ecology, and students graduating with a degree in ecology are able to make contacts with influential faculty that can help them as they pursue prestigious post-doctoral programs and faculty positions at universities around the world. Additionally, the Ecology Center hosts a seminar series that brings famous scientists from all over the world to speak at USU.

All ecology students are required to take coursework within various designated areas, and the remainder of coursework and research will be completed in one of the following departments:

- **Biology:** Students who study ecology in the Biology Department focus on theoretical ecology and how it applies to evolution and other disciplines within biology.
- **Environment and Society:** This department is concerned with human ecology and the relationships between humans and natural ecosystems.
- **Plants, Soils, and Climate:** Students in this department study the ecology of plants, soils, and climate and issues that tie them to ecology.
- **Watershed Science:** Ecology students in this department focus on the science and conservation of aquatic ecosystems.
- **Wildland Resources:** Students in this department are concerned with terrestrial ecology and ecosystems.

Career Options

Students who graduate with a master's typically pursue PhD programs or work as research assistants for government agencies.

PhD graduates primarily seek post-doctoral positions with universities and then go on to faculty positions or work as researchers for government agencies.

What it takes

Admissions Requirements

Applicants must have strong backgrounds in biology, and they should also have some understanding of geology, soils, meteorology, chemistry, physics, mathematics, and statistics. Accordingly, incoming students who lack coursework in these areas may be asked to make up deficiencies in addition to the course of study required for their graduate degrees.

To be accepted to the program, it is recommended that applicants first contact a specific faculty member with whom they are interested in working. If the faculty member is accepting graduate students and agrees to work with the student, the student can then apply by completing the following application requirements:

Application Requirements:

- Complete the online application
- Pay the $55 application fee
- Score at or above the 40th percentile on the GRE
- Have a 3.0 or higher GPA on your last 60 semester or 90 quarter credits
- Provide transcripts of all college/university credits
- Provide three contacts for letters of recommendation

International students have additional admissions requirements.

Admissions Deadlines

Biology:

- The Department of Biology considers applications on a year-round basis. Applications received for fall semester by February 15 will be considered for all financial awards available. Applications received after that date will be considered for the limited amount of financial awards available at the time.

Environment and Society:

- Fall semester – February 15
- The degree programs in the Department of Environment and Society have rolling admission, meaning the department will continue to consider and accept applications until the program is full. The time it takes to process an application is primarily dependent on the speed with which the School of Graduate Studies receives letters of recommendation, transcripts, and test scores. For most students, this process may take six to eight weeks. Applicants should plan accordingly.

Plants, Soils, and Climate:

- Applications for graduate programs are accepted year-round. However, chances for acceptance are best if students apply between October and January of each academic year. It is also encouraged that students begin in the fall if possible.

Watershed Science:

- Fall semester – June 15
- Spring semester – October 15
- Summer semester – March 15
- Preference for financial assistance will be given to applicants who apply before January 10.

Wildland Resources:

- Applications for graduate programs are accepted year-round. However, chances for acceptance are best if students apply between October and January of each academic year. It is also encouraged that students begin in the fall if possible.

Financial Assistance

Most students are funded by research assistantships from their major professors. Additionally, the Ecology Center awards assistantships to qualified PhD students who are otherwise without financial support.

The Ecology Center also provides research support awards for both master's and doctoral students on a competitive basis. Students can receive up to $5,000 through these awards to purchase research supplies, for travel costs, and other research expenses. In order to be considered, students must submit a detailed proposal, including their research objectives and a budget describing how funds would be used.

A variety of additional funding opportunities are available, including fellowships, scholarships, tuition awards, and travel support. Additionally, students may be eligible for subsidized health insurance through qualifying assistantships.

Program Requirements

Click here to see course requirements for the **Master of Science**.

Click here to see course requirements for the **Doctor of Philosophy**.

Qualifying Exams:

Biology:

- All **PhD** students must pass a comprehensive exam, usually taken in their second year. The student's graduate committee sets the material of the exam, which consists of a written and an oral component.
- All **master's** students must pass a comprehensive exam with either a written or an oral component, set by their graduate committee. This exam usually takes place when the student has completed a year and a half in the program.

Environment and Society:

- **PhD** students must pass a comprehensive exam after completing their coursework and before submitting

their dissertation. The exam will have a written and an oral component based on the student's area of research.

Plants, Soils, and Climate:

- Each student must undergo some sort of qualifying experience. Depending on the student's particular research and their faculty committee, the exam can either be a traditional oral and written exam, a scholarly proposal, or another option best suited to the student's individual situation.

Watershed Science:

- All **PhD** students must pass a comprehensive exam. Students take these exams typically the second or third year after most of their coursework is completed. They take a written exam set by their graduate committee, which is usually followed by an oral component where the committee can pose questions to the student regarding the written exam.

Wildland Resources:

- **PhD** students must pass comprehensive examinations. This exam is used to assess whether a student is prepared to successfully conduct independent research. The assessment depends upon the student's knowledge in his or her area of emphasis and in supporting areas, understanding of philosophical perspectives on scholarship, and ability to communicate this knowledge effectively. It is recommended that the comprehensive exam be taken by the end of the student's second academic year, and it must be passed no later than one year prior to defending the dissertation and before candidacy will be recommended.

Contact

Advisor(s)

Marsha Bailey
Wildland Resources Staff Assistant
Office: NR 206
Phone: (435) 797-2503
Email: marsha.bailey@usu.edu

Becky Hirst
Environment and Society Staff Assistant
Office: NR 201
Phone: (435) 797-3781
Email: becky.hirst@usu.edu

Scott Jones
Associate Professor, PSC Graduate Program Coordinator
Office: AGSC 158
Phone: (435) 797-2175
Email: scott.jones@usu.edu

Chris Luecke
Professor, WATS Department Head
Office: NR 210 C
Phone: (435) 797-2463
Email: chris.luecke@gmail.com

Kami McNeil
Biology Staff Assistant
Office: BNR 125
Phone: (435)797-1909
Email: kami.mcneil@usu.edu

Faculty

Peter Adler, PhD, Colorado State University
Associate Professor
Area: Plant community ecology
Office: BNR 287
Phone: (435) 797-1021
Email: peter.adler@usu.edu

Diane Alston, PhD, North Carolina State University
Professor
Area: Entomology, integrated pest management
Office: BNR 326
Phone: (435) 797-2516
Email: diane.alston@usu.edu

Anne Anderson, PhD, University of Leicester
Professor
Area: Plant-microbial interactions, phytotoxic mechanisms
Office: BNR 325
Phone: (435) 797-3407
Email: anderson@biology.usu.edu

Lise Aubry, PhD, University Paul Sabatier
Research Assistant Professor
Area: Population ecologist
Office: NR 356
Phone: 435-797-3219
Email: lise.aubry@aggiemail.usu.edu

Michelle Baker, PhD, University of New Mexico
Associate Professor, Co-Director of Graduate Programs
Area: Ecosystem ecology, aquatic ecology
Office: BNR 145
Phone: (435) 797-7131
Email: michelle.baker@usu.edu

Mary Barkworth, PhD, Washington State University
Associate Professor
Area: Botany, plant systematic
Office: JCTN 6
Phone: (435) 797-1584
Email: mary.barkworth@usu.edu

Karen Beard, PhD, Yale University
Associate Professor
Area: Community ecology, ecosystem ecology, conservation biology
Office: BNR 161
Phone: (435) 797-8220
Email: karen.beard@usu.edu

Janis Boettinger, PhD, University of California – Davis
Professor
Area: Soil genesis, classification and mineralogy
Office: AGSC 354
Phone: (435) 797-4026
Email: janis.boettinger@usu.edu

Edmund Brodie, PhD, Oregon State University
Professor
Area: Behavior, evolution
Office: BNR 149
Phone: (435) 797-2489
Email: brodie@biology.usu.edu

Mark Brunson, PhD, Oregon State University
Department Head, Professor
Area: Environmental knowledge, attitudes, and behavior
Office: NR 201 B
Phone: (435) 797-2458
Email: mark.brunson@usu.edu

Phaedra Budy, PhD, Utah State University
Associate Professor
Area: Fisheries management and conservation
Office: NR 134
Phone: (435) 797-7564
Email: phaedra.budy@usu.edu

Michael Conover, PhD, Washington State University
Professor
Area: Animal behavior, wildlife damage management
Office: BNR 159
Phone: (435) 797-2436
Email: mike.conover@usu.edu

Layne Coppock, PhD, Colorado State University
Associate Professor
Area: Range ecology and management, international development, systems analysis
Office: NR 140
Phone: (435) 797-1262
Email: layne.coppock@usu.edu

Todd Crowl, PhD, University of Oklahoma
Professor
Area: Aquatic ecology, conservation biology, river ecology
Office: BNR 175
Phone: (435) 797-2498
Email: todd.crowl@usu.edu

Johan du Toit, PhD, University of Witwatersrand
Professor
Area: Ecology and conservation of large mammals in terrestrial ecosystems
Office: NR 206
Phone: (435) 797-2837
Email: johan.dutoit@usu.edu

Thomas Edwards, PhD, University of Florida
Professor
Area: Spatial ecology, habitat modeling, biostatics
Office: NR 126
Phone: (435) 797-2529
Email: t.edwards@nr.usu.edu

Joanna Endter-Wada, PhD, University of California – Irvine
Associate Professor
Area: Natural resource and environmental policy, interdisciplinary social sciences, water management and planning
Office: BNR 270 A
Phone: (435) 797-2487
Email: joanna.endter-wada@usu.edu

Morgan Ernest, PhD, University of New Mexico
Associate Professor, Co-Director of Graduate Programs
Area: Dynamics of communities, spatial ecology
Office: BNR 143
Phone: (435) 797-8751
Email: morgane@biology.usu.edu

E.W. "Ted" Evans, PhD, Cornell University
Professor
Area: Population biology, community ecology
Office: BNR 245
Phone: (435) 797-2552
Email: ted.evans@usu.edu

Susannah French, PhD, Arizona State University
Assistant Professor
Area: Physiological ecologist
Office: BNR 343
Phone: (435) 797-9175
Email: sfrench@biology.usu.edu

Eric Gese, PhD, University of Wisconsin – Madison
Associate Professor
Area: Predator behavior and ecology
Office: NR 128
Phone: (435) 797-2542
Email: eric.gese@usu.edu

Robert Gillies, PhD, University of Newcastle, England
Associate Professor
Area: Biometeorology
Office: JQL 231
Phone: (435) 760-8023
Email: robert.gillies@usu.edu

Paul Grossl, PhD, Montana State University
Associate Professor
Area: Soil chemistry, biogeochemistry
Office: AGSC 348
Phone: (435) 797-0411
Email: paul.grossl@usu.edu

Charles Hawkins, PhD, Oregon State University
Professor
Area: Aquatic ecology, stream and riparian ecosystems
Office: BNR 162 D
Phone: (435) 797-2280
Email: chuck.hawkins@usu.edu

Lawrence Hipps, PhD, University of California – Davis
Professor
Area: Biometeorology
Office: AGSC 360
Phone: (435) 797-2009
Email: lawrence.hipps@usu.edu

Astrid Jacobson, PhD, Cornell University
Assistant Professor
Area: Soil chemistry
Office: AGSC 356
Phone: (435) 797-2184
Email: astrid.jacobson@usu.edu

Jiming Jin, PhD, University of Arizona, Chinese Academy of Sciences
Assistant Professor
Area: Global climate modeling and analysis
Office: NR 358
Phone: (435) 797-8175
Email: jiming.jin@usu.edu

Scott Jones, PhD, Utah State University
Associate Professor, PSC Graduate Program Coordinator
Area: Soil physics
Office: AGSC 158
Phone: (435) 797-2175
Email: scott.jones@usu.edu

Karin Kettenring, PhD, University of Minnesota
Assistant Professor
Area: Wetland ecology, plants and restoration
Office: NR 230
Phone: (435) 797-2546
Email: karin.kettenring@usu.edu

Michael King, PhD, Utah State University
Associate Professor
Area: Wildlife management
Office: USU-CEU campus
Phone: (435) 613-5400
Email: mike.king@ceu.edu

David Koons, PhD, Auburn University
Assistant Professor
Area: Animal population and ecology
Office: NR 242
Phone: (435) 797-8670
Email: david.koons@usu.edu

W. David Liddell, PhD, University of Michigan
Department Head, Professor
Area: Sedimentology
Office: GEOL 212
Phone: (435) 797-1261
Email: dave.liddell@usu.edu

James Long, PhD, University of Washington
Professor
Area: Forest ecology, silviculture
Office: NR 326
Phone: (435) 797-2574
Email: james.long@usu.edu

Chris Luecke, PhD, University of Washington
Professor, WATS Department Head
Area: Aquatic ecology, fisheries management
Office: NR 210 C
Phone: (435) 797-2463
Email: chris.luecke@gmail.com

James MacMahon, PhD, Notre Dame University
Dean, College of Science
Area: Restoration ecology, community ecology
Office: BNR 317
Phone: (435) 797-8151
Email: jim.macmahon@usu.edu

Dan MacNulty, PhD, University of Minnesota
Assistant Professor
Area: Wildlife ecology
Office: BNR 271
Phone: 435-797-7442
Email: dan.macnulty@usu.edu

Frank Messina, PhD, Cornell University
Professor
Area: Insect behavior, ecology, evolution
Office: BNR 211
Phone: (435) 797-2528
Email: frank.messina@usu.edu

Karen Mock, PhD, Northern Arizona University
Associate Professor
Area: Conservation genetics and applied molecular ecology
Office: NR 338
Phone: (435) 797-7870
Email: karen.mock@usu.edu

Christopher Monz, PhD, Colorado State University
Assistant Professor
Area: Recreation ecology, outdoor recreation, wilderness management
Office: NR 318
Phone: (435) 797-2773
Email: chris.monz@usu.edu

Keith Mott, PhD, University of Arizona
Professor
Area: Botany, carbon-water balance, plant physiology
Office: BNR 303
Phone: (435) 797-3563
Email: keith.mott@usu.edu

Richard Mueller, PhD, University of California
Associate Professor, Associate Dean of the College of Science
Area: Botany, plant morphology
Office: ESLC 245 G
Phone: (435) 797-2479
Email: richard.mueller@usu.edu

Jeanette Norton, PhD, University of California – Berkeley
Professor
Area: Soil microbiology
Office: AGSC 352
Phone: (435) 797-2166
Email: jeanette.norton@usu.edu

Michael Pfrender, PhD, University of Oregon
Associate Professor
Area: Evolution of complex characters in natural populations
Office: BNR 239
Phone: (435) 797-7623
Email: pfrender@biology.usu.edu

James Powell, PhD, University of Arizona
Professor
Area: Applied mathematics, mathematical biology, nonlinear evolution equations
Office: LUND 304
Phone: (435) 797-1953
Email: jim.powell@usu.edu

Claudia Radel, PhD, Clark University
Assistant Professor
Area: Human-environment geography, cultural/political ecology, feminist geography
Office: NR 232
Phone: (435) 797-0516
Email: claudia.radel@usu.edu

R. Douglas Ramsey, PhD, University of Utah
Professor
Area: Remote sensing, geographic information systems, landscape ecology, spatial analysis
Office: NR 355 A
Phone: (435) 797-3783
Email: doug.ramsey@usu.edu

Jennifer Reeve, PhD, Washington State University
Associate Professor
Area: Organic and sustainable agriculture
Office: AGSC 332
Phone: (435) 797-3192
Email: jennifer.reeve@usu.edu

Keri Ryan, PhD, University of California – Berkeley
Assistant Professor
Area: Dynamics, control, and building procedures
Office: ENLAB 272
Phone: (435) 797-2968
Email: keri.ryan@usu.edu

Alan Savitzky, PhD, University of Kansas
Department Head, Professor
Area: Evolutionary biology and conservation of amphibians and reptiles
Office: BNR 127
Phone: (435) 797-1909
Email: savitzky@usu.edu

Jack Schmidt, PhD, Johns Hopkins University
Professor
Area: Hydrology, fluvial geomorphology, mineral and water development policy
Office: BNR 349
Phone: (435) 797-1791
Email: jack.schmidt@usu.edu

Eugene Schupp, PhD, University of Iowa
Professor
Area: Plant population ecology, restoration ecology
Office: BNR 373
Phone: (435) 797-2475
Email: eugene.schupp@usu.edu

John Stark, PhD, University of California – Berkeley
Professor
Area: Soil microbiology, ecology, and biogeochemistry
Office: VSB 331
Phone: (435) 797-3518
Email: john.stark@usu.edu

Kimberly Sullivan, PhD, Rutgers University
Associate Professor
Area: Ornithology, behavior, population ecology
Office: BNR 313
Phone: (435) 797-3713
Email: yejunco@biology.usu.edu

Richard Toth, MLA, Harvard University
Professor
Area: Bioregional planning, water resources management
Office: NR 336
Phone: (435) 797-0694
Email: richard.toth@usu.edu

Helga Van Miegroet, PhD, University of Washington – Seattle
Professor
Area: Wildland soils and biochemistry
Office: BNR 157
Phone: (435) 797-3175
Email: helga.vanmiegroet@usu.edu

Carol von Dohlen, PhD, University of Maryland – College Park
Associate Professor
Area: Phylogenics and systems of homopterans
Office: BNR 237
Phone: (435) 797-2549
Email: carol.vondohlen@usu.edu

Joseph Wheaton, PhD, University of Southampton
Assistant Professor
Area: GIS, spatial modeling
Office: NR 360
Phone: (435) 797-2465
Email: joe.wheaton@usu.edu

Ethan White, PhD, University of New Mexico
Assistant Professor
Area: Spatial ecology, dynamics of communities
Office: BNR 139
Phone: (435) 797-2097
Email: ethan.white@usu.edu

Michael White, PhD, University of Minnesota
Adjunct Associate Professor
Area: Regional to global carbon cycle modeling, remote sensing, vegetation phenology
Office: - - -
Phone: - - -
Email: mikew.usu@gmail.com

Paul Wolf, PhD, Washington State University
Professor
Area: Genomics and phylogeny of land plants
Office: BNR 335
Phone: (435) 797-4034
Email: paul.wolf@usu.edu

Wayne Wurtsbaugh, PhD, University of California – Davis
Professor
Area: Biogeochemistry, limnology, fish ecology
Office: BNR 106
Phone: (435) 797-2584
Email: wayne.wurtsbaugh@usu.edu

Julie Young, PhD, Utah State University
Assistant Professor
Area: USDA National Wildlife Research Center, Predator Behavior and Ecology
Office: BNR 165
Phone: (435) 797-1348
Email: julie.young@usu.edu

Get Involved

Professional Organizations, Honor Societies, and Clubs

Ecological Society of America: ESA is a nonpartisan, nonprofit organization of scientists founded in 1915 to improve communication among ecologists, raise public awareness of the importance of ecology, and influence environmental decision making by enhancing communication between the ecological community and policy makers.

Labs, Centers, Research

Ecology Center: The Ecology Center is an administrative structure in the university that supports and coordinates ecological research and graduate education in the science of ecology and provides professional information and

advice for decision makers considering actions that affect the environment. The Ecology Center at USU has had a string of directors known nationally and worldwide as premier scientists in the field of ecology, and students graduating with a degree in ecology are able to make important contacts with influential faculty that can help them go on to prestigious post-doctoral programs and faculty positions at universities around the world.

Millville Predator Research Facility: This 165-acre site, part of the National Wildlife Research Center, allows employees to care for more than 100 coyotes involved in learning, behavior, and physiology studies. Studies include coyote behavior in captive environments, reproduction, interactions with other species, and more.

Remote Sensing/Geographic Information Systems Laboratory: The RS/GIS advances knowledge in the application of geospatial technologies in ecosystem science and natural resource management. The lab conducts research to meet the requirements of contracting agencies, which include the USDI Bureau of Land Management, USDA Forest Service, the U.S. Department of Defense, the National Guard Bureau, the U.S. Geological Survey, NASA, and various state and international agencies and organizations.

Utah Botanical Center: The UBC, located in Kaysville, Utah, is home to research and demonstration projects focused on sustainable living in the Intermountain West. Studies of water conservation, horticulture, water quality enhancement, wetland ecology, integrated pest management, urban forestry, agriculture, fish and wildlife, highway enhancement, and storm-water management combine to make the center a living laboratory.

Utah Center for Water Resources Research: The UCWRR facilitates water research, outreach, design, and testing elements within a university environment that supports student education and citizen training.

Utah Water Research Laboratory: The UWRL works on nearly 250 water-related projects a year and has projects in all of Utah's 29 counties and more than 40 countries. The lab is one of the go-to places that addresses the technical and societal aspects of water-related issues, including quality, quantity, and distribution of water.

Water Initiative: Utah State University supports a broad community of students and faculty engaged in water education, research, and outreach. The USU Water Initiative provides an overarching umbrella for the activities of this community aimed at fostering interdisciplinary collaboration and collegial sharing of ideas related to water across the departments and colleges of USU.