Conservation and Restoration Ecology Major

Department of Wildland Resources
College of Natural Resources

Published September 2007 **Effective for students beginning degree Summer Sem. 2007 thru Spring Sem. 2008**

Admission Requirements For This Major

1. New freshmen admitted to USU in good standing qualify for admission to this major.

2. Transfer students from other institutions or other USU majors need at least a 2.5 total GPA for admission to the Conservation and Restoration Ecology major in good standing. Special attention will be given to the amount of, and performance in, prerequisite math and science courses.

The Program

Conservation is the scientific discipline that seeks to conserve, maintain, and renew the ecological systems that sustain life on this planet, and enrich the quality of life of the citizens who inhabit it. Restoration ecology is the science and practice of ecological management with the goal of recovering, or where necessary, recreating those ecological systems that have been damaged or eliminated through overuse, neglect, or disaster. Together, these two themes characterize a new discipline in natural resource management. This major is dedicated to helping students achieve a broad understanding of ecological systems and processes. Conservation and Restoration Ecology emphasizes the hands-on application of practices that foster and sustain native species of plants and animals, ecological communities, and ecosystems. This new discipline addresses such threats as invasive species, habitat degradation, and land use change effects. This degree guides students in developing practical solutions to the problems that diminish the ecological integrity of wildland ecosystems and the quality of life of their inhabitants and visitors.

The curriculum includes a solid foundation in basic science (biology, chemistry, mathematics, and statistics), as well as a strong program in plant and animal ecology and the ecosystems of the Intermountain West. However, in contrast to more traditional degree programs in Natural Resources, the degree is designed to maximize the flexibility of the curriculum to meet the individual interests of the student. Students majoring in Conservation and Restoration Ecology design a personal curriculum in consultation with a faculty advisor, emphasizing coursework in particular ecosystems, disciplines, or techniques.

The formal requirements for a Conservation and Restoration Ecology major, together with University Studies requirements, are outlined in this program guide, which students are urged to read carefully and discuss with their academic advisor. The Conservation and Restoration Ecology major is an intensive campus-based program designed with the expectation that students will acquire additional practical experience through various summer internship opportunities coordinated within the College of Natural Resources.

Career Opportunities

The Conservation and Restoration Ecology degree will educate students for employment with private environmental and biological research and consulting companies, private industry with environmental divisions, private land reclamation contractors, private land owners, nonprofit environmental organizations, and state and federal land management agencies. Graduates will be involved in many endeavors, including developing and implementing listed species recovery plans or plans for conservation of biological diversity, developing habitat conservation plans or management plans for species conservation, restoring altered ecosystems, and managing protected ecosystems. Graduates will typically work as conservation biologists, conservation planners, population ecologists, restoration ecologists, and research technicians; in addition, many will further their education in graduate school.

Degrees and Programs Offered Through This Department

Conservation and Restoration Ecology: Bachelor of Science (BS)

Forestry: BS, Master of Science (MS), and Doctor of Philosophy (PhD)

Rangeland Resources: BS

Range Science: MS and PhD

Wildlife Science: BS

Wildlife Biology: MS and PhD

Ecology: MS and PhD

Natural Resources: Master of Natural Resources (MNR)

Academic Advisement

All students should contact their academic advisor for assistance with course selection, program planning, and meeting graduation requirements. If they do not know who their advisor is, students should contact the Department of Wildland Resources (NR 206) or the College of Natural Resources Academic Service Center (NR 120).

Graduation Requirements: BS Degree in Conservation and Restoration Ecology

Minimum University Requirements*

Total credits	120
Grade point average (most majors require higher GPA)	2.00 GPA
Credits of *C*- or better	100
Credits of upper-division courses (#3000 or above)	40
USU credits	30
(20 of which must be upper division, including 10 required by major)	
Completion of approved major program of study	See department
Credits in minor (if required by department)	12
Credits in American Institutions (ECON 1500; HIST 1700, 2700, or 2710; POLS 1100; or USU 1300)	3
University Studies requirements	See below

*Colleges and departments may require more credits or a higher GPA. See requirements on this sheet.

University Studies Requirements for Conservation and Restoration Ecology Major

Note: Approved University Studies courses and requirements are listed in the back section of each semester's *Schedule of Classes*.

General Education Requirements (27-28 credits)

Competency Requirements (9-10 credits)

Communications Literacy (CL1 and CL2) (6 credits)

ENGL 1010 (CL1) (3 credits) or satisfactory AP, CLEP, IBO, ACT, or SAT score

AND

ENGL 2010 (CL2) (3 credits) or satisfactory IBO score

Quantitative Literacy (QL) (3-4 credits)

MATH 1050 (4 credits)

OR

MATH 1100 (3 credits)

OR

Satisfactory AP, CLEP, IBO, ACT, or SAT score

Computer and Information Literacy (0 credits)

Passing grade on six computer and information literacy related examinations. Students must pass all six examinations before earning 37 USU semester credits.

Breadth Requirements (18 credits)

Select at least one approved course from each of the following six categories: **American Institutions (BAI), Creative Arts (BCA), Humanities (BHU), Life Sciences (BLS), Physical Sciences (BPS),** and **Social Sciences (BSS)**. (CLEP or AP credit may be used.) At least two of the six breadth courses must be University Studies courses with a **USU prefix** (excluding USU 1000, 1010, 1100, 3330, 4900, and 6900). BIOL 1620 (BLS) and CHEM 1110 (BPS), 1120 (BPS), or 1220 (BPS) may be used toward this requirement. ENVS 2340 (BSS) is recommended.

Depth Education Requirements

Communications Intensive (CI) (2 courses)

WILD 3700, plus another course having CI designation, will meet this requirement.

Quantitative Intensive (QI) (1 course)

STAT 2000 or 3000 will meet this requirement.

Depth Course Requirements (4 credits minimum)

Complete at least 2 credits in approved 3000-level or above courses from each of the following two categories: **Humanities and Creative Arts (DHA)** and **Social Sciences (DSS)**. ENVS 4000 (DSS) may be used toward this requirement. PHIL 3510 (DHA) is recommended.

Conservation and Restoration Ecology Major (95 credits)

All courses required for the major must be taken on an *A-B-C-D-F* basis. A grade of *C-* or better is required for all WILD courses used to meet the requirements for a major in Conservation and Restoration Ecology. The grade point average for all courses taught by the College of Natural Resources must be 2.5 or higher.

Effective Summer Semester 2006, some course numbers changed, due to House Bill 320 (Common Course Numbering). Course numbers used *prior to* Summer Semester 2006 are shown in parentheses, following *formerly*.

A. General Science Foundation Courses (34 credits) **Credits**

- ☐ **BIOL 1610** Biology I (F) 4
  (formerly BIOL 1210)
- ☐ **BIOL 1620 (BLS)**[1] Biology II (Sp) 4
  (formerly BIOL 1220)
- ☐ **MATH 1050 (QL)** College Algebra (F,Sp,Su) 4
- ☐ **MATH 1100 (QL)** Calculus Techniques (F,Sp,Su) 3
- ☐ **SOIL 3000** Fundamentals of Soil Science (F,Sp) 4
- ☐ **STAT 2000 (QI)** Statistical Methods (F,Sp) (3 cr) **or**
- ☐ **STAT 3000 (QI)** Statistics for Scientists (F,Sp,Su) (3 cr). 3
- ☐ **NR 2220** General Ecology (F,Sp) 3

Select one of the following chemistry series (9 credits):

- ☐ **CHEM 1110 (BPS)** General Chemistry I (F,Sp) 4
- ☐ **CHEM 1115** General Chemistry Laboratory (Sp). 1
  (formerly CHEM 1130)
- ☐ **CHEM 1120 (BPS)** General Chemistry II (Sp) 4

OR

- ☐ **CHEM 1210** Principles of Chemistry I (F,Sp) 4
- ☐ **CHEM 1215** Chemical Principles Laboratory I (F,Sp) 1
  (formerly CHEM 1230)
- ☐ **CHEM 1220 (BPS)** Principles of Chemistry II (F,Sp,Su). 4

B. Departmental Common Courses (27 credits)

- ☐ **WILD 2000** Introduction to Forest, Range, and Wildlife Sciences (F,Sp). 1
- ☐ **WILD 3600** Wildland Plant Ecology and Identification (F) 4
- ☐ **WILD 3610** Wildland Animal Ecology and Identification (F) 4

Credits

- ☐ **WILD 3700 (CI)** Inventory and Assessment in Natural Resource and Environmental Management (F) 3
- ☐ **WILD 3710** Monitoring and Assessment in Natural Resource and Environmental Management (Sp) 3
- ☐ **WILD 3800** Wildland Ecosystems (Sp) 3
- ☐ **WILD 3810** Plant and Animal Populations (Sp) 3
- ☐ **WILD 3850** Vegetation and Habitat Management (F) 3
- ☐ **WILD 3900** Managing Dynamic Ecological Systems (Sp) 3

C. Degree Program Courses (13 credits)

- ☐ **ENVS 3000** Natural Resources Policy and Economics (F) 4
- ☐ **ENVS 4000 (DSS)** Human Dimensions of Natural Resource Management (F) 3
- ☐ **WILD 4600** Conservation Biology (Sp). 3
- ☐ **WILD 4700** Ecological Foundations of Restoration (Sp) 3

D. Degree Program Electives (21 credits)

Students in the Conservation and Restoration Ecology major must meet with their advisor and plan a program of study for their 21 credits of degree program electives. Students must identify an organizing theme or comprehensive plan to guide the selection of their degree program electives, and all courses counted toward this requirement must be approved in advance by the student's advisor. Courses taken to complete a dual major with another major within the College of Natural Resources may *not* be counted toward fulfillment of this requirement.

E. Free Elective Credits

Students may take the remainder of the 120 credits from any department. The guidelines described previously under "Breadth Requirements" and "Depth Education Requirements" should be consulted to ensure meeting University Studies Requirements.

Students who transfer to USU with an Associate of Arts (AA) or Associate of Science (AS) degree from an approved institution will have satisfied the General Education portion of the University Studies requirements, but will still need to complete the Depth Education portion.

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[1]University Studies designations,including (BLS), (BPS), (DSS), (QI), and (QL), indicate that these courses may be counted for University Studies requirements, as well as for the Conservation and Restoration Ecology major.

Note: Students wanting to pursue federal employment should check the following U.S. Office of Personnel Management website for a listing of required coursework:
http://www.opm.gov/qualifications/SEC-IV/B/GS0400/0408.HTM

Conservation and Restoration Ecology Major Recommended Four-Year Plan of Study

Students should meet regularly with their faculty advisor and carefully plan their academic program, keeping in mind that many upper-division courses have prerequisites and must be taken in sequence. Students following the recommended schedule listed below should be able to complete degree requirements in four years (eight semesters).

A. First Year (28 credits)

Fall Semester (14 credits) **Credits**

- ☐ **BIOL 1610** Biology I 4
  (formerly BIOL 1210)
- ☐ **ENGL 1010 (CL1)** Introduction to Writing: Academic Prose. 3
- ☐ **USU 1300 (BAI)** U.S. Institutions (3 cr) **or**
- ☐ Other approved Breadth American Institutions (BAI) course (3 cr) . . . 3
- ☐ **USU 1330 (BCA)** Civilization: Creative Arts (3 cr) **or**
- ☐ Other approved Breadth Creative Arts (BCA) course (3 cr) 3
- ☐ **WILD 2000** Introduction to Forest, Range, and Wildlife Sciences. 1

Spring Semester (14 credits)

- ☐ **BIOL 1620 (BLS)** Biology II. 4
  (formerly BIOL 1220)
- ☐ **ENVS 2340 (BSS)** Natural Resources and Society (recommended) . . 3
- ☐ **MATH 1050 (QL)** College Algebra. 4
- ☐ **USU 1320 (BHU)** Civilization: Humanities (3 cr) **or**
- ☐ Other approved Breadth Humanities (BHU) course (3 cr). 3

B. Second Year (31 credits)

Fall Semester (16 credits) **Credits**

- ☐ **CHEM 1110 (BPS)** General Chemistry I (4 cr) **or**
- ☐ **CHEM 1210** Principles of Chemistry I (4 cr) 4
- ☐ **MATH 1100 (QL)** Calculus Techniques 3
- ☐ **NR 2220** General Ecology 3
- ☐ Approved Depth Humanities and Creative Arts (DHA) course 3
- ☐ Free electives 3

Spring Semester (15 credits)

- ☐ **CHEM 1115** General Chemistry Laboratory (1 cr) **or (formerly CHEM 1130)**
- ☐ **CHEM 1215** Chemical Principles Laboratory I (1 cr) . . . . . 1 **(formerly CHEM 1230)**
- ☐ **CHEM 1120 (BPS)** General Chemistry II (4 cr) **or**
- ☐ **CHEM 1220 (BPS)**[2] Principles of Chemistry II (4 cr). 4
- ☐ **ENGL 2010 (CL2)** Intermediate Writing: Research Writing in a Persuasive Mode 3
- ☐ **SOIL 3000** Fundamentals of Soil Science 4
- ☐ **STAT 2000 (QI)** Statistical Methods (3 cr) **or**
- ☐ **STAT 3000 (QI)** Statistics for Scientists (3 cr) 3

C. Third Year (29 credits)

Fall Semester (14 credits)

Note: These courses have multiple prerequisites and are designed to be taken as a block during fall semester of the junior year. Extended lab sessions and a multi-day field trip make it difficult to schedule additional courses during this semester.

- ☐ **WILD 3600** Wildland Plant Ecology and Identification 4
- ☐ **WILD 3610** Wildland Animal Ecology and Identification 4
- ☐ **WILD 3700 (CI)** Inventory and Assessment in Natural Resource and Environmental Management 3
- ☐ **WILD 3850** Vegetation and Habitat Management. 3

Spring Semester (15 credits)

- ☐ **WILD 3710** Monitoring and Assessment in Natural Resource and Environmental Management 3

Credits

- ☐ **WILD 3800** Wildland Ecosystems 3
- ☐ **WILD 3810** Plant and Animal Populations 3
- ☐ **WILD 3900** Managing Dynamic Ecological Systems 3
- ☐ Degree program electives or free electives 3

D. Fourth Year (32 credits)

Fall Semester (16 credits)

- ☐ **ENVS 3000** Natural Resources Policy and Economics 4
- ☐ **ENVS 4000 (DSS)** Human Dimensions of Natural Resource Management 3
- ☐ Degree program electives 9

Spring Semester (16 credits)

- ☐ **WILD 4600** Conservation Biology. 3
- ☐ **WILD 4700** Ecological Foundations of Restoration 3
- ☐ Degree program electives. 10

[2]CHEM 1220 may conflict with other courses taught this semester. This course could be taken during spring semester of the senior year.

Requirement Changes

Graduation requirements shown on this sheet are subject to change. Students should check with their faculty advisor regarding possible changes or for additional information regarding degree requirements, course sequencing, and departmental specialization options and their related coursework.

Materials for Persons with Disabilities

This requirement sheet is available in large print, audio, and braille format upon request to the USU Disability Resource Center.

For information contact

Wildland Resources Department; Natural Resources 206;
Utah State University; 5230 Old Main Hill; Logan UT 84322-5230;
tel. (435) 797-3219; **http://www.cnr.usu.edu/wild**

Prepared by Registrar's Office, Utah State University

Planning and Progress Worksheet

Semester		Year	
Department	Course Number	Course Title	Credits

Semester		Year	
Department	Course Number	Course Title	Credits

Semester		Year	
Department	Course Number	Course Title	Credits

Semester		Year	

Semester		Year	

Semester		Year	