EDUCATION IN RANGELAND ECOLOGY AND MANAGEMENT AT UTAH STATE UNIVERSITY

Volume 1: A Self-Evaluation Report

April 2008

Department of Wildland Resources
College of Natural Resources
Utah State University
Logan, Utah
PREFACE

This self-evaluation report has been produced for the purposes of reaccreditation with the Society for Range Management (SRM). Our previous SRM reaccreditation was in 1993, in the days when there was still a Department of Range Science at Utah State University, so things have changed considerably since then. Our program in rangeland ecology and management (REM) now resides within the Department of Wildland Resources, which incorporates elements of forest, range, and wildlife sciences from the amalgamation of three former departments. As a consequence, this report covers the REM program as well as aspects of the Department that are relevant, but not necessarily specific, to the REM program. As will be seen in this document, the Department educates students that can qualify for employment in the REM profession through two undergraduate degree programs: Rangeland Resources, and Conservation and Restoration Ecology. These two degrees share a common core curriculum with our other two degree programs (Wildlife Science and Forestry) and so the Department’s student body is fully integrated. The faculty of the Department believes this approach is effective for educating students in the modern paradigm of sustainable ecosystem management, which emphasizes the importance of ecosystem goods and services in addition to the production of traditional commodities such as meat, fiber, timber, etc. It is also effective for maximizing the utility of teaching facilities and faculty time and expertise, so we respectfully hope the SRM reaccreditation team will share our enthusiasm for the way our REM program has evolved within what is now the Department of Wildland Resources.

Producing a report of this scope requires a team effort and several people deserve special acknowledgements: Claire Brazell worked long hours compiling the report and its extensive appendices, as well as copy typing and reformatting numerous sections of text; Lana Barr assisted with the printing and distribution; John Malechek provided the history of the REM program at Utah State University; Chris Call contributed significantly to the section on the curriculum and advising; Ben Baldwin provided information on the Range Club and the Tehabi internship program; Fee Busby provided valuable comments and editing suggestions on a previous draft. Thanks to all concerned and on behalf of the faculty I welcome this opportunity to submit our REM program for review by the SRM reaccreditation team. The feedback will be invaluable as we continually adapt and strive to improve our ability to meet the challenges of the future.

Johan T. du Toit, Head
Department of Wildland Resources
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1. RANGELAND ECOLOGY AND MANAGEMENT UNIT CHARACTERISTICS

1.1 Overview of the Department of Wildland Resources

The Department of Wildland Resources originated in the name of the Department of Forest, Range, and Wildlife Sciences, which was formed in July 2002 when the College of Natural Resources was reorganized. Faculty and staff, currently numbering 55, are largely derived from the former Departments of Fisheries and Wildlife, Forest Resources, Geography and Earth Resources, and Rangeland Resources. Faculty expertise is consequently diverse, but a common theme is applied ecology and management in terrestrial ecosystems. To take advantage of this diverse expertise and promote crosscutting programs that integrate the faculty and staff in one new and dynamic academic unit, the department voted for a name change. A faculty subcommittee directed the process, which involved extensive consultation, and in June 2006 the name was officially changed to the Department of Wildland Resources.

The Department is strongly bolstered by the presence of a dynamic team of federal- and state-funded collaborators in the form of the Utah Cooperative Fish and Wildlife Research Unit (US Geological Survey and Utah Division of Wildlife Resources) and the USDA Predator Research Facility (National Wildlife Research Center). In addition, the Department hosts the Jack H. Berryman Institute, which has a national responsibility for research, teaching, and outreach in the field of wildlife damage management and mitigation of human-wildlife conflict (funded by USDA/APHIS/Wildlife Services).

The Department of Wildland Resources offers four Bachelor of Science degrees: Conservation and Restoration Ecology, Forestry, Rangeland Resources, and Wildlife Science. All of these degrees were in existence prior to the formation of the present department except for the Conservation and Restoration Ecology degree. Enrollment data for these degree programs since the department originated in 2002 (Figure 1.1; Table 6.5) show that enrollment has remained steady, with the highest number of students in the Wildlife Sciences undergraduate degree major and Wildlife Biology graduate degree major. PreRangeland Resources, PreForestry, Prefisheries & Wildlife, and Fisheries & Wildlife undergraduate majors are no longer offered. In addition, the Fisheries & Wildlife graduate major has been discontinued. Our graduate enrollment has increased 20% since 2003 with the biggest increase during 2005-2006. These degree programs offer broad educational opportunities for students interested in the analysis and management of forest and rangeland ecosystems and their associated wildlife populations. The department’s philosophy on education is to promote a broad interdisciplinary approach to natural resources analysis, management, and science. The Wildland Resources undergraduate curriculum is designed to provide students the basic education and training required for initiation of a career in the profession. Completion of the curriculum allows graduates to be competitive in attaining entry into graduate schools or into entry-level positions in state and federal management agencies.
The range management discipline has a long and proud history at USU that has touched the lives of thousands of people and has had a positive influence on literally millions of acres of rangeland in North and South America, Africa, Australia and the Middle East. These influences have been through the education of students, through research, and through on-the-ground implementation aided by USU Range alums and USU faculty through extension and assistance programs, both foreign and domestic.

1.2.1 Administrative Features
The beginnings of range science and management at USU can be traced back to around 1918 when formal courses in range management were first organized and taught by Raymond J. Becraft, a staff member of the Botany Department. The organization of the Department of Forestry and Range Management in 1928 marked the beginning of a unique administrative unit devoted to natural resource topics. Becraft moved to the new 3-man department in the academic year of 1927-28 and joined forester and department head Lyle F. Watts (on-loan from the U.S. Forest Service) and extension forester Charles M. Genoux. Becraft single handedly taught courses in range and conducted research until 1935 when he left USU for the University of Idaho.

In 1933, the College [University] Board of Trustees established a School of Forestry with two departments, Forestry and Range Management, located in the College of Agriculture. The following year, the new School welcomed a third department, Wildlife Management. L.A. Stoddart was hired as head of the Range Management Department in 1935, and was apparently its sole faculty member until he was joined by Arthur Smith in 1937. The School's name was changed in 1945 to the School of Forest, Range, and Wildlife Management, which endured until 1957 when the term “School” was changed to “College.” Finally, the College’s present name, College of Natural Resources, was put into place in 1965.

The Department has been known by five different administrative names since its distinction as a unique unit in 1933: Range Management was the name of longest duration, from 1933 to 1959, when the name was changed to Range Science. In 1996 the name was changed yet again to Rangeland Resources. With the re-organization of the College in 2002, the range program became a part of a new amalgamated unit named Department of Forest, Range and Wildlife Sciences. Finally, this unit was re-named its current title of Wildland Resources Department in 2006.

Department leadership over the years has been provided by 7 “permanent” department heads and several “acting” or temporary department heads. The first, Ray Becraft, served from 1933 to 1935. Following Becraft’s departure, L.A. Stoddart assumed the role and served until his death in 1968. Cyrus McKell then followed briefly from 1969 to 1971 when Don Dwyer was brought on-board. Dwyer led the Department until his departure in 1985. After a 1-year interim period, John Malechek assumed the role in 1986 and served until 1999. Then followed a period
of leadership by “interim” department head Allen Rasmussen until re-organization of the College in 2002. Re-organization resulted in the majority of the Range faculty moving into the new amalgamated Department of Forest, Range and Wildlife Sciences and a period of temporary leadership until the arrival of current Department Head Johan du Toit in 2005.

The first home for the Forestry and Range Department was three offices and three classrooms of the Animal Husbandry building on the northwest corner of the Quad. However, due to astonishingly rapid growth, the department had outgrown these quarters by 1936 (approximately 450 forestry and range management student majors in 1936) and was moved to the old Home Economics Building (subsequently re-named Forestry Building), located where the new Learning-Living Center now stands, and where it remained until 1959 when it moved to the new Forestry-Zoology building (now called the Quinney Biology-Natural Resources). The Range Science Department, along with its sister departments of Wildlife and Forestry moved to their present quarters in the Natural Resources Building in 1983, retaining most of their former space in the adjacent Quinney Biology-Natural Resources Building.

1.2.2 Faculty
Over the 81 years that range has been a distinct discipline at USU, its concepts and principles have been taught, researched and extended by 41 permanent faculty members (Table 1.1) and numerous additional professionals who have held post-doctoral positions or have been hired on a temporary basis to replace regular faculty away on sabbatical leave or other short-term, off-campus assignments. These people have brought distinction to the University through their teaching, research publications and extension activities, and through their influence on the many undergraduate and graduate students that have passed through the halls, labs, and lecture rooms. The first textbook on range management was produced by Professors Stoddart and Smith in 1943 and it remained the standard work for the profession through two subsequent editions (1955 and 1975, the latter with Professor Thad Box). Twelve of the faculty members listed in Table 1 hold current academic appointments in the Wildland Resources Department and 4 are emeritus faculty.

1.2.3 Undergraduate Program; Curriculum and Students
Initially, there was a single “range management” course of study, but by 1957 the University Bulletin listed three different options: the traditional Range curriculum, a Forest-Range Management course of study, and a new Watershed Management major. The Forest-Range Management major was reputed to be “…multiple-use training with emphasis on, of course, range management, watershed management, and enough forest management to qualify a man for Forest Service employment via the Junior Agricultural Assistant Civil Service examination.” By the early 1970s, the watershed major had become a jointly-held program between the Range Science and Forest Sciences Departments via a Watershed Unit administrative adjunct. The Forest-Range Management track was dropped in the early 1980s and a single major of Range Science remained thereafter.
Unfortunately, our information on undergraduate students and their numbers is far less complete than that for graduate students. The Range Department has never been the large undergraduate program as has, initially, Forestry, and lately, Wildlife. This can be illustrated by a few comparative numbers from the early days. In the 1935-36 academic year, Forestry had 268 total students, Wildlife 81 (the second year of the Wildlife Department’s existence), and Range 63 students. At this point, the entire faculty of the new School consisted of seven professors.

The war years saw an immense decline in student numbers. Only 11 total students were enrolled in the entire School in 1943-44, followed by 26 in 1944-45. Many of the courses were simply not taught. However, by 1945-46, numbers had again began to increase and 199 students were counted in the School, 29 of them Range majors. Enrollments subsequently increased through the late 1950s and 1960s to an all-time peak in the early 1970s. Incomplete records show a total College of Natural Resources enrollment in 1970 of slightly over 1,000 undergraduates. The proportion comprised of Range majors is unknown.

From the outset, as even today, the federal land management agencies of US Forest Service, Bureau of Land Management (initially Grazing Service) and Natural Resources Conservation Service (formerly Soil Conservation Service) were the major employers of our graduates.

1.2.4 Research and Graduate Programs
The training of graduate students has historically been a large part of the research function of the range program. The first Master of Science degree in Range Management was awarded in 1938 to Wallace R. Hanson and the first PhD degrees (2) in 1956 to Dillard Gates and Floyd Kinsinger. By 1999, the last time an assessment was made, the Department had awarded 280 MS degrees and 172 PhDs. Certainly these numbers have increased substantially since then. The recipients of these degrees have gone on to productive, and in some cases, outstanding careers in university teaching and administration, research, industry, and rangeland management and administration, both in the US and in several foreign countries.

Early research focused on the ecology of rangeland plants, plant communities, and tolerance of plants to grazing (Stoddart, Cook). Also much emphasis was placed on range livestock nutrition (Cook), and big game-rangeland relations (Smith). Pioneering work in the area of watershed management was begun by D.L. Goodwin in the 1950s and USU was the first university in the nation to offer a full-fledged curriculum in the subject.

Research by the faculty has resulted in hundreds of peer-reviewed papers in top-flight scientific journals and has brought world-wide recognition to USU as a center of expertise in a variety of areas of ecology and management, including: plant community ecology, physiological ecology, rangeland-wildlife relationships, animal nutrition, animal behavior, plant population ecology, rangeland rehabilitation, invasive species, poisonous plants, economics, and watershed management.
1.2.5 Extension

Out-reach from the university to the field has long been a tradition of the Range Department. This typically involved “regular” (i.e., academic) faculty, as well as extension faculty. Even today, there are still stories of extension-related exploits by Professors Cook and Smith. Smith had a half-time appointment with the Utah Fish and Game Department from 1956 until his retirement in 1973, as did his successor, Philip Urness. This joint arrangement between the Department and Utah Division of Wildlife Resources unfortunately ended with Urness’ retirement in 1994.

Range Department faculty who held appointments as Extension Specialists include (in approximate order of their time-of-employment): Grant H. Harris, John Vallentine, Karl Parker, F. E. Busby, Kendall Johnson and Paul McCauley, Roger Banner and Allen Rasmussen, and, today, Roger Banner. Additionally, James Bowns, professor at Southern Utah University in Cedar City, has provided invaluable extension assistance for the southern part of the State, both on an informal and, lately, formal (i.e., part-time Extension appointment) basis.
<table>
<thead>
<tr>
<th>Name</th>
<th>Years of Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Becraft, Ray J.</td>
<td>1919-1935</td>
</tr>
<tr>
<td>Smith, Arthur D.</td>
<td>1937-1973</td>
</tr>
<tr>
<td>Cook, C. Wayne</td>
<td>1942-1943; 1946-1967</td>
</tr>
<tr>
<td>Harris, Grant A.</td>
<td>1951-1956</td>
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<tr>
<td>Goodwin, D.L.</td>
<td>1955-1963</td>
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<tr>
<td>Vallentine, J. F.</td>
<td>1958-1962</td>
</tr>
<tr>
<td>Box, Thadis W.</td>
<td>1959-1962; 1970-1989 (emeritus)</td>
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<tr>
<td>Parker, Karl G.</td>
<td>1963-1978</td>
</tr>
<tr>
<td>Grumbles, J.B.</td>
<td>1962-1968</td>
</tr>
<tr>
<td>Coltharp, George B.</td>
<td>1964-1974</td>
</tr>
<tr>
<td>Bowns, James¹</td>
<td>1965-present (Extension)</td>
</tr>
<tr>
<td>West, Neil E.</td>
<td>1964-2005 (emeritus)</td>
</tr>
<tr>
<td>Hooper, Jack</td>
<td>1966-1970</td>
</tr>
<tr>
<td>Scotter, George</td>
<td>1966-1968</td>
</tr>
<tr>
<td>Gifford, G.F.</td>
<td>1967-1984</td>
</tr>
<tr>
<td>Caldwell, M.M.</td>
<td>1967-present</td>
</tr>
<tr>
<td>Goodall, D.W.</td>
<td>1968-1974</td>
</tr>
<tr>
<td>McKell, C.M.</td>
<td>1969-1981</td>
</tr>
<tr>
<td>Malechek, J.C.</td>
<td>1970-present</td>
</tr>
<tr>
<td>Workman, J. P.</td>
<td>1970-2005 (emeritus)</td>
</tr>
<tr>
<td>Dwyer, D.D</td>
<td>1971-1987 (emeritus)</td>
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<tr>
<td>Norton, B.E.</td>
<td>1971-1999</td>
</tr>
<tr>
<td>Busby, F.E.</td>
<td>1972-1979; 1998-present</td>
</tr>
<tr>
<td>Urness, P.J.</td>
<td>1973-1995</td>
</tr>
<tr>
<td>Banner, Roger</td>
<td>1976-1981; 1983-present</td>
</tr>
<tr>
<td>Johnson, Kendall</td>
<td>1979-1988</td>
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<tr>
<td>O'Rourke, James</td>
<td>1979-1986</td>
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<td>Richards, James</td>
<td>1980-1990</td>
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<tr>
<td>McCawley, Paul</td>
<td>1982-1989</td>
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<tr>
<td>Provenza, F.D.</td>
<td>1982-present</td>
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<tr>
<td>Allen, Edith</td>
<td>1983-1988</td>
</tr>
<tr>
<td>Gay, Charles</td>
<td>1983-present</td>
</tr>
<tr>
<td>Dobrowolski, James</td>
<td>1984-2000</td>
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<td>Pyke, David</td>
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<td>Rasmussen, Allen</td>
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<tr>
<td>Coppock, Layne</td>
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<td>Schupp, Gene</td>
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<td>McCoy, Nicole</td>
<td>1999-2002</td>
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<tr>
<td>Ramsey, Doug</td>
<td>2002-present</td>
</tr>
<tr>
<td>Ryel, Ron</td>
<td>2002-present</td>
</tr>
</tbody>
</table>

¹ Joint appointment with Southern Utah University with residence and tenure at SUU
1.3 Mission of the Department of Wildland Resources

The mission of the Department of Wildland Resources is to achieve excellence in integrating forest, range, and wildlife sciences. As researchers, we apply internationally recognized scientific expertise, an interdisciplinary approach, and a collaborative spirit to develop innovative solutions for the conservation and management of the natural resources of our changing planet. As educators, we mentor students at undergraduate and graduate levels, synthesizing established knowledge and cutting-edge research into a dynamic and highly relevant curriculum. As extension specialists, we help the people on the land understand and use research-based knowledge to improve their livelihoods through enlightened stewardship of ecosystem goods and services. The scope of this mission is worldwide although the primary responsibility is to the State of Utah and then the nation.

The specific mission for the REM program, within the overall mission of the Department, has shifted over the past few decades away from the traditional paradigm in which the emphasis was on livestock production as the primary commercial endeavor on rangelands. In keeping with the integration of forest, range, and wildlife sciences within the Department, the current paradigm emphasizes understanding, valuing, and sustainably managing the full spectrum of ecosystem goods and services provided by rangelands. Our rationale is that the livelihoods and lifestyles of ranchers in Utah, the American West, and in rangelands on other continents, are rapidly diversifying beyond the production of meat and fiber from domesticated animals. Increasingly, ranchers are successfully incorporating wildlife production, water stewardship, ecotourism, and conservation incentives into their business models. In response, the curricula of our BS degrees in Rangeland Resources (RARE) and Conservation and Restoration Ecology (CREC) are designed to educate students within the new paradigm while also providing them with the qualifications required to meet expectations of the traditional paradigm (e.g. the federal government’s Office of Personnel Management series GS-454 standards for rangeland managers).

1.4 Goals and objectives of the REM program

Accomplishment of the department’s mission is through a series of goals, each having several tactical objectives. Those that apply directly or indirectly to the REM program are as follows:

Goal 1: Provide an internationally recognized program of instruction that fulfills the University’s mission of graduating an educated person while, at the same time, providing disciplinary training in the ecology and management of natural resources in terrestrial ecosystems.

Objective A. Continually revise and update curricula, deleting unneeded and adding needed courses as appropriate.
Objective B. Expose faculty and students to nationally/internationally recognized individuals in the Department’s seminar series to stimulate new ideas and promote the flow of information on a diversity of concepts.

Objective C. Improve the opportunities for “hands-on” educational experiences by actively encouraging and facilitating student participation in summer internship programs, field trips, study abroad programs, and research projects.

Objective D. Provide undergraduate and graduate students with a voice in departmental policies and affairs through their elected representatives.

Objective E. Nurture professional growth by encouraging students to be involved with professional societies (principally the Society for Range Management, The Wildlife Society, Berryman Institute, and the Society of American Foresters) and providing them with support to attend and participate in professional meetings.

Objective F. Promote the development of effective communication skills by making communications intensive courses, which entail graded writing and speaking assignments, a required component of the curriculum.

Goal 2: Provide the conditions and incentives for a meritorious research program that addresses not only the biophysical elements of terrestrial ecosystems, but also the social and economic features that characterize social-ecological systems.

Objective A. Provide an environment in the Department that stimulates and rewards creative thought and activity.

Objective B. Emphasize research that addresses the multiplicity of ecosystem goods and services.

Objective C. Continue to strengthen our graduate program by recruiting and critically screening applicants and providing challenging and useful study programs.

Objective D. Emphasize the critical need for research that addresses scientific principles and functional processes while keeping a clear view of the application of results to real-world management problems.

Objective E. Encourage and reward the continued submission of grant proposals for research support from outside the University.

Goal 3: Provide citizens of Utah, the Nation and the World with the benefit of new and existing knowledge and its application through extension, continuing education, and distance learning programs.
Objective A. Deliver continuing education short courses on particular ecosystem management practices and principles to personnel in federal and state agencies, county agricultural agents, ranchers, youth groups, and the general public.

Objective B. Deliver online courses to place-based students and provide synchronous interactive broadcasts of classes to students across the USU regional campus system.

Objective C. Continue the publication of popular and application-oriented articles so that fundamental research findings get applied to current day problems.

Objective D. Encourage the entire departmental faculty to actively participate in extension and continuing education efforts.

Objective E. Provide the professional leadership necessary to develop, promote, and present symposia on state-of-the-art research topics, future directions for the profession, and educational needs.

Goal 4: Provide the incentive and the means for professional growth in all departmental personnel: faculty, staff, students, and technicians.

Objective A. Encourage and facilitate sabbatical leaves for eligible faculty so that continued studies and self-renewal will add to the overall departmental excellence.

Objective B. Encourage and facilitate involvement in professional societies, working groups, advisory boards and other service-related functions.

Objective C. Encourage and facilitate international experience to enlarge the individual’s perspective and, especially, to improve teaching.

Objective D. Maintain or increase, as necessary, morale and desire of faculty and staff to achieve our set-forth goals and objectives through a reward system that recognizes both accomplishment and the lack of it.

Objective E. Provide our support staff with opportunities for professional enrichment through special workshops and seminars both on-campus and off-campus.

Objective F. Provide directed leadership training for undergraduate and graduate students through incorporation of leadership principles and techniques into formal academic courses, and through informal, personal interactions with students.
Goal 5: Foster harmonious faculty, staff, and administrator relationships.

Objective A. Maintain up-to-date role statements for all faculty and staff.

Objective B. Conduct annual performance appraisals for all faculty and staff, with careful attention to the relationship between expectations (role statement) and performance.

Objective C. Keep departmental faculty and staff informed through adequate meetings, memos, and informal interchanges.

Objective D. Provide ample opportunity and a non-threatening atmosphere for faculty, staff, and students to express themselves to the department head and to each other.

Objective E. Develop and nurture an atmosphere of mutual trust and respect among all levels within the Department and among departments in the College and the University.

Objective F. Maintain a commitment to education and professionalism that prevents any discrimination against individuals within faculty, staff, and students on grounds of age, race, color, sex, creed, religion, or physical disability, while demonstrating a zero-tolerance policy for cases of infringement.

1.5 Utah State University Organization Chart

An organization chart (Attachment 1A) follows showing the REM program in the academic administrative structure of Utah State University.

1.6 College of Natural Resources Organization Chart

An organization chart (Attachment 1B) follows showing the relationship of the REM program with other environment and natural resource programs within the college.
1.7 Recent and anticipated changes to the REM program

The most significant change in our program occurred in 2002 when our undergraduate curricula were reorganized to create a set of common courses for all students in the Department. Many of our undergraduate students enter the program with very little background in natural resources. The first critical element of the new curriculum is to get these students “grounded” by focusing first on the “concrete” coursework, familiarizing them with the native flora and fauna and developing their capacity to make informed observations. This curriculum is known colloquially as the “blind parachutist” curriculum in that we believe that we should be able to parachute our graduates blindfolded anywhere in the western US, and when they remove their blindfolds they should know the dominant and key plant and animal species, interpret the geomorphology and landforms, and identify correctly their location. One of the implications of such a curriculum was that dendrology and range plants were merged into “Plant Ecology and Identification,” and that Conservation and Restoration, Forestry, Rangeland Resources, and Wildlife Science majors all have to take the course. The complement is that Conservation and Restoration, Forestry, and Rangeland Resources majors have to take “Animal Ecology and Identification” with the wildlife biologists. “Inventory and Assessments” was also generalized to cover the range of resources situations that students can expect to encounter in their careers. Data show that almost all natural resource graduates have to work in interdisciplinary teams and many are put into positions outside their primary area. Broad training makes them better suited to varied employment opportunities and job demands. From the faculty perspective, the change resulted in many fewer small classes needing to be taught, and in greater research opportunity.

This commons curriculum was initially organized as a set of courses that all students would take during their junior year. The full suite of courses included:

**Fall semester, junior year**
- 3600 Plant Ecology & Identification (4 cr.)
- 3610 Animal Ecology & Identification (4 cr.)
- 3700 Inventory & Assessment (3 cr.)
- 3850 Vegetation & Habitat Management (3 cr.)

**Spring semester, junior year**
- 3710 Monitoring & Assessment (3 cr.)
- 3800 Wildland Ecosystems (3 cr.)
- 3810 Plant & Animal Populations (3 cr.)
- 3900 Managing Dynamic Systems (3 cr.)

Beginning in the fall semester of 2008 (i.e. the coming academic year), this block of eight courses will be redistributed across the junior and senior years (two courses per semester) and some “principles” courses now taken during the senior year will be taken when students are juniors. These changes have come about through the deliberations of a Commons Curriculum Committee and have been debated at two successive department retreats. The main rationale is to provide students with a more logical sequence of courses that move from identification and description (“what”) to monitoring and management (“how”). The new curriculum also strengthens linkages between courses within semesters and allows for the development of WILD 4910 as an integrative, problem-solving, “capstone” course in the spring semester of the senior year. The future format of these courses is presented below.
New format:

**Fall semester, junior year**
- 3600 Plant Ecology & Identification (4 cr.)
- 3610 Animal Ecology & Identification (4 cr.)

**Spring semester, junior year**
- 3800 Wildland Ecosystems (3 cr.)
- 3810 Plant & Animal Populations (3 cr.)

**Fall semester, senior year**
- 4750 Monitoring & Assessment (3 cr.)
- 4850 Vegetation & Habitat Management (3 cr.)

**Spring semester, senior year**
- 4900 Managing Dynamic Systems (3 cr.)
- 4910 NR Problem Solving / Synthesis (3 cr.)

Another important and relatively recent change was the development of the BS degree in Conservation and Restoration Ecology (CREC), which took in its first cohort of students in the fall semester of 2004. This undergraduate major was developed in recognition of the growing need to produce graduates specifically trained to address such threats as invasive species, habitat degradation, and land use change effects in terrestrial ecosystems. Invasive weeds and the impacts of energy and mineral development, especially related to the current oil and gas exploration boom, are two particularly powerful drivers requiring a greater curricular emphasis on restoration of rangelands in the Intermountain West. The 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. Its curriculum includes a solid foundation of basic science as well as a series of courses in plant and animal ecology and the ecosystems of the Intermountain West. What sets this degree apart from the BS degree in Rangeland Resources (RARE) is that it maximizes the flexibility of the curriculum to meet the individual interests of each student. CREC students design a personal curriculum in consultation with the dedicated CREC faculty advisor, emphasizing coursework in particular ecosystems, disciplines, or techniques. In this way, CREC students are able to qualify with transcripts that meet the federal government’s Office of Personnel Management requirements for various occupational series including GS-454 Rangeland Management. Enrollments in the CREC degree have risen steadily and have now exceeded enrollments in the RARE degree (Fig. 1.1), while some of the more active and successful members of the USU student chapter of the Society of Range Management (the “Range Club”) are CREC majors. The CREC degree is thus included in this self-study for SRM reaccreditation since, although it does not have the words “range” or “rangelands” in its title, it overlaps considerably with the Department’s REM program and is directly relevant to emerging needs in the general field of REM.

The BS degree in Wildlife Science is currently being rolled out for delivery through the USU regional campus system with the same set of core courses as outlined above for the “commons curriculum” that applies to all degrees in the Department. This means that the central framework will be available for other degrees such as CREC and perhaps RARE to be offered to place-based students across the State of Utah in years to come, depending on how soon appropriate elective courses become available as the Regional Campus and Distance Education system grows.
No other substantial changes are anticipated at this stage. As challenges emerge they will be addressed in an adaptive management mode to achieve the best outcome for the continued strength of the REM program. Such challenges could include reduced enrollments in the RARE degree, which are currently holding fairly steady at about 20 students while the CREC enrollments are growing rapidly in comparison (Fig. 1.1). This appears to be symptomatic of a national trend and reflects the real and perceived employment opportunities for young graduates entering the natural resources professions. An important recruiting tool is the strong and dynamic USU Student Chapter of the SRM and departmental support for students to attend state and national SRM meetings, which will be maintained. An additional challenge is the replacement of faculty positions following retirements, since vacant positions revert to the College. New positions have to be motivated for in the face of competition with the needs of other programs and departments, but the present and past importance of the REM program within the College is well recognized and it is to be expected that its needs for faculty will continue to be met.

![Figure 1.1. WILD undergraduate enrollments, by major: Wildlife Science (WISC); Forestry (FORE); Rangeland Resources (RARE); Conservation and Restoration Ecology (CREC).](image)
1.8    Information about the REM program

The REM program is referenced in both the Utah State University general catalog and University and departmental web links.

1.8.1    University Catalog Selections

Copies of portions of the Utah State University general catalog that provide information about the REM program are available in detail in Appendix A.

1.8.2    University and departmental web links

University Websites

http://www.usu.edu/academics/undergraduate.cfm

http://www.usu.edu/academics/colleges.cfm

Departmental Websites

http://www.cnr.usu.edu/wild/

http://www.cnr.usu.edu/wild/htm/undergraduate-programs/rangeland-resources

http://www.usu.edu/majorsheets/07-08/Rangeland07.pdf
1. DEGREE CREDENTIAL

2.1 Transportable student record documentation

Below is documentation from the Utah State University Registrar’s Office indicating how the range credential is formally acknowledged in transportable student records.

March 6, 2008

Dr. Johan du Toit:

The College of Natural Resources offers a major in Rangeland Resources as a Bachelor of Science and Range Science as a Master of Science and Doctor of Philosophy. With the masters and doctorate majors a student can also earn a concentration in; Game Range Management, International Range Management, Range Animal Nutrition, Range Management, Range Rehabilitation, and Range Resources Economics.

When a diploma is printed for a student who has earned a degree it will state;

On the nomination of the Faculty and as authorized by law, Utah State University has conferred on John Doe the degree of Bachelor of Science in Rangeland Resources.

When a transcript is printed for a student who has earned a degree it will state;

Degrees Awarded: Bachelor of Science
Major: Rangeland Resources

Sincerely,

John Mortensen
Registrar
Utah State University
2.2  University catalog documentation

Documentation from the Utah State University general catalog explicitly stating that a formal credential in REM can be found in Appendix B.

2.3  Web Site Documentation

The following web page is the portal link to information on the BS degree in Rangeland Resources:

Rangeland Resources

Degree Program

Range scientists and managers deal with natural resources on rangelands—grasslands, deserts, woodlands, wetlands, and tundras—that occupy a significant land area in the USA and the world. Range students learn to manage and conserve rangeland resources to ensure the sustained output of products and values such as habitat for a wide variety of plant and animal life, forage for livestock and wildlife, water for agricultural and municipal use, and scenic beauty for recreational activities. This degree program also teaches students how to restore lands damaged by past misuse.

Students are required to fulfill the requirements of their chosen degree as listed in the Utah State University General Catalog and the Major Requirement Sheet for the degree at the time of entry into the degree program. If the degree requirements are later changed, students may choose to move to new degree requirements.

The following link provides access to the 2006-07 Major Requirement Sheet for the Wildland Resource Department's Rangeland Resources undergraduate degree.

Rangeland Resources Management Major Requirement Sheet

2.3.1  Rangeland Resources Major Requirement Sheet

Documentation from the Utah State University website specifying the course of study necessary to obtain the REM credential can be found in Appendix C.
3. CURRICULUM AND ADVISING

3.1 Syllabi for General Concepts curriculum standards courses

Syllabi for each of the courses that are commonly used to meet the General Concepts curriculum standard are available in Appendix D.

Table 3.1 General Concepts Course Number Summary Table

<table>
<thead>
<tr>
<th>General Concepts Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADVS 3500</td>
</tr>
<tr>
<td>BIOL 4420</td>
</tr>
<tr>
<td>CHEM 1210</td>
</tr>
<tr>
<td>ENVS 3300</td>
</tr>
<tr>
<td>PLSC 5550</td>
</tr>
<tr>
<td>STAT 2000</td>
</tr>
<tr>
<td>WATS 4750</td>
</tr>
<tr>
<td>WILD 3710</td>
</tr>
<tr>
<td>WILD 4520</td>
</tr>
</tbody>
</table>

3.2 Syllabi and supporting documentation for Specific Concepts curriculum standards courses

Syllabi and supporting documentation for each of the courses used to meet the REM Specific Concepts curriculum standard are available in Appendix E.

Table 3.2 Specific Concepts Course Number Summary Table

<table>
<thead>
<tr>
<th>Specific Concepts Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENVS 3000</td>
</tr>
<tr>
<td>WILD 3710</td>
</tr>
<tr>
<td>WILD 4000</td>
</tr>
</tbody>
</table>

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3.3 Advising protocol

All newly admitted freshmen (Utah residents and out-of-state students within 400 miles of campus) are required to participate in a Student Orientation, Advising, and Registration (SOAR) session before being permitted to register for courses. Students entering for fall semester typically meet with the department head or a designated advisor during one of the many summer SOAR sessions to receive individual advice about degree requirements and fall semester courses. Online orientation is available for students who are unable to attend SOAR sessions in person. Newly admitted transfer students are not required to participate in SOAR; however, they must contact their departmental academic advisor before registering for courses. The College of Natural Resources (CNR) has an Academic Advising Center staffed by a head advisor, an assistant advisor, and student peer advisors. The center is an early point of contact for entering freshmen and transfer students to learn about general university requirements. The advisors in the center also provide recommendations to students when their faculty advisors are off campus, and they perform initial reviews of graduation forms. After being admitted to USU, freshman and transfer students are assigned to a faculty advisor to guide them through their degree program (see next section below).

3.3.1 Matching Students with Advisors

Each of the four undergraduate majors in the Wildland Resources Department has a designated faculty advisor. Chris Call advises all students in the Rangeland Resources major, Gene Schupp advises all students in the Conservation and Restoration Ecology major, Mike Kuhns advises all students in the Forestry major, and Mike Wolfe advises all students in the Wildlife Science major. One of the requirements for freshmen and transfer students in the Introduction to Forest, Range, and Wildlife Sciences (WILD 2000) course is to meet with their designated advisors and plan out the coursework for their degree program. Prior to this meeting, designated faculty advisors make presentations about the majors and associated degree requirements in the WILD 2000 course.

3.3.2 Keeping Abreast of New Information

Faculty advisors meet with the head advisor of the CNR Academic Advising Center once each semester to review any new additions to the USU Advisor Handbook, and any changes in policies for required courses taught in other departments across campus. The handbook is updated each fall, and is available online and as a hard copy. Any course policy changes requiring immediate attention are sent to faculty advisors via e-mail by the head advisor in the CNR Academic Advising Center.
3.3.3 Course Substitutions and Courses Fulfilling the Intent of General Concepts Curriculum Categories

Every course listed in the General Concepts curriculum is available at USU. In many cases, more than one course offered at USU meets the criteria for many of the courses (e.g., chemistry, statistics, animal production, and hydrology), providing some flexibility in course selection. Students entering as freshmen and proceeding through the Rangeland Resources major and the Conservation and Restoration Ecology major typically don’t have course substitution issues. Most of our transfer students come from colleges and universities in Utah and surrounding states. We have articulation agreements with these institutions for the basic courses (e.g., biology, chemistry, math, statistics, general ecology, general soils, and plant taxonomy) and some of the more advanced courses (e.g., plant physiology, wildlife management, and recreation management). A flow chart showing the alignment of prerequisites for most of the courses in the General Concepts curriculum has been developed for each major in the department. When substitution issues arise, faculty advisors first try to choose a substitute course based on their knowledge of similar courses offered across campus. In some instances, advisors help students make arrangements with a faculty member to teach a Special Topics course that fulfills the intent of a required course that has been cancelled. In some cases, particularly with transfer students who did not take appropriate coursework at their first institution or in their first major at USU, students are advised at the outset that they will require an additional semester or two to complete the required coursework for the major.

3.3.4 Mechanism to Ensure Students Meet with Advisors Twice a Year

During SOAR sessions, the first meeting with an advisor in the CNR Academic Advising Center, the first meeting with a faculty advisor, and the Introduction to Forest, Range, and Wildlife Sciences (WILD 2000) course, students are informed that they need to meet with their faculty advisor each semester prior to registering for courses for the upcoming semester. Faculty advisors are given lists with advisee names and contact information (e-mail and phone), to contact advisees during the registration period, if necessary. Students are encouraged to contact their faculty advisor or an advisor in the CNR Academic Advising Center any time a problem arises.
## 4. Rangeland Ecology and Management Educators

### 4.1 REM Faculty Curricula Vitae

Curricula vitae for REM faculty are available in detail in Appendix F. Faculty responsibilities are summarized in Table 4.1.

**Table 4.1.** Summary of responsibilities of Wildland Resources faculty teaching REM-specific courses, together with the numbers of undergraduates and graduates currently advised by each (as major advisor or committee member), the weighting allocated to each role category (teaching, research, extension, service/administration), and the individual's salary source (education and general, or other).

<table>
<thead>
<tr>
<th>Name</th>
<th>Courses taught</th>
<th>Credit hours</th>
<th>Advisees</th>
<th>Role weighting (%)</th>
<th>Salary source (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Undergrad</td>
<td>Grad-major</td>
<td>Grad-comm</td>
</tr>
<tr>
<td>Adler, Peter</td>
<td>WILD 3800</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Banner, Roger</td>
<td>WILD 7000</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Busby, Frank E. &quot;Fee&quot;</td>
<td>WILD 2000</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Call, Chris</td>
<td>WILD 3600</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>WILD 3850</td>
<td>4</td>
<td>3</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>WILD 4000</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>WILD 7000</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>Leffler, Josh</td>
<td>WILD 3700</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Long, Jim</td>
<td>WILD 3850</td>
<td>3</td>
<td>0</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Malechek, John</td>
<td>WILD 4000</td>
<td>3</td>
<td>0</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Provenza, Fred</td>
<td>WILD 3900</td>
<td>3</td>
<td>0</td>
<td>11</td>
<td>22</td>
</tr>
<tr>
<td>Ramsey, Doug</td>
<td>WILD 3710</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Ryel, Ron</td>
<td>WILD 3710</td>
<td>3</td>
<td>0</td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Schupp, Eugene</td>
<td>WILD 2200</td>
<td>3</td>
<td>0</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>VanMiegroet, Helga</td>
<td>WATS 3700</td>
<td>3</td>
<td>35</td>
<td>5</td>
<td>8</td>
</tr>
</tbody>
</table>

**Notes:**
1. Fieldtrip component only
2. Taught in past years, phased over to new instructors in 2007-08
3. On phased retirement (50% time in 2007-08)
4.2 Cultivating excellence in education

Excellence in education is promoted by a strong set of policies implemented at University, College, and Department levels. Examples include a faculty development workshop series driven by the Provost’s Office, which brings in experts in pedagogy to inspire instructors and impart new techniques. An example is Dr. Ken Bain, who wrote the book *What the Best College Teachers Do* (2004, Harvard University Press). A series of discussion groups about his book were arranged within the College in advance of his campus visit in 2007, which was very well received. At the Department level, all tenure-track faculty members have to undertake peer review of their teaching, and as from 2007 all new faculty members are participating in a “Teaching Academy”, in which they are mentored by outstanding instructors in the Department. In addition, we have instituted a “Panel of Examiners”, which meets at the end of each semester to peer-review the final exam papers set by each faculty member teaching that semester. This is very helpful for all instructors to learn what their colleagues are expecting their students to know, and also to improve the standard of exam papers to enhance academic rigor. All courses are evaluated by students for both instructor effectiveness and course effectiveness, as is standard across public universities, and those evaluation scores are discussed each year by the faculty member and the Department Head in an annual performance management meeting. College awards are presented annually on a very competitive basis to recognize faculty members for excellence in teaching, advising, mentoring undergraduate research, etc. Finally, faculty members are encouraged to attend national conferences and workshops on pedagogy, and the costs of that are covered by the Department and College on a shared basis. The importance of attending such training opportunities applies particularly to the distance learning skills that are increasingly required in all our degree programs.

Faculty members are provided with opportunities to take sabbatical leave, and these opportunities are almost always taken up on schedule. The planning to accommodate the responsibilities (teaching, advising, administration, etc) of the faculty member applying for sabbatical leave has to be undertaken well in advance. These opportunities are essential for refreshing the creativity of faculty members. As regards maintaining their grounding in the REM field and maintaining contact with REM practitioners, faculty members have opportunities to undertake consultancy work and are commonly involved in extension activities such as those arranged by Dr. Roger Banner (USU Extension) and short courses such as those presented by Dr. Fred Provenza (BEHAVE Project), which promote interaction between range commodity producers and faculty members.

Multidisciplinary team research is dependent on the types of grants that are secured, but one project that has been very successful in this regard is a project to investigate the wider ecological effects of vegetation manipulation in (a) the sagebrush steppe ecosystem and (b) the conifer/aspen forests in the Rocky Mountain ecosystem. That project was funded (2004-2007) through a congressional earmark passed through NRCS and allowed a diverse team of applied
ecologists to work together with graduate students to generate a wide range of sub-projects. One aspect of that project was a well attended “Restoring the West” conference at USU in 2007, which attracted wide attention for its focus on the sagebrush steppe ecosystem and the implications of research on sustaining range animal production without compromising biodiversity.

4.3 Adjunct faculty and corresponding curricula vitae (see Appendix G)

Curricula vitae for adjunct faculty are available in detail in Appendix G. Adjunct faculty information is summarized in Table 4.2.

Table 4.2 Summary of academic rank and home institution for adjunct REM faculty.

<table>
<thead>
<tr>
<th>Name</th>
<th>Adjunct academic rank</th>
<th>Home institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bartos, Dale</td>
<td>Adjunct Professor</td>
<td>USDA Forest Service Forestry Sciences Lab</td>
</tr>
<tr>
<td>Brunson, Mark</td>
<td>Adjunct Professor</td>
<td>USU (Environment &amp; Society)</td>
</tr>
<tr>
<td>Coppock, Layne</td>
<td>Adjunct Associate Professor</td>
<td>USU (Environment &amp; Society)</td>
</tr>
<tr>
<td>Johnson, Doug</td>
<td>Adjunct Professor</td>
<td>USDA-ARS Forage &amp; Range Research Lab</td>
</tr>
<tr>
<td>Jones, Tom</td>
<td>Adjunct Associate Professor</td>
<td>USDA-ARS Forage &amp; Range Research Lab</td>
</tr>
<tr>
<td>Monaco, Tom</td>
<td>Adjunct Assistant Professor</td>
<td>USDA-ARS Forage &amp; Range Research Lab</td>
</tr>
<tr>
<td>Pfister, Jim</td>
<td>Adjunct Associate Professor</td>
<td>USDA-ARS Poisonous Plant Research Lab</td>
</tr>
<tr>
<td>Ralphs, Mike</td>
<td>Adjunct Associate Professor</td>
<td>USDA-ARS Poisonous Plant Research Lab</td>
</tr>
</tbody>
</table>

4.4 Teaching assistant/lecturer position summary

The Department employs graduate students as teaching assistants (TAs) and graders for courses subject to timely requests from instructors and the needs of the course, as judged by the class enrollment and structure and the presence or absence of a laboratory component. The constraint on the number of TAs and graders that can be employed is the status of the department’s operating budget each year. Nevertheless, every effort is made to provide as many opportunities as possible for graduate students to (a) develop their teaching skills and (b) earn additional income by working as TAs or graders. In some (rare) cases, senior undergraduates are employed to assist instructors with certain courses. Graduate TAs generally take an active part in teaching, such as in laboratory sections of a course, while graders are used to process tests and assignments under the direction of the instructor. The
current list of TAs and graders in the department (Table 4.3) is fairly representative of the situation in most years. At present we have no lecturer positions in the department, although we are considering hiring some within the regional campus system to contribute to the execution of our distance learning mission.

**Table 4.3**  Graduate teaching assistants and graders in the Department of Wildland Resources (2007 - 2008)

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Course</th>
<th>Lab?</th>
<th>Class size (last year)</th>
<th>Semester</th>
<th>TA</th>
<th>Grader</th>
<th>Student level (of TA or grader)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chris Call</td>
<td>3600</td>
<td>Yes</td>
<td>35</td>
<td>Fall 07</td>
<td>Full-time</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td>Mike Wolfe</td>
<td>3610</td>
<td>Yes</td>
<td>30</td>
<td>Fall 07</td>
<td>Full-time</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td>Josh Leffler</td>
<td>3700</td>
<td>Yes</td>
<td>30</td>
<td>Fall 07</td>
<td>Full-time</td>
<td>MS</td>
<td></td>
</tr>
<tr>
<td>Karen Mock</td>
<td>4880</td>
<td>No</td>
<td>20</td>
<td>Fall 07</td>
<td>Full-time</td>
<td>MS</td>
<td></td>
</tr>
<tr>
<td>Doug Ramsey</td>
<td>5750/6750</td>
<td>Yes</td>
<td>10</td>
<td>Fall 07</td>
<td>Half-time</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td>Tom Edwards</td>
<td>6500</td>
<td>Yes</td>
<td>20</td>
<td>Fall 07</td>
<td>Half-time</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td>Joel Diamond</td>
<td>2200</td>
<td>No</td>
<td>55</td>
<td>Spring 08</td>
<td>Full-time</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td>Mike Conover</td>
<td>3300</td>
<td>No</td>
<td>25</td>
<td>Spring 08</td>
<td>Full-time</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td>Ron Ryel</td>
<td>3710</td>
<td>Yes</td>
<td>30</td>
<td>Spring 08</td>
<td>Full-time</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td>Peter Adler</td>
<td>3800</td>
<td>No</td>
<td>30</td>
<td>Spring 08</td>
<td>Half-time</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td>Dave Koons</td>
<td>3810</td>
<td>Yes</td>
<td>35</td>
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<td>Full-time</td>
<td>PhD</td>
<td></td>
</tr>
<tr>
<td>Fred Provenza</td>
<td>3900</td>
<td>No</td>
<td>40</td>
<td>Spring 08</td>
<td>Full-time</td>
<td>PhD</td>
<td></td>
</tr>
</tbody>
</table>

4.5  Vacant position summary

There are currently no vacant positions in the Department of Wildland Resources.

4.6  Complementary roles of research, extension, and teaching in the Department

The Department of Wildland Resources has a dynamic and well integrated “research engine” that includes projects that cut across the disciplines of forest, range, and wildlife sciences. Externally funded awards generated by the College of Natural Resources in FY 2006-07 amounted to $10,482,217. Of this, $5,959,677 (57%) was recorded as having been generated by the Department of Wildland Resources, making it the most successful department in the College. In addition, our research faculty members were also to a large degree responsible for the almost $3 million brought in by the Ecology Center. Considering the grantsmanship of faculty on a university wide basis, the per-capita success of research faculty in the Department of Wildland Resources is among the highest on campus. The value of this dynamic research activity for REM students is that their instructors are actually *doing* cutting-edge research and not just talking about it. Students have opportunities to visit active research sites for fieldtrips,
some get to be employed as research technicians, and some of their classes (e.g. the planned course WILD 4910 Natural Resources Problem Solving / Synthesis) will entail the collection of primary data by students, which they will analyze together with faculty members within a long-term research project. Undergraduates also have opportunities to earn academic credit (in lieu of elective courses) for independent research projects that are conducted with a faculty mentor, and it is by no means uncommon for undergraduates to publish in peer-reviewed journals as co-authors with faculty members.

The extension/outreach component of the REM program in the Department of Wildland Resources is directed by Dr. Roger Banner, Extension Range Specialist. Dr. Terry Messmer, the Extension Wildlife Specialist, holds degrees in both range and wildlife and is actively involved in a number of range–related projects that deal with wildlife habitat management. During the period 2001-2006, Dr. Banner recorded 8,456 face-to-face extension contacts and indirect contacts through newsletters and websites would more than triple that number. The program in Extension Rangeland Management helps managers, agents, land users, and the general public seeks information, expertise and assistance involving public and private rangelands and associated natural resources. Programs include Range Schools, AZ/UT Range-livestock Annual Workshop, the USU Extension/UFBF biennial Rangeland Conference, and BEHAVE (Behavioral Education for Human, Animal, Vegetation, & Ecosystem Management). An example of a successful program is the Utah Range School. Three Utah Range Schools presented in 2006 resulted in a dramatic increase in participants’ knowledge of rangeland management. The program also recently produced the booklet Grasses and Grasslike Plants of Utah – a Field Guide. The Utah Rangelands Web site (extension.usu.edu/rangelands; extension.usu.edu/rangeplants), an element of the Rangelands West Partnership, serves as a web resource for science based information on the nature, use, and management of rangelands in Utah and beyond. While extension faculty members have limited teaching responsibilities, they do advise their own graduate students and serve on the advisory committees of other students across disciplines within the Department, and in some cases across departments and colleges within the University.

5. EXTRACURRICULAR PROFESSIONAL DEVELOPMENT

5.1 On-campus club structure, student membership and activities

The on-campus structure of the club has remained relatively stable over the past five years. The USU Range Club is housed in the Wildland Resources Department (formerly Forest, Range, and Wildlife Department). The club has four main officers; president, vice-president, recorder (secretary) and historian and fills other offices when necessary for committees and activities. Active members of the club hold elections each spring semester. The membership of the club is open to all students interested in rangelands. The majority of students are from the Wildland Resources Department and other majors within the College of Natural Resources. There is active advisement of the club by faculty and staff with additional participation by “coaches” for
the various SRM student competitions. For more information visit the USU Range club website at:

http://www.cnr.usu.edu/htm/students/student-organizations/srm

2003 – Membership:  14

Activities: Range Club meetings, USU Clubs and Organizations meeting, CNR Student council Meetings Social- Welcome Back Bar-B-Que, End of semester Pot-Luck, Closing Social, Fundraisers/Service USU Day on the Quad, CNR week Booth SRM – contest practices and preparation (URME, Plant ID, Rangeland Cup, public speaking, undergraduate papers, club booth), preparation meetings for section and national meeting, Utah Section Meeting, National Meeting.

2004 – Membership:  15

Activities: Logistical – Range Club meetings, USU Clubs and Organizations meeting, CNR Student council Meetings Social- Welcome Back Bar-B-Que, End of semester Pot-Luck, Closing Social, Fundraisers/Service USU Day on the Quad, CNR week Booth SRM – contest practices and preparation (URME, Plant ID, Rangeland Cup, public speaking, undergraduate papers, club booth), preparation meetings for section and national meeting, Utah Section Meeting, National Meeting.

2005 – Membership:  17

Activities: Logistical – Range Club meetings, USU Clubs and Organizations meeting, CNR Student council Meetings Social- Welcome Back Bar-B-Que, End of semester Pot-Luck, Closing Social, Fundraisers/Service Range Club Banquet (guest speakers Fred Provenza and Charles Kay) USU Day on the Quad, CNR week Booth SRM – contest practices and preparation (URME, Plant ID, Rangeland Cup, public speaking, undergraduate papers, club booth), preparation meetings for section and national meeting, Utah Section Meeting, National Meeting.

2006 – Membership:  23

Activities: Logistical – Range Club meetings, USU Clubs and Organizations meeting, CNR Student council Meetings Social- Welcome Back Bar-B-Que, Skeet-shooting activity, End of semester Pot-Luck, Closing Social, Fundraisers/Service USU Day on the Quad, CNR week Booth, Newton Dam Cleanup SRM – contest practices and preparation (URME, Plant ID, Rangeland Cup, public speaking, undergraduate papers, club booth), preparation meetings for section and national meeting, Utah Section Meeting, National Meeting, post meeting evaluation.

2007 – Membership:  27

Activities: Logistical – Range Club meetings, Weekly Presidency meetings, USU Clubs and Organizations meeting, CNR Student council Meetings Social- Welcome Back Bar-B-Que, End of semester Pot-Luck, Root-Beer Float Social post SRM meeting, Loggers Ball, Closing Social,
Fundraisers/Service – USU Day on the Quad, CNR week Booth, Newton Dam Cleanup, Application of Spike Herbicide on Ranch SRM – contest practices and preparation (URME, Plant ID, Rangeland Cup, public speaking, undergraduate papers, club booth), preparation meetings for section and national meeting, Utah Section Meeting, National Meeting, post meeting evaluation.

2008 – Membership: 30

Activities: (see Attachment 5A: Range Club Newsletter) Logistical Range Club meetings, Weekly Presidency Meetings, Social - Opening Social, Spring Bar-B-Que (planned April 10) Fundraisers/Service – Range Club Banquet (guest speaker Bill Hopkin, Director of Grazing Improvement Program, Utah Department of Agriculture), Cottonwood Ranch Visit (planned March 27-30,) Application of Spike Herbicide SRM – contest practices and preparation (URME, Plant ID, Rangeland Cup, public speaking, undergraduate papers, club booth), extensive fundraising effort or travel to Louisville, preparation meetings for national meeting, national meeting, post-meeting evaluation.

5.2 Student participation in annual section and national meetings

2003 Section – (Provo) 4 National – (Casper) 6

2004 Section – (Richfield) 6 National – (Salt Lake City) 12

2005 Section – (Midway) 7 National – (Ft. Worth) 6

2006 Section – (Logan) 18 National – (Vancouver) 8

2007 Section – (Price) 14 National – (Reno) 12

2008 Section (to be held in November 08) National (Louisville) 14

Participation Summary: Students are required to participate with an extensive preparation for the National meeting. This preparation includes participation at the section meeting, preparing for contests and an introduction and orientation to the SRM National meeting.

Student Contests: Each student is required to participate in at least two recognized contests. Students must identify the desired contests early in the fall semester and participate in various practices and study sessions to prepare.

SRM National Meeting Orientation: To help prepare students to make the most of the national meeting there is a two-class introduction to professional society meetings. The first focuses on what to expect at a meeting, the second class focuses on how to participate effectively. (See Attachment 5B: SRM Meeting Preparation) The overall goal is to help the students make the most of the meeting and reduce the anxiety. A large focus of this orientation is professional
development. Students are required to develop a professional resume, create a team shirt or vest, create name tags and business cards.

Once at the meeting students are required, in addition to contests, to attend (at least one) symposium, technical sessions, and poster session of their choice. All of the students are required to participate in the job fair/career development workshops, Tapping The Top, USU Mixer and student awards presentation. The students are strongly encouraged to engaged in as many activities as possible and maximize their networking opportunities.

5.3 Financial support for student participation in professional society meetings

There are five main mechanisms available to the USU Range Club to raise funds.

- Fundraisers and services projects. Projects identified, developed and executed by the Range Club. Most of these projects are opportunistic and make up the majority of the activities that the club participates in. There are no “traditional” yearly fundraisers that are repeated each year. Total amount raised varies year to year depending on the need.
- Self-Funding. Students pay a portion of the cost to attend the meeting. This method combined with fundraisers was the main funding until the past three years. Total amount raised varies year to year.
- University Funding. ASUSU (Associated Students of Utah State University – USU student government). The Range Club can petition ASUSU for funding to represent USU at professional meetings if participating with contests and/or presenting research. Amount obtained (average since 2006) $1200 per year
- College Funding. Dean’s Office and Wildland Resources. The Range Club can petition the Dean and Wildland Resources Department Head for addition funding. In addition to actual financial support there is in-kind support that is provided through ride and room sharing, staff time and administrative support. Amount obtained (average since 2006) $2400 per year ($1200 dept, $1200 Deans Office)
- Alumni Donations. A more recent addition to the funding mechanism, the club has been developing alumni relationships. This has often been an unpredictable funding source. In 2007, Sponsor-a-Student program was developed to allow alumni donations to support the SRM dues for a student. This program was successful in raising over $400 to cover dues. Total alumni donation amount varies year to year.
5.4 Communication of and student membership in SRM and on-campus academic societies

Professional development information is conveyed to students in a variety of methods including:

- Range Club Advisement – Active club advisors provide a consistent emphasis on professional development with the officers and club members. The goal is to create leaders within the club that focus on their careers and create an atmosphere that challenges students to achieve more.
- Range Club Meetings – provide opportunities to get students involved, advertise other opportunities on campus and within the surrounding community.
- Range Club Activities- many of the club activities are developed to provide the students with opportunities to gain valuable skills and experiences. Examples include: Sagebrush treatment with Spike as a fundraiser and skill training, Range Club banquet to bring in outside speakers to increase the students professional network and learn about cutting-edge science and management.
- Participation in section and national meetings- Strongly encouraging students to participate with the SRM provides authentic opportunities for professional development see first-hand the benefits of such activities and find mentors to further their development.
- Participation with USU faculty and alumni - Active and interested USU faculty and alumni provide additional formal and informal opportunities for professional development. Examples include professors involving students on small projects after discussing common interests at a social function or connecting them to potential mentors.

Current membership in SRM includes all students that attend the SRM national meeting. The recent development of the Sponsor-A-Student Alumni program is intended to provide funding for student SRM membership to encourage their involvement and “set-the-hook”.

5.5 Seasonal or permanent job advertisement

Formal efforts include:

- CNR Advising service center. The College of Natural Resources Academic Service Center is the front-line resource for helping CNR students get the most out of their university experience. They post opportunities, send out broadcast emails and advice on potential jobs and career options. [http://www.cnr.usu.edu/htm/students/prospective-students/academic-service-center](http://www.cnr.usu.edu/htm/students/prospective-students/academic-service-center)
- Email notification. CNR, Wildland Resources and other departments
• Range Major Advisor. All range majors have an assigned advisor, Dr. Chris Call, who provides information about potential jobs.
• USU Job Fair. USU holds several events inviting potential employers on campus to recruit.
• Seminars and Job fairs with CNR. Alumni and NR related companies are invited to participate directly with the students.
• Range Club participation in section and national SRM meetings. Provides access to current jobs and networking potential for future jobs.

Informal efforts include:

• Word-of-mouth networking
• Email notification. Various faculty and staff and students send out emails with potential jobs.
• Alumni visits and individual emails/calls

5.6 Resources for recruiting efforts and professional development

Resources for professional development have been addressed in the previous section. There are resources for recruiting efforts, including: open houses, high school visits, transfer college visits, the majors fair on the USU campus, and writing high school science and agriculture teachers. This is handled through the CNR Academic Service Center.

5.7 Internship opportunities

The two offices that administer internship opportunities in the CNR are the Tehabi Program and the CNR Academic Advising Service Center:

Tehabi Internship program – (www.tehabi.org) (See Attachment 5C: Tehabi 2007 Newsletter)

Tehabi is a mentored, academic-focused, paid internship program designed to enhance natural and cultural resource management by creating an environment where university students, resource professionals, scientists, and local community members can share experience, information and ideas.

Over the past nine years we have been using focused internships to help prepare future natural resource professionals while providing resource management agencies with quality work. Tehabi staff actively seeks out internship opportunities with potential partners to provide students with career launching experiences. Tehabi strives to improve communication among groups and individuals involved in resource management by involving a diverse group of students, instructors, and supervisors.
The Tehabi program begins with a field course that focuses on introducing students to the challenges of natural resources management with a curriculum emphasizing five categories: field skills, organizational behavior, public interaction, interpersonal skills, and systems thinking. Then, each student spends 12 weeks in an office-based internship. During this time, students work on writing and thinking exercises and complete a project that they design with their supervisor. Projects have included draft environmental assessments (EA’s), fuels inventories, livestock and wildlife utilization studies, road and trail mapping, recreational site design, and more. The internship concludes with a final meeting held at the USU Bear Lake training facility. At the meeting interns present their projects and reflect on what they have learned from their experience and how it can be applied to the future.

**Tehabi Quick Facts**
Since 1999, Tehabi has...
- created over 160 student opportunities,
- generated $1,057,564 for student opportunities, including $822,369 through CESU (Cooperative Ecosystem Studies Units) agreements,
- created 39 agreements with 3 different CESU’s - Colorado Plateau, Great Basin, and Rocky Mountain,
- partnered with 3 federal agencies (Bureau of Land Management, National Park Service, and USDA Forest Service) and 3 NGO’s,
- worked with offices in 8 western states (AZ, CO, ID, MT, NV, OR, UT, and WY) and Washington DC,
- worked with interns from 19 colleges and universities around the country and across the globe,
- held field courses in three different states (AZ, MT, NV)
- offered internship opportunities in a variety of disciplines, including wildlife, range, exotic plants, recreation, GIS, policy, fuels, hydrology, and interpretation

**CNR Advising Service Center** – provides clearinghouse for potential internship host organizations to contact. The ASC posts all opportunities for jobs and internships. [http://www.cnr.usu.edu/htm/students/prospective-students/academic-service-center](http://www.cnr.usu.edu/htm/students/prospective-students/academic-service-center)

### 5.8 Research opportunities

Undergraduate research opportunities are cultivated with faculty in several ways: employment in research programs as student workers/technicians, Honors Program theses, and a formal, campus-wide undergraduate research program. Many of the students working as technicians for faculty members and their graduate students in the field and laboratory become interested in research and conduct their own research projects associated with the faculty member’s overall research program. Students in the Honors Program complete a senior thesis project
that reflects 3-6 credits of academic work, including research projects. The Honors student inquires about research opportunities with faculty members who are doing research in disciplines of interest. Students can also engage in research opportunities through the Undergraduate Research and Creative Opportunities (URCO) Grant program, funded by the Vice President for Research Office. The combined grant award is $1,000, with $500 coming from URCO and $500 in matching coming from the sponsoring academic department. Students can also apply for up to $500 for a travel award to present their research findings at a professional meeting.

The first two undergraduate research opportunities (working as a research technician, Honors thesis) are not formally advertised; they are cultivated though student-faculty interactions. The URCO program is advertised on the USU website, and is updated on regular basis with opportunities, application requirements and dates.
Range Club Attends Society for Range Management Annual Meeting

The Range Club traveled to Louisville, Kentucky to participate in the 61st annual meeting of the Society for Range Management. Over 1400 people attended this meeting. The theme this year was “Building Bridges” and for five days, the Range Club represented USU by “building” our careers and professional networks. Students began preparing for this meeting early fall semester, developing teams, beginning practices and trying to fit extra time into already busy schedules. Each student participated in at least two competitions in addition to attending the various other events of the meeting.

The SRM annual meeting provided great opportunities to interact with range professionals, learn about cutting edge science and management and discuss current issues. Every day was packed full of competitions, symposiums, discussions and even occasionally a little bull riding.

USU Students Secure Jobs

This year the Society for Range Management annual meeting in Louisville, Kentucky held an On-The-Spot-Hiring Program to fill positions with federal agencies such as the BLM, NRCS and USFS. We are proud to announce that the Utah State range club received the most number of offers than any other university participating. We had three members receive full time positions, they were:

* Jordan Davis – Moab BLM
* Jeremy Ivie – Kanab BLM
* Garth Nelson – Soda Springs USFS

Did You Know?

- The USU Range Club took 14 members to the annual SRM Meeting in Louisville, KY this year
- Club members competed in 5 different competitions in Louisville
- USU Range Club has raised over $8,500 this year to help with travel expenses
- The club has traveled a total of 3200 miles this year
- The 2009 Annual Meeting will be in Albuquerque, New Mexico

The USU Range Club is a group of students interested in rangelands. The club works to promote the development of future range science professionals, continuing education of members and the public, and sustainable rangeland ecosystems.
Student Competitions

Undergraduate Range Management Exam (URME)
A comprehensive exam that covers all aspects of range management, including ecology and multiple use.
USU team placed 12th
Jamin Johanson 15th
Jeremy Ivie 41st
Katie Santini, Ashley Hansen, Makeda Trujillo, Casey Addy, Jenny Christiansen, Jordan Davis

Plant Identification Team
Students compete to identify 100 plants from a set of prepared specimens.
USU team placed 6th
Jamin Johanson 24th
Julie Burgess 26th
Tren Hagan 30th
Garth Nelson 41st

Rangeland Cup
2008 National Champions
Casey Addy, Ashley Hansen, Katie Santini Advisor: Dr. Chris Call

In this competition each team is presented with an academic challenge that they have to address with a poster and then defend verbally to a panel of anonymous judges who mingle with the crowd and ask questions on the spot from whomever is manning the poster at the time.

Club Booths
Each school creates a booth corresponding with the theme of the meeting and competes against

Undergraduate Papers
Students present papers on any topic related to range science
Jamin Johanson
Jade Sumson

Undergraduate Public Speaking
Five minute extemporaneous speeches based on general range topics Makeda Trujillo, Jade Sumson, Janessa Chew, Brandon Ervin, Jenny Christiansen

Tapping the Top, Professional Development and Bull Riding...
The annual SRM meeting in Louisville brought many more opportunities than just the competitions; students had the opportunity to attend the career development workshop as well as many lectures from professionals around the country on a wide variety of topics. Students also attended the alumni mixer and Tapping The Top mixer where students were able to interact with professionals. These allowed students to network with professionals and build relationships while gaining valuable information. It wasn’t all serious meetings and competitions; there was still time for fun and games outside of the meeting, from wandering the town and touring museums to having dinner with faculty to get to know them on a more personal level, there was even a little time for bull riding.
2007 USU Range Club Summary

2007 was a successful year for the USU Range Club. We started Fall Semester with a great opening social where Roger Banner cooked his famous Texas brisket and turkey. It started things off right and we have only picked up momentum since!

Fall was full of various service projects and fundraisers. We tried (twice!) to have a yard sale of donated goods but the weather didn't cooperate. After that we shifted our efforts to less weather dependent activities including a dutch-oven dinner for the USU Greeks, projects for Fee Busby and Maureen Wagner, setting up a research project for Chris Call and Mike Ralphs and a sagebrush treatment project for Chuck Gay. Everyone has been busy!

We also spent a lot of time preparing for the SRM section and annual meetings. The Range Club took 15 students to Price for the Utah Section meeting. It was a great opportunity to meet professionals and network! The various teams put in hours of practice on the different events to get ready for the annual meeting in January. All of our hard work paid off and we had a very successful trip to Louisville!

Overall, it has been a great year. The club continues to grow, over 30 members now, and more faculty and alumni are getting involved. Although 2007 was a very successful year for us we have high hopes for 2008 and still have many activities planned for the new year.

Sponsor a Student

This year the Range Club started the "Sponsor a Student" program. The program is designed to provide alumni an opportunity to directly impact a student's career development by sponsoring one year of membership ($35) in the Society for Range Management. This is a great way to get students involved in SRM and help launch their careers!

Thank You 2007 Sponsors
Mark Brunson  Jordan Davis
Roger Banner  Brandon Ervin
Fee Busby  Julie Burgess
Jenny Christiansen  Tren Hagman
Jeremy Ivie  Jamin Johanson
Garth Nelson  Makeda Trujillo
George Cook  Janessa Chew
Paul Curtis  Ashley Hansen
John Reese  Casey Addy
Ronald Torgerson  Jade Sumison
Ross Wright  Katie Santini

2008 Upcoming Events and Activities

Bill Hopkin GIP Banquet
Come find out more about the Grazing Improvement Program from Director Bill Hopkin. The GIP is a new program with exciting opportunities for Utah producers.
Feb 29

Cottonwood Ranch Visit
Join the Range Club on a trip to Agee Smith's Ranch in Nevada to learn about his operation and how he is succeeding by incorporating cutting edge range manangement.
March 8-18th

Spring Bar B Que
Nothing better than good friends and good food to welcome spring. The Range Club, local alumni and USU Range Faculty will welcome the SRM Accreditation Committee and show them a little Logan hospitality.
April 10
THANK YOU to everyone that supported the USU Range Club this year.

The Range Club could only succeed with the advice, support and help of many USU faculty, staff, alumni, and students. We appreciate all of the time, energy and interest that have been invested in our success. Thanks for all you do!

Get Involved

If you have questions or would like to get involved, contact Jamin Johanson at:

jaminj@cc.usu.edu

For more information about the Range Club, visit our website:

http://www.cnr.usu.edu(htm/students/student-organizations/srm)
Attachment 5C

Tehabi Program Selected for Centennial Challenge

This year Tehabi was selected by the NPS Intermountain Region to submit a proposal to the National Park Service (NPS) Centennial Challenge. The NPS Centennial Challenge is part of President Bush’s National Park Centennial Initiative. This initiative is proposing up to $3 billion of new public and private investment over 10 years to improve and expand national park conservation, preservation and visitor service programs in preparation for the parks’ 100th anniversary in 2016.

The Centennial Challenge would make available up to $100 million annually in mandatory funds over 10 years to match at least $100 million in private contributions for signature projects and programs in National Parks. More information can be found at http://www.dot.gov/initiatives/npscentennial.html.

The one million dollar Tehabi proposal expands on the current Tehabi model and provides support for natural and cultural resource interns across the Intermountain Region over the next five years. The goal of the proposal is to “grow” Tehabi to provide opportunities for more students and mentors. We are excited to be recognized and selected by the NPS Intermountain Region as a model for education of future resource managers.

Tehabi creates a group of future leaders with both technical and collaborative skills, who have an understanding of the environment in which they will work, and a network to support them as they begin.

Tehabi Milestone

This June Tehabi passed the $1 million dollar mark for student opportunities created since 1999! Thanks to everyone who has helped make this happen!

“This summer I have changed completely. I learned more this summer than I learned in all of my coursework. I believe that with all of my experience this summer I will be more prepared in future and current employment opportunities.”

—2007 Tehabi Intern

Tehabi Quick Facts 2007

Since 1999, Tehabi has...
- created over 1,057 student opportunities,
- generated $1,057,564 for student opportunities, including $322,359 through CESU agreements,
- created 39 agreements with 3 different CESU’s - Colorado Plateau, Great Basin, and Rocky Mountain,
- partnered with 3 federal agencies (BLM, NPS, and USDA-FS) and 3 NGO’s,
- worked with offices in 8 western states and Washington DC,
- worked with interns from 19 colleges and universities around the country and across the globe,
- held field courses in three different states,
- offered internship opportunities in a variety of disciplines, including wildlife, range, exotic plants, recreation, GIS, policy, fuels, hydrology, and interpretation.
Tehabi 2007 Wrap-Up

The Tehabi Internship Program has just finished another great season! This summer Tehabi had 16 students from five universities participate with the internship program. These interns worked at seven different offices in five states with the Bureau of Land Management and the National Park Service.

The internships began with a field course held from May 19-26, hosted by Grant-Kohrs Ranch National Historic Site in Deer Lodge, Montana. At the field course, students were introduced to concepts that are not generally taught in a traditional classroom, including field skills, organizational behavior, public interaction, interpersonal skills, and systems thinking. Interns say they enjoyed the field course because of the people they were able to meet and the preparation it gave them for the work they would do throughout the summer.

At the conclusion of the field course, interns traveled to their sponsoring office to work for 12 weeks under the direct supervision of the host agency. While the types of work they did varied, one thing all interns had in common was an opportunity to gain hands-on experience and an introduction to the “real world”. One of Tehabi’s primary goals is to give students the opportunity to take concepts they learn in the classroom and apply them on the ground while getting paid.

At the end of the summer, the interns gathered again for a final meeting held August 9-12, at the USU Bear Lake Training Center. While there, interns discussed and reflected upon their internship experiences and gave individual presentations on their summer internships and final projects.

Although summer is the busiest time for Tehabi, the ball never stops rolling and we are already gearing up for the 2008 field season. We are always looking for great internship opportunities, excited supervisors, and enthusiastic interns. Please contact us if you’re interested!

This year’s interns say Tehabi is...

“A place for students to share ideas and experiences and to learn from one another and Tehabi advisors.”

“An excellent opportunity to transition from classroom to real world experience. A chance to meet people and build a network of friends and associates.”

“A great way to get really involved with natural resource issues and a great way to have a hands-on experience.”

“A great experience for first year field work and for professional networking.”

“An organization dedicated to contributing to the professional and personal growth of future resource managers.”

“A great opportunity to learn about what you will experience out in the field. It was great to interact with people from different backgrounds and disciplines.”

TEHABI 2007, PAGE 2
Tehabi Intern Accomplishments, Summer 2007

Angie Roberts, Shannon Moore, Jenny Christiansen, and Steven D. Sadleir (Utah State University) BLM Jarbridge Field Office, Twin Falls District, ID Fire Rehabilitation Interns

Angie, Shannon, Jenny, and Steven worked on a Fire Rehabilitation Crew to monitor fires that had been mechanically seeded or allowed to recover naturally with absence of livestock grazing. They finished 50 rehabilitation sites, started an electronic database of their field data, and began a GIS database in ARC GIS. The crew was also able to assist in one of the seasons largest fire, Murphy Complex. They worked with the logistics unit as well as ground support to aid in any way possible.

Matt Jemmett and James Brower (Utah State University) Shoshone BLM Field Office, ID Recreation Technician Interns

Matt and James conducted a comprehensive road and trail inventory in an area designated by their supervisor. During the inventory they also collected multiple other features such as range improvements, recreation opportunities, utility use, and other points and area that are managed by the BLM. Matt and James were responsible for downloading, processing, and editing of data.

Kate Cutler (Utah State University) Burley BLM Field Office, ID Range Technician Intern

Kate was primarily involved in collecting the data for Standards and Guides (S&Gs). This involved visiting different allotments, and recording vegetation cover and utilization and rating data according to Idaho’s standards for Rangeland Health. The data she collected will aide in the renewal of grazing permits, managing and maintaining the land and determining the condition of the different pastures within each allotment.

Marne Davenport (U of Montana) Grant Kohrs Ranch National Historic Site, MT, Interpretation Intern

Marne served as a liaison between the Interpretation and Resource Management divisions at Grant Kohrs Ranch. She created an interpretive display regarding the cattle industry and the changes it had gone through throughout the years. Using the information from the display she created a site bulletin available to visitors.

Emily Yost (University of Pittsburgh) Glen Canyon National Recreation Area, AZ Web Content Development Intern

Emily developed natural resource profiles for the Glen Canyon NRA website. She worked with Resource Management staff to develop profiles that included an overview and background on the resources and issues of Glen Canyon NRA. These profiles are an opportunity for the NRA to educate the public about issues such as water quality, invasive nonnative species, and the management of those and other issues.
Beth Fowers (Utah State University)  
Ely BLM field office, NV  
Emergency Stabilization and Rehabilitation (ESR) Intern

Beth was assigned to visit the seven fires that burned in 2004, which are in their final year of monitoring. She developed general vegetation maps of the entire fire to supplement the data collected by the monitoring crews and help determine the success of ESR treatments.

Jared Reese (Utah State University)  
Ely BLM Field Office, NV  
Wildlife/Fisheries Intern

Jared was in charge of designing the layout for a new interpretive sign at the Shoshone Ponds Instant Study Area. He researched the area, created a timeline and aerial map, developed the sign layout and text, and created an electronic reserve of all photographs taken of the area since 1972. The product of his work this summer will help to inform visitors to the area about the importance of preserving several of Nevada’s threatened and endangered fish species.

Chris McVicars  
(University of Nevada, Reno), Ely BLM field office, NV, Vegetation Technician Intern

Chris surveyed eight fires from the 2006 fire season. He noted the presence/absence of any invasive or noxious weeds, as well as any other wildlife and vegetation in the area. He was responsible for surveying areas in which disturbance was greatest (roads, washes, trails, fire perimeter). Once the fires had been surveyed, Chris wrote detailed, objective vegetation survey reports on his findings, which included findings, methods, maps, pictures and future management recommendations.

Makeda Trujillo & Ashley Hansen (Utah State University), and Daniel Robison (University of Nevada, Reno)  
Grant-Kohrs Ranch National Historic Site, MT, Inventory & Monitoring Interns

Makeda, Ashley, and Daniel worked on a vegetation monitoring project at both Grant-Kohrs and Little Bighorn Battlefield National Monument. They established the first sites to begin a 50 year monitoring project. They established and collected data at 15 sites at Little Bighorn and 20 sites at Grant-Kohrs. These data were analyzed and compared with data collected during the 2006 protocol year. These interns also checked three hundred sites to verify the accuracy of vegetation types occurring across Grant-Kohrs Ranch. They also assisted with the day-to-day operations of running the ranch.

Taylor Robinson (Helena College of Technology), BLM Elko Field Office, Emergency Stabilization and Rehabilitation (ESR) Intern

Taylor worked to monitor the progress of rehabilitation efforts implemented after 2000 wildfires. She used two established methods for monitoring previously burned areas: paced density transects for aerial seeding and permanent density transects for drill range seedings. Taylor provided first year data for a three-year project that aims at identifying the effectiveness of rehabilitation efforts and the readiness of the land for grazing.
THANK YOU to everyone who participated with and supported the Tehabi program this summer!!!

Tehabi would not exist without the consistent support of our BLM and NPS partners, many USU faculty and staff, the Rocky Mountain and Great Basin CESUs, other resource professionals who volunteer their time, and our ambitious current and past interns. Thanks for all you do!

If you have questions or would like to get involved, contact Ben Baldwin at 435-797-2582 or ben.baldwin@usu.edu

For more information about the Tehabi Program, visit our website, www.tehabi.org.
usu natural resources alums honored at range science meeting

utah state university alums cynthia driggs mcArthur and cody b. scott, both graduates of the college of natural resources, were named 2008 outstanding young range professionals by the society for range management. the two were among four scientists who received the award at the group’s national meeting held jan. 26-31 in louisville, ky.

mcArthur, who earned a bachelor’s degree in environmental studies from usu’s department of environment and society in 1998, serves as a range management specialist for the u.s. department of agriculture forest service in washington, d.c.

“I really enjoyed my years at Utah State,” McArthur says. “(USU Professor) Mark Brunson has had such a positive influence on my life.”

Her award citation reads, “Cindy’s role extends beyond knowing the appropriate scientific principles to apply. She works with a broad range of individuals and groups and has facilitated resolutions in contentious situations while always maintaining professionalism and decorum.”

scott, who conducted research with professor Fred Provenza in usu’s department of Wildland resources, earned a doctorate in range science in 1995. He serves as professor of animal science at Angelo State University in San Angelo, Texas.

Scott was honored as “a great research scientist and an extraordinary range management instructor” in his award citation.

His research focuses on small ruminants, especially goats, and their role in the spread of mesquite and control of juniper. Scott lists fostering his students’ leadership skills and independent thinking abilities as his top teaching aims.

Established in 1948, the society for range management is the professional scientific society and conservation organization of rangelands, which encompass nearly half of the world’s land. The society has more than 4,000 members in 48 countries.
6. ASSESSMENT OF COURSES/PROGRAM EFFECTIVENESS

6.1 Curriculum Map

The flow charts (Attachments 6A and 6B) showing the alignment of prerequisites for the Rangeland Resources major and the Conservation and Restoration Ecology major, are essentially curriculum maps for each major. Basic biological concepts provide the foundation for general ecological concepts, which provide an entry point into several natural resource ecology and management courses. Math concepts and skills prepare students to understand and perform statistical analyses, which are used in inventory and monitoring courses. Algebra and calculus techniques are used in quantitative modeling in a plant and animal population ecology course. Algebra and chemistry concepts prepare students to understand nutrient and water dynamics in soils courses. Familiarization with dominant plant species and their autecology, and with soil properties is necessary for understanding responses to manipulation and management concepts and practices. Lastly, exposure to economics, policy, and human dimensions of natural resource management is necessary before entering into collaborative problem solving.

Course numbers are presented in the flow charts below. The full titles for the course numbers are:

ADVS 2080  Beef Production Practices
ADVS 2090  Sheep Production Practices
BIOL 1610  Biology I
BIOL 1620  Biology II
BIOL 4400  Plant Physiology
BIOL 4420  Plant Taxonomy
CHEM 1110  General Chemistry I
CHEM 1120 + 1115  General Chemistry II + Lab
CHEM 1210  Principles of Chemistry I
CHEM 1220 + 1215  Principles of Chemistry II + Lab
CIL EXAM  Computer and Information Literacy Exam
ENVS 3000  Natural Resources Policy and Economics
The four undergraduate degrees in the Department are organized around a set of common core courses, referred to as the “common curriculum”, and the expected learning outcomes of each of these courses are provided in Attachment 6C.
Prerequisites for 
Rangeland Resources 
Major

* Prerequisites are MATH 1010 or ACT score of 23 or above
** With permission of instructor

Utah State University

Attachment 6A

Constructed using the 2007-2008 requirement sheet
As of 9/20/07
Prerequisites for Conservation and Restoration Ecology Major

Constructed using the 2007-2008 requirement sheet
As of 9/20/07

- BIOL 1610 → BIOL 1620
- CIL EXAM
- MATH 1050*
  - MATH 1100
  - STAT 2000 OR*
    - STAT 3000
    - CHEM 1110 or 1210
    - CHEM 1120 + CHEM 1115 or CHEM 1220 + CHEM 1215

NR 2220

- WILD 3610
- WILD 3810
- WILD 4600
- WILD 3850
- WILD 3700
- WILD 3710
- WILD 4700
- WILD 2000
- WILD 3600
- WILD 3900
- ENVS 3000
- ENVS 4000

See your advisor to plan a program of study for the 21 credits of degree program electives required

* Prerequisites are MATH 1010 or ACT score of 23 or above
Attachment 6C
6.2 Student questionnaire evaluation summaries

Each course taught at Utah State University is evaluated by the students enrolled in each class, using a standardized university-wide evaluation form. Students score the performance of the course and the instructor according to 20 attributes, using a six-point scale: 6, excellent; 5, very good; 4, good; 3, fair; 2, poor; 1, very poor. The data provided below (Table 6.1) refer to overall course quality and instructor effectiveness, which can be compared with scores at Department, College and University levels (Table 6.2).

Table 6.1  Mean score summaries from student evaluations by course – 2007

<table>
<thead>
<tr>
<th>REM specific courses</th>
<th>Number of respondents</th>
<th>Overall quality of course</th>
<th>Instructor effectiveness in teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>WILD 3700</td>
<td>30</td>
<td>4.7</td>
<td>4.8</td>
</tr>
<tr>
<td>WILD 3710</td>
<td>61</td>
<td>4.05</td>
<td>4</td>
</tr>
<tr>
<td>WILD 3800</td>
<td>29</td>
<td>4.8</td>
<td>5.1</td>
</tr>
<tr>
<td>WILD 3850</td>
<td>62</td>
<td>5</td>
<td>5.1</td>
</tr>
<tr>
<td>WILD 3900</td>
<td>38</td>
<td>5</td>
<td>5.2</td>
</tr>
<tr>
<td>WILD 4000</td>
<td>15</td>
<td>5.5</td>
<td>5.5</td>
</tr>
</tbody>
</table>

Table 6.2  Mean score summaries from student evaluations by area – 2007

<table>
<thead>
<tr>
<th>All courses</th>
<th>Number of respondents</th>
<th>Overall quality of course</th>
<th>Instructor effectiveness in teaching</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wildland Resources Department</td>
<td>734</td>
<td>4.95</td>
<td>5</td>
</tr>
<tr>
<td>College of Natural Resources</td>
<td>1912</td>
<td>4.9</td>
<td>5</td>
</tr>
<tr>
<td>Utah State University</td>
<td>94339</td>
<td>5</td>
<td>5.1</td>
</tr>
</tbody>
</table>
6.3 Annual exit interviews

Annual exit interviews are conducted with all graduating seniors from the four majors combined, since the objective is to derive a holistic evaluation of the undergraduate experience in the Department. In April of 2006 and 2007 the graduating seniors met for a working lunch with the Department Head. In 2006 all attendees (N = 10) met at one lunch and in 2007 the group (N = 26) was divided into two roughly equal groups that met on separate days. After the lunch, students were asked to complete an anonymous written questionnaire and return it to the department office. The response rate was low in both years and so the data were combined, resulting in a 44% overall response rate. In future a more effective system will be devised to compel students to complete and return the questionnaire. Nevertheless, the results did not differ substantially between years and so by combining both years the number of responses (N = 16) was adequate to gauge the overall effectiveness of the Department’s undergraduate program and to identify specific strengths and weaknesses. Responses to 2006 and 2007 questionnaires are summarized in Tables 6.3 and 6.4. In addition, the following comments were noted during the lunch discussions as issues/recommendations of consensus among the students:

- BIOL 5250 (Evolutionary Biology) is redundant as a required course in the Wildlife major. Note: This has been acted upon.
- There should be more GIS and less policy in WILD 3710 (Monitoring & Assessment). Note: This has been acted upon.
- Students who would otherwise have chosen Range or Forestry majors chose Conservation and Restoration Ecology because of the greater flexibility in course choices (more electives).
- There should be a specific event scheduled for the junior year to inform undergraduate students about options/procedures/recommendations for graduate studies. Note: This is being planned.
- A fifth-year intensive MNR degree would be very popular if it were seen to be well organized and supported by the faculty. Note: This is in place.
- Powerpoint presentations in classes have to be carefully considered to avoid information overload. A mix of Powerpoint, board work, and overheads is optimal.
- The department does not offer enough fieldtrips and opportunities for hands-on practical training in field techniques (telemetry, trapping, etc.).
**Table 6.3.** Provision of services to students by the department. Responses could be ‘strongly agree’ (SA), ‘agree’ (A), ‘neutral’ (N), ‘disagree’ (D), or ‘strongly disagree’ (SD). Respondents were combined from graduating seniors of AY 2006 (N = 6) and AY 2007 (N = 10). Values in cells indicate the number of times each response was selected.

<table>
<thead>
<tr>
<th>Responses</th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>My advisor was generally helpful in guiding my progress through the program</td>
<td>5</td>
<td>1</td>
<td>6</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>My advisor was usually available when I needed suggestions</td>
<td>5</td>
<td>6</td>
<td>1</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Little or no student advisement is needed</td>
<td></td>
<td></td>
<td>4</td>
<td>5</td>
<td>7</td>
</tr>
<tr>
<td>The curriculum included too much repetition of course content across classes</td>
<td>1</td>
<td>8</td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Laboratories in courses are necessary to apply skills and knowledge learned in classrooms</td>
<td>5</td>
<td>9</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course field trips and field exercises are important for professional development</td>
<td>11</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The best teachers were able to illustrate classroom principles with examples from their research</td>
<td>5</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>The WILD Department has a responsibility to help its students find employment</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The WILD Department did an adequate job of informing students about the outlook for jobs in the field</td>
<td>10</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The WILD Department and/or CNR provide adequate assistance to students in applying for and locating jobs</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Professors heavily involved in research tend to neglect their teaching duties</td>
<td>2</td>
<td>10</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Students with urban backgrounds are handicapped when they enter a Natural Resources program</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>The courses taught in the WILD Department are too heavily oriented toward economic and commodity values rather than recreational, aesthetic, and wildlife values</td>
<td>1</td>
<td>6</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>
Table 6.4. Success in providing skills required for managing wildland resources. Scores range from 0 (completely unsuccessful) to 10 (completely successful). Respondents were combined from graduating seniors of AY 2006 (N = 6) and AY 2007 (N = 10). Values in cells indicate the number of times each score was selected.

<table>
<thead>
<tr>
<th>Scores:</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to deal with economic considerations of natural resources</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>7</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to assess how much use ecosystems can withstand on a sustained basis</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skills in observing a terrestrial ecosystem and determining its current condition</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to evaluate how past uses and events have affected current ecosystem conditions</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge about aesthetic and other non-consumptive values in wildland management</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Familiarity with the problems of endangered plant and animal species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Ability to deal with political processes associated with resource management decisions</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A working knowledge of sources of information available to wildland managers</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to use computers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Skills in applying sampling theories and evaluation techniques to analyze field problems</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to systematically solve problems from a broad ecological perspective</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>6</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to apply management principles to solve problems in field situations</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to incorporate social attitudes to address environmental management problems</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to critically read, analyze, and use information in the scientific literature</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to make persuasive and effective public presentations</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skills and practice in technical report writing</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skills in communicating research findings to people with non-scientific backgrounds</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to think holistically and identify the consequences of management practices on the entire ecosystem</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ability to analyze a problem by examining its component parts, then organizing information into a coherent whole</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>5</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation to stay current in the field by continually updating knowledge and skills</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivation to maintain involvement with professional organizations in the field of your major</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commitment to professional standards and ethics</td>
<td>1</td>
<td></td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broad general knowledge of world environmental management problems</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Knowledge of current sociopolitical issues in wildland management</td>
<td>1</td>
<td></td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall success across all categories:</strong></td>
<td>6</td>
<td>2</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>23</td>
<td>48</td>
<td>102</td>
<td>80</td>
<td>55</td>
<td>38</td>
</tr>
</tbody>
</table>
6.4 Integration of feedback from students into the operation of the program

The Wildland Resources Department evaluates the effectiveness of its undergraduate programs in three main ways: 1) Capstone courses require each student to become involved in the analysis of a real-world environmental problem. How the students fare in these capstone experiences depends on the effectiveness of the instruction they received in previous courses, and grades are determined in part from faculty-student interviews in which the complete learning experience is evaluated. 2) The Department Head meets informally with graduating seniors at a working luncheon, followed by a formal, anonymous questionnaire. 3) The College conducts 9-month and 5-year surveys of all of our graduates to determine how well our degree programs prepared them for their professional careers. We also periodically conduct interviews with leaders in governmental regulatory and funding agencies to determine how our graduates served their needs. In addition, the department has formulated specific learning objectives with each course. These learning objectives are explicitly outlined in each course syllabus and are summarized for each degree program. To maximize placement of our graduates into career tracks that best match their aspirations and abilities, faculty members work with individual students to determine their professional aspirations, design course work and research, initiate participation in professional meetings, and introduce them to professionals at other universities or natural resource agencies. Learning objectives are tailored to individual students but will likely encompass aspects of experimental design, data analysis, statistics, modeling, and public education. In our graduate programs we educate students to fill positions in other academic institutions, state and federal agencies, and non-governmental environmental organizations. We accept high-achieving students from a diversity of backgrounds and our graduate education programs are specifically tailored to meet the interests and goals of each individual student.

The Department continuously revises and improves its academic offerings by applying the principle of adaptive management, which is the approach we teach our students to adopt when they become managers of wildland ecosystems. Essentially, this is a process of learning-by-doing, in which the entire process, from objectives to outcomes, is continually adapted to suit changing conditions which can be environmental, economic, political, etc. The process is outlined in Fig.6.1
Figure 6.1. The adaptive management cycle for an academic program
6.5 Undergraduate student recruitment activities

A combination of on-campus and off-campus recruiting events and activities are conducted as follows:

- On-campus events include (1) Preview Day (for high school seniors and their parents) in October every year; (2) Scholars' Day for high-level admitted students in March every year.
- Open houses: for high school students and their parents; held at 7 locations in southern Idaho and northern Utah every fall; USU recruitment fair where every college has a display staffed by advisors and student ambassadors.
- Transfer open houses: for students at 2-year colleges in Utah; held at 4 campuses throughout Utah; USU recruitment fair where every college has a display staffed by advisors and student ambassadors.
- Guest lectures in high schools: Associate dean and undergraduate advisor guest lectured in 2 natural resources/agriculture classes in high schools in southern Utah.
- Guest lectures at 2-year schools: Associate dean and undergraduate advisor guest lectured at two 2-year schools in central Utah and met with faculty advisors at those schools.
- FFA recruitment: Set up a table and talk to high school students attending the state FFA conference held on campus.
- Envirothon and Science Olympiad: Attend science-related competitions for high school students; set up a display staffed by advisors and student ambassadors, help coordinate events; offer $1,000 scholarships to competition winners who want to come to USU and major in the College of Natural Resources.
- Mailings: Send hard-copy information to prospective students who have inquired about our programs and also purchased names of high-achieving students from throughout the West.
- Follow-up emails and phone calls: Student ambassadors follow up with students who have either visited the college or have been in contact with us about our programs.

6.6 Description of academic standards for admission, retention, and graduation

Admission: Freshman students who are admitted to USU are automatically eligible for admission to CNR. Transfer students need to have a 2.5 transfer GPA, with special attention given to the amount of, and performance in, prerequisite math and science courses.

Retention: Students must maintain a 2.0 minimum USU GPA in order to remain in good standing at the university.
Graduation: Students in the Rangeland Resources (RARE) major must have a minimum 2.5 GPA for all courses taught by the College of Natural Resources (including electives taught by CNR). In addition, students must earn a C- or better in all WILD-prefix courses used to meet the requirements for the RARE degree. All required courses for the major, including those taught by other departments across campus, must be taken on a graded basis (A-B-C-D-F).

6.7 Enrollments

Table 6.5. Enrollments by major in the Department of Wildland Resources (fall semester)

<table>
<thead>
<tr>
<th>Undergraduate</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservation and Restoration Ecology</td>
<td>--</td>
<td>--</td>
<td>15</td>
<td>20</td>
<td>30</td>
<td>34</td>
</tr>
<tr>
<td>Fisheries &amp; Wildlife</td>
<td>104</td>
<td>57</td>
<td>21</td>
<td>7</td>
<td>2</td>
<td>--</td>
</tr>
<tr>
<td>Forestry</td>
<td>25</td>
<td>16</td>
<td>26</td>
<td>27</td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>Rangeland Resources</td>
<td>33</td>
<td>19</td>
<td>14</td>
<td>18</td>
<td>19</td>
<td>23</td>
</tr>
<tr>
<td>Wildlife Sciences</td>
<td>--</td>
<td>11</td>
<td>67</td>
<td>83</td>
<td>90</td>
<td>82</td>
</tr>
<tr>
<td>PreFisheries &amp; Wildlife</td>
<td>2</td>
<td>28</td>
<td>2</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>PreForestry</td>
<td>--</td>
<td>7</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>PreRangeland Resources</td>
<td>--</td>
<td>2</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>Total Undergraduate</strong></td>
<td><strong>164</strong></td>
<td><strong>140</strong></td>
<td><strong>145</strong></td>
<td><strong>155</strong></td>
<td><strong>166</strong></td>
<td><strong>161</strong></td>
</tr>
</tbody>
</table>

Graduate

| Ecology                           | 14   | 23   | 30   | 35   | 45   | 34   |
| Forestry                          | 11   | 11   | 6    | 10   | 6    | 5    |
| Range Science                     | 18   | 19   | 20   | 19   | 17   | 13   |
| Wildlife Biology                  | 17   | 22   | 33   | 30   | 37   | 33   |
| Fisheries & Wildlife              | 4    | 1    | --   | --   | --   | --   |
| **Total Graduate**                | **64** | **76** | **89** | **94** | **105** | **85** |

TOTAL MAJORS

| TOTAL MAJORS                      | 228  | 216  | 234  | 249  | 271  | 246  |

63
6.8 History of Rangeland Resources (BS) graduates

![Bar chart showing the number of graduates per academic year from 2001-2002 to 2007-2008](image)

**Figure 6.2.** Graduates in Rangeland Resources (BS) from 2001-2002 through 2007-2008 (projected)

6.9 Employment record of recent graduates

From an assessment perspective, the Wildland Resources Department considers the Employment/Education Survey of Recent Graduates to be one of the more important surveys we conduct because it focuses on one of the university’s most important outcome measures - student success in finding jobs and being accepted into graduate programs (Table 6.6). We purposely wait to survey recent graduates until they have been out of school long enough to have had a reasonable chance to find a job or become enrolled in a graduate program. The department uses the standardized telephone survey instrument that is used by all USU departments each year as we contact our recent graduates. Recent graduates are highly mobile and it can be difficult to locate them but a concerted effort is made to contact as many of our graduates as possible. The last official data from the Analysis, Assessment & Accreditation Office was published in March 2005. During May and June, 2004, USU’s Office of Analysis, Assessment and Accreditation worked with our department in conducting a telephone survey for students who received bachelor’s degrees from July 1, 2002 to June 30, 2003. The Wildland Resources Department awarded 39 degrees during this time period and 92% of Employment/Education surveys were completed which is a very high rate for a telephone
survey. We were able to obtain information concerning the graduate from a variety of sources including the student, a parent, or a spouse. During this time period, when asked if the student was currently continuing his/her education, 22% responded “yes”. Graduates continuing their education were asked to name the school they were attending and as would be expected, USU was the most frequently reported choice. Of the students indicating they were not full-time students, 23 already had a full-time job, 2 were unemployed, and 3 gave no response. Although some students may choose to work in areas outside of their discipline, as a general rule, the Wildland Resources students pick majors because they expect to work in that field. As a result, of the 24 students that had full-time jobs, 15 indicated that the job was directly related to their degree, 1 somewhat related, 5 not related, and 3 had no response. In evaluating the effect of state resources used for higher education, the issue of where graduates take full-time jobs is relevant. Students who remain in the State of Utah add human capital to the state’s work force and contribute to the tax base of the state. Interestingly, out of our 24 graduated students, 12 were employed in the state of Utah, 11 out-of-state, and 1 had no response. Graduates were asked who their employer was. Graduates from the Wildland Resources Department were most likely to be employed in the public sector. Obtaining numbers on starting salaries for recent graduates is a difficult task. Students or their spouses are often reluctant to provide this information and relatives who may have been contacted as part of the survey may not know. It was anticipated that this part of the survey data would be less complete than other information collected and the forecast proved to be generally correct. However, a surprising proportion of the survey contacts were willing and able to provide salary data, allowing us to identify the starting salary range of recent graduates with full-time jobs; these ranged from a low of $12,000 to a high of $39,520. At the conclusion of each academic year, the Wildland Resources Department continues to collect data regarding employment and continued education of our Wildland Resources graduates.
Table 6.6. Employment/Education Survey of Recent Graduates from the Department of Wildland Resources (for degrees awarded between July 2002 and June 2003)

<table>
<thead>
<tr>
<th>Completion rate</th>
<th>Number of degrees awarded</th>
<th>Number of completed surveys</th>
<th>Completion rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>39</td>
<td>36</td>
<td>92%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Are you currently continuing your education?</th>
<th>Yes</th>
<th>No</th>
<th>No response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td>27</td>
<td>1</td>
<td>36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>If yes, are you a full- or part-time student?</th>
<th>Full-time</th>
<th>Part-time</th>
<th>No response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>At which institution are you enrolled?</th>
<th>USU</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What degree are you studying for?</th>
<th>Masters</th>
<th>Doctoral</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7</td>
<td>1</td>
<td>0</td>
<td>8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Are you currently employed?</th>
<th>Yes, full-time</th>
<th>Yes, part-time</th>
<th>No job</th>
<th>No response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24</td>
<td>0</td>
<td>8</td>
<td>4</td>
<td>36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is your job related to your USU degree?*</th>
<th>Related</th>
<th>Somewhat related</th>
<th>Not related</th>
<th>No response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In which state or country is your job located?*</th>
<th>Utah</th>
<th>Not Utah</th>
<th>No response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>12</td>
<td>11</td>
<td>1</td>
<td>24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Who is your employer?*</th>
<th>Private sector</th>
<th>Education (private or public)</th>
<th>Public sector (not education)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td>2</td>
<td>14</td>
<td>24</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In your current job, what was your starting salary?*</th>
<th>Lowest</th>
<th>Highest</th>
<th>Median</th>
<th># Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$12,000</td>
<td>$39,520</td>
<td>$26,113</td>
<td>14</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Are you currently looking for a full- or part-time job?**</th>
<th>Yes, full-time</th>
<th>Yes, part-time</th>
<th>Not looking</th>
<th>No response</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>5</td>
</tr>
</tbody>
</table>

*Respondents with full time jobs

**Respondents without full-time jobs and who are not full-time students
7. UNIVERSITY CREDENTIALS AND SUPPORT

7.1 Documentation that Utah State University is accepted by its regional accrediting agency

Utah State University is accredited with the Northwest Commission on Colleges and Universities (NWCCU) and was reaccredited following a review in the fall of 2007 (see Attachment 7A).

7.2 Institutional commitment/capacity for a quality education program

The College of Natural Resources (CNR) is fortunate to have been endowed with the Quinney Library, which specifically maintains collections of materials pertaining to natural resources and the environment. These are available in a number of formats that support the programs of study and research of the three CNR departments and several partnering centers. Between the CNR’s Quinney Library and USU’s Merrill-Cazier Library there is an extensive collection of reference books relevant to REM, and the extensive list of relevant journals is available from the library web site (http://library.usu.edu/). A list of journals, series, and proceedings held at USU that specifically pertain to rangeland ecology and range education is shown in Appendix H.

The availability of classroom and teaching laboratory facilities to the Department of Wildland Resources is becoming a limiting factor, largely due to the needs of the Wildlife Science degree. Some courses have to be “capped” to restrict enrollments to only those students who require those courses for their major, meaning that some courses are not available as electives. Some courses that need to use computer laboratories are running separate sessions of each class. Generally, the delivery of REM-specific courses is not yet being compromised by space constraints although there is a concern that some courses, such as WILD 3600 (Wildland Plant Ecology and Identification), need more bench space for laying out specimens. On the positive side, the Department has recently purchased an advanced microscope for the undergraduate Plant ID Team and several classrooms are being equipped with updated multimedia equipment to facilitate the interactive broadcast of classes to and from regional campuses.

Field instruction facilities available for REM courses include the Green Canyon research facility on the outskirts of Logan, the College Forest (about 30 km from campus), and the Tintic Research Station in central Utah. These facilities are not, however, extensively used for undergraduate instruction in REM due to (a) transport constraints and (b) the need to expose students to extensive rangeland ecosystems. A partial solution has been to take students on a field trip in their junior year in WILD 3850 (Vegetation and Habitat Management) and to actively encourage all students to take up summer internships in the Tehabi program. In the future, the new course WILD 4910 (Natural Resources Problem Solving and Synthesis) will be using a permanent field site that is yet to be determined but will be near Logan, at which each cohort of students will collect and analyze field data within a long-term ecological research framework.

Hiring and retention of core REM faculty requires that remuneration packages are competitive with national norms, and the evidence indicates that salaries in the Department of Wildland
Resources are mostly in line with those at similar institutions in the USA (Table 7.1). A second factor to consider is that USU offers a particularly favorable benefits package, which is currently worth an additional 43% of the annual salary. Finally, the costs of living (especially housing) are comparatively low in Logan and so the hiring and retention of faculty is generally not compromised by weak financial incentives. The biggest challenges to recruiting and retaining outstanding faculty members are mainly related to the small city and low diversity of economic enterprises in Logan, which can make it difficult to find suitable jobs for faculty spouses.

**Table 7.1.** Academic year (9 month) salaries of core faculty in the Department of Wildland Resources (as of February 2008) compared with national values for the discipline of natural resources and conservation, as provided by Oklahoma State University's 2006-2007 faculty salary survey of institutions belonging to the National Association of State Universities and Land-Grant Colleges. The national data presented refer to institutions (N = 21) like Utah State University that have the Carnegie Foundation classification of RU/H (research universities – high research activity).

<table>
<thead>
<tr>
<th>Rank</th>
<th>USU, Wildland Resources</th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Highest</td>
</tr>
<tr>
<td>Professor</td>
<td>85,779</td>
<td>96,911</td>
</tr>
<tr>
<td>Assoc. Professor</td>
<td>63,176</td>
<td>72,000</td>
</tr>
<tr>
<td>Asst. Professor</td>
<td>56,189</td>
<td>60,272</td>
</tr>
</tbody>
</table>

The criteria for tenure and promotion (T&P) at USU are currently perceived by the faculty to be more stringent than ever before, although there are no data to support that perception. Nevertheless, with the central administration of USU currently maintaining a strong emphasis on promoting best practice in the T&P process, and with excellent recently hired faculty coming through the system, it might appear that the “bar has been raised”. At USU the T&P process involves an advisory committee of senior colleagues who conduct both formative and summative evaluations of the candidate. Formative evaluations are based on peer reviews of teaching, including classroom visits, as well as reviews of research directions and productivity. Summative evaluations are communicated by letter from the committee to the department head and copied to the T&P candidate. While this system has some drawbacks, the benefit is that each faculty member is actively mentored by a small group of close colleagues who provide detailed feedback and thus support excellence in education, extension, and research.

Office space is an increasingly contentious issue in the College of Natural Resources (CNR) and attached Biology and Natural Resources (BNR) buildings as the numbers of faculty and graduate
students grow. Wildland Resources offices and laboratories are interspersed in both buildings with those from other departments, and there is no REM-specific office, laboratory, or teaching space. The best way for the SRM re-accreditation team to evaluate the sufficiency of such space for REM teaching will be to walk through these facilities during the campus visit.

Permanent support staff in the Department of Wildland Resources consist of an Administrative Assistant (Lana Barr) and a Staff Assistant III (Claire Brazell). Fred Provenza and Terry Messmer both employ Rae Ann Hart as a staff member to assist their programs, while various faculty members employ assistants and technicians on their projects depending on grant funding.
January 24, 2008

Dr. Stan L. Albrecht
President
Utah State University
1435 Old Main Hall
Logan, UT 84322-1435

Dear President Albrecht:

On behalf of the Northwest Commission on Colleges and Universities, I am pleased to report that the accreditation of Utah State University has been reaffirmed on the basis of the Fall 2007 Comprehensive Evaluation Report. Congratulations on receiving this continued recognition.

The policy of the Commission is not to "grant" accreditation for a "definite" number of years. Instead, accreditation must be reaffirmed periodically. Each institution is required to conduct a self-study and be visited by a "full-evaluation" committee at least once every ten years; and during the fifth year, the institution is to submit an interim report and be visited by one or more Commission representatives. In the case of Utah State University, the Commission requested a progress report in spring 2008 to address Recommendation 7 of the Fall 2007 Comprehensive Evaluation Report. The Commission also requested that the institution prepare a focused interim report and host one or more Commission representatives in fall 2009 to address Recommendations 1, 2, 3, 4, 5, 6 and 8 of the Fall 2007 Comprehensive Evaluation Report. A copy of the Recommendations is enclosed for your reference.

In reaffirming accreditation, the Commission determined that Recommendations 1, 2, 3, 4, 5, 6 and 8 of the Fall 2007 Comprehensive Evaluation Report are areas where the institution is substantially in compliance with Commission criteria, but in need of improvement. The Commission further determined that Recommendation 7 of the Fall 2007 Comprehensive Evaluation Report does not meet Commission criteria for accreditation. According to U.S. Department of Education Regulation 34 CFR 602.20 and Commission Policy A-18, Commission Action Regarding Institutional Compliance Within Specified Period (enclosed), the Commission requires that Utah State University take appropriate action to ensure that Recommendation 7 of the Fall 2007 Comprehensive Evaluation Report is addressed and resolved within the prescribed two-year period.

In the unlikely event the Commission should conclude that an institution is in danger of being unable to fulfill its mission and goals or to continue to meet the Eligibility Requirements, Standards or related Policies for accreditation, the Commission reserves the right to request that the institution receive an evaluation committee for a special review.
President Stan L. Albrecht
January 24, 2008
Page Two

The Commission commends the University for the remarkable success of its capital campaign in generating $200 million from the private sector to support programs and facilities. Moreover, the Commission applauds the University's accomplishments in engaging undergraduates in research. Further, the Commission commends the faculty and staff for their commitment to meeting the needs of students and their dedicated service to the University. In addition, the Commission finds laudable the responsive efforts of the administration and the University Library in assuring that faculty and students, both on campus and at a distance, have access to needed information, whether in traditional or electronic formats. The Commission notes the University's extraordinary efforts to extend its resources to meet the needs throughout the state and for its effectiveness in reaching collaborative agreements with state and local governments and other institutions. Lastly, the University is to be commended for its effectiveness in maintaining and expanding the facilities and enhancing the campus landscape during periods of constrained resources.

Again, congratulations on receiving this recognition. Please feel free to contact me regarding your thoughts or suggestions for improving the comprehensive evaluation process and for any assistance we may provide the institution.

The Commission requests that Utah State University submit eight printed copies and one electronic copy of its Spring 2008 Progress Report to the Commission office no later than April 18, 2008, as specified in the Guidelines for the Preparation of Progress Reports (enclosed).

Best wishes for a rewarding and peaceful new year.

Sincerely,

[Signature]
Sandra L. Elman
President

SEE: rö

Enclosures: Recommendations
Policy A-18
Guidelines for the Preparation of Progress Reports

cc: Dr. H. Craig Petersen, Director, Analysis, Assessment and Accreditation
    Mr. Richard L. Shipley, Board of Trustees Chair
    Mr. David L. Buhler, Interim Commissioner of Higher Education