EDUCATION IN RANGELAND ECOLOGY AND MANAGEMENT AT UTAH STATE UNIVERSITY

Volume 1: Self-Evaluation Report
June 2017

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

This self-evaluation report has been produced for the purposes of reaccreditation of Utah State University’s Rangeland Ecology and Management (REM) major by the Society for Range Management (SRM). Our most recent previous SRM reaccreditation was in 2008. USU’s REM program is in the Department of Wildland Resources, which offers undergraduate degrees in Conservation and Restoration Ecology, Forest Ecology and Management, Rangeland Ecology and Management, and Wildlife Ecology and Management. We also conduct research and graduate education in these fields. Our REM students qualify for employment in the range profession when they graduate.

Our undergraduates in all four majors share a common core curriculum, so the Department’s student body is fully integrated. The faculty believe that this approach is effective for educating students to understand and manage sustainable ecosystems. It also is necessary if we want to efficiently and effectively teach students in four separate degree programs. Our interdisciplinary undergraduate curriculum is consistent with trends in the Range profession, as well as USU’s tradition of broadening the definition of “Range.” When the discipline of rangeland ecology first emerged in the mid-1900’s, it was firmly focused on improving livestock management. Today, rangeland ecologists are as likely to be concerned about threats from biological invasions, altered disturbance regimes, climate change, and providing a variety of ecosystem services, as they are about managing livestock. Furthermore, we increasingly recognize that small units of land cannot be effectively managed in isolation; rather, we must account for the movement of energy, matter, and organisms across landscapes, linking rangelands with forests and aquatic ecosystems. To keep pace with these trends, today’s students need broader and more interdisciplinary training. Fittingly, USU has played an important role in pushing the boundaries of rangeland ecology. Long-time faculty members such as Martyn Caldwell, Neil West, and Fred Provenza, pursuing curiosity driven research that started well outside the traditional range discipline, ultimately had a tremendous impact on rangeland resource management. Our ambition is to extend their legacy.

Producing a report of this scope requires a team effort and several people deserve special acknowledgements: Michele Guy and Marsha Bailey worked long hours compiling the appendices, as well as editing and proofreading. The previous report written by former department head Johan du Toit also was very helpful. Thanks to everyone who helped. On behalf of the Wildland Resources faculty we welcome this opportunity to submit our REM program for review by the SRM reaccreditation team. The feedback will be valuable as we continually adapt and strive to improve our ability to meet the challenges of the future.

Michael Kuhns, Head
Department of Wildland Resources

Fee Busby
REM Program Leader

Peter Adler
REM Program Undergraduate Advisor
EXECUTIVE SUMMARY

Utah State University, through the Quinney College of Natural Resources and its Department of Wildland Resources, is seeking to continue the Society for Range Management (SRM) accreditation of our Rangeland Ecology and Management (REM) undergraduate degree program. Our undergraduate and graduate degrees in range and our range-related research and extension programs have been around since 1918, so our program will be 100 years old when it is (hopefully) reaccredited in 2018. Our range program has had an illustrious past and we intend it to have an equally illustrious future.

SRM’s Accreditation Handbook states that the objectives of the accreditation process are to:
• establish recognized minimum standards that address the educational needs of students preparing to enter the profession,
• provide constructive guidance to institutions that are currently providing or are planning to provide instruction in the discipline, and
• identify programs that meet or exceed the accreditation standards.

As a part of the evaluation, a visitation team will come to the USU campus in the fall of 2017 to review our program. This self-evaluation report was developed to prepare for that visit so we and the visitation team can assess how well the program meets the SRM accreditation standards. These seven standards describe the features of an undergraduate REM program that SRM feels "is equipped to provide the depth and breadth of instruction necessary to achieve SRM formal education goals". This report is explicitly organized by those accreditation standards and addresses each information item that the handbook suggests be included to determine whether each of the standards has been achieved.

Standard I establishes how the REM program fits into the university and how this structure lends itself to effective governance and operation. Our program may be more integrated into the larger department than some, and our REM program leader may be a less central figure to its management than the program leader described in the manual, but we feel that we have gotten very good results with our present structure. Standard II simply establishes that a degree with the word "rangeland" exists at USU, that it shows on graduates' diplomas and transcripts, and that it is acknowledged and described on the university website. This is shown by inclusion of a letter from the Registrar and reference to pertinent web pages.

Standard III describes the curriculum, both general and REM-specific, that is required by SRM for a program to be accredited, and student advising. Our REM program curriculum more than meets this standard, with an integrated curriculum that also serves three other majors. We also have a good advising system. We have excellent faculty who more than achieve the criteria for Standard IV. Also our student clubs, range-related and otherwise, are very active and are well supported, supporting our having achieved the requirements for Standard V.

Standard VI involves assessment of the REM program and how we are meeting our objectives. We summarized the multiple ways in which we assess our programs, and we feel that we are meeting or exceeding our objectives. The one thing that we are not doing well is attracting large numbers of students to the program. However, it seems like this is a problem across the country. Finally, we show for Standard VII that USU is properly accredited and that we have very good support for our faculty, our program, and our students.

We feel that this report shows that we meet or exceed all of the standards required by SRM. We hope that SRM ends up agreeing, and we look forward to the visit this fall.
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ACCREDITATION STANDARD I –
RANGELAND ECOLOGY AND MANAGEMENT UNIT CHARACTERISTICS

This self-study report addresses each the Society for Range Management’s (SRM’s) seven accreditation standards in order. Under each standard we address the bulleted items mentioned in the SRM Accreditation Manual. In this report these items have bold headings with first level heading numbers (e.g. 1.1, 2.2, etc.).

1.1 History of the REM Program at Utah State University

The range management discipline has a long and proud history at Utah State University (USU) that has touched the lives of thousands of people and had a positive influence on millions of acres of rangeland all over the world. 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 via extension and assistance programs, both foreign and domestic.

1.1.1 Program Administration History

USU’s involvement in range science and management began 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 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.” The name “College of Natural Resources”, was put into place in 1965. In 2012, the College name was changed to the “Quinney College of Natural Resources” in recognition of S. J. and Jessie E. Quinney, long term supporters of the College.

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 formed unit named the Department of Forest, Range and Wildlife Sciences. Finally, this unit was re-named with its current title of Wildland Resources in 2006 (often referred to as the Wild Department or just “Wild” in this report).

Department leadership has included seven “permanent” department heads and several “interim” or temporary department heads. The first, Ray Becraft, served from 1933 to 1935. L.A. Stoddart then assumed the role until his death in 1968. Cyrus McKell then followed briefly from 1969 to 1971 followed by Don Dwyer 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. Reorganization resulted in the majority of the range faculty moving into the new Department of Forest, Range and Wildlife Sciences and a period of temporary leadership by David Roberts and Michael Wolf until the arrival of Johan du Toit in 2005. Johan served as department head until July 2012, when he stepped down and Mike Kuhns was named interim department head, and then was named permanent department head in January 2013.

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 rapid growth, the department outgrew these quarters by 1936 (there were approximately 450 forestry and range management student majors in 1936) and was moved to the old Home Economics Building (subsequently re-named the 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 building). 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 as well.

1.1.2 Faculty History

Over the 81 years that range has been a distinct discipline at USU, its concepts and principles have been taught, researched, and extended by 49 permanent faculty members (Table 1.1) and numerous additional professionals in post-doctoral positions or people 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). Ten of the faculty members listed in Table 1 hold current academic appointments in the Wildland Resources Department.
Table 1.1. Faculty in Range Departments at USU, arranged by year of appointment.

<table>
<thead>
<tr>
<th>Name</th>
<th>Years</th>
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<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>
</tr>
<tr>
<td>Goodwin, D.L.</td>
<td>1955-1963</td>
</tr>
<tr>
<td>Vallentine, J. F.</td>
<td>1958-1962</td>
</tr>
<tr>
<td>Box, Thadis W.</td>
<td>1959-1962; 1970-1989(Emeritus)</td>
</tr>
<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, James</td>
<td>1965-2006 (Extension Adjunct)</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>1967-2008</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>1970-2008</td>
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<tr>
<td>Workman, J. P.</td>
<td>1970-2005 (Emeritus)</td>
</tr>
<tr>
<td>Dwyer, D.D</td>
<td>1971-1987 (Emeritus)</td>
</tr>
<tr>
<td>Norton, B.E.</td>
<td>1971-1999</td>
</tr>
<tr>
<td>Busby, Fee</td>
<td>1972-1979; 1998-present</td>
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<tr>
<td>Urness, P.J.</td>
<td>1973-1995</td>
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<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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<tr>
<td>Richards, James</td>
<td>1980-1990</td>
</tr>
<tr>
<td>McCawley, Paul</td>
<td>1982-1989</td>
</tr>
<tr>
<td>Provenza, F.D.</td>
<td>1982-2009</td>
</tr>
<tr>
<td>Allen, Edith</td>
<td>1983-1988</td>
</tr>
<tr>
<td>Gay, Charles</td>
<td>1983-2013</td>
</tr>
<tr>
<td>Dobrowolski, James</td>
<td>1984-2000</td>
</tr>
<tr>
<td>Pyke, David</td>
<td>1985-1992</td>
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<tr>
<td>Call, Chris</td>
<td>1987-2013</td>
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<tr>
<td>Rasmussen, Allen</td>
<td>1989-2002</td>
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<tr>
<td>Coppock, Layne</td>
<td>1991-2002</td>
</tr>
<tr>
<td>Schupp, Gene</td>
<td>1992-present</td>
</tr>
<tr>
<td>McCoy, Nicole</td>
<td>1999-2002</td>
</tr>
<tr>
<td>Ramsey, Doug</td>
<td>2002-present</td>
</tr>
<tr>
<td>Ryel, Ron</td>
<td>2002-2013</td>
</tr>
<tr>
<td>Adler, Peter</td>
<td>2006-present</td>
</tr>
<tr>
<td>Villalba, Juan</td>
<td>2005-present</td>
</tr>
<tr>
<td>Veblen, Kari</td>
<td>2011-present</td>
</tr>
<tr>
<td>Kulmatiski, Andrew</td>
<td>2013-present</td>
</tr>
<tr>
<td>Burritt, Beth</td>
<td>2005-present</td>
</tr>
<tr>
<td>Thacker, Eric</td>
<td>2013-present</td>
</tr>
<tr>
<td>Hulvey, Kristin</td>
<td>2014-present</td>
</tr>
</tbody>
</table>
1.1.3 Undergraduate Program History – Curriculum and Students

Initially, there was a single "range management" course of study at USU, but by 1957 the University Bulletin listed three 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. The Forest-Range Management track was dropped in the early 1980s and a single major of Range Science remained. That name was changed to Rangeland Resources some time before 2000, and that was renamed Rangeland Ecology and Management in 2017.

Unfortunately, our information on undergraduate students and their numbers is far less complete than that for graduate students. The range major is not and has never been as large an undergraduate program as forestry was in the past and as wildlife is now. 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 department’s existence), and range had 63 students. At this point, the entire faculty of the new school consisted of seven professors.

World War II saw a dramatic 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 begun 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 at that time is unknown.

From the outset, and continuing today, the federal land management agencies of the U.S. Forest Service, Bureau of Land Management, and Natural Resources Conservation Service (formerly Soil Conservation Service) were the major employers of our range graduates.

1.1.4 Research and Graduate Program History

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. Since the departments were reorganized in 2002 until 2016 the new department has awarded 189 MS degrees and 65 PhDs. 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 U.S. 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 journals and has brought world-wide recognition to USU for its 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.

1.1.5 Extension History

Outreach from the university to the field has long been a tradition of the range program. This involved both extension and non-extension faculty. Professors Cook and Smith were involved with extension range education early-on. Smith had a half-time appointment with the Utah Fish and Game Department (now Utah Division of Wildlife Resources) from 1956 until his retirement in 1973, as did his successor, Philip Urness. This joint arrangement ended with Urness’ retirement in 1994.

Range department faculty who held official appointments as Extension Specialists include (in approximate order of their time-of-employment): Grant H. Harris, John Vallentine, Karl Parker, Fee Busby, Kendall Johnson, Paul McCauley, Roger Banner, Allen Rasmussen, Roger Banner, and currently, Eric Thacker and Beth Burritt. Additionally, James Bowns, professor at Southern Utah University in Cedar City, provided extension assistance for southern Utah, both on an informal and formal basis from 1965 until his retirement in 2006. In addition, Dr. Terry Messmer, whose title is Extension Wildlife Specialist, has a background in Range Science and has done much rangeland-related extension work.

1.1.6 Recent and Present Day Wildland Resources Department

The Department of Wildland Resources began as 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 about 50, originally came from the former Departments of Fisheries and Wildlife, Forest Resources, Geography and Earth Resources, and Rangeland Resources. However, many faculty have been hired more recently and they have no memory of these past arrangements. Faculty expertise is diverse, but a common theme still 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 unit, the department adopted its current name, the Department of Wildland Resources, in June 2006.

The Department is fortunate to have several federal- and state-funded collaborators in 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 Center, which promotes research, teaching, and outreach in the field of wildlife damage management and mitigation of human-wildlife conflict. At the time of the last accreditation visit this center was funded by USDA/APHIS/Wildlife Services, but now it is funded by the state, private donations, and numerous other sources. We are also fortunate to have the USDA ARS Forage and Range Research and the Poisonous Plant Research Laboratories located on the USU campus. Scientists at these labs are not directly associated with our undergraduate teaching program, but often interact with students through the Student Chapter of the SRM. Many of our students are able to work for these labs during the school year and summers.

The Department of Wildland Resources offers four Bachelor of Science degrees: Conservation and Restoration Ecology (CREC), Forest Ecology and Management (FEMA; Forestry in 2008),
Our BS in Conservation and Restoration Ecology (CREC) was fairly new at the time of our last reaccreditation. It can be fairly similar to the REM degree in that a student can choose courses that qualify them for the GS-454 Rangeland Management Series, but its flexibility, based on 21 credits of electives selected with the advisor, means it also can prepare them for a wider range of employment options or for excellent graduate programs. This flexibility tends to draw some of our best and most creative students. Its flexibility is somewhat similar to the Environmental Studies major in the ENVS Department, but it has stronger science and math requirements, and the focus, of course, is on land restoration and protection. Like our other majors, its curriculum includes a solid foundation in basic science, plant and animal ecology, and ecosystems of the Intermountain West. It is different though, in that CREC students design a personal curriculum in consultation with the CREC faculty advisor. Enrollments in CREC have been higher than all but the WEMA major for several years. (Fig. 6.4), running at a little under 50. Some of the more active and successful members of the USU student chapter of the SRM (the “Range Club”) are CREC majors. It may be that some of our former REM students have switched to CREC either because of the degree name or its flexibility. In talking with several CREC graduates recently, the Wild Department Head had two of them indicate that they would have chosen to get their degree in REM had that been the name at the time, instead of the old range degree name of Rangeland Resources.

Our current undergraduate 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 several professions. 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.

1.2 Goals, Mission, and Objectives of the REM Program

1.2.1 Mission of Department and REM Program

The mission of the Department of Wildland Resources is to use our educational, research, and extension expertise in ecology and resource management to advance the understanding and stewardship of wildland ecosystems and the services they provide.

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. Increasingly, ranchers and other managers of rangelands are successfully incorporating wildlife production, water stewardship, ecotourism, and conservation incentives into their management. We also are increasingly
educating students who are not tied to ranching or animal production on rangelands at all, but who are interested in rangelands for the ecosystem services they provide, for their esthetics, and for other less tangible characteristics. In response, the curriculum of our REM BS degree is designed to educate students within this new paradigm while also providing them with the qualifications required to meet traditional expectations (e.g. the Office of Personnel Management series GS-454 standards for rangeland managers).

Underlying this mission is a commitment to education provided without discrimination for any reason. USU’s commitment, and therefore our commitment, to equal opportunity, affirmative action, civil rights, and to avoid discrimination is detailed in the university policy manual (see https://hr.usu.edu/files/policies/303.pdf). This commitment is evident by changes in gender make-up in our programs, where the Wild Department has gone from having 35% of our enrollees female in 2007-08 to having 44% female in 2016-17. However, our racial and ethnic diversity has stayed fairly constant over that same time period at 85% white in 2007-08 to 84% white in 2016-17.

1.2.2 REM Program Goals and Objectives

Accomplishment of the mission of the REM program is through the attainment of several goals and learning objectives as follows:

Goal 1 – REM graduates will have and be able to use basic biological knowledge.

Learning Objective R1 – Functional knowledge of biology and ecology in relation to rangeland ecology and management - includes basic understanding of vegetation management in the context of soils, hydrology and watershed processes, and natural and anthropogenic disturbance; plant taxonomy and identification; environmental context of organismal biology; and population, community, and ecosystem dynamics.

Goal 2 – REM graduates will be able to collect and use data.

Learning Objective R2 – Competence in collecting and analyzing data related to rangeland ecology and management - includes ability to use field/lab techniques to measure and record data about organisms and their environments; to measure land areas and conduct spatial analysis using GIS and related tools; to design and implement inventories and monitor ecological systems; and to analyze data and use models to project future ecological conditions resulting from range conservation or restoration management.

Goal 3 – REM graduates will understand and be able to deal with human motivations and behavior in their work.

Learning Objective R3 – Understanding of the social context in which rangeland ecological studies and management are conducted - includes basic understanding of human behavior, economics, and culture and their impacts on natural resources; of human demands for natural resources and their effects on resource availability and quality; of natural resource policy and how it is developed; of how federal, state, and local laws and regulations govern natural resource management; and of the ecosystem services that rangelands provide to society.

Goal 4 – REM graduates will communicate effectively.
Learning Objective R4 – Ability to Communicate – Includes the ability to understand scientific and other documents in order to critically evaluate opposing viewpoints in rangeland ecology and management; to prepare and deliver effective oral presentations to professionals and stakeholders; and to write clearly for both technical and non-technical audiences.

Goal 5 – REM graduates will be able to accomplish complex management tasks that involve multiple perspectives using knowledge and skills attained at USU.

Learning Objective R5 – Understanding of and ability to apply what is learned in the major to conserve, restore, and manage rangeland natural resources – ability to research possible solutions to range management problems, then develop a conservation, restoration, or management plan with specific objectives and constraints.
1.3 Organization Chart Showing REM Program Within USU Administrative Structure

Figure 1.1. This chart shows the REM program within the academic structure of Utah State University.
1.4 Mechanism for REM Program Leader to Contribute to Program Administration

The REM program’s home is the Wildland Resources Department (Wild), which also is the home of the Wildlife Ecology and Management, Forest Ecology and Management, and Conservation and Restoration Ecology majors. The Wild Department is one of three in the Quinney College of Natural Resources (QCNR). QCNR is one of eight academic colleges or schools at USU. Its Dean answers to the Provost, who answers directly to the President. An organizational diagram of the university and the college’s, department’s, and REM program’s place within it is included in Figure 1.1.

Figure 1.2 shows the REM program within the QCNR Administrative Structure, where most of USU’s environmental and natural resource programs lie. The REM program leader is Dr. Fee Busby, assisted by Dr. Peter Adler, Dr. Eric Thacker, and a number of other range-oriented faculty who together teach and advise students in the REM program, as well as students in the other three department majors. Those faculty report to the Wildland Resources Department Head Michael Kuhns, who reports to the QCNR Dean. There is an associate department head to assist in carrying out administrative duties. The background of the current department head is forestry, but the other faculty listed above all have range backgrounds.

The mechanism for how the REM faculty “contribute to deliberations made at the most immediate superior level of the administration,” is both formal and informal. In general, program needs and problems are conveyed to the department head through one-on-one interactions, by committees reporting directly to him, and department meetings held four times a year and at our annual retreat. When appropriate and necessary, those requests, needs, or problems are then discussed with the QCNR dean and others.

Faculty that teach courses in the common curriculum serve as the department’s curriculum committee. This group includes faculty with backgrounds in forestry, wildlife science, and rangeland management. Four REM-related faculty (Adler, Busby, Kulmatiski, and Veblen) serve on this committee. This committee meets periodically to address changes in any department course (including numbering, content, and scheduling) and in the four department major curricula. Recommendations for course and curricula changes are submitted for consideration to the department head and by the entire WILD department faculty. If appropriate, changes in courses and curricula approved by the department faculty are submitted to the University for review and approval.

The range-oriented faculty have an informal group that meets as needed to discuss curriculum (courses, content, and scheduling), hiring, and other matters regarding the REM program. Curriculum matters are brought by REM-related faculty to the department’s curriculum committee for consideration as described above. When a faculty vacancy occurs or a new faculty position is made available to the department, REM-related faculty have input, both individually and collectively. When a decision is made to hire a REM-related faculty member, REM faculty serve as the chair and as members of the search committee.
1.5 Organization Chart Showing REM Program Within QCNR Administrative Structure

Figure 1.2. This chart shows the REM program within the academic administrative structure of the Quinney College of Natural Resources at Utah State University.
1.6 Recent Changes in REM Program Objectives and/or Organizational Structure

The REM program is aimed at providing students an undergraduate degree in Rangeland Ecology and Management that can lead to employment as a range professional employed by a federal or state agency, non-governmental organizations including private sector employment (consulting or ranching), or can help a student prepare for graduate school. The degree consists of 120 credits, which includes 24 credits in the commons curriculum that all of our majors take, 15 or 16 credits of courses specific to the REM major, and 14 credits of electives. The REM program is accredited by the Society for Range Management, and it meets federal Office of Personnel Management (OPM) requirements for the Rangeland Management Series (GS-454).

A number of changes have happened to the program over the years. In response to a university-wide effort to improve student educational assessment in the past year, the Wild department simplified its list of 26 learning objectives for all of its undergraduate majors to 5 learning objectives for each major. To see the original learning objectives, go to our assessment web page (https://qcnr.usu.edu/wild/about/assessment/undergrad_assessment) and select the results of the Graduating Senior Survey (2015-16, Table 3). To see the new learning objectives table, click on the link to the contemporary learning objectives table on that same page (first paragraph, Learning Objectives Table). There have been no changes to the REM program’s organizational structure since shortly after the college reorganized in 2002. However, the name of the major was changed from Rangeland Resources to Rangeland Ecology and Management in 2017.

1.7 Evaluation of the Progress of the Program Toward Achieving Its Objectives

This section mainly describes how we assess our progress toward meeting our objectives for the REM program. A detailed discussion of our progress can be found in the section titled “Accreditation Standard VI – Assessment of Courses/Program Effectiveness”.

The Wild Department assesses the success of our undergraduate programs in several ways, described in depth in the Undergraduate Assessment section of our website at https://qcnr.usu.edu/wild/about/assessment/undergrad_assessment. We interview graduating seniors about their experiences at luncheons hosted twice a year by the department head. Graduating students also fill out a questionnaire where they self-assess their success in accomplishing five learning objectives (26 learning objectives in the past). They also rate services provided to them by the program and the university. A summary of the results of that survey going back several years can be found on the undergraduate assessment web page mentioned above.

The five learning objectives are described in detail in our assessment section (see above) and also in this report under goals and objectives (see section 1.2.2). Though the specifics vary by major, the broad themes are the same for all four majors. For REM, they are:

1. Functional knowledge of biology and ecology in relation to REM.
2. Competence in collecting and analyzing data related to REM.
3. Understanding of the social context in which rangeland ecological studies and management are conducted.
4. Ability to communicate.
5. Understanding of, and ability to apply, what is learned in the major to conserve, restore, and manage rangeland natural resources.
In addition to having graduating seniors self-assess their accomplishment of the five learning objectives for their majors, we also have identified which objectives are pertinent to which courses. We use final grades attained by our students in certain courses or, for Wild classes, we use grades for certain assignments or projects as indicators of achievement for a particular objective. A table that maps specific courses to the learning objectives is linked on our assessment page. When a student graduates with one of our majors we score them based on all of this data and we use that score as an indicator of our attainment of those learning objectives. We devised this system in Fall of 2016, and will first use it for students who graduated in spring of 2017. Since we are tracking success of individual students and they need to finish all of their coursework to get a score, we will not have full degree-program data on anyone for a few years.

Other ways we assess success are by reviewing student ratings of the courses they take and their instructors using the IDEA course evaluation system (learn more at the USU AAA website at [www.usu.edu/aaa](http://www.usu.edu/aaa)). USU also surveys graduates about job placement every year, which we feel is a good indicator of achievement of our learning objectives. We also feel that the outcomes of accreditation reviews like this one and the SAF accreditation review are good indicators of our educational success. Included on our assessment web page are examples of some of the data-driven decisions we have made in the past few years as a result of our undergraduate assessment efforts.

Overall, we feel that the assessment data provide evidence that our programs are quite successful. However, we need to address problems like the low rate of eventual graduation for students enrolled in our undergraduate majors. We also have to find ways to deal with increasing total enrollments in all of our majors making classes too large. This is mainly a problem with our WEMA major, but with enrollments so high in that major (around 200), all of our commons courses get high enrollments, so efforts to increase enrollments in our smaller REM and FEMA majors cause problems for those courses. The ideal situation would be for more of our WEMA majors to switch to REM or FEMA. Our assessment tools have helped us to identify these problems and will lead to possible solutions.

Further presentation and discussion of our program assessment results can be found in the section of this report titled “Accreditation Standard VI – Assessment of Courses/Program Effectiveness”.

1.8 Anticipated Changes in REM Program

We have few plans to change the REM program or the undergraduate curriculum overall. Low REM enrollments are perhaps the biggest challenge to the future of the program. REM enrollments have increased from 20 at the time of the last reaccreditation to about 35 (see Figure 6.4). Despite this improvement, enrollments still are low enough to cause problems when we assign valuable faculty teaching efforts to classes so small that they don’t work well logistically or pedagogically. We also worry that when a pre-tenured faculty member is assigned to teach a course with, say, 3 students in it, that their teaching efforts and outcomes, even if successful, might not be respected by reviewers when they come up for tenure. It also is the cause of some resentment from fellow faculty who are busy teaching large classes.

Low REM enrollments are common nationally and likely reflect societal trends. Many students lack understanding of what rangelands are and what it means to be involved with range professionally. Our report to SRM 10 years ago suggested that lack of employment opportunities for REM graduates might have been a part of the problem of low interest in
majoring in REM. For the last few years we have had no problems in placing REM graduates in
good jobs when they graduate, though none of this year’s four REM graduates have permanent
employment at the moment. In general, our impression is that there are not enough REM
graduates to fill the open positions.

In an attempt to increase enrollment in the REM major, we are partnering with Snow College, a
small state community college in central Utah. For several years, we have had students transfer
from Snow as juniors. There are several natural resources related faculty at Snow, including
one with a rangeland management background who advises students interested in REM. The
quality of these transfer students has been excellent. We formalized an agreement with Snow
College last year that allows students to study at Snow for three years before transferring to
Logan for their senior year. While at Snow, students will be able to take several of the
department common courses which are already broadcast to support the WEMA program
offered at the USU Uintah Basin Branch Campus (Vernal) and at USU-Eastern (Price). Several
additional required courses will be taught by qualified faculty at the College. At Logan, students
will take the remaining required courses as well as GS-454 required “Directly Related Plant,
Animal, and Soil Sciences” and “Related Resource Management Studies” courses that are only
available at the Logan Campus.

We are considering offering the same 3 + 1 REM program at the USU Uintah Basin and at
USU-Eastern campuses. As mentioned above, we currently broadcast many REM required
courses to these campuses in support of the distance WEMA program. A WEMA faculty
member is located on each of these campuses. We can deliver the courses using currently
employed or retired agency rangeland management specialist to teach laboratories, but we will
need to address student advising.

Other than our efforts to deal with problems caused by overall high enrollments, and low
enrollments in REM, we see no major changes coming for the REM program in the next few
years.

1.9 Information About the REM Program – Websites and Catalogue Entries

The following are several pages from the USU and Wildland Resources websites, including two
pages from the USU Degree Finder website for the undergraduate REM page and the graduate
Range Science page, the main REM page from the Wildland Resources website, the front and
back from the REM advertising brochure, and the main catalogue page for the REM program.
The brochure will be redone this summer.
Figure 1.3. USU Degree Finder REM page located at https://www.usu.edu/degrees/index.cfm?id=153.
Figure 1.4. USU Degree Finder graduate Range Science page located at https://www.usu.edu/degrees/index.cfm?id=72.
Figure 1.5. USU Wildland Resources Department REM page located at https://qcnr.usu.edu/undergraduates/prospective/degrees/rangeland_resources.
Figure 1.6. USU Wildland Resources Department REM online brochure (page 1) located at https://qcnr.usu.edu/undergraduates/prospective/degrees/pdfs/USU-2016_NR%20Rangeland%20Resources.pdf. Note old degree name is still in use because name has just been changed. New version will also include Peter Adler as an advisor for REM students.
Figure 1.7. USU Wildland Resources Department REM online brochure (page 2) located at https://qcnr.usu.edu/undergraduates/prospective/degrees/pdfs/USU-2016_NR%20Rangeland%20Resources.pdf. Note old degree name is still in use because name has just been changed. New version will also include Peter Adler as an advisor for REM students.

![Rangeland Resources Four Year Plan](image)

Below is a sample four year plan. Students should meet regularly with their advisor and carefully plan their academic program, keeping in mind that many upper division courses have prerequisites and must be taken in sequence. Students following the recommended schedule listed below should be able to complete degree requirements in four years/eight semesters.
Figure 1.8. USU Catalogue entry (page 1) for REM degree located at [http://catalog.usu.edu/preview_program.php?catoid=12&poid=9666&returnto=3832](http://catalog.usu.edu/preview_program.php?catoid=12&poid=9666&returnto=3832). The remainder of the page consists of a semester-by-semester listing of required courses (see Figures 1.9 and 1.10).
Figure 1.9. USU Catalogue entry (page 2) for REM degree located at http://catalog.usu.edu/preview_program.php?catoid=12&poid=9666&returnto=3832. The remainder of the page consists of a semester-by-semester listing of required courses (see Figures 1.8 and 1.10).
Figure 1.10. USU Catalogue entry (page 3) for REM degree located at http://catalog.usu.edu/preview_program.php?catoid=12&poid=9666&returnto=3832. The remainder of the page consists of a semester-by-semester listing of required courses (see Figures 1.8 and 1.9).

<table>
<thead>
<tr>
<th>Fall Semester (17 credits)</th>
<th>Credits</th>
<th>General Education Info and Notes:</th>
<th>Spring Semester (14 credits)</th>
<th>Credits</th>
<th>General Education Info and Notes:</th>
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<tr>
<td>ENVS 3019: Fundamentals of Natural Resource and Environmental Policy</td>
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<td></td>
<td>WATS 3700: Fundamentals of Watershed Science (C)</td>
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<td></td>
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<tr>
<td>ENVS 4000: Human Dimensions of Natural Resource Management (DSS)</td>
<td>3</td>
<td></td>
<td>WILD 3810: Plant and Animal Populations</td>
<td>3</td>
<td></td>
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<tr>
<td>PSC 3000: Fundamentals of Soil Science</td>
<td>4</td>
<td></td>
<td>WILD 3850: Vegetation and Habitat Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>WILD 3880: Wildland Plants and Ecosystems</td>
<td>4</td>
<td></td>
<td>WILD 4000: Principles of Rangeland Management</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>WILD 3850: Range Plant Taxonomy and Function</td>
<td>3</td>
<td></td>
<td>Electives*</td>
<td>2</td>
<td>See comment below</td>
</tr>
</tbody>
</table>

Comments

*The variable number of credits for ADVS 2080 and ADVS 2090, as well as STAT 2000 and STAT 3000, requires students to adjust the number of elective credits taken in their program.

<table>
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<th>Fourth Year (30-32 credits)</th>
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<td>-----------------------------</td>
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<td>PSC 5130: Soil Genesis, Morphology, and Classification</td>
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<tr>
<td>WILD 4750: Monitoring and Assessment in Natural Resource and Environmental Management</td>
</tr>
<tr>
<td>Depth Humanities and Creative Arts (DHA) Course</td>
</tr>
<tr>
<td>Electives*</td>
</tr>
</tbody>
</table>

Comments

*The variable number of credits for ADVS 2080 and ADVS 2090, as well as STAT 2000 and STAT 3000, requires students to adjust the number of elective credits taken in their program.
ACCREDITATION STANDARD II – DEGREE CREDENTIAL

USU offers a Bachelor of Science degree in Rangeland Ecology and Management (formerly called Rangeland Resources). This credential is listed on a student’s transcript and diploma. A letter from the Registrar confirming that is attached below. Look above in Figures 1.8, 1.9, and 1.10 for the university catalogue listing that mentions the REM major and the course of study from the university catalog and website.

Figure 2.1. Letter from the USU Registrar dated April 7, 2017 confirming that USU offers a Bachelor of Science degree in Rangeland Ecology and Management and that it is listed on a student’s transcript and diploma.
ACCREDITATION STANDARD III – CURRICULUM AND ADVISING

This section provides evidence that the REM program at USU provides both the breadth and the depth needed for the subjects required for accreditation. SRM requires students to complete a total of at least 66 credits in specific subject areas to obtain a range credential from an SRM accredited REM program. Here we present a list of required courses and their syllabi, both for General Concepts courses and then for Rangeland Ecology and Management Specific Concepts. USU provides 89 to 104 credits in those areas, which more than meets the requirements.

3.1 USU Courses That Meet SRM Curriculum Requirements

3.1.1 General Concepts Courses (48 credits required by SRM)

Students in our REM program take 67 to 75 credits of General Concepts courses as described below (note that some of the courses listed also count toward meeting the GS-454 “Directly Related Plant, Animal, and Soil Sciences” and “Related Resource Management Studies” course requirements):

- **Biology (4 cr. required; USU total is 8 cr.)**
  - BIOL 1610: Biology I (3 cr.)
  - BIOL 1615: Lab (1 cr.)
  - BIOL 1620: Biology II (3 cr.)
  - BIOL 1625: Lab (1 cr.)

- **Chemistry (4 cr. required; USU total is 9 cr.)**
  - CHEM 1110: General Chemistry I (4 cr.)
  - CHEM 1120: General Chemistry II (4 cr.)
  - CHEM 1125: Lab (1 cr.)
  - or-
  - CHEM 1210: General Chemistry I (4 cr.)
  - CHEM 1220: General Chemistry II (4 cr.)
  - CHEM 1215: Lab (1 cr.)

- **Soil Science (4 cr. required; USU total is 4 cr.)**
  - PSC 3000 (Fundamentals of Soil Science, 4 cr.)

- **Plant Taxonomy (3 cr. required; USU total is 6 cr.)**
  - WILD 3820: Forest Plants: Identification, Biology, and Function (3 cr.)
  - WILD 3830: Range Plant Taxonomy and Function (3 cr.)

- **Quantitative Concepts (9 cr. required; USU total is 10-11 cr.)**
  - MATH 1050: College Algebra (4 cr.)
  - MATH 1100: Calculus Techniques (3 cr.)
  - STAT 2000: Statistical Methods (4 cr.) or STAT 3000: Statistics for Scientists (3 cr.)
  - WILD 4580: Management and Manipulation of Ecological Data (1 cr.)

- **Integrated Natural Sciences (9 cr. required; USU total is 12-13 cr.)**
  - WATS 2220: General Ecology (3 cr.)
  - WATS 3700: Fundamentals of Watershed Science (3 cr.)
  - ADVS 2080: Beef and Dairy Herd Health and Production Practices (3 cr.) or ADVS 2090: Sheep Production Practices (2 cr.)
  - PSC 5130: Soil Genesis, Morphology, and Classification (4 cr.)
• **Resource Management (9 cr. required; USU total is 9-12 cr.)**
  WILD 3810: Plant and Animal Populations (3 cr.)
  ENVS 4000: Human Dimensions of Natural Resource Management (3 cr.)
  ENVS 3300: Outdoor Recreation Management (3 cr.) or WILD 4500: Principles of Wildlife Management (3 cr.); choose one or both

• **Economics (3 cr. required; USU total is 3-6 cr.)**
  ECN 1500: Introduction to Economic Institutions, History, and Principles (3 cr.) or APEC 3012: Introduction to Natural Resource and Regional Economics (3 cr.); choose one or both

• **Communication (3 cr. required; USU total is exposure to at least 6 cr.)—**all USU students are required to take 2 communication intensive (CI) courses which require both writing and public speaking; in the REM curriculum QCNR CIs are available from WATS 3700: Fundamentals of Watershed Science (3 cr.) and WILD 4910: Assessment and Synthesis in Natural Resource Science (3 cr.)

3.1.2  **Rangeland Ecology and Management Specific Concepts Courses (18 REM specific credits are required by SRM that are in addition to the General Concepts instruction described above)**

Students in our REM program take 22 credits of Specific Concepts courses as described below:

• **Introduction to Rangeland Ecology and Management (3 cr. total)**
  WILD 4000: Principles of Rangeland Management (3 cr.)

• **Applied Rangeland Ecology (3 cr. total);**
  WILD 3800: Wildland Plants and Ecosystems (3 cr.)
  From Handbook: Including developing an appreciation of the spectrum of considerations that are part of recognizing healthy rangeland communities, maintaining healthy rangeland (including all elements determining sustainable use targets) and an awareness of the structure and function dynamics of rangelands (e.g., multiple state-and-transition succession ecology considerations).

• **Inventory and Assessment Methods (10 cr. total)**
  WILD 1800: Introduction to Geographic Information Sciences (3 cr.)
  WILD 2400: Wildland Resources Techniques (3 cr.)
  WILD 4750: Monitoring and Assessment in Natural Resource and Environmental Management (4 cr.)
  From Handbook: Quantitative and qualitative assessment of plant communities, land management units, application of spatial analytical skills (e.g., mapping/GPS/GIS/remote sensing, application of mathematics and statistics to quantify trends and sustainable use targets).

• **Vegetation/Habitat Management Techniques (3 cr. total)**
  WILD 3850: Vegetation and Habitat Management (3 cr.)
  From Handbook: Provide a “tool box” of methods based on scientific insights that can be used to craft solutions responsive to unique challenges (e.g., fire and grazing management; restoration practices; weed management; watershed management; riparian management).

• **Rangeland Management Planning and Problem Solving (3 cr. total)**
  WILD 4910: Assessment and Synthesis in Natural Resource Science (3 cr.)
  From Handbook: Including elements of team projects and should assess the mastery of the process of solving natural resource problems, taking into account ecological, social,
government policy, and economic contexts, and the use of inquiry, analytical, integrative/synthetic, and communication skills.

3.1.3 Courses to Satisfy GS-454 Requirements

Students work with their faculty advisor to identify electives that will fulfill the OPM Rangeland Management GS-454 Series requirements for “Directly Related Plant, Animal, and Soil Sciences” and “Related Resource Management Studies” courses. These requirements are described on our website at https://qcnr.usu.edu/undergraduates/prospective/degrees/pdfs/RANGEOPMstatement2015-16.pdf.

3.2 Course Syllabi

3.2.1 Syllabi for General Concepts Courses

Syllabi for each of the courses used to meet the REM General Concepts curriculum standard listed above are available in Appendix A.

3.2.2 Syllabi and Supporting Documentation for Specific Concepts Courses

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

3.3 Advising Protocol

All newly admitted freshmen are required to participate in an Online Orientation before being permitted to register. Students entering for fall semester typically meet with an academic advisor during one of the many summer Aggie Orientation sessions to receive individual advice about degree requirements and fall semester courses. If possible, students also meet with their faculty advisor. Online Aggie Orientation is available for students who are unable to attend sessions in person. Newly admitted transfer students are required to participate in Online Orientation; and they must contact the Quinney College of Natural Resources’ (QCNR) academic advisor before registering for courses. QCNR has an Academic Advising Center staffed by a head advisor and student peer advisors. The center is an early point of contact for entering freshmen and transfer students to learn about general university and major requirements. The advisors in the center handle academic advising, including helping every student in the college come up with a complete degree plan, answering questions on courses and curricula along the way, and assisting students with graduation planning. Faculty advisors can be thought of as professional advisors, giving advice on careers and other non-academic matters. Each freshman and transfer student is assigned to a faculty advisor (see below).

3.3.1 Matching Students with Advisors

Each of the four undergraduate majors in the Wildland Resources Department has a designated faculty advisor. Peter Adler advises all students in the REM major, Eugene Schupp advises all students in the CREC major, Jim Long advises all students in the FEMA major, and several wildlife faculty advise students in the WEMA major. One of the requirements for freshmen and transfer students is the Natural Resources Professional Orientation course (WILD 2000), in which they are required to meet their faculty advisors and begin the process of formulating their degree and career plans.
3.3.2 Keeping Abreast of New Information

Faculty advisors meet with the lead advisor of the CNR Academic Advising Center periodically as needed to stay up-to-date on undergraduate advising matters. We also usually cover one or more topics about undergraduate needs and issues at our annual college and department retreats, and there are numerous opportunities throughout the school year for faculty advisors and staff from the QCNR advising office to stay up-to-date.

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, and animal production), providing some flexibility in course selection. Students entering as freshmen and proceeding through the REM major typically don’t have course substitution issues. Most of our transfer students come from colleges and universities in Utah and surrounding states where we have articulation agreements for the basic courses (e.g., biology, chemistry, math, statistics, general ecology, and soils) and some of the more advanced courses. Electives are where REM majors have most of their flexibility, though to ensure that they meet federal Office of Personnel Management (OPM) requirements for the Rangeland Management Series (GS-454), they may have to take specific courses for some of their electives. These requirements are described and listed in a section of our website at https://qcnr.usu.edu/undergraduates/prospective/degrees/pdfs/RANGEOPMstatement2015-16.pdf.

3.3.4 Mechanism to Ensure Students Meet with Advisors Twice a Year

During Aggie Orientation, in the online orientation modules, in the first meeting with an advisor in the QCNR Academic Advising Center, in the first meeting with a faculty advisor, and in the Natural Resources Professional Orientation (WILD 2000) course, students are informed that they need to meet with an advisor from the Advising Center 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 and offer their assistance. Students are encouraged to contact their faculty advisor or an advisor in the QCNR Academic Advising Center any time a problem arises. USU’s Analysis, Assessment and Accreditation (AAA) office conducted a Freshman/Sophomore survey in 2014-15 (results available at http://www.usu.edu/aaa/20142015fresh_soph_survey.cfm). It showed that 70% said that their advisor was the most important source for information about their academic program, and 70% met with their advisor once a semester.

ACCREDITATION STANDARD IV – RANGELAND ECOLOGY AND MANAGEMENT EDUCATORS

4.1 REM Qualifying Faculty

4.1.1 REM Faculty CVs and Table

Curricula vitae for REM faculty are available in detail in Appendix C. Faculty responsibilities and support are summarized in Table 4.1 for all of the Wild faculty who teach REM-related courses. The instructors who teach REM-specific courses and the courses they teach are indicated in
Table 4.1 in bold. As you can see, eight faculty teach the 18+ credits of REM-specific courses required for accreditation, which exceeds the minimum of three that are required.

### 4.1.2 Qualifying Faculty

As required by SRM, all faculty who teach in the REM program have “doctoral degrees in range management/science or other applied science disciplines directly related to rangeland ecology and management” (Table 4.1 and Appendix C). However, the faculty teaching REM courses do not have their teaching assignments under the administrative control or oversight of the REM program leader. Rather, their teaching and other assignments are under the oversight and control of the Wildland Resources Department Head, with input from the REM program leader.

As required by the SRM (see page 8 in the Accreditation Handbook) and indicated by their CVs (Appendix C), the faculty who teach our REM courses come from a diversity of backgrounds; have substantial professional experience in range management or related fields; have PhD degrees from a variety of institutions; are competent in the areas in which they teach and conduct research; are good, effective teachers; know how to stimulate independent thinking; are involved with the range profession in different ways; and are keeping up with new developments in the profession. All of them participate in appropriate professional, scientific, and scholarly endeavors.

As required and described in the accreditation handbook, “the career records of these faculty demonstrate active involvement in the development of the rangeland management profession through 1) their record of membership/service to the SRM and 2) their record of expanding the scientific and/or education capability of the profession as evidenced by periodically publishing articles in peer-reviewed venues that specifically target communication with members of the profession, in particular the Rangeland Ecology and Management journal or Rangelands”, as indicated by their CVs included in Appendix C.

### 4.2 Cultivating Excellence in Education

Excellence in education is promoted by USU, QCNR, and our department in many ways as described below.

#### 4.2.1 Policies/Practices to Keep Educators in Touch with REM Professionals

USU has a generous consulting leave policy and several of our faculty take advantage of it, getting involved in professional projects that give them case studies and background knowledge that can be useful in their teaching. As mentioned elsewhere, all of our faculty participate in professional and scientific meetings, both presenting at those meetings and having their students present, but also meeting with REM professionals. They also take advantage of and participate in extension/outreach programs like the annual *Restoring the West Conference*, the aim of which is to bring scientists and professionals together to discuss big concerns in restoration in the West. Perhaps the primary way in which our teaching faculty stay in touch with land management and other REM professionals is by participating in many multidisciplinary research projects as a part of their research appointments. Our faculty spend much of their time on projects involving agencies such as the BLM, U.S. Forest Service, and USDA Agricultural Research Service, and Utah Division of Wildlife Resources and Division of Environmental Quality.
4.2.2 Policies/Practices/Programs to Enhance Teaching Skills

Examples of programs that enhance teaching skills include an annual teaching academy that is required of all new faculty members. There also are numerous faculty development workshops sponsored by the Provost’s office and the Vice President for Academic & Instructional Services (see ais.usu.edu). The AIS office has one-on-one assistance available in instructional design and the use of advanced technology to assist teachers, including techniques appropriate for distance education, which is becoming an important consideration in teaching at USU and elsewhere. Faculty also are encouraged to attend national conferences and workshops on pedagogy.

Table 4.1. Wildland Resources faculty teaching REM-specific courses (in bold), teaching other REM-related courses, and others, including their numbers of advisees, their role statement weightings (Teaching, Research, Extension, Service), and their salary source (education and general, or other). Enrollment for the most recent semester the course was taught is indicated in column 3.

<table>
<thead>
<tr>
<th>Name</th>
<th>Courses Taught (Credits)</th>
<th>Recent Enrollment</th>
<th>Advisees</th>
<th>Role Weighting (%)</th>
<th>Salary Source (%)</th>
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<tr>
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</tr>
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<tr>
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</tr>
<tr>
<td>Veblen, Kari</td>
<td>WILD 4750 (4)</td>
<td>29</td>
<td></td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

Faculty Who Teach REM Specific Concepts Courses

Faculty Who Teach General Concepts and Other REM-Related Courses

Other REM-Related Faculty

Notes:
1 Resigning 6/30/17
2 Online classes
3 Optional, but recommended for REM
4 Starting 8/1/17
5 Co-taught, Long and Busby
6 Federal employee
7 Adjunct; retired
At the department level, all tenure-track faculty members receive peer review of their teaching, especially as a part of their promotion and tenure evaluation. All courses are evaluated by students using the IDEA system for both instructor effectiveness and course effectiveness, and those evaluation scores are discussed each year by the faculty member and the Department Head in an annual review meeting (see www.usu.edu/aaa/idea.cfm). The university, QCNR, and the department recognize good teaching by giving teacher of the year awards to excellent faculty, and by rewarding faculty who participate in other student-oriented activities like the Undergraduate Teaching Fellow and Undergraduate Research Fellow Programs.

Faculty have opportunities to take sabbatical leave every seventh year, and they almost always do. Sabbaticals are essential for refreshing faculty creativity, broadening background, and enhancing skills. We plan carefully to cover the responsibilities (teaching, advising, administration, etc.) of the faculty member for the year (usually) that they are gone.

4.2.3 Other Faculty Categories

We do not use affiliate and adjunct professors to teach REM courses or advise students, except through their membership in graduate students’ committees. However, we have been using adjunct faculty who are retired from federal agencies to teach the forest plants class lab at our Vernal Branch Campus and our USU-Eastern campus, since we have to offer a plant class for our WEMA majors in those places. In fall 2016 we made the entire range plants course (lecture and lab) available at USU-Eastern, taught by the same person who had taught the forest plants lab there. His name is Dr. Mike Ralphs and he is retired from the USDA-ARS. Again, this was done for the WEMA students we have in Price, to give them another plant course option, but that course may also be taken by REM students in the future if we offer the REM degree in that location. A CV for Dr. Ralphs is included in Appendix C.

4.2.4 Teaching Assistants and/or Lecturer Positions

We get a small amount of funding (about $8K a year) to support TAs who help with instruction. Typically, though, we spend about $24K on TAs and this pays for about 12 TAs for high enrollment classes. None of our graduate students rely exclusively on TAs for stipend, but instead students TA occasionally as they and their background are needed. Most TAs are graduate students and they are paid a stipend that normally supplements their research assistantship funding for the semester. We also get several (3 to 5) Undergraduate Teaching Fellows each year who are centrally funded. We use one person with the title of Instructor who works for the ENVS Department and who helps us teach GIS labs (for WILD 1800).

4.2.5 Vacant Positions

We currently have four vacant faculty positions, one of which (a fire ecologist) will begin work this August. The other three are a Wildlife Movement Ecologist (will be vacated July 1, 2017), a Population Ecologist (also will be vacated July 1, 2017), and a Quantitative Spatial Ecologist (a new position). We just received approval from the QCNR Dean to fill all three of these and we are waiting for the Provost’s approval so we can start advertising this summer, interview this fall, and have the new hires on board by August 2018.
4.2.6 How Research, Extension/Outreach, and Service Appointments of REM Faculty Compliment Teaching and Advising Objectives

See section 4.2.1 for a description of how research and extension helps connect our faculty to REM professionals and how that helps us be better teachers and advisors. 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. Funds from the USU Agricultural Experiment Station and the USU Ecology Center total at least $657K for the WILD department. Externally funded awards generated by the QCNR in FY17 amounted to $10.6M, with $4.6M of this brought in by the Department of Wildland Resources. 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 field trips, many are employed as research technicians, and some of their classes (e.g. the WILD 4910 REM Capstone course) will entail the collection of primary data by students, which they will analyze together with faculty members within a long-term research and management 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 not uncommon for undergraduates to publish in peer-reviewed journals as co-authors with faculty members.

Extension/outreach in REM in the Department of Wildland Resources is mainly done by Dr. Eric Thacker, Extension Range Specialist who also teaches WILD 4000, Principles of Rangeland Management course, and by Beth Burritt, who mostly provides Extension Range education for Utah’s northernmost counties. Dr. Terry Messmer and Dr. David Dahlgren, our Extension Wildlife Specialists, both hold degrees in range and wildlife and are actively involved in a number of range-related projects that deal with wildlife habitat management. 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, and the USU Extension/Utah Farm Bureau Federation biennial Rangeland Conference.

ACCREDITATION STANDARD V – EXTRACURRICULAR PROFESSIONAL DEVELOPMENT

SRM requires accredited REM programs to have a student organization, advised by a faculty member, which focuses on professional development of future rangeland scientists/managers (e.g., range club). Participation in section and international SRM meetings should be encouraged and to some degree financially supported by the program. At USU, this organization is our Range Club.

5.1 Range Club Structure, Student Membership and Activities

The USU Range Club is housed in the Wildland Resources Department. The club is a Chapter of the Utah Section, Society for Range Management (SRM). The structure of the club has remained relatively stable over the past five years. The membership of the club is open to all students interested in rangelands. The majority of students are from the WILD Department, but we routinely have students from other majors within the Quinney College of Natural Resources and from the Colleges of Agriculture and Applied Science participate in club activities. There is active advisement of the club by faculty and staff with additional participation by “coaches” for
the various SRM student competitions. Club advisors and coaches provide a consistent emphasis on professional development with the officers and club members.

The club officers include a president and vice-president, or in one recent year co-presidents. Other officers and committees are elected or appointed as needed. Active members of the club hold elections each spring semester. Activities of the club most years include opening and closing socials, speakers at club meetings, field trips, fund raising activities, and participation in meetings and contests sponsored by the SRM. Club members participate in SRM activities at both the Utah Section and International Society levels.

5.2 Range Club Participation and Activities During the Past Several Years, Including Participation in Utah Section and Society Meetings

2011–2012 – Membership: 14. Meetings: Range Club meetings, Club Officer meetings, College Student Council meetings. Socials: booth at College welcome back social, Welcome Back Club Bar-B-Que, end of year closing social. Fundraisers/Service: MIM riparian monitoring, fence building, Spike herbicide application, application for USU funding and meeting with student government, USU Day on the Quad, CNR Week booth with sale of Dutch oven potatoes. SRM contest practices and preparation (URME, Plant ID, Rangeland Cup, public speaking, undergraduate papers, club booth), preparation meetings for section and national meeting. Attended Utah Section meeting in Richfield (12 participants, scholarship winner, 2nd place high individual URME; attended technical sessions) and national meeting in Spokane (13 participants, 5th place plant ID; attended technical sessions).

2012–2013 – Membership: 19. Meetings: Range Club meetings, Club Officer meetings, College Student Council meetings. Socials: booth at College welcome back social, welcome back Club Bar-B-Que, end of year Club closing social. Fundraisers/Service: MIM riparian monitoring, Spike herbicide application, application for USU funding and meeting with student government, USU Day on the Quad, CNR Week booth with sale of Dutch oven potatoes. SRM contest practices and preparation (URME, Plant ID, Rangeland Cup, public speaking, undergraduate papers, club booth), preparation meetings for section and national meeting. Attended Utah Section meeting in Orem (19 participants, 1st place Plant ID, 1st place URME, 2nd and 3rd place plant ID individual, 1st and 3rd high individual URME; attended technical sessions) and national meeting in Oklahoma City (19 participants, 4th place plant ID, 1st place URME, 1st place high individual URME, 5th place combined individual, 2nd place Rangeland Cup, 1st place extemporaneous speaking, Trail Boss Award; attended technical sessions).

2013–2014 – Membership: 14. Meetings: Range Club meetings, Club Officers meetings, College Student Council meetings. Socials: booth at College welcome back social, welcome back Club Bar-B-Que, end of year Club closing social. Fundraisers/Service: MIM riparian monitoring, transplanting plants for ARS research projects, application for USU funding and meeting with student government, USU Day on the Quad, CNR Week booth with sale of Dutch oven potatoes. SRM contest practices and preparation (URME, Plant ID, Rangeland Cup), preparation meetings for section and national meeting. Attended Utah Section meeting in Cedar City (12 participants, award information not available; attended technical sessions) and national meeting in Orlando (14 participants, 4th place plant ID, 4th place high individual URME; attended technical sessions), post meeting evaluation.

Fundraisers/Service: MIM riparian monitoring, Spike herbicide application, fence building, application for USU funding and meeting with student government, USU Day on the Quad, QCNR Week booth with sale of Dutch oven potatoes. SRM contest practices and preparation (URME, Plant ID, Rangeland Cup, undergraduate papers), preparation meetings for section and national meeting. Attended Utah Section meeting in Logan (12 participants, 1st place plant ID, 1st place URME, 1st, 2nd, and 3rd high individual plant ID, 1st and 2nd high individual URME, 1st and 3rd high individuals combined; attended technical sessions) and national meeting in Sacramento (14 participants, 4th place plant ID, 1st high individual URME, 5th high individual combined score; attended technical sessions), post meeting evaluation.

2015–2016 – Membership: 12. Meetings: Range Club meetings, Club officer meetings, QCNR Student council meetings, QCNR student leadership retreat. Socials: booth at College welcome back social, welcome back Club Bar-B-Que, End of semester Club social. Fundraisers/Service: fence building, application for USU funding and meeting with student government, USU Day on the Quad, QCNR week booth and sale of Dutch oven potatoes. SRM contest practices and preparation (URME, Plant ID, undergraduate papers), preparation meetings for section and national meeting. Attended Utah Section meeting in Moab (9 participants, 1st place plant ID, 2nd place URME, 1st high individual score plant ID, 3rd place individual score URME, 2nd place individual and team combined score; attended technical sessions) and national meeting in Corpus Christi (12 participants, 8th place plant ID and 11th place URME; attended technical sessions).

2016–2017 – Membership: 14. Meetings: Range Club meetings, Club officer meetings, QCNR leadership retreat. Socials: booth at College welcome back social, welcome back Club Bar-B-Que, End of semester Club social, post-SRM meeting dinner. Fundraisers/Service: fence building, MIM riparian monitoring, application for USU funding and meeting with student government, USU Day on the Quad, QCNR week booth and sale of Dutch oven potatoes. SRM contest practices and preparation (URME, Plant ID, extemporaneous speaking), preparation meetings for section and national meeting. Attended Utah Section meeting in Moab (12 participants, scholarship winner, 2nd place plant ID, 1st place URME, 2nd high URME individual, 1st high combined team and 3rd high combined individual scores; attended technical sessions) and national meeting in St. George (14 participants, 6th place plant ID, 1st place URME, 1st place URME individual, 1st place individual combined score, 1st and 3rd place extemporaneous speaking, Trail Boss award; attended technical sessions).

Summary of Participation in Club, Utah Section, and Society Meetings

<table>
<thead>
<tr>
<th>School Year</th>
<th>Club Membership</th>
<th>Utah Section</th>
<th>Society</th>
</tr>
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<tbody>
<tr>
<td>2011–2012</td>
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<tr>
<td>2012–2013</td>
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<tr>
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<td>2014–2015</td>
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</tr>
<tr>
<td>2015–2016</td>
<td>12</td>
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</tr>
<tr>
<td>2016–2017</td>
<td>14</td>
<td>12</td>
<td>14</td>
</tr>
</tbody>
</table>

All of the Utah Section meetings mentioned above are the Section’s annual meeting which is held in November. Participation is high because of Plant ID and URME competition between Brigham Young University, Southern Utah University, Utah Valley University, and Utah State University. Participation in Section summer meetings and tours is less common and only occurs if a student’s employer encourages participation. The Range Club also participates and
competes in the Wyoming Section meeting from time to time. The Club’s Facebook page also shows more of the activities (https://www.facebook.com/USU-Range-Club-275949205781907/).

Club membership, activities, and participation has been fairly steady for the past several years ranging from 12 to 19. This was typical of the Club for many years before 2011 as well. Club membership and participation in Utah Section and Society meetings is generally the same. We have been concerned for some time that the Club’s activities are largely driven by preparation and participating in the Plant ID and the URME contests. Participants in Rangeland Cup, extemporaneous speaking, and undergraduate paper presentations are often members of either the plant ID or URME teams. Faculty have tried to help the club develop a more broad based program and the Club does go on some field trips, sponsors speakers at Club meetings, and has some social events. However, so far we have not been able to broaden the membership much beyond those that participate in the contests.

One non-contest activity that the club has participated in most years since 2004 is helping Jay Wilde, a southern Idaho rancher, and the U.S. Forest Service conduct the annual Multiple Indicator Monitoring (MIM) protocol on Jay’s FS allotment. Jay is very progressive and it is a treat for the students to interact with him. Following the monitoring, Jay takes the students and Forest Service personnel on a short tour of the ranch and then treats everyone to lunch. Some great discussion about “all things range” usually occurs during lunch.

5.3 Financial Support for Student Participation in Professional Society Meetings

The Range Club and members are responsible for covering all cost of social activities and for most of the costs associated with registration, travel, rooms, and meals at the Utah Section and Society meetings. There are five main mechanisms used by the USU Range Club to raise funds. Fundraising projects are identified, developed, and executed by the Range Club. Most of these projects are opportunistic and make up the majority of the Club’s activities. There are no “traditional” yearly fundraisers that are repeated each year. Total amount raised varies year to year depending on the need. Typical projects involve treating brush with Spike herbicide for a local rancher and helping with research projects (building fence and transplanting plants).

**University Funding** – The Range Club can petition the Utah State University Associated Students (student government) for funding to represent USU at professional meetings if participating with contests and/or presenting research. Average amount obtained is about $1,200 per year. Obtaining funding from USUAS requires the Club to submit a written request for funds and attend a meeting to defend the request.

**University Honors Funding** – For several years we have had several honors students participate in the Club. The number varies from year to year. The USU Honors Program provides funding to support a student’s participation in a professional meeting. Average amount is about $150 per student per year.

**College Funding** – The QCNR Dean’s Office and Wild Department. The Club can petition the Dean and Wild Department Head for additional 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 has averaged about $2,400 per year ($1,200 from the and $1,200 from the Dean).

**Self-Funding** – Students pay a portion of the cost to attend the Utah Section and Society meetings. Total amount required of each student varies from year to year. Important to note is
that every student that participates in the Society annual meeting is a paid student member of the SRM. The Club does not pay the SRM membership fees. We believe membership in the professional organization is the responsibility of the individual student.

5.4 How Information on Professional Development is Conveyed to Students
We emphasize the importance of belonging to a professional organization such as SRM in many ways, including the activities and events involving SRM mentioned in sections 5.1 and 5.2 above and in this section. Additional professional development information is imparted in a number of ways:

WILD 2000 – This is a first-year student orientation class taught for all majors in the Department and/or College (depending on semester). One long-standing requirement of this class is that every student must participate in two student organization activities (meeting, field trips, and socials). They are encouraged to engage with the student organization that relates to their major. This helps get students involved in their professional club as early as possible.

Student Advising – Every student in the QCNR has two advisors: (1) an Academic Advisor who works with the student on issues related to the University (http://qcnr.usu.edu/undergraduates/advising/advising) and (2) an assigned Faculty Advisor who works with the student on professional development, summer jobs, and careers. Peter Adler is currently the advisor for REM majors. Chris Call was the advisor until his retirement in 2013. Students are encouraged to meet with Peter at least once a semester.

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 who focus on their careers and create an atmosphere that challenges students to achieve more. Prior to retirement Chris Call was the primary Club advisor. Currently Fee Busby serves as the Club advisor as well as the Plant ID and URME teams coach.

Range Club Meetings – Club meetings provide opportunities to get students involved (including those attending because of the NR/WILD 2000 requirement). Some Club meetings are focused on logistics of travel to meetings, but others include invited speakers who talk about their work. The first meeting every fall semester is an open meeting and invitation to all students to participate in the Plant ID and URME teams.

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, MIM field trip and engagement with rancher and Forest Service personnel, fence building needed for research projects as a fundraiser, and transplanting grasses for a research project and fundraiser.

Participation in Section and National Meetings – At the Utah Section meeting, students are encouraged when not competing to attend the education program and banquet to interact with society members. At the Society meetings, students are strongly encouraged to participate in as many activities as possible and to maximize their networking opportunities. Particular emphasis is put on the job fair/career development workshops, Student Conclave, Tapping-the-Top, USU Alumni and Friends Reception, and the student awards presentation. They are also encouraged to attend symposia, technical sessions, and poster sessions.

Engagement 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.

**Involvement in Undergraduate Research** – Utah State encourages undergraduate students to become involved in undergraduate research. Faculty serve as mentors for students and guide them in the preparation of research proposals. Funds are provided at both the College and University level to cover basic costs of research projects. Students who conduct research present the results of their work at a variety of venues including at Utah Section and Society meetings. The 2017 Undergraduate Researcher of the Year for QCNR was from the Wild Department, and that person also was chosen for the University-wide Robins Award as the top Undergraduate Researcher of the Year at USU.

**Student Membership in SRM and Campus Academic Societies** – We are fairly certain that most REM students are SRM members. However, we have not been collecting this information. It may be available from the SRM’s records though. Similarly, we have not been collecting membership information for REM students in academic societies.

### 5.5 Seasonal or Permanent Job Announcements

In WILD 2000, Natural Resources Professional Orientation, every student must use web resources (such as the Texas A&M Department of Wildlife and Fisheries Job Board, USAJobs, and QCNR Jobs) to find a job of interest and develop a resume suitable for applying for the job. We emphasize the importance of summer work experience that relates to a student’s major. Some examples of our efforts to help students find meaningful work include:

**QCNR Academic Service Center** – The Academic Service Center for QCNR is the front-line resource for helping CNR students get the most out of their university experience. The Center posts internship and job opportunities, sends out emails announcing job opportunities ([http://qcnr.usu.edu](http://qcnr.usu.edu), click Undergraduates, then Internships and/or Jobs/Opportunities). The Academic Service Center also organizes one or more Job Fairs each year. Participants are the federal and state agencies and non-government organizations that have a long history of hiring natural resource students. The events are usually held early in the spring semester, about the time agencies have made decisions on what summer jobs they will offer. Students have an opportunity to talk with resource managers about work and career opportunities.

**QCNR Internships** – For the past three years the QCNR has partnered with the Forest Service; Utah Division of Wildlife Resources; Utah Forestry, Fire and State Lands; National Park Service; and various non-profits to provide summer internships for students. QCNR and the agencies each pay about half of the intern’s salary. The students apply through the college but interview with agency personnel who decide who to hire. Each year several of the internships have been rangeland management or closely related (vegetation sampling) positions.

**Wild Department Job Assistance** – Besides the college job assistance, individual faculty routinely receive seasonal and permanent job announcements for rangeland management specialists from agencies (Forest Service, Bureau of Land Management, Natural Resources Conservation Service, and Utah Division of Wildlife Resources) and natural resource organizations (Utah and other state Conservation Corps and Great Basin Institute), and various other universities seeking summer field technicians and/or graduate students. Rangeland related job notices are sent by e-mail to the Range Club to distribute to all students on their distribution list (which includes students from other majors as well as alumni) and by Peter Adler, the REM faculty advisor, to all current REM majors.
USU Career Services – USU Career Services holds several Job Fairs each year. Many of the federal and state agencies that hire REM majors and environmental consulting firms participate. Students are made aware of the Job Fair opportunities by e-mail and class announcements. The USU Career Services office also assists students in preparing their resumes.

SRM National Meeting – As discussed above, we encourage students to take advantage of employment activities at the SRM national meeting. These include a Job Fair and employment seminars. We have had several students obtain job offers while at the meeting.

5.6 Resources for Recruiting

Student recruiting is largely conducted by staff of the QCNR Academic Services Center and QCNR student ambassadors. Staff and/or students attend “College Night” programs scheduled by the USU Office of Admissions. The college will typically have a booth at these programs. We talk to prospective students, get their contact information, and follow-up with any who express an interest in the College. We also consider WILD 2000 to be an opportunity to recruit students into the REM program. This course is required of all majors in the college but students with an interest in natural resources from other programs across campus take the course as well. There also is a recruiting opportunity with students already enrolled in QCNR who know about Wildlife Ecology and Management but may not know about Rangeland Ecology and Management. This course allows us to explain “what range is” to roughly 200 students a year. In addition, students are recruited into QCNR majors through a USU course titled Career Exploration. Each semester the Lead Advisor presents information about majors in QCNR to all sections of the course.

As discussed above in section 2.8, a signed agreement with Snow College for a 3 + 1 transfer program should help us attract students that are interested in the REM program. Additional students may be recruited if we are able to extend the program to the Uintah Basin Branch campus in Vernal and the USU-Eastern campus in Price.

5.7 Internship Opportunities

See the internship information under section 5.5. Besides the official QCNR internships described there, every student who has a summer job can arrange with a faculty member and his or her employer to use that summer job as an internship opportunity. The Wild Department has an internship manual and forms available, or the student and the faculty advisor can come up with their own arrangements.

5.8 Research Opportunities

See the undergraduate research information in section 5.4 above. Undergraduate research opportunities are available through employment in faculty and graduate student research projects as student workers/technicians, both in the summer and the school year. They also can learn about research by doing an Honors Program thesis, and through the formal undergraduate research program. Advertisement of such opportunities is through social media, employment notices on bulletin boards, web pages, list serves, and through student-faculty interactions.

Many of the students working as technicians for faculty members and graduate students in the field and laboratory become interested in research and conduct their own research projects with faculty serving as mentors. These students may conduct their research using resources available to the mentor, or they may apply for the formal undergraduate research programs administered by the college and the USU Vice President for Research.
Grants of up to $1,000 are available, with $500 coming from the university or college and $500 from the sponsoring academic department. Students can also apply for up to $500 for travel to present their research findings at a professional meeting. Students in the USU Honors Program are required to complete a senior thesis project that reflects 3-6 credits of academic work, including research. Honors students in QCNR routinely work with a faculty member and conduct field research. Funding for research by an Honor’s student can come from the Honor’s Program, from the faculty mentor, and/or from the formal programs sponsored by the College and University.

Students who conduct undergraduate research publish their results by presenting a talk or a poster at research symposia on campus, having a poster selected for “Posters on the Hill” held every year at the Utah State Capitol, presenting at professional meetings such as the Undergraduate Papers session at the SRM meeting, and/or publishing in a scientific journal.

**ACCREDITATION STANDARD VI – ASSESSMENT OF COURSES/PROGRAM EFFECTIVENESS**

In this section we will show how we conduct assessments of the individual courses and the REM program overall to make sure that we are meeting our objectives, and we share the results of those assessments.

### 6.1 Curriculum Map

Figure 6.1 is a curriculum map for the REM major. Basic biology provides 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. Math also prepares a student for 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 as is done in the REM capstone course, WILD 4910.
6.2 Student Ratings of Effectiveness of Information Delivery for REM-Specific Courses

Each course taught at Utah State University is evaluated by the students enrolled in that course using a standardized university-wide on-line evaluation system called the IDEA Center. This function is overseen and directed by the USU Office of Analysis, Assessment, and Accreditation (see www.usu.edu/aaa/). The university changed to the IDEA Center system in Fall 2011. The IDEA Center Student Ratings of Instruction assess teaching effectiveness by focusing on learning and curricular objectives. Students score courses on their progress in achieving specific learning objectives identified by the instructor, on the instructor, and on the course overall, with the system adjusting for class size and other variables. They also are able to leave written, open-ended feedback (and many do). Regular training on the IDEA system is available for instructors. The data provided below (Table 6.1) include progress on learning objectives, teacher quality, and course quality. Scores are reported as Much Higher than similar courses in IDEA (MH), Higher (H), Similar (S), Lower (L), and Much Lower (ML). Everyone teaching these courses and the courses themselves received scores of at least “Similar” when compared to other courses in the IDEA system. Teachers at USU generally are considered to be doing an adequate job teaching if they are at least in the S range for teacher and course scores, but many are in the H range. Fewer, but excellent, teachers are in the MH range.
Table 6.1. Students’ average scores for REM-specific courses and instructors for the most recent year taught (2016-17 school year). The system compares our scores with average scores for similar courses in the IDEA system, with MH = a Much Higher score for our course, H = Higher, and S = Similar. None of our courses had scores that were lower or much lower than the IDEA average scores.

<table>
<thead>
<tr>
<th>REM Specific Courses</th>
<th>Number of Respondents (% Response)</th>
<th>Progress on Objectives</th>
<th>Overall Course Quality</th>
<th>Overall Instructor Quality</th>
<th>Summary Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>WILD 1800</td>
<td>35 (50%)</td>
<td>S-H*</td>
<td>S-H*</td>
<td>S-H*</td>
<td>S-H*</td>
</tr>
<tr>
<td>WILD 2400</td>
<td>30 (70%)</td>
<td>H</td>
<td>S</td>
<td>S</td>
<td>H</td>
</tr>
<tr>
<td>WILD 3800</td>
<td>56 (88%)</td>
<td>S</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>WILD 3850</td>
<td>46 (73%)</td>
<td>S-H*</td>
<td>S-H*</td>
<td>S-H*</td>
<td>S-H*</td>
</tr>
<tr>
<td>WILD 4000</td>
<td>21 (84%)</td>
<td>H</td>
<td>H</td>
<td>S</td>
<td>H</td>
</tr>
<tr>
<td>WILD 4750</td>
<td>26 (90%)</td>
<td>H</td>
<td>MH</td>
<td>H</td>
<td>H</td>
</tr>
<tr>
<td>WILD 4750 Online</td>
<td>18 (75%)</td>
<td>H</td>
<td>H</td>
<td>S</td>
<td>H</td>
</tr>
<tr>
<td>WILD 4910</td>
<td>8 (100%)</td>
<td>H</td>
<td>MH</td>
<td>MH</td>
<td>MH</td>
</tr>
</tbody>
</table>

* Course co-taught; instructors separately evaluated.

6.3. Graduating Senior Interview and Survey Summary

The department head meets informally with graduating seniors at an end-of-semester luncheon. During the luncheon, the students and department head discuss high and low points of their educational experiences at USU. In the past, students attending the luncheon filled out an anonymous survey to self-assess their accomplishment of the 26 historical learning objectives. We post results from these surveys on our Undergraduate Assessment web page at http://qcnr.usu.edu/wild/about/assessment/undergrad_assessment. This year’s results are available on our assessment web page and are included below, with students now self-assessing their accomplishment of our new, contemporary learning objectives. Graduating senior participation in the exit survey has been low in the past, ranging from 34% to 69%, but this year we increased the response rate to 75% (39 of 52) by putting it online, making participation seem more urgent, and by using repeated reminders. As was mentioned earlier, we are in the midst of implementing a new assessment system, where we will also rate students’ attainment of those same learning objectives independent of the students’ self assessments, using final grades or even grades on specific assignments in certain courses.

6.3.1 Interview Summary

Summarizing the conversation that goes on during the lunches is difficult, but it tends to be fairly useful to me. For the last two years in a row more than one student mentioned not feeling that they had learned to write adequately. Since then I have been looking into what might be the cause for them feeling that way, and what can be done about it. These discussions also sometimes bring to light a teacher who is not doing a good job. The department head usually is aware when there are such problems with our faculty, but it is helpful when things are not going well in a required class in another department and especially in another college.
6.3.2 Survey Results: Majors of Graduates and Job Information

Of the 39 who responded to the graduating senior survey, 21 (54%) graduated in WEMA, 8 (21%) in FEMA, 6 (15%) in CREC, and 4 (10%) in REM. Employment information is discussed in section 6.15 below.

6.3.3 Survey Results: Student Experiences

Table 6.2 shows how the graduating seniors felt about some of the services and experiences they had while at USU. They felt strongly that field and lab experiences and professors relating their research to their teaching are important aspects of college, and they felt good about the help they got from the college’s Academic Advising Center. They were somewhat ambivalent about the college’s role in helping them find jobs, and they generally disagreed that professors’ research got in the way of their teaching.

Table 6.2. Student agreement with statements about services and experiences they had while at USU. Numbers are the percentage that gave a particular rating for a given experience. Bold indicates the most selected rating. *N = 35 (7 in Fall 2016 and 28 in Spring 2017).*

<table>
<thead>
<tr>
<th>Experience</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course field trips and field exercises are important for professional development.</td>
<td>69%</td>
<td>25%</td>
<td>3%</td>
<td>0%</td>
<td>3%</td>
<td>35</td>
</tr>
<tr>
<td>I feel laboratories in courses are necessary to apply skills and knowledge learned in classrooms.</td>
<td>49%</td>
<td>33%</td>
<td>6%</td>
<td>6%</td>
<td>6%</td>
<td>35</td>
</tr>
<tr>
<td>I feel that little or no student advisement is needed.</td>
<td>6%</td>
<td>14%</td>
<td>14%</td>
<td>49%</td>
<td>17%</td>
<td>35</td>
</tr>
<tr>
<td>I feel the WILD Department has a responsibility to help its students find employment.</td>
<td>14%</td>
<td>51%</td>
<td>29%</td>
<td>6%</td>
<td>0%</td>
<td>35</td>
</tr>
<tr>
<td>I received adequate assistance from the WILD Dept and/or CNR in applying for and locating a job in my field.</td>
<td>20%</td>
<td>26%</td>
<td>37%</td>
<td>11%</td>
<td>6%</td>
<td>35</td>
</tr>
<tr>
<td>My faculty advisor was generally helpful in guiding my progress through the program.</td>
<td>31%</td>
<td>26%</td>
<td>23%</td>
<td>17%</td>
<td>3%</td>
<td>35</td>
</tr>
<tr>
<td>Professors heavily involved in research tend to neglect their teaching duties.</td>
<td>9%</td>
<td>6%</td>
<td>31%</td>
<td>40%</td>
<td>14%</td>
<td>35</td>
</tr>
<tr>
<td>The CNR Academic Advising Center was generally helpful in guiding my progress through the program.</td>
<td>57%</td>
<td>34%</td>
<td>6%</td>
<td>3%</td>
<td>0%</td>
<td>35</td>
</tr>
<tr>
<td>The WILD Department did an adequate job of informing students about job prospects in my field.</td>
<td>34%</td>
<td>43%</td>
<td>20%</td>
<td>3%</td>
<td>0%</td>
<td>35</td>
</tr>
<tr>
<td>The best teachers illustrate classroom principles with examples from their research.</td>
<td>54%</td>
<td>37%</td>
<td>6%</td>
<td>3%</td>
<td>0%</td>
<td>35</td>
</tr>
<tr>
<td>There was too much repetition of course content in my classes.</td>
<td>6%</td>
<td>20%</td>
<td>23%</td>
<td>45%</td>
<td>6%</td>
<td>35</td>
</tr>
</tbody>
</table>
6.3.4 Survey Results: Student Ratings of Attainment of Learning Objectives

Table 6.3 shows how the graduating seniors (all majors combined and REM only in parentheses) felt about their attainment of the five contemporary learning objectives detailed on our assessment page. Students felt like they had attained all five learning objectives fairly well, as shown by no ratings below 5 and mean ratings of 8.1 to 8.7 on a scale of 0 to 10. Judging by mean ratings, they felt that they understood biology and ecology (#1) and social context (#3) best, ability to apply and synthesize what they had learned to management (#5) was lower but still fairly high, and ability to communicate (#4) was next, followed closely by competence in collecting and analyzing data (#2).

Table 6.3. Students’ ratings of how successful they were in attaining the following learning objectives during their time at USU (shown as percentage giving a particular rating within an objective). Percentages in parentheses are for REM majors. Answers 0-4 are not shown because there were no responses for those choices. The scale went from 0–Not at all successful to 10–Completely successful. \( N = 35 \) (7 in Fall 2016 and 28 in Spring 2017; 4 were in REM).

<table>
<thead>
<tr>
<th>Learning Objectives – Short Descriptions</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Mean (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Knowledge of biology and ecology in relation to your major.</td>
<td>0%</td>
<td>3% (25%)</td>
<td>23%</td>
<td>20% (25%)</td>
<td>11% (25%)</td>
<td>43% (25%)</td>
<td>8.7 (35)</td>
</tr>
<tr>
<td>2. Competence in collecting and analyzing data.</td>
<td>0%</td>
<td>17% (25%)</td>
<td>17% (25%)</td>
<td>20% (50%)</td>
<td>32%</td>
<td>14%</td>
<td>8.1 (35)</td>
</tr>
<tr>
<td>3. Understanding of the social context in which natural resource management is conducted.</td>
<td>0%</td>
<td>0%</td>
<td>23% (25%)</td>
<td>23% (50%)</td>
<td>20%</td>
<td>34% (25%)</td>
<td>8.7 (35)</td>
</tr>
<tr>
<td>4. Ability to communicate.</td>
<td>3%</td>
<td>6% (25%)</td>
<td>23% (25%)</td>
<td>25% (25%)</td>
<td>20%</td>
<td>23% (25%)</td>
<td>8.2 (35)</td>
</tr>
<tr>
<td>5. Understanding of and ability to apply what is learned in your major to manage, conserve, and restore natural resources.</td>
<td>3%</td>
<td>3%</td>
<td>11% (25%)</td>
<td>29% (25%)</td>
<td>31% (25%)</td>
<td>23% (25%)</td>
<td>8.5 (35)</td>
</tr>
</tbody>
</table>

6.4 Surveys of Students Throughout Their Degree Program, Alumni, and Employers of Alumni

As mentioned earlier, USU’s AAA office conducted a Freshman/Sophomore survey in 2014-15 (available at http://www.usu.edu/aaa/20142015fresh_soph_survey.cfm). The results show some of the difficulties we face when dealing with such a small student population, in that of the 33 Wildland Resources students who responded, only one was an REM major. Therefore this description will be for all 33 Wild majors surveyed. Gender was half male and half female, 94% were white, 94% were single, a third were from outside of Utah, a third did not work, and surprisingly, 21% intended to eventually get a PhD. More than a third (36%) had already worked with a faculty member on a research project outside of class. Almost 70% said that their advisor was the most important source for information about their academic program, and an identical proportion met with their advisor once a semester. Two-thirds felt strongly that their advisor gave them good advice and cared about them, and 85% were satisfied with USU’s
advising system. It seems fairly certain though, based on our observations, that many of these freshmen and sophomores did not completely understand whether they were meeting with an advisor in the QCNR Academic Advising Center or their faculty academic advisor. Nearly all (85 to 91%) of these students felt that the requirements for their major were clear and reasonable, and that faculty were helpful and were good teachers.

In addition to the USU’s AAA office survey, all QCNR students are sent a survey after each advising appointment with the Lead Academic Advisor in the QCNR Academic Service Center. The survey information is compiled monthly by University Advising and reviewed by the Vice Provost’s office. QCNR’s monthly survey’s consistently show high student satisfaction with their advising experience. Using the survey engine, students are also able to report any advising concerns directly to the QCNR Associate Dean and University Advising.

We also survey students at all stages of their degree program through the IDEA course ratings they all have the opportunity to provide. Though this does not exactly match what is described in the accreditation handbook, it comes close in that it includes the opportunity for students to provide written feedback. This feedback is shared with the course instructor and the department head. It usually is very frank and direct, and it has great effect on the instructor. We also get feedback from undergraduates early in their programs by interviews that take place during the WILD 2000, Natural Resources Professional Orientation course. Other than that, we have so few REM students that we feel we are well aware of their experiences and challenges. We interact with alumni of our REM program regularly at local and national SRM and other meetings. What we learn from them influences us when we consider changes in the REM program. Alumni also are surveyed by the university regularly, mostly regarding employment (see https://qcnr.usu.edu/wild/about/assessment/files/AnnualReport2014-2015.pdf). For more on employment see section 6.13 below. We interact regularly with leaders in the agencies and businesses that our alumni work for at local and national SRM and other meetings. As with the alumni themselves, what we learn from these employers influences us when we consider changes in the REM program.

6.5 Mechanisms of Integrating Feedback from Assessment to Program Operations

Analyses of program assessment outcomes data are shared with faculty annually at our department retreat, and discussed during subsequent departmental meetings. Based on these analyses and discussions, suggested changes to courses, curricula and programs are identified. To a large degree, the details of any such changes are handled by the departmental Undergraduate Curriculum Committee. Changes made as a result of trends in the program assessment outcomes data are then documented and highlighted in the Data-Based Decisions section of our Assessment web page at https://qcnr.usu.edu/wild/about/assessment/undergrad_assessment.

6.6 Description of Student Recruitment Activities

Undergraduate recruitment is described in section V, and especially in section 5.6.

6.7 Description of Academic Standards for Admission, Retention, and Graduation from the REM Program

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. Students must maintain a 2.0
minimum USU GPA in order to remain in good standing at the university. Students in the REM major must have a minimum 2.5 GPA for all courses taught by the College of Natural Resources (including electives taught by QCNR). In addition, students must earn a C- or better in all WILD-prefix courses used to meet the requirements for the REM 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).

6.8 Summary of Patterns of Student Progress Through the Program

Figure 6.2 shows the average length of time it is has taken for students in the REM program and the Wild Department’s other majors (and the overall average) to graduate for the last nine years. For the most part, the averages for the four majors are not all that different and are not too surprising. They do jump around a bit from year to year. The REM numbers do not differ appreciably from the other majors, other than the high figure of almost 14 in 2015-16. The departmental average of about 9 terms or 4-1/2 years seems about right, or maybe even a little faster than we would have expected. It could be kept lower by the fact that we get quite a few transfer students. However, a student’s time elsewhere is figured into these numbers if USU has that information. Transfer credit has to be the reason for the very low figure (5 terms) for FEMA in 2012-13.

Figure 6.2. Average terms (semesters) to degree for the Wild Department’s four majors and overall. Years to degree would be roughly half the plotted figures.
For the last ten years 71% of our undergraduate students entered the university directly into a Wild major and 29% were transfers. The largest source of transfer students into our majors was unknown (18.6%), with the rest coming from majors all over the university, and the most coming from the Animal, Dairy and Vet Sciences (ADVS) Department (2.7%; most of these would likely go into REM) and from Biology (1.8%). We lose fewer students to transferring than we gain, with only 10.9% transferring out of our majors. Again, they transfer out to many majors all over the university, but most of those go to the Environment and Society Department in QCNR (4.6%), and also to Biology and to ADVS, the same departments that they are transferring in from. We have been aware for some time that students in Wild majors who end up not able to get past our heavier math and science requirements often leave us for another major, and that the less science and math intensive majors in ENVS draw many of them.

6.9 Summary of Analyses of Student Academic Records

As with the time to graduation, the average GPA of graduating students by major varies and jumps around quite a bit (Figure 6.3). Figures for 2014-15 and 2015-16 are fairly high (~3.7) for the CREC major and fairly low (~2.8) for the REM major. Figure 6.3 also shows average GPAs for the entire ENVS and WATS Departments in the QCNR). WATS GPAs tend to be a little lower than the others, but the differences aren’t particularly meaningful.

Figure 6.3. Average GPA upon graduation for the last nine years for the four Wild Department majors and for the Department’s graduates overall, as well as the overall GPA for BS graduates of QCNR’s WATS and ENVS departments.
6.10 Relative Importance of the Sources of Ideas for Progress in the REM Program

Faculty are the leaders in maintaining the quality and cohesiveness of the REM program, though with the Commons Curriculum the focus is more on keeping all of the majors moving forward than just the REM major. The REM Program Leader gets the REM faculty together occasionally. The department head is more focused on all of the majors, but gets involved when there is a need for some more centralized action. Students have a big role in keeping quality up through the IDEA evaluations they complete for every course they take. Some faculty think that these evaluations do not have much effect, but they do, both on assessment of faculty for raises and promotions, but also because the faculty care about what the students think and therefore they pay attention. Alumni’s effect on the program fades as they are away from it, but immediately after graduation they have an effect, and that effect lasts to the extent they stay involved. Employers have great impact on the REM program because we know what their standards and requirements are and we change the curriculum to meet their needs. In some cases certain faculty also interact with employers by participation on committees that attempt to change or affect the employers’ standards, especially at the federal level.

6.11 Total Current Enrollment by Class in the REM Program

Average enrollment in the REM program in 2016-17 was the lowest of any major in the department at 33, followed closely by FEMA at 42 (Figure 6.4). However, only 27 REM students enrolled for courses in the spring of 2017. The largest enrollment major in the department by far for the entire time is in WEMA, at nearly 200 in 2016-17. This disparity in numbers can make it challenging to teach what the WEMA majors need while still paying attention to the needs of the other, smaller programs. The total undergraduate enrollment in the department was 300 in 2016-17, the largest in the QCNR.

Of the 300 Wild undergraduate students we had in 2016-17, 21% were freshmen, 21% were sophomores, 24% were juniors, and 33% were seniors. The larger proportion of seniors may be because of the transfer students we get, who are farther along in their degrees, and also because many students take more courses than they are required to. Therefore, they end up spending a fair amount of time at the senior level based on credit hours but still have to take more credits to finish degree requirements. This disparity was extreme in the REM program, where 7% of REM majors (2) were freshmen in spring 2017, 15% (4) were sophomores, 15% (4) were juniors, and 63% (17) were seniors. This may indicate continued low future enrollments for the REM program if many of those seniors graduate in 2018.
Figure 6.4. WILD undergraduate and certain graduate enrollments by year and major from 2007-08 to 2016-17.

6.12 Number of REM Graduates

As with enrollments, the REM program had the lowest number of graduates (4) in the most recent year shown (Figure 6.5), but FEMA had the lowest total graduates over the nine year period. WEMA always had the highest number of graduates. The total number of graduates receiving a BS from a Wild major in the nine years that are included in Figure 6.5 is 306, with 180 in WEMA, 53 in CREC, 48 in REM, and 25 in FEMA. The latest year had the most graduates over all, with 53 students graduating that year.
6.13 Employment & Continuing Education of Graduates

USU Career Services conducted an employment and continuing education telephone survey across graduates from all USU colleges and departments in 2011-12, 2012-13, 2013-14, and 2014-15. We feel that these or similar data are very important because they provide an indication of how well we are recruiting and preparing our students to become working natural resource professionals. We are exploring how frequently these university-wide surveys will be conducted in the future, and also to find out what other information is being gathered (if any) and how we can access it. Data from these surveys, and analyses of such data, are posted on our Assessment page (at https://qcnr.usu.edu/wild/about/assessment/undergrad_assessment) so that we can assess ways to alter our recruitment strategies and modification of the degree programs themselves in order to keep up with employment and continuing education demands. For Wildland Resources alumni surveyed in 2014-15, 95.7% were employed, and their salaries averaged $33K if they had a BS and $58K if they had an MS. Range graduates had jobs as an environmental specialist for a private company and as range technicians for an NGO and for the BLM. Half resided in Utah and half elsewhere.

Figure 6.6 summarizes responses when students were asked if they had a job to go to after graduating. Nearly all had a relevant job to go to when they graduate, or they were planning on going to graduate school. Six said they had a job with an “other” natural resources agency, 5 with the U.S. Forest Service, 4 Utah Division of Wildlife Resources, 3 university/college, 2 each BLM and a non-NR organization, 1 private ranch or other land manager, and 1 with state
forestry in Utah. The greatest numbers without or with temporary jobs were in the WEMA major. All four REM graduates had full time, temporary jobs that were related to their major.

**Figure 6.6.** Numbers of graduating seniors indicating whether they had a job to go to when they graduated, and the nature of the job. FT = full time, PT = part time, P = permanent, T = temporary, R = related to degree, Unrel = unrelated. Part-time, permanent, related is not included because no one chose that answer. WEMA = Wildlife Ecology and Management, FEMA = Forest Ecology and Management, REM = Rangeland Ecology and Management, CREC = Conservation and Restoration Ecology. N = 39 (8 in Fall 2016 and 31 in Spring 2017).

### 6.14 Information on Non-Majors Taking REM Courses

We have little information on non-majors taking REM courses. A fair number of agriculture students take our WILD 4000 (Principles of Rangeland Management) and WILD 4910 (Assessment and Synthesis in Natural Resource Science) courses. All of the remaining REM-specific courses are mostly taken by non-REM majors though, because they are a part of our Commons Curriculum, and therefore all of our undergraduates have to take them.
ACCREDITATION STANDARD VII – UNIVERSITY CREDENTIALS AND SUPPORT

7.1 Documentation that Utah State University is Accredited by its Regional Accrediting Agency

Documentation that USU is accepted by its regional accrediting agency is presented here as a screen capture of a partial list of universities and colleges accredited by the Northwest Commission on Colleges and Universities (NWCCU). NWCCU is an independent, non-profit membership organization recognized by the U.S. Department of Education as the regional authority on educational quality and institutional effectiveness of higher education institutions in the northwest region. The Commission oversees regional accreditation for 162 institutions. Its decision-making body consists of up to twenty-six Commissioners who represent the public and the diversity of higher education institutions within the Northwest region.

Figure 7.1. Screen capture from the website of the NWCCU on February 13, 2017 showing USU as accredited for Associate, Baccalaureate, Masters, and Doctorate programs through Spring 2018; at http://www.nwccu.org/Directory%20of%20Inst/State%20Map/Utah/Utah.htm.
7.2 Institutional Commitment/Capacity for a Quality Education Program

7.2.1 Library Services

The Quinney College of Natural Resources (CNR) is fortunate to receive a great deal of financial and other support from the Quinney Foundation. They helped us add onto our building with the construction of the Quinney Library a number of years ago, which gives us a space and a staff person who pays particular attention to maintaining collections of materials pertaining to natural resources and the environment, especially digital collections. Between the Quinney Library and USU’s Merrill-Cazier Library there is an extensive collection of reference books and journals relevant to REM (http://library.usu.edu/).

7.2.2 Classroom, Laboratory, and Field Instruction Facilities

The availability of classroom and teaching laboratory facilities to the Department of Wildland Resources is adequate but barely so. We have a classroom that is dedicated to our needs and is controlled and scheduled by us. We renovated it a few years ago to increase its capacity, which now stands at 60. The capacity of that classroom and the QCNR computer labs has at times required that some classes 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. At either end of that classroom we have a herbarium and an animal sample collection for study and teaching. That classroom also has very up-to-date projection equipment. Quinney Foundation funding allows us to keep up with technological needs in our QCNR computer labs, but often the rooms are just too full to allow any more students. However, a new 60-seat computer laboratory for GIS and other computer intensive courses will be available when the new Life Sciences Building is complete, which should be in about a year. There are very good facilities and support available to us for broadcasting courses to branch campuses using IVC technology.

Field instruction facilities available for REM courses include the Green Canyon research facility on the outskirts of Logan, the Wasatch-Cache National Forest right outside our door, the Daniel Experimental Forest (about 30 km from campus), and the Tintic Research Station in central Utah. Our range plants course is conducted almost exclusively in the field around campus, on nearby public lands, and through overnight field trips in central and southern Utah. The REM capstone course, WILD 4910, for the past several years has been doing a project focused on management and improvement of a private ranch in northwest Utah, which gets students a chance to get out and work in the real world.

7.2.3 Hiring and Retention of Core REM Faculty

Hiring and retention of faculty requires that remuneration packages are competitive with national norms, and the evidence indicates that salaries in the Department of Wildland Resources are below national averages for full professors by about $17,955, for associate professors by $9,695, and for assistant professors by $4,985 (Table 7.1). Wild Department salaries also are lower than average salaries at USU overall and at the University of Utah. On the other hand, USU does offer a particularly good benefits package, which is currently worth 43% of the annual salary. Costs of living (especially housing) also are relatively low in Logan. Therefore, hiring and retention of faculty has generally not been compromised by low pay, though recently we had two faculty (a couple) leave because of a particularly attractive offer from another state university. The biggest challenges to recruiting and retaining outstanding faculty members are mainly related to the small size of Logan and the low diversity of economic enterprises in Logan,
which can make it difficult to find suitable jobs for faculty partners. USU has a dual career assistance policy that eases the interviewing and hiring of partners when a job that they qualify for is available, but it is more difficult to get funding to create jobs for partners.

Table 7.1. Academic year (9 month) salaries of core faculty in the Department of Wildland Resources (as of June 2017) compared with national values for 4-year public institutions, the University of Utah, and USU overall as provided by the Chronicle of Higher Education’s faculty salary survey for 2015-16.

<table>
<thead>
<tr>
<th>Rank</th>
<th>USU, Wildland Resources</th>
<th>National</th>
<th>UofU</th>
<th>USU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average</td>
<td>Highest</td>
<td>Lowest</td>
<td>N</td>
</tr>
<tr>
<td>Professor</td>
<td>$95,783</td>
<td>$116,660</td>
<td>$76,370</td>
<td>11</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>$72,274</td>
<td>$114,358</td>
<td>$45,936</td>
<td>5</td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>$65,261</td>
<td>$75,494</td>
<td>$60,417</td>
<td>10</td>
</tr>
</tbody>
</table>

7.2.4 Use of Tenure and Promotion Process That Supports Excellence in Education

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. The committee membership stays the same throughout the pre-tenure period.

7.2.5 Office Space

Office space is tight but currently adequate in the QCNR. Offices in the NR building are fairly nice and good sized, while offices in the Biology and Natural Resources (BNR) building are somewhat dreary, though kept up well considering the age of the building. QCNR has about half of the space in the BNR building, and currently that building is high on the USU priority list for a major renovation. The Quinney Foundation and several other donors have committed funding for the renovation, though state funding will have to pay most of the cost. 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.

7.2.6 Support Staff

Permanent support staff in the Department of Wildland Resources consist of two very good Administrative Assistants Michele Guy and Marsha Bailey. Several faculty pool resources to
employ Rae Ann Hart as a staff assistant to work on their programs, while various faculty members employ assistants and technicians on their projects depending on grant funding.