

Faculty Development Plan
Department of Wildlife and Wildland
Conservation Name, PhD
2016

Teaching

Self-assessment of strengths, skills and competencies

I am blessed to have the opportunity to be at BYU and work with undergraduate and graduate students to help them achieve their professional goals. One of my greatest strengths in the classroom is my ability to draw on my previous experiences and current research to provide the students with exciting and informative lectures. I find that students enjoy it when I relate principles I am teaching in the classroom with experiences I have had in my current research at BYU or previous research with the USDA-Agricultural Research Service. I also enjoy sharing experiences from my youth growing up on a ranch and sharing current experiences from my family's ranch and other ranches.

I feel that most of the students that I teach in the Department of Plant and Wildlife Sciences have a strong love of the outdoors and where possible would prefer to be outside. Last semester I designed various outdoor lectures and activities on campus for the students to participate in. Most outdoor lectures involved stations that that students would move through and conduct hands on experiments to learn various principles. This teaching approach was challenging as I had to spend a significant amount of time collecting materials from the field and setting up demonstrations. However, these outdoor lectures were well worth the time as it energized the students, provided them with practical training, and prompted them to ask thoughtful questions.

Being able to teach the gospel during my lectures is one of my favorite parts of my occupation. This last semester I challenged my students to relate how the natural environment can help us understand the gospel of Jesus Christ. One or two presentations were given at the start of each class and were focused on lecture material that had previously been shared. I was amazed with the analogies that the students provided. These presentations from the students invited the spirit into the class, strengthened our testimonies, and gave us a better appreciation for our Heavenly Fathers creations.

Areas of Improvement and Goals

- As I navigate this new experience as a professor I am well aware of the high standards BYU has for me as a professor and the students. One of my greatest desires is that students are able to take what they learn in the classroom and apply it in the “real world.” I would like to interview professionals in the disciplines I am teaching to make sure my courses provide the students I teach with the educational requirements needed to be successful in their future careers.
- In my teaching field it is important that students are competent in applied mathematics. In my last review for PWS-215 there was a mix of opinion from the students in my ability to teach them how to perform various calculations associated with the course. Most felt I focused on the subject until all the students understood the concepts but unfortunately there was also a few who felt that I did not give enough explanation. I would like to design homework assignments and laboratory exercises that will provide the students with the computational skills that will allow them to be leaders in their future professions.
- My mentor has suggested that I break my lectures into digestible sections for each lecture period. To address this suggestion, I will give an overview to the class at the start of each lecture, outlining the information that we will learn for the day. I will also give them a list of questions at the start of the lecture that the students can answer during the lecture to better engage them and help them focus on the key points of the class.
- As a new professor I need to spend a significant amount of time preparing quality lectures. For courses that I have not previously taught I will start preparing those lectures the semester prior to teaching to assist in having a balanced life.
- When interviewing for my position at BYU, I was admonished by Elder Teh that the gospel should be taught with secular learning. I was deeply impressed by this counsel, my goal is to start each lecture with a prayer and as prompted by the spirit teach gospel principles within my course lectures. For each of my classes, I will also have at least one class essay where the students relate how the gospel of Jesus Christ can help them be better stewards and professionals in their careers.
- I feel it is important that my class be tailored to meet the individual needs of the students. I would like to do mid-course evaluations and after each test invite the class to share with me topics they enjoyed and areas where I can improve. I will attend the temple frequently for guidance in teaching.

Teaching Coursework Schedule

It is proposed that I will teach the following courses:

1. PWS 215: Principles of Range Management (3 credits; winter)
2. PWS 416: Rangeland Vegetation Improvements (3 credits; fall)
3. PWS 411: Watershed Management (3 credits; winter even years)
4. PWS 553: Restoration Ecology (2 credits; winter odd years)

Last winter I had the opportunity to teach PWS 215 and will be teaching PWS 416 this fall. Currently Dr. Bruce Roundy is teaching PWS 411 and PWS 553. It is anticipated that within the next 1-3 years I will teach these courses when Dr. Roundy retires.

Scholarship

Self-assessment of strengths, skills and competencies

The last six years I have created an original and successful research program with innovative techniques to improve rangeland reseeding success. My work has been recognized and noted on a national and international scale. Creativity and originality are two of the greatest strengths I bring to Brigham Young University. In my research program, I am bridging the gap between ecological theory and rangeland restoration by establishing a high impact research program that focuses on: 1) understanding the limiting factors controlling rangeland-seeding success, and 2) developing patentable seed enhancement technologies that are engineered to overcome specific biotic and abiotic factors that have been identified to cause mortality.

My research is recognized as a scientific authority and leader in the rangeland and restoration ecology field, having published 4 patent applications (containing 7 unique technologies), 22 peer-reviewed publications. I have developed a timely and impactful research program that is recognized not only for providing solutions for restoring rangelands in the western US, but also for having global ramifications in various agricultural systems with limited irrigation and/or rainfall. This international impact is evidenced by invitations to make keynote and scientific presentations (Brazil 2013, Austria 2014, Australia 2013, 2015), and field trials outside North America (Portugal, Holland, Italy). My research extends beyond academia with business engagement accelerating the advancement of new innovative seed technologies. During my research career, I have secured over \$2 million from competitive grants and private industry. These investments demonstrate confidence by fellow scientists and stakeholders that the scientific studies and restoration approaches I am conducting provide solutions to real world problems of critical importance.

Areas of Improvement and Goals

- I feel it is important that the knowledge and technologies gained from my laboratory should be transferable and beneficial. I will work with undergraduate and graduate students to publish 2-3 peer reviewed publications a year and present 2-3 abstracts at professional meetings.
- My research requires a unique set of laboratory equipment and facilities. I will work with BYU architects to design, order equipment, and construct a state-of-the-art-seed enhancement laboratory that is dedicated to providing solutions for improving rangeland-seeding success.
- To achieve my research goals it will require a significant amount of undergraduate and graduate support. To allow me to hire these students I will obtain a minimum of \$100,000 a year of external funding.
- It is important for me and the mission of BYU that my research has an impact on my fellowman. To stay current on topics in my field I will attend at least one professional conference a year and present with my students. I will also attend the temple frequently to pray about the direction of my research.

Citizenship

Self-assessment of strengths, skills and competencies

I enjoy the comradery among the faculty at BYU, which makes it enjoyable to attend department and college meetings, devotionals, forums and convocations. I also enjoy and seek to collaborate with other professors on research projects as well as assisting their graduate students when needed. I am an active member for the Society for Range Management and enjoy assisting and participating in their annual meetings. My unique skill sets allows me to peer review several manuscript a year for various national and international journals.

Areas of Improvement and Goals

- I feel that it is important to serve on committees and be involved in the department and college. As requested by my chair, I will serve on the Department Scholarship Committee.
- Each year BYU competes in rangeland competitions at the Society for Range Management National meetings. These competitions help showcase BYU and their

students and enhances the student's resumes when they apply to graduate school or professional positions. I will coach the students to help them prepare for the Undergraduate Range Management Examination and along with Dr. Steven Petersen take the students to the national meetings.

- Building a rapport with students is very important. When possible I would like to attend club activities and other events that are ran by the students or the department.

Course Development Project Grant Proposal

Department of Wildlife and Wildland

Conservation Name, PhD

2016

Students in the Department of Plant and Wildlife Sciences have a strong love of the outdoors and where possible prefer to be outside. I am working to design various outdoor lectures and activities on campus for the students to participate in. Most outdoor lectures involve stations that that students move through and conduct hands on experiments to learn various ecological principles. While this teaching approach is challenging, I find it to be well worth the time as it energizes the students, provides them with practical training, and prompts them to ask thoughtful questions.

Rangeland vegetation monitoring is an important skillset that is taught in my Rangeland Ecology and Management class. To improve students monitoring skills I would like to purchase similar monitoring equipment as our used by professionals in the field. Land EKG sales a comprehensive monitoring kit that has an assembly of field tools that would be helpful for my students to learn how to use while I am conducting my outdoor field activities. I am requesting that \$300 be provided through the course development project grant to help me purchase a monitoring kit.

Website for purchase of monitoring kits: <http://www.landekg.com/monitoring-kits/>

PWS 416 Rangeland Vegetation Improvement Fall 2016

Instructor: Name, 5048 LSB, 801-422-2458, Name@byu.edu Office hours: MWF
11:00 AM-12:00 PM

Teaching Assistant: Natalie Bostwick, LSB 5022, nattibo10@gmail.com

TA office hours: M 12:00-1:50 PM, F 11:00-11:50 AM and by appointment

Lecture: 8:00 - 8:50 am TTH C255 ESC

Lab: 2:00 - 4:50 pm M C247 ESC except **Field Trips** meet at parking lot across from Motor Pool. This is located just west of the campus gas station on E 900 N (the street that runs just north of the LSB).

Learning Outcomes

1. Understand how historical and successional history of the land influences its current condition.
2. Obtain knowledge and experience on how to implement vegetation treatments using biological, chemical, and mechanical methods, and controlled burning (i.e. fire).
3. Apply and plan revegetation, fire rehabilitation, and restoration practices to rangelands.
4. Integrate plant control, revegetation and other restoration practices to meet land management goals.
5. Become familiar with approaches, practices, and outcomes of rangeland vegetation improvements in actual field situations.
6. Know how to work with others to develop management actions to address resource objectives.

These learning outcomes fulfill requirements for the Wildlife and Wildlands Conservation BS, MS, and PhD degrees by applying ecology, tools, techniques, analytical thought, scientific method, and cooperative working relationships to management.

I. Texts

- A. Reserve: On reserve in library: Password ROU416
- B. Posted on BYU Learning Suite (BYU LS)

II. Grading and Exams

- A. Grade distribution

A 95-100	B 84-86	C 74-76	D 64-66
A- 90-94	B- 80-83	C- 70-73	D- 60-63
B+ 87-89	C+ 77-79	D+ 67-69	

- B. Point breakdown

Lab reports approx. 11 @ 20 points each	220
In-class study questions 10 @ 10 points each	100
Two mid-semester exams	200
Final	<u>150</u>
Total Points	<u>770</u>

III. Field trips/Labs

Students will have the opportunity to spend time learning in the field and interacting with land managers. In rare instances some field trips may require students be out in the field past 5:00 PM. Field trip/lab reports/exercises/assignments are due on Tuesday, 2 weeks after the Monday they are held or passed out. All labs and field trips are required. Your 2 lowest scores or absences will be dropped. You must write the reports from your own notes, so if you miss the trip, you will get a zero for the report for that trip. There are two exceptions to this rule: you can miss and use someone else's notes to write up reports for the Great Basin and Ephraim trips as these trips will happen outside of the scheduled teaching period.

IV. In class study questions or homework assignments

I will give these questions in class or lab and tell you the due date. They will not be posted on Learning Suite. You will write down the questions in class and bring your answers to class when due. We will discuss answers and you will give yourself a preliminary grade that we will review. These questions will be from class discussions and will help you see how I will ask questions for the exams. We will drop your two lowest scores or absences.

V. Tentative Course Outline, Reading Assignments and Field trips, and Lab Schedule

Aug	29	M	Introduction/historical perspective (C247 ESC)
	30	T	Introduction/ historical perspective (C255 ESC)
Sep	1	Th	Introduction (C255 ESC)

READ: 1. Monsen, Steven B., Richard Stevens, and Nancy L. Shaw. 2004. Restoring western ranges and wildlands. Vol. 1. USDA Forest Service General Technical Report RMRS-GTR-136-Vol.1. Fort Collins, CO. Chapters 1-5, pages 1-32. Download pdf file from BYU LS.

2. Briske, D.D., B. T. Bestelmeyer, T.K. Stringham, and P.L. Shaver. 2008. Recommendations for development of resilience-based state-and-transition models. Rangeland Ecology and Management 61:359-367. Download from BYU LS.

Sep	5	M	Labor day Holiday
	6	T	Policy/Funding/Planning
	8	Th	Ecology of vegetation change; planning vegetation treatments

READ: 1. Review: Tausch, R.J., R. F. Miller, B. A. Roundy, and J. C. Chambers. 2009. Piñon and juniper field guide: Asking the right questions to select appropriate management actions. Pages 1-70. US Geological Survey Circular 1335. Reston, Virginia. Download pdf from BYU LS.

2. S. R. Archer, K.W. Davies, T.E. Fulbright, K.C. McDaniel, B.P. Wilcox, and K.I. Predick. 2011. Brush management as a rangeland conservation strategy: A critical evaluation. P 105-170 In: D.D. Briske, editor. Conservation benefits of rangeland practices. USDA NRCS. Link on BYU LS: <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/?&cid=stelprdb1045811>.
3. Sheley, R., E. Vasquez, J. James, and B. Smith. 2010. Applying ecologically-based invasive plant management. USDA, Agricultural Research Service. www.EBIPM.org. Download from BYU LS.
4. Sheley, R. L., J.J. James, M.J. Rinella, D. Blumentahl, and J.M. DiTomaso. 2011. Invasive plant management on anticipated conservation benefits: a scientific assessment. P. 291-336 In: D.D. Briske, editor. Conservation benefits of rangeland practices. USDA NRCS. Link on BYU LS: <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/?&cid=stelprdb1045811>.

Sept 12 M No class; see Friday, Sat field trip scheduled below
 13 T Ecology of vegetation change; planning vegetation treatments
 15 Th Mechanical plant control
 16, 17 Fri, Sat Field trip to Great Basin National Park. Meet am on Friday at Parking Lot across from Motorpool.

READ:

1. Review-controlling plants mechanically, Revegetation Equipment Catalog. <http://reveg-catalog.tamu.edu/index.htm>
2. Fulbright, T.E. and F.S. Guthery. 1996. Mechanical manipulation of plants. p. 339-354 In: P.R. Krausman, (ed.). Rangeland wildlife. Society for Range Management, Denver, CO. (reserve).
3. Monsen, Steven B. and others. Vol. 1. Chapters 8 and 9, pages 57-73. BYU LS.
4. Brush control treatments (BYU LS).
5. Sprouting responses of brush species (BYU LS).
6. Review: Guide for quantifying fuels in the sagebrush steppe and juniper woodlands of the Great Basin. Download pdf from BYU LS.

Sep 19 M Field trip: Mechanical control of oak (Squaw Peak Road); thistle control (South Fork)
 20 T Mechanical control
 Sept 22 Th Mechanical plant control

Sep 26 M Field trip: Jordanelle created wetlands.
 27 T Biological control
 29 Th Biological control

READ: 1. Review: Flee beetle spurge control. Download pdf from BYU LS.
 2. Review: Multispecies grazing spurge. Download pdf from BYU LS.

Oct 3 M **Exam 1**
 4 T Biological control
 6 Th Chemical control of plants

READ: 1. Monsen, Steven B. And others. Vol. 1. Chapter 10, pages 89-99.
 2. Controlling plants chemically, Revegetation Equipment Catalog web site:
<http://reveg-catalog.tamu.edu/index.htm>
 3. Herbicide toxicity and risk analysis (BYU LS)
 4. Koerth, B.H. 1996. Chemical manipulation of plants. p. 322-337 In: P.R. Krausman, (ed.). Rangeland wildlife. Society for Range Management, Denver, CO. (reserve).
 5. Weed Wheel. USDA, Agricultural Research Service. www.EBIPM.org. Download from BYU LS.

Oct 10 M Field trip: Assessing P-J for fuel treatments.
 11 T Chemical control
 13 Th Chemical control of plants

READ: 1. Monsen, Steven B. And others. Vol. 1. Chapter 11, pages 101-119.
 2. Pyke, D. A., M. L. Brooks, and C. D'Antonio. 2010. Fire as a restoration tool: A decision framework for predicting the control or enhancement of plants using fire. Restoration Ecology 18:274-284. Download from BYU LS.
 3. Controlling plants with fire, Revegetation Equipment Catalog web site:
<http://reveg-catalog.tamu.edu/index.htm>.
 4. Riggs, R.A. S.C. Bunting, and S.E. Daniels. 1996. Prescribed fire. p. 295-319 In: P.R. Krausman, (ed.). Rangeland wildlife. Society for Range Management, Denver, CO. (reserve).
 5. S. M. Fuhlendorf, R. F. Limb, D. M. Engle, and R.F. Miller. 2011. Assessment of prescribed fire as a conservation practice. P 75-104 In: D.D. Briske, editor. Conservation benefits of rangeland practices. USDA NRCS. Link on BYU LS:
<http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/technical/nra/ceap/?&cid=stelprdb1045811>.

Oct 17 M Field trip: Controlling phragmites and tamarisk.
 18 T Fire history
 20 Th Plant response to fire

- READ:
1. Monsen, Steven B. And others. Vol. 1. Chapters 6 and 7, pages 33-56.
 2. Monsen, Steven B. And others. Vol. 1. Chapter 12, pages 121-154.
 3. Monsen, Steven B. And others. Vol. 3. Chapters 24-29, pages 699-768. 3.
 4. Site preparation, seeding specialized planters, Revegetation Equipment Catalog web site: <http://reveg-catalog.tamu.edu/index.htm>.

Oct 24 M Field trip: Wildland fire rehabilitation.
 25 T Prescribed fire
 27 Th Prescribed fire

- READ:
1. Monsen, Steven B. And others. Vol. 1. Chapter 9 pages 73-87.
 2. Review: Sheley, R., J. Mangold, K. Goodwin, and J. Marks. 2008. Revegetation guidelines for the Great Basin: Considering invasive weeds. USDA\Agricultural Research Service, ARS-168. Washington , DC. Download pdf from BYU LS.
 3. Roundy, B. A., A. Hulet, L. Crook, N. Cline, and K. Young. Draft. Seeding non-forested wildlands. Download from BYU LS.
 4. Germination testing (BYU LS).
 5. Plant materials center testing (BYU LS).
 6. Seed certification (BYU LS).

Oct 31 M Field trip: Fuel control projects.
 Nov 1 T Plant response to fire
 3 Th Revegetation

Nov 7 M Ephraim DWR seed warehouse and equipment. Return after 6 pm.
 8 T Revegetation
 10 Th Revegetation

Nov 14 M Lab: Seed coatings to enhance revegetation success.
 15 T Revegetation
 17 Th Revegetation

- READ: 1. Monsen, Steven B. And others. Vol 1. Chapters 13-17.

Nov 21 M **Exam 2**
 22 T Friday instruction day, no class
 24 Th Thanksgiving holiday no class

Nov 28 M Lab: Herbicide calibration
 29 T Disturbed land revegetation
 Dec 1 Th Disturbed land revegetation

Dec	5	M	Seed mix development and calculations; rangeland drill calibration and broadcast seeder calibration
	6	T	Review
	8	Th	Last class; review for final

Dec 12 Final Exam Thurs 7:00 – 10:00 am. Covers material from last exam through end of semester (revegetation and integrating vegetation improvements).

BYU and Department Policies

Honor Code and Ethics:

It is expected that students will comply with University dress and grooming standards. It is likely, however, that clothes will get soiled in laboratories. Dress accordingly for labs. A lab coat is advisable and lab glasses or goggles are required in labs handling chemicals.

It is also expected that students will abide by the BYU Code of Honor. It is a serious violation of the Honor Code for a student to represent someone else's work as his/her own. Plagiarism is also a violation of the Honor Code. Four or more consecutive words put together by another author must be credited to that author or you have committed plagiarism. It is also a serious violation for you to assist other students in dishonest behavior such as allowing them to copy your work and claiming it as their own. We view violations of the Honor Code seriously in the department. **IF YOU CHEAT, YOU FAIL THE COURSE!**

Computer Usage and Internet Access:

As a student enrolled at BYU, you are required to follow BYU standards including the Honor Code. Accordingly, you must avoid accessing indecent or pornographic materials. The University reserves the right to monitor your computer use pursuant to the University Computer Use Policy. Violations of this use policy may result in immediate termination of employment (if working for BYU) and referral to the Honor Code Office for other appropriate sanctions at the sole discretion and judgment of the University.

Preventing Sexual Misconduct

As required by Title IX of the Education Amendments of 1972, the university prohibits sex discrimination against any participant in its education programs or activities. Title IX also prohibits sexual harassment—including sexual violence—committed by or against students, university employees, and visitors to campus. As outlined in university policy, sexual harassment, dating violence, domestic violence, sexual assault, and stalking are considered forms of "Sexual Misconduct" prohibited by the university.

University policy requires any university employee in a teaching, managerial, or supervisory role to report incidents of Sexual Misconduct that come to their attention through various forms including face-to-face conversation, a written class assignment or paper, class discussion, email, text, or social media post. If you encounter Sexual Misconduct, please contact the Title IX

Coordinator at t9coordinator@byu.edu or 801-422-2130 or Ethics Point at <https://titleix.byu.edu/report-concern> or 1-888-238-1062 (24-hours). Additional information about Title IX and resources available to you can be found at titleix.byu.edu.

Students with Disabilities:

Brigham Young University is committed to providing a working and learning atmosphere which reasonably accommodates qualified persons with disabilities. If you have any disability which may impair your ability to complete this course successfully, please contact the University Accessibility Center at 422-2767 (2170 WSC) during the first week of the semester. Reasonable academic accommodations are provided for all students who have qualified documented disabilities. Services are coordinated with the student and instructor by the SSD Office. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures. You should contact the Equal Opportunity Office at 422-5895 (D-282 ASB).