

# IMPACTS OF LIVESTOCK ON PUBLIC LANDS MANAGEMENT: A CASE STUDY ON THE MODOC PLATEAU, CALIFORNIA

ENV 265: Field Methods in Environmental Science (CRN 18541, 3 credits)

ENV365: Adv. Field Methods in Environmental Science (CRN 18542, 3 credits)

## Dr. Kerry Byrne

Office: DOW 205

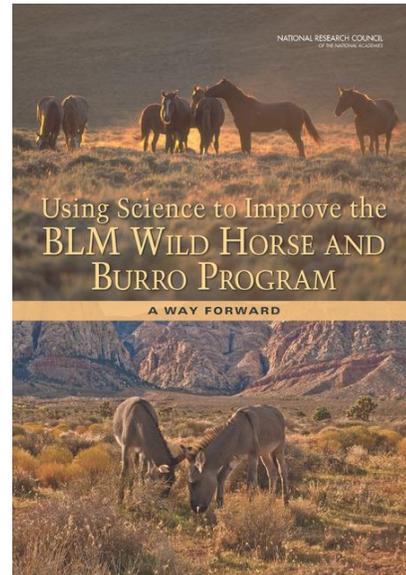
Contact: Kerry.Byrne@oit.edu

Office Hours: MF 1-2, T 2-3,

or by appointment

**Class Meeting time:** Wed, 3:00 – 5:50 PM in DOW E242\*

**Required Field Trip:** Friday October 18 – Sunday October 20, BLM Eagle Lake Field District near Ravendale, CA (on the Modoc Plateau)



## Course Description:

In this experiential-based course students will learn the basic methods of rangeland assessment and terrestrial/riparian vegetation monitoring in plant communities with a range of disturbance pressure from livestock (cattle) and managed wild horses. Additionally, students will learn how to process and interpret field data in order to assess, interpret, and describe current and potential future conditions on a management unit, and present their results in a professional oral and written report.

**Course Objectives:** In this course, students will learn:

- 1) Fundamental concepts in Ecosystem, Rangeland, and Community Ecology
- 2) How to conduct vegetation monitoring
- 3) How to estimate above and belowground forage production
- 4) How to identify plant functional groups and assess the stability of those groups
- 5) How to characterize soils
- 6) How to evaluate resource use by livestock
- 7) How to assemble, analyze, and interpret vegetation and soils-related field data in a cohesive manner

**Reading Material:** Select readings are identified below. These readings will be made available as PDF's on blackboard

Brooks, M.L., J.R. Matchett, and K.H. Berry. 2006. Effects of livestock watering sites on alien and native plants in the Mojave Desert, USA. *Journal of Arid Environments* 67:125-147

Byrne, K.M., W.K. Lauenroth, and P.B. Adler. 2013. Contrasting effects of precipitation manipulations on production at two sites within the central grassland region, USA. *Ecosystems*, **16**, 1039-1051.

Byrne, K.M., W.K. Lauenroth, P.B. Adler, and C.M. Byrne. 2011. Estimating Aboveground Net Primary Production in Grasslands: a Comparison of Non-Destructive Methods. *Rangeland Ecology and Management* 64:9-12.

Fernandez-Gimenez, M., and B. Allen-Diaz. 2001. Vegetation Change along Gradients from Water Sources in Three Grazed Mongolian Ecosystems. *Plant Ecology* 157: 101-118.

Garrott R.A. and M.K. Oli. 2013. A Critical Crossroad for BLM's Wild Horse Program. *Science* 341: 847- 848.

Herrick, J.E., J.W. Van Zee, K.M. Havstad, L.M. Burkett, and W.G. Whitford. 2009. Monitoring Manual for Grassland, Shrubland, and Savanna Ecosystems. Volume I: Quick Start. USDA ARS Las Cruces, New Mexico. The University of Arizona Press.

National Research Council. 2013. *Using Science to Improve the BLM Wild Horse and Burro Program: A Way Forward*. Washington, DC: The National Academies Press.

Todd, S.W. 2006. Gradients in Vegetation Cover, Structure, and Species Richness of Namo-Karoo Shrublands in Relation to Distance from Livestock Watering Points. *Journal of Applied Ecology* 43: 293-304.

**Assessment:** Field/lab exercises, a quiz, a final exam, and group oral presentations will provide the basis for grading student performance. Advanced students (those registered for ENV 365) will conduct a literature review and turn in a final paper.

<b>Field/lab exercises</b>	<b>50%</b>
<b>Quiz</b>	<b>10%</b>
<b>Final Exam</b>	<b>25%</b>
<b>Group Oral Presentations</b>	<b>15%</b>

Course grades at Oregon Tech follow a "whole grade" structure: A = 100-90%, B = 89-80%, C= 79-70%, D = 69-60%, F < 60%.

**Exercise Format:** Field exercises and data collection will be conducted during the mandatory field trip, and data processing will occur during class time in the weeks following the field trip. Instructors will train students on basic methods and then students will collect their own original data (and process data) under instructor supervision

**Quiz Format:** pre-field trip quiz will include identification of living specimens, multiple choice, and short answer

**Exam Format:** The final exam will generally include multiple choice and short-answer questions

**Group Oral Presentations:** Students registered in ENV 365 will lead their group in developing a presentation on a subtopic developed with consultation from the instructor. All students will participate in the preparation of the presentation by assisting in data organization, graphing, lab work, etc. ENV 365 students will be graded based on completeness and clarity of results. ENV 265 students will be graded based on their performance in a supporting role.

**Policies:**

- 1) Make up exams or deadline extensions may be offered only in the case of a documented illness or personal emergency. In either case, the student must contact the instructor by phone or email no later than one hour before the exam time explaining the general circumstances responsible for their absence. In the case that an emergency prevents such communication, the instructor may waive the requirement of a notification phone call or email. The instructor reserves the right to deny any student a make-up exam or deadline extension unless doing so would violate an applicable university policy.
- 2) You will be representing OIT on the field trip. As such, you must follow all University policies regarding student conduct. Any misconduct will be reported to student affairs.

**Field trip information:** Students must attend the field trip Friday Oct 18 through Sunday Oct 20. There is no “make-up field trip.” Students must be able to hike or otherwise navigate in a natural setting, including walking over rough terrain off trail. Students must also be able to carry 10-20 pounds of equipment and/or supplies. Students should consult the weather forecast and pack appropriately. Students should also bring a field notebook (preferably a “write-in-the rain” type), (2) pencils, a pocket knife, canteen/water, a lunch, sunscreen, a hat, an extra base layer, an extra pair of socks and shoes, and rain shell (even if the forecast looks safe, local weather can change fast, so better to be prepared). Students should wear sturdy footwear; waterproof, breathable boots are the best option. If you do not have them, consider buying some if your budget allows. Students will camp in tents at Ramhorn springs campground on the Eagle Lake Field District of the BLM. There are no showers or running water. Students are expected to furnish their own camping equipment. If students do not own camping equipment, they can rent it at a nominal expense from the OIT Outdoor Program in the College Union. Generally, students will need a tent (or share one), a sleeping bag, and any personal sundries needed for hygiene and/or comfort. Students may also opt to bring their own camp chairs, inflatable mattresses, stoves, cookware, utensils, etc. Water and meals will be provided. The class will take rental vans for transportation to and from the site. Students are not allowed to drive themselves. We will depart OIT at approximately 3PM on Fri Oct 18 and return Sun Oct 20 at approximately 6PM. Transportation details will be coordinated by the instructor during class time.

## Course Schedule

Week	Date	Topic	Reading
1	2-Oct	Course introduction, travel logistics	
2	9-Oct	Monitoring, Assessment, and Methods	Garrott & Oli 2013
3	16-Oct	Quiz & Field trip logistics	Byrne et al. 2011 and Byrne et al. 2013 (introductions only), and Fernandez-Gimenez & Allen-Diaz 2001
4	23-Oct	Literature Review	
5	30-Oct	<b>Lecture:</b> Soils and Plant Communities, Utilization, Objectives for remainder of quarter. <b>Laboratory analysis:</b> estimation of forage production, utilization, standing root biomass, gravimetric soil water	Before class: <a href="http://www.ext.colostate.edu/drought/soilmoist.html">http://www.ext.colostate.edu/drought/soilmoist.html</a>
6	6-Nov	<b>Laboratory Analyses:</b> quantitative and semi-quantitative soil texture. <b>Meet at Cornett Lab.</b> <i>Arrive promptly as this method takes 2 full hours and we won't begin until everyone has arrived and knows the methods</i>	Before class: soil texture protocols (2), will be posted on Blackboard
7	13-Nov	<b>Laboratory Analyses, cont.</b> We will finish processing any samples that remain. <b>Meet in Cornett Lab.</b> Additional time may be used for self-directed group work	
8	20-Nov	self-directed group work. <i>We will not meet officially this week, but I will be in my office during class time if any student/group would like to meet with me.</i>	
9	27-Nov	No class- Thanksgiving break	
10	4-Dec	Student presentations	
	6-Dec	Friday Dec 6 by 11:59 pm students enrolled in ENV 365 must submit their literature review, 3 pages (double spaced) maximum.	
	FINAL EXAM	11-Dec, 4-6 pm	

## General Details

### Student Success Center

Website: <http://www.oit.edu/current-students/student-support>

The Student Success Center provides a wide range of student support services including Testing Services which promotes academic success by working with faculty by providing testing services for any of the OIT academic courses as well as specialized testing services such as those needed for accommodations for students with disabilities, in-class test proctoring, and a computer lab, and Career Services which offers career advising, resume writing, job interviewing workshops, job search assistance, career fairs, and job listings.

**Testing Services:** 541-885-1791

**Career Services:** 541-885-1020

### Peer Consulting Services

Website: <http://www.oit.edu/current-students/student-support/tutoring>

Peer Consulting is a **completely free** academic support service available for all students of Oregon Tech. Peer Consultants are typically Oregon Tech students who have taken the same classes you have and have earned a B or better in their areas of expertise. We often have professors and staff that offer their time and assistance in the Center as well. Our goal is to provide assistance in all areas, majors, and courses offered at Oregon Tech. Peer Consulting reinforces what you are learning in your classes, fosters your sense of community and strengthens intercultural communication. Peer Consulting helps empower you to become successful in your academic career and reach your graduation goal.

**Office:** LRC 233 **Tel:** 541.851.5236

**Disability Services** Website: <http://www.oit.edu/current-students/student-support/disability-services>

If you may need a course adaptation or academic accommodation because of a disability, or if you might need special arrangements in case the room or building must be evacuated, please see me as soon as possible. I rely on the Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies. If you have not previously contacted that office, I encourage you to do so. Staff will assist in communicating information about needs and adjustments to instructors.

**Call:** 541-885-1031 or 541-851-5227 for further assistance. **Office:** LRC 230B.

### Statement on Recording Lectures and In-Class Discussions

Please be advised that this class may be recorded. HOWEVER, if you would like permission to record this class you must speak with the professor prior to making any recordings.

**Disrupting the Academic Environment :** Obstruction or disruption of teaching, research, administration, disciplinary procedures, or other institutional activities, including the Institution's public service functions or other authorized activities on institutionally owned or controlled property is strictly prohibited by Oregon Tech's code of student conduct and may result in disciplinary action.

**The Honor Code:** Cheating and plagiarism are strictly enforced in this course. Students caught cheating will receive a zero on the exam or assignment and will be reported to student services.

**Plagiarism** means to:

- to steal and pass off (the ideas or words of another) as one's own
- to use (another's production) without crediting the source
- to commit literary theft
- to present as new and original an idea or product derived from an existing source

All of the following are considered plagiarism:

- turning in someone else's work as your own
- copying words or ideas from someone else without giving credit
- failing to put a quotation in quotation marks
- giving incorrect information about the source of a quotation
- changing words but copying the sentence structure of a source without giving credit
- copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not (see our section on "fair use" rules)

**For more information on plagiarism and how to properly cite scientific works and writings contact your instructor or visit [www.plagiarism.org](http://www.plagiarism.org)**