



THE YELLOWSTONE PROGRAM:
WILDLIFE CONFLICT AND CONSERVATION
SUMMER 2023

ACADEMIC SYLLABUS

Faculty:

Lead Instructor: Veronica Yovovich, PhD

Co-Instructor: Lewis Reed

Contact Hours:

We will be together all day, every day throughout the course.

Class Meetings:

This Wildlands Studies Program involves instruction and field activities every day, with one half-day off during the program for resupplying, showering, and laundry. Faculty and staff work directly with students 10+ hours a day and are available before and after scheduled activities. We begin each day at 6 am, with breaks for meals, rest, and study time. Most evenings contain scheduled activities, including discussions, structured study time, wildlife observation, etc. Each day's activities tend to run very long, and may end as late as 10 pm (e.g., for wildlife observation). Since we will be spending all of our time outdoors, we will need to work around whatever weather conditions come our way. As such, we need to be flexible and able to accommodate a variety of class times and conditions. Fluctuations in weather, and tips on wildlife activity will have a significant impact on our daily plans. *I cannot emphasize enough the need to be flexible.* We will try to communicate changes in plan as soon as they arise, and please know that this is likely to come up every day.

Course Credit:

Wildlands Studies students receive credit for one undergraduate course:

ESCI 437A, Environmental Wildlands Studies (5 quarter / 3.35 semester credits)

Field-based course studying the environmental problems affecting the natural and human-impacted ecosystems of our study region, including the role of human interactions.

In this program we have formal coursework (i.e., readings, discussions, etc.) and experiential learning in the field.

Academic credit is provided by Western Washington University. **Students with special accommodation requests must communicate with the instructor before the program begins.**

Readings:

We have a course reader; a pdf version will be provided to students in advance of the course. Students need to bring a **printed** copy with them (please print on both sides to save weight, you'll appreciate this when we're backpacking!). **Do not bring a tablet or laptop in lieu of printing.** We will also have a shared reference library with additional materials.

Contents of this syllabus:

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I. Program Overview

Wildlands Studies' Yellowstone Program allows participants to observe, study, and learn about some of the most magnificent wildlife species in North America. This American wilderness course enables students to see wildlife species – bison, grizzly bears, elk, possibly grey wolves, and more – rarely seen in the coterminous United States, and to reflect on the perspectives – local vs. regional, scientific vs. cultural, etc. – by which they and their ecosystem are managed.

We spend the first week of the course at a base camp in/around Yellowstone National Park. Early most mornings we will visit the Lamar Valley (aka “the Northern Range”) to find, observe, explore, and study a variety of habitats and wildlife species. We will spend the rest of the day and evening learning about various aspects of biology, ecology, conservation biology, and wildlife management as they relate to our focal species (particularly grey wolves, bison, and grizzly bears), and discuss the implications as they relate to Yellowstone National Park and the Greater Yellowstone Ecosystem (GYE).

In the process, students will acquire skills in wildlife observations, locating and tracking animals, understanding wildlife behavior, and identifying a variety of native flora and fauna. Our hands-on field activities will be augmented by meetings with local community members, wildlife management experts, and conservation leaders as we explore the ecology of our study species and the complex management issues and controversies surrounding them.

Just over halfway through the course we head into the spectacular Absaroka-Beartooth Wilderness for a 3 to 5 day backpacking trip. During this segment, students continue their studies of wildlife habitat and ecology, with an emphasis on grizzly bear biology and recovery in the Yellowstone Ecosystem, and go deeper into the principles of conservation biology, natural resource management, and reserve design. Participants will also acquire basic backcountry skills that emphasize bear safety techniques, field navigation, and team building.

Although the course is not taught in a classroom, the academic expectations are high. There will be additional challenges posed by factors such as long days, inclement weather, logistical changes, and physically demanding conditions. As such, we will get the most out of our experiences together if we bring along flexibility, ample patience, a sense of humor, self-motivation, and perhaps most importantly, the desire to work as a team towards a common goal.

II. Learning Objectives

Students will develop knowledge of and experience in:

1. ***Ecosystems and natural history of the Greater Yellowstone Ecosystem.*** Students will learn to identify plant and animal species using field guides, understand the natural history of the GYE, and the processes that underlie ecological community development and change.
2. ***Biological needs, behavior, and ecology of key species in the Greater Yellowstone Ecosystem.*** We will focus on a subset of species that are sensitive to human activities, specifically grizzly bear, wolf, bison, and elk. Students will learn ecological concepts as they relate to these key species, and how human activity influences wildlife behavior and ecological relationships.
3. ***Applying conservation biology in real-world application settings.*** Human activities are impacting wildlife species at an unprecedented rate, increasing threats to the health and viability of wildlife populations everywhere, and the GYE is no exception. Students will learn to recognize how the principles of conservation biology are playing out in the GYE, including proximal and ultimate causes of species decline and extinction, principles of habitat fragmentation and reserve design, and how these principles have (or have not) been used to develop management and recovery plans for threatened or sensitive species.
4. ***Political, legal, and social dimensions of wildlife species management.*** Students will have the chance to meet biologists, natural resource managers, and other local stakeholders who have very different perspectives on sustainability, management, and policy. Students gain additional insight into the political and management history through readings.

5. **Field observation skills, including methods for documenting and sharing findings.** Students will be introduced to techniques for recording and presenting information (e.g., natural history sketching, field journaling, etc.) and gain experience using a variety of techniques to present natural history observations.
6. **Basic backcountry skills, including backcountry travel and safety, field navigation, and group management.** Although not the main focus of this course, students will learn the basics of how to plan for a prolonged backcountry trip, backcountry safety, and managing/leading a group. Each student will lead the group for one day, helping the instructors plan, coordinate and implement the day's activities, and lead the class discussion with the help of a fellow student. In addition, each student will be naturalist of the day, teaching their classmates about a particular aspect of local natural history, and leading the day's course discussion with a fellow student.

Topics will be addressed through course readings, discussions, field activities, visits with local experts and researchers, extended backcountry excursions, and field research projects. Much of the learning will take place as small group discussion of the readings. **It is absolutely imperative that each student complete all of the required readings before the day's class and actively participate in the discussion.** Students will be expected to critically evaluate, analyze, and synthesize material from the various activities. Our overarching goal is to have students leave the course with extensive knowledge about this region, as well as broader synthesis skills, allowing them to critically evaluate information in their future lives and careers.

III. Course Description

Students will receive transcript credit for the following course introduced on page 1:

ESCI 437A, Environmental Wildlands Studies (5 quarter / 3.35 semester credits)

Field-based course studying the environmental problems affecting the natural and human-impacted ecosystems of our study region, including the role of human interactions.

Experiences/Activities

Students will learn concepts and principles of environmental studies, conservation biology and ecology, wildlife management and conservation planning methods, and data collection and analysis techniques. Students will examine outcomes of environmental policies and wildlife management, including both sociological and natural consequences, and evaluate environmental policy options. Along the way, students will consider concepts and principles of environmental research, ethics, land and wildlife management, and the role of culture in wildland management.

Outcomes

Students will gain the ability to critically read and evaluate scientific and policy literature, as well as texts written for popular audiences. Students will gain knowledge in wildland natural history and policy, with specific emphasis on the GYE. Students will discuss and critique the literature in light of other information they have learned in this program from local experts, personal observations, and other relevant readings. Students should be able to demonstrate understanding of basic ecological, management, and policy concepts as related to the GYE, including community ecology and species interactions, effects of climate change, etc. Students will be able to apply their knowledge of natural and social science to new scenarios and clearly demonstrate understanding of the material.

Students will develop skills in field observation, employ varied techniques to present and record their natural history observations. Students will be able to conduct basic field research and be able to synthesize, organize, and present their data in a way that is appropriate to the audience and subject matter. Students will discuss their results considering current management or conservation issues. Students will be able to demonstrate their understanding of the ecological and/or social science processes and concepts that underlie research.

IV. Grading Scheme

Letter grade	Percentage
A	92.5- 100+
A-	90.0- 92.4
B+	87.5- 89.9
B	82.5- 87.5
B-	80.0- 82.4
C+	77.5- 79.9

Letter grade	Percentage
C	72.5- 77.4
C-	70.0- 72.4
D+	67.5- 69.9
D	62.5- 67.4
D-	60.0- 62.4
F	< 60.0

V. Assessment

The following is an overview of the academic requirements. Some of the assignments are ongoing (journal and readings) and some have specific dates (Final Exam). **Due dates are subject to adjustment in response to weather and logistic changes.** Final grades for the course listed above will be based on the following items:

Assessment Item	Date due	% of grade
Cougar/wolf research proposal	7/1	6
Bison ethology research project	7/1	6
Field journal	7/01	18
Reading, discussions and class participation/leadership	6/24-7/8	25
Midterm exam (short answer/essay)	7/1	20
Final exam (short answer/essay)	7/7	25

Research Projects (12%)

Each student will participate in two field studies, one research proposal on carnivore diet/habitat use, and one study writeup on bison behavior, each based on our hands-on experience. You will gather and analyze data, develop research questions and methods, and write a report. The final grade includes detailed written reports in your field journal, as well as preparation, participation and fieldwork. Students will be evaluated on their participation during the collaborative fieldwork as well as on the final written product.

Field Journal (18%)

The field journal is an integral part of the Yellowstone course. It serves as a learning tool, a place for reflection upon experience, and a record of your experience as a whole. You should plan on writing in it every day. The following is a summary of our expectations/recommendations and a rough outline of due dates throughout the course. **Clearly label each assignment so we can find them.**

0. Table of Contents (-4 pts if missing)

Leave a page at the beginning of your journal for a table of contents. Populate this table with assignment names and page numbers so we can find them for grading. If multiples exist, star entries you would like graded.

1. Trip Logs (2 total; 1 pt each)

The trip log is a structured, narrative record of an excursion. Include basic orienting information, a general route description, natural history observations, species lists, approximate travel distances and times, and important route details. This log is a careful summary of observations and field notes taken throughout the day. Entries should take ~20-60 minutes to write-up, but can take longer depending on the day of record. You will record one day during the first week in Yellowstone National Park, and one day during the backcountry trip during the second week.

2. Extended Entry (1 total; 4 pts)

This entry should involve more extensive reflection and effort. The purpose of this is to allow you to focus on an aspect of your experience in which you are most interested. Example styles include poetry, detailed drawings, free-writes, or detailed natural history descriptions. For example, students in the past have included detailed study of edible plants, or focused study of certain taxa (e.g., mushrooms, moss, lichen, aquatic invertebrates), or reflections on the ethics of wildlife management. In order to receive full credit the entry must be inspired by and related to the GYE.

3. Naturalist of the Day (1 total; 4 pts)

This is a structured in-depth natural history study recorded in your journal. It will draw from observations made in your trip log combined with additional research from field observations, field guides, and other references. Specific requirements include observations about identification, habitat, life history, behavior, interactions with other species, etc. Each student will make an oral presentation of their Naturalist of the Day, usually presented at dinner that night, though sometimes they are delayed a day or two.

4. Point-Counter Point (1 total; 8 pts.)

Students will pick a contentious topic from the course and create a diagram expressing the complexity of the issue. Students will identify **each** of the various stakeholders involved in the controversy, their various perspectives, and the values/evidence/scientific merits supporting and/or refuting their various positions. The write up could be turned in the form of a **detailed** and organized diagram, and an accompanying short essay, bullet points, or other form of discussion. Regardless of the presentation method, students will need to demonstrate a thorough treatment and understanding of the complexity of the issue at hand, and how the various perspectives relate to one another.

Please note: this is the largest component of the field journal.

Journal Grading Criteria:

1. **Orienting Information:** All entries must include orienting information including date, time, location, weather, and any other relevant details (this could include habitat type, slope, aspect, etc.).
2. **Entry consistency:** This refers to regular and consistent use of the journal, which you should write in every day.
3. **Organized:** You should be able to use your journal as a reference. Information should be accessible and related to specific dates and locations. Include a table of contents in the beginning so we can find specific assignments, and title assignments appropriately.
4. **Neatness/Readability:** Someone else should be able to use your journal as a reference (or grade it).
5. **Diversity of Expression:** We encourage you to use a diversity of journaling techniques. Avoid using only one form of expression. We will discuss in detail a variety of journaling techniques.
6. **Detailed Observation:** Attention to detail will improve your observation skills.

Readings, discussion and class participation (25%)

We will discuss these readings as a group, with two students leading each discussion. Ideally, students would read the readings once before the course begins, and then leave themselves ample time to read the papers a second time before discussions as some may take longer than others to digest. Grades will be based on student participation in the discussions and on participation in other activities (e.g., leader of the day, meetings with biologists, etc.). **We don't insist that each student understand every paper at the onset of each discussion, but if the paper is unclear, students need to seek clarification during discussion; bringing questions is as welcome as bringing understanding.**

Discussion Leader Write-up (2 total – leader of the day and naturalist of the day; 5 pts. each)

Each student will be responsible for leading the discussion with a partner twice during the course. Before class, the discussion leaders will prepare a brief summary, generate discussion questions, and/or bring up places where they are confused as leaders or where they think their fellow students may get confused. This is a time to be critical and creative – discussion leaders are especially encouraged to design an activity related to the readings that will help everyone learn the material better. **The journal write up must be done before the discussion takes place and should contain notes from the reading** (this could be bullet points, an outline of the reading, or another format that displays intimate knowledge of the reading), **discussion questions for the group, an outline of the activity if applicable, etc.**

Readings, discussion, and class participation (15 points)

The remainder of your participation grade will be determined by your general participation in course discussion, your engagement with presenters, the degree to which you participate in team activities (e.g., loading the vans, cleaning, cooking, etc.), and your general eagerness to be a present and contributing member of the group. Participating in group discussions can range from sharing a deep understanding of the reading, to asking questions that help us all gain clarity. The important part is to show that you are engaging with the material and thinking about things critically.

Leader of the Day (points count towards participation)

Each student will be leader of the day once. In general, this involves helping the instructors lead the group for the day. This will involve getting up before the class and heating water for breakfast, waking classmates up at a pre-determined time, making sure both spotting scopes are packed appropriately in the van after observations, helping the class transition between activities, helping the instructors navigate, etc. We will assign leaders of the day at the beginning of the course, so you might give some thought to when you might like to lead - whether you want to try your hand at backcountry navigation, lead sooner rather than later, etc.

Exams (Midterm: 20%, Final: 25%)

There will be two exams during the course, one midterm and one final. Each exam will consist of short-essay questions based on readings, class discussions, and presentations. The midterm exam is worth 20% of your final grade, and the final exam is worth 25%. The final exam will be cumulative, drawing more heavily from the second half of the course.

VI. General Reminders

Academic Integrity is as relevant in this field course as it is at your home institution. Plagiarism (using the ideas or materials of others without giving due credit), cheating, or aiding another to cheat (either actively or passively), will result in a zero for the assignment and will be reported to your home institution.

Assignment deadlines are established to enable everyone to participate with course activities. Therefore, deadlines are firm. If you believe that extenuating circumstances have prevented you from completing your work on time, make sure to discuss this with the faculty before the work is due.

Participation and attendance are absolutely crucial throughout this program. Students are expected to make multiple contributions to every class discussion, ask questions of guest speakers, and be demonstrably engaged during every course activity. Because of the demanding schedule and limited time, all components of the program are mandatory and missing even one class can have a proportionally greater effect on your final grade. So it is important to be prompt and prepared (i.e., with required equipment) for all activities.

VII. Academic Schedule & Course Content

Outlined in the following table, but subject to change. Readings may be added or changed, and activities will likely shift from day-to-day depending on weather, opportunity, guest speakers, etc. *Please be ready to be flexible.*

Date	Location	Discussion Topics & Activities*	Chapters to read	LoD & NoD
June 25	YNP	PM: Meet at the airport Introductions; logistics, equipment and safety overview, academic expectations Camp: YNP (Madison Junction)	Appendix 1&2 Intro Readings	
June 26	YNP / Hebgen Lake	AM: Buffalo Field Campaign (2h drive) PM: Carcass compost site visit	Bison 1	LoD1: NoD1:
June 27	YNP	AM: Wildlife and bison observation study PM: Discussion 1: Bison Ecology	Bison 1	LoD1: NoD2:
June 28	YNP	AM: Field exercise PM: Discussion 2: Colonialism and NPS	Parks & People	LoD2: NoD2:
June 29	YNP	AM: Field exercise PM: Discussion 3: Naturalist & wolf readings	Naturalist & Wolf	LoD3: NoD3:
June 30	YNP	AM: Presentations from park biologists (10am-12) PM: Field exercise - cougar and wolf crew (~12-4)	N. Range & Climate	LoD3: NoD4:
July 1	YNP	AM: Discussion 4: Trophic cascades PM: Discussion 5: Northern Range/climate change & Unstructured study time	Trophic Cascades	LoD4: NoD4: NoD5:
July 2	YNP	AM: Review PM: Midterm, begin packing (V shop)	Exam, Journals due	LoD5: NoD5:
July 3	YNP/ West Yellowstone	AM: Town (free time) – resupply and shower PM: Finish packing, study time	Appendix 1&2	LoD6: NoD6:
July 4	Backpack	AM: Backcountry travel PM: Unstructured reading time	Appendix 1&2	LoD7: NoD8:
July 5	Backpack	AM: Discussion 6: Conservation biology and reserve design, Island biogeography and metapopulations PM: Unstructured study time/optional day hike	Reserve Design & Cons Bio	LoD6: NoD6:
July 6	Backpack/ YNP	AM: Backcountry travel PM: Discussion 7: Grizzly bear recovery and management	Grizzly bear recovery	LoD7: NoD7:
July 7	YNP	AM: Day hike YNP PM: Discussion 8: NA model wildlife conservation	Journals Due	LoD8: NoD8:
July 8	YNP	AM: Final exam PM: Day hike YNP	Final Exam	
July 9	Campground	AM: Discussion: Land Ethic; Return to BZN airport, course ends	Land Ethic	LoD8:
*Topic dates may change with weather and presenter schedules				

VIII. Reading List

Required Reading

The course reader will be provided via email as a PDF file about a month before the course begins. A schedule will be included so you know which readings will be discussed each day. ***It is imperative that students read the assigned papers before discussion*** - it is a very small group and it becomes clear very quickly who has done the reading and who has not. Every student is to contribute to every discussion, so it is very difficult to hide being unprepared for class. Other books and scientific papers will be made available on these topics through the course library we have with us.

Recommended Pre-Course Reading

We cover a great deal of content in this two-week course. **We highly recommended reading the introductory readings from the course reader before arriving** (the first couple days of readings as well as Appendix 1&2) to become familiar with the history, ecology, and management of the GYE.

Optional

If students are looking for additional resources, we recommend the following:

1. *The Yellowstone Resources and Issues Handbook*: <https://www.nps.gov/yell/learn/resources-and-issues.htm> (top choice)
2. *Yellowstone's Northern Range: Complexity and Change in a Wildlands Ecosystem*. Available from Yellowstone National Park: <https://archive.org/details/yellowstonesnort00mamm>
3. *Searching for Yellowstone: Ecology and Wonder in the Last Wilderness*. Paul Schullery
4. Any of the numerous books dealing with Yellowstone wolves and bears by Hank Fisher, Gary Ferguson, Frank Craighead, Paul Schullery, and Doug Smith.