

**FWB 469:  
CONSERVATION AND MANAGEMENT OF LARGE MAMMALS**

**Fall 2023**

TR 11:30-12:45    243 Natural Resources    3 credits

**Instructor:**

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***Synopsis:***

This applied ecology course will utilize principles of behavior, ecology, population dynamics, and conservation as they relate to large mammals. Primary emphasis will be on North American megafauna, but time will also be devoted to international wildlife.

***Course Objectives:***

1. Students will develop an advanced understanding of the assumptions, effectiveness, and limitations of theories and strategies used to manage large mammal populations and their habitats.
2. Students will be able to critically discuss the dynamic nature of ecosystems and the effects of human activities on these, including key issues facing North American wildlife management.
3. Students will gain familiarity of approaches to assess wildlife population status, including identification of important wildlife habitat.

***Readings:***

We will not have a mandatory textbook for the class. Additional course material will be taken from the primary literature and other relevant readings. For access to course materials on Canvas you will need an eID user name and password. Visit <http://info.canvas.colostate.edu> to learn more about Canvas.

***Course Structure***

Lecture will be presented Tuesdays and/or Thursdays. A handout of the Powerpoint slides will typically be posted on Canvas prior to class when applicable. Guest lectures may not share their slides. A number of readings will be posted for lectures and discussions. All students are expected to keep up on course readings.

***Reading Discussions***

Throughout the semester, we will have Reading Discussions focused on papers from the scientific literature. Typically, 2-3 students will be assigned to lead each discussion section. The students are expected to submit 3-5 discussion questions on the reading for posting on Canvas no later than the class period before the discussion. Each student in the course must submit brief answers to these discussion questions in CANVAS and be prepared to discuss and critique the paper.

At the start of the discussion section, the students are expected to provide a thorough, yet concise overview of the scientific papers assigned to the discussion topic and supporting materials via a ~10 minute Powerpoint presentation. In the summary, you should: 1) review the major points of the papers, 2) raise topics of interest (i.e., highlight novel results and conclusions, conflicts), 3) raise any questions or objections you have with the methods, results, and/or conclusions, 4) tie the material covered into related literature and your own experiences (e.g., does it reinforce or contradict results or conclusions from other publications?), and 5) cite parts of the paper that you don't understand and request clarification for the group discussion. Following the summary, the lead student should then be prepared to actively generate and facilitate discussion for the rest of the discussion section. You will be assigned a grade for leading the discussion. A grading rubric will be posted on Canvas and reviewed in class at the beginning of the semester.

### ***Individual Species Presentation***

Each student will pick one North American large mammal species, and deliver to the class a 10 minute Powerpoint presentation in the style of a scientific conference (8 minute lecture, 2 minute question section) reviewing the basic life history, ecology and recent research for their species. Topics to be discussed should include distribution, development and reproduction, ecology, behavior, habitat requirements, conservation or management status, and at least one interesting research study that was recently published (since 2015) in the scientific literature. Prior to the classroom presentation, each student will provide the Powerpoint presentation to be posted on Canvas.

### ***Research Paper and Presentation***

Each student will use the primary literature to research and prepare a term paper covering an important, current conservation issue involving a large mammal species or group of large mammal species. The large mammal conservation topic will be the student's choice. The term paper should consolidate what is known about the large mammal conservation issue, identify the major management problems contributing to the conservation concern, critically evaluate how proposed or ongoing programs are dealing with these factors, and synthesize the information into a relatively concise research paper that makes a clear recommendation on actions needed to tackle this issue. The paper should not be a summary, but an analysis with actionable recommendations.

Papers should be less than 2000 words (not including Literature Cited), with 12 point font and 1.5 line spacing. Format for references cited in the text and listed in the Literature Cited section should follow guidelines for the journal *The Journal of Wildlife Management*:

[http://joomla.wildlife.org/documents/Manuscript\\_Guidelines\\_2008.pdf](http://joomla.wildlife.org/documents/Manuscript_Guidelines_2008.pdf)

You will not necessarily need the traditional sections of a scientific research paper (Intro, Methods, Results, Discussion, etc.); your paper may be divided into sections as you see fit. However, you must include an Abstract and Literature Cited section. In order to assess the current state of knowledge on your topic you must utilize the primary scientific literature. You should cite at least 15 primary sources from the scientific literature, including at least 5 recent (year 2015) references (this does not include "gray literature", book chapters, agency reports, or web sites); note that 15 primary references is the minimum but more are expected to achieve a high grade. If you can not find 5 recent publications on the topic, funding an alternative topic is encouraged.

The research paper will be submitted mid-semester, at which point it will be graded and receive a formal peer review by another student and the instructor. Peer reviews will be returned to the author, who will then be expected to revise the paper according to the reviews and submit a final revision toward the end of the semester.

After submission of final papers, each student will prepare and present their paper before the class in a 10 minute Powerpoint presentation, in the style of a scientific conference (8 minute lecture, 2 minute question section). Each student will provide the Powerpoint presentation to be posted on Canvas. Note, presentations should include appropriate citations. Each student will also provide a set of 3 questions relevant to the large mammal issue to be considered for use for the final.

### *Debate*

The debate exercises are intended to encourage you to do more research on your own, and to consolidate your learning by having to present the material in a compact format to the class. Generally, the exercise creates a polarized debate, with a team of students assigned to each side of the issue (pro and con). Both teams are expected to present their arguments for their respective sides and conduct a rebuttal to the other teams arguments. This requires preparation of both perspectives on the issue. Teams should outline the key ecological, economic and social considerations for their side in their policy briefing document. In addition, teams should be familiar with the contrasting opinions and arguments and be briefed thoroughly allowing them to argue for or against an issue effectively. Students not actively in the debate are expected to turn in questions for the pro or con side of the argument that challenge the arguments made.

### *Assignments*

Assignment may include take-home problem sets, computer lab write ups, and preparation and position statements for in-class debates. Assignments are due at the start of the class on the due date, and will be penalized 50% if received in the afternoon or evening of the due date. No problem sets will be accepted after the due date, unless we accept a catastrophic reason in advance.

### *Field Trips*

We are planning a field trip to Yellowstone National Park/Grand Teton National Park/Jackson Elk Refuge. All students are expected to participate in field trips. Details of the field trips will be discussed in class.

### *Conservation Activity*

Each student will be required to conduct an activity relating to conservation **during the semester**. Possibilities include, but are not limited to: (1) work at resource agencies, conservation groups, or zoos, (2) assisting ongoing scientific research programs (e.g., working with faculty or graduate students), (3) participation in conservation education programs, (4) delivering a public talk or seminar, (5) involvement in a conservation activity with a student club, including The Wildlife Society, The Society for Conservation Biology, or American Fisheries Society, (6) writing to politicians regarding conservation issues, and (7) writing articles regarding conservation issues for the popular press. In the final week of class, students will deliver brief presentations of their volunteer activity. Examples of activities that do not live up to the spirit of the assignment, and hence **do not count**, include (1) activities associated with another class, (2) simply joining a student club without participating in an activity, (3) attending

a seminar (including those sponsored by a student club), (4) donating money, (5) purchasing a hunting/fishing license, or (6) any recreational activity (e.g., hunting, fishing, hiking, birdwatching, etc). If you have any questions about what will count, please ask well in advance!

### ***Exams***

There will be two examination periods – a Midterm and a Final. Exams may include multiple-choice, true/false, short-answer, and essay questions. Exam questions will be taken from lectures, guest lectures, lecture readings, discussion readings, and field trips. Make-up or early exams are seldom given; rare exceptions are made for catastrophes truly beyond your control. In these cases, I must be notified before the exam and I must have written verification. If I do not have a valid excuse from you before the exam, you will receive a 0. Once I have returned an exam you have 24 hours to identify any arithmetic errors on my part and I will correct them. If you did not detect arithmetic errors, but want question(s) re-graded, you must submit the exam with a written explanation of your arguments within one week after it was returned in class. Beware! If you submit an exam for re-grading I will re-grade the entire exam to ensure no other mistakes were made (this may or may not benefit you).

### ***Grading***

TENTATIVE point allocation for evaluation of students:

<b>ASSIGNMENT</b>	<b>POINTS</b>	<b>GRADE PERCENT</b>
Midterm	40	11%
Final	55	15%
Research Term Paper		
1 <sup>st</sup> Submission	10	4%
Revision/Final	50	15%
Research Presentation	20	5%
Term Paper Peer Review	20	5%
Individual Species Presentation	20	5%
Problem Sets/Labs/Assignments (3)	30	8%
Field Journal	10	3%
Discussion Lead	20	5%
Discussion Question Responses (7)	35	10%
Debate Lead	20	5%
Debate Questions	4	1%
Participation/Attendance	10	3%
Conservation Activity	10	3%
<b>TOTAL</b>	<b>364</b>	

Cutoffs for grades typically will be based on standard percentages at CSU. Plus and minus grades will be given; in some instances grades might be based on the performance of the entire class.

### ***Academic Dishonesty And Disruptive Behaviors:***

Cheating and plagiarism will not be tolerated in class. If found cheating, you will receive a failing grade. Distractive behaviors such as talking to neighbors, phone scrolling, regularly coming to class late (unless prior authorization has been given), or leaving class early are also not acceptable; students engaged in such activities may be asked to leave the class. Instances of academic dishonesty and disruption also may be referred to the Office of Judicial Affairs, which can result in University disciplinary action (see Student Rights & Responsibilities section of the CSU General Catalog for more information). As an instructor it is my responsibility to ensure all students have an equal opportunity to learn the material without disruption or distraction. I take that responsibility seriously and will not tolerate such disturbances.

Academic integrity lies at the core of our common goal: to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, we will ask to you sign the CSU Honor Pledge as part of completing all of our major assignments. While you will not be required to sign the honor pledge, we will ask each of you to write and sign the following statement on your papers and exams:

***"I have not given, received, or used any unauthorized assistance."***

### ***Use of ChatGPT and Large Language Models***

Students must obtain permission from me before using AI composition software (like ChatGPT) for any assignments in this course. Using these tools without my permission puts your academic integrity at risk.

### ***Attendance and Participation:***

You are expected to attend all classes, but I will not always take roll. As adults I leave it in your responsible hands to get notes and do the required reading. I expect you to get materials from missed classes from your peers. Your participation in class may benefit you when I assign grades. Those students who have actively contributed in class will find that such participation may teeter their grade higher.

### ***Late work***

Most the assignments in this class are done in groups or require exchanges with other members of the class. As such, late work will impact the entire class. I ask that you work to get all work in by deadlines. I will take 10% off the first day for later work, and reserve the right to not accept work if it is delayed beyond that.

### ***Special Needs:***

Please let me know as soon as possible if you have any special needs. If any student has a learning disability please contact the Resources for Disabled Students. That way we can work to accommodate you as soon as possible. It is your responsibility to work with RDS and bring necessary paper work to me.

	Subject	Assignments
22-Aug-23	Course intro	
24-Aug-23	History of Large Mammal Management	
29-Aug-23	Species Presentations	
31-Aug-23	Species Presentations	<b>Discussion 1 Questions Due</b>
5-Sep-23	Species Presentations	<b>Debate I Position Statements Due</b>
7-Sep-23	Rocky Mountain elk Discussion	<b>Discussion 2 and 3 Questions Due</b>
12-Sep-23	Debate I: Jackson Elk Herd	<b>Discussion 4 Questions Due</b>
14-Sep-23	Grizzly Delisting Discussion; Migration Discussion	<b>Discussion 5 Questions Due</b>
19-Sep-23	Bison culling discussion	
21-Sep-23	Discussion: Carnivore Management at the human interface	<b>Debate II Position Statements Due</b>
Sep 22-25	Yellowstone Field Trip	
26-Sep-23	Class Canceled	<b>Field Trip Journal Due</b>
28-Sep-23	CPW Carnivore Management Mark Vieira	
3-Oct-23	Debate II: Cougar hunting	<b>Paper Outline Due</b>
5-Oct-23	Midterm	<b>Midterm</b>
10-Oct-23	Harvest management	
12-Oct-23	CPW Big Game Management Andy Holland	
17-Oct-23	Population Model Lab I	
19-Oct-23	Colorado Wolf Reintroduction Guest Lecture	<b>Discussion 6 Questions Due</b>
24-Oct-23	Debat III: Carnivore Reintroduction	<b>Discussion 7 Questions Due; Lab I Write Up Due</b>
26-Oct-23	Discussion: Pneumonia in Big Horn sheep	<b>Paper Due</b>
31-Oct-23	Recreation and Wildlife Discussion	
2-Nov-23	Spatial Ecology Approaches	
7-Nov-23	Understanding habitat preferences	<b>Paper Review Due</b>
9-Nov-23	Large Mammal Movement Lab II	
14-Nov-23	Corridor Conservation	<b>Lab II Due</b>
16-Nov-23	Large Mammal Movement Lab III	
21-Nov-23	Thanks Giving	<b>Lab III Due (Email)</b>
23-Nov-23	Thanks Giving	
28-Nov-23	Research Presentations	<b>Final Paper Due</b>
30-Nov-23	Research Presentations	
5-Dec-23	Research Presentations	
7-Dec-23	Final Exam	<b>Conservation Activity Due</b>