FNR 37500 Human Dimensions of Natural Resource Management (3 credits)
Spring 2024

Meeting Time and Location
1:30 – 2:45 pm, Tuesdays and Thursdays
Stewart Center 320

Instructor
Zhao Ma, Ph.D.
Preferred pronouns: she/her/hers
Department of Forestry and Natural Resources
FORS 111
Email: zhaoma@purdue.edu
Student hours: Please email me directly to set up a
time for any in-person appointments.

Graduate Teaching Assistant

Katy Dix
Preferred pronouns: she/her/hers/they/them/theirs
Department of Forestry and Natural Resources
FORS 212B
Email: dix5@purdue.edu
Student hours: 12 – 1 pm, Tuesdays (in person)

Megan Jefferis
Preferred pronouns: she/her/hers
Department of Forestry and Natural Resources
PFEN G004
Email: mjefferi@purdue.edu
Student hours: 11am – 12 pm, Thursdays (in person)

Course Description
This course will introduce social science concepts and principles that can help you understand and address problems in natural resource management and conservation. We will discuss what human dimensions are and why they are important to a variety of natural resource issues. We will learn about relevant social science theories that provide a foundation for understanding the human dimensions of natural resources. We will also explore relevant research methods and practical strategies that can be used to help better understand and influence human behaviors to be more aligned with sustainability goals. Finally, this course will train students to think critically in an interdisciplinary way, with a focus on incorporating social science thinking into natural resource problem-solving. After all, natural resource problems, and more broadly, environmental problems, are inherently human problems.

Learning Objectives
The overall learning objectives for this course are to:
1. Become familiar with key concepts and theories related to the human dimensions of natural resource management.
2. Become familiar with key methods that can be used to collect and analyze human-dimensions data to inform natural resource management and environmental conservation decisions.
3. Be able to identify various social, economic, political, and cultural factors that influence how people (particularly individuals) think about and act towards natural resources and the environment.

4. Be able to identify potential strategies for informing and influencing human behaviors towards a more sustainable future.
5. Be able to critically examine current natural resource management and conservation approaches/programs from a human-dimensions perspective and suggest well-informed alternatives/changes/additions to enhance management and conservation outcomes.

Course Format

1. This course will be delivered mainly through PowerPoint lectures. In-class discussion, activities, and documentary films will also be used to facilitate effective learning. Guest speakers will be invited occasionally.
2. PowerPoint slides will be made available on Brightspace before class. Please note that **not all lecture notes will be printed on the slides, and it is your responsibility to add notes to the slides** as we move through the material.
3. I strongly encourage you to ask questions during the lecture if concepts are unclear. Questions asked during lecture are especially valuable, as others in the class may also benefit from an answer to your question.
4. It may be necessary from time to time to adjust the course schedule with the understanding that major assignment due dates and exam dates will likely not be affected. I will make all announcements about any schedule change or course change in class, via email and on Brightspace.
5. Your grades will be posted on Brightspace.
6. **It is your responsibility to check Brightspace, as well as your emails regularly to keep track of course announcements.**

Required Readings

There is no assigned textbook for this course. All assigned readings, handouts, and supplemental resources will be available to you via Brightspace. Please check frequently for updates as you are responsible for all material posted. **You are expected to arrive in class having read and processed the assigned readings.** Unless an assigned reading is especially difficult, we will not review the reading material in detail in class; rather, our in-class lecture and discussion will be built upon the readings.

Evaluations and Grades

Completion of CITI training – Each student will go through the CITI Human Subjects Research Basic Course (https://www.irb.purdue.edu/training/) independently and obtain a certificate of completion. Detailed instructions will be discussed in class.

Exams – Three (3) exams will be given. Exam #1 will cover the first third of the semester, exam #2 will cover the second third of the semester, and exam #3 will cover the last third of the semester. Each exam will consist of multiple-choice, filling-in-the-blank, short-answer, and short-essay questions. All three exams will be non-comprehensive, but exam #2 and exam #3 may contain questions from prior exams that require further attention. Please note that at the end of the semester, we will use the two highest scores from the three exams to calculate your final grade, which means you can drop the lowest of your three exam scores. We implement this approach to alleviate some of the pressure students feel about taking exams and also to reduce the impact of one-time bad luck on your final grades.

Think-and-write assignments – There will be four (4) think-and-write (TAW) assignments throughout the semester. These writing assignments are designed to help students reflect on material covered in class and in the assigned readings. In general, these writing assignments will ask you to (1) summarize in your own words a concept or issue that were discussed in class or in the assigned readings, and (2) practice applied problem-solving by using the concepts, theories, and processes learned in class or from the readings to critically analyze an environmental or natural resource issue.

You will receive 0 points if you do not complete the assignment; 15 points if you did not answer all the questions or if your answers were incorrect, too simple, or underdeveloped, lacked relevance to the course material, or did not reflect critical thinking of the course material; and 30 points if you answer all the questions and critically engage with the course material through your answers. Detailed instructions about each TAW assignment will be posted on Brightspace at least two weeks prior to the date when the assignment is due.

A semester-long research project with both group and individual assignments – As part of a group, each student will participate in and *partially* complete a semester-long research project that focuses on the human dimensions of an environmental or natural resource issue. The specific steps include the following:
- Each group will *work together* to select a current issue of interest, write three research questions, and identify one peer-reviewed journal article from the literature that examines similar research topics/questions as their group research project.
- Each group member will then *individually* develop: (1) a brief interview or focus group protocol for collecting qualitative data, and (2) a brief survey questionnaire for collecting quantitative data. The idea is that both the qualitative and quantitative data to be collected using these individually developed data collection instruments can be analyzed to answer the three research questions identified by the group.
- Finally, after the entire semester of learning about concepts, theories, and methods related to the human dimensions of natural resource management, each group member will *individually* write a reflection about (1) their group's research questions, (2) their individually developed data collection instruments, and (3) how they think about the peer-reviewed journal article identified by the group at the beginning of the semester.

As such, there are *four* assignments associated with this research project, including *one group assignment and three individual assignments*. The group is required to work together on the group assignment and is also strongly encouraged to work together on the individual assignments by discussing and peer reviewing each other's work so group members can learn from each other and improve the quality of their work.

We understand that group projects are not always easy, especially in our current learning environment. However, in natural resources, we rarely work alone on projects. Often, we work with individuals and groups from different backgrounds and disciplines. Being able to work in a group (face-to-face or virtually) towards a common goal is critical in the environmental and natural resource fields and takes practice. To facilitate such practice, encourage active participation, and make the process as fair as possible, this research project is specifically designed to include both group and individual assignments, while creating ample opportunities

for group collaboration and learning. You will receive detailed instructions about the research project in class and on Brightspace.

Items	Total points	Due dates
Completion of CITI training	30	01/25
Exams	200	
Exam #1	100	02/20
Exam #2	100	03/28
Exam #3	100	04/25
Think-and-write (TAW) assignments	120	
TAW 1	30	01/18
TAW 2	30	02/01
TAW 3	30	03/07
TAW 4	30	04/18
Human dimensions research project	200	
Research questions and literature review (group)	50	02/08
Interview / focus group protocol (individual)	50	02/29
Survey questionnaire (individual)	50	03/21
Reflection essay (individual)	50	04/11
Total points possible	**550**	

At the end of the semester, the total points earned in this course will be converted to a letter grade based on the following percentages (**no rounding up**):

A+ 97.0-100 percent	A 93.0-96.9 percent	A- 90.0-92.9 percent
B+ 87.0-89.9 percent	B 83.0-86.9 percent	B- 80.0-82.9 percent
C+ 77.0-79.9 percent	C 73.0-76.9 percent	C- 70.0-72.9 percent
D+ 67.0-69.9 percent	D 63.0-66.9 percent	D- 60.0-62.9 percent
	F 0-59.9 percent	

Course Expectations and Policies

Attendance – Attendance is expected, just like any regular class. We recognize that we all have our own challenges. We ask you to please communicate with the instructor and/or TAs if you face challenges that will affect your attendance. We are willing to work with everyone to make this course a meaningful learning experience, but we need you to communicate with us in a timely manner.

This course follows the "Academic Regulations: Attendance and Office of the Dean of Students: Class Absences" posted in Brightspace under "University Policies and Statements." The policies state that students are expected to be present for every meeting of the classes in which they are enrolled. When conflicts or absences can be anticipated, such as for many University-sponsored activities and religious observations, you should inform me of the situation as far in advance as possible. For unanticipated or emergency absences when advance notification to is not possible, contact me as soon as possible by email or through Brightspace. For cases that fall under excused absence regulations, you or your representative should contact or go to the Office of the Dean of Students (ODOS) website to complete appropriate forms for instructor notification. Under

academic regulations, excused absences may be granted by ODOS for cases of grief/bereavement, military service, jury duty, parenting leave, or emergent medical care.

Assignment and exam policy – All assignments will be expected on their due dates and all quizzes and exams will be given on the dates scheduled. If you anticipate that you will not be able to submit an assignment or take an exam or quiz on time due to a legitimate reason (e.g., own illness, family member illness, caregiving responsibilities), please **let the instructor and TA know ahead of time**. Without any email before the assignment due date, **late assignments received after the due date will be downgraded 10% of the total possible points** for that assignment per day (a 24-hour period). Without any email before the scheduled exam date, **a missed exam will be given a score of zero**.

Make-up assignments, quizzes or exams are allowed **only when a legitimate emergency occurs**. The instructor reserves the right to determine what a legitimate emergency is.

If unexpected circumstances (e.g., a family emergency) make it impossible for you to inform the instructor and/or TAs before an assignment due date or a scheduled data for a quiz or exam, you should still let them know as soon as possible so an appropriate arrangement can be made regarding your missed assignment, quiz, or exam. We are willing to work with all students to make sure you have sufficient support to complete the required work for this course.

Academic dishonesty – Academic integrity is one of the highest values that Purdue University holds. Incidents of academic dishonesty in this course will be addressed by the instructor and forwarded to the Office of Student Rights and Responsibilities (OSRR) for review at the university level. Any violation of course policies as it relates to academic integrity will result minimally in a failing or zero grade for that assignment, and at the instructor's discretion may result in a failing grade for the course. Individuals are encouraged to alert university officials to potential breaches of this value by either emailing integrity@purdue.edu or by calling 765-494-8778. While information may be submitted anonymously, the more information is submitted the greater the opportunity for the university to investigate the concern. More details are available on our course Brightspace under University Policies and Statements. Scholastic dishonesty includes, but is not limited to:
- Copying from, or assisting, another student during a quiz or exam;
- Using notes or prepared information (including cell phones, computers, or electronic notebooks) in a quiz or exam unless authorized by the instructor;
- Substituting for another student or letting someone substitute for you in taking a quiz or exam;
- Acquiring a copy of an exam (including from previous years) before taking it;
- Obtaining a copy of an exam after taking it without the explicit permission of the instructor;
- Submitting substantially the same work for an assignment in this class as you turned in for credit in another class without the explicit permission of all concerned instructors;
- Using a ghostwriter, commercial or otherwise, for any type of assignment;
- Doing a class assignment for someone else or allowing someone to copy your assignment;
- Knowingly aid and abet, directly or indirectly, other parties in committing dishonest acts;
- Plagiarizing, including paraphrasing or direct quoting the work of others (published or unpublished, public, or private, written or verbal) as your own without proper citation (including phrases lifted from websites and materials prepared by those who sell term papers). Direct

quotations should be used infrequently (typically <1% of a paper). If you use five or more words from a source verbatim as they are in the source and cite the source, this is still considered plagiarism. Citations should acknowledge the source of a fact or idea, but the writing should be your own.

Purdue's Honor Pledge: *"As a Boilermaker pursuing academic excellence, I pledge to be honest and true in all that I do. Accountable together - We are Purdue."*

Use of AI – Using AI to complete any assessed work in this course will result in a **zero grade** for the assignment in question. Assessed work includes all Think-and-write (TAW) assignments and all group and individual writing assignments for the group research project.

Grief absence policy – Purdue University recognizes that a time of bereavement is very difficult for a student. Purdue therefore provides the following rights to students facing the loss of a family member through the Grief Absence Policy for Students (GAPS). According to GAPS, students will be excused for funeral leave and given the opportunity to earn equivalent credit and to demonstrate evidence of meeting the learning outcomes for missing assignments or assessments in the event of the death of a member of the student's family. The student will need to contact Purdue University Office of the Dean of Students to obtain the necessary grief absence notice for their instructors.

Accessibility – Purdue University strives to make learning experiences accessible to all participants. If you anticipate or experience physical or academic barriers based on disability, you are welcome to let me know so that we can discuss options. You are also encouraged to contact the Disability Resource Center (DRC) at drc@purdue.edu or by phone at 765-494-1247.

Students with disabilities whose DRC Course Accessibility Letter (CAL) includes test accommodations must first release their CAL to me and then schedule to take their exams with the DRC at olympic.accessiblelearning.com/Purdue. You must do this at least one week before the exam date listed on the syllabus. In the case of finals week, you must do this at least four weeks before the start of finals week (or insert the relevant date for the semester). I will provide the DRC with your exam and they will administer it and provide the result to me for grade reporting. Students must inform me immediately of cases where the DRC does not have space so that I can make other arrangements. Students who fail to follow this process and these deadlines risk not being able to have their accommodations for that exam.

Mental health – If you find yourself beginning to feel some stress, anxiety and/or feeling slightly overwhelmed, try WellTrack. Sign in and find information and tools at your fingertips, available to you at any time. **If you need support and information about options and resources**, please contact or see the Office of the Dean of Students. Call 765-494-1747. Hours of operation are M-F, 8 am- 5 pm. **If you find yourself struggling to find a healthy balance between academics, social life, stress**, etc., sign up for free one-on-one virtual or in-person sessions with a Purdue Wellness Coach at RecWell. Student coaches can help you navigate through barriers and challenges toward your goals throughout the semester. Sign up is free and can be done on BoilerConnect. If you or someone you know is feeling overwhelmed, depressed, and/or in need of mental health support, services are available. For help, such individuals should

contact [Counseling and Psychological Services (CAPS)](#) at 765-494-6995 during and after hours, on weekends and holidays, or by going to the CAPS office on the second floor of the Purdue University Student Health Center (PUSH) during business hours.

Basic needs security – Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. There is no appointment needed and Student Support Services is available to serve students 8 a.m.-5 p.m. Monday through Friday.

Emergencies – In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructors' control. Information about any changes to this course will be posted on Brightspace and sent to you via email. You are expected to read your @purdue.edu email on a frequent basis.

Diversity statement – In this course, each voice has something of value to contribute. Please take care to respect the different experiences, beliefs, and values expressed by students and staff involved in this course regardless of their ages, backgrounds, citizenships, abilities, sex, education, ethnicities, family status, genders, gender identities, geographical locations, languages, military experience, political views, races, religions, sexual orientations, socioeconomic statuses, and work experiences.

In this course, we strongly support Purdue's commitment to maintaining a community that recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach her, his or their potential. A hyperlink to Purdue's full Nondiscrimination Policy Statement is included in our course Brightspace under University Policies and Statements. Any student or staff member involved in the course who feel that they have been the victim of discrimination or hate (or who have witnessed such incident) are encouraged to report it online via www.purdue.edu/report-hate or to contact the Office of Student Rights and Responsibilities at 756-494-1250.

Anti-harassment policy – Purdue University is also committed to providing an educational and work environment free of discrimination and harassment and does not condone and will not tolerate discrimination or harassment of any person in the University community. Any student or staff member involved in the course who feel that they have been the victim of harassment (or who have witnessed such incident) are encouraged to report it online via https://www.purdue.edu/harassment/ or to report what happened to the police.

Land Acknowledgement – In this course, we acknowledge that Purdue University is built upon the ancestral homelands of the Indigenous Peoples. We honor and appreciate the Bodéwadmik (Potawatomi), Lenape (Delaware), Myaamia (Miami), and Shawnee People who are the original Indigenous caretakers of this land.

Course Outline and Schedules

Week	Date	Topics	Assignments/ Exams	Readings
1	Jan. 9	• Review syllabus and course expectations • What are human dimensions of natural resource management?		
	Jan. 11	• Complexity of natural resource issues: case study "Sacred Cod"		Bennett et al. (2017)
2	Jan. 16	• Complexity of natural resource issues (cont.) • Why do we care? • Group research project instructions		Spalding et al. (2017)
	Jan. 18	• Human attitudes, beliefs, and values	**Due: TAW 1**	Carlson et al. (2020)
3	Jan. 23	• Human attitudes, beliefs, and values (cont.) • Social norms		Cook & Ma (2014)
	Jan. 25	• Social norms (cont.) • Group research project planning meeting	**Due: CITI training certificate**	Abrahamse & Steg (2013)
4	Jan. 30	• Social science research: overview • Human subjects research and ethics		
	Feb. 1	• Qualitative research design and data collection • ACTIVITY: A taste of developing interview / focus group questions	**Due: TAW 2**	Jacob & Furgerson (2012)
5	Feb. 6	• Qualitative data analysis • ACTIVITY: A taste of qualitative data analysis		Miles et al. (2018)
	Feb. 8	• Quantitative research design and data collection • ACTIVITY: A taste of developing survey questions	**Due: Research project group assignment**	Dillman et al. (2014a; 2014b)
6	Feb. 13	• Quantitative data analysis • ACTIVITY: Peer review of interview / focus group questions		
	Feb. 15	• Types of environmental goods • Tragedy of the commons: a review		Mildenberger (2019)
7	Feb. 20	• Exam #1	**Exam #1**	
	Feb. 22	• Challenging the 'tragedy of the commons': case study "48 Cantones: The Mayan Forest"		Ostrom (2009)
8	Feb. 27	• Challenging the 'tragedy of the commons' (cont.)		Ostrom et al. (1999)
	Feb. 29	• Theory of Planned Behavior	**Due: Individual interview / focus group protocol**	Holt et al. (2021)
9	Mar. 5	• Theory of Planned Behavior (cont.) • ACTIVITY: Peer review of survey questions		
	Mar. 7	• Trust and its role in natural resource management	**Due: TAW 3**	Stern & Baird (2015)
10	Mar. 12	• Spring break—no class		
	Mar. 14	• Spring break—no class		

Week	Date	Topics	Assignments/ Exams	Readings
11	Mar. 19	• Trust and its role in natural resource management (cont.)		
	Mar. 21	• Guest lecture: Angie Haywood, Assistant Director, Planning & Public Engagement, Indiana Department of Natural Resources	**Due: Individual survey questionnaire**	
12	Mar. 26	• Diffusion of innovation and its role in natural resource management		Mascia & Mills (2017)
	Mar. 28	• Exam #2	**Exam #2**	
13	Apr. 2	• Sense of place and its role in natural resource management: case study "In light of reverence"		
	Apr. 4	• Sense of place and its role in natural resource management (cont.)		Eaton et al. (2019)
14	Apr. 9	• Social networks and its role in natural resource management		de Lange et al. (2022)
	Apr. 11	• Guest lecture: Dr. Taylor Stinchcomb, Wildlife Conservation Society, Alaska (topic: human dimensions of wildlife)	**Due: Individual reflection essay**	Stinchcomb et al. (2022)
15	Apr. 16	• Guest lecture: Seth Harden, Upper Wabash River Project Director, The Nature Conservancy		
	Apr. 18	• Types of environmental justice and why it is important for environmental and natural resource management and conservation	**Due: TAW 4**	Agyeman et al. (2016)
16	Apr. 23	• Looking back: understanding human dimensions of natural resource management requires the integration of various disciplinary and interdisciplinary concepts and approaches		
	Apr. 25	• Exam #3	**Exam #3**	

Assigned Reading List

1. Abrahamse, W., & Steg, L. (2013). Social influence approaches to encourage resource conservation: A meta-analysis. *Global Environmental Change*, *23*(6), 1773-1785. https://doi.org/10.1016/j.gloenvcha.2013.07.029
2. Agyeman, J., Schlosberg, D., Craven, L., & Matthews, C. (2016). Trends and directions in environmental justice: From inequity to everyday life, community, and just sustainabilities. *Annual Review of Environment and Resources*, 41(1), 321-340. https://doi.org/10.1146/annurev-environ-110615-090052
3. Bennett, N.J., Roth, R., Klain, S.C., Chan, K., Christie, P., Clark, D.A., ... & Wyborn, C. (2017). Conservation social science: Understanding and integrating human dimensions to improve conservation. *Biological Conservation*, *205*, 93-108. https://doi.org/10.1016/j.biocon.2016.10.006
4. Carlson, S.C., Dietsch, A.M., Slagle, K.M., & Bruskotter, J.T. (2020). The VIPs of wolf conservation: How values, identity, and place shape attitudes toward wolves in the United States. *Frontiers in Ecology and Evolution, 8*(6). https://doi.org/10.3389/fevo.2020.00006
5. Cook, S.L., & Ma, Z. (2014). The interconnectedness between landowner knowledge, value, belief, attitude, and willingness to act: Policy implications for carbon sequestration on private

rangelands. *Journal of Environmental Management*, *134*, 90-99. https://doi.org/10.1016/j.jenvman.2013.12.033

6. de Lange, E., Milner-Gulland, E.J., & Keane, A. (2022). Effects of social networks on interventions to change conservation behavior. *Conservation Biology*, *36*(3), e13833. https://doi.org/10.1111/cobi.13833

7. Dillman, D.A., Smyth, J.D., & Christian, L.M. (2014a). Chapter 4 The fundamentals of writing questions. *Internet, Phone, Mail, and Mixed-mode Surveys: The Tailored Design Method (4th ed.)*. John Wiley & Sons.

8. Dillman, D.A., Smyth, J.D., & Christian, L.M. (2014b). Chapter 5 How to write open- and closed-ended questions. *Internet, Phone, Mail, and Mixed-mode Surveys: The Tailored Design Method (4th ed.)*. John Wiley & Sons.

9. Eaton, W.M., Eanes, F.R., Ulrich-Schad, J.D., Burnham, M., Church, S.P., Arbuckle, J.G., & Cross, J.E. (2019). Trouble with sense of place in working landscapes. *Society & Natural Resources*, *32*(7), 827-840. https://doi.org/10.1080/08941920.2019.1568653

10. Holt, J.R., Butler, B.J., Borsuk, M.E., Markowski-Lindsay, M., MacLean, M.G., Thompson, J.R. (2021). Using the Theory of Planned Behavior to understand family forest owners' intended responses to invasive forest insects. *Society & Natural Resources, 34*(8), 1001-1018. https://doi.org/10.1080/08941920.2021.1924330

11. Jacob, S.A., & Furgerson, S.P. (2012). Writing interview protocols and conducting interviews: Tips for students new to the field of qualitative research. *Qualitative Report*, *17*, 6. http://www.nova.edu/ssss/QR/QR17/jacob.pdf

12. Mascia, M.B., & Mills, M. (2018). When conservation goes viral: The diffusion of innovative biodiversity conservation policies and practices. *Conservation Letters, 11*, e12442. https://doi.org/10.1111/conl.12442

13. Mildenberger, M. (2019, April 23). The tragedy of the tragedy of the commons. *Scientific American*, 23. Assessed from https://blogs.scientificamerican.com/voices/the-tragedy-of-the-tragedy-of-the-commons/

14. Miles, M.B., Huberman, A.M., & Saldana, J. (2018). Chapter 4. Fundamentals of qualitative data analysis. *Qualitative Data Analysis: A Methods Sourcebook (4th ed.)*. Sage Publications.

15. Ostrom, E. (2009). A general framework for analyzing sustainability of social-ecological systems. *Science*, *325*(5939), 419-422. DOI: 10.1126/science.1172133

16. Ostrom, E., Burger, J., Field, C. B., Norgaard, R. B., & Policansky, D. (1999). Revisiting the commons: local lessons, global challenges. *Science*, *284*(5412), 278-282. DOI: 10.1126/science.284.5412.278

17. Spalding, A.K., Biedenweg, K., Hettinger, A., & Nelson, M.P. (2017). Demystifying the human dimension of ecological research. *Frontiers in Ecology and the Environment*, *15*(3), 119-119. https://doi.org/10.1002/fee.1476

18. Stern, M.J., & Baird, T. (2015). Trust ecology and the resilience of natural resource management institutions. *Ecology and Society, 20*(2), 14. http://dx.doi.org/10.5751/ES-07248-200214

19. Stinchcomb, T.R., Ma, Z., & Nyssa, N. (2022). Complex human-deer interactions challenge conventional management approaches: The need to consider power, trust, and emotion. *Ecology and Society, 27*(1), 13. https://doi.org/10.5751/ES-12899-270113