University of Wisconsin-Madison
Natural Resource Economics
AAE/Econ/Forest Ecol/531
Fall 2022

Instructor:
Dominic Parker
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Taylor Hall, Room 413
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Class Meetings:
Tuesdays and Thursdays, 9:30 – 10:45 a.m.
Engineering Hall, Rm. 3534

Office Hours:
Tues & Thurs, 3 to 4 pm and by appointment.

Class Website:
We will use Canvas. Check regularly for announcements, readings, assignments, etc.

Course Description:
This 3-credit course will introduce the concepts, tools, and methods of natural resource economics. Examples of concepts include *commons, anticommons, steady state*, *maximum sustained yield*, *discounting*, and the *rule of capture*. Examples of tools include analytical models of optimal control and numerical simulation. We will use algebra, calculus, and computer programs to solve problems and economic intuition to interpret the results.

The course will apply the methods and tools towards the study use of land, renewable energy, water, forests, fossil fuels, fisheries, and wildlife. As we will see, resource management (or lack thereof) depends on real-world conditions related to resource scarcity and the extent to which property rights are defined and enforced. In the case of renewable resources, growth rates and/or recharge rates also play an important role. The course applications will mix economic modeling and problem solving with practical readings and some basic statistical exercises. We will examine how the economic and environmental benefits from resources are captured under some government policies and dissipated under others.

Natural Resource Economics is a class in economic theory, so you can expect math and a lot of diagrams, abstractions, and simplifications. But the purpose of theory is to help understand the real world. *Note: Economics 301 (Intermediate Microeconomic Theory) and Math 211 (Calculus) are prerequisites to this class.*

Course Learning Objectives:
Successful students will

- employ appropriate concepts to correctly define the economic benefits accrued from different natural resources; and
- apply appropriate methodologies to demonstrate the conditions under which the benefits are likely to be captured or dissipated by real world actors; and

- explain the social, economic, and/or environmental dimensions of the sustainability challenge(s) of maintaining healthy stocks of forests, fish, wildlife, and water; and
- analyze the causes of and solutions for the sustainability challenge of maintaining healthy stocks of forests, fish, wildlife, and water.

Textbook Resources:
There is not a required textbook, but you may find it useful to own the following books.

Conrad, Jon M. 2010. *Resource Economics* (2nd Edition). Cambridge University Press.
(a Master's level treatment of traditional resource topics).

Field, Barry C. 2008. *Natural Resource Economics, an Introduction*. Waveland Press.
(an introductory level treatment of a large-range of resource topics).

Supplementary Readings:
Supplementary readings will be a mix of journal articles, blogs, news media, and policy briefs.

Grading:

Problem Sets 5 @ 8 points	40 pts
Quizzes 5 @ 10 points	50
Group Presentation	25
Final exam	35
Total	**150 pts**

The final grading is as follows

A:	92 – 100%
AB:	86 – 92%
B:	80 – 86%
BC:	74 – 80%
C:	68 – 74%
D:	60 – 68%

Problem Sets:
The problems sets will be due approximately every third week. You can work on these together, in small groups, but I expect you to turn in your own, individual work.

Quizzes:
In-class quizzes will be given approximately every third week. Questions will include a mixture of technical problems and short-essay questions. You may be required to solve mathematical problems, draw graphs, and to critically assess readings from the course.

Group Presentations:
I will assign students to groups of 3-4 students and each group will give a brief presentation on the topic. Preparing for the presentations will give the presenting students an opportunity to explore a topic in depth, and it will give the audience a break from listening to the professor lecture!

Final Exam:
There will be a comprehensive final exam. Your grade will depend on how well you demonstrate both intuitive and technical understanding of course concepts.

Guidelines for Doing Well in the Class:

- *Attend all classes* – quizzes, problem sets, and the final exam focus on material discussed in class, and much of the lecture material will not come from the textbooks or readings
- *Keep up with reading* – be "on same page" – or at least on same chapters
- *Devote necessary time* – the course meets two 75 minute periods per week and carries the expectation that students will work on learning activities (reading, writing, problem sets, studying, etc.) for about 3-4 hours out of classroom for every class period.

Academic Integrity:

By enrolling in this course, each student assumes the responsibilities of an active participant in UW-Madison's community of scholars in which everyone's academic work and behavior are held to the highest academic integrity standards. Academic misconduct compromises the integrity of the university. Cheating, fabrication, plagiarism, unauthorized collaboration, and helping others commit these acts are examples of academic misconduct, which can result in disciplinary action. This includes but is not limited to failure on the assignment/course, disciplinary probation, or suspension. Substantial or repeated cases of misconduct will be forwarded to the Office of Student Conduct & Community Standards for additional review. For more information, refer to studentconduct.wiscweb.wisc.edu/academic-integrity/.

Accommodations for Students with Disabilities:

The University of Wisconsin-Madison supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12), and UW-Madison policy (Faculty Document 1071) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform me of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. I will work either directly with you or in coordination with the McBurney Center to identify and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA.

Diversity and Inclusion:

Diversity is a source of strength, creativity, and innovation for UW-Madison. We value the contributions of each person and respect the profound ways their identity, culture, background, experience, status, abilities, and opinion enrich the university community. We commit ourselves to the pursuit of excellence in teaching, research, outreach, and diversity as inextricably linked goals. The University of Wisconsin-Madison fulfills its public mission by creating a welcoming and inclusive community for people from every background – people who as students, faculty, and staff serve Wisconsin and the world.

TENTATIVE SCHEDULE (Subject to Change)

Week	Topics	Readings	Notes
1 (Sept 8)	Course overview		
2 (Sept 12 - 16)	Open access, Common property	SR 1, 2 SR 3	
3 (Sept 19 -23)	Anticommons, Rights to Use and Not Use Resources	SR 4, p. 660-88 SR 5	Thur: PS1 due, SP 1 & 2
4 (Sept 26 - 30)	Forestry	SR 6, 7	Tues: Q1
5 (Oct 3 - 7)	Forestry, Private Land Conservation	SR 8	
6 (Oct 10 - 14)	Private Land Conservation	SR 9	Tues: PS2 due, SP 3 Thur: Q3, SP 4
7 (Oct 17 - 21)	Fisheries	SR 10, 11	
8 (Oct 24 - 28)	Fisheries	SR 12	Thur: No Class
9 (Oct 31 - Nov 4)	Fisheries, Wildlife		Tues: PS 3 due, SP 5 & 6 Thur: Q3
10 (Nov 7 - 11)	Wildlife	SR 13, 14, 15	
11 (Nov 14 - 18)	Wildlife, Water	SR 16	Tues: PS4 due, SP 7 Thur: Q4, SP 8
12 (Nov 21 - 25)	Water	SR 16	
13 (Nov 28 –Dec 2)	Water, Fossil Fuels	SR 17-18	Thur: SP 9
14 (Dec 5 – 9)	Fossil Fuels, Renewable Energy	SR 17-18	Tues: PS 5 due Thurs: Q5
15 (Dec 12 – 16)	Renewable Energy	TBA	Tues: SP 10 Thurs: Course review
16 (Dec 17)	Final Exam		Exam: 5 – 7pm

Supplementary Readings (SR) (subject to change)

1. Hardin, Garrett. 1968. The Tragedy of the Commons. *Science* 162: 1243-48
2. Karpoff, Jonathan. 2022. The Tragedy of the 'Tragedy of the Commons": Hardin versus the Property Rights Theorists. *Journal of Law and Economics* 65(S1): S65-84.
3. Dietz, Thomas, Elinor Ostrom and Paul Stern. 2003. The Struggle to Govern the Commons. *Science* 302 (5652): 1907-12.
4. Heller, Michael. 1998. The Tragedy of the Anticommons: Property in the Transition from Marx to Markets. *Michigan Law Review* 111(3): 621-688.
5. Leonard, Bryan, Shawn Regan, Christopher Costello, Suzi Kerr, Dominic Parker, Andrew Plantinga, James Salzman, Kerry Smith, and Temple Stoellinger. 2021. Allow 'Nonuse Rights' to Conserve Natural Resources. *Science* 373(6558): 958-961.
6. Field, Barry C. 2008. "Chapter 12: Forest Economics" in *Natural Resource Economics*, Waveland Press, Longrove Illinois.
7. Conrad, Jon M. 2010. "Chapter 4: The Economics of Forestry" in *Resource Economics*, 2nd Edition. Cambridge University Press.
8. Tietenberg, Tom and Lynne Lewis. 2012. "Chapter 10: A Locationally Fixed, Multipurpose Resource: Land" In *Environmental & Natural Resource Economics,* pp 237-261.
9. Parker, Dominic P. and Walter N. Thurman. 2019. Private Land Conservation and Public Policy. *Annual Review of Resource Economics* 11: 337 – 354.
10. Field, Barry. C. 2008. "Chapter 13: Marine Resources" in *Resource Economics*, 2nd Edition. Cambridge University Press.
11. Conrad, Jon M. 2010. "Chapter 3: The Economics of Fisheries" in *Resource Economics*, 2nd Edition. Cambridge University Press.
12. Deacon, Robert T. 2009. Creating Marine Assets: Property Rights in Ocean Fisheries. PERC Policy Series No. 43. Available at: http://perc.org/sites/default/files/ps43.pdf
13. Field, Barry. C. 2008. "Chapter 18: Economics of Wildlife Management" in *Resource Economics*, 2nd Edition. Cambridge University Press.
14. Fischer, Carolyn. 2010. Does Trade Help or Hinder the Conservation of Natural Resources? *Review of Environmental Economics and Policy* 4:1, 103-121.
15. Gilbert, Natasha. 2020. "A Plan to Save Wildlife May have Done More Harm than Good." *The Atlantic*, November 23.
16. Field, Barry. C. 2008. "Chapter 15: Water Resources" in *Resource Economics*, 2nd Edition. Cambridge University Press.
17. Field, Barry. C. 2016. "Chapter 10: Mineral Economics" in *Resource Economics*, 3rd Edition. Cambridge University Press.
18. Conrad, Jon M. 2010. "Chapter 5: The Economics of Nonrenewable Resources" in *Resource Economics*, 2nd Edition. Cambridge University Press.

Student Group Presentation Topics (SP) (subject to change)

1. Are all commons tragedies? The decimation of American Bison
2. Using markets to bring back the Bison? The American Prairie Reserve
3. What are Payments to Ecosystem Services and are they working?
4. How should conservation easements be valued and paid for?
5. Do ITQs have drawbacks and why is fishery reform slow?
6. What market-based strategies are being used to conserve fish that are not commercially valuable?
7. What is CAMPFIRE and is it a good alternative to national hunting bans?
8. What is the "right" number of wolves in Wisconsin and how do we get it?
9. What is happening to groundwater in the Wisconsin central sands and what are solutions?
10. When is renewable energy a tragedy of the anticommons?