

History of Ecology

History of Science 353 / Environmental Studies 353

Spring 2010

- Meets:** TR 1:00 p.m. – 2:15 p.m.
B223 Van Vleck
- Instructor:** Amrys O. Williams
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117 Bradley Memorial (CHE graduate student office)
- Office Hours:** T 2:30 p.m. – 4:30 p.m. or by appointment
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The word “ecology” has come to have many meanings and connotations: a scientific field dealing with the relation of organisms and the environment, a way of thinking about the world emphasizing holism and interconnection, a handmaiden of the environmental movement, to name a few. This course covers the history of ecology as a scientific discipline from the eighteenth-century natural history tradition to the development of population, ecosystem, and evolutionary ecology in the twentieth century, situating the science in its cultural, political, and social contexts. Along the way, it traces the connections between ecology and economic development, political theory, ideas about society, the management of natural resources, the preservation of wilderness, and environmental politics. How have scientists, citizens, and activists made use of ecological ideas, and to what ends? How have they understood and envisioned the human place in nature? How have the landscapes and places in which ecologists have done their work shaped their ideas? Other major themes include the relationship between theories of nature and theories of society, ecology and empire, the relationship between place and knowledge about nature, the development of ecology as a professional discipline, the role of ecologists as environmental experts, relationship between the state and the development of ecological knowledge, and the relationships among ecology, conservation, agriculture, and environmentalism.

Course Requirements:

Attendance, preparation, and participation in discussion (10%). Students are expected to attend each class, to read the assigned materials closely and thoughtfully, to pay attention in lecture, and to participate in discussion. The class is a mix of lecture and discussion, with one day a week generally consisting of a lecture presenting the week’s topics, and the other of group work and discussion relating more closely to the assigned readings. Students should bring paper copies of the readings to class for reference and to facilitate discussion.

Reading/ discussion questions (25%). Each week, students will turn in an assignment based on the readings. This will generally be a set of short-answer questions designed to facilitate discussion. Students should complete 11 out of 14 of these assignments.

Midterm examination (30%) and final examination (35%). These will be take-home essays of approximately five double-spaced pages, due one week after they are assigned in class.

Graduate students will complete additional reading and writing assignments, in consultation with the instructor.

Required Texts:

1. Donald Worster, *Nature's Economy: A History of Ecological Ideas*, 2nd edition (Cambridge: University of Cambridge Press, 1994), available for immediate purchase at the University Book Store (\$30.99 new, \$23.25 used). If you search for a copy of the book elsewhere, be sure to get the second edition, as it differs substantially from the original printing. There are also several copies in the UW library system.
2. Course reader, available for purchase (\$39.00, cash or check only, no returns or refunds) from Eileen Ward in the History of Science Department Office, 210 Bradley Memorial. The office is open from 8:00 a.m. to 4:30 p.m. during the first week of classes, and from 8:00 a.m. to 4:00 p.m. during the second week of classes. After the second week of classes, the office is open less frequently. A copy of the reader is also on reserve at College Library.

Readings

Each week's reading assignment generally consists of at least one *primary source*—a document from the period under study—and one *secondary source*—an article, book chapter, or other piece of modern scholarship focused on that period, usually relating to at least one of the accompanying primary sources.

- To help orient yourself to the material, look over the reading questions quickly before you begin reading.
- Read the materials in the course reader in the order in which they appear: primary source(s) first, followed by secondary source(s).
- The reading questions are designed to help you identify some of the most important points, ideas, and connections in and among the documents. Do the questions as you read, the revisit them and your answers once you have finished the reading, to see if you have anything you'd like to add.
- Take notes. This will help you identify ideas you'd like to talk about more in discussion, and also prove a useful reference when writing exams.

Readings from Worster appear throughout, and provide context, background, and counterpoint for the materials in lecture and in the course reader. Don't accept Worster's arguments (or anyone else's, for that matter!) as gospel—be skeptical as you read, and think critically about his analysis. You'll have a chance to read a lot of the same authors he talks about for yourself, so you will be well equipped to put your own ideas in conversation with his.

Lecture and Discussion:

Class time is an opportunity to critically engage with the concepts and issues of history, and with one another. It is a place to learn and practice the important skills of thinking, speaking, writing, and asking questions, and in so doing to become comfortable expressing our thoughts and ideas—to become comfortable talking. It is a place to be not passive but participatory. Below are some guidelines and tips for making the most of our time together.

- **Get to know one another.** I expect us to learn one another's names, and to use them; to say hello when we see each other in passing on campus. The classroom is a social as well as an intellectual space; as we each bring something different to this course, our individual minds will benefit from the collective endeavor of group inquiry and exploration.
- **Come prepared.** This means being on time, having completed the assigned readings and discussion questions, having thought about the material, and being ready to share your thoughts and ideas with one another. Taking notes as you read will help you work through the assignments; taking some time after you have finished reading to assemble your thoughts and jot down some more comprehensive ideas, speculations, or questions will make sure you arrive in class with something to contribute.
- **Be engaged.** Discussions offer us the time to explore the week's material together, so that we can share our insights with and learn from one another. Come to discussions ready to contribute meaningfully and to listen to each other. The best discussions flourish when we are able to build on one another's ideas and comments, engaging fully in the give-and-take of conversation—and this can only happen when we are paying close attention. Cell phones and other devices should be turned off, computers stowed, readings and notes on hand in paper form.
- **Be respectful.** The classroom should be a safe space for the sharing and testing of ideas. Each member should have the opportunity to speak without fear, and no one person or group should dominate a discussion. Learning to speak our minds is as much about learning to listen as it is about figuring out how to articulate our ideas clearly and exactly. We should each feel free to disagree with one another, but we should always be careful to do so respectfully.
- **Have fun!** Class should be enjoyable, something to look forward to each week. Discussion in particular is our opportunity to dig into the truly fascinating material of this course, and doing so together offers endless opportunities for discovery and excitement. If we all follow these guidelines, we should have a very successful semester.

Policies and Procedures:

Laptops and other electronics—Because the majority of lectures take place in a darkened room with PowerPoint presentations, because bright screens are distracting to other students in this environment, and because the temptation to multitask is so enormous, please keep your laptop computers, cell phones, and other screen-based devices turned off and stowed during class. If you prefer to type up your notes, please do so outside of class time. If you have McBurney accommodations to use a laptop or other device for note-taking during class, please let me know.

Email—I am available over email to answer questions you have about the course, and I welcome your inquiries, ideas, and suggestions. However, please do not email me with questions that could be answered by consulting your syllabus, or that would be better dealt with in a one-on-one meeting. For all but the briefest and simplest questions, I find that it is

usually preferable for us to meet in person, in my office hours or at another scheduled time. When emailing me, please allow a full 24 hours for a response.

Absences—Class attendance is mandatory for both lecture and discussion, and unexcused absences will adversely affect your grade. If you know you will be absent from class due to illness or any other reason, please contact me beforehand.

Illness—If you are sick, let me know; then stay home, rest, get well, and return to class when you are healthy. This is especially important if you suspect you may have the H1N1 influenza, but is a good rule of thumb for any ill health. You do your best work when you take good care of yourself.

Extensions and extenuating circumstances—Things happen. If something is going on in your life and you need extra time to complete work, come and see me.

Late assignments—Unless you make another arrangement with me directly, assignments handed in after the due date will receive a one-third grade reduction for every 24 hours they are late.

Honesty—Plagiarism in academic writing and cheating on exams are serious offenses and will be penalized in accordance with University of Wisconsin standards. Cite all your sources, do your own work, and hold yourself to a high standard of academic integrity.

Accommodations—If you are a McBurney student who requires special accommodations for note-taking, test-taking, or anything else related to the course, please come and see me as soon as possible.

Resources:

The UW's **Writing Center** (<http://writing.wisc.edu/>) is an excellent resource for helping you with your writing, from the idea to the sentence to the paper. In addition to an abundance of online reference materials, they offer individual consultations at several locations around campus, as well as over email and online. They also conduct a series of free writing workshops focused on particular kinds of assignments. Don't hesitate to take advantage of their services!

The **UW Libraries** (<http://www.library.wisc.edu/>) are a resource the richness and rarity of which you may be unaware. The UW's collections are among the best in the nation, and reflect Wisconsin's position as a leading research university. The resources that are free and at your fingertips during your time here are ones you may never again have access to after leaving college. To really explore and make use of their collections, you need to venture beyond Helen C. White! Take a library workshop, hone your research skills, browse the stacks, and learn how information is organized in a major research facility. The **Wisconsin Historical Society** (<http://www.wisconsinhistory.org/>) is also right here on campus, and houses the largest library collection on North American history in the U.S. Don't be intimidated by the current construction project—it's open, and the renovations should be finished by the end of January, leaving us once again with one of the best reading rooms I've ever had the pleasure of working in. Don't leave campus without spending some time there.

College life often involves a lot of stress. If you feel like things are getting out of hand, either for personal or academic reasons, please contact the Counseling and Consultation Service, part of **University Health Services** (<http://www.uhs.wisc.edu/>).

Schedule of Topics and Readings

N.B.: Reading assignments appear under the date they are *due*. “Weeks” in this course refer to a lecture, followed by a discussion of the readings related to that material. During the first part of the course, lectures are on Thursdays (R), followed by a Tuesday (T) discussion; during the latter portion, lectures are on Tuesdays, followed by a Thursday discussion. Please refer closely to the schedule to eliminate confusion.

Week 1—Introduction: What is Ecology?

T 19 January—Introductions, course overview, and discussion of “What is ecology?”

Week 2—Linnaeus and the Economy of Nature

R 21 January—Lecture: Linnaeus and the Economy of Nature

T 26 January—Discussion of readings:

Worster, Chapters 1 & 2

Carl Linnaeus, “On the Police of Nature,” in *Select Dissertations from the Amoenitates Academicæ*, trans. F.J. Brand (London, 1781), pp. 129-166.

Lisbet Koerner, “God’s Endless Larder” and “A New World—Pepper, Ginger, Cardamon’: Economic Theory,” chapters 4 & 5 in *Linnaeus: Nature and Nation* (Cambridge: Harvard University Press, 1999), pp. 82-112.

Week 3—The Ecology of Empire

R 28 January—Lecture: Humboldt and the Ecology of Empire

T 2 February—Discussion of readings:

Worster, Chapters 6 & 7

Alexander von Humboldt, *Aspects of Nature in Different Lands and Different Climates, with Scientific Elucidations*, trans. Mrs. Sabine (Philadelphia, 1850), pp. 227-246.

Richard Grove, “The beginnings of global environmentalism: Professional science, oceanic islands, and the East India Company, 1708-1838,” chapter 7 in *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600-1860* (Cambridge: Cambridge University Press, 1995), pp. 309-379.

Week 4—Darwin, Malthus, and the Entangled Bank

R 4 February—Lecture: The Entangled Bank

T 9 February—Discussion of readings:

Worster, Chapters 8 & 9

Thomas Malthus, book 1, chapter 1 in *An Essay on the Principle of Population* (London: J. Johnson, 1798), pp. 2-14.

Charles Darwin, "The Struggle for Existence," chapter 3 in *On the Origin of Species by Means of Natural Selection, or, The Preservation of Favoured Races in the Struggle for Life* (1859), ed. John W. Burrow (New York: Penguin Books, 1982), pp. 60-79.

Daniel P. Todes, "Darwin's Malthusian Metaphor and Russian Evolutionary Thought, 1859-1917," *Isis* 78 (1987), pp. 537-551.

Week 5—Conservation and its Discontents

R 11 February—Lecture: Progressive Conservation

T 23 February—Discussion of readings:

John Muir, *Our National Parks* (Boston: Houghton Mifflin Co., 1901), pp. 1-15, 30-36.

Charles Van Hise, "Conservation and Mankind," in *The Conservation of Natural Resources in the United States* (New York: Macmillan, 1910), pp. 359-379.

William Cronon, "The Trouble with Wilderness; or, Getting Back to the Wrong Nature," *Environmental History* vol. 1 (1996), pp. 7-28.

Laura Lovett, "Men as Trees Walking: Theodore Roosevelt and the Conservation of the Race," chapter 5 in *Conceiving the Future: Pronatalism, Reproduction, and the Family in the United States, 1890-1938* (Chapel Hill: University of North Carolina Press, 2007), pp. 109-130.

Week 6—Environmental Experts and Resource Conflict

R 25 February—Lecture: Nature's Experts

T 16 February—Discussion of readings:

Stephen A. Forbes, "The Lake as a Microcosm," *Bulletin of the Peoria Scientific Association* vol. 87 (1887), pp. 77-87; reprinted in Leslie A. Real and James H. Brown (eds.), *Foundations of Ecology: Classic Papers with Commentaries* (Chicago: University of Chicago Press, 1991), pp. 14-27.

Daniel Schneider, "Local Knowledge, Environmental Politics, and the Founding of Ecology in the United States: Stephen Forbes and 'The Lake as a Microcosm,'" *Isis* 91 (2000), pp. 681-705.

Karl Jacoby, "The State of Nature: Country Folk, Conservationists, and Criminals at Yellowstone National Park, 1872-1908," in Catherine McNicol Stock & Robert D. Johnston, eds., *The Countryside in the Age of the Modern State: Political Histories of Rural America* (Ithaca: Cornell University Press, 2001), pp. 91-112.

Weeks 7 & 8—Ecology, Conservation, and Agriculture in the Interwar Years

R 18 February—Lecture: Plant Ecology and Dust Bowl

T 2 March—Film screening and discussion of readings:

Pare Lorentz, *The Plow That Broke the Plains* (1936, 25 min.)

Worster, Chapter 12

Paul Sears, *Deserts on the March* (Norman: University of Oklahoma Press, 1935), pp. 81-92, 119-132, 157-169, 197-231.

Finis Dunaway, "The Decline to Dust," chapter 2 in *Natural Visions: The Power of Images in American Environmental Reform* (Chicago: University of Chicago Press, 2005), pp. 33-59.

R 4 March—Lecture: Managing Nature

T 9 March—Discussion of readings:

Worster, Chapter 13

Aldo Leopold, "The Land Ethic," in *A Sand County Almanac* (1949; New York: Ballantine Books, 1966), pp. 165-177, 188-226.

Olaus Murie, "Fenced Wildlife for Jackson Hole," *National Parks Magazine* (1946), pp.8-11.

Neil Maher, "Nation: The Great Conservation Debate," chapter 5 in *Nature's New Deal: The Civilian Conservation Corps and the Roots of American Environmentalism* (New York: Oxford University Press, 2008), pp. 151-180.

R 11 March—*No class*—*American Society for Environmental History conference*

Week 9—Forestry, Race, and Nation

T 16 March—Lecture: Forestry, Race, and Nation

R 18 March—Discussion:

Franz Heske, *German Forestry* (New Haven: Yale University Press, 1938), pp. 3-43, 173-185.

Michael Imort, "Eternal Forest—Eternal *Volk*," chapter 2 in Franz-Joseph Brüggemeier, Mark Cioc, and Thomas Zeller (eds.), *How Green Were the Nazis?: Nature, Environment, and Nation in the Third Reich* (Athens: Ohio University Press, 2005), pp. 43-72.

Jake Kosek, "'Smokey Bear is a White Racist Pig,'" chapter 5 in *Understories: The Political Life of Forests in Northern New Mexico* (Durham: Duke University Press, 2006), pp. 183-227.

Midterm exam handed out at the end of class on Thursday 18 March.

Week 10—Community, Cooperation, and the Population in Animal Ecology

T 23 March—Lecture: Adding an Animal Dimension

R 25 March—Discussion of readings:

Worster, Chapters 14 & 15 (this week and next)

Warder Clyde Allee, "Co-operation among Animals," *University of Chicago Magazine* 20 (1928), pp. 419-425.

Alfred E. Emerson, "The Biological Basis of Social Cooperation," *Illinois Academy of Sciences Transactions* 39 (1946), pp. 9-18.

Gregg Mitman, "From the Population to Society: The Cooperative Metaphors of W. C. Allee and A. E. Emerson," *Journal of the History of Biology* 21 (1988), pp. 173-194.

Midterm exam due at the beginning of class on Thursday 25 March.

-----Spring Break-----

Week 11—From the Organism to the Ecosystem: Ecology in the Atomic Age

T 6 April—Lecture: From the Organism to the Ecosystem

R 8 April—Discussion of readings:

Worster, Chapters 14 & 15 (last week and this week)

Raymond Lindeman, "The Trophic-Dynamic Aspect of Ecology," *Ecology* 23 (1942), pp. 399-418.

Peter Taylor, "Technocratic Optimism, H.T. Odum, and the Partial Transformation of Ecological Metaphors after World War II," *Journal of the History of Biology* 21 (1988), pp. 213-244.

Steven Bocking, "Oak Ridge Ecosystem Research and Impact Assessment," chapter 5 in *Ecologists and Environmental Politics: A History of Contemporary Ecology* (New Haven: Yale University Press, 1997), pp 89-115.

Weeks 12 & 13—The Two Bombs

T 13 April—Lecture: Fallout and Pesticides

R 15 April—Film screening and discussion of readings:

Excerpts from *CBS Reports: "The Silent Spring of Rachel Carson"* (15 May 1963, 60 min.)

Worster, Chapters 16 & 17

Rachel Carson, "A Fable for Tomorrow," "The Obligation to Endure," "Surface Waters and Underground Seas," "And No Birds Sing," "The Human Price," "Through a Narrow Window," and "The Other Road," chapters 1, 2, 4, 8, 12, 13, and 17 in *Silent Spring* (Boston: Houghton Mifflin, 1962), pp. 1-13, 39-51, 103-127, 187-216, 277-297.

Ralph Lutts, "Chemical Fallout: Rachel Carson's *Silent Spring*, Radioactive Fallout, and the Environmental Movement," *Environmental Review* vol. 9, no. 3 (1985), pp. 210-225.

T 20 April—Lecture: Population, Resources, and Development

R 22 April—Discussion of readings:

Paul Ehrlich, *The Population Bomb* (1968), pp. 15-35, 46-67.

Garret Hardin, "The Tragedy of the Commons," *Science* 162 (13 December 1968), pp. 1243-1248.

Barry Commoner, *The Closing Circle* (New York: Bantam Books, 1971), pp. 125-139, 178-215.

John Sharpless, "Population Science, Private Foundations, and Development Aid: The Transformation of Demographic Knowledge in the United States, 1945-1965," chapter 6 in Frederick Cooper & Randall Packard (ed.), *International Development and the Social Sciences* (Berkeley: University of California Press, 1997), pp. 176-200.

Week 14—Towards a Global Environmental Consciousness / Globalizing Ecology

T 27 April—Lecture: Globalizing Ecology

R 29 April—Discussion of readings:

William C. Clark, "Managing Planet Earth," *Scientific American* vol.261, no. 3 (September 1989), pp. 46-54.

Peter Taylor and Frederick Buttel, "How do we know we have global environmental problems? Science and the globalization of environmental discourse," *Geoforum* 23 (1992), pp. 405-416.

Clark Miller, "Climate Science and the Making of a Global Political Order," in Sheila Jasanoff (ed.), *States of Knowledge: The Co-Production of Science and Social Order* (London: Routledge, 2004), pp. 46-66.

Week 15—Biodiversity, Conservation Biology, and the Third World

T 4 May—Lecture:

R 6 May—Discussion of readings:

R. Rittermeier *et al.*, "Hotspots and Global Biodiversity Conservation," in *Hotspots* (Mexico City: CEMEX, Conservation International, 1999), pp. 21-67.

Ramachandra Guha, "The Authoritarian Biologist and the Arrogance of Anti-Humanism: Wildlife Conservation in the Third World," *The Ecologist* 27 (1997), pp. 14-20.

Final exam handed out at the end of class on Thursday 6 May.

Final Exam—due in my mailbox by 2:25 p.m. Central Time, Thursday 13 May.

Quick Reference Schedule of Topics, Readings, and Assignments

Calendar Week	Tuesday	Thursday
1: 19, 21 January	Introduction: What is Ecology?	Lecture: Linnaeus and the Economy of Nature
2: 26, 28 January	Discussion: Worster, Linnaeus, Koerner	Lecture: Humboldt and the Ecology of Empire
3: 2, 4 February	Discussion: Worster, Humboldt, Grove	Lecture: The Entagled Bank
4: 9, 11 February	Discussion: Worster, Malthus, Darwin, Todes	Lecture: Progressive Conservation
5: 16, 18 February	Discussion: Muir, Van Hise, Cronon, Lovett	Lecture: Nature's Experts
6: 23, 25 February	Discussion: Forbes, Schneider, Jacoby	Lecture: Plant Ecology and the Dust Bowl
7: 2, 4 March	Film: <i>The Plow That Broke the Plains</i> Discussion: Worster, Sears, Dunaway	Lecture: Managing Nature
8: 9, 11 March	Discussion: Leopold, Murie, Maher	No class—Amrys at ASEH meeting
9: 16, 18 March	Lecture: Forestry, Race, and Nation	Discussion: Heske, Imort, Kosek <i>Midterm exam handed out</i>
10: 23, 25 March	Lecture: Adding an Animal Dimension	Discussion: Worster, Allee, Emerson, Mitman <i>Midterm exam due at start of class</i>
<i>Spring Break</i>		
11: 6, 8 April	Lecture: From the Organism to the Ecosystem	Discussion: Worster, Lindeman, Taylor, Bocking
12: 13, 15 April	Lecture: Fallout and Pesticides	Film: <i>CBS Reports, "The Silent Spring of Rachel Carson"</i> Discussion: Worster, Carson, Lutts
13: 20, 22 April	Lecture: Population, Resources, and Development	Discussion: Ehrlich, Hardin, Commoner, Sharpless
14: 27, 29 April	Lecture: Globalizing Ecology	Discussion: Clark, Taylor & Buttel, Miller
15: 4, 6 May	Lecture: Coercive Conservation?	Discussion: Rittermeier, Guha <i>Final exam handed out</i>
Finals Week: 11, 13 May	No class—final exam period	<i>Final exam due by 2:25 p.m.</i>