

PRINCETON UNIVERSITY
WOODROW WILSON SCHOOL
Spring 2002

**WWS 586b/EEB 516
Conservation of Endangered Species and Ecosystems**

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Course Description

We will examine the ways in which science has influenced public policy with respect to both endangered species and ecosystems in the United States. Important case studies from different regions of the United States are examined in detail, emphasizing the key scientific studies and how they affected decision-making. Because we will focus on a limited number of case studies, students will have the opportunity to work with the primary decision documents, including environmental impact statements, legal briefs, Congressional testimony, and peer-reviewed publications. Topics include the northern spotted owl and the Clinton Administration's Northwest forest plan, the reintroduction of the gray wolf to Yellowstone National Park, management of Yellowstone's elk herd, and the conservation of red-cockaded woodpeckers on private lands.

Prerequisites

I anticipate that students with a range of backgrounds and experience will be taking the course. Accordingly, I will try to structure parts of the course to play to those different strengths. Students with strong science backgrounds may be asked to summarize or interpret technical papers, while students with strong policy backgrounds may be asked to delve into legal and policy matters in greater depth.

Course Format

We will devote most of each session to a discussion of the reading assignments. Frequently, I will give a short introductory lecture to provide the necessary background for that discussion.

Requirements

Your grade will be based on class participation and presentations (30%), the mid-term paper (30%), and the final paper (40%).

Reading Assignments

Reading assignments fall into two categories: required reading, which covers the material we will be discussing during each class, and supplementary reading, which provides useful background information or allows you to explore a given topic in greater detail. I have prepared a course packet, available through Pequod Printing. Readings included in the course packet are indicated by an asterisk (*); readings not included in the packet are on reserve at the Woodrow Wilson School library.

Schedule of Classes

February 5 (Tuesday): An overview of the course; background lecture: How many species are there on earth?

Required Reading for 2/7:

Erwin, T.L. 1982. Tropical forests: their richness in coleoptera and other arthropod species. *The Coleopterists Bulletin* 36: 74-75.*

May, R.M. 1992. How many species inhabit the earth? *Scientific American*. October, pp. 42-48.*

Supplementary Reading for 2/7:

May, R.M. 1990. How many species? *Phil. Trans. R. Soc. Lond. B* 330: 293-304.

Wilson, E.O. 1992. *The Diversity of Life*. Cambridge, MA: Belknap Press, pp. 243-280.

Lomborg, B. 2001. *The Skeptical Environmentalist: Measuring the Real State of the World*. Cambridge, England: Cambridge University Press, pp. 249-257.

February 7 (Thursday): discussion of Erwin and May; background lecture: The history of wolves in Yellowstone National Park and elsewhere in the American West.

Required Reading for 2/12:

Wilson, E.O. 1987. The little things that run the world (The importance and conservation of invertebrates). *Conservation Biology* 1: 344-346.*

Terborgh, J. 1988. The big things that run the world—a sequel to E.O. Wilson. *Conservation Biology* 2: 402-403.*

United States District Court, District of Wyoming. *Wyoming Farm Bureau Federation et al. vs. Bruce Babbitt* (district court opinion), pp. 1-12, 36-50.

Supplementary Reading for 2/12

Terborgh, J., et al. 2001. Ecological meltdown in predator-free forest fragments. *Science* 294: 1923-1926.*

February 12 (Tuesday): discussion of conservation of top predators versus other species; discussion of Yellowstone wolf case.

Required Reading for 2/14

Brief of Plaintiffs/Appellees, Wyoming Farm Bureau Federation et al. (Farm Bureau's brief to the Court of Appeals by Todd S. Welch et al.).

Brief for Plaintiffs-Appellants, Appellees Predator Project et al. (Predator Project's brief to the Court of Appeals by Douglas L. Honnold).

Brief of Amici Curiae prepared by Michael Bean for Environmental Defense Fund et al.

February 14 (Thursday): further discussion of wolf case; what the Court of Appeals decided; background lecture: The public lands system of the United States.

Required Reading for 2/19

Leopold, A.S., S.A. Cain, C.M. Cottam, I.N. Gabrielson, and T.L. Kimball. Wildlife management in the national parks. Report of the Advisory Board on Wildlife Management appointed by Secretary of the Interior Udall, 4 March 1963.*

February 19 (Tuesday): what should a national park be? (discussion of Leopold report)

Required Reading for 2/21

Chadde, S.W. and C.E. Kay. 1991. Tall-willow communities on Yellowstone's Northern Range: a test of the "natural-regulation" paradigm. Pp. 231-262 in *The Greater Yellowstone Ecosystem: Redefining America's Wilderness Heritage*, edited by R.B. Keiter and M.S. Boyce. New Haven, CT: Yale University Press.*

Kay, C.E. 1998. Testimony before the U.S. House of Representatives Subcommittee on Forests and Forest Health oversight hearing on the decline of aspen in the western United States, May 14.*

February 21 (Thursday): Are there too many elk in Yellowstone? How strong is the evidence?

Required Reading for 2/26

Despain, D., D. Houston, M. Meagher, and P. Schullery. 1986. *Wildlife in Transition: Man and Nature on Yellowstone's Northern Range*. Boulder, CO: Roberts Rinehart.

February 26 (Tuesday): What should the Park Service do about elk populations in Yellowstone? Discussion of ecological “imbalances” in the national parks.

Required Reading for 2/28

Berger, J., J.E. Swenson, I. Persson. 2001. Recolonizing carnivores and naïve prey: Conservation lessons from Pleistocene extinctions. *Science* 291: 1036-1039.*

Transcript of National Public Radio story on Science study by John Nielsen.*

February 28 (Thursday): A conversation with John Nielsen, environmental reporter for National Public Radio, on how the media cover science and environmental issues.

Required Reading for 3/5, 3/7

Forsman, E.D., E.C. Meslow, and H.M. Wight. 1984. Distribution and biology of the spotted owl in Oregon. *Wildlife Monographs* 87: 1-84. (read pp. 1-30, 53-57; skim rest)

March 5 (Tuesday): background lecture: The National Forest Management Act and forestry operations in the Pacific Northwest; discussion of spotted owl controversy.

March 7 (Thursday): discussion of the role of field data in conservation planning (focusing on the case of the spotted owl)

Required Reading for 3/12

Lande, R. 1985. Report on the demography and survival of the northern spotted owl.*

Lande, R. 1988. Demographic models of the northern spotted owl (*Strix occidentalis caurina*). *Oecologia* (Berlin) 75: 601-607. (skim after reading 1985 report)*

March 12 (Tuesday): the role of modeling in conservation planning; background lecture: How the Interagency Scientific Committee (ISC) came into existence.

March 14 (Thursday): discussion of midterm papers.

Required Reading for 3/26

Thomas, J.W., E.D. Forsman, J.B. Lint, E.C. Meslow, B.R. Noon, and J. Verner. 1990. A conservation strategy for the northern spotted owl. Report of the Interagency Scientific Committee to Address the Conservation of the Northern Spotted Owl. Portland, OR: USDA Forest Service, USDI Bureau of Land Management, USDI Fish and Wildlife Service, USDI National Park Service. Pp. 1-45; Appendix B (skim).

March 26 (Tuesday): discussion of spotted owl report, focusing on use of models and island biogeography.

Required Reading for 4/2

Thomas et al. 1990. A conservation strategy for the northern spotted owl. Appendix O; Appendix P (skim).

April 2 (Tuesday): How did the Thomas Committee handle issues such as the size, spacing, and connectivity of reserves? Background lecture: Genesis of the Clinton Administration's forest plan for the Pacific Northwest.

Note: We will also determine responsibilities for the group presentations that will occur on April 9, 11, and 16.

Required Reading for 4/4

Grumbine, R.E. 1994. What is ecosystem management? *Conservation Biology* 8: 27-38. (skim)*

Fitzsimmons, A.K. 1994. Federal ecosystem management: a "train wreck" in the making. *Policy Analysis No. 217* (Oct. 26). Washington, DC: Cato Institute.*

April 4 (Thursday): What is ecosystem management? How might we expect an ecosystem plan for the Pacific Northwest forests to differ from the Thomas Committee's spotted owl plan?

Required Reading for 4/9, 4/11, and 4/18

Forest Ecosystem Management: An Ecological, Economic, and Social Assessment. Report of the Forest Ecosystem Management Assessment Team. 1993. USDA Forest Service, USDI Fish and Wildlife Service, USDC National Marine Fisheries Service, USDI National Park Service, USDI Bureau of Land Management, and Environmental Protection Agency.

Note: Everyone should read/skim chapters I and II, but skip the economic and sociological analyses in Chapter II, if you wish. In addition, teams should read relevant chapters for their presentations.

April 9 (Tuesday): Discussion of spotted owls and other terrestrial vertebrates.

April 11 (Thursday): Discussion of salmon and other aquatic organisms.

April 16 (Tuesday): Discussion of invertebrates, fungi, and plants associated with old-growth forests; how do you conserve species that are virtually unknown? Background lecture: Whatever happened to the spotted owl/PNW forest controversy?

April 18 (Thursday): A conversation with Brock Evans, executive director of the Endangered Species Coalition, on the battle between environmentalists and the timber industry to protect the old-growth forests of the Pacific Northwest.

Required Reading for 4/23

Kohm, K.A. 1991. The Act's history and framework. Pp. 10-22 in *Balancing on the Brink of Extinction: The Endangered Species Act and Lessons for the Future*, edited by K.A. Kohm. Washington, DC: Island Press.*

Defenders of Wildlife. 1992/1993. *Saving Endangered Species: A Report and Plan for Action*. Washington, DC: Defenders of Wildlife. (skim)

National Wilderness Institute. 1997. *Conservation Under the Endangered Species Act: A Promise Broken*. Special Project of the NWI Resource, Vol. 7, Issue 1. Washington, DC: National Wilderness Institute. (skim)

Supplemental Reading for 4/23

Bean, M.J. and M.J. Rowland. *The Evolution of National Wildlife Law*. Third Edition. Westport, CT: Praeger Press, pp. 198-276.

Noss, R., M.A. O'Connell, and D.D. Murphy. 1997. *The Science of Conservation Planning: Habitat Conservation Under the Endangered Species Act*. Washington, DC: Island Press.

April 23 (Tuesday): The strengths and weaknesses of the Endangered Species Act.

Required Reading for 4/25

Hedman, C.W., S.G. Haines, H.C. Durham IV, and J.F. Bullock. Undated. *Habitat conservation plan to create a private mitigation bank for red-cockaded woodpeckers on International Paper land*.*

Bonnie, R. 1997. Strategies for conservation of the endangered red-cockaded woodpecker on private lands. *Endangered Species UPDATE* 14 (7&8): 45-47.*

Bonnie, R. 1997. Safe harbor for the red-cockaded woodpecker. *Journal of Forestry* (April), pp. 17-22.*

Pinkston, W. and J. James. 2000. Timber giant cuts rare deal on rare birds. *Wall Street Journal* (Southeast Journal edition), p. S1-S3.*

Supplemental Reading for 4/25

Wilcove, D.S., M.J. Bean, R. Bonnie, and M. McMillan. 1996. Rebuilding the Ark: Toward a More Effective Endangered Species Act for Private Land. Washington, DC: Environmental Defense.

April 25 (Thursday): A conversation with Robert Bonnie, economist and forester, Environmental Defense, on the use of economic and regulatory incentives to conserve endangered species on private lands.

Required Reading for 4/30 (TBA)

April 30 (Tuesday): A conversation with Lisa Naughton, assistant professor of geography, University of Wisconsin at Madison, and visiting research fellow, Princeton Environmental Institute, on people and parks in the tropics.

May 2 (Thursday): Concluding lecture and discussion.