

PRINCETON UNIVERSITY  
WOODROW WILSON SCHOOL  
Spring 2004

**WWS 586b/EEB516**  
**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 and other countries. Important case studies from different regions (mostly in 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 conservation of the northern spotted owl, the Clinton Administration's Northwest forest plan, reintroduction of the gray wolf to Yellowstone National Park, management of Yellowstone's elk herd, conservation of endangered species on private lands, and different approaches to setting global conservation priorities.

Please be advised that the schedule below is subject to change, depending on the availability of the invited speakers.

**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 class 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 supplemental 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

**Class 1.** An overview of the course. Background lecture: what constitutes an endangered species?

#### Required Reading for Class 2

Knowles, C. 2002. Status of white-tailed and Gunnison's prairie dogs. National Wildlife Federation, Missoula, MT.

**Class 2.** Should the white-tailed and/or Gunnison's prairie dogs be listed? Background lecture: wolf restoration in North America.

#### Required Reading for Class 3

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

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.

#### Supplementary Reading for Class 3

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.\*

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

**Class 3.** Discussion of wolf case. Background lecture on US public lands.

#### Required Reading for Class 4

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.\*

**Class 4.** What should a national park be? (discussion of Leopold report)

#### Required Reading for Class 5

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.\*

Huff, D.E. and J.D. Varley. 1999. Natural regulation in Yellowstone National Park's northern range. *Ecological Applications* 9: 17-29.\*

Ripple, W.J., E.J. Larsen, R.A. Renkin, and D.W. Smith. 2001. Trophic cascades among wolves, elk, and aspen on Yellowstone National Park's northern range. *Biological Conservation* 102: 227-234.\* (skim)

**Class 5.** Are there too many elk in Yellowstone? How strong is the evidence? What, if anything, should the Park Service do about it? Discussion of ecological "imbalances" in the national parks.

#### Required reading for Class 6: TBA

**Class 6.** A conversation with W. Robert Irvin, World Wildlife Fund, on wolf reintroduction.

#### Required reading for Class 7

Caufield, C. 1990. The ancient forest. *New Yorker*, May 14\* (skim)

**Class 7.** Background lecture: The National Forest Management Act and forestry operations in the Pacific Northwest (prelude to the spotted-owl controversy).

Required Reading for Class 8

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)

**Class 8.** Discussion of the role of field data in conservation planning, focusing on the case of the spotted owl.

Required Reading for Class 9

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)\*

**Class 9.** The role of modeling in conservation planning. What conservation plan for the spotted owl would you propose? Background lecture: The Bush Administration's spotted-owl dilemma.

Required Reading for Class 10

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); Appendix O; Appendix P (skim)

**Class 10.** Discussion of Thomas plan, focusing on use of models and island biogeography.

Required Reading for Class 11

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

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

**Class 11.** What is ecosystem management? Background lecture: genesis of the Clinton Administration's forest plan; the concept of ecosystem management.

Required Reading for Classes 12 and 14

Begin reading the following long and boring (but important) document:

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.

We will not discuss this report until Class 14. 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. *Important note: focus on Option 9, since that is the one that was ultimately chosen by the Clinton Administration.*

**Class 12.** What would an ecosystem plan for the Pacific Northwest look like? Background lecture: recent changes in forestry regulations pertaining to biodiversity.

Required Reading for Class 13: TBA

**Class 13.** Discussion of midterm paper.

Required Reading for Class 14: see Required Reading for Class 12.

**Class 14.** The Clinton Administration's forest plan: discussion of spotted owls and other species. What percentage of the remaining old-growth forest was protected by the Clinton Administration?

Required Reading for Class 15

Noss, R.F. 1993. A conservation plan for the Oregon Coast Range: Some preliminary suggestions. *Natural Areas Journal* 13: 276-289.\*

Egan, T. 1994. Oregon, foiling forecasters, thrives as it protects owls. *New York Times*, October 11.\*

**Class 15.** Comparison of the Clinton Administration's plan with Reed Noss's ecosystem plan for the Oregon Coast Range. Background lecture: Whatever happened to the spotted owl/ancient forest controversy?

Required Reading for Class 16

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.\*

Noss, R.F., 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, pp. 1-47.

#### Supplemental Reading for Class 16

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

**Class 16:** How the Endangered Species Act works...or doesn't work.

#### Required Reading for Class 17

Raven Environmental Services. 2002. Habitat Conservation Plan for the red-cockaded woodpecker on the property owned by Woodlands Group LLC in Livingston Parish, Louisiana. Report submitted to the U.S. Fish and Wildlife Service, Lafayette, LA (March).\*

U.S. Fish and Wildlife Service. 2002. Environmental Assessment. Issuance of incidental take permit under Section 10(a)(1)(B) of the Endangered Species Act to Woodlands Group L.L.C., Livingston Parish, LA, in association with a Habitat Conservation Plan for the red-cockaded woodpecker (*Picoides borealis*). Atlanta, GA: U.S. Fish and Wildlife Service.\*

**Class 17.** Habitat Conservation Plans (HCPs)—a case study from Louisiana.

#### Required Reading for Class 18

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

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.

**Class 18.** A conversation with Roger Platt, vice president of the National Realty Committee, on the Endangered Species Act and the business community.

#### Required Reading for Class 19

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.\*

**Class 19.** A conversation with Michael Bean, Environmental Defense, on the use of economic and regulatory incentives to conserve endangered species on private lands.

Required Reading for Class 20

Schwartzman, S., A. Moreira, and D. Nepstad. 2000. Rethinking tropical forest conservation: perils in parks. Conservation Biology 14: 1351-1357.\*

Terborgh, J. 2000. The fate of tropical forests: a matter of stewardship. Conservation Biology 14: 1358-1361.\*

Redford, K.H. and S.E. Sanderson. 2000. Extracting humans from forests. Conservation Biology 14: 1362-1364.\*

Schwartzman, S., D. Nepstad, and A. Moreira. 2000. Arguing tropical forest conservation: people versus parks. Conservation Biology 14: 1370-1374.\*

**Class 20.** Preservation versus regulated use: what works in developing nations?

Required Reading for Class 21

Kremen, C. et al. 1999. Designing the Masoala National Park in Madagascar based on biological and socioeconomic data. Conservation Biology 13: 1055-1068\*

**Class 21.** A conversation with Claire Kremen, Princeton University, on the design and management of parks in the tropics.

Required Reading for Class 22

Myers, N., R.A. Mittermeier, C.G. Mittermeier, G.A.B. da Fonseca, and J. Kent. 2000. Biodiversity hotspots for conservation priorities. Nature 403: 853-858.\*

Olson, D.M. and E. Dinerstein. 1998. The Global 200: a representative approach to conserving earth's most biologically valuable ecoregions. Conservation Biology 12: 502-515.\*

Kareiva, P. and M. Marvier. 2003. Conserving biodiversity coldspots. American Scientist 91: 344-351.\*

**Class 22.** Setting global conservation priorities: is there a right or a wrong way to do it?

Required Reading for Class 23: TBA

**Class 23.** A conversation with Carter Roberts, The Nature Conservancy, on determining conservation priorities.

Required Reading for Class 24: TBA

**Class 24.** Concluding lecture and discussion.