

Economic and Social Aspects of Conservation Biology
Conservation Biology 8004

Winter Term 2006
MW 2:30 – 4
VoTech R380

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Course description:

This course is intended to introduce you to a broad range of ideas and methods from the social sciences that are relevant for conservation biology. Since most of the threats to biodiversity originate from human actions, understanding human behavior and the social, political and economic systems in which people operate is an essential component for those interested in conserving biodiversity. There are no social science prerequisites and I do not assume that you have had any particular training in social science. Most of the material we will cover is readily accessible to intelligent and motivated students (like yourself). For some topics having some background in economics is helpful. I will give several “Economics 101” sessions as needed outside of normal class for students who have not had any economics or who feel that they would benefit from some review. Some topics will be presented via lectures but much of course will be discussion format.

Course Requirements:

- a) Active participation in class discussions (15%)
- b) Class presentation/discussion leader (15%)
- c) 8 “insight” writing assignments (10%)
- d) 4 Problem sets (10%)
- e) Take-home exam I (25%)
- f) Take-home exam II (25%)

Everyone is expected to do class readings prior to class and come prepared to discuss the material for the day. It is really important to do the readings and think through the topics. Doing so will make for more lively discussions and will allow us to delve more deeply into the material. Readings can be found on line on E-reserve through the Entomology, Fisheries and Wildlife Library (see the E-reserve instruction sheet for details). The password for readings for this course is cbio800406.

Each student will work with one or two other students to lead a class session during the semester. How you organize the class session is up to you (lecture, small or large group discussion, activity...). You are free to assign your own set of readings, i.e., you do not

need to include the readings listed on the syllabus for that topic. My only request is that you meet with me prior to your session to run through your plans.

The insight writing assignments are meant to be short (one or two paragraphs) and focused on an idea or theme from class discussion, class readings, or life in general, that has come up during the week that you find interesting or important for conservation.

Several times during the course we will take up more quantitative or technical material where it helps to work through problems to cement understanding. On problem sets, I encourage you together in groups but each of you is to turn in your own assignment.

For the take-home exams, you will be asked to answer 2 out of 3 essay questions requiring synthesis of course material to address an important conservation issue. You will be several days to work on each exam (for example, handed out in class on Wednesday and due in class the following Monday). The take-home exams are “open book” but you are not to talk with others about the exam until after everyone has turned in the exam.

Course Syllabus

I. Views, Values and Valuation

1. What Do People Want? Contrasting Views of Conservation. (January 18)

McPhee, J. 1971. *Encounters with the Archdruid*. Farrar, Straus and Giroux.

2. Conservation Values and Objectives: What Should We Conserve and Why? What is Successful Conservation? (January 23)

Kellert, S. 1996. Values. In *The Value of Life: Biological Diversity and Human Society*. Island Press.

Ehrenfeld, D. 1988. Why put a value on biodiversity? In *Biodiversity*, E.O. Wilson (ed.). National Academy Press.

Salafsky, N., R. Margoluis, K.H. Redford and J.G. Robinson. 2002. Improving the practice of conservation: a conceptual framework and research agenda for conservation science. *Conservation Biology* 16(6): 1469-1479.

3. Psychology of Conservation Behavior (Guest Speaker: David Fulton, January 25)

Fulton, D.C., M.J. Manfredo and J. Lipscomb. 1996. Wildlife value orientations: a conceptual and measurement approach. *Human Dimensions of Wildlife* 1(2): 24-47.

Fishbein, M. and M.J. Manfredo. 1992. A theory of behavior change. In *Influencing human behavior: theory and applications in recreation, tourism, and natural resources management*, M.J. Manfredo (ed.). Champaign, IL: Sagamore.

Manfredo, M.J., T. Teel and A.B. Bright. 2003. Why are public values toward wildlife changing? *Human Dimensions of Wildlife* 8(4): 287-306.

Insight #1 Due (January 25)

4. Environmental Ethics (Guest Speaker: Dan Philippon, January 30)

Rolston, Holmes, III. 2001. Biodiversity. In *A Companion to Environmental Philosophy*, D. Jamieson (ed.). Blackwell.

Norton, B.G. 1991. Biological diversity. In *Toward Unity Among Environmentalists*. Oxford University Press.

Economics 101 Session: Demand Analysis, Willingness-to-pay/accept. Time and Place *TBA*.

Background Reading: Katz, M.L. and H.S. Rosen. 1991. Consumer choice. Chapter 2 in *Microeconomics*. Comparative statics and demand. Chapter 3 in *Microeconomics*. Irwin.

5. Economic Valuation Methods (February 1)

Goulder, L.H. and D. Kennedy. 1997. Valuing ecological services: philosophical bases and empirical methods. In *Nature's Services: Societal Dependence on Natural Ecosystems*, G. Daily (ed.). Island Press.

King, D., M. Mazzotta and K. Markowitz. Ecosystem valuation. <http://www.ecosystemvaluation.org/>

Insight #2 Due (February 1)

6. Valuing Ecosystem Services (February 6)

Millennium Ecosystem Assessment. 2005. *Living Beyond Our Means: Natural Assets and Human Well-Being*. Island Press.

Each student to read one of the following:

Barbier, E.B. and M. Cox. 2004. An economic analysis of shrimp farm expansion and mangrove conversion in Thailand. *Land Economics* 80(3): 389-407.

Balmford, A. et al. 2002. Economic reasons for saving wild nature. *Science* 297: 950-953.

Ricketts, T.H., G.C. Daily, P.R. Ehrlich and C.D. Michener. 2004. Economic value of tropical forest to coffee production. *Proceedings of the National Academy of Sciences* 101(34): 12579-12582.

Costanza, et al. 1997. The value of the world's ecosystem services and natural capital. *Nature* 387: 253-260.

II. Approaches to Conservation: Planning, Policy, Markets and Social Processes

7. Conservation Planning: Terrestrial Application (February 8)

Ando, A., J. Camm, S. Polasky and A. Solow. 1998. Species distributions, land values, and efficient conservation. *Science* 279: 2126-2128.

Rodrigues. A.S.L., et al. 2004. Effectiveness of global protected area networks in representing species diversity. *Nature* 428: 640-643.

Polasky, S., E. Nelson, E. Lonsdorf, P. Fackler and A. Starfield. 2005. Conserving species in a working landscape: land use with biological and economic objectives. *Ecological Applications* 15(4): 1387-1401.

8. The Nature of Social Problems (February 13)

Rittel, H.W.J. and M.M. Webber. 1984. Planning problems are wicked problems. In *Developments in Design Methodology*, Nigel Cross (ed.). John Wiley & Sons.

Salwasser, H. 2002. Navigating through the wicked messiness of natural resource problems: roles for science, coping strategies, and decision analysis. Sierra Science Summit. Draft.

Problem Set #1 Due (February 13)

9. Conservation Planning: Marine Application (February 15)

Lundquist, C.L. and E.F. Granek. 2005. Strategies for successful marine conservation: integrating socioeconomic, political and scientific factors. *Conservation Biology* 19(6): 1771-1778.

Each student to read one of the following:

Arime, S. et al. 2003. Applying ecological criteria to marine reserve design: a case study from the California Channel Islands. *Ecological Applications* 13: S170-S184.

Granek, E.F. and M.A. Brown. 2005. Co-management approach to marine conservation in Moheli, Comoros Islands. *Conservation Biology* 19(6): 1724-1732.

10. Common Property and Social Norms (February 20)

Dietz, T., E. Ostrom and P.C. Stern. 2003. The struggle to govern the commons. *Science* 302: 1907-1912.

Ostrom, E. 2000. Collective action and the evolution of social norms. *Journal of Economic Perspectives* 14(3): 137-158.

Problem Set #2 Due (February 20)

11. Community Conservation, Social Capital and Institution Building (Guest Speaker: Kristen Nelson, February 22)

Pretty, J. and D. Smith. 2004. Social capital in biodiversity conservation and management. *Conservation Biology* 18(3): 631-638.

Campbell, L.M. and A Vainio-Mattila. 2003. Participatory development and community-based conservation: opportunities missed for lessons learned. *Human Ecology* 31(3): 417-437.

Insight #3 Due (February 22)

12. Market Allocation and Market Failure (March 1)

Tietenberg, T. 1999. Property rights, externalities and environmental problems. In *Environmental and Natural Resource Economics*, 5th Edition. Addison-Wesley Longman.

Economics 101 Session: Market Equilibrium – Supply and Demand
Time and Place TBA

Background Reading: Katz, M.L. and H.S. Rosen. 1991. Equilibrium in competitive markets. Chapter 10 in *Microeconomics*. Irwin.

13. Conflict Management/Dispute Resolution (Guest Speaker: Tom Fiutak, February 27)

Deutsch, M. Cooperation and conflict: a personal perspective on the history of the social psychological study of conflict resolution.

Insight #4 Due (March 1)

14. Economic Approaches for Conservation: Markets, Incentive and Market-Based Policy (March 6)

Tietenberg, T. 1999. Economics of pollution control. In *Environmental and Natural Resource Economics*, 5th Edition. Addison-Wesley Longman.

Weiner, J. 2001. Policy design for international greenhouse gas control. In *Climate Change Economics and Policy*, M. Toman (ed.). Resources for the Future.

Panayotou, T. 1994. Conservation of biodiversity and economic development: the concept of Transferable Development Rights. *Environmental and Resource Economics* 4: 91-110.

15. Benefit-Cost Analysis and the Role of Economics and Politics in Conservation (March 8)

Arrow, K.J. et al. 1996. Is there a role for benefit-cost analysis in environmental, health, and safety regulation? *Science* 272: 221-222.

Farber, D.A. 1999. A case of uncertainty. Chapter 1 in *Eco-pragmatism*. Chicago University Press.

Farber, D.A. 1999. Economics versus politics. Chapter 2 in *Eco-pragmatism*. Chicago University Press.

Sagoff, M. 1988. At the shrine of our lady of Fatima; or why political questions are not all economic. Chapter 2 in *The Economy of the Earth*. Cambridge University Press.

Problem Set #3 Due (March 8)

16. Conservation Policy and Politics (March 20)

Kraft, M.E. 1999. Making decisions about environmental policy. In *Better Environmental Decisions*, K. Sexton, A.A. Marcus, K.W. Easter and T.D. Burkhardt (eds.). Island Press.

Chhatre, A. and V.Saberwal. 2005. Political incentives for biodiversity conservation. *Conservation Biology* 19(2): 310-317.

III. Conservation in Practice

17. U.S. Conservation Policy: The Endangered Species Act (March 22)

Clark, J.A. 1994. The Endangered Species Act: its history, provisions and effectiveness. In *Endangered Species Recovery: Finding the Lessons, Improving the Process*, T.W. Clark, R.P Reading and A.L. Clarke (eds.). Island Press.

Rohlf, D. J. 1991. Six biological reasons why the Endangered Species Act doesn't work and what to do about it. *Conservation Biology* 5:273-282.

Insight #5 Due (March 22)

18. International Conservation Policy: CITES and CBD (March 27)

Ginsberg, J. 2002. CITES at 30 or 40. *Conservation Biology* 16(5): 1184-1191.

Webster, D. 1997. The looting and smuggling and fencing and hoarding of impossibly precious, feathered and scaly wild things. *The New York Times Magazine*, February 16, 1997.

Thorbjarnarson, J. 1999. Crocodile tears and skins: international trade, economic constraints, and limits to sustainable use of crocodilians. *Conservation Biology* 13(3): 465-470.

Swanson, T. 1997. The Biodiversity Convention: a meeting of the minds? Chapter 5 in *Global Action for Biodiversity*. Earthscan.

Take-home Exam #1 Due (March 27)

19. The Social, Political and Economic Context of Conservation in Developing Countries (Guest Speaker: Abdi Samatar, March 29)

Barrett, C.B., K. Brandon, C. Gibson and H. Gjertsen. 2001. Conserving biodiversity amid weak institutions. *Bioscience* 51(6): 497-502.

Adams, W.H., R. Aveling, D. Brockington, B. Dickson, J. Elliot, J. Hutton, D. Roe, B. Vira and W. Wolmer. 2004. Biodiversity conservation and the eradication of poverty. *Science* 306: 1146-1149.

20. Communities, Conservation and Economic Development: Community Based Conservation and Integrated Conservation and Development Plans (April 3)

Hackel, J.D. 1999. Community conservation and the future of Africa's wildlife. *Conservation Biology* 13(4): 726-734.

Berkes, F. 2004. Rethinking community-based conservation. *Conservation Biology* 18(3): 621-630.

Oates, J.F. 1999. Conservation falls in love with economic development. In *Myth and Reality in the Rain Forest: How Conservation Strategies are Failing in West Africa*. University of California Press.

21. Parks vs. People: Reserves and/or Community Based Conservation? (April 5)

Bruner, A.G., R.E. Gullison, R.E. Rice and G.A.B. da Fonseca. 2001. Effectiveness of parks in protecting tropical biodiversity. *Science* 291: 125-128.

Parks vs. People in *Conservation Biology* 14(5): 1351-1374, 2000.

Schwartzman, S., A. Moreira, and D. Nepsted. Rethinking tropical forest conservation: perils in parks, 1351-1357.

Terborgh, J. The fate of tropical forests: a matter of stewardship, 1358-1361.

Redford, K.H. and S. E. Sanderson. Extracting humans from nature, 1362-1364.

Colchester, M. Self-determination or environmental determinism for indigenous peoples in tropical forest conservation, 1365-1367.

Chiccon, A. Conservation theory meets practice, 1338-1369.

Schwartzman, S., D. Nepsted and A. Moreira. Arguing tropical forest conservation: people versus parks, 1370-1374.

Insight #6 Due (April 5)

22. Conservation in a Working Landscape (Guest Speaker: Meredith Cornett, April 10)

Readings TBA

23. Paying for Conservation? (April 12)

Ferraro, P.J. and A. Kiss. 2002. Direct payments to conserve biodiversity. *Science* 298: 1718-1719.

Terborgh, J. 1999. Tropical forests: worth more dead than alive. In *Requiem for Nature*. Island Press.

Daily, G.C. and K. Ellison. 2002. Costa Rica: paying Mother Nature to multitask. In *The New Economy of Nature: The Quest to Make Conservation Profitable*. Island Press.

Insight #7 Due (April 12)

III. The Long Run: Sustainability

24. Economic Growth and Sustainability (April 17)

Farber, D.A. 1999. The shadow of the future. Chapter 5 in *Eco-pragmatism*. Chicago University Press.

Callicott, J.B. and K Mumford. 1997. Ecological sustainability as a conservation concept. *Conservation Biology* 11(1): 32-40.

Arrow, K. et al. 2004. Are we consuming too much? *Journal of Economic Perspectives* 18(3): 147-172.

Economics 101 Session: Intertemporal allocation and discounting
Time and Place TBA.

Background Reading: Polasky, S. 2002. Notes on discounting and growth.

25. Biodiversity, Traditional Knowledge and Intellectual Property Rights (Guest Speaker: Ford Runge, April 19)

Runge, C.F. 2004 Enclosure, intellectual property and life-sciences research. *The Journal of World Intellectual Property* 7(6): 807-828.

Verna, S.K. 2004. Protecting traditional knowledge – is a sui generis system an answer? *The Journal of World Intellectual Property* 7(6): 765-806.

Wynberg, R. 2004. Rhetoric, realism and benefits sharing – use of traditional knowledge of Hoodia species in the development of an appetite suppressant. *The Journal of World Intellectual Property* 7(6): 851-876.

Insight #8 Due (April 19)

26. Population (April 24)

Cohen, J.E. 2003. Human population: the next half century. *Science* 302: 1172-1175.

Sen. A. 1994. Population: delusion and reality. *The New York Review of Books*, Sept. 22, 1994, 62-71.

Repetto, R. and T. Holmes. 1983. The role of population in resource depletion in developing countries. *Population and Development Review* 9: 609-632.

27. Agriculture, Food and Sustainability (April 26)

Tilman, D., K. Cassman, P. Matson, R. Naylor and S. Polasky. 2002. Agricultural sustainability and the costs and benefits of intensive production practices. *Nature* 418: 671-677.

Johnson, D.G. 2000. Population, food and knowledge. *American Economic Review* 90(1): 1-14.

Brown, L. 1999. Feeding nine billion. In *State of the World 1999: A Worldwatch Institute Report on Progress Toward a Sustainable Society*. New York: Norton.

Problem Set #4 Due (April 26)

28. Land Use and Land Change (May 1)

Meyer, W.B. and B.L. Turner. 1992. Population growth and global land use/land cover change. *Annual Review of Ecology and Systematics* 23:39-61.

Foley, J. et al. 2005. Global consequences of land use change. *Science* 309: 570-574.

29. The State of Biodiversity Conservation and of Conservation Biology (May 3)

Wilson, E.O. 2000. On the future of conservation biology. *Conservation Biology* 14(1): 1-3.

Jenkins, M. 2003. Prospects for biodiversity. *Science* 302: 1175-1177.

Trombulak, S.C., K. S. Omland, J.A Robinson, J.J. Lusk, T.L. Fleischner, G. Brown and M Domroese. 2004. Principles of conservation biology: recommended guidelines for conservation literacy from the education committee of the Society for Conservation Biology. *Conservation Biology* 18(5): 1180-1190.

Take Home Exam #2 Due (Date *TBA*)