RMES 500F Human Dimensions of Biological Conservation

Department/Program: Resource Management and Environmental Studies
Year: 2005/2006 Term 2
Course Title: Human Dimensions of Biological Conservation
Course Schedule: M 9:00am – 12:00pm
Location(s): AERL 420

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Course Description:

Conservation should benefit ecosystems, non-human organisms, and current and future human populations. Historically, conservation has occurred through protected areas, whose creation has frequently entailed considerable displacement of indigenous, traditional, and land-based people. Although the pursuit of benefits to non-human organisms can be defended ethically, it has become clear that conservation without consideration of human welfare is likely to be fleeting. Accordingly, recent decades have brought considerable enthusiasm surrounding concepts like community-based conservation and ecosystem services; and, increasingly, conservationists attempt to justify conservation by its social and economic benefits. But how often have the spatial and temporal distributions of costs and benefits (and their stratification by class) been analyzed rigorously?

In this course, students will (1) gain an appreciation of the history of protected areas, their role in protecting biodiversity, and their impacts on people; (2) learn the tools to both critique and assess the costs and benefits of conservation actions; (3) become familiar with key case studies where such analyses have been performed; (4) analyze their own case study in partnership with other students; and (5) think and communicate critically and creatively about ways to navigate the difficult tradeoffs between humanity and conservation. Upon completion of the course, students will be poised to make conservation more effective and more efficient in a world dominated by human beings and their needs.

Course Assignments

12.5% Short Paper I (Due Feb 6, 2006)
12.5% Short Paper II (Due March 6, 2006)
5% Case Study Outline
15% Case Study Presentation
35% Case Study/Final Paper
20% Class Participation (include debate responsibilities)

Weekly Debate Structure

Pro: 10 min opening statement
Contra: 10 min response
Pro: 10 min rebuttal
Contra: 10 min 2nd response
Pro: 2 min conclusion (no new statements)
Contra: 2 min conclusion (")
Evaluation and judgment: 10 min

IMPORTANT: ***All assignments must be submitted to the instructors in hardcopy or in a file readable/transferable to WORD .rtf and .doc files or*** **ADOBE** ***pdf files.***

Course Policies:

Philosophically, we believe that to read is to think and that it is better to read carefully and thoughtfully than, simply, widely. The reading load for this course is low-average for a graduate seminar. It amounts to an average of 60-80 pages per week; all readings are selected for their ease and appropriateness to a mutli-disciplinary audience.

Attendance:

Following university regulation, regular attendance is expected of students. Students who neglect their academic work and assignments may be excluded from the final examinations. Students who are unavoidably absent because of illness or disability should report to their instructors on return to classes.

The University accommodates students with disabilities who have registered with the Disability Resource Centre. The University accommodates students whose religious obligations conflict with attendance, submitting assignments, or completing scheduled assignments. Please let us (the instructors) know in advance, preferably in the first week of class, if you will require any accommodation on these grounds. Students who plan to be absent for varsity athletics, family obligations, or other similar commitments, cannot assume they will be accommodated, and should discuss their commitments with the instructor before the drop date.

Late assignments: 5% reduction of grade will be assigned for each day an assignment is late beyond required due date. Exemption of this rule will be considered under exceptional circumstances only

Academic Dishonesty:

Please review the UBC Calendar “Academic regulations” for the university policy on cheating, plagiarism, and other forms of academic dishonesty.

Students should retain a copy of all submitted assignments (in case of loss) and should also retain all their marked assignments in case they wish to apply for a Review of Assigned Standing. Students have the right to view their marked examinations with their instructor, providing they apply to do so within a month of receiving their final grades. This review is for pedagogic purposes. The examination remains the property of the university.

Course Schedule

Readings: Readings are expected to be completed by Monday class period at the beginning of the assigned week.

Week 1: Introduction (January 9, 2006)

- Course expectations, structure and content
- Class discussion on problems with conservation (baseline thinking)
- Chapin (Chapin 2004)
- Rebuttal & Critique and/or development of Chapin's ideas
- Collective summary of problems with and challenges to conservation to be examined this semester

Week 2 (KC): Purpose and Logic of Conservation (January 16, 2006)

- concept of biodiversity
- keystone, indicator, and umbrella species
- species area curves and the SLOSS debate, early reserve design
- scale of human impacts, spatial distribution of impacts
- major causes of extinction, differential vulnerability of organisms and processes
- the process by which conservation sites have been and are now being identified, and the geography of conservation distribution including hotspot analysis, eco-regional assessment, others

Debate statement: Be it resolved that (BIRT) Large-scale fortress conservation is necessary to conserve biodiversity, and this will necessarily involve curtailing activities and rights of some people.

Concept of biodiversity:

Concept: (Ehrlich & Wilson 1991) optional; (Wilson 1992) optional; (Wilson 1997) optional (3 pp).

Keystone, indicator, and umbrella species:

(Raffaelli 2004) required (2 pp). Good background and summary of recent research.
(Paine 1969) optional. Origin of the keystone species concept.
(De Leo & Levin 1997) optional. Opportunities for indicators of ecosystem integrity.
(Ebenman & Jonsson 2005) required (8 pp). Good demonstration of how to implement keystone species concept.
(Bifolchi & Lode 2005) optional. Attempted test of otters as an umbrella species.

Species area curves and the SLOSS debate, early reserve design:

Species area curves: (Rosenzweig 1995) optional; (Rosenzweig 2003) required (12 pp).
SLOSS and early reserve design: (Diamond 1976; Simberloff & Abele 1976; Terborgh 1976) optional; (Simberloff & Abele 1982) required (10 pp).

Scale of human impacts, spatial distribution of impacts:

(Vitousek et al. 1997) required (6 pp).
(Palmer et al. 2004) optional.
(Foley et al. 2005) required (5 pp).

Major causes of extinction, differential vulnerability of organisms and processes:

Causes of extinction: {Terborgh, 1980 #572;Wilcove, 1998 #4573;Araújo, 2005 #4505} optional; {Kappel, 2005 #4508;Li, 2005 #4572} required (8 pp; 7 pp) http://www.esajournals.org/esaonline/?request=get-archive.
Differential vulnerability: {Cardillo, 2005 #4507;de Castro, 2004 #3360;Purvis, 2000 #2133} optional.

Conservation Planning:

(Margules & Pressey 2000) required (11 pp).
(Weeks 1997) optional.
(Myers et al. 2000) required (6 pp).
{Orme, 2005 #4225} optional. (?)
{McDonald, 2005 #4081} optional. (?)
(Olson et al. 2001) optional.
(Hoekstra et al. 2005) optional.
{Kareiva, 2003 #3028} optional. (?)
{Donlan, 2005 #4223} optional. (?)

Week 3: History of Conservation as Practice and Ideas (January 23, 2006)

- The Wilderness Concept: Cronon 1996
- Green Imperialism: Nelson 2003; Neumann 1998 (intro and chapter 4)
- Historical vs. contemporary objectives for protected areas: from Parks to Protected Areas: (Scott et al. 2001) Optional. Other/general: (Janzen 1998;

Janzen 2000; Janzen 2001a) optional; (Janzen 2001b) required (16 pp in book; 6 pp pdf). (Terborgh 2004) required (2 pp).

- Spatial distribution of conservation activities/Biodiversity and Cultural Diversity (Maffi 2001)
- Consequences for Indigenous and Traditional People (Dowie, 2005; Wilshusen et al 2003 in Brechin 2003

Debate Statements: (a) BIRT the argument that conservation in the developing world is a new form of colonialism is overstated and ill supported by the evidence; (b) BIRT wilderness as an idea, however compromised its history, remains fundamentally important to humankind's ability to imagine a better future for nature.

Week 4 (TS): Problems of Implementation (January 30, 2006)

- Role of NGOs (Chapin 2004; Sundberg 1998)
- Dirty conservation Neumann (2001); Harper 2002 Introduction
- Encroachment versus entitlement: distribution of access rights; assumptions on which these processes are based ("good users" and "bad users"); Ribot & Peluso (2003);
- Ecologically Noble Savage versus Indigenous Social Movements (Conklin & Graham 1995; Brosius 1999; Redford (1990);

Debate Statements: (a) BIRT the vast majority of problems with protected areas can be classified as problems of the definition of access and its distribution across social groups; (b) BIRT the idea of the 'ecologically noble savage' is a stereotype that does more harm than good (vs more good than harm); (c) BIRT it is possible to define and distribute access rights in an equitable manner in reference to protected areas.

Week 5 (KC): Law and Policy (February 6, 2006)

- International agreements, and their impacts on national and local activities (e.g., CITES, CBD, . . .)
- Other tools of conservation (certification, endangered species law, farm subsidies, payment for environmental services programs)
- Discuss the efficacy of each tool, the contexts in which they work and the problems they raise

Debate Statement: (a) BIRT market and incentive-based policies are generally the only useful kind of tools for conservation; (b) BIRT endangered-species legislation through the involvement of the judiciary system creates an essential opportunity for effective conservation [Note you are arguing as for or against litigation as the primary vehicle of enforcement.]

International agreements, and their impacts on national and local activities (e.g., CITES, CBD, . . .)

(Balmford et al. 2005) optional.
CITES, and interaction with other agreements: (Wijnstekers 2003) chapters 1, 2, 22 required (16 pp).

Other tools of conservation (certification, endangered species law, farm subsidies, payment for environmental services programs)

Certification: (Leslie 2004) required (10 pp); (Hardner & Rice 2002; Brownstein et al. 2003) optional.
Law: (Polasky et al. 1997) required (11 pp); (Wilcove & Lee 2004) required (7 pp); (Boyd 2003) chapter 5 required; (Bonnie 1999; Peterson et al. 2004) optional.
Agri-environment: (Kleijn & Sutherland 2003) required (23 pp); for CRP under Farm Bill (Dunn et al. 1993; Goodwin & Smith 2003) optional.
Payments for conservation (Ferraro & Kiss 2002) required (2 pp); (Stoneham et al. 2003) optional; and payments for environmental services (Eigenraam 2005; Hawn 2005; Kousky 2005) required; (Rosa et al. 2003; Lovera 2005) optional.

Week 6: (KC & TS): Ecosystem Services (February 20 8am-11am, 2006)

- familiarize with concept
- what ecosystem services are and are not
- how to identity ecosystem services
- their valuation and integration into policy
- conceptually understand and critique methods of valuation with concrete examples
- Why the pressure the assign $ value, what the end goal in so doing is, and what problems does it raise?

Debate Statements: (a) BIRT ecosystem services have the potential to greatly enhance/undermine biodiversity conservation; (b) BIRT were we to internalize the externalities of ecosystem services, the levels of biodiversity conservation that most conservationists strive for would be attained without separate conservation efforts; (c) BIRT market expression of ecosystem services is likely the most effective means for valorizing services otherwise under-recognized.

Readings:

Concept, what ecosystem services are and are not:

(Daily et al. 1997) required (18 pp) http://www.esa.org/science/Issues/; (Daily 1997) optional.

How to identity ecosystem services and apply scientific research:

(de Groot et al. 2002) optional; (Kremen 2005) optional; (Kremen & Ostfeld 2005) required (9 pp) http://www.esajournals.org/esaonline/?request=index-html.

Their valuation and integration into policy:

(Arrow et al. 1996) required (2 pp).
(Heal 2000) required (7 pp); (Heal 2003) optional.
(Costanza & Folke 1997; Goulder & Kennedy 1997) optional.
(Daily et al. 2000) required (2 pp).
(Heal et al. 2001) optional; (Salzman et al. 2001) required? (24 pp).
(Costanza et al. 1997) required (8 pp); (Ricketts et al. 2004) required (4 pp).

Conceptually understand and critique methods of valuation:

(Sagoff 1998; Gatto & De Leo 2000; Ludwig 2000) all required (18 pp, 9 pp, 5 pp).

Week 7 (KC & TS): Ethics (February 27, 2006)

- Economics as an ethical theory (esp. utilitarianism)?
- Logic (method?) of ethical reasoning
- Key contributions and problems in environmental ethics
- Using ethical principles to guide conservation – how to balance duties to nonhuman organisms (taxonomic levels, etc.) and humans (including future generations)
- How to use ethics to critique planning and implementation—why is there no "applied environmental ethics"?

Debate Statements: (a) BIRT the needs of existing human beings should take priority over the needs of non-human organisms . . . conservation of biodiversity and ecosystem services for human needs is all that we should ever aim for; (b) BIRT the common understanding of "sustainability" is an appropriate expression of our duties to future generations; (c) BIRT an ethics-based approach to conservation is ultimately preferable given the human propensity to exhaust their natural resources.

Readings: Economics as an ethical theory (esp. utilitarianism)?

(Sagoff 1998; Gatto & De Leo 2000; Heal 2000; Ludwig 2000)

Logic (method?) of ethical reasoning

(Hare 1997b, a) optional.
(Singer 1993) Ch 1 required (15 pp).

Key contributions and problems in environmental ethics

(Sober 1986) optional.
(Norton 1995) optional.
(Callicott 1992) optional; (Callicott 1999) required (13 pp).

(Rolston 1994) chapter 1 optional, chapter 4 required (32 pp).
(Naess 1989) optional.
(Regan 1992) required (22 pp).
(Singer 1993) chapter 10, required (25 pp).

Week 8 (TS): Community-Based Conservation Planning (March 6, 2006)

- Logic of linking conservation and development
- Common property regimes and their drivers
- Co-Management in Parks Management
- Community involvement in protected-area planning
- Critiques and revisions

Debate Statements: BIRT Community Based Conservation Planning will only be successful where there exists some local history of sustainable land management; (b) BIRT common property regimes can/cannot be implemented as a structured approach to planning

Readings**: **Logic of linking conservation and development:
(Salafsky & Wollenberg 2000) optional.
(Janzen 1998; Janzen 2001b) optional.

Community involvement in protected-area planning:
{Janzen, 2000 #3997} required (11 pp).
(Inamdar et al. 1999) optional.

Lessons, critiques and revisions:
{Adams, 2004 #3754} required (4 pp).
http://www.sciencemag.org/cgi/content/full/306/5699/1146
{Berkes, 2004 #3745;Jones, 2005 #4226;Jones, 2004 #4080} optional.

Common property findings:
{Hardin, 1968 #476} optional. http://links.jstor.org/sici?sici=0036-8075%2819681213%293%3A162%3A3859%3C1243%3ATTOTC%3E2.0.CO%3B2-N
{Brechin, 2003 #4735}{Berkes, 1998 #4733} optional.
{Agrawal, 2003 #4741} required (22 pp).
http://www.cardiff.ac.uk/cplan/teaching/cp0321/articles_gh/agrawal2.pdf
{Dietz, 2003 #4060} required (6 pp).
http://171.66.122.53/cgi/reprint/302/5652/1907.pdf
{Leitmann, 1998 #4740} required (17 pp).
http://taylorandfrancis.metapress.com/media/64jlxnvxlkbg11l4fatn/contributions/v/n/5/u/vn5uuvvh7u5buv5b.pdf

Case study:
{De Lacy, 1997 #4734} required (34 pp).
{Kremen, 1999 #2450} optional (14 pp).

Week 9: (KC/TS/JT): Evaluation and Monitoring (March 13, 2006)

- Background: the purpose and design of indicators
- Recent and current efforts
- Social Indicators – their logic and use
- Site specific versus universal criteria
- Guest speaker: Joleen Timko

Debate Statement: BIRT it is neither possible nor desirable for the activities of conservation organizations to be monitored and evaluated carefully; (b) BIRT that given the current demand for audits, the only route to justice and ecological health is through evaluation tools that hold park managers accountable.

Background: the purpose and design of indicators:

(Failing & Gregory 2003) required (12 pp).

Recent and current efforts:

(Kremen et al. 1994) required (12 pp). http://www.jstor.org/cgi-bin/jstor/printpage/08888892/di995161/99p0012w/0.pdf?backcontext=table-of-contents&dowhat=Acrobat&config=jstor&userID=8e672f9a@ubc.ca/01cce4401e00507224a&0.pdf
(Kremen et al. 1998) optional.
(Stem et al. 2005) required (15 pp). http://www.blackwell-synergy.com/links/doi/10.1111/j.1523-1739.2005.00594.x/abs/
(Hockings 2003) required (10 pp). http://www.bioone.org/pdfserv/i0006-3568-053-09-0823.pdf
(Barrow & Fabricius 2002) required (13 pp).
http://www.iucn.org/themes/wcpa/pubs/pdfs/PARKS/park12_2.pdf
(Salafsky & Margoluis 1999; Salafsky et al. 2002) optional.
(Conservation Measures Partnership 2005) optional web resource.

Week 10: Workshop (March 20, 2006)

Week 11: Workshop (March 27, 2006)

Week 12: Student Presentations (April 3, 2006)

Week 13: Student Presentations (April 10, 2006)

Short Paper #1 (DUE FEB 6, 2006):

Explain/defend the following as a policy brief or op-ed piece limited to 1000 words. Explain why it is that conservation biologists and social scientists are at odds as to the trajectory of how conservation has and might yet occur. What are the likely solutions to this conflict? The policy brief should be written for the federal minister's whose mandate it is to oversee CIDA (Canadian International Development Agency) or for the editor at the Globe and Mail. Please send this piece in, after receiving comments from Terre and Kai.

Short Paper #2 (DUE MAR 6, 2006):

Explain/defend the following as a policy brief or op-ed piece limited to 1000 words. Give your opinion on the status of Canada's protected areas, Species at Risk Act, or marine biodiversity, and the relevance for the welfare of Canadians. Propose solutions and explain why they would help, where other efforts have fallen short. The policy brief should be written for the Minister of the Environment, or of Fisheries and Oceans Canada, or for the editor at the Globe and Mail. Please send this piece in, after receiving comments from Terre and Kai.

Possible Case Study Sites:

Masoala National Park, Madagascar
Ranomafana, Madagascar
Guanacaste (Area de Conservación), Costa Rica
Great Bear Rainforest, BC
Great Barrier Reef (marine?)
Mbaracayu Biosphere Reserve, eastern Paraguay
Manu National Park/Biosphere Reserve, Peru
Yellowstone National Park, Wyoming, USA
Changbaishan Mountain Biosphere Reserve, northeast China?
Mainland Africa --

Case Study Goals/Assignment

The goal of this assignment is to apply your thinking as it has developed over the course of the seminar to an analysis of a particular protected area be that a park, biosphere reserve, wilderness area, etc. In essence, you will be a protected-area consultant. We want this project to be useful to you, and to the protected area in question, so please choose a site of special interest or significance to you. Also, we hope that in cases where this is possible, you will go as far as to establish contact with these decision makers, as soon as you settle on an area (indeed, you may wish to choose your focus area in part based on your conversations with decision makers). Conversations with decision-makers where

possible will help guide the scope, focus, and structure of your analysis. When not possible, you will need a proxy for contact with a decision maker – eg. contact with someone who doesn't have decision authority but knows the site well and this can be supplemented in turn with 'grey literature' (planning documents, reports and meeting minutes, etc)

You will be offering both a verbal (presentation) and written (paper) version of your work. Beforehand, however, you are expected to submit an outline of your case plan (**due Feb 27**). At this point, you should have either initiated contact or assessed your case to ensure necessary material is available to you – e.g, you've chosen an area, got some contacts, have spoken or emailed a decision maker, determined your temporal and content focus, and initiated research. In no more than 1000 words, your outline should explain and justify these choices, and lay out the structure and content of the paper and how you will ensure that it will be considered appropriately by the decision makers in question. ***The presentation is worth 15% of your final grade; the paper is worth 35%; the outline is worth 5%. [Details below.]***

Final papers should be fully referenced and standard term length, that is, 18-25 pages double spaced (max 7000 words). **Papers are due April 14th, 2006.** Presentations are as per assigned class schedule; they should be treated as a 'dry-run' for your paper and should be structured such that you are able to maximize feedback from seminar participants. *You may choose to deviate from the assignment criteria somewhat if and when a particular kind of analysis strikes you and if and when you have cleared that option with either Kai or Terre.*

Your case study analysis should be focused on a characterization of the site as well as an assessment of its success or failure as a site both biologically and socially, and should close with recommendations for its continuance, management, expansion/contraction, etc.:

While we will not ask you to follow a specific format, your case should include content along the following lines:

- Include a succinct presentation of primary details of the site including historical context, biological priorities (uniqueness, significance, etc.), major users, interests, threats and pressures–local and non-local, governance structure of park and of relevant region or nation state. Also highlight and explain any major points of scientific or social controversy, and relevant law or policy prescriptions (e.g., CITES, national endangered species legislation, etc.). Finally, include a brief assessment of the area's contribution to local or national income, wages, or livelihoods (and, where applicable, to human concerns outside the nation).

- Provide a clear framework or theory as to why any evident problems or improvements have changed or escalated over time **or** why a particular problem evolved as it did. Your explanation should clearly rely upon class material but may also draw upon other ideas to elaborate or contest core findings or assumptions in the seminar literature.

- Convince the reader and your class colleagues (re: the presentation) that the explanatory framework you used to analyze your case is appropriate (i.e., that your criteria for evaluating the current status and/or future prospects are sound and the 'best' way to understand the case).

- Provide some compelling arguments as to what changes in area management and/or governance or monitoring practices should occur, and defend these as sensible from both a biological and social perspective.

Master Reading List

Readings from Kai

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

Arrow, K. J., M. L. Cropper, G. C. Eads, R. W. Hahn, L. B. Lave, R. G. Noll, P. R. Portney, M. Russell, R. Schmalensee, V. K. Smith, and R. N. Stavins. 1996. Is there a role for benefit-cost analysis in environmental, health, and safety regulation? Science 272:221-222.

Balmford, A., L. Bennun, B. ten Brink, D. Cooper, I. M. Cote, P. Crane, A. Dobson, N. Dudley, I. Dutton, R. E. Green, R. D. Gregory, J. Harrison, E. T. Kennedy, C. Kremen, N. Leader-Williams, T. E. Lovejoy, G. Mace, R. May, P. Mayaux, P. Morling, J. Phillips, K. Redford, T. H. Ricketts, J. P. Rodriguez, M. Sanjayan, P. J. Schei, A. S. van Jaarsveld, and B. A. Walther. 2005. The convention on biological diversity's 2010 target. Science 307:212-213.

Barrow, E., and C. Fabricius. 2002. Do rural people really benefit from protected areas: rhetoric or reality? PARKS 12:67-79.

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

Bonnie, R. 1999. Endangered species mitigation banking: promoting recovery through habitat conservation planning under the Endangered Species Act. Science of the Total Environment 240:11-19.

Boyd, D. R. 2003. Unnatural Law: Rethinking Canadian Environmental Law and Policy. UBC Press, Vancouver, BC.

Brownstein, C., M. Lee, and C. Safina. 2003. Harnessing consumer power for ocean conservation. Conservation in Practice 4.

Callicott, J. B. 1992. Animal liberation: A triangular affair. Pages 37-69 in E. C. Hargrove, editor. The Animal rights, environmental ethics debate: the environmental perspective. State University of New York Press, Albany, NY.

Callicott, J. B. 1999. The search for an environmental ethic. Pages 193-205 in W. H. Shaw, editor. Social & Personal Ethics. Wadsworth Publishing Co., Belmont, CA.

Chapin, M. 2004. A challenge to conservationists. World Watch 2004:17-31.

Conservation Measures Partnership. 2005. The Conservation Measures Partnership. http://www.conservationmeasures.org/CMP/.

Costanza, R., R. d'Arge, R. d. Groot, S. Farber, M. Grasso, B. Hannon, K. Limburg, S. Naeem, R. V. O'Neill, J. Paruelo, R. G. Raskin, P. Sutton, and M. v. d. Belt. 1997. The value of the world's ecosystem services and natural capital. Nature 387:253-260.

Costanza, R., and C. Folke. 1997. Valuing ecosystem services with efficiency, fairness, and sustainability as goals. Pages 49-68 in G. C. Daily, editor. Nature's Services: Societal Dependence on Natural Ecosystems. Island Press, Washington, DC.

Daily, G. C. 1997. Valuing and safeguarding Earth's life-support systems. Pages 365-374 in G. C. Daily, editor. Nature's Services: Societal Dependence on Natural Ecosystems. Island Press, Washington, DC.

Daily, G. C., S. Alexander, P. R. Ehrlich, L. Goulder, J. Lubchenco, P. A. Matson, H. A. Mooney, S. Postel, S. H. Schneider, D. Tilman, and G. M. Woodwell. 1997. Ecosystem Services: Benefits Supplied to Human Societies by Natural Ecosystems. Pages 1-18 in Ecological Society of America, editor. Issues in

Ecology, Washington, DC.
Daily, G. C., T. Soderqvist, S. Aniyar, K. Arrow, P. Dasgupta, P. R. Ehrlich, C. Folke, A. Jansson, B. O. Jansson, N. Kautsky, S. Levin, J. Lubchenco, K. G. Maler, D. Simpson, D. Starrett, D. Tilman, and B. Walker. 2000. The value of nature and the nature of value. Science 289:395-396.
de Groot, R. S., M. A. Wilson, and R. M. J. Boumans. 2002. A typology for the classification, description and valuation of ecosystem functions, goods and services. Ecological Economics 41:393-408.
Dunn, C. P., F. Stearns, G. R. Guntenspergen, and D. M. Sharpe. 1993. Ecological benefits of the Conservation Reserve Program. Conservation Biology 7:132-139.
Eigenraam, M. 2005. EcoTender: Paying for ecosystem services, not lemons. http://ecosystemmarketplace.net/pages/article.opinion.php?component_id=3947&component_version_id=5684&language_id=12.
Failing, L., and R. Gregory. 2003. Ten common mistakes in designing biodiversity indicators for forest policy. Journal of Environmental Management 68:121-132.
Ferraro, P. J., and A. Kiss. 2002. Direct payments to conserve biodiversity. Science 298:1718-1719.
Gatto, M., and G. A. De Leo. 2000. Pricing biodiversity and ecosystem services: The never-ending story. Bioscience 50:347-355.
Goodwin, B. K., and V. H. Smith. 2003. An ex post evaluation of the conservation reserve, federal crop insurance, and other government programs: Program participation and soil erosion. Journal of Agricultural and Resource Economics 28:201-216.
Goulder, L. H., and D. Kennedy. 1997. Valuing ecosystem services: philosophical bases and empirical methods. Pages 23-47 in G. C. Daily, editor. Nature's Services: Societal Dependence on Natural Ecosystems. Island Press, Washington, DC.
Hardner, J., and R. Rice. 2002. Rethinking green consumerism. Scientific American 286:88-95.
Hare, R. M. 1997a. Moral Thinking: It's Levels, Method, and Point. Clarendon Press, Oxford, UK.
Hare, R. M. 1997b. Sorting Out Ethics. Clarendon Press, Oxford, UK.
Hawn, A. 2005. Ecosystem farming: The precursor of markets in South Africa? http://ecosystemmarketplace.net/pages/article.news.php?component_id=743&component_version_id=1246&language_id=12.
Heal, G. 2000. Valuing ecosystem services. Ecosystems 3:24-30.
Heal, G. 2003. Bundling public and private goods. Journal of the European Economic Association.
Heal, G., G. C. Daily, P. R. Ehrlich, J. Salzman, C. Boggs, J. Hellmann, J. Hughes, C. Kremen, and T. Ricketts. 2001. Protecting natural capital through ecosystem service districts. Stanford Environmental Law Journal 20:333-364.
Hockings, M. 2003. Systems for assessing the effectiveness of management in protected areas. BioScience 53:823-832.
Inamdar, A., H. de Jode, K. Lindsay, and S. Cobb. 1999. Capitalizing on nature: Protected area management. Science 283:1856-1857.
Janzen, D. 1998. Gardenification of wildland nature and the human footprint. Science 279:1312-1313.

Janzen, D. H. 2000. Costa Rica's Area de Conservacion Guanacaste: a long march to survival through non-damaging biodiversity and ecosystem development. Pages 122-132. Norway/UN conference on the Ecosystem Approach for Sustainable Use of Biological Diversity. Norwegian Directorate for Nature Research and Norwegian Institute for Nature Research, Trondheim, Norway.

Janzen, D. H. 2001a. Good fences make good neighbors. PARKS 11:41-49.

Janzen, D. H. 2001b. Lumpy integration of tropical wild biodiversity with its society. Pages 133-148 in W. J. Kress, and G. W. Barrett, editors. A New Century of Biology. Smithsonian Institution Press, Washington, D. C.

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