Course Syllabus

Course Title: Adaptive (Co-)Management
Semester and year: Spring 2006
Course Number: NRM 694/BIOL694/ECON 694/ANTH 694
Class time: Tu. Th. 9:45 – 11:15
Room: 208 Irving 1
Web page: See Blackboard

Course Instructor

<table>
<thead>
<tr>
<th>Name</th>
<th>Department affiliation</th>
<th>Phone numbers</th>
<th>Office</th>
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<tbody>
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<td></td>
<td>Department - SNRAS and Institute of Arctic Biology</td>
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Prerequisites: (A) Participation in the Resilience and Adaptation Program in good standing, or (B) approval of instructional team based on potential to function effectively in a graduate-level interdisciplinary environment.

The Focus of the Course:
This course is an exploration of the theoretical considerations and practical applications of adaptive management, co-management, and adaptive co-management as they related to achieving social, economic, and ecological sustainability. We survey a broad set of conceptual foundations for societal and professional-level decision-making, using the case-study method in our analysis.

Background: The outcome of contemporary issues related to sustainability is determined by the interaction of individual and collective actors with differing societal goals and values, legal mandates, resource production capabilities, ecological conditions, assessments of uncertainty, cultural perspectives on risk, and direct and indirect costs and benefits of outcomes. In many situations, a decision must be made. Even the inability to select and implement a particular decision amounts to a default decision to accept certain consequences. A social-ecological system's capacity to learn from experience and respond to change in ways that account for these problems is critical to sustainability. Because of the controversial nature of many decisions and the complexity of systems (ever changing and integrating complex social and biological elements), many foundational areas must be integrated if decisions are to support social-ecological resilience.

Adaptive management has been defined in the literature as an approach or framework for dealing with human decision making in complex social-ecological systems. Ideally, adaptive management strives towards intentional learning by comparing the outcomes of past decisions to previously predicted outcomes or goals and desires, followed by systematic reflection on that experience in order to improve current and future decision making. In some cases formal models serve to guide this learning process. The adaptive management approach attempts to develop a holistic appreciation of the inherent dynamics of ecosystems, changing markets, and evolving public conceptions and values. Consequently, an adaptive management approach suggests the need to
apply the principles of experimentation, while also focusing on institutional determinants of robust decision-making.

In most cases “adaptive management” has been used to refer to the decision making by resource managers. Today we live in a world in which decisions are determined by the behavior of sophisticated and highly connected social networks, including local communities, agencies, NGOs, and the greater public. To capture this broader dimension of the adaptive process, we will also consider the concept of co-management and the newer term adaptive co-management, with the former being the sharing of power sharing between resource user communities and state management agencies in decision making over shared resources, and the latter being a more societal-level process that facilitates social learning through appropriate levels of integration and autonomy of local-to-global integrations. Through all of these concepts, cultural and historical issues, underlying management assumptions, and the implications of uncertainty are key considerations. Thus, adaptive co-management requires consideration at several temporal and spatial scales to address problems in a comprehensive manner.

These idealized objectives are today considered by many as laudable and there is a push by some to use an adaptive management and or a co-management approach, but the objectives of these approaches are also not well documented or understood in practice. This gives our class a unique opportunity to be critical and creative, to make discoveries, and to push the current thinking in this field forward.

What then are the impediments and potential of social learning of a management system? In what conditions is social learning enhanced or derailed? To what extent are the challenges of adaptive co-management structural, institutional, ecological, or cultural? What are the conditions in which individuals and collectives are successful in achieving their objectives through adaptive management? How and when can adaptive management principles be applied at the community, regional, global, and cross-scale levels?

Curriculum / Schedule of Topics
This course has two interrelated objectives:
1) To provide foundational understanding of the theoretical and applied aspects of adaptive management, co-management, and adaptive co-management.
2) To develop skills of case study research.

We will study the principles and theory of adaptive co-management through discussions, lectures, and readings, interspersed with student presented case studies and meetings with individuals who provide first-person accounts of adaptive co-management situations in action. Students are given exercises that simulate the problems facing decision makers. Students work in teams to undertake mini- and in-depth case studies with relevance to problems of adaptive co-management. Collectively, the class builds a portfolio of case studies that are used in a final overview analysis.
Topics to be addressed in our course include:

- Disentangling the definitions of adaptive management, co-management, adaptive co-management
- History, paradigms, cultures of resource and environmental management.
- Diagnostic tools for single and multiple case study analysis
- Consequences of the absence of adaptation - collapse.
- Organizational and institutional dimensions of sustainable common pool resources
- Problems and opportunities in integrating local / traditional knowledge and science in management
- Problems of accounting for uncertainty in decision making
- Management as experimental process
- Processes of Social learning
- Collective action and collaboration theory
- Social and environmental impact assessment as adaptive process
- The interface of science and politics in adaptive management
- Public participation in decision making
- Ecological monitoring for adaptive management
- Use of models in the management of complex systems
- Implications of chaos and emergence

Case studies illustrating various dimensions of adaptive management.
We will use a number of cases to ground our analysis and bind it with theory. Some examples can include:

- Social-Ecological Collapse of the Newfoundland Cod Fishery
- Everglades Regional Ecosystem Management
- The Columbia River Watershed Restoration Program
- Northwest Old Growth and Endangered Species in the US and Canada
- Indigenous Systems of the James Bay Cree
- The Alaska North Slope Science Initiative
- Glenn Canyon Watershed Management
- Katrina in retrospect

During the first half of the semester, the instructor or guests will present classes that outline the key concepts. Where possible, classes will be followed by another in which students present case studies, illustrating and expanding on relevant elements of that dimension. Students work in teams and are assigned responsibility for a specific session at the beginning of the semester. An appropriate case study will be recommended by the instructor; student teams are free to select their own case(s). Students should work with faculty in the development of their class lesson plan.

Some basics questions for preparing case studies:

- What happened? – know the facts
- Functional or dysfunctional, and why? --
- What were the areas of conflict and the underlying interests?
- Why were they happening? (Multi-causality rules.)
- How does that the case illustrate or question the aspect of adaptive co-management of interest?
- What needs to change?
- How does one change it?
The Major Project (draft):
Students work in teams to undertake in-depth analyses that focus on problems of adaptive co-management in the Alaskan or Arctic context. Teams should be self organized, with each team including three members. Teams should be multi-disciplinary in composition and include no more that one non-RAP student per group.

The major project should lead to the production of a paper worthy of publication in the journal Society and Ecology, an on-line journal posted at http://www.ecologyandsociety.org/.

Below are guidelines on the steps and deadlines for undertaking the major project.

February 9th - Form teams and send a list of team members to the instructor.

February 21th - Identify your team’s case study and problem area, and send brief communication to instructor indicating the team’s choice.
The criteria for topic selection should include:

- The topic addresses some aspect of adaptive management theory and practice
- The topic focuses on an Alaskan or northern case or cases
- The topic makes an original contribution to the literature of adaptive management

The criteria for case study selection should include:

- Merits of the case study or case studies to illustrate adaptive or maladaptive aspect(s) of decision making process.
- Availability of resources (documentation and resource people) to provide necessary background information for the research.
- Appropriateness of focus and scope to make the analysis manageable.

March 23th - Each team submits a three-page prospectus, justifying the selection of the topic and case study, and indicating the group’s proposed division of labor. In the prospectus, the team should outline criteria it will use to evaluate individual team members’ contribution to the project.

March 26th - Class is dedicated to each team presenting an overview of its project and progress to date. Briefings will be presented in oral form, allowing time for feedback from other teams and faculty. An outline of the proposed paper is due to the instructor at this time.

May 10th - Final papers are submitted to the course Blackboard drop box.

During Exam Period – “2005 RAP Adaptive Management Colloquium” – Student presentations of case study analyses are made at our annual Adaptive Management RAP Colloquium, attended by RAP students, faculty, and invited professionals. Presentations should be no more than 20 minutes in length with 15 minutes allotted for Q and A.

About the final paper:
Papers should relate theory to interpretation and where appropriate, make recommendations by commenting both on the decision making process as well as the utility of theory in explaining the practice of adaptive management. Papers need to be
original/novel contributions. Paper length should be no more than 30 pages in text length (double spaced/10 point Arial), plus figures and tables, and bibliography, with proper citations. Guidelines for papers can be found at:
http://www.ecologyandsociety.org/submissions.php#guidelines

Grading Policy:

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<tr>
<td>35</td>
<td>Mid-term</td>
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<tr>
<td>20</td>
<td>Four reflection papers / mini assignments</td>
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<tr>
<td>35</td>
<td>Class attendance, preparation, and participation</td>
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<tr>
<td>20</td>
<td>Mini case study presentations</td>
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<tr>
<td>30</td>
<td>Oral presentation of Final Case Study*</td>
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<tr>
<td>60</td>
<td>Written Final Case Study (including related assignments)*</td>
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**200** Total points awarded

*The final case study presentation will be evaluated as a team product, with team members noting individuals’ respective contributions.

Course Policies/Expectations:

- This is a small class that depends on your full participation; avoid missing classes. If you know ahead of time that you will not be attending, let the instructor know.
- Good participation means leaving time and space for encouraging ALL students to talk and share ideas.
- Come to class having read assigned material. Come to class with one or two general questions about that material (or for the guest if we happen to have one).
- We will share many different perspectives. Make your points respectfully, while listening openly to the ideas of others. Seek to find ways beyond the dialectics of thesis - antithesis.
- The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. State that you will work with the Office of Disabilities Services (203 WHIT, 474-7043) and I will work with this office to provide reasonable accommodation to students with disabilities.
- You are expected you to do your own work in accordance with the UAF Student Code of Conduct (http://www.uaf.edu/catalog/current/academics/regs3.html). Cheating and plagiarism are very serious offenses, and will not be tolerated. Any exam or paper that contains plagiarized material will receive a grade of zero. Be sure you understand what constitutes plagiarism and cheating (see below for help on this). Any student who turns in a paper not written by him/herself (such as purchased from a company or downloaded from the Internet) will flunk the entire course. Rasmuson Library has prepared materials to help you understand how to cite sources properly. There are links to these on our Blackboard site. For an explanation of what constitutes plagiarism see:
  http://www.uaf.edu/library/instruction/handouts/Plagiarism.html
  For an explanation of how to properly cite sources see:
  http://www.uaf.edu/library/instruction/handouts/Citing.html
- The course is a work in progress; we all work together on change, and the syllabus is subject to change, and if it does, I will consult with you about it beforehand.
Good books about Adaptive Management:

Adaptive Management
694 NRM/694 BIO/694 ECON/694 ANTH
Spring 2006

Class schedule (subject to change)

Date / topic /details / lecture or guest / assignment

19-Jan
Introduction to class topic and method/ Questions of interest
Review the syllabus; Some of Gary's questions
Kofinas

24-Jan
Key concepts and schema
An view on rationale and basic ideas -- resources and social organization
Kofinas

Folke, C., S. Carpenter, T. Elmqvist, Lance Gunderson, C. Holling, B. Walker, J.
Bengtsson, F. Berkes, J. Colding, K. Danell, M. Falkenmark, L. Gordon, R. Kaspertson,
N. Kautsky, A. Kinzig, S. Levin, K.-G. Måler, F. Moberg, L. Ohlsson, P. Olsson, E.
Ostrom, W. Reid, J. Rockström, H. Savenije, and U. Svedin. 2002. Resilience and
Sustainable Development: Building Adaptive Capacity in a World of Transformations.
Scientific Background Paper on Resilience for the process of The World Summit on
Sustainable Development on behalf of The Environmental Advisory Council to the

Lee, K. N. 1993. Compass and Gyroscope: Integrating Science and Politics for the

26-Jan
Case study research
What is it? How do you do it? What are the strengths and weaknesses of this method?
Kofinas

Newbury Park.

31-Jan
Systems that failed
Three cases: Katrina/ Challenger/Newfoundland cod
Student led/ presented
Use whatever resources you can find to study your case study from a history a
perspective; assess the extent to which the social system was responsive and or learned
from the past.

2-Feb
Primer on institutions, organizations, and CPRs
Tragedies, property rights, and games
Kofinas


7-Feb
What are robust institutions? How do they facilitate learning?
Guest lecture by and discussion with eminent institutionalists
Elinor Ostrom


9-Feb
Community management systems
Student presented cases in local systems of management
Student presented case
TBA

14-Feb
Co-management - examples of community-state power sharing
Three cases: Point-no-point co-management; the Inuivialuit Arrangement ACM; BQCM as social leaning

TBA

16-Feb
The Cultural Dimension
The TEK - Science Interface

TBA

21-Feb
Regional Social-Ecological Dynamics in Learning I
The Everglades
Student teams

23-Feb
Regional Social-Ecological Dynamics in Learning II
Glenn Canyon
Student teams
28-Feb
no class

2-Mar
Formal models, policy and human decision making
Use of spatial models to understand collective decision making
Herrmann and Valcic

7-Mar
Uncertainty and Making Policy
Science-citizen councils and public policy-decision making
Herrmann and Hills

9-Mar
Uncertainty and Making Policy
Student reflections on faculty presentations
Herrmann and Hills
Take home mid term exam

14-Mar
spring break

16-Mar
spring break

21-Mar
Ecological Monitoring
Examples that contribute to adaptation and resilience / The PWS Experience; The Arctic Borderlands Coop
TBA

23-Mar
Student progress reports on projects
Mini presentations to review your progress on student projects

28-Mar
Thinking _again about collapse_
Public UAF Lecture
Jared Diamond

30-Mar
The Forestry Problem and AM
AM in the context of the Northwest
Judy
4-Apr
The Forestry Problem and AM
AM in the context of the Northwest – US-CANDA comparisons
Student mini presentations
w/ Juday

6-Apr
Integrated Assessment as tool in AM
Possible Futures and Sustainability
w/ Berman

11-Apr
Scenarios and Gaming
The Millennium Assessment
w/ Berman

13-Apr
Scenarios and Gaming
Student scenarios and analysis
w/ Berman

18-Apr
Legal and political dimensions of AM
TBA
TBA

20-Apr
Legal and political dimensions
TBA
TBA

25-Apr
AM Applications in Alaska?
North Slope Science Initiative as AM
TBA

27-Apr
AM Applications in Alaska?
North Slope Science Initiative
TBA

2-May
AM Applications in Alaska?
North Slope Science Initiative
TBA

4-May
Pulling it all together
Open discussion / Course Evaluation
Exam Week
Present final projects at symposium
Time/place TBA