Appendix 2: ENVIRONMENTAL STUDIES 481
Analyzing environmental issues using a social-ecological systems perspective

University of Victoria, Canada
Instructor: Natalie Ban
Room: Clearihue Building C115
Time: 16:30-19:20 Wednesdays
Office Hours: Thursdays 3-4pm, David Turpin Building B250, or by appointment
Readings: No textbook – all readings are articles accessible through the library

Course background and description

Environmental problems are multi-faceted issues, involving complex interactions between people and the environment. Analyzing environmental issues to formulate options for solutions thus requires interdisciplinary approaches. The concept of social-ecological systems is one such approach that is gaining recognition internationally. This class uses a social-ecological systems lens to better understand, analyze, and find solutions to environmental issues.

Through the assignments in this class, you will learn about and contribute to ongoing research on social-ecological systems. You will work in groups to carry out in-depth case study research. Each group will focus on one case study to understand the resources, actors, and governance system in the case, and how these interact with one another. Case studies in this class will focus on large social-ecological systems, with an emphasis on protected areas. If your case study research is of high calibre, your case study write-up might be used to assist with entering that case into an international comparative database that seeks to analyze conditions leading to successful resource management in large-scale social-ecological systems.

This course is cross-listed with ES 581. The cap for class size (ES 481 and 581 combined) is 30 students.

Learning objectives

By the end of the course, you should be able to:

- Describe the ideas and theories behind the social-ecological systems framework.
- Assess and analyze a case study using this framework.
- Write a high-quality research essay to describe the findings of your case study research.
- Collaborate effectively with peers on a research project.

Course structure and format[1]

This class will be a team effort. The format will be a mix of discussions, reading, in-class exercises, and some lectures. This class will place a lot of emphasis in-class participation, and on developing case studies as a way for you to understand and apply the concepts covered in class. To participate effectively in class activities and discussions, you need to read the assigned papers before each class.

[1] *Minor adjustments to the schedule might be necessary, but due dates for assignments will not change.*

Date	Topic	Readings*
Sep. 4 2013	Introduction to course and overview of social-ecological systems (SESs)	
Sep. 11 2013	SES background continued. Overview of the Social-Ecological Meta-Analysis Database (SESMAD) project; literature review research skills	Hardin 1969; Ostrom 2009 Cox et al. 2010; Cox 2013 in prep.
Sep. 18 2013	Case studies as a method; discussion about group project for class; group work	Agrawal 2001; Bruner et al. 2001; Young et al. 2006
Sep. 25 2013	SESs: resources, actors; documenting research gaps	Collette et al. 2010; Folke et al. 2005
Oct. 2 2013	SESs: governance systems; referencing skills	Agarwal and Chhatre 2006; Ostrom 2011
Oct. 9 2013	SESs: Context and external influences; academic writing skills	De'ath et al. 2012; Berkes 2006
Oct. 16 2013	SESs: Interactions leading to outcomes ***Course project, individual assignment 1 due***	Pollnac et al. 2010; Olsson et al. 2004
Oct. 23 2013	Analyzing interactions-outcomes; presentation skills	Flyvbjerg 2006; SESMAD case study papers tbd
Oct. 30 2013	Analyzing interactions-outcomes continued; academic writing exercise	Gutierrez et al. 2011; Tucker et al. 2007
Nov. 6 2013	Case study discussions, comparisons of cases ***Course project, individual assignment 2 due***	Cinner et al. 2012; Fleischman et al. 2013 in review
~~Nov 13 2013~~	Reading break	
Nov. 20 2013	Class time for working on group report (Dr. Ban away)	
Nov. 27 2013	Potential improvements/solutions in cases	Chapin et al. 2010
Dec. 4 2013	Class discussion about case studies, and case study methodologies; course evaluation ***Presentations on case studies*** ***Group report due***	

** In addition to the assigned readings, you will be expected to find and read relevant materials for your case study (see term paper assignment).*

Reading list

* When you are off-campus, you have to log in to UVic in order to get access to UVic's library subscriptions. Instructions can be found on this UVic website: http://library.uvic.ca/help/proxy_help/access.html

Agrawal, A. 2001. Common Property Institutions and Sustainable Governance of Resources. World Development **29**:1649-1672. (http://www.sciencedirect.com/science/article/pii/S0305750X01000638)

Agrawal, A., and A. Chhatre. 2006. Explaining success on the commons: Community forest governance in the Indian Himalaya. World Development **34**:149-166. (http://www.sciencedirect.com/science/article/pii/S0305750X05001889)

Berkes, F. 2006. From community-based resource management to complex systems: the scale issue and marine commons. Ecology and Society **11**(1):45[online]. (http://www.ecologyandsociety.org/vol11/iss1/art45/ES-2005-1431.pdf)

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. (http://www.sciencemag.org/content/291/5501/125.short)

Chapin III, F. S., S. R. Carpenter, G. P. Kofinas, C. Folke, N. Abel, W. C. Clark, P. Olsson, D. M. S. Smith, B. Walker, O. R. Young, F. Berkes, R. Biggs, J. M. Grove, R. L. Naylor, E. Pinkerton, W. Steffen, and F. J. Swanson. 2010. Ecosystem stewardship: sustainability strategies for a rapidly changing planet. Trends in Ecology & Evolution **25**:241-249. (http://www.sciencedirect.com/science/article/pii/S0169534709003255)

Cinner, J. E., T. R. McClanahan, M. A. MacNeil, N. A. J. Graham, T. M. Daw, A. Mukminin, D. A. Feary, A. L. Rabearisoa, A. Wamukota, N. Jiddawi, S. J. Campbell, A. H. Baird, F. A. Januchowski-Hartley, S. Hamed, R. Lahari, T. Morove, and J. Kuange. 2012. Comanagement of coral reef social-ecological systems. Proceedings of the National Academy of Sciences **109**:5219-5222. (http://www.pnas.org/content/109/14/5219.short)

Collette, B. B., K. E. Carpenter, B. A. Polidoro, M. J. Juan-Jordá, A. Boustany, D. J. Die, C. Elfes, W. Fox, J. Graves, L. R. Harrison, R. McManus, C. V. Minte-Vera, R. Nelson, V. Restrepo, J. Schratwieser, C.-L. Sun, A. Amorim, M. Brick Peres, C. Canales, G. Cardenas, S.-K. Chang, W.-C. Chiang, N. de Oliveira Leite, H. Harwell, R. Lessa, F. L. Fredou, H. A. Oxenford, R. Serra, K.-T. Shao, R. Sumaila, S.-P. Wang, R. Watson, and E. Yáñez. 2011. High Value and Long Life—Double Jeopardy for Tunas and Billfishes. Science **333**:291-292. (http://140.109.29.102/pdf/896.pdf)

Cox, M. 2013 in preparation. The SESMAD project. (Will be saved on Moodle.)

Cox, M., G. Arnold, and S. V. Tomás. 2010. A review of design principles for community-based natural resource management. Ecology and Society **15**:38. (http://www.ecologyandsociety.org/vol15/iss4/art38/main.html)

De'ath, G., K. E. Fabricius, H. Sweatman, and M. Puotinen. 2012. The 27–year decline of coral cover on the Great Barrier Reef and its causes. Proceedings of the National Academy of Sciences **109**:17995-17999. (http://www.pnas.org/content/109/44/17995.short)

Fleischman, Forrest D., Natalie C. Ban, Louisa S. Evans, Graham Epstein, Gustavo Garcia-Lopez, Sergio Villamayor-Tomas. Governing large-scale social-ecological systems: Lessons from a comparison of five cases. In review in International Journal of the Commons. (Will be saved on Moodle.)

Flyvbjerg, B. 2006. Five Misunderstandings About Case-Study Research. Qualitative Inquiry **12**:219-245. (http://qix.sagepub.com/content/12/2/219.short)

Folke, C., T. Hahn, P. Olsson, and J. Norberg. 2005. Adaptive governance of social-ecological systems. Annual Review of Environment and Resources **30**:441-473. (http://www.annualreviews.org/doi/abs/10.1146/annurev.energy.30.050504.144511)

Gutierrez, N. L., R. Hilborn, and O. Defeo. 2011. Leadership, social capital and incentives promote successful fisheries. Nature **470**:386-389. (http://www.nature.com/nature/journal/v470/n7334/abs/nature09689.html)

Hardin, G. 1968. The tragedy of the commons. Science **162**:1243-1248. (http://www.sciencemag.org/content/162/3859/1243.full)

Olsson, P, Folke, C., Berkes F. 2004. Adaptive comanagement for building resilience in social-ecological systems. Environmental Management **34**:75-90. (http://link.springer.com/article/10.1007/s00267-003-0101-7#page-1)

Ostrom, E. 2009. A general framework for analyzing sustainability of social-ecological systems. Science **325**:419-422. (http://www.sciencemag.org/content/325/5939/419.full?sid=1821e913-6ac4-4634-95f8-e5a18ad04712)

Ostrom, E. 2011. Background on the institutional analysis and development framework. Policy Studies Journal **39**:7-27. (http://onlinelibrary.wiley.com/doi/10.1111/j.1541-0072.2010.00394.x/full)

Pollnac, R., P. Christie, J. Cinner, T. Dalton, T. Daw, G. Forrester, N. Graham, and T. McClanahan. 2010. Marine reserves as linked social–ecological systems. Proceedings of the National Academy of Sciences **107**:18251-18255. (http://www.pnas.org/content/107/43/18262.short)

Tucker, C. M., J. C. Randolph, and E. J. Castellanos. 2007. Institutions, Biophysical Factors and History: An Integrative Analysis of Private and Common Property Forests in Guatemala and Honduras. Human Ecology **35**:259-274. (http://link.springer.com/article/10.1007/s10745-006-9087-0#)

SESMAD case studies TBD. (will be saved on Moodle)

Young, O. R., E. F. Lambin, F. Alcock, H. Haberl, S. I. Karlsson, W. J. McConnell, T. Myint, C. Pahl-Wostl, C. Polsky, and P. Ramakrishnan. 2006. A portfolio approach to analyzing complex human-environment interactions: institutions and land change. Ecology and Society **11**:31 (online). (http://www.ecologyandsociety.org/vol11/iss2/art31/)

Grading and assignments

Your grade will be based on the following components (see Appendix A for details):

Component	Percent of mark	Due date
Class participation	**25%**	
Reflections on readings	10%	Reflections due in hard copy at the beginning of each class
Leading a discussion on one week's readings	10%	Sign-up in first class
Participation in discussions and activities	5%	Ongoing
Course project	**75%**	
Individual assignment #1	25%	October 16
Individual assignment #2	25%	November 6
Group report	20%	December 4
Presentation	5%	December 4

Class participation and course project

Class participation

Reflections on readings: Your mark for class participation includes weekly reflections. A template will be provided for weekly reflections on readings. 1% will be deducted for each missed reflection. These are not meant to be onerous, but rather provide a format for you to take notes while doing the readings. The purpose is to encourage everyone to do the readings prior to class so that we can have fruitful in-class discussions. The reflections will be due as hard copies at the beginning of each class. They will not be marked, but they will be reviewed to make sure you made an effort to complete them properly.

Leading a discussion: For each class starting week 2, several students (2-3) will be in charge of leading a class discussion on readings. You will sign up for these during the first class. You can be creative and convey information from the readings in any way you wish (e.g., discussions, debates, role-play, videos, etc). You are encouraged to bring in relevant material in addition to the assigned readings. The first hour of each class will be devoted to these student-led discussions.

Participation in discussions and activities: You are expected to participate actively in class discussions. As part of your class participation, you will also be expected to bring examples from your case study (see course project below) to in-class discussions.

Course project: You will work in groups of four (a group of 3 or 5 may be necessary) to carry out in-depth case study research. Each group will focus on one case study to understand the resources, actors, and governance system in the case, and how these interact with one another. Case studies in this class will focus on large social-ecological systems, with an emphasis on protected areas, and will allow you to apply the concepts covered in class and in the readings. A penalty of 10% per day applies to late submissions.

The project has three parts: two individual assignments, and a group report.

> **Individual assignment #1**: Within each group, you will divide key components of social-ecological aspects of your case study. Each person picks one of: governance system, actors, resources, external influences, so that all aspects are covered. Each person will write a well-researched and well-referenced short (700 words maximum; references are extra) paper that summarizes your focal aspect of the case. More detail about this assignment and what content to include will be provided in class. You will receive an individual grade for this assignment.
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> **Individual assignment #2**: Again each group will divide their case study into components, with each person writing a well-researched and well-referenced short (700 words maximum; references are extra) paper that summarizes your focal aspect of the case. The focus here is on interactions and outcomes. More detail about this assignment and what content to include will be provided in class. You will receive an individual grade for this assignment.

Group report: Your group report serves to coherently synthesize the findings of your case study. This means piecing together the individual components members of your group have already written, editing them to be a coherent piece of writing, and synthesizing the key findings. Your group will be expected to revise and integrate the individual pieces, based on feedback you will have received on these for your previous assignments. More detail will be provided in class about components to include in the group report. You will receive a group grade for this report (i.e., every group member will receive the same mark for this component). Maximum 3000 words, references are extra.

Presentation: During the last day of class, each group will present its case study and findings. The presentation will be in the format of an academic conference presentation. Each group will have 10-15 minutes for the presentation (the time allocation will be finalized based on the total number of groups).

Course policies

(Excluded here; this lists policies around grading scale, students with disabilities, plagiarism, and academic integrity).