

Seminar in Biodiversity Conservation: Towards New Paradigms

GRG 392M (#37495), LAS 388 (#40407), Fall 2011
Mondays 4-7 PM, in GRG 408



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Course goals:

This course will use a graduate-student seminar format to examine the current state of knowledge about the goals and methods of biodiversity conservation, especially in reference to global changes, both environmental and social. Students will be expected to read the relevant scientific literature, to actively participate in class discussions, and to write three essays. The seminar is crafted to expose participants to the means of research and communication concerning the environmental consequences of global change, and especially in regards the management of species, ecosystems, and landscapes. New approaches to biodiversity conservation will be evaluated over the course of the semester.

Course schedule:

Part 1: Species and Ecosystems (August, September)

Part 2: Landscapes: Utilized and Natural (October)

Part 3: Assessing New Paradigms (November)

Required readings:

Chapin, F. S., III, G. P. Kofinas, and C. Folke (eds.). 2009. *Principles of Ecosystem Stewardship: Resilience-Based Natural Resource Management in a Changing World*. Springer, New York, NY. ISBN: 9780387730325

Perfecto, I., J. Vandermeer, and A. Wright. 2010. *Nature's Matrix: Linking Agriculture, Conservation and Food Sovereignty*. Earthscan, London (paperback). ISBN: 9781844077823

Additional required readings are posted on Blackboard:

Aide, T.M. & H.R. Grau. 2004. Globalization, migration, and Latin American ecosystems. *Science* 305: 1915-1916.

Barnosky, A.D. et al. 2011. Has the Earth's sixth mass extinction already arrived? *Nature* 471: 51-57.

Brondizio, E.S. et al. 2009. Connectivity and the governance of multilevel social-ecological systems: The role of social capital. *Annual Review of Environment and Resources* 34: 253-278.

Collins, S.L. et al. 2011. An integrated conceptual framework for long-term social-ecological research. *Frontiers in Ecology and the Environment* 9: 351-357.

Grau, H.R. et al. 2003. The ecological consequences of socioeconomic and land-use changes in postagriculture Puerto Rico. *Bioscience* 53: 1159-1168.

Grau, H.R. et al. 2007. Regeneración ambiental en el noroeste argentino. *Ciencia Hoy* 17: 100.

Grau, H.R. et al. 2008. Balancing food production and nature conservation in the Neotropical dry forests of northern Argentina. *Global Change Biology* 14: 985-997.

Grau, H.R. & T.M. Aide. 2007. Are rural-urban migration and sustainable development compatible in mountain systems? *Mountain Research and Development* 27: 119-123.

Grau, H.R. & T.M. Aide. 2008. Globalization and land-use transitions in Latin America. *Ecology and Society* 13(2): 16.

Izquierdo, A.E. et al. 2011. Implications of rural-urban migration for conservation of the Atlantic forest and urban growth in Misiones, Argentina (1970-2030). *Ambio* 40: 298-309.

Rudel, T.K. et al. 2009. Agricultural intensification and changes in cultivated areas, 1970-2005. *Proceedings of the National Academy of Science* 106: 20675-20680.

Young, K.R. 2007. Causality of current environmental change in tropical landscapes. *Geography Compass* 1: 1299-1314.



<u>Date</u>	<u>Topic(s)</u>	<u>Textbook chapters</u>	<u>Other readings</u>
29 Aug.	Introduction: Biodiversity		
5 Sept.	NO CLASS (Labor Day)		
12 Sept.	Global change	Chapin, Chap. 1, 14	Young (2007)
19 Sept.	Global change	Perfecto, Chap. 1-2; <u>Choose</u> Chap. 2, 3, 4, or 5 from Chapin	
26 Sept.	Extinctions		Barnosky et al. (2011)

First essay due (50 points)

3 Oct.	Utilized landscapes	Chapin, Chap. 6, 12; Perfecto, Chap. 3-4	
10 Oct.	Forests	Chapin, Chap. 7; Perfecto, Chap. 5	
17 Oct.	Drylands	Chapin, Chap. 8	Collins et al. (2011)
24 Oct.	Aquatic systems	Chapin, Chap. 9, 10, 11	
31 Oct.	Cities	Chapin, Chap. 13	Brondizio et al. (2009)

Second essay due (50 points)

7 Nov.	Stewardship	Chapin, Chap. 15; Perfecto, Chap. 6	
14 Nov.	Land use efficiency: The land sparing/sharing dichotomy	Grau et al. (2008); Grau & Aide (2007); Rudel et al. (2009); Grau et al. (2007* in Spanish)	

Detailed outline of third essay due (20 points)

21 Nov.	Rural-urban migration and ecosystem recovery	Grau et al. (2003); Aide & Grau (2004); Izquierdo et al. (2011); Grau & Aide (2007)	
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28 Nov. Literature review project presentations

Third essay due (100 points)



Grading:

Essay #1---50 points

Essay #2---50 points

Essay #3 outline---20 points

Essay #3---100 points

In all cases of a written assignment, 10% of the value is based on an oral presentation in class on the day the assignment is due, while 90% is based on the written product. Final letter grades for the semester will be based on A, $\geq 92\%$ of possible points; A-, 90-91.99%; B+, 88-89.99%; B, 82-87.99%; B-, 80-81.99%; C+, 78-79.99%; C, 72-77.99%; etc.

Assignments:

- 1.) **Essay #1:** This will be an essay written in the style and format of chapters in the Chapin et al. It should choose **one** crucial research question involving global change in regards biodiversity and should lay out a research agenda. It should be based on ideas and citations from Chapters 1-5 and 14 of Chapin et al., plus any additional sources you feel are germane. It should be 5 to 8 pages long (not including reference citations), double-spaced.
- 2.) **Essay #2:** This essay is to be written in the style and format of a research proposal (or preproposal): This is a two-to-three page proposal (single spaced) saying what, where, why, and how you would do research to extend or complete the studies described or mentioned in **one** of the following readings: Chapin et al., Chapters 2, 3, 4 or 5; Perfecto et al, Chapters 2, 3 or 4. This proposal should be informed by (and cite when appropriate) the other readings already assigned in the class, plus additional sources that are found to be useful. Section headings used must be: Research question, Previous studies, Specific objectives, Study area, Methods, Expected results, Budget, Literature cited. The maximum budget that may be requested is \$100,000.
- 3.) **Essay #3:** This will be an essay written in the form of a literature review essay on one or more of the new paradigms discussed in this course. Write it in the style and format of *Progr. Physical Geography* or *Progr. Human Geography*. You should describe the current research being done on the specific topic(s) you chose and predict future research trends. The essay should be 12 to 18 pages long, double spaced, and should utilize a minimum of fifteen references from the scientific literature. This should be done in relation to the materials and topics covered in this course, but can focus in on a place or process or species of particular interest. (Students registered in LAS 388 must also make their topic relevant to Latin America.) Note that a detailed outline (accompanied by a brief class presentation) is due on 14 November, with the final paper (accompanied by a class presentation) due the last day of class, 28 November.

