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Spring 2-1-2006

FOR 170N.01: International Environmental Change

Stephen F. Siebert

University of Montana - Missoula, steve.siebert@umontana.edu

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FOR 170: International Environmental Change

Spring 2006
2 credits; grade

Monday 4:10 – 5:50 PM
HS 207

Course Description:

This course provides an introduction to natural and anthropogenic environmental change from ancient to contemporary times. Course objectives include: 1) exploring the historical role and importance of ecological disturbance on the development and maintenance of terrestrial ecosystems and 2) introducing potential fields of study in the College of Forestry & Conservation.

Many of the issues we will consider are complex and imprecisely known. Just like the real world, there are rarely simple answers to complex problems and many things we do not know. I expect you to come to class having read the assigned readings and prepared to discuss them. As you review the syllabus, note that most articles are brief (or abstracts only) and that we will make time each class to discuss the day's topic and readings. I look forward to your informed participation and would be happy to meet with you to review material or to discuss other topics.

Instructor:

Steve Siebert, Professor
Science Complex 406; email: steve.siebert@cfc.umt.edu; phone: 243-4661
Office hours by appointment: Monday PM, Tuesday AM & Thursday AM

Required Readings:

Readings are available in the Mansfield Library (one printed copy on reserve) and through the ERES system: <http://eres.lib.umt.edu> (password FOR170).

Grading (+/- grading will be used):

Two short writing assignments	
#1 (due March 13)	15 %
#2 (due April 24)	15
Three quizzes – 15 pts each	45
Final exam	<u>25</u>
Total	100 %

Note: missed quizzes or late assignments result in lost credit without prior approval.

SYLLABUS

Week/Date	Topics/Readings
1 – 1/23	<p>Course introduction & overview of concepts: diversity, complexity, sustainability, productivity, stability, disturbance, sensitivity, resilience, equitability & uncertainty.</p> <p>Jackson et al. (2001), Ludwig et al. (1993), Uhl et al. (1990)</p>
2 – 1/30	<p>Climate, soils and plant formations</p> <p>Bush (2003)</p>
3 – 2/6	<p>Development and change in ancient times: Crete & Mexico Film: “The Chinampas”</p> <p>Chapin (1988), Grove & Rackham (2001), Haug et al. (2003), Marsh (1864)</p>
4 – 2/13	<p>Quiz #1 Biodiversity & forest conversion Film: “The Fires of the Amazon”</p> <p>Geist & Lambin (2002), Ripple & Beschta (2004), Sala et al. (2000)</p>
5 - 2/20	<p>President’s Day – no class</p>
6 – 2/27	<p>Traditional anthropogenic disturbance Film: “The Great Dance: Hunter’s Story” Writing Assignment #1 handed out</p> <p>Gomez-Pompa & Kaus (1992), Mann (2002), Moffat (2002), Willis et al. (2004)</p>
7 – 3/6	<p>Protected area management</p> <p>Bruner et al. (2001), Janzen (1998), McNeely (2002)</p>

8 – 3/13

Quiz #2

Contemporary anthropogenic disturbance – globalization

The Economist (2004), Stiglitz (2002)

Writing assignment #1 due in class

Spring Break

9 - 3/27

Fire: a force in all environments ?

Film: “Fires in Spring”

Abram et al. (2003), Barber & Schweithelm (2000), Beschta et al. (2004), Camp et al. (1997), Nasi et al. (2002)

10 – 4/3

Exotic plant & animal invasions: living with new neighbors

Guest lecturer: Dr. Paul Alaback

LeJeune & Seastedt (2001), MacDougall et al. (2004), Pouchard & Alaback (2004)

11 – 4/10

Global climate change: What does it mean ?

Film: “The Impact of Global Warming”

Writing Assignment #2 handed out

Dale et al. (2001), Harvell et al. (2002), Hughes et al. (2003), McKenzie et al. (2004)

12 – 4/17

Quiz #3

Global travel: vector of foreign ideas, institutions and organisms

Film: “The Golf War”

Norris et al. (1998), Rothman (1998)

13 – 4/24

Forests: for whom and for what?

Film: “Sustainable Forest Management”

Writing assignment #2 due in class

Koch (1998), McEvoy (2003), Sedjo (2001)

14 – 5/1

Conclusion: alternative conservation and development paths

Davidson (2000), Kates et al. (2001), Towe (1990), Wallace (1869)

Final Exam

Monday, May 8 - 5:30 to 7:30 in HS 207

Required Readings:

Abram, N. et al. 2003. Coral reef death during the 1997 Indian Ocean dipole linked to Indonesian wildfires. *Science* 310:952-955 (abstract only).

Barber, C. and J. Schweithelm. 2000. Trial by Fire: Forest Fires and Forestry Policy in Indonesia's Era of Crisis and Reform. World Resources Institute, Washington, D.C. pp. 1-4.

Beschta, R.; et al. 2004. Postfire management on forested public lands of the western United States. *Conservation Biology* 18:957-967. (abstract only).

Bruner, A., et al. 2001. Effectiveness of parks in protecting tropical biodiversity. *Science* 291:125-128.

Bush, M. 2003. Ecology of a Changing Planet (3rd Ed.) Prentice Hall, NJ. pp. 65-81.

Camp, A., et al. 1997. Predicting late-successional fire refugia pre-dating European settlement in the Wenatchee Mountains. *Forest Ecology and Management* 95:63-77 (abstract & conclusion).

Chapin, M. 1988. The seduction of models. *Grassroots Development* 12(1):8-17.

Dale, V. et al. 2001. Climate change and forest disturbances. *BioScience* 51:723-734.

Davidson, C. 2000. Economic growth and the environment: alternatives to the limits paradigm. *BioScience* 50:433-440.

The Economist. 2004. More or less equal? March 13, 2004. pp. 69-71.

Geist, H. and E. Lambin. 2002. Proximate causes and underlying driving forces of tropical deforestation. *BioScience* 52:143-150.

Gomez-Pompa, A. and A. Kaus. 1992. Taming the wilderness myth. *BioScience* 42:271-279.

- Grove, A. and O. Rackham. 2001. The Nature of Mediterranean Europe: An Ecological History. Yale Univ. Press, New Haven. pp. 8-10.
- Harvell, C., et al. 2002. Climate warming and disease risks for terrestrial and marine biota. *Science* 296:2158-2162. (abstract & conclusion).
- Haug, G., et al. 2003. Climate and the collapse of Maya civilization. *Science* 299:1731-1735 (abstract only).
- Hughes, T., et al. 2003. Climate change, human impacts, and the resilience of coral reefs. *Science* 301:929-933. (abstract only).
- Jackson, J., et al. 2001. Historical overfishing and the recent collapse of coastal ecosystems. *Science* 293:629-638 (abstract only).
- Janzen, D. 1998. Gardenification of wildland nature and the human footprint. *Science* 279:1312-1313.
- Kates, R., et al. 2001. Sustainability science. *Science* 292:641-642.
- Koch, E. 1998. Forty Years a Forester. Mtn. Press, Missoula. pp. 189-196.
- LeJeune, K. and T. Seastedt. 2001. *Centaurea* species: the forb that won the west. *Conservation Biology* 15:1568-1574 (abstract only).
- Ludwig, D., et al. 1993. Uncertainty, resource exploitation and conservation: lessons from history. *Science* 260:17-18.
- MacDougall, A.; B. Beckwith; C. Maslovat. 2004. Defining conservation strategies with historical perspectives: a case study from a degraded oak grassland ecosystem. *Conservation Biology* 18:455-465. (abstract only).
- Mann, C. 2002. 1491. *The Atlantic Monthly* March, pp. 41-53.
- Marsh, G. 1864. Man and Nature: The Earth as Modified by Human Action. Charles Scribner & Sons, NY. pp. 1-7 & 33-43.
- McEvoy, T. 2003. Positive Impact Forestry. Island Press, NY. pp. 136-139.
- McKenzie, D.; Z. Gedalof; D. Peterson; P. Mote. 2004. Climatic change, wildfire, and conservation. *Conservation Biology* 18:890-902 (abstract only).
- McNeely, J. 2002. Forest biodiversity at the ecosystem level: where do people fit in? *Unasylva* 209:10-15.

- Moffat, A. 2002. South America landscapes: ancient and modern. *Science* 269:1959-1961.
- Nasi, R. et al. 2002 Forest fire and biological diversity. *Unasylva* 209:36-40.
- Norris, R., et al. 1998. Community-based ecotourism in the Maya forest: problems and potentials. In: R. Primack, et al. (eds). Timber, Tourists, and Temples. Island Press, Washington, D.C. pp. 327-342.
- Pauchard, A. and P. Alaback. 2004. Influence of elevation, land use, and landscape context on patterns of alien plant invasions along roadsides in protected areas of south-central Chile. *Conservation Biology* 18:238-248 (abstract only).
- Ripple, W. and R. Beschta. 2004. Wolves, elk, willows, and trophic cascades in the upper Gallatin Range of Southwestern Montana, USA. *Forest Ecology and Management* 200:161-181 (abstract only).
- Rothman, H. 1998. Devil's Bargain. University Press of Kansas. pp. 10-28.
- Sala, O., et al. 2000. Global biodiversity scenarios for the year 2100. *Science* 287:1770-1774.
- Sedjo, R. 2001. Biotechnology in forestry. *Resources for the Future* Fall (Issue 145):10-12.
- Stiglitz, J. 2002. Globalization and its Discontents. W.W. Norton & Co., N.Y. pp. 214-229.
- Towe, T. 1990. It's time Montana stopped selling itself down the river. Editorial. *The Missoulian*, June 18, 1990.
- Uhl, C. et al. 1990. Studies of ecosystem response to natural and anthropogenic disturbances provide guidelines for designing sustainable land-use systems in Amazonia. In: C. Uhl (ed) Alternatives to Deforestation. Columbia Univ. Press, NY. pp. 24-27.
- Wallace, A.R. 1869. The Malay Archipelago. Oxford Univ. Press, Oxford (reprint). pp. 596-598.
- Willis, K.; L. Gillson; F. Brncic. 2004. How "virgin" is virgin rainforest? *Science* 304:402-403.