DRAFT PROPOSAL SYLLABUS

Environmental Studies [course number]
Climate Change & Conservation

Fall 2008 **Charles C. Chester, Lecturer**

Class time: TBD
Classroom: TBD
Email: cchester@brandeis.edu
Office Hours: TBD

Course overview

This course examines the nexus between climate change and conservation. Through both conceptual and practical approaches, students will focus on devising answers to the key question: *What effects will climate change have on human capacity to conserve resources?* Over the semester, students will use what they learn through lectures, readings, and class participation to work as a group in drafting a "project report" on the impacts of climate change on the Boston Harbor Islands National Park Area.

The course has three main objectives. First, students will acquire a strong understanding of the following topics:

- the science, policy, and politics of climate change;
- the science, policy, and politics of conservation;
- the impacts of climate change on conservation; and
- what can be done to avert or ameliorate the impacts of climate change on conservation.

Second, students will work on developing both their oral presentation skills and writing skills. In regard to the latter, each student's written work will primarily consist of their contributions to the group project report. Concluding the course with the "deliverable" of a completed project report constitutes the third objective of the course.

It is important to note that both *climate change* and *conservation* serve as short-hand descriptors for very complex phenomena. Although scientists continue to define climate change as "any change in climate over time, whether due to natural variability or as a result of human activity,"[1] the course will examine the issue through the more commonly accepted definition of "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."[2] It is important to note that despite broad scientific consensus over the actuality of anthropogenic climate change, there remains reputable skepticism over both (1) the degree to which climate change will cause net damage to ecosystems and human well-being, and (2) the degree to which current costs of mitigating climate change will outweigh the future costs of adapting to climate change. *Accordingly, this course does not require students to accept climate change as an imminent threat, and rational skepticism over climate change will be both accepted and encouraged in all aspects of the class.* Moreover, grading for the course will be entirely unconnected with any student's particular stance on the science and/or politics of climate change. At the same time, however, students must recognize that the group project will focus on how a

particular protected area could respond to the threat of climate change under a projected "worst case" scenario.

The term conservation has been defined and used in myriad ways. One prominent collaborative effort at the international level defined conservation as "the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations." Such a definition is useful both because and despite of the fact that it fails to identify any specific *target* to be conserved. While this course will focus principally on the conservation target of biodiversity, other conservation targets to be considered will be water, soils, and agricultural lands.

Class organization

The class will meet once a week, and will generally consist of (1) a discussion of the readings, (2) a short lecture on the day's topic, (3) student briefings, and (4) plenary or sub-group work on developing the report on climate change and the Boston Harbor Islands National Park Area. In addition, a few classes will feature guest lectures.

The basic outline of the course is as follows:

Week 1: Course overview

Week 2: Climate change science

Week 3: Climate change policy & politics

Week 4: Conservation science, policy & politics

Week 5: Measuring the impacts of climate change on conservation - Overview

Week 6: Measuring the impacts of climate change on conservation – Case studies

Week 7: Measuring the impacts of climate change on conservation – New England as a case study

Week 8: Full class drafting session on Boston Harbor Islands report

Week 9: Mitigation & Forestry

Week 10: Adaptation I - Assessment & planning

Week 11: Adaptation II - Implementation & evaluation

Week 12: Full class wrap-up of Boston Harbor Islands report

Week 13: Conclusion and final exam

Class readings

For each class, students will read no more than four publications from a wide range of sources that include individual book chapters, journal articles, magazine articles, websites, and other materials. These will be made available on the Latte website, with the one exception of the individual chapters from the one book required for the course:

- Braasch, Gary and Bill McKibben. 2007. *Earth under fire: How global warming is changing the world*. Berkeley: University of California Press. [Designated **EUF** in reading list.]

It is critical to note that because this course covers a rapidly developing field, I

will make multiple substitutions to the preliminary reading list over the course of the semester. *Students are responsible for checking the online syllabus two weeks in advance of each class to ensure that they see the latest reading assignments.*

Course Requirements:

E-journal and class discussions. Students will be expected to come to class prepared to discuss the readings. To prepare for class discussions, students will keep an e-journal in which they will take notes on the readings. For each reading, the e-journal should contain (1) a list of four bullet points that highlight the key points made in the reading, and (2) a minimum of one question that lies unanswered in the reading (the question does not need to be answered). The journal will be submitted twice over the course of the semester.

Class briefings: Over the course of the semester, each student will make a minimum of two 5-10 minute presentations—which will be called "briefings"—to the class. Each briefing will be on a publication relevant to that day's topic that is not in the reading list. Students will have the flexibility to either choose the paper on their own (subject to my approval), or to work with me to find a relevant publication. Students are encouraged but not required to use overhead projections (Keynote, PowerPoint, etc.).

Journal article summaries: For each of the papers presented to the class for the briefings, students will write up a short 400 word "summary for policy makers." These summaries will be submitted in draft and final form.

Class project: Students will participate in the drafting of a report on the effects of climate change on the Boston Harbor Islands National Park Area. Collectively, the students will organize an outline of the report, and will break it down into manageable pieces for individual and/or smaller group drafting. Drafting and redrafting the document will consist of the bulk of the student's work for the class. **Please note that the drafting of the report will be a continuous process over the course of the semester, and consequently that "due dates" for submitting drafts will be determined as the project develops.** Although I will be flexible and do my best to work with your schedules in determining due dates, you need to determine whether your personal schedule will allow for such a continuously evolving class schedule.

Final exam: Students will take a half-hour final exam during the last class. This exam will test students' assimilation of materials from lectures *and* student briefings over the course of the semester.

Course grading:

Course grades are based on the following:

- 15%: Participation in class discussions
- 15%: E-journal on the readings
- 15%: Student briefings
- 15%: Journal article summaries

- 30%: Written contribution to final report
- 10%: Final exam

Field trip:

Early in the semester, students will make a day long field trip to the Boston Harbor Islands National Park Area. While this trip will likely fall on a Sunday, I will accommodate students' schedules in order to maximize participation.

Disabilities:

If you are a student with a documented disability at Brandeis University and if you wish to request a reasonable accommodation for this class, please see me immediately. Please keep in mind that reasonable accommodations are not provided retroactively.

Academic honesty:

Plagiarism will be immediately reported. As noted above, students must ensure that they have properly cited any sources utilized in their writings.

Course Readings

Week 1: Course overview

- No readings for first class

Week 2: Climate change science

UNEP. 2008. United Nations Environment Programme Yearbook 2008. Nairobi. "Global overview," pp. 1-14.

UNDP. 2007. Human Development Report 2007/2008: Fighting climate change: Human solidarity in a divided world. New York: UN Development Program. "Overview," pp. 1-18.

NSTC. 2008. Scientific assessment of the effects of global change on the United States. Committee on Environment and Natural Resources, National Science and Technology Council. May. "Executive summary," pp. 1-17.

EUF: Certainty and Uncertainty in Climate Change by Stephen H. Schneider and Janica Lane

Week 3: Climate change policy & politics

Najam, Adil. 2007. Climate change conversion. *Boston Globe*, June 8.

IPCC. 2007. *Climate Change 2007: Impacts, Adaptation and Vulnerability: Summary for Policymakers*. Working Group II Contribution to the Intergovernmental Panel on Climate Change Fourth Assessment Report.

Layzer, Judith A. 2006. *The environmental case: Translating values into policy*, 2nd edition. Washington, D.C.: CQ Press. Chapter 11: "Climate change : the challenges of international environmental policymaking."

EUF: Neros or Heroes: Choosing a Better, Safer, Cleaner—and Cooler—World

Week 4: Conservation science, policy & politics

Dasmann, Raymond. 1973-74. Conservation of natural resources. In *The dictionary of the history of ideas: Studies of selected pivotal ideas*, ed. Philip P. Wiener, 1: 470-477. New York: Charles Scribner's Sons.

Adams, W. M. 2007. Thinking like a Human: social science and the two cultures problem. *Oryx* 41, no. 03: 275-276.

Zimmerer, Karl S. 2000. The Reworking of conservation geographies: Nonequilibrium landscapes and nature-society hybrids. *Annals of the Association of American Geographers* 90, no. 2: 356-369.

Pimm, Stuart, *et al.*. 2008. What is Biodiversity? In *Sustaining life: How human health depends on biodiversity*, ed. Eric Chivian and Aaron Bernstein. New York: Oxford University Press.

Week 5: Measuring the impacts of climate change on conservation - Overview

Lips, Karen R., *et al*. 2008. Riding the Wave: Reconciling the Roles of Disease and Climate Change in Amphibian Declines. *PLoS Biology* 6, no. 3: e72.

Griffiths, Franklyn. 2007. Camels in the Arctic? Climate change as the Inuit see it: "From the inside out." *The Walrus*. 21 November.

Parmesan, Camille. 2006. Ecological and evolutionary responses to recent climate change. *Annual Review of Ecology, Evolution, and Systematics* 37, no. 1: 637-669.

EUF: Detecting the Force of Climate by Camille Parmesan

Week 6: Measuring the impacts of climate change on conservation – Case studies

Pounds, J. Alan, *et al*. 2006. Widespread amphibian extinctions from epidemic disease driven by global warming. *Nature* 439, no. 7073: 161-167.

Deutsch, Curtis A., *et al*. 2008. Impacts of climate warming on terrestrial ectotherms across latitude. *Proceedings of the National Academy of Sciences* 105, no. 18: 6668-6672.

Jetz, Walter, *et al*. 2007. Projected impacts of climate and land-use change on the global diversity of birds. *PLoS Biology* 5, no. 6: e157.

EUF: Human Dimensions of Climate Change in the Mountains of Peru by Alton C. Byers

1st submission of e-journal due

Week 7: Measuring the impacts of climate change on conservation – New England as a case study

Dean, Cornelia. 2008. The Preservation Predicament. *New York Times*, January 29.

Frumhoff, Peter C., *et al.* 2007. *Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions*. Cambridge, MA: Union of Concerned Scientists. Synthesis report of the Northeast Climate Impacts Assessment (NECIA).

University of Wisconsin-Madison. 2007. Paradise lost? Climate Change in the North Woods.

Week 8: Full class drafting session on Boston Harbor Islands report

NPS. 2002. *Boston Harbor Islands National Park Area General Management Plan*. Boston: Boston Support Office of the Northeast Region, National Park Service. Prepared for the Boston Harbor Islands Partnership. Selected sections.

Week 9: Mitigation & Forestry

Malhi, Yadvinder, *et al*. 2008. Climate Change, Deforestation, and the Fate of the Amazon. *Science* 319, no. 5860: 169-172.

McKenney, Daniel W., *et al*. 2007. Potential impacts of climate change on the

distribution of North American trees. *BioScience* 57, no. 11: 939(10).

Taylor, Martin and Penelope Figgis. 2007. Protected Areas: buffering nature against climate change: Overview and recommendations. In *Protected Areas: Buffering nature against climate change*, ed. M. Taylor and P. Figgis, Proceedings of a WWF and IUCN World Commission on Protected Areas symposium, 18-19 June 2007, Canberra: 1-12. Sydney: World Wide Fund for Nature-Australia.

Week 10: Adaptation I - Assessment & planning

Palmer, Margaret A., *et al*. 2008. Climate change and the world's river basins: Anticipating management options. *Frontiers in Ecology and the Environment* 6, no. 2: 81.

Green, Rhys E., *et al*. 1999. Conclusion. In *Impacts of climate change on wildlife*, ed. Rhys E. Green, *et al.*: 70-71: Royal Society for the Protection of Birds, English Nature, UNEP World Conservation Monitoring Centre, World Wide Fund for Nature.

Botkin, Daniel B., *et al*. 2007. Forecasting the effects of global warming on biodiversity. *BioScience* 57, no. 3: 227(10).

Molyneux, David H., *et al.*. 2008. Ecosystem Disturbance, Biodiversity Loss, and Human Infectious Disease. In *Sustaining life: How human health depends on biodiversity*, ed. Eric Chivian and Aaron Bernstein: Chapter 7. New York: Oxford University Press.

Week 11: Adaptation II - Implementation & evaluation

Vogel, Coleen, Susanne C. Moser, Roger E. Kasperson, and Geoffrey D. Dabelko. 2007. Linking vulnerability, adaptation, and resilience science to practice: Pathways, players, and partnerships. *Global Environmental Change* 17, no. 3-4: 349-364.

USGAO. 2007. *Climate change: Agencies should develop guidance for addressing the effects on federal land and water resources*. United States Government Accountability Office. August. GAO-07-863. Pp. 5-10.

TNC. 2007. *Save of the week: Climate change action on North Carolina's Albemarle Peninsula*. The Nature Conservancy. Accessed 1 November 2007. http://www.nature.org/success/art14181.html.

EUF: Challenges to biodiversity in a changing climate by Thomas E. Lovejoy

Week 12: Full class wrap-up of Boston Harbor Islands report

No readings.

Week 13: Conclusion and final exam

Root, Terry L. and Stephen H. Schneider. 2006. Conservation and Climate Change:

the Challenges Ahead. *Conservation Biology* 20, no. 3: 706-708.

Willis, K. J. and H. J. B. Birks. 2006. What Is Natural? The Need for a Long-Term Perspective in Biodiversity Conservation. *Science* 314, no. 5803: 1261-1265.

Emanuel, Kerry. 2007. Phaeton's Reins: The human hand in climate change. *Boston Review*.

EUF: Epilogue: Emissions accomplished—now the battle must be fought

2nd submission of e-journal due

Endnotes

[1] IPCC. 2007. *Climate Change 2007: Impacts, adaptation and vulnerability*. New York: Cambridge University Press. Contribution of Working Group II to the fourth assessment report of the Intergovernmental Panel on Climate Change.

[2] Article 1(2) of the UN Framework Convention on Climate Change.

[3] IUCN. 1980. *World conservation strategy: Living resource conservation for sustainable development*. Gland, Switzerland: International Union for Conservation of Nature and Natural Resources.

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