Syllabus
“Climate change in Massachusetts: What would Henry say?”
A field trip-based course for Fall 2011

Course instructor: Dr. Richard Primack

Course description and purpose:
Henry David Thoreau spent decades observing and recording the natural history of Concord and other sites in Massachusetts. Thoreau is most well known for his book *Walden*, which includes extended essays on the changing seasons. Thoreau's journals and other unpublished writings also contain extensive quantitative records on plant flowering times, bird migration times, ice-out times in Walden Pond, and temperature records from water bodies. Thoreau's observation can be placed within a long tradition of naturalists observing the plants and animals of Massachusetts, and his records are now being used to document the reality of climate change. If Thoreau were alive today, he could readily observe the impacts of climate change and other human activities on the landscape of Concord. What would he think about it, and what would he do about it?

The purpose of this course will be to place Thoreau and *Walden* within the context of modern climate change research. The students will read *Walden* concurrently with *Eaarth* by Bill McKibben along with articles from the primary literature to gain an appreciation of how Thoreau anticipated many modern climate change issues. In particular, we will read research papers comparing the observations of Thoreau and other historical data sets with modern observations in order to detect the fingerprint of climate change. We will trace how these scientific papers have been presented in the magazines and newspapers to gain an appreciation of the process whereby science is communicated to the public.

Class discussions will often take place at local field sites, including Hall's Pond Sanctuary, the Charles River, and the Fenway. Weekend field trips will be made to sites of historical and scientific interest, including Walden Pond in Concord, the Hammond Woods in Newton, and Mt. Auburn Cemetery (where large numbers of bird watchers track bird movements).

Required readings:

Supplemental readings from the primary literature, related to both general climate change impacts and changes seen in Massachusetts in particular. Samples are as follows:

Journal of Climatology 22: 1819-1827. (The impact of climate change on lakes and ponds.)


Miller-Rushing, A.J., R.B. Primack, and R. Stymeist. 2008. Interpreting variation in bird migration times as observed by volunteers. Auk 125: 565-573. (Volunteers can play a key role in climate change research.)


Course requirements and grading:
First in-class presentation 15%
Second class presentation 15%
Mid-term exam 25%
Final paper 20%
Final paper presentation 10%
Class participation 15%
The first presentation will be based on a review of a paper or papers relevant to the course. The second presentation will be based on observation made at the field sites. Class participation involves leading class discussions. The final paper and presentation at the end of the course will be based on the student’s investigation of a specialized topic, selected during discussions with the professor. The final paper will be 15 pages long with 15-20 references and written in the style of *BioScience*, a journal that presents non-technical overview articles for researchers and science teachers.

Students will be required to attend all lectures and field trips. Students must make up any missed work. Work handed in late will be marked down 10% for each day late.

All work on papers and presentations should be done independently unless a specific request is made for work to be done together.

Students are required to be aware of and adhere to the CAS code of academic conduct.

**Course schedule:**

Topics will be presented on a weekly basis. Many of the course meetings will involve Saturday field trips. Each week, students will be encouraged to discuss their ideas on possible course projects. I will meet with students individually to discuss their projects and encourage them to select a project that is feasible and appropriate for the course.

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept 6</td>
<td>Concord as a living laboratory of climate change.</td>
<td><em>Walden</em> (W): Economy</td>
</tr>
<tr>
<td>Sept. 20</td>
<td>Long-term changes in bird arrival times in Massachusetts.</td>
<td><em>W</em>: Reading, Sounds, <em>Solitude</em></td>
</tr>
<tr>
<td></td>
<td>Possible guest lecturer: Nathan Phillips, Department of Geography. First presentations.</td>
<td></td>
</tr>
<tr>
<td>Oct. 4</td>
<td>The value of historical records in climate change research.</td>
<td><em>W</em>: Baker Farm, Higher laws, <em>Brute Neighbors</em></td>
</tr>
<tr>
<td>Oct. 12 (Tues.)</td>
<td>The role of volunteer bird watchers in detecting climate change. Hour exam.</td>
<td><em>E</em>: High Tide</td>
</tr>
<tr>
<td>Oct.18</td>
<td>The relationship between Thoreau's</td>
<td><em>W</em>: House warming,</td>
</tr>
<tr>
<td></td>
<td>W: House warming,</td>
<td></td>
</tr>
</tbody>
</table>
writings and contemporary social issues. Former inhabitants


Nov. 1  Statistical problems of interpreting historical data gathered by different observers.

Nov. 8  Insects as the missing link in climate change research: why are insects so important and so often ignored?

Nov. 15 & 22  New England as a center for naturalists and natural history study.

Nov. 29  Student project presentations.

Dec 6  Student project presentations.

Dec 10  Final course summary. What would Thoreau think of global climate change, and what would he do?

Final paper is due on December 14, 2010.