

Greening the Curriculum: Who, what, why, when, how, wherefore...

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How do we prepare students for the major challenges of the 21st century?

This is a climate-linked energy, biodiversity and land-use crisis, which will perhaps impoverish us all, and in which everyone can be made to suffer somehow. Everything is connected to everything else. So, for instance, if we temporarily solve the current energy shortage by adding more coal and tar sands, we accelerate climate change yet again, and destroy much of northern Alberta and West Virginia.

And yet there is a comprehensive solution proposed...

Who here can list one of Presidential Science and Technology advisor John Holdren's (*et al*) climate "stabilization wedges?" (Including energy with GHG reduction systems)

- De-carbonizing electricity production: Green power, smart grids, clean coal
- Energy efficiency (home and workplace)
- De-carbonizing transport fuels and electric transport
- Methane management on farms and in industry
- Carbon management in forests and soils
- Fourth generation nuclear power

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A climate-linked biodiversity crisis: the sixth “mass extinction”

Who here knew that we were losing as much as 30,000 species a year? Or more?

- Ordinary people, especially children, are increasing suffering from nature deficit disorder. Are you?
- Did you play in woods and fields or gardens as a kid?
- Do your children play outside? Do you? Does your outside play involve equipment or machinery that gets between you and nature?
- Do you hunt or fish or garden or chop firewood or produce any of your own food?
- How can we solve a climate and biodiversity crisis, if we don't see the damage because we never go outdoors or participate meaningfully in nature?

This is not rocket science!

What's needed:

- A basic education in climate change and green energy for every student who intends to be some kind of leader in society
- A basic understanding of biodiversity and how the biosphere works
- Don't leave home without them
- But do leave home. Get outside!

Unity College: An Exemplary Sustainable Campus in Rural Maine

- Modeling frugal campus sustainability
- Broadening the constituency for conservation
- Serving the underserved
- Emphasizing field-based experiential programs
- Integrating sustainability and the arts
- Integrating sustainability and natural history
- A regional center for sustainability consulting and expertise
 - Green power and green buildings: SusTech program
 - General education sustainability curriculum design: NASA, NCSE studies
 - Biodiversity science center of excellence

Inside initiatives:

- Master plan calls for all new campus buildings to be net zero carbon
- Climate action plan – linked to master plan
- The Unity House by Bensonwood (of *This Old House* fame). First LEED platinum college presidents house in the country, one of only 250 LEED platinum buildings
- Emits no net climate emissions – today, in New England!
- Lead by example. “Do as I do,” not “do as I say”





Paco the dog enjoys zero carbon living at the Unity House

Outside initiatives:

- Solving nature deficit disorder
 - The NOVA program
 - Exceptional science faculty, committed to experiential learning
 - Exceptional arts and humanities faculty:
 - The Art of Stewardship
 - *Hawk and Handsaw*
 - Unity first year students take outdoor field trips more or less daily each fall, linked to classes such as Bio 1, basic skills classes such as this map reading class on Mount Harris

Basic skills

- Can you find your way in the woods with map and compass?
- Can you find your way in the 21st century?



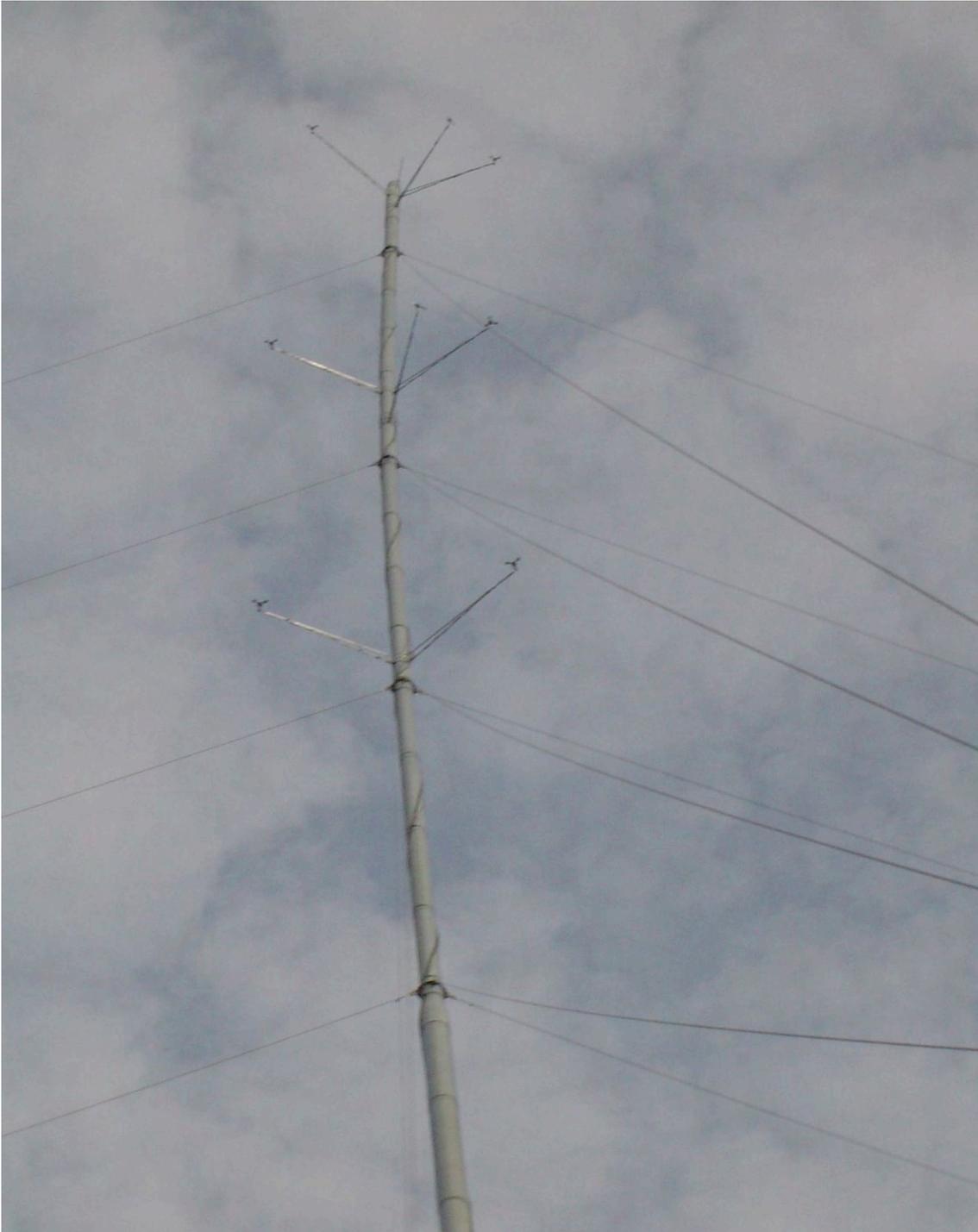
Midcoast Maine

- Mount Harris in the early fall



Outside initiatives:

- Basic science for biodiversity conservation and green energy. Examples:
 - Student research projects
 - Citizen science initiatives:
 - Great Backyard Bird Count
 - Invasive crabs on the Maine coast
 - Renewable energy and energy efficiency
 - Weatherization teams
 - Community Wind Assessment



Community Wind
Assessment:
Our NRG Systems 60
meter anemometer
tower

Community Wind Assessment

- Students and faculty provide basic anemometry services to Maine communities considering a community-owned wind turbine or wind farm
- Biggest problems turn out to be community issues, more than wind issues
- Need for good community facilitation and conflict resolution skills





Sustainability in Higher Education

To summarize...

How do we prepare students for the major challenges of the 21st century?

To protect freedom and liberty, it's probably best not to leave climate and energy decisions to some technologically adept elite. They need to be decentralized as far as possible. Good behavior is infinitely better than intrusive governance. Currently, we're still in collective denial. Those of us with responsibility for education have to do something, preferably the right thing...

- First up, young people in general need to understand the planet they live on, and their role in its maintenance
- While young people intending to be leaders in any walk of life (any college undergraduate) need to understand basic climate science, energy, and biodiversity
- Their mentors (that would be us) need to organize to make available, even require this education
- The best framework for this education is science. Students need to be taught to evaluate things for themselves. Science can enable this without preaching.
- So we need a basic training in climate science and biodiversity for every undergraduate