

Safeguarding Nature's Values in a Changing Climate

GreenGov Symposium: Adaptation 101

Tom Fry

Senior Policy Advisor, Climate Adaptation

The Nature Conservancy

Values at Risk

Biodiversity, natural communities

"Examine each question in terms of what is ethically and aesthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."

-Aldo Leopold, A Sand County Almanac

Ecosystem Services or "Natural Capital"

Human civilization depends on healthy ecosystems.

Ecosystem Services: processes by which the environment produces resources.

These services are extensive and diverse ... affecting the quality of our land, water, food, and health.

Climate threats

Biodiversity, natural communities

Assessments suggest:

- approximately **20-30 percent** of the world's plant and animal species assessed as of 2006 are likely to be at increasingly **high risk of extinction**
- substantial **changes in structure and functioning** of terrestrial ecosystems are very likely to occur
- the **resilience** of many ecosystems around the world is likely to be **exceeded** this century by an **unprecedented combination** of... disturbances associated with climate change, such as flooding, drought, wildfire, and insects... and other global change-drivers...

Ecosystem Services or “Natural Capital”

Climate change poses daunting new challenges because it will alter the amount and locations of wealth produced by natural systems.

- Sea-level rise
- Ocean acidification
- Seasonal shifts

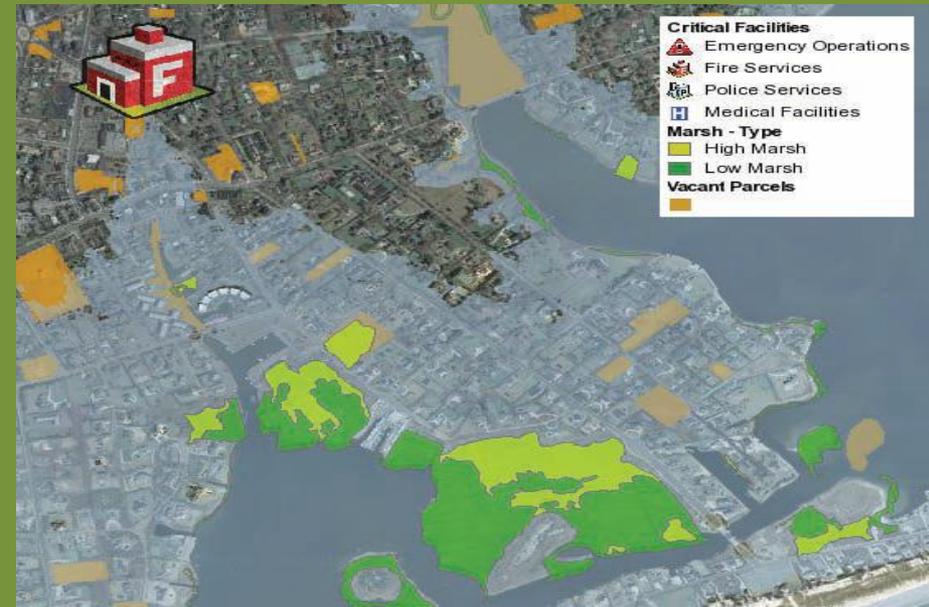
Adaptation Approaches

Biodiversity,
natural communities



North Carolina's Albemarle Peninsula and the Alligator River National Wildlife Refuge

Ecosystem Services or
"Natural Capital"



Long Island Sound and coastalresilience.org

Ecosystem-based adaptation (EBA) approaches

- Are ready now, are likely to be more accessible to rural and poor communities and are cost-effective.
- Are precautionary and address risk management, ensuring that long-term natural resources that provide resilience are not destroyed by short-term or emergency responses to a crisis.
- Provide both protective services (such as mangroves buffering storm surges) as well as provisioning services (such as wetlands providing food and fiber) that hard infrastructure cannot provide.
- Improve local livelihoods as people's access to natural resources and jobs are secured.
- Can contribute to climate change mitigation by conserving or enhancing carbon stocks or by reducing emissions caused by ecosystem degradation and loss.

Resilient Nature, Resilient People

At present, climate change is seen as one problem for nature and another for people. This must stop. If human adaptation to climate change compromises biodiversity, then the loss of forests and other natural ecosystems will accelerate climate change, increasing the need for adaptation even as the planet's capacity to accommodate it diminishes. An integrated approach makes the circle virtuous: by conserving biodiversity, we decelerate climate change while increasing the adaptive capacity of people and ecosystems alike.



A force to fight global warming: Natural ecosystems and biodiversity must be made a bulwark against climate change, not a casualty of it, argue Will R. Turner, Michael Oppenheimer, and David S. Wilcove. *Nature*, Vol 462, 19 November 2009