Being Benign: Implications of Human Development on Natural Systems

Skot Rogers | Spring 2014

Few things are a constant in this world except change itself. The earth is a living, breathing, and incredibly complex system of dependent chains that are constantly pulling and balancing against one another. Humans are not outside of this sphere of dependency by any means, yet in an era of industrialization, economic growth, and technologies fueled by non-renewable resources, human activities seldom place a priority on maintaining a sustainable balance with the natural world. Considering the challenges of maintaining that balance through conservation of natural sites, the following is an analysis of some of the norms which humanity must re-think in order to ensure the health of the only inhabitable planet known to man.

Conservation vs Development

The idea of placing a value on conservation over unrestricted economic growth is not a brand-new concept. Although there may be more attention and science applied to the discussion of environmental protection in the United States today, there has been a relatively long history of conserving nature in this country, not to mention the roots of modern environmentalism being established in ancient cultures all over the globe. In the progressive era of the early twentieth century there were many newly emerging thoughts surrounding the issues of whether to develop for economic growth or to conserve natural systems.

One of the first, and perhaps most notable early preservationists in the United States, was a Scottish immigrant named John Muir. Muir became associated with the preservation ethic which holds that mankind, "...should protect the natural environment in a pristine, unaltered state" (Withgot and Brennen 143). It is a value that maintains that nature should not only be protected for its own sake, but that maintaining nature promotes human happiness as well. As Muir himself stated, "Everybody needs beauty as well as bread. Places to play in and pray in, where nature may heal and give strength to body and soul alike" (Withgot and Brennen 143).

Decades of further distillation, consideration, and analysis by countless other environmentalists hold the same arguments true for even more reasons evident in today's advanced scientific landscape. Preserving nature for nature's sake, for the intrinsic value that it provides, should not be the only driver for wildlife preservation. The value of preservation for the sake of maintaining biodiversity is a more scientific concept that came about in the later part of the twentieth century. It holds that maintaining areas free from human development will promote an ability for the natural functions of those areas to flourish. Furthermore, wilderness areas with abundant space that are not polluted by human activities can provide a wealth of "ecosystem services". As Eric Chivian and Aaron Bernstein explain in *Sustaining Life; How Human Health Depends on Biodiversity*, there are a myriad of these ecosystem services that natural systems provide. There are the provisioning services such as food, fuel wood, and medicines. There are the regulating services such as clean air, purified water, flood mitigation, and erosion control. There are supporting services like nutrient cycling and pollination, just to name a few (70).

However, just as there is a long history of conservation, for purposes both intrinsic and extrinsic, aesthetic and scientific, there is the other side of the coin: development. As

long as there are natural resources to exploit for human development, there will always be a drive by industry to do just that, often to the point where those resources cannot be renewed and are lost forever. Protecting these natural resources for the sake of human health and the health of the entire globe as an ecosystem is something that must be in the forefront of policy decisions on every scale of the spectrum. From town hall meetings in small cities, to international environmental treaties between the largest nations, logging, drilling, and building plans must all be seen through the lens of environmental stewardship first and foremost. Stern regulations, as uncomfortable as they may feel, must continue to be made and painstakingly enforced in order to protect the environment

But, will an ever-increasing list of environmental protection laws block meaningful development? The truth is that they will not inhibit development; they will force development to work differently. Just as anti-slavery laws in the United States directly affected the South, an area that subsequently conceded major losses of industry and development as a result of a loss of an unpaid enslaved workforce, environmental laws will inevitably lead to *changes* in conventional methods of development as well, not the *end* of development. In other words, in the exact same way that slavery was wrong and abolishing it did not irreparably destroy the American South, shifting the worldwide methods of conventional development to more sustainable methods which protect the environment will not irreparably destroy modern civilization; it will simply force a much-needed change in the status quo.

Development in Volatile Regions

Humans as a species are incredibly adaptable to different climates. In addition, the luxuries of the modern lifestyle (air conditioning, thermoinsultion, the personal automobile) have afforded humanity an ability to set up homes in nearly every climate

on the globe. Yet with all of this available technology, human developments are still as fragile as tiny grains of sand when compared to the magnitude of some of the world's most incredibly destructive storms. The question then becomes, *whether or not it is worth it to pursue development in areas of the world that are prone to extreme natural disasters*.

In a recent examination of this question, author Janet Babin, writing for WNYC News, looked at whether or not it is practical for humanity to continue to develop on shorelines where superstorms resulting from global climate change may only proliferate. Looking specifically at superstorm Sandy, one of several "hundred-year-storms" which have hit in the last *twenty* years, Babin states there is talk among some geologists about a need for a, "…strategic retreat from the ocean front, especially on barrier islands" (Babin, *WNYC.org*). Many experts agree that global climate change, rising sea levels, and ever-increasing volatility in the atmosphere will mean that ruined homes along shorelines like New Jersey that are then rebuilt will simply be destroyed again when the next storm hits. Orrin H. Pikey, Professor Emeritus of Earth and Ocean Sciences, Nicholas School of the Environment at Duke University states rather bluntly, "It is just madness to rebuild right back where the buildings were destroyed before, and where they will be destroyed in the future" (Babin, *WNYC.org*). He believes that a gradual retreat from these sensitive shorelines should be made by discontinuing any rebuilding of structures that are damaged by more than fifty percent during massive storms like Sandy.

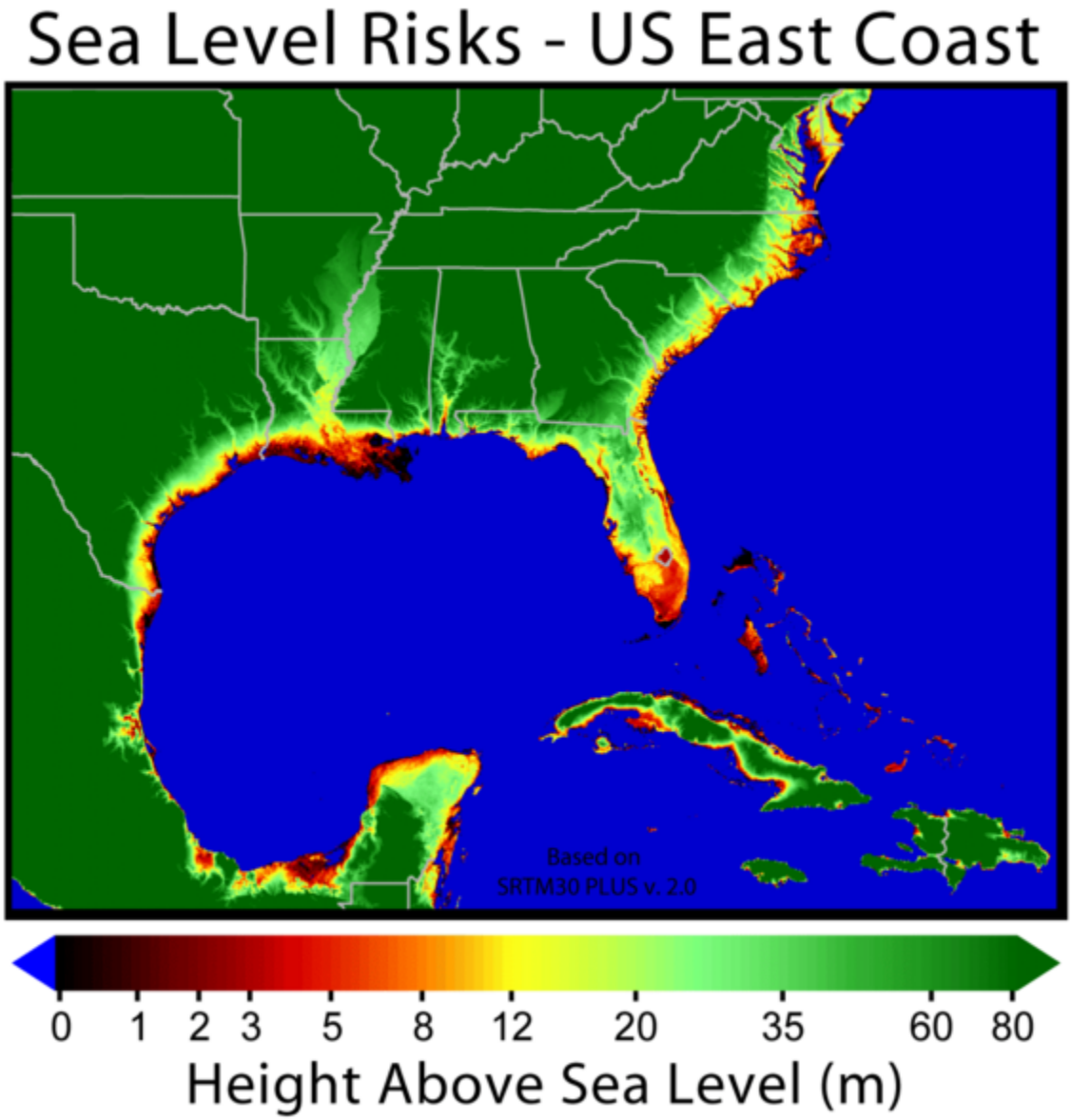
The question of whether to conserve nature is not only an environmental issue then; it is also an economic one. Dune engineering projects that replace natural weather barriers with man-made sand embankments are extremely expensive. Nicholas Huba and Kirk Moore, writing for www.thedailyjournal.com, state that while man-made dunes built by

the Army Corps of Engineers in 2010 were able to save all of the homes in a 1.1-mile-long borough on Long Beach Island in Harvey Cedars, NJ, the artificial safety net came at an incredibly lofty price tag of twenty-five million dollars. (Huba and Moore, *TheDailyJournal.com*). What's more, man-made dunes like those must continue to be maintained. Studies estimate that over one billion dollars have already been spent artificially protecting US shorelines with beach nourishment projects, and that's just since such records have been being kept. Moreover, sixty-five percent of the funding for those beach nourishment projects has been completed by the US Army Corps of Engineers who receive funding from federal tax dollars (Babin, *WNYC.org*). The data are simply too overwhelming to ignore; new development in areas of the country prone to these kinds of storms is not sustainable if global climate change continues on its projected path, particularly in barrier island communities or places like New Orleans where the costs of rebuilding are so prohibitive that parts of that city even today are still in total ruin. Rebuilding what has been destroyed and will most likely be destroyed again is simply not a wise investment.

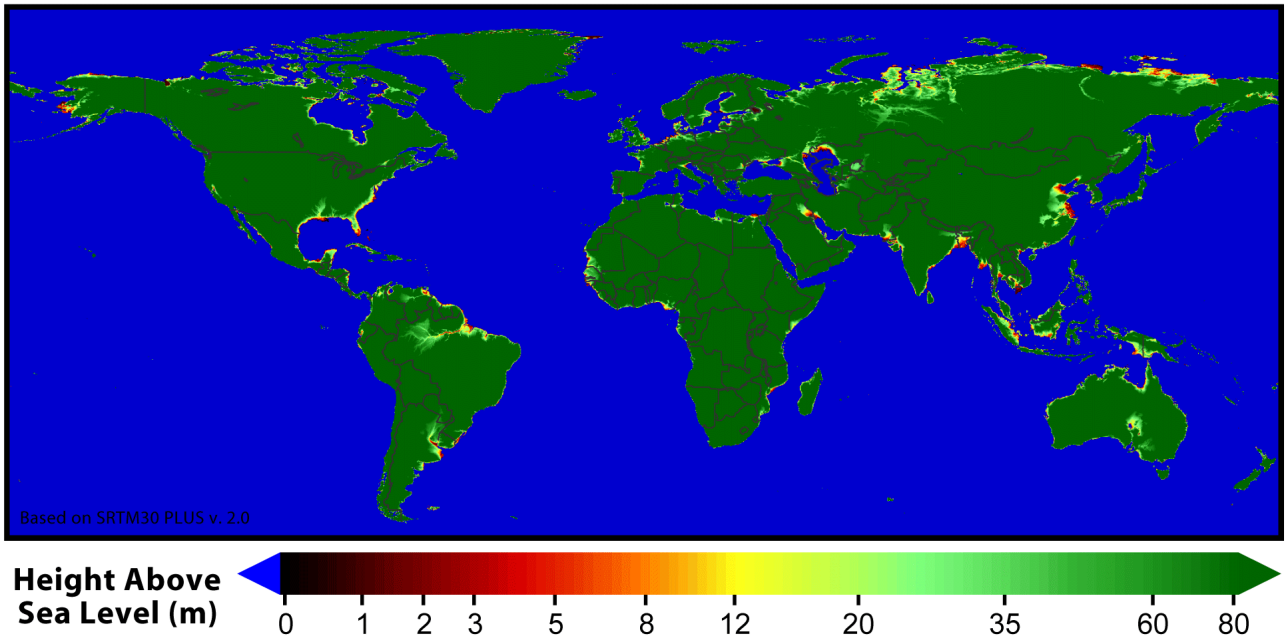
Analysis can only begin to estimate the total costs of rebuilding places like New Orleans. The Tennessean News Service estimated in 2005 that if total reconstruction were to be completed in New Orleans, the cost could exceed a staggering one-hundred billion dollars (Matheson and Blaade 5). What's more, this estimate only includes restoring what was lost from hurricane Katrina. It does not include the staggering costs of the technological enhancements that the city would require to be able to prevent the exact same thing from happening again.

Consider the maps below with context provided by Withgot and Brennan (509) who explain that there are a substantial number of areas of human population that lie within just meters of sea level. Because of this they are extremely susceptible to long-term sea

level rise and storm surges as climate change advances. Anything in red to black below would be at an extremely high risk.



Regions Vulnerable to Sea Level Rise



Areas of Particular Importance

Following is a list of particularly vulnerable areas that must be protected. These are all areas that provide invaluable ecosystem services and are at an incredible risk of collapse if not protected adequately:

- *Indiana Dunes National Shoreline* - Dunes prevent damages from storm surges. Storm surges can cause tremendous amounts of harm to natural areas as well as man-made development. Maintaining dunes, especially natural ones is a necessity.
- *Amazon River Basin* - The Amazon River contains some of the richest and most invaluable amounts of biodiversity on the globe. Science is only beginning to understand the impacts of losses of extremely dense areas of biodiversity.
- *Wetlands of the Calumet* - Fresh water is an incredibly valuable resource, only

becoming more valuable as human population explodes and climate change advances. Preserving wetlands with natural fresh water filtering is critical.

- *Pantanal of Brazil* - This is another incredibly important freshwater wetland. The potential for new medicines from plants and animals found here as well as the filtering services that the plants here provide make this an extremely valuable place on planet earth.

Conclusion

In a future where the most fragile coastal areas are long abandoned by human development, scaled back by meaningful sacrifices, those of the world's most vulnerable areas may become the world's richest and most beautiful *natural* sites. One is limited only by one's imagination in envisioning what a future might look like for areas below sea level in New Orleans or on barrier islands in New Jersey. They could be transformed into incredible ecotourism sites, free from conventional development, rich with wildlife and abounding with new sustainable technologies like zero-trash tours, solar-powered boats, perhaps even high tech stormproof hybrid hotels designed in all aspects to benefit the natural environment they are established in. While no change is comfortable, most change is inevitable. Humanity has an obligation to itself and its posterity to protect the natural world on which it depends by rethinking the norms around development along environmentally vulnerable areas.

Works Cited

Babin, Janet. "Build or Retreat From the Jersey Shore?" *WNYC News*. www.wnyc.org, January 2013. Web. 8 March 2013.

Chivan, Eric and Aaron Bernstein, eds. *Sustaining Life: How Human Health Depends on Biodiversity,* New York: Oxford University Press. Inc. 2008. Print.

Eastern_USA_Sea_Level_Risks.png www.globalwarmingart.com. png file. 2012. Web. http://www.globalwarmingart.com/images/2/2c/Global_Sea_Level_Rise_Risks.png

Global_Sea_Level_Rise_Risks.png www.globalwarmingart.com. png file. 2012. Web. http://www.globalwarmingart.com/images/2/2c/Global_Sea_Level_Rise_Risks.png

Huba, Nicholas and Kirk Moore. "NJ Residents File Suit Over Dunes That Saved Homes." TheDailyJournal.com. www.thedailyjournal.com. November 2012. Web. 8 March 2013.

Matheson, Victor, Robert Baade. "Can New Orleans Play Its Way Past Katrina?" College of the Holy Cross, Department of Economics. Faculty Research Series Paper no. 06-03. 2006. Web. www.holycross.edu/departments/economics/website

Withgott, Jay, Scott Brennan. *Environment: The Science Behind the Stories*, San Francisco: Pearson Benjamin Cummings, 2005. Print.