

# In the Eye of a Hurricane There is Quiet

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*We met with our community group to plan the restoration of the meadow near the public school. Everyone was so happy to get together and share ideas.*

The newest projections for climate change are more severe than past expectations. One explanation is that the fast melting ice in the Arctic has changed the absorption rate of sunlight and the region is warming much more quickly. This is also changing the temperature regimes in the north Atlantic and Pacific, changing fish distributions and threatening commercial fisheries.

*We picked out a selection of wildflowers to attract lots of butterflies. It will be great to have fireflies also, flashing on a summer's evening.*

Increased sea level rise and storm surges, have continually flooded coastal areas, damaging residential zones and critical infrastructure. In some areas the new high tides are causing backup of storm sewer infrastructure and flooding areas even distant from the beach. Local efforts to deal with the ocean's rise are stymied by some government officials who question whether the climate projections are really accurate. Some coastal habitats are dying with increased salt water inundation.

*A few the leaders met out in the field to flesh out a design for the meadow and where we should put the seating areas. We had a nice potluck lunch together while we sketched ideas.*

Increased urbanization throughout the world is placing large percentages of once rural populations into coastal cities. This is added pressure to increase infrastructure and residential housing near the coast to accommodate the new urban migrants. The burgeoning new cities increase heat island effects, stressing public health facilities. We lack many appropriate genotypes of plants that can withstand these urban stresses to use in restoration projects.

*Planting day finally came and the local newspaper sent a reporter and took photos. A bunch of kids were helping us plant plugs. We talked about more community restoration projects for the future. I met an old school acquaintance that just moved to town, great fun.*

Recent outbreaks of insect borne diseases, particularly by mosquitoes, have received great attention. These ecological disservices have increased objections and support for adding habitat parcels near residential areas, despite the many other positive advantages that this landscape model can bring. Calls for spraying to eliminate potentially dangerous insects have increased, challenging the ability of beneficial species, even those that support the growing urban agriculture movement, to survive.

*Wow, there's a cute person over there planting ferns and I just got a nice smile. Wow. I should do this more often!*

New genetic techniques to counter the wave of invasive species are rapidly being developed. The new CRISPR-cas9 genetic technique holds great promise to eliminate invasive species of insects and plants that have damaged so many of our habitats. However, the unease of releasing genetically modified individuals into our habitats is widespread. Despite the precision of this technique and the many experimental testing protocols which precede any release, it is increasingly difficult to get this remedy applied.

*Finishing up now, we've had great weather, and they're predicting a light rain tonight. Just like we hoped the day would go!*

The new drone technology and wireless sensors can revolutionize our ability to monitor and manage restored habitats. Using airborne cameras and modeling software to identify plant species on the ground, we have the ability to cut personnel costs dramatically. We can follow the growth of installed plants and the early onset of disease and other disturbances that must be managed. However, the misuse of drones and the deep concern about danger of falling equipment and possible surveillance of private citizens has stymied the application of this technology for many projects.

*The whole project's gone so well, feeling so much satisfaction over the work. What can go wrong now?*

The recent national elections in the United States have installed an administration which has continually denied the truth of climate change on this continent, and seems interested in putting poorly trained individuals in charge of environmental agencies that frame regulations upon which the country depends. The stated interest in increasing local

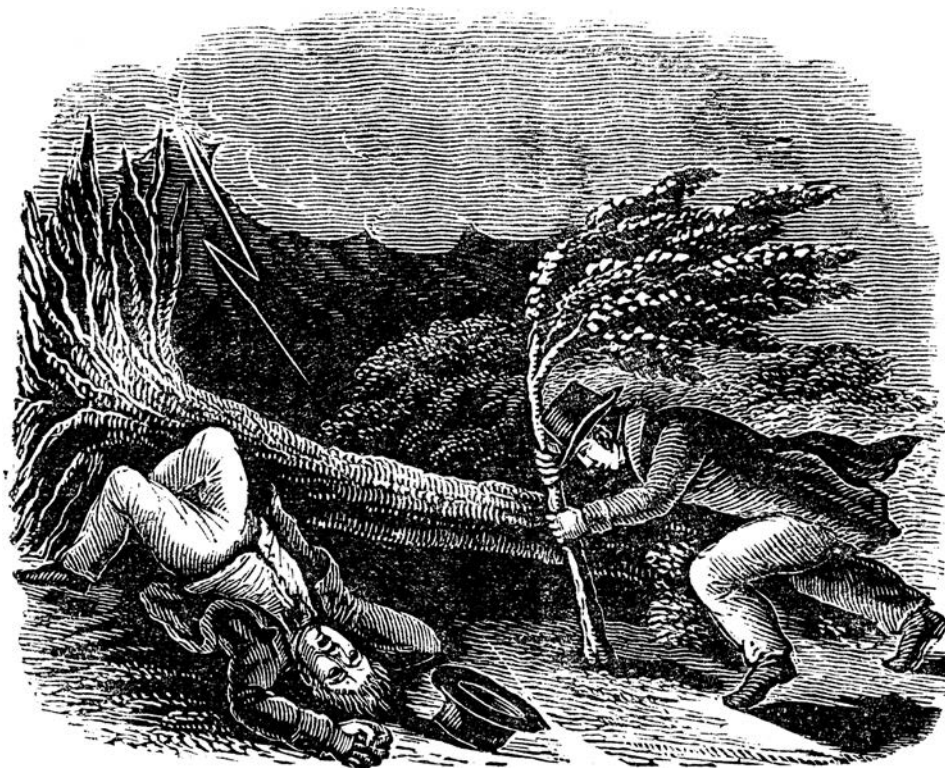
economic benefits, even though for short-term, as trumped concern about long-term environmental health and the many benefits that healthy habitats give for community stability, public health, sustainable water resources, cleaner air, and the many advantages of higher biodiversity.

*"In the eye of a hurricane there is quiet, for just a moment, a yellow sky"*

(Miranda and McCarter 2016)

## Recommended Readings

- Anderson, K. and K.J. Gaston. 2013. Lightweight unmanned aerial vehicles will revolutionize spatial ecology. *Frontiers in Ecology and the Environment* 11:138–146.
- FitzGerald, D.M., M.S. Fenster, B.A. Argow and I.V. Buynevich. 2008. Coastal impacts due to sea-level rise. *Annual Review of Earth and Planetary Sciences* 36:601–647.
- Hall, S.S. 2016. Editing the Mushroom. *Scientific American* 314:56–63.
- Hufford, K.M. and S.J. Mazer. 2003. Plant ecotypes: genetic differentiation in the age of ecological restoration. *Trends in Ecology & Evolution* 18:147–155.
- Iverson, L., A. M. Prasad, S. Matthews and M. Peters. 2011. Lessons learned while integrating habitat, dispersal, disturbance, and life-history traits into species habitat models under climate change. *Ecosystems* 14:1005–1020.
- Kalnay, E. and M. Cai. 2003. Impact of urbanization and land-use change on climate. *Nature* 423:528–531.
- McMichael, A.J., R.E. Woodruff and S. Hales. 2006. Climate change and human health: present and future risks. *The Lancet* 367: 859–869.
- Miranda, L-M. and J. McCarter. 2016. *Hamilton: The Revolution*. New York, NY: Grand Central Publishing.
- Pinsky, M.L., O.P. Jensen, D. Ricard and S.R. Palumbi. 2011. Unexpected patterns of fisheries collapse in the world's oceans. *Proceedings of the National Academy of Sciences* 108:8317–8322.
- Schiffman, R., 2014. Drones flying high as new tool for field biologists. *Science* 344:459–459.
- Vergés, A., P.D. Steinberg, M.E. Hay, A.G. Poore, A.H. Campbell, E. Ballesteros, et al. 2014, August. The tropicalization of temperate marine ecosystems: climate-mediated changes in herbivory and community phase shifts. *Proceedings of the Royal Society B* 281: 20140846.



Tempest. Barber, J.W. 1857. *The Handbook of Illustrated Proverbs*. New York, NY: George F. Tuttle. The Florida Center for Instructional Technology, fcit.usf.edu.