

**How to make local governments want more green infrastructure: Using open space protection to save on flood insurance and conserve nature**



Top: flooded neighborhood / Bottom: TNC's Coastal Resilience 2.0 Mapping Tool

NOAA / TNC

What if key communities and homeowners along the Gulf Coast knew they had an opportunity to save up to 20% per year on flood insurance premiums? And

what if that opportunity translated into a decreased risk of flooding? Would they take steps to realize those savings?

The Nature Conservancy (TNC) and researchers at Texas A&M University are betting yes. With support from a landscape conservation grant and funding from the Knobloch Foundation, their community resilience project has recently identified just such an opportunity.

### **Using open space protection to save on flood insurance and conserve nature**

Using existing datasets, they developed a model that predicts lands with a high probability of flooding. Next they used land cover data and maps to identify unprotected areas with high conservation value for land trusts across the region. By combining these two sets of results, they were able to identify 421 watersheds out of ~2600 across the Gulf as the most effective for land conservation to protect communities from flooding and conserve open space for fish and wildlife. A mapping platform that hosts these data [TNC's Coastal Resilience 2.0 mapping tool](#).

"Floods are a real and growing problem along the Gulf coast and land conservation is an effective way to reduce flood risk," says Dr. Christine Shepard, Director of Science for the Conservancy's Gulf of Mexico Program. "We have an opportunity in the Gulf of Mexico to increase community resilience by preserving open spaces in areas of high flood risk. The science shows us where we can do this in a way that also benefits fish and wildlife."

### **Why does land conservation lower insurance premiums?**

As the TNC report [Protecting Open Space & Ourselves](#) states, "Open space enables the critical natural functions of wetlands to persist; the water storage capacity of the landscape is maximized and flooding beyond the extent of the actual protected area can be reduced." Not only that, but the Federal Emergency Management Agency's (FEMA) voluntary Community Rating System (CRS) gives communities points for flood mitigation activities, including open space protection, which can earn their citizen's an insurance discount.

These discounts are based on good science. The 2012 study "[Open space protection and flood mitigation: A national study](#)" found that from 1999 to 2009, a point increase in the CRS system significantly decreased the observed amount of insured flood damage in floodplain areas.

To get a sense of the magnitude of the opportunity here, within (or partially within) the 421 high priority watersheds lie 343 municipalities, counties, and parishes. Yet, as of 2014 only 100 of those communities were enrolled in the CRS program. Even those 100 communities only earned an average of 131 out of a possible 2,020 points for open space preservation.

### **Will communities take advantage of this new knowledge?**

A hammer is only useful when someone picks it up to drive a nail. Accordingly, the Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative is providing additional support to ensure that Gulf communities can begin to use this new flood protection analysis. The Nature Conservancy will be engaging the residents and officials of three or more localities through a series of workshops in the spring of 2017. They are working with partners who will use the experience to engage additional communities elsewhere. (For more information or to nominate your community, email [cshepard@tnc.org](mailto:cshepard@tnc.org).)

This project will also be integrating information developed by the multi-LCC [Tidal Wetland Migration project](#). "Mike Osland has great information showing which open space areas are important for wetland migration as sea level rises," says Shepard. "We would also like to identify which watersheds are most resilient to climate change and sea level rise by incorporating information on future development and where future flood claims are likely to be, combined with Mike's information. Right now, we have the data but not the funding to take these additional steps."

### **Gray or green?**

This approach to flood risk reduction is one type of "green infrastructure" that is increasingly being deployed worldwide. Dr. Shepard explains, "Gray vs. green

infrastructure choices are local decisions that must be made based on local circumstances, including the level of risk reduction desired and what is to be protected - is it critical infrastructure? Also, the amount of funding is a factor because gray infrastructure, such as a sea wall, tends to be far more resource intensive and requires maintenance. Many solutions could be hybrid. Green infrastructure is not a magic bullet, but it should absolutely be one of the tools to achieve flood protection.”

From 1996 to 2007, communities within the ~2,600-watershed study area experienced the largest amount of insured property damage in the U.S. As the first of its kind to examine undeveloped lands across these Gulf watersheds, this coastal resilience study is a great addition to the flood protection toolbox.