

Tools and Strategies to Address Coastal Wetland Loss

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Background

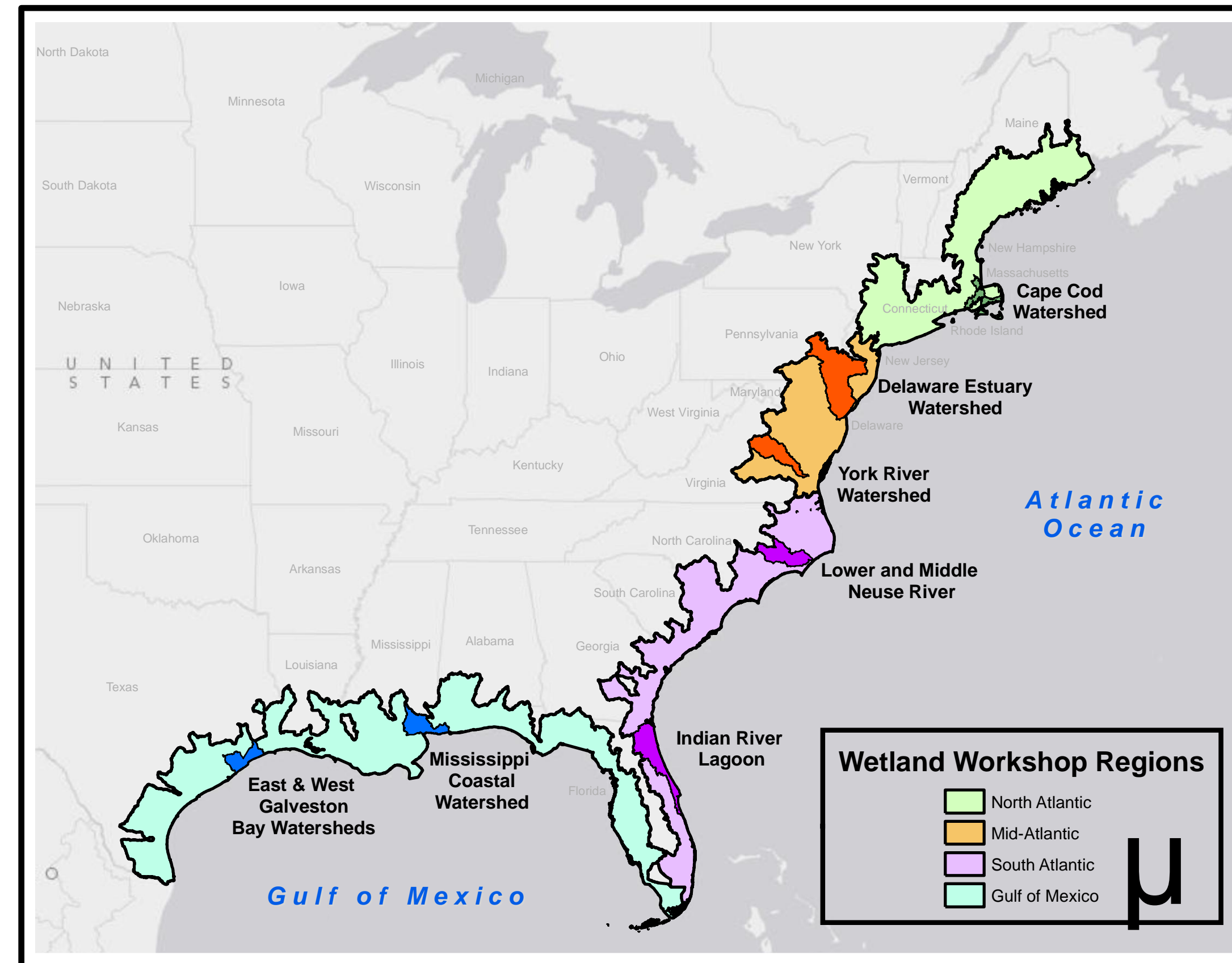
Wetlands in coastal areas are under pressure from numerous sources, both human (e.g., development, shoreline hardening) and natural (e.g., storms, sea-level rise). A 2008 report on wetlands in the coastal watersheds of the eastern United States concluded that between 1998 and 2004 more than 360,000 acres of wetlands in those watersheds were lost. To develop a better understanding of the underlying causes of this loss, the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) co-lead a series of workshops in specific watersheds around the country, focusing on those where the greatest amount of wetland loss was occurring. EPA, NOAA and Eastern Research Group (ERG) compiled current, readily available information about each watershed to set the stage for review participants. Participants at the workshops included federal, state, and local wetlands professionals, university scientists and local non-profits.

At each of the seven workshops, participants were asked the following questions during the discussion:

- What are the root causes of coastal wetland loss in your area? Are there differences between fresh and saltwater stressors? Which are the top three stressors?
- What are the current regulatory and non-regulatory protection and restoration tools being used to adapt to or mitigate wetland loss in your area?
- What are the successful strategies being employed to protect and restore coastal wetlands in your area?
- What information gaps would be most helpful to address loss, and how can these gaps be addressed?

Information about coastal wetlands stressors, tools and strategies to address these stressors, and gaps that exist for addressing coastal wetlands loss were assembled into regional review summaries for each of the four regions where workshops were held (North Atlantic, Mid-Atlantic, South Atlantic, Gulf of Mexico). These reports will be available to the public in 2012.

Workshop Locations



Results and Conclusions

Although the watersheds analyzed were diverse, a number of common wetland stressors emerged. The stressors mentioned most often were:

- Sea level rise and climate change
- Development associated with population growth in coastal areas
- Limitations of regulations (activities in non-jurisdictional wetlands, exempt activities, or unauthorized activities)
- Hydrologic alterations
- Agriculture and forestry
- Shoreline hardening
- Cumulative impacts

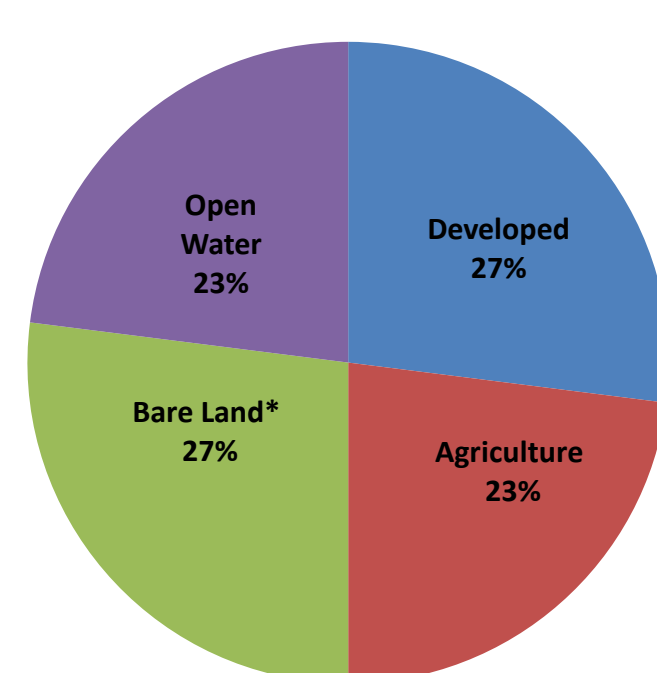
A number of tools and strategies are being used successfully to address coastal wetland loss, and more widespread use of those tools should decrease coastal wetland loss. With respect to unauthorized and non-jurisdictional wetland loss, which was identified as a universal problem, successful approaches to address it, such as landowner outreach and education, comprehensive enforcement, or state and local regulation, are currently not being implemented widely. Future work through the National Ocean Policy and the Interagency Coastal Wetlands Working Group will strive to fill some of the gaps and needs identified in the coastal wetlands workshops.



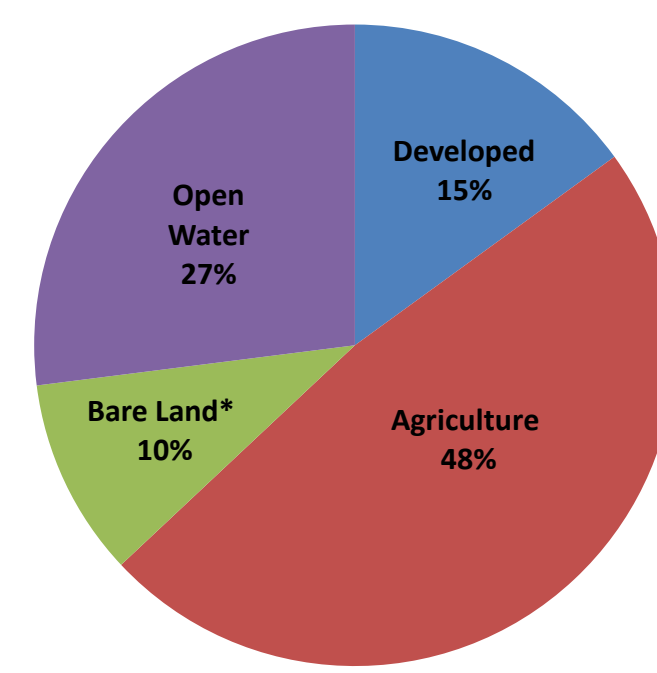
Stressor example: The aerial photos above illustrate a loss of wetlands in League City, TX (within the East & West Galveston Bay Watersheds) because the wetlands were deemed non-jurisdictional.

Regional Wetland Loss Data

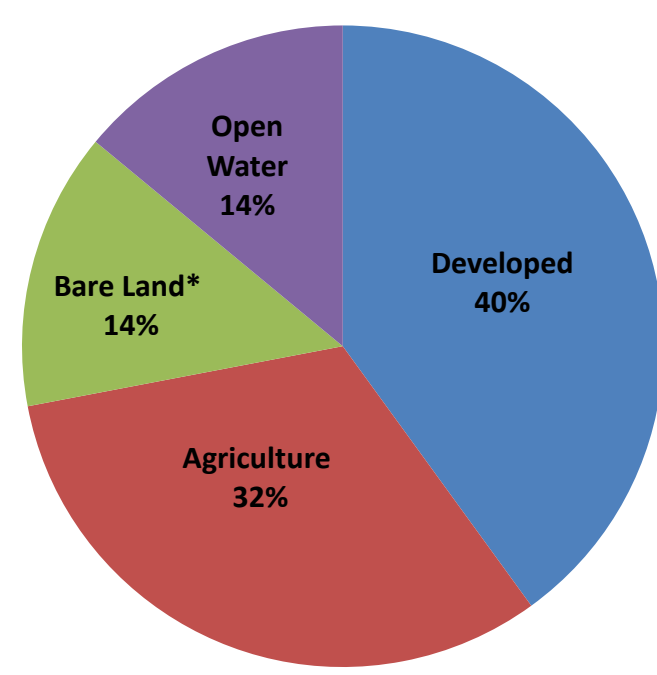
The pie charts below show wetland loss data derived from the Coastal Change Analysis Program (C-CAP) in each of the four regions of analysis. C-CAP data was compared between 1996 and 2006. * Note: bare land includes lands transitioning from one land use to another. For example wetlands drained or filled for development.



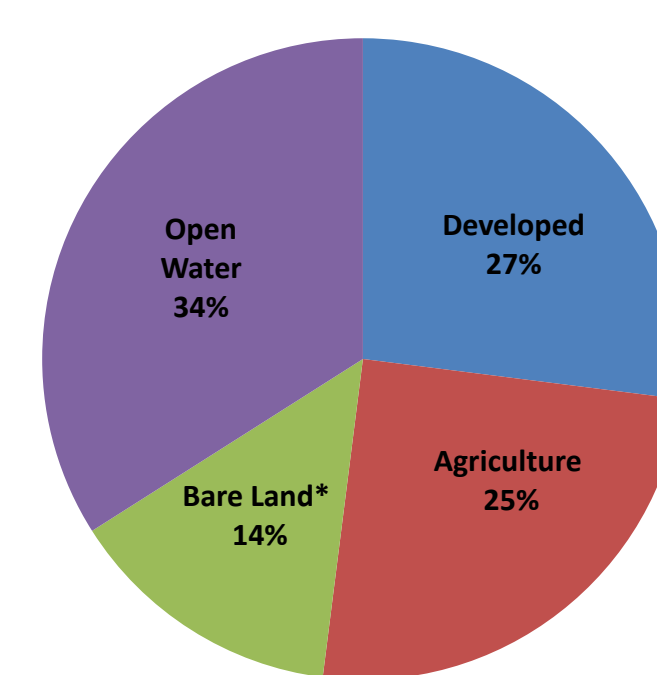
North Atlantic



Mid-Atlantic



South-Atlantic



Gulf Of Mexico

Tools to address coastal wetlands loss - Highlights

To address the stressors identified at each workshop, participants described tools and strategies that are currently successful in a specific watershed and can be applied more widely. The following tools and strategies to address coastal wetlands loss were identified in multiple workshops:

Living Shorelines: A newly planted marsh with fiber logs allowing plants to establish root system and stabilize shoreline. This "living shorelines" technique is used in place of shoreline armoring to reduce the impact of coastal erosion.



Photo source: Virginia Institute of Marine Science

Best Management Practices: Vegetated filter strips in the Neuse River Basin help trap sediments and decrease nitrogen loads from agriculture or other non-point sources.

Beneficial Use of Dredged Material: Dredged material is used to restore islands along the Gulf coast, such as Deer Island in Mississippi pictured here.

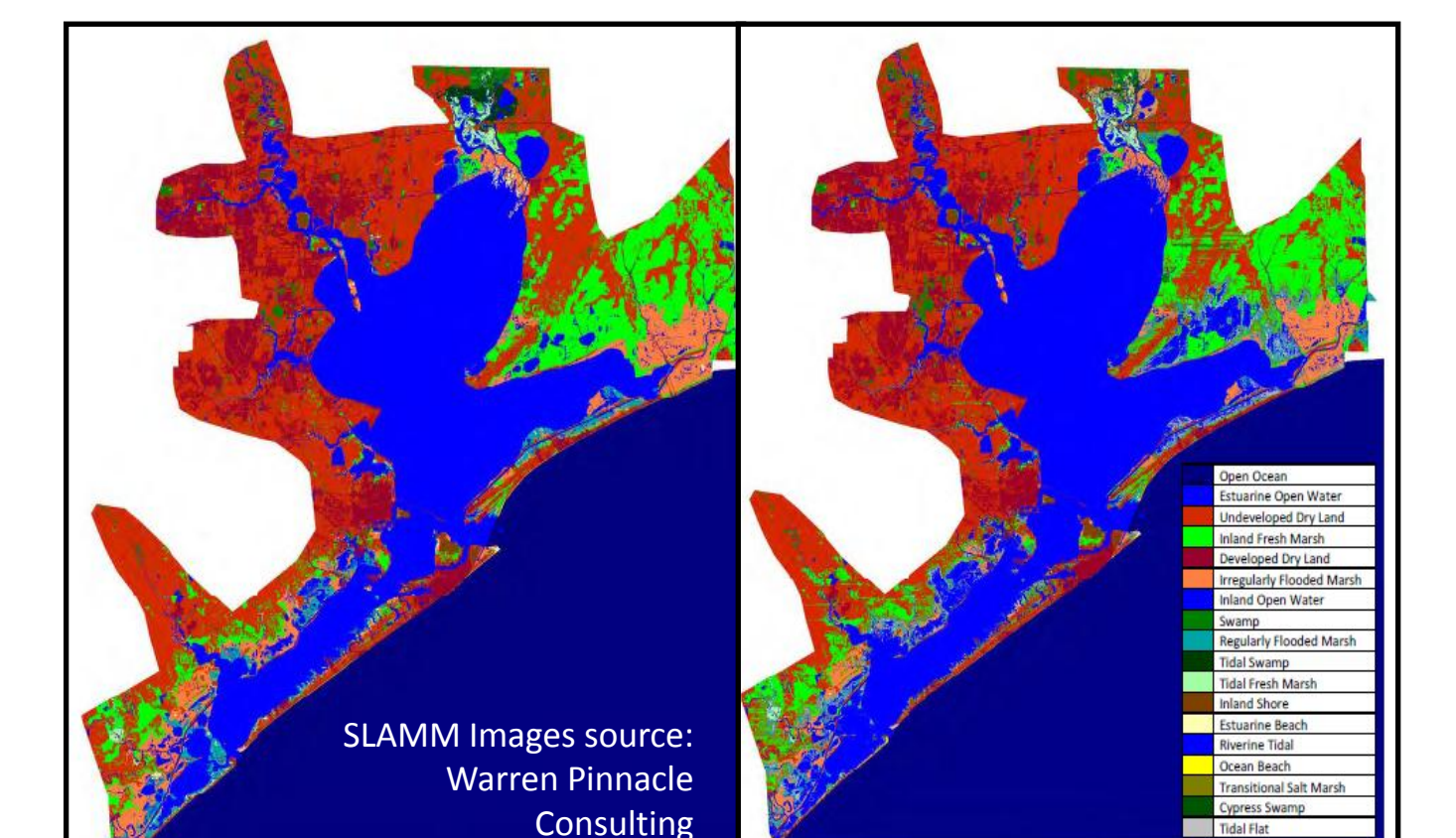
Coordination and watershed planning with local entities: Engaging local governments and NGOs in dialog and watershed planning is an extremely effective way to reduce coastal wetland loss. In Pass Christian, Mississippi, local officials coordinate with the Mississippi Department of Natural Resources to ensure that all applicants for building permits also sought wetland permits, if needed. The Land Trust for Mississippi Coastal Plain is working with communities in six local watersheds to build local partnerships and develop watershed plans.

Wetland Loss Mapping and Enforcement: Land cover changes detected by comparing aerial maps from 1993 and 2000 led MassDEP to pursue criminal investigation into cases where large wetland areas had been filled or altered without a permit. For example, in this image (right) in Westport, MA you can see the deep marsh circled in green in the left photograph were filled in for homes and lawns (see red circle on right photo).



Photo source: Buzzards Bay National Estuary Program

Sea level rise modeling: The Sea Level Affecting Marshes Model 6 is used to predict the effects of specified sea level rise projections on wetlands and other coastal habitats. In Galveston Bay, the 1 meter sea level rise model predict a 67% loss of brackish (irregularly flooded) marsh and an 84% loss of tidal swamp by 2100. This predicted change is illustrated to the right with initial wetland conditions in 2004 in the left image and predicted wetland conditions for 2100 in the right image.



SLAMM Images source: Warren Pinnacle Consulting

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