Combating Wetland Loss – Louisiana Estuary Experience

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Introduction

The Baratraria-Terrebonne estuary is located in the wetland area between the Atchafalaya and Mississippi River deltas. This region is rich in several cultures unique to America, and reliant on the environment. The rapid increase of wetland loss is destroying the way of life of these peoples on several levels: directly with those dependent on the agriculture and wildlife of the region, and indirectly with those whose homes are destroyed by increasingly high storm surge and flood lines. Hereby, the loss of wetland can be directly correlated to economic, social, cultural and natural loss. An economic region which is dependent on hunting and fisheries for food, furs etc., the bayou parishes cannot survive without the fruitful environment they developed in[1].

Healthy marshlands have been analyzed by the Army Corps of Engineers to reduce storm surge by 1 foot per every 2.7 miles of healthy marsh.[2] The conservation and restoration of the bayou region can reduce the impact of disasters such as Hurricane Katrina, which took place in 2005.

In the Louisiana Costal Plain surrounding the Atchafalaya and Mississippi River, 1,526 square miles of land was lost between 1930 and 1990 (a total of 17.8% , 11.6% of which was direct man made loss).[3]

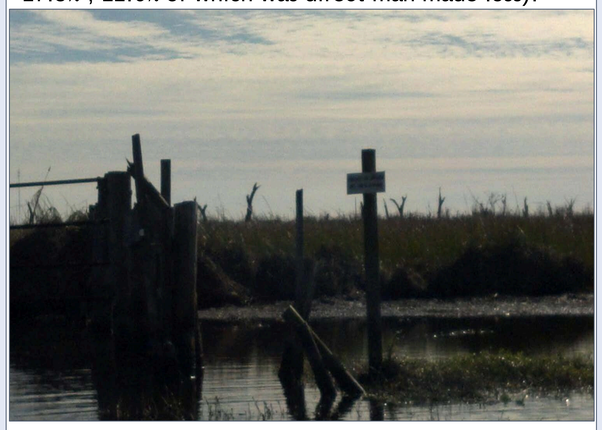

Figure 1. An example of saltwater intrusion due to Hurricane Katrina. Certain marsh grasses which can tolerate an increase in the salinity survive; albeit, only the withered trunks of the decimated oaks remain in the distance.

The Bayou Brigade

Figure 2. UB Team Bayou standing atop a previously failed levee. Behind them is decimated marshland.

Causes of Degradation

Direct Land Loss

- Direct land loss refers to wetlands becoming water by the creation and dredging of canals.[4]
- Commercial alteration has be done by canals for the oil industry, and leveeing the Mississippi River.
- Over the past 7000 years, the Mississippi River Delta has naturally changed six times.[3] In order to maintain the economic harbor status of New Orleans, the Mississippi River was leveed to prevent formation of a new delta elsewhere.

Lack of Sediment Deposition

- Land and elevation lost due to flooding, coastal erosion and depression has not be replenished due to levee construction.
- The rate of land loss has outgrown the rate of replenishment by far.

Saltwater Intrusion

- The four types of marshland are freshwater, intermediate, brackish and saltwater.
- When saltwater intrudes upon a freshwater marsh, much of the wildlife cannot handle the elevated salinity levels, killing the plants and leading to more land degradation (Figure 1).[4]

Waterlogging and Wave Erosion

- Waterlogging of wetland regions can increase salinity and destroy vegetation.
- Traffic on the canals canal create wave action which erodes the marsh shorelines over time.
- Healthy marsh is less susceptible to natural erosion.
- Wave action erosion causes a compounding effect by creating less land for less vegetation which is necessary for land retention.[4]

Species Invasion

- Overgrowth of certain invasive vegetation and overgrazing of native vegetation by the invasive nutria allots for a certain element of caution with invasive species. [4]
- Any foreign species could disrupt the natural habitat of a native creature that is essential to industry at any point in the food chain.

Off-shore Hypoxia

- With the leveeing of the Mississippi River nutrients that normally stayed in the land went out to the Gulf of Mexico and created a large algae population.[5]
- An increased algae population has decreased the off shore oxygen content (hypoxia defined), thus effected the population of plankton which act as a food source for many commercial products.

Making Impact

As *Team Bayou* a group of 19 UB students and faculty spent the later portion of their winter break studying the plight of the marshlands and working to help the cause (Figure 2).

Team Bayou opened their trip with education at the *Katrina and Beyond Exhibit* and LUMCON – learning the profound impacts of hurricane damage in relation to the wetland region, as well as the local ecology and anthropology.

A large newsworthy (*www.houmatoday.com*) project the students were involved in was the several stage recycling of holiday trees. Communities and municipalities recycled old holiday trees to nearby canal entrances end of the holiday season. The UB students then worked with BTNEP in loading over 500 trees into boats (Figure 4) and then unloading them into crates near vulnerable canal shorelines.

The main purpose of this project was to combat the wave action of the passing boats in the canals and eventually build sediment along that line for more native vegetation to grow in. This project has been ongoing for 5 years now, and is made possible by volunteers and progressive legislation.

Figure 4. Team Bayou hauled trees into boats of all sizes to transport 500 trees in one day's work.

Team Bayou also had more intensive community interaction. While at the Bayou Grace Community Center, the team constructed decorative planters for native species vegetation to give out to community members. This simpler project gets the immediate community involved in the wetland restoration, while also offering an ascetically pleasing product for residents. It also created an element of interaction between Team Bayou and the Terrebonne parish, where the community voiced their concerns and their appreciation for the students' involvement. Bird houses were also constructed for migratory and native birds who use the wetlands as their major habitat.

While in Thibodaux, the team worked at Nicholls State University to build a germination and farming facility. In this facility, experimental farming of native species of vegetation is and will be taking place, for the eventual transplant to areas of need. Specifically, UB students built tables in a hydroponic system to house germinating plants, sowed over 2000 seeders for new vegetation and tended to the currently growing agriculture in the facility.

Conclusions

As shown in Figure 5, the wetland loss is a conclusively dangerous issue. Restoration of the wetlands will help restore and bolster the economy in the Louisiana coastal region as thereby the culture of the Cajuns and others. An increase in wetland area will also prevent large hurricanes from being massive disasters. Money and time toward the Louisiana bayou is as vital as preventative medicine for an individual. People of all ages can make a difference in this area by offering their time, money or writing their politicians expressing the dire need in the Louisiana bayou. The University at Buffalo project was a clear and continual success in aiding the bayou region.

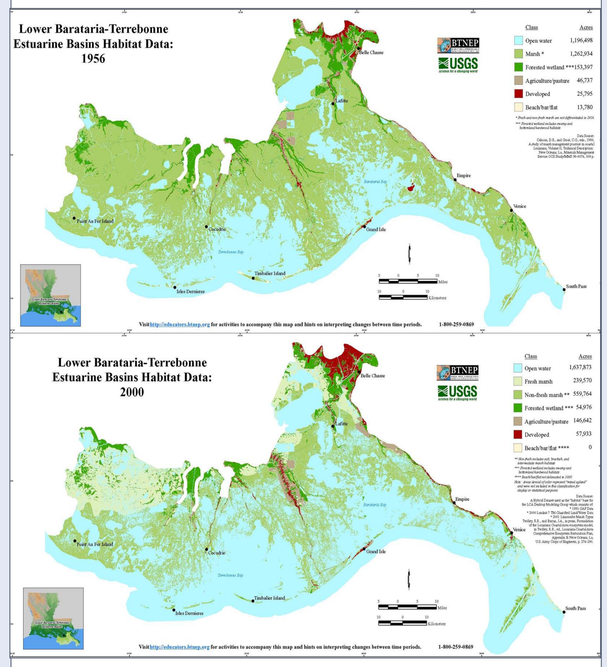

Figure 5. Time lapse of estuary land loss, 1956-2000.

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