

As a resident of the Mississippi Delta, there are two things you can look forward to every year--hot summers and flash floods. Flooding has always been a major part of life in the Mississippi Delta. In fact, there is a common saying in the region: "People in the Delta fear God and the Mississippi River." The worst flood in the history of the Delta was in 1927; the river broke the levee and leveled my hometown, Greenville, Miss., a place commonly referred to as the "heart of the Delta."



My grandfather, Roosevelt Parker, has lived in the Delta since he was 20 years old. At 65, he currently lives in Greenville's Sector 4--an area built on an old swamp. . Since he bought his home 30 years ago, he has experienced between 10 and 15 flooding



events. The worst of these came in 2011 when a combination of snowmelt from the north and heavy rainfall flooded his home. When asked how bad the flood was, he simply said, "I could go out in my yard and catch fish." In that instance, he received help from the Federal Emergency Management Agency (FEMA), but only enough to cover structural damages to his property. Due to

the frequency of flooding events, it is hard to get flood insurance for houses in that part of the Delta. After learning my grandfather's story, I decided to dig a little and find out both why the Delta is so susceptible to flooding and what other aspects of the Delta have been significantly affected by flooding.

There are many parts of the Delta affected by flooding in addition to the residential areas. A great example is the casino district in Tunica, Miss., the town that my mother and I have lived in since late 2010. Valued at \$821.95 million, Tunica is the tenth most profitable casino town in the United States, according to an article by Dan Wilson, a journalist for TheRichest.com. In 2011, a mix of heavy rain and snowmelt from the north caused much of Tunica's casino district to flood, leading to several weeks

of closure for repairs. “All 10 casinos in Tunica closed for the first time since gaming began there in 1994, idling about 9,600 employees, closing 4,600 hotel rooms and keeping away more than 20,000 average daily visitors,” reported Howard Stutz in an article in 2011.



Flooding in the Delta is a complex issue with many potential causes. According to Marty Pope, a hydrologist at the National Weather Service in Jackson, Miss., some of the main causes are snowmelt from upstream, tropical systems, and the fact that the Delta is so flat. These three factors, when alone, are enough to cause flash floods. When they happen simultaneously, they can cause massive floods and problems for the Delta’s residents.

In the United States, flooding causes an average of \$8.2 billion in damages and costs the lives of roughly 89 people per year (Hydrologic Information Center – Flood Loss Data, April 28, 2014). After looking through some project progress reports for the Sectoral Applications Research Program (SARP), I found that research has been conducted in several sectors of the U.S. on how these effects could be lessened in the future. I have arranged meetings with the primary investigators of some of these flood adaptation-based projects in order to find out what could be done in the Delta specifically.

The first researcher I spoke with was Latham Stack, the Principle Investigator of “Design and Implementation of a Decision-Support Program for Adapting Civil Infrastructures to Climate Change”. His research deals with adaptation measures in the Sunapee Lake watershed. After discussing the geographical features of the Delta, he recommended that updating the building standards as well as zoning could keep residents from building property in flood plains. In his research, he first looked at increasing the size of culverts to put a maximum dollar value on the possible adaptations for the Sunapee Lake watershed. He explained that culverts would be the last resort as an adaptation because of the price and time needed. I also spoke with Margaret Walls, the PI of “Creating Resilience to Climate Change: Cost-Effective Land Conservation in the Floodplain”. Her project centered on conserving flood plains in St. Louis, MO. I found

this project especially interesting because my grandfather's home and much of the neighborhood I grew up in is built on a flood plain. The purpose of her project was to find out how much it would cost (and if it was even possible) to either purchase land that was considered a flood plain or to set restrictions in order to prevent flood plains from being developed.

In conclusion I would like to focus on three key points pertaining to flooding in the Mississippi Delta. First I would like to stress that it is important that when looking at flooding for a particular area that we not only look at that area but also the areas upstream as runoff and snowmelt play a large part in flooding. Even if Mississippi has a relatively light year in terms of precipitation, high amounts of rainfall or snowmelt from the states north of the Mississippi River could cause runoff downstream causing the river to rise and that coupled with even light rainfall could mean some serious flooding. Another point I would like to stress is that adaptation measures cost a lot of money. Without proper funding an area such as the Delta would not even receive flood map making it harder on the engineers and planning department to make some adaptation measures. That brings me to my final point: adaptation measures must be made in the Delta. Left alone the Delta is a large flood plain due to its flat land and rich soil. With that being said people like my grandfather and much of my family that have lived in the Delta their entire lives will most likely not move. The residents of the Delta need a way to cope with the effects of flooding because it is a very real problem.