

Vulnerability of Coastal Louisiana Tribes in a Climate Change Context

In January 2012, several tribal communities from coastal Louisiana (including Grand Bayou Village, Grand Caillou/Dulac, Isle de Jean Charles and Pointe-au-Chien Indian Tribes) met to “share knowledge, support, cultural connectivity and adaption strategies” in response to the significant environmental changes they are facing. This meeting, convened by the tribes and attended by the National Resources Conservation Service (NRCS), brought together local tribal members, national tribal leaders, faith leaders, government agency representatives, and resource specialists to share information on the various opportunities, resources, and programs available to tribal communities experiencing the impacts of large-scale environmental change. Meeting outcomes were documented and included as technical input for the tribal lands chapter of the 2013 National Climate Assessment report.

Living among the bayous in southern Louisiana, these coastal tribes have experience dealing with tides, storms, sea level changes, and soil composition fluctuations resulting from the rise and fall of Mississippi River. However, in recent years, environmental changes including subsidence, land sinking and shrinking, and sea-level rise have posed uncommon challenges to these indigenous communities. Natural disasters, such as Hurricanes Katrina, Rita, Gustav, Ike, Lee and Isaac, have taken a significant toll. Additionally, the tribes have also had to cope with various impacts resulting from the petroleum industry, ranging from standard canal construction to large-scale disasters such as the BP oil spill. This profile explores the ways in which climate change may exacerbate the challenges already facing coastal Louisiana tribes.

Background

The Landscape:

Southern coastal Louisiana is a complex patchwork of swamps, marshes, bayous, deltas, and low-lying islands. Fluctuations in river flow (especially the Mississippi River), tides, sea-level, storm surges, and rainfall have historically made this an ever-changing coastal environment. However, these coastal areas are now experiencing greater than normal subsidence and are being isolated from freshwater and sediment sources (CWPPRA). Some of the causes of the subsidence include levee installations, fossil fuel infrastructure and extraction, and the natural deterioration of barrier islands, which has increased the reach of encroaching marine tides and subsequently caused erosion and saltwater intrusion that kills coastal forests. It is estimated that the mass of land loss is equal to the size of the state of Delaware (Couvillion et al. 2011).

The Tribes:

Grand Bayou Village is a water-based tribal community located in Plaquemines Parish, LA. The Tribe has inhabited this village for 300 years, and the broader region for much longer. They are primarily Atakapa-Ishak, with



Grand Bayou Village. Photo credit: Buster Landin, Purdue University, Native American Educational and Cultural Center. Purduenaecc.blogspot.com

ancestry including Acadian French and other tribes along the Mississippi River. This community continues to “live in concert with nature”, with a primarily subsistence lifestyle.

The Grand Caillou/Dulac Band of the Biloxi-Chitimacha Confederation of Muskogeans is located along several bayous that are part of the Bayou Terrebonne watershed in Terrebonne Parish, LA. The Grand Caillou/Dulac Band is a native tribe that has lived in the region for hundreds of years.

“There used to be trees and forest for as far as you could see or run. We would go out to play and there was land all around us, now there is just water.” Shirell Parfait Dardar, Pointe-au-Chien

The Isle de Jean Charles Band of the Biloxi-Chitimacha Confederation of Muskogeans is also located in Terrebonne Parish, LA on “a narrow ridge of land between Bayou Pointe-aux-Chene and Montegut” (called Isle de Jean Charles). Bayou St. Jean Charles splits the island down the middle, with a road on only one side. Prior to 1876, the State of Louisiana considered this area “uninhabitable swamp land”, but then began selling to individuals (ITEP 2008). According to oral history, the ancestors of this group first came to the island in 1840. Since then, they have continued to preserve their community, culture, and (mixed) Indian heritage (coming from the Biloxi, the Chitimacha, and the Choctaw tribes). Land loss is their primary concern, along with the intrusion of saltwater affecting what little land remains, making any kind of food cultivation very difficult (NRCS Workshop 2012).



Grace Welsh, Pointe-au-Chien, collects crabs, a seafood staple of coastal tribes. Credit: Julie Dermansky (www.washingtonpost.com)

The Pointe-au-Chien Indian Tribal Community, with approximately 680 members, is located in lower Pointe-au-Chien, a traditional Chitimacha village in Terrebonne Parish, LA. The Pointe-au-Chien Indians have Acolapissa, Atakapas, and Biloxi Indian ancestry. These groups have historically inhabited Louisiana and the Mississippi River Valley. The Pointe-au-Chien continue to lead a subsistence lifestyle by hunting alligators, fishing, and catching shrimp, crabs, and oysters, but their ability to farm is becoming more and more difficult with increasing saltwater intrusion and land loss (NRCS Workshop 2012).

Common Challenges:

The Coastal Louisiana tribes share a common connection to the coastal landscape, having subsistence lifestyles that are deeply rooted in local ecosystems and species.. Without taking climate change into consideration, these tribes have already been facing many challenges that compromise their ability to carry out traditional activities, and that threaten their cultural and economic survival. As described in the NRCS Workshop 2012 Report, “The land and waters that we depend on for our lives, our culture, [and] our heritage, have been abused, broken and poisoned.” These challenges, which result mostly from anthropogenic processes, make these tribes all the more vulnerable in the face of climate change.

Two of the major anthropogenic contributors to tribal disparity have been the construction of levees and the petroleum industry. The placement of levees has often negatively impacted and isolated tribal communities. These levees, coupled with canals built by the petroleum industry, have permanently inundated previously available land and have modified the flooding processes

of the area and have reduced the natural deposition of sediment along the coast and in the bayous that would have normally been deposited by the Mississippi River. This changes the natural species composition of the area and affects the tribes' access to arable land, subsequently preventing tribes from carrying out traditional and subsistence activities. This also forces tribal communities to rely on processed foods sold in grocery stores, and thereby placing tribal members at further risk of poverty and disease.

Additionally, the BP Horizon Oil Spill had numerous impacts on local landscapes and tribal livelihoods. In 2010, shortly after the region was finally beginning to recover from Hurricane Katrina in 2005, the BP Horizon Oil Spill severely impacted these already vulnerable communities. The Grand Bayou Village is once again faced with the destruction of their fishing and shrimping livelihoods as well as the damage to marshes from the encroaching petroleum oil (Faerber, 2010). At a June 2012 GO-FISH meeting at the Houma Library, fishers told of having only 30% of their normal catch of shrimp and that all oyster beds are dead from the Atchafalaya to the Mississippi border. Vulnerability to catastrophic events such as severe storms or oil spills hits hardest on those living subsistence lifestyles, such as the coastal Louisiana tribes. Therefore, these events not only threaten natural ecosystems, but they also threaten the entire way of life of these tribes.

Adding to the obstacles faced by these tribes is the fact that they have struggled to gain official State and Federal tribal recognition. In June 2004, after many years of petitioning, the State of Louisiana granted official State recognition to the Grand Caillou/Dulac Band and the Isle de Jean Charles Band of the Biloxi-Chitimacha Confederation of Muskogees, as well as the Pointe-au-Chien Indian Tribal Community. The Grand Bayou Atakapa-Ishak has not yet been recognized by the state. Additionally, all four tribes continue to lack federally-recognized status, making it difficult to receive funding for educational opportunities, housing improvements, or utility services, and excluding these tribes and their members from resources from the Federal Emergency Management Agency (FEMA) and the Bureau of Indian Affairs (BIA) – all of which perpetuate risks and vulnerability and prevent mitigation due to lack of funds (ITEP 2008). A lack of federal recognition also leaves these tribes with little leverage to confront the entities that have negatively impacted tribal lands and livelihoods, and also prevents the tribes from seeking federal funding to prepare for the impacts of climate change.

Key Vulnerabilities in a Climate Change Context

The many challenges described above make Coastal Louisiana Tribes particularly vulnerable to climate change impacts. Climate change is likely to exacerbate the effects of these pre-existing challenges. Land loss, changes in species presence, and severe weather are all likely to become greater as a result of climate change. Additionally, increased temperatures are already affecting the social dynamics of tribal communities. These impacts have the potential to affect many aspects of tribal life, from the production of food to the preservation of tribal traditions.

Land loss:

Landscape changes due to natural erosion and oil industry canals have resulted in tribal lands now covered by water. Residents are concerned about declining land resources, loss of storm protection from once-living forests, and decreased air quality resulting from the loss of those trees.

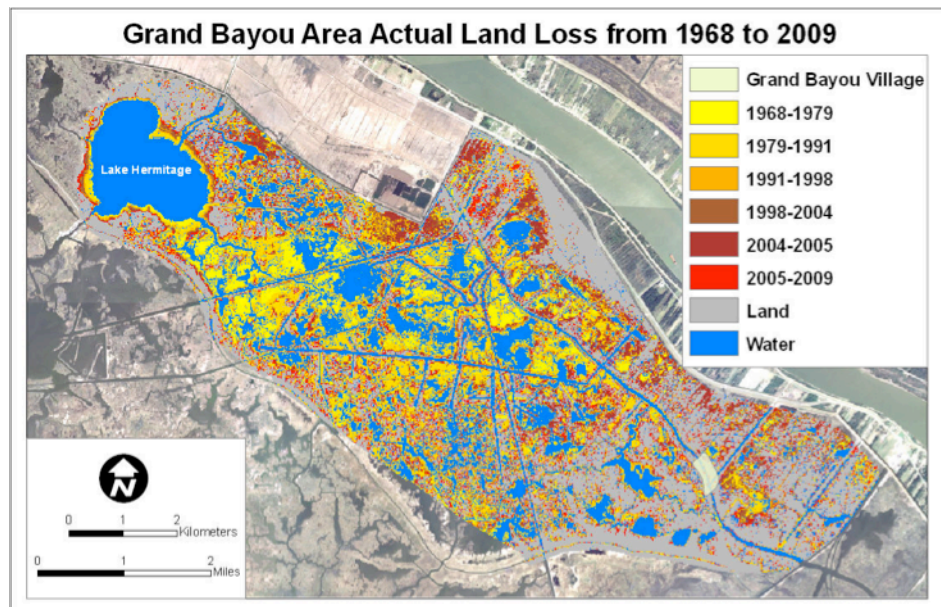
"I used to get lost walking in the trees behind my house. Now there's nothing. Bays and bayous were miles from home, now they're all around" (NRCS Workshop 2012, 12).
Donald Dardar, Pointe-au-Chien

A research project completed by Bethel et al. in May 2011 confirmed, utilizing local knowledge and geospatial mapping technology that the percentage of land in the Grand Bayou area of Plaquemines Parish has decreased significantly. Using community members' traditional ecological knowledge (TEK), the authors produced a report that clearly identified areas of land that have changed (mostly as a result of inundation, and to a lesser degree, the construction of waterways) in the past 45 years. Bethel et al. concluded that these land-use changes were a result of several environmental and anthropogenic factors including: canal dredging by oil companies, subsidence, erosion, storms (such as Hurricane Katrina), the Mississippi River levee system (which prevented seasonal flooding that would deposit additional sediment and help prevent subsidence), and climate change (Bethel et al, 569).

Similarly, the Isle de Jean Charles has lost significant land. According to a PBS News Hour Broadcast, "In the 1950s, the island was 11 miles long and 5 miles across. Now it's no more than 2 miles long and a quarter mile across". This clear and extensive loss of land is making it difficult for residents to continue their way of life, which includes subsistence practices such as gardening, gathering traditional medicines and hunting wildlife historically found in this environment.

Many of the residents of Isle de Jean Charles have chosen to move away:

"Eventually, when we all move off of the island and our people move into other communities, we lose our culture, our people, our land," said Chief Naquin, "Basically we're losing everything that an Indian tribe has" (PBS NewsHour).



Geospatial map showing land loss in Grand Bayou Area (1968-2009). Remote Sensing data was combined with the Grand Bayou community's traditional knowledge to render this image as part of the research by Bethel et al in 2011.

Increased Temperatures:

Coastal Louisiana tribal members have also observed increasing temperatures. Longer warm periods and shorter winters affect plant cycles, overall ecosystem health and community dynamics. Additionally, rising temperatures in the region impact social interactions and the sense of community. Tribal members who attended the NRCS gathering in 2012 reported that people used to leave their windows open, which promoted more human interaction, a stronger connection to the outdoors, and a raised awareness of natural processes occurring outside. Now, in order to cope with the increases in temperature, many residents shut their windows and use air conditioning instead.

Changes in Species Presence:

Community members also point to the changes in flora and fauna species. One community

describes how muskrat trapping used to be an integral part of their lifestyle, but has now nearly ceased because there are no longer muskrats near their homes. Other communities, such as Isle de Jean Charles, are concerned because many of their traditional medicinal plants no longer can survive the increasing saltwater intrusion. Bethel et al. explains, *“the new inlets and expanded waterways allowed increasing tidal exchange and greater salinity fluctuations, which created a stressful habitat for historical vegetation that was less tolerant of these conditions”* (567). These conditions further contribute to land loss and erosion because the lack of vegetation allows regular tides and storms to more easily erode existing marshland, creating a positive feedback loop of deterioration and land change. Additionally, tropical storms (such as Lee in 2011) wreak havoc on the fragile and quickly disappearing gardens and vegetation (NRCS Workshop 2012, 13).



One of many “ghost forests” - dead trees that were not able to adapt to invading salt water. Image: <http://bayoureference.blogspot.com/2011/06/flood-control-vs-coastal-erosion.html>

Loss of Traditional Foods and Medicinal Plants

Tribal members are also concerned because they feel as if they no longer know what they are consuming. Due to land loss and saltwater intrusion, their garden spaces are dwindling and becoming less viable for food production. This has resulted in residents purchasing more food from the grocery store, rather than eating homegrown vegetables.

“If there is a choice between growing potatoes on contaminated soil, it might be better than buying them from the grocer. You don’t know what kind of poison they put on them in the commercial fields.” Earl Billiot, Pointe-au-Chien

Additionally, many tribal members are no longer able to trade with other members of their community (i.e. freshly caught shrimp for garden vegetables) (NRCS Workshop 2012). The increase in processed foods at the expense of fresh seafood and vegetables is altering their diets and impacting their health. Yet another concern is related to the loss of medicinal plants. Historically, tribal members found remedies for ailments with traditional plants. Now, they must pay for medical services. Because of land changes and the loss of traditional foods and medicinal plants, tribal lifestyles once rooted in local ecosystems and traditional cultural practices are now disconnected and dependent on non-tribal systems.

Livelihood Impacts:

Many of the changes and impacts discussed above have affected tribal livelihoods. Observed increases in temperatures make multi-day fishing and shrimping trips impossible because of refrigeration concerns. Furthermore, fishing regulations, the increased cost of diesel, the decreased price of products, and the decreased available freshwater resulting in increased travel all present the tribes with challenges. As was summarized in the NRCS Workshop Report:

The combination of increasing temperatures, loss of land, the economic situation and government regulations have impacted our subsistence-based communities’ lives and livelihoods, forcing us into survival mode. And, whereas before we thrived on what we caught and enjoyed our livelihoods, now, with the high price of fuel and low price of shrimp, we don’t even look forward to our catch (15).

The impacts of climate change are lessening the richness of life in the bayous – tribes are losing their land, their environmental resources, their livelihoods, and their unique cultural dynamics. Several tribal members explained the uniqueness of the place, the community, and the ability to share resources with one another. Not having the resources that traditionally supported this community dynamic forces undesired change.



Increased Vulnerability to Hurricanes:

It is projected that the higher temperature differentials caused by climate change will increase the frequency and strength of severe storms and hurricanes. Because of the challenges already posed by other disturbances such as levees and petroleum industry infrastructure and contamination, coastal tribes find themselves extremely vulnerable in the face of hurricane season.

Land loss and storm damage cause concern for residents Virgil Dardar, Chris Brunet, and Chief Albert Naquin of Isle de Jean Charles. Credit: Chris Granger, Times-Picayune.

"Back when I was a child, we used to ride out the hurricane on the island and not worry about flooding. We didn't have to worry about the winds either, because there were a lot of trees... And now it's basically an open field. So when a hurricane comes, it's like here we are, come and get us." Chief Albert Naquin, Isle de Jean Charles

Not only are declining environmental protections such as substantial land mass or living trees creating vulnerability; the lack of government response when disaster strikes increases the vulnerability of coastal Louisiana tribes. While national and international concern focused on the destruction of the city of New Orleans during Hurricane Katrina, coastal Louisiana tribes were fighting their own battle (Archambeault 2006). Tribal communities lost boats, homes, and livelihoods to the mud and floodwater that washed over the area during severe storms. In addition, the hurricanes caused the loss of many coastal wetlands, and devastated the "seafood, crabbing, oystering, shrimping, hunting, alligator and fur processing industries" which the tribes depend on (Archambeault 2006).



Oil suffocates traditional food sources such as black oysters, threatening food security of tribal communities. Source: Shawn Escoffery

Adaptation

As these issues have become more severe and the tribes' ways of life more jeopardized, there have been a number of suggestions as to how the tribes can adapt. State government has proposed relocation for individuals; however that would fracture the tribe and reduce the possibility of achieving federal recognition. For some tribes, such as the Grand Caillou/Dulac, the dwindling resident and resource numbers are seriously hindering the function of their communities, resulting in the harsh reality of relocation. On the Isle de Jean Charles, 95% of the community has had to move away for work (leaving just the older folks and grandkids). Some, such as Chief Albert Naquin, are fighting to pull their communities back together despite the land loss, culture loss, and lack of

funding (NRCS Workshop 2012). Other tribes must also contend with politicians who are pushing relocation for their own goals. In the Grand Bayou Village, developers want to “buy out” the tribes and build condominiums and fishing camps near the bayous the tribes have traditionally owned for generations.

Some tribal members are using creative ways to physically adapt to the new environments they are facing. Examples from the NRCS Workshop Report (2012) include:

- alternative farming methods – such as raised-bed gardens and planting trees in baskets
- air conditioning for homes, cooling systems for boats, & staying inside as temperatures increase
- further travel to gather oysters (due to decreasing fresh water availability)
- freezing of more seafood and vegetables

Tribal fishermen have expressed concerns about restoration projects conceived and developed by non-resident tribes, without the permission or involvement of local tribes. The fishermen believe the structures are poorly sited and will contribute to the loss of the current land mass rather than the intended purpose of land building.

Other physical adaptation strategies come in the form of strategies to survive severe storms. For example, tribe member Rosina Philippe of Grand Bayou Village “believes her people have been able to survive in a hurricane-prone area because of their adherence to putting life first; practicing safe harbor mooring; and allowing marshes to buffer the effects of a storm surge” (“Atakapa-Ishak”, 2011).

Tribes have had to maneuver around environmental and political set-backs to keep their communities alive. Bayou communities are often cut off from the rest of the world for days and sometimes weeks after storms and high water. During Hurricane Katrina, a Pointe au Chien tribal member bought a back hoe so that he could clear roads and debris as quickly as possible for the community. The Grand Bayou community members evacuated by boat so that they could return to their homes as quickly as possible to start the arduous work of clean up and rebuilding. After Hurricane Katrina Grand Bayou community members lived on their boats in their evacuation site for 9 months. The spirit of mutual help and assistance contributed to the continuation of the community in the shadow of the government that forgot many of them during the recent string of storms since Katrina. As Archambeault (2006) further asserts, the coastal Louisiana tribes “took charge of their own recovery.” Despite the extreme difficulties and unequal vulnerability that tribal communities face, their strong sense of community and traditional knowledge and support systems are sound strategies for dealing with the devastating changes that recent severe storms have wrought.

Adaptation strategies could be strengthened if the tribes would have more opportunities to partake in decision-making about rebuilding plans, restoration, levees, storm protection, or other actions that may affect the tribes. Unfortunately, a lack of Federal recognition makes it difficult for these tribes to be a part of the decision-making process. Because of this political exclusion, tribes have had to take their own initiatives. As the Pointe-au-Chien people have pointed out, *“the perseverance, ability to adapt, humility and cultural knowledge of our people have sustained the Tribe”* (NRCS Workshop 2012, 9). Many members have had to move out of their communities to find work and support themselves and their families, but some have stayed despite the difficulties. Regardless of the lack of tribal recognition, the shortage of educational opportunities, and the environmental challenges they face, tribal members continue to find ways to adapt to these hardships while maintaining cultural and community cohesion.

Conclusion

With climate change impacts now at the forefront of public policy and planning discussions, these coastal Louisiana tribes are asking to be heard and to have their comments taken seriously. As the NRCS Workshop (2012) illustrated, coastal Louisiana tribes have been excluded from many regional or state actions that affect them. When the floodwall project for Plaquemines Parish was designed and implemented by the Army Corps of Engineers, the Grand Bayou Village was excluded, leaving them as “a sacrificial zone” to storm surges and severe weather events.

Similarly, Isle de Jean Charles residents are left out of protection plans, “less than 30 families now make their home here, too few to make levees worth the expense, according to Louisiana’s latest coastal plan” (PBS NewsHour). Garret Graves, Chairman of the Coastal Protection and Restoration Authority, explains that “looking at the amount of money it would take [to protect the Isle de Jean Charles community], and the [number of] homes... you have to prioritize” (PBS NewsHour). Tribes must have a voice in the decision-making processes that affect them. As one tribal member concluded, *“the authorities need to listen to local people, receive our input and take action that includes us and is done with us”* (NRCS Workshop 2012, 18). Some of this participation began at the workshop, where ideas were shared and the workshop report, “Stories of Change: Coastal Louisiana Tribal Communities’ Experiences of a Transforming Environment”, was compiled and provided as input to the National Climate Assessment.¹

The NRCS Workshop concluded that there is a need for information on changes to species and ecosystems, and adaptation strategies to protect and foster cultural resources in changing conditions. The workshop resulted in a long list of actions that tribes could implement to adapt to climate change and environmental impacts. These include bulk heading for protection and land erosion, fostering self-sufficiency and coordination with other coastal communities, creating raised-bed gardens, ensuring that their input is considered when levee locations are determined, and asking the authorities and the wider coastal community to



Building raised bed gardens to act as surge protection for the homes at Grand Bayou.
Source: Rosina Philippe

¹ Other participatory conversations about these issues were facilitated by programs and companies that want to help train and educate tribal members in a variety of areas, including the National Center for Atmospheric Research’s (NRCS) program Significant Opportunities in Atmospheric Research and Science (SOARS). SOARS aims to train students in participatory action research so that they have the tools to address issues in their communities.

Other partners involved with the NRCS workshop included the National Climate Assessment, USDA, Wisconsin’s Tribal Conservation and Advisory Council (WTCAC), Barataria-Terrebonne National Estuary Program (BTNEP) PCUSA- Bayou Blue Presbyterian Church, and the University of New Orleans Center for Hazards Assessment, Response and Technology (UNO-CHART). A primary purpose of the workshop was to “develop a co-management approach to coastal restoration and retention and to view resource concerns and environmental issues in the bayou and local communities that can be addressed through the resources of the NRCS (NRCS Workshop 2012).”

include their “traditional ecological knowledge and ask (us) to be co-scientists and co-managers” (NRCS Workshop 2012, 20).

Tribes at the workshop came up with detailed lists of next steps, as well as specific agencies they can partner with. These ideas and action plans will continue to be developed by the four tribes and other participants of the workshop. They will also create a living strategic plan focused on “Community-based Coastal Community Restoration” so that the dialogue and planning can continue as further changes occur.

The tribes of coastal Louisiana, including Grand Bayou Village, Grand Caillou/Dulac Band, Isle de Jean Charles Band and Pointe-au-Chien Indian Tribe, are all facing a number of environmental and climate change related impacts. Many of these impacts are causing major changes in the lifestyles and livelihoods of these communities and in their relationship to the environment. The tribes are already implementing adaptation strategies to preserve their cultures, communities, and ways of life, as well as the land on which they depend.

Moving forward, these tribes and others will continue to develop plans and detailed actions that will help reduce short-term vulnerability (such as planting in raised garden beds and building relationships between tribes) and improve long-term sustainability and community health (such as participating in decision-making processes and initiating programs to come up with new adaptive strategies). Overall, these coastal Louisiana tribes are working hard to find solutions for their changing environments, which is inspiration for others who are doing similar work.

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Tribal Climate Change Profile Project:

The University of Oregon and the USDA Forest Service Pacific Northwest Research Station are developing tribal climate change project profiles as a pathway to increasing knowledge among tribal and non-tribal organizations interested in learning about climate change mitigation and adaptation efforts. Each profile is intended to illustrate innovative approaches to addressing climate change challenges and describes the successes and lessons learned associated with planning and implementation. For more information about the initiative, visit: <http://tribalclimate.uoregon.edu/>.

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