

Presidents' Forum on Meeting Coastal Challenges

Louisiana State University
Lod and Carole Cook Alumni Center
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MODERATORS

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SPEAKERS

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SUMMARY*

Synopsis

The primary goal of this forum was to establish and develop dialogue between coastal leaders and research universities in order to best address and solve the current realities faced by those peoples living in southern Louisiana.

Session leaders promoted the utilization of university research towards the most immediate needs and concerns of coastal citizens. To this end, coastal parish leaders voiced critical issues related to coastal land loss in their communities and suggested avenues of university research that could meet those needs.

The forum encouraged a partnership between coastal and university leaders in order to create a unified front with which to campaign against coastal land loss. This coalition must include academic institutions, local and state government, and the private sector.

Panel one presented new information and research available to coastal residents, communities, and industries. Five papers were presented and each is briefly outlined below.

Panel Two presented current problems and needs faced by coastal communities. Further, appropriate university research was suggested that would serve to alleviate the concerns of those living with coastal land loss.

PANEL ONE: Confronting the Scientific Realities of Coastal Land Loss

- Information that has been developed by scientists in research universities and institutions across Louisiana was presented to coastal residents, communities, and industries.

A Century of Coastal Degradation and our Current Approach to Restoration
Robert Twilley

- Factors originally intended to improve and protect the lives of coastal citizens have instead led to the degradation of southern Louisiana. These include:
 - 1) Measures toward flood control (especially those implemented after the flood of 1927) including the levee system
 - 2) Investments in oil and gas exploration
 - 3) Navigation investments
 - 4) The Swamp Land Act of 1850 created the need to apply nitrate fertilizer to the watershed that led to the hypoxia in these areas
- Complete restoration of coastal Louisiana is not currently possible due to a higher rate of land loss as compared to rebuilding capacity. Instead, efforts must be made towards rehabilitation.
- As land is built back, it will change the nature of the land in relation to freshwater or saltwater characteristics. This changing landscape will generate tough challenges about the types of habitats desired along the coast.
- Four possibilities regarding the future of coastal Louisiana:
 1. Build a rehabilitation program and measures along the coast that would increase wetland acreage over time
 2. Build a system that can be used to stabilize the land as it is today
 3. Reduce the rate of land loss
 4. No-action scenario
- Current technologies reveal how much land will be lost/ gained under each of the aforementioned scenarios and thus demonstrate what strategies will reverse the rate of land loss and increase the rate of land area. Several variables affect the predictions, including the length of time before coastal rehabilitation program is initiated (this variable can be factored into model), what kind of funding will be available, and the ability to change the trajectory of wetland loss.

Using Technology to Illustrate the Realities of Hurricane Vulnerability

Dr. Ivor van Heerden

- Current technologies integrate land loss information and rainfall amounts to examine potential hurricane impacts in Louisiana.
- Research has demonstrated the following realities if Hurricane Ivan had passed west of Lake Pontchartrain:
 - Artificial levees, while beneficial for river floods, enhance storm surges
 - Flooding of Bonne Carre Spillway
 - 24 feet of water in Plaquemines and St. Bernard Parish
 - Flooding of the Westbank
 - Water will hit industrialized areas before flooding New Orleans, enhancing the possibility of contamination.
 - Water surges will reach Interstate 12
 - 14-17 feet of standing water in New Orleans (assuming levees did not fail)
 - Land where Barataria Bay used to be acts as a funnel for the storm surges
- Suggestions for mitigation/ rehabilitation:
 - Build a passive structure across the Rigolets along the Interstate I-10 bridge to reduce the cross-sectional areas of flood and surge waters that enter Lake Pontchartrain.
 - Divert 50% of the Mississippi River into the Breton Sound area. Although this would mean the shut down of the MGRO, 10000 acres / year would be created. Further sediments may flow into adjacent marsh area, rejuvenating those areas and creating a platform to protect against hurricane storm surges.

The Changing Face and Elevations of Coastal Louisiana

Tim Osborn

- Current technologies at NOAA allow the following:
 - Map coastal shorelines and waters
 - Measure the tides
 - Set and maintain a reference network that surveyors use for determining position and elevations of the United States
 - Predict, with high accuracy, weather patterns
 - view LIDAR (Airborne Laser Elevation) contours, elevation profiles in coastal parishes
- Historical data in regards to elevation changes reveal that the sea level rise in coastal Louisiana has increased approximately one inch every 30 months over the past 60 years

- NOAA can determine the rates of movement (changes in elevation) experienced by coastal parishes in southern Louisiana. This data can be used to support flood protection, coastal restoration, coastal ports, new highways, new schools, courthouses, housing developments, and hurricane evacuation routes
- Elevation data reveals that many coastal communities live below sea level and are dependent upon flood protection levees for their existence
- A statewide network of GPS reference stations, CORES (Continuously Operating Reference Stations) act to support the state in surveying, engineering, restoration, flood protection work, and infrastructure research efforts. CORES can be used for a new generation of GPS faced positioning. CORES are available for public use.

Geographic Information Systems: A Tool for Addressing Coastal Challenges

Dewitt Braud

- GIS is a tool that uses satellite images for visualization and analysis, with important applications with regard to coastal studies. Some of these applications include the following:
 - Generation of subsidence maps which reveal subsidence rates for coastal Louisiana
 - Conversion of satellite imagery to land/ water masks (images of the land and water) which aid in the analysis of land loss.
 - GIS maps can simulate a one meter combined sea level rise and subsidence and predict the effects of such a scenario
 - Examination of those areas where land has been lost can be compared to those areas where land has been maintained. Comparing these differences can provide prediction tools for those areas more likely to exhibit land loss.
 - Generation of maps that plot all hurricanes that have made land fall in Louisiana over the past 100 years. This can be used not only as a historical tool, but also a prediction tool for the paths of future hurricanes.
 - GIS can determine all towns that may be affected by a hurricane including the current population of those towns and housing units.
 - GIS maps can show the extensive oil and gas infrastructure of southern Louisiana, including pipelines, offshore platforms, derrick structures, and oil and gas wells.
 - GIS maps can demonstrate the increased effects of hurricanes as coastal land is lost
 - Using LIDAR (Airborne Laser Elevation) for more accurate elevation data, the quality of flood zone maps will be greatly improved.
 - GIS maps can illustrate how New Orleans is surrounded by water at a higher elevation than the city.
 - Maps can highlight many other features, including but not limited to, mercury sites, water wells, road conditions, traffic information, oil and gas activities, real time wind activities, wave patterns, geospatial portal to government services, boat launches and marinas, population shifts, and patterns of crime.

The Evolution of Marine Extension and Socioeconomic Research
by Rex Caffey

- Documents a decrease in productivity of commercial fishermen and a 40% reduction in the commercial fishing fleet in coastal Louisiana. Both are directly attributed to globalization and free trade, not coastal land loss.
- Using a land to water ratio, it has been predicted that the amount of edge-habitat was going to reach a maximum around the year 2000 and by the year 2050 be in decline. This raises the question of how long a system can sustain itself when it is consuming its own mass.
- The long-term restoration objectives of diversion projects such as Caernarvon are often in conflict with the short-term management objectives of coastal fisheries.
- Socioeconomic challenges and limitations are the main impediments to running projects such as Caernarvon and/or Davis Pond to their full capacity.
- The sustainability of coastal Louisiana is primarily a socioeconomic issue. A dollar value must be placed on restoration concerns in order to make a logical national argument.
- Revenue was lost when oil and gas production moved from inland Louisiana to coastal, coastal to offshore. If production were in state waters or on the Louisiana coast, the match from the federal government would increase from less than 1% to 50%.
- Louisiana can not sustain herself under the current budget.
- Restoration projects must be reframed in terms of cost efficiency
- Value of restoration differs based on the way in which it is framed. As a state, Louisiana is prepared to spend many millions on restoration, whereas people are less likely to spend money when the question is framed in terms of preserving recreational opportunities.

PANEL TWO: Confronting the Current Realities of Coastal Communities

- Panel Two presented current problems and needs faced by coastal communities. The following people spoke on the behalf of their communities:
 - Tim Matte – St. Mary Parish
 - Charlotte Randolph – Lafourche Parish
 - Tina Horn – Cameron Parish
 - Randy Roach – Calcasieu Parish
 - Mike Bertrand – Vermilion Parish
 - Al Levron – Terrebonne Parish
 - Timothy Kerner – Jefferson Parish
 - Benny Rousselle – Plaquemines Parish
 - Yarrow Etheredge – Orleans Parish
 - Henry Rodriguez, Jr. – St. Bernard Parish

CONCERNS ABOUT MEETING COASTAL CHALLENGES (alphabetical)

Climate Change:

- New Orleans named the North American city most vulnerable to the effects of climate change.

Coastal Infrastructure:

- Protection and maintenance of oil and gas, port facilities, navigation waterways, local business (i.e. North American Shipyard), residential, municipal, and parish infrastructure
- Damage to oil and gas infrastructure posed the following problems:
 - Environmental concerns regarding the exposure of oil and gas infrastructure
 - Economic concerns regarding the reduced production of oil and gas

Economics:

- Loss of potential business and decrease in economic development in southern Louisiana due to economic and insurance concerns, and potential for future disaster/hurricanes
 - High cost of maintenance required to create and/or maintain current and future economic development
 - The need to protect existing businesses in coastal areas produces financial concerns
- Loss of economic livelihood for current and future generations of coastal Louisiana due to a decline in local industry. These industries include:
 - Agriculture
 - Wildlife and Fisheries
 - Need to protect fisheries, wildlife, and waterfowl in existing marshes
 - Shrimping
 - Oil and Gas / Oil field services
 - Tourism
- High insurance premiums faced by those living in threatened coastal areas resulting in a lack of insurance coverage for many coastal citizens
- Inability to run existing freshwater diversion projects at their full capacity. For example Caernarvon is currently operating at 15%
- Loss of land value in coastal communities

Elevation:

- Concern that no uniform elevation numbers exist for certain structures.

Evacuation Concerns:

- Need for coastal communities to be “one step ahead” of New Orleans and Baton Rouge when declaring evacuation due to concerns that once the larger cities declare evacuation the road will be too clogged for coastal citizens to leave
- Concern for those citizens (100,000) in New Orleans who will not have the transportation required to leave the city
- Traffic concerns due to large number of citizens evacuating from southern Louisiana.
- Concern that some evacuation routes will be impassable/dangerous due to hurricane storm surges, for example the Manchac overpass on the north shore
- Concern for at-risk populations during hurricane evacuation, including those in nursing homes

Funding:

- The state of Louisiana does not currently have the required financial resources to prevent coastal erosion
- Funding that is received is less than what is needed to even sustain the coast

Hurricanes:

- Effects of hurricane landfall
 - Damage to property
 - Loss of life
 - Concern that existing levees are not high enough to protect from hurricane storm surges
- Public health concerns and implications that may emerge from hurricane-related emergency situations

Lack of Awareness:

- Citizens of New Orleans, may not be aware of how close the coast is to the city
- Low national interest in the plight of coastal Louisiana communities

Land:

- The restoration and protection of existing barrier islands and Cheniere plain and ridges
- Shoreline erosion
- Lake bank erosion
- Channel erosion
- Interior marsh erosion
- Loss of sediment
- Subsidence
- Excess water levels

Land use planning:

- How to adopt the storm water regulations and other ordinances required to comply with EPA regulations
- How to protect/ restore private land; how to enforce regulations that will prevent the effects of coastal erosion on private land; how will communities encourage private landowners to obtain permits that restrict certain activities on their land?
- The need to prohibit activity which will do irreparable harm to the goals and objectives of coastal restoration.
 - Wetland restoration will limit the activities that the public can partake of it (i.e. fishing), thus possibly decreasing public support for coastal restoration
 - Compatibility of recreational activity and environmental and agricultural activities
 - Proposed construction moratoriums on development that normally “defies rational logic.”
- The sale of wetlands (i.e. the New Orleans East Land Bridge) to private developers
- Need for land development regulations and restrictions concerning density, height, and construction stability
- Creating new zoning codes, particularly with respect to preventing oil exploration and limiting development

Legal Issues:

- Legal liability to the governing authority of a given parish when the parish is forced to retreat from its infrastructure.

Loss of Culture:

- What are the effects of losing ones culture and heritage?
- Loss of cultural resources that will occur when people are forced to move out of their environment

Mississippi River Gulf Outlet:

- The effects of the MGRO in St. Bernard Parish including loss of swamp, cypress, freshwater, brackish water, and saline marshes
- The levee on the Orleans facing side of the MGRO is 2-4 feet lower than the St. Bernard side

Need for Short Term and Efficient Solutions:

- Coastal citizens want to spend money on those projects that will demonstrate short term rewards
- Frustration expressed over always “studying” and not putting any plans into action

Quality of Life:

- Practical problems of conducting day to day governmental activities in these high risk areas. These include, but are not limited to land use planning, building roads, and providing drainage.
 - Question of how much is to be spent on drainage projects given the uncertainty of where the water is going to be
- How are communities supposed to maintain a quality of life in high risk areas?

Relocation:

- Decreasing populations in coastal communities result in a decrease in community livelihood and quality of life.
- Relocation of citizens in those coastal communities that do not have the resources to prevent land loss
- Psychological and social effects of relocating coastal citizens into an urban setting
 - Education and job concerns (most coastal citizens have jobs that are tied to coastal environment)
 - Many coastal citizens do not have health insurance and function below the poverty line
 - Finding suitable housing for coastal citizens who relocate
 - Fear that change of lifestyle will lead to negative social problems including alcohol and drug abuse, and increased crime rate

Shoreline Stabilization:

- Examine methods of shore stabilization other than rocks and sheet pilings

Water Quality:

- Intrusion of salt water is causing high salinity levels in drinking water. This is creating situations in which local water sources may no longer be drinkable. This is of particular concern to those peoples with high blood pressure.
- Salt water intrusion is killing many interior marshes
- Fecal coli form pollution prevalence in the lower areas of coastal parishes

RECOMMENDED ACTION AND RESEARCH (alphabetical)

Coastal leaders and researchers suggested action and research that would serve to alleviate the coastal challenges. These include:

Awareness:

Action

- Empower the public, private sector, and local governments to work as a unified force in order to begin addressing the problems of coastal erosion
- Work with universities around the nation to create a large lobbying force for the passage of the WRDA bill
- Provide public education about individual risk management, including the need to develop individual disaster plans

Climate Change:

Action

- Encourage leadership receptive to climate change at the national and statewide levels
- Establish a governor's commission on climate change that includes university resources
- Create national and state attention to the issue of climate change, specifically, how it relates to coastal restoration

Coastal Infrastructure:

Action

- Build a passive structure across the Rigolets along the Interstate I-10 Bridge to reduce the cross-sectional areas of flood and surge waters that enter Lake Pontchartrain

Research

- Study the Southern Building Code
- Infrastructure study of the damages caused by oil and gas
- The need for better FEMA maps
- Development of no growth and retreat strategies such as determining procedures for decommissioning infrastructure
- Research that provides ongoing risk assessment of coastal land loss threat and quantifying of the extent of this problem. For example, the pipelines could be studied with respect to the risk of pipelines at various depths, the material of the pipeline, and the nature of the products in these pipelines.

- Development of legal analysis and the drafting of legislation that would provide immunity to the parish and the state for any claim associated with a justifiable retreat from infrastructure.
- Need for a study that examines the possibility of a tunnel to cross the Calcasieu Ship Channel
- Research in capital improvement projects, specifically the Operation Block concept for the Rigolets and the MGRO area. (Operation Block is the concept to lessen hurricane storm surge levels in Lake Pontchartrain by reducing the cross section of the channel these waters use to reach the lake. It is proposed to build a series of passive breakwater-type structures across the Rigolets at the I-10 bridge; structures that will not interfere with day-to-day tidal interchange, but would significantly reduce the cross section through which the storm surge flows. Reducing surge elevations in Lake Pontchartrain could mean that New Orleans would not flood under conditions it would flood at present.)
- Study the effects of the drainage projects north of the Mermentau Basin on the lower Mermentau Basin. Conduct similar studies on the Vermillion and Calcasieu Basins.

Economics:

Research

- Study the rate of decline and the development of management practices that will maximize the sustainability of near shore fisheries. For example, possible management strategies include limiting the number of residential and commercial fishing licenses.
- Examine methods of converting rice fields and cattle pastures into shrimp farms

Elevations:

Action

- Convince state agencies to implement the NGVD29 to improve elevation measures

Research

- Need to unify methods for measuring elevations

Evacuation:

Action

- Build a north south corridor from the Houma-Thibodaux area to Interstate I-10.

Research

- Develop a comprehensive evacuation plan for citizens of southern Louisiana. This plan should outline effective and detailed evacuation procedures for those citizens of southern Louisiana, with specific attention to efficient timing, improved contra lanes, and education concerning alternate routes.

Funding Concerns

Action

- Impose a moratorium on local oil and gas revenues
- Encourage all parishes to work together and jointly fund the Operation Block at the Rigolets

Research

- Determine which areas of coastal Louisiana are sustainable and use existing monies in those areas.
- Use GIS technology to determine which coastal communities are tenable and at what point they may no longer be so
- Study the financial capabilities of local coastal communities and provide innovative financing methods to meet future restoration challenges

Hurricane Protection:

Action

- Build a wall encircling the Industrial Canal
- Build more hurricane protection levees

Research

- Develop innovative methods of hurricane protection

Land Use Planning:

Research

- Research regarding the problems that will arise concerning the loss of land use. Specifically, each parish will have to decide where it's "Alamo" is, and research could elucidate the factors that will have to go into this difficult decision

Loss of Culture:

Research

- Study the effects of losing the cultural resources of Louisiana
 - in those people who are forced to move from their lands
 - in the United States at large

Need for Short Term and Efficient Solutions:

Research

- Conduct studies that reveal the decision making process among other restoration projects around the country that demonstrate how final, unified decisions are made with regard to implementing restoration
- Focus on those studies that lead to actual construction projects/ technologies

Relocation:

Action

- Provide public outreach and material to assist in the probable relocation of coastal citizens

Research

- Research other communities that are forced to relocate from their environments

Restoration of Land:

Actions

- Dredge and mine sediment from the Mississippi River and MGRO to restore shorelines
- Restore shell reefs/ other hard structures by stockpiling and recycling concrete (as opposed to importing limestone)
- Use guide levees to pump sand and sediment into the Myrtle Grove basin in order to recreate marsh
- Dredge the Atchafalaya / Use it as a sediment source
- Build barrier islands using abandoned oil wells and platforms.
- Use crushed glass as beach material
- Compost garden waste and use it to restore wetlands
- Recycle dredge material
- Divert 50% of the Mississippi River into the Breton Sound area. Although this would mean the shut down of the MGRO, 10,000 acres / year would be created. Further, sediments may flow into adjacent marsh area, rejuvenating those areas and creating a platform to protect against hurricane storm surges.
- Mine gravel and/ or sand from the MMS or OCS
- Build floodgates from sheet pilings

Research

- Determine the type of water needed to flow from Sabine River in order to maintain the marshes
- Vegetative studies on marsh plants that build elevation
- Development of better dredging technology
- Study restoration in Africa that uses dredging to create several hundreds of acres of wetlands.
- Need for updates on shoreline and bank erosions studies
- Evaluations that will eliminate any uncertainties regarding the conveyance of Mississippi River sediments for the restoration of Terrebonne Parish
- Studies showing the success and benefits of current hydrologic restoration

Shoreline Stabilization:

Action

- The use of Armorflex (flexible mat of concrete blocks connected by stainless steel cable), boudin bags, and/ or planting banks at a 15 degree angle and then putting in gravel or sand
- Use of artificial seaweeds that reduces wave action

Water Quality:

Action

- Move a freshwater diversion through a canal to St. John swamp and use it to flush out high salinity water

Research

- Look for outside sources of drinking water
- Enhance technologies that reduce fecal coli form pollution

Other:

- A new WVA (Wetland Valuation Assessment) plan (WVA is a quantitative, habitat-based assessment methodology developed for use in prioritizing project proposals submitted for funding under the Breaux-Johnston Act)
- Studies that promote environmental diversity (i.e. cypress swamps to salt marshes) in coastal areas, including how individual components complement each other

STUDIES COMPLETED OR UNDERWAY

University researchers and scientists also discussed current studies/ projects already established that addressed some of the concerns voiced by the coastal communities. These include:

- The use of GIS technologies to map areas of evacuation routes that get flooded during storms
- The Hurricane Center at LSU is conducting a study of the Southern Building Code as it could be applied to Louisiana and what changes could be needed with respect to the code
- Public opinion surveys in New Orleans to understand attitudes local citizens have towards evacuation. Specifically the surveys questioned whether citizens will evacuate, where they will go, and what they fear with respect to possible evacuation
- The use of CORES to provide accurate elevation measurements

* This summary was prepared by Sonia Ladha, Center for Hazards Assessment, Response and Technology (CHART), University of New Orleans by using Atlas TI ethnographic software.