A PLACE OF CONSTANT CHANGE
Mapping Community Resilience in Coastal Louisiana, 1950-2010
Resilience is often treated as a static event... But is it really?
Coastal Land Loss, 1932-2010
Historical Hurricanes, 1851-2006

Historical Hurricane Strikes in the Gulf of Mexico

Projection: Transverse Mercator
Central Meridian: 95°10’W
1st Std Parallel: 35°30’
2nd Std Parallel: 0°00’
Latitude of Origin: 29°30’
Why is Historical Resilience Important?

Without Understanding That Resilience is an Historical Process, Communities Cannot Fully...

- Anticipate Multi-Hazard Threats
- Respond to Hazards Events
- Recover from Disasters
- Reduce Vulnerability to Hazard Threats

Colten, Kates, and Laska (2008)
This research is part of an ongoing project examining the historical adaptation of communities to Louisiana’s Coastal Zone...

- **Ethnic Populations**
  - Persistence in Place
  - Arrival of Immigrants
  - Cultural Heritage and Traditions

- **Population Distribution and Change**
  - Urbanization and Rural Decline
  - Community Relocation

- **Economic Change**
  - Fisheries, Agriculture, Forestry, and Minerals

- **Adaptation and Loss of Resilient Practices**
  - Living on High Ground
  - Living Behind Levees
  - Changes in Housing Types
Factors that Determine a Community’s Inherent Resilience and Social Vulnerability...

- Demographics
- Social Variables
- Housing Conditions
- Economic Conditions
- Access and Communications
- Community Health and Well-Being
Population Density Patterns in Southeast Louisiana

African American

Native American

Asian

Hispanic

Population Density
- Total Population: 1 Dot = 1,000 People
- African American: 1 Dot = 500 People
- Asian: 1 Dot = 100 People
- Hispanic: 1 Dot = 100 People
- Native American: 1 Dot = 100 People

Data Source: U.S. Census Bureau
Total Population of Coastal Shoreline and Coastal Watershed Parishes Residing in Group Quarters (2010)

Population in Group Quarters
- Correctional Facilities
- Juvenile Detention Facilities
- Nursing Homes
- College Dormitories
- Military Barracks

Data Source: U.S. Census Bureau
Total Value of Fisheries and Aquaculture in Coastal Shoreline and Coastal Watershed Parishes (2010)

Freshwater Fisheries

Marine Fisheries

Aquaculture

Gross Value
- None
- Less than $1 Million
- $1 Million to $5 Million
- $5 Million to $10 Million
- $10 Million to $25 Million
- More than $25 Million

Data Source: Louisiana State University AgCenter
Both exogenous drivers and endogenous processes can lead to changes in the social and physical landscape.

- Extreme Weather Events
- Economic Conditions
- Coastal Land Loss
- Drought
- River Flooding
- Legal and Societal Changes
Two main categories of disturbance...

- **Exogenous Discrete Events or System Shocks**
  - The impact of a single shock on resilience could be measured in a single decade
  - It might take a generation to learn how a region changes as a result of repeated shocks

Pendall, Foster, and Cowell (2008)
Two main categories of disturbance...

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  - It might take a generation to learn how a region changes as a result of repeated shocks

- Endogenous Slow-moving Challenges or “Slow Burns”
  - More than a generation of observations might be necessary to understand the resilience of communities to slow burn challenges

Pendall, Foster, and Cowell (2008)
Land Area Change in Coastal Louisiana by Census Block

Net Land Change (1932-1956)
- Greater than 50% Loss
- 10% to 50% Loss
- Up to 10% Loss
- Up to 10% Gain
- 10% to 50% Gain
- Greater than 50% Gain

Data Source: Couvillon et al. 2011; U.S. Census Bureau
Land Area Change in Coastal Louisiana by Census Block

Net Land Change (1956-1973)
- Greater than 50% Loss
- 10% to 50% Loss
- Up to 10% Loss
- Up to 10% Gain
- 10% to 50% Gain
- Greater than 50% Gain

Data Source: Couvillion et al. 2011; U.S. Census Bureau
Land Area Change in Coastal Louisiana by Census Block

Net Land Change (1973-1990)
- Greater than 50% Loss
- 10% to 50% Loss
- Up to 10% Loss
- Up to 10% Gain
- 10% to 50% Gain
- Greater than 50% Gain

Data Source: Couvillion et al. 2011; U.S. Census Bureau
The degree to which a community is reliant upon Natural Resource Extraction is an important driver of change...
Pounds of Shrimp Landed in Coastal Parishes

Total Pounds Landed

- None
- Less than 1 Million
- 1 - 5 Million
- 5 - 10 Million
- 10 - 25 Million
- More than 25 Million

Data Source: U.S. Department of the Interior, Bureau of Commercial Fisheries; NOAA National Marine Fisheries Service
Pounds of Menhaden Landed in Coastal Parishes

Data Source: U.S. Department of the Interior, Bureau of Commercial Fisheries; NOAA National Marine Fisheries Service
Value of Fish and Shellfish Landed at Major Louisiana Ports

- More than $75 Million
- $50 Million to $75 Million
- $25 Million to $50 Million
- Less than $25 Million

Note: All values converted to 2010 dollars

Data Source: U.S. Department of the Interior, Bureau of Commercial Fisheries; NOAA, National Marine Fisheries Service
Value of Fish and Shellfish Landed at Major Louisiana Ports

1970
- More than $75 Million
- $50 Million to $75 Million
- $25 Million to $50 Million
- Less than $25 Million

Note: All values converted to 2010 dollars

Data Source: U.S. Department of the Interior, Bureau of Commercial Fisheries; NOAA, National Marine Fisheries Service
Value of Fish and Shellfish Landed at Major Louisiana Ports

1980
- More than $100 Million
- $50 Million to $100 Million
- $25 Million to $50 Million
- Less than $25 Million

Note: All values converted to 2010 dollars

Data Source: U.S. Department of the Interior, Bureau of Commercial Fisheries; NOAA, National Marine Fisheries Service
Value of Fish and Shellfish Landed at Major Louisiana Ports

1990

More than $100 Million
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Value of Fish and Shellfish Landed at Major Louisiana Ports

2010
- More than $75 Million
- $50 Million to $75 Million
- $25 Million to $50 Million
- Less than $25 Million

Note: All values converted to 2010 dollars

Data Source: U.S. Department of the Interior, Bureau of Commercial Fisheries; NOAA, National Marine Fisheries Service
Sugar Production as a Proportion of Total Acres of Farmland

Percent of Farmland

- Green: None
- Light Green: Less than 5%
- Yellow: 5.1% - 10.0%
- Orange: 10.1% - 25.0%
- Orange: 25.1% - 50.0%
- Red: More than 50%

Data Source: U.S. Department of Commerce, Bureau of the Census; U.S. Department of Agriculture, National Agricultural Statistics Service
Renewable Natural Resource Employment in Coastal Shoreline and Coastal Watershed Parishes

Population Employed in Agriculture, Forestry, and Fisheries
1950
Data Source: Louisiana Department of Agriculture and Forestry, Louisiana Forestry Commission
Renewable Natural Resource Employment in Coastal Shoreline and Coastal Watershed Parishes

Population Employed in Agriculture, Forestry, and Fisheries

Data Source: Louisiana Department of Agriculture and Forestry, Louisiana Forestry Commission
Renewable Natural Resource Employment in Coastal Shoreline and Coastal Watershed Parishes

Population Employed in Agriculture, Forestry, and Fisheries
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Data Source: Louisiana Department of Agriculture and Forestry, Louisiana Forestry Commission
Renewable Natural Resource Employment in Coastal Shoreline and Coastal Watershed Parishes

Population Employed in Agriculture, Forestry, and Fisheries
1980

Data Source: Louisiana Department of Agriculture and Forestry; Louisiana Forestry Commission
Renewable Natural Resource Employment in Coastal Shoreline and Coastal Watershed Parishes

Population Employed in Agriculture, Forestry, and Fisheries
2000

Data Source: Louisiana Department of Agriculture and Forestry, Louisiana Forestry Commission
Renewable Natural Resource Employment in Coastal Shoreline and Coastal Watershed Parishes

Population Employed in Agriculture, Forestry, and Fisheries 2010

Less than 5%  5.1% - 10.0%  10.1% - 15.0%  15.1% - 20.0%  20.1% - 25.0%  Greater than 25%

Data Source: Louisiana Department of Agriculture and Forestry, Louisiana Forestry Commission
Regional Clusters of Natural Resource Employment in Louisiana Communities

Natural Resource Employment Clusters and Outliers (2010)
- Green: Low Natural Resource Employment
- Yellow: Average Natural Resource Employment
- Orange: High Natural Resource Employment
- Red: Outlier Communities with High Natural Resource Employment

Data Source: U.S. Census Bureau
Factors that Determine the Degree to which a Community is in Recovery or Decline...

- Population Change
- Economic Conditions
- Housing Conditions
- Crime
- Health Impacts
Louisiana Families in Poverty in Coastal Shoreline and Coastal Watershed Parishes

Families in Poverty
1980
- 7.4% - 11.4%
- 11.5% - 13.9%
- 14.0% - 15.6%
- 15.7% - 18.2%
- 18.3% - 22.1%
- 22.2% - 28.2%

Data Source: U.S. Bureau of the Census; Minnesota Population Center
Demographic Vulnerability in Coastal Louisiana, 1950-2010
Louisiana Coastal Post Offices in the Twentieth Century

Louisiana Coastal Post Office Relocations

Mean Direction and Distance of Replacement Post Offices

Open Post Offices (2000)

Thank You!

Questions?