

Appendix C
Barrier Island Status Report

BARRIER ISLAND STATUS REPORT

Fiscal Year 2016 Annual Plan

In compliance with Act 297 of the 2006 Regular Legislative Session, the Coastal Protection and Restoration Authority (CPRA) provides this barrier island status report as part of the Annual Plan document, which will be submitted to each member of the Louisiana Legislature. The current Barrier Island Status report is available electronically at the CPRA website. Please visit www.coastal.LA.gov to download and review the full report. A summary of the report is provided below.

CONSTRUCTED PROJECTS

The coastlines of the modern Mississippi River delta plain are bordered by numerous barrier islands from Raccoon Island in the west to Hewes Point in the northern Chandeleur Islands (Figure 1). These barrier islands could be grouped to represent fragmented remnants of distal extremities of several major delta lobes and headlands: for the sake of convenience they have been grouped from west to east as the Teche Delta System, Lafourche Delta System, Modern Delta System, and the St. Bernard Delta System. The back-barrier lagoons are connected to the Gulf of Mexico by approximately 25 tidal inlets which separate these barrier islands from each other and allow the exchange of diurnal tides.

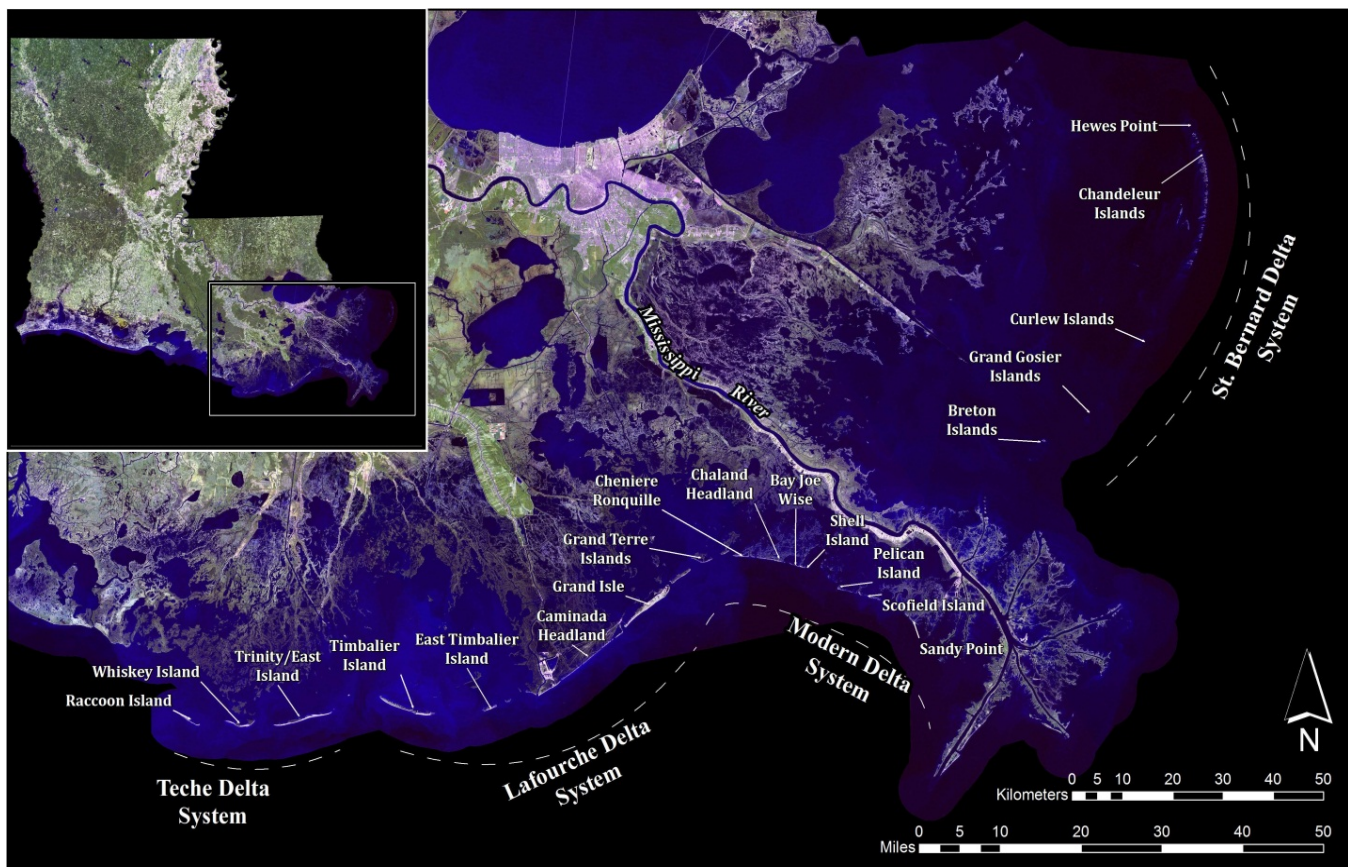


Figure 1. Location of barrier islands and Barrier Island Delta Systems in Louisiana

The restoration of Louisiana's barrier islands and barrier island systems has been a priority for a number of restoration programs over the past several decades, and more than 30 barrier island projects have been constructed to date (including 11 in the Teche Delta System, 11 in the Lafourche Delta System, 7 in the Modern Delta System, and 2 in the St. Bernard Delta System: see Table 1). Most of these constructed barrier island projects have been monitored, and their performance has been assessed to adaptively improve resilience and persistence of these projects and future barrier island projects.

With several major restoration projects in place, the post-restoration estimated Year of Disappearance (YOD) for several barrier island systems in Louisiana have been extended from years to decades. This increase in island longevity throughout the system is a direct benefit of the restoration projects. Further, with the increase in both frequency and intensity of major hurricanes over the past decade (and similar projections into the future), in the absence of the restoration and protection program, it is expected many of these islands would have disappeared much sooner than original projections.

MONITORING AND MAINTENANCE

Louisiana's barrier islands are part of a complex system controlled by many overlapping and interrelated processes. The four primary barrier island systems have been monitored and evaluated by recent efforts, such as the Barrier Island Comprehensive Monitoring (BICM) program, the monitoring of the Emergency Berms, and project specific efforts. These programs have provided information to the CPRA regarding the current condition and stability of Louisiana's barrier islands. To minimize the acceleration of island disintegration that commonly occurs after a breach, a barrier island Breach Management Program is currently being developed to address both breach prevention and response to breaches when they occur. This program will considerably improve the state's ability to repair storm-induced damages and extend the life-expectancy and integrity of Louisiana's barrier shorelines. Finally, to ensure the efficient and effective use of limited sediment resources in Louisiana, a number of programs/projects, including Borrow Area Monitoring and Maintenance (BAMM) and the Louisiana Sand Resources Database (LASARD), have been initiated under the overarching umbrella of the Louisiana Sediment Management Plan (LASMP). In order to monitor the impact of loading of sand to build beach and dune and restore the barrier islands/headlands, a CIAP-funded Caminada Moreau Subsidence Study was undertaken.

A final report entitled "Louisiana Barrier Island Comprehensive Monitoring (BICM) Program Summary Report: Data and Analyses 2006 through 2010: U.S. Geological Survey Open-File Report 2013-1083" was published as a USGS open file and can be accessed online at <http://cims.coastal.la.gov/DocLibrary/DocumentSearch.aspx?Root=0&Folder=0> (Kindinger et al 2013). The BICM program used both historical and newly acquired (2006 - 2010) data to assess and monitor changes in the aerial and subaqueous extent of islands, habitat types, sediment texture and geotechnical properties, environmental processes, and vegetation composition. BICM datasets included aerial still and video photography (multiple time series) for shoreline assessment, shoreline position, habitat mapping, and land loss from CIR aerial photography light detection and ranging (lidar) surveys for topographic elevations; single-beam and swath bathymetry; and sediment grab samples. The BICM program has begun a new data collection cycle in 2015 with plans to complete analysis and reporting in 2019.

BARRIER ISLAND PERFORMANCE ASSESSMENT

Louisiana's barrier shoreline is one of the fastest eroding shorelines in the world. Due to the geologic setting and the predicted changes in sea level during coming decades, these shoreline habitats and the services they provide are some of the most vulnerable features of our coastal landscape. Barrier island stability is affected by a number of factors, including settlement, overwash, offshore loss of sediment, longshore transport, and island breaching. Each of these factors is discussed in the context of recent high-frequency data collection.

Shoreline erosion data from BICM indicate that most of Louisiana's shoreline is eroding faster than ever before with some short-term (1996 – 2005) erosion rates more than double the historic (1890s – 2005) averages. However, recent information from the post-BICM studies elucidates the benefits of recent restoration projects. The full report includes a presentation of the overall findings from BICM and detailed discussion of recent shoreline change rates by geomorphologic delta complex. Additionally, the BICM program is currently updating shoreline change rates for the entire coast thru 2012, with plans to develop 2015 data when coast-wide photography is obtain this fall.

MINIMIZED DESIGN TEMPLATE

The minimized design template is defined as a design template with minimal barrier island dimensions that restores the barrier shoreline's geomorphic form and ecologic function and retains this form and function after being subjected to the design storm events.

A minimized design template was previously developed for the Terrebonne Basin barrier shorelines extending from East Timbalier Island to Raccoon Island as part of the Louisiana Coastal Area program for the Terrebonne Basin Barrier Shoreline Restoration Project (TBBSR). Efforts related to modeling for 2017 Master Plan project evaluations have led to development of a minimal design template for the coast. Future efforts related to regional project evaluation and prioritizations can utilize this minimal design, allowing valid comparisons and prioritization areas along the coast using an un-biased approach. Table 7 in the full report presents the dimensions of the minimized restoration templates.

FUTURE PLANS

Future plans for Louisiana's barrier islands include additional projects, continuation of system wide barrier island monitoring via BICM, continued improvements in borrow area management, management of relevant sediment, geophysical, and ecological data, and improved overall understanding of sediment budgets and sediment management requirements to support the needs of the Coastal Master Plans barrier shoreline projects and better prioritize Louisiana's barrier shoreline efforts.

Table 1. List of constructed and pending barrier island projects in Louisiana

Barrier Shoreline Restoration Projects	Funding Program	Construction Date
Teche Barrier System		
<i>Constructed Projects</i>		
Raccoon Island Repair (TE-0106)	Various	1994
Barrier Island Sand Retention (TE-0004b)	FEMA	1995
Raccoon Island Breakwaters (TE-0029)	CWPPRA	1997
Raccoon Island Shoreline Protection/ Marsh Creation (TE-0048)	CWPPRA	2007, 2013
Whiskey Island Restoration (TE-0027)	CWPPRA	1999
Whiskey Island Back Barrier Marsh Creation (TE-0050)	CWPPRA	2009
Enhancement of Barrier Island and Salt Marsh Vegetation DEMO (TE-0053)	CWPPRA	2012
Isles Dernieres Restoration Trinity Island (TE-0024)	CWPPRA	1999
New Cut Dune and Marsh Restoration (TE-0037)	CWPPRA	2007
Isles Dernieres Restoration East Island (TE-0020)	CWPPRA	1999
BIMP 2009 Sand Fencing (LA-0246)	STATE	2009
Wine Island Revegetation Project	FEMA	1995
<i>Funded for Construction</i>		
NRDA Caillou Lake Headlands (TE-0100) (under construction) (includes Ship Shoal: Whiskey West Flank Restoration (TE-0047))	NRDA	TBD
<i>Future Projects</i>		
None		
Barrier Shoreline Restoration Projects		
Lafourche Barrier System		
<i>Constructed Projects</i>		
Barrier Island Sand Retention (TE-0004b)	FEMA	1995
Timbalier Island Planting Demonstration (TE-18)	CWPPRA	1996
Timbalier Island Dune and Marsh Creation (TE-40)	CWPPRA	2004
BIMP 2009 Sand Fencing (LA-0246)	STATE	2009
East Timbalier Island Sediment Restoration, Phase 1 (TE-25)	CWPPRA	2000
East Timbalier Island Sediment Restoration, Phase 2 (TE-30)	CWPPRA	2000
West Belle Pass Barrier Headland Restoration (TE-52)	CWPPRA	2012
Caminada Headland Beach and Dune Restoration (BA-45)	CIAP/ STATE	2015
Grand Isle Bay Side Breakwaters (BA-0187)	STATE	
Fifi Island Restoration (BA-0155)	CIAP	2015
Fifi Island Breakwater (BA-0168)	CIAP	2015
Grand Isle and Vicinity Hurricane Protection	WRDA	2010
Vegetative Planting of a Dredged Material Disposal Site on Grand Terre (BA-28)	CWPPRA	2001
Restoration on West Grand Terre Island at Fort Livingston (BA-0186)	NOAA	2003
East Grand Terre Island Restoration (BA-30)	CIAP	2010
<i>Funded for Construction</i>		
NRDA Caminada Headland Beach and Dune Restoration, increment 2 (BA-143) (under construction)	CIAP/ Surplus	TBD
<i>Future Projects</i>		
Barataria Basin Barrier Shoreline (BBBS) Restoration (BA-10) Eastern portion of Caminada	LCA	TBD
East Timbalier Island (TE-0118) (in design)	NFWF	TBD
West Grand Terre Beach Nourishment and Stabilization Project (in design)	RESTORE	TBD
Caminada Back Barrier Marsh Creation (BA-0171) (in design)	CWPPRA	TBD
Barrier Shoreline Restoration Projects		
Modern Barrier System		
<i>Constructed Projects</i>		
Pass La Mer to Chalant Pass (BA-38, part 1) also known as "Chalant Headland"	CWPPRA	2007
BIMP 2009 Sand Fencing (LA-0246)	STATE	2009
Pass Chalant to Grand Bayou Pass Barrier Shoreline Restoration (BA-35) also known as "Bay Joe Wise"	CWPPRA	2009
Barataria Barrier Island Complex Project: Pelican Island and Pass (BA-38, part 2)	CWPPRA	2012
Emergency Berms W8, W9, W10	Berm Funds	2010-2011
Riverine Sand Mining/Scotfield Island Restoration (BA-40)	CWPPRA/ Berm Funds	2013
Shell Island Restoration East Berm (BA-110)	Berm Funds	2013
<i>Funded for Construction</i>		
Chenier Ronquille Barrier Island Restoration (BA-76) (under construction)	NRDA	TBD
Shell Island Restoration West NRDA (BA-111) (under construction)	NRDA	TBD
<i>Future Projects</i>		
BBBS Restoration (BA-10)	LCA	TBD
Barrier Shoreline Restoration Projects		
St. Bernard Delta System		
<i>Constructed Projects</i>		
Chandeleur Islands Marsh Restoration (PO-27)	CWPPRA	2001