

NOAA PROJECTS
RESEARCH AND DATA NEEDS FOR THE PONTCHARTRAIN BASIN
JULY 2008

(Note: The list reflects apparent deficiencies in data and ongoing research addressing the Pontchartrain Basin. It is not meant to include all the data and research which may be ongoing and which may be just as significant as those listed.)

1. **Rangia clams and other shellfish in St. Bernard and Plaquemines Parishes**– *Rangia* clams (*Rangia cuneata*) are the dominant species and effective indicator species in Lake Pontchartrain. *Rangia* clams or other bivalves are understudied in St. Bernard and Plaquemines Parishes. The extent, habitat range and predation of bivalves and their effect on water quality in the Lower Sub-basin portion of the Pontchartrain Basin may play an important role in the estuarine ecology and needs additional study.
2. **Natural Oyster Reefs** - Ecology and structure of natural, historic oyster (*Crassostrea virginica*) reefs in St. Bernard Parish should be studied for their physical and biological roles in the marsh, such as in the historic reefs in the Biloxi marsh. Also to be investigated is the potential use of oyster reefs for restoration and preservation of the coastal marshes, such as barrier reefs.
3. **MRGO Habitat**- The ecologic condition and water quality of the Mississippi River Gulf Outlet (MRGO) is virtually unknown and yet the channel influences a vast area of lakes and marsh in the Pontchartrain Basin. Basic biological and water quality characterization should be undertaken to assess MRGO habitat value and its impact on the surrounding estuary including commercial species such as shrimp, crab and oyster. The proposed plug closures should be considered in designing a program for characterization before, during and after closures.
4. **Non-commercial species in St. Bernard and Plaquemines Parishes**- Study of the ecology and interaction of non-commercial and non-game species, such as birds and fish, in St. Bernard and Plaquemines Parishes should be undertaken.
5. **Blue crab (*Callinectes sapidus*) in Lake Pontchartrain**– The impact of anoxia or hypoxia on blue crab ecology and fishery in Lake Pontchartrain has not been examined although it is likely to be occurring annually. Study should include the impact on trophic dynamics and on crab harvest.
6. **West Indian Manatee (*Trichechus manatus*)** - Migratory patterns and activity of manatee into the Pontchartrain Basin have been poorly studied for these endangered species. In July of 2005, 200 to 300 manatees were observed within Lake Pontchartrain indicating much greater significance of the Pontchartrain basin habitats to this species and its potential recovery (Pers. Comm., Dr. Steve Miller with Audubon's Aquarium of the Americas; see also, <http://www.aoml.noaa.gov/general/lib/pasca.html>). The

dependence of manatee on SAV occurrence and the impact of manatee on SAV should be investigated as well as any other critical habitat interactions.

7. **Poorly Planned Growth** - While we generally know that poorly planned growth negatively affects the Pontchartrain Basin's water quality and habitats, there is a need to quantify these impacts. Examples include: how does the percent of impervious cover (sidewalks, roads, roofs, etc.) from new development impact water quality due to increased runoff loads?; how much riparian habitat is being impacted by development?; what kinds of wetlands are being developed, are they in the coastal zone? This research will provide decision-makers with the information to back up the need for Smart Growth and Sustainable Development policies and regulations.
8. **Sand and Gravel Mine Impact** - Hydrologic, ecologic, water quality and geomorphic studies need to be conducted to understand the long-term alterations to streams and rivers in the Upland Sub-basin due to sand and gravel mining operations.
9. **Subsidence and Relative Sea-level Rise** – Precise measurement of actual land subsidence and the net rate of relative sea-level rise is needed to accurately forecast future conditions with or without restoration projects. Understanding of the underlying processes is equally important and needs further research.
10. **Delta Management Study**- Alternatives to better manage deep-draft navigation on the Mississippi River and the river's natural sediment and water resources need to be evaluated. Reduction in sediment load and the continued deposition of sediment at the shelf edge warrant consideration of better management of the river's sediment resource. Alternatives should include at-least selective closure of passes on the Mississippi River.
11. **Leaky Levees** are proposed in several areas of the coast and are intended to provide surge reduction in storm conditions and some measure of estuarine hydrologic function during fair weather conditions. These leaky levees will create new major footprints across coastal habitats and will have effects on areas on the flood and protected side of the levee. Research needs to be conducted on the ecological impacts of these levees including the impact of the construction footprint, access canals, hydrologic alterations, levee maintenance impacts, alterations in migratory species, borrow sites, subsidence, tidal prism, productivity, sediment transport, shifts in wetland habitat types etc.
12. **Flood gates** on major tidal passes are proposed in several areas of the coast and are intended to provide surge reduction in storm conditions and some measure of estuarine hydrologic function during fair weather conditions. These gates will have effects on areas on the flood and protected side of the gate. Research needs to be conducted on the ecological impacts of these gates including the impact of the construction footprint, hydrologic alterations, levee maintenance impacts, alterations

- in migratory species, tidal prism, productivity, sediment transport, shifts in wetland habitat types etc.
13. **Design of Rebuilding of Bayou la Loutre ridge** - Restoration of Bayou la Loutre ridge is a significant challenge and must consider: source of sediment, containment during construction, appropriate elevations, settlement, planting, plant succession management, control of invasive plant species, dimensions, etc. Site specific engineering and ecological planning for Bayou la Loutre ridge is necessary.
 14. **Compilation of Hurricane Katrina impacts on the Pontchartrain Basin** (compilation)- Many disparate efforts by state, federal and universities have investigated the impact of Hurricanes Katrina and Rita on the Pontchartrain Basin, including at least habitat and water quality. These studies need to be compiled into a single report so that a complete picture can be defined of the short term impacts and the expected long term effects on the Basin.
 15. **Inventory Fresh water mussels and Assess restoration requirements for freshwater mussels in north shore rivers**- Fresh water mussels have been severely impacted on the north shore. Basic research on the methods and management necessary for recovery is needed.
 16. **Evaluate potential new conservation areas for longleaf pine habitat** – The CHMP suggest creation of new conservation areas for re-establishment of longleaf pine savannah habitats. Current land-use and physical land conditions should be screened to identify potential areas for conservation and re-establishment of this habitat. Use of controlled burns needs to be considered.
 17. **Education program for Longleaf pine** habitats – The general public on the north shore understands very little of the historic significance and ecologic value of longleaf pine habitat. Education is necessary to build support for its protection and restoration.
 18. **Introduction of Exogenous Species into the Pontchartrain Basin as a Consequence of Freshwater Diversion Projects** There is a real potential for the introduction of exogenous species into the Lake Pontchartrain Basin when major freshwater diversion projects associated with the Mississippi River become a reality. There is a need to identify the presence of exogenous species in the river and to determine which potential biological control agents may be employed to control the species once they enter the Pontchartrain Basin. Both field studies and laboratory investigations should be conducted.
 19. **Environmental Threats in the area of Vietnamese Communities in New Orleans East** Pre and Post Katrina there have been anecdotal reports of possible increased health risks to Vietnamese communities in Eastern Orleans, possibly due to nearby landfills, poor drainage, or the common practice of home gardens in this urbanized area. Initial assessment should focus on direct detection of air, water or ground contamination exceeding EPA standards.

20. **Assessment of Anoxia in Chandeleur Sound** – In 2008, anoxia was documented in northern Chandeleur Sound. Research should focus on the geographic and temporal extent, which can lead to an understanding of the drivers for anoxia in Breton Sound and the biological impacts of anoxia in the sound.

