Statewide Summary for Mississippi

By Larry Handley[1], Kathryn Spear[1], Ali Leggett[2], and Cindy Thatcher[1]

Background

The Mississippi coastline is 113 linear kilometers (70 miles) long and its estuaries cover approximately 594 km (369 mi; Figure 1) (Handley and others, 2007). It has a man-made sand beach 43.5 km (27 mi) long and 595.5 km (370 mi) of shoreline (Klein and others, b., 1998). The Mississippi Sound extends across the coastal waters of the State and encompasses 175,412 ha (433,443 acres). It is bordered by the Mississippi coast; Mobile Bay, Ala.; the Gulf Islands National Seashore barrier islands; and Lake Borgne, La. The watersheds and drainages feeding into Mississippi Sound, excluding tidal exchange from the Gulf of Mexico, include Lake Borgne, Pearl River, Jourdan River, Wolf River, Biloxi River, Tchoutacabouffa River, Pascagoula River, and Mobile Bay. The Pascagoula River is one of the last undammed rivers in the continental U.S. and the only undammed river flowing into the Gulf of Mexico. Freshwater inflow into Mississippi Sound, excluding that from Mobile Bay, averages 882.4 m^3 per second (30,806 ft^3 per second).

The Mississippi coastal zone contains approximately one-third of the State's 120 ecological communities (Klein and others, a., 1998). Regional land use includes silviculture, agriculture, and urban development, including several coastal casinos.

[1] U.S. Geological Survey National Wetlands Research Center, 700 Cajundome Blvd., Lafayette, LA 70506

[2] Mississippi Department of Marine Resources, Coastal Preserves Bureau, 1141 Bayview Ave., Biloxi, MS 39530

Commercial shipping, shipbuilding, phosphate rock refinement, and electric power generation companies include some of the industrial complexes found along the Mississippi coast. The three counties found along the Mississippi coast, Hancock, Harrison, and Jackson Counties, had a total population of 370,702 as of 2010, constituting 12.5 percent of the State's population (U.S. Census Bureau, 2010). These counties cover over 160.9 km (100 mi) of coastline and are one of the fastest growing regions in the state (Klein and others, b., 1998).

The casino industry, military installations, trade, and manufacturing provide most jobs in coastal Mississippi. Two major deep-water ports exist in coastal Mississippi. Recreation and tourism have a significant impact on Mississippi's economy as well, annually attracting approximately 1.8 million visitors to the coast and generating approximately $3.5 billion statewide, about one-third of which comes from coastal tourism. Ninety percent of the coastal tourism expenditures come from recreational boating and related industries. Marine recreational fishing generates more than $50 million annually, with approximately 280,000 participants, more than a million recreational fishing expeditions, and over 40,000 resident saltwater sportfishing licenses sold each year. More than one-fourth of the anglers fishing in coastal Mississippi are tourists. Landings of shrimp, crabs, oysters, and finfish equal approximately 99.8 million kg (220 million lbs) of seafood annually. The entire seafood industry in coastal Mississippi, including processing of seafood caught in other Gulf States, generates approximately $450 million per year.

Statewide Status

The most recent status data for Mississippi was collected in 2007 (Figure 2). There were 21,554 hectares (53,261 acres) of estuarine emergent wetlands, 5,116 hectares (12,643 acres) of palustrine emergent wetlands, and a total of 26,816 hectares (66,264 acres) of emergent wetlands in coastal Mississippi in 2007. Historical trend data for coastal Mississippi is examined in the Mississippi Sound vignette.

Causes of Change

Habitat loss and pollution caused by industrial and residential development, including shipbuilding, port, and harbor facility expansion, have resulted in emergent wetland loss and degradation. Wetlands cover 30 to 50 percent of Mississippi's coastal counties, and an estimated 4,046.9 hectares (10,000 acres) of wetlands were lost to development and canal construction before the Mississippi Coastal Wetlands Protection Law was passed in 1973 (Klein and others, b., 1998). Urban development along the coast, especially related to the casino industry, and an emphasis on port development and the plastics and chemicals industries have resulted in land-use changes that have affected coastal habitats (Handley and others, 2007). The maintenance and deepening of the Pascagoula and Gulfport ship channels have altered hydrological patterns of sediment transport and surface circulation, and the Bonnet Carre Spillway at times contributes massive amounts of fresh water to Mississippi Sound, altering salinity. Decreased water quality and increased turbidity have contributed to seagrass loss. Dredging for channels, ports, and marinas and the disposal of dredge material has contributed to the loss of wetlands on the Mississippi coast (Mississippi Department of Marine Resources, 1988). Many wetland habitats have been filled to create new land.

Coastal erosion and sand movement have also contributed to habitat loss in areas of the Mississippi coast.

Overview of Emergent Wetland Restoration Efforts

The primary state and federal agencies which hold regulatory authority over the protection of emergent wetland habitat in coastal Mississippi include the Mississippi Department of Marine Resources (MDMR), the Mississippi Department of Environmental Quality (MDEQ), the US Fish and Wildlife Service (USFWS), the Mississippi Secretary of State's Office (SOS), NOAA National Marine Fisheries Service (NMFS), and the US Army Corps of Engineers (USACE). These agencies, in addition to the Grand Bay National Estuarine Research Reserve (GBNERR), The Nature Conservancy (TNC), the Land Trust for the Mississippi Coastal Plain (LTMCP), and numerous universities and non-nonprofit organizations, are the primary agencies tasked with monitoring and management of the State's emergent wetlands.

The MDMR Office of Coastal Ecology is tasked with the protection of publicly and privately owned wetlands within the Mississippi Coastal Zone. The Bureau of Wetlands Permitting holds regulatory authority for impacts associated with residential and commercial development, channel maintenance dredging, and associated impacts to wetland habitats. Under a memorandum of agreement with the Mobile and Vicksburg districts of the USACE, applications for wetland activities within the coastal zone are submitted to MDMR, in accordance with the federal Coastal Zone Management Act and the state Coastal Wetlands Protection Law.

Overview of Monitoring, Restoration, and Enhancement Opportunities

Restoration and enhancement opportunities hinge on the ability of state, federal, and non-profit organizations to acquire emergent wetland acreage and/or permits to conduct these activities. Approximately 18,616 hectares (46,000 acres) of emergent marsh and associated buffer are held by the state and federal systems for permanent conservation. In partnership with the Mississippi Secretary of State's Office and The Nature Conservancy, the MDMR's Coastal Preserves Program actively seeks properties within its acquisition boundary. As resources become available, these acquired lands are restored to their natural condition and held in permanent conservation. The Land Trust for the Mississippi Coastal Plain also plays a significant role in conservation along the Gulf Coast and is often the recipient of donated lands and conservation easements. These lands are also maintained as conservation and public use areas.

Restoration and enhancement activities are limited by ownership and funding availability, although guidance for restoration and enhancement is available through the state and federal regulatory agencies mentioned above. A proactive approach is used by these agencies to address anticipated conservation issues. Historical aerial images are used to monitor marsh loss and this information is used to prioritize areas for restoration efforts by the state. The Mississippi Coastal Preserves Program has developed the Beneficial Use of Dredged Materials Program with the goal of using dredged materials to restore lost emergent wetlands. The USACE released guidance for incorporating the direct and indirect physical effects of projected future sea level change in managing, planning, engineering, designing, constructing, operating, and maintaining USACE projects (USACE, 2009). The Grand Bay Estuarine Research Reserve has established programs to monitor the impacts of anticipated climate change and sea-level rise (SLR).

Specific monitoring programs are outlined in the Mississippi Sound vignette portion of this document.

References Cited

Handley, L., Altsman, D., and DeMay, R., eds., 2007, Seagrass Status and Trends in the Northern Gulf of Mexico: 1940-2002: U.S. Geological Survey Scientific Investigations Report 2006-5287 and U.S. Environmental Protection Agency 855-R-04-003, 267 p.

Klein, L.A., Landry, M., and Seward, J.E., eds., a., 1998, Marine Resources and History of the Mississippi Gulf Coast: Volume Two: Mississippi's Coastal Environment, Mississippi Department of Marine Resources, 502 p.

Klein, L.A., Landry, M., and Seward, J.E., eds., b., 1998, Marine Resources and History of the Mississippi Gulf Coast: Volume Three: Mississippi's Marine Industry, Economics, and Laws, Mississippi Department of Marine Resources, 320 p.

Mississippi Department of Marine Resources, 1988, Mississippi Coastal Program, U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management.

U.S. Army Corps of Engineers, 2009, Water Resource Policies and Authorities; Incorporating Sea-Level Change Considerations in Civil Works Programs, Circular No. 1165-2-211.

U.S. Census Bureau, 2010, State and County QuickFacts, Mississippi:

http://quickfacts.census.gov/qfd/states/28000.html, accessed January 23, 2012.

Figure 1. Mississippi state map.

Figure 2. Status of Mississippi emergent wetlands, 2007.