LOWER MISSISSIPPI RIVER VALLEY - INTEGRATED SCIENCE FOR SUPPORT OF ADAPTIVE MANAGEMENT

Aquatic Resource Research - Lower Mississippi River Leveed Floodplain Work Unit

Overview: The Lower Mississippi River begins at the confluence of the Mississippi and Ohio Rivers in Cairo, Illinois and flows 954 miles to the Gulf of Mexico. Its watershed is comprised of 6 hydrologic units, which drain 41% of the continental United States. Prior to the Flood Control Act of 1928 the Lower Mississippi Alluvial Valley was a dynamic ecosystem. Historically, the river wandered through a 15-25 mile wide meander belt within a 30-125 mile wide floodplain continually creating and abandoning primary and secondary channels. The meander belt was interspersed with abandoned channels, meander scars, and large expanses of forested wetlands. These wetlands provided an array of diverse aquatic habitat types that were frequently reconnected to the river by flooding and more than 150 species of fish inhabited the ecosystem. The Lower Mississippi River and its tributaries encompass the largest floodplain fishery and the largest bottomland hardwood forest in North America. At its mouth in the Gulf of Mexico, the Mississippi River supports 4.5 million acres of coastal marsh. The coastal areas (prairies and marshes) are an ecological extension of the forested alluvial valley and together form a wetland complex of unrivaled scope in the Temperate Zone of the Western Hemisphere.

Civil works projects implemented on the Mississippi River to promote flood control and navigation have shortened the river channel by removing 152 miles of bends. Rock dikes are used to direct flow from secondary channels into the navigation channel. The Lower Mississippi River currently has a surface area of 0.6 million acres and has been restricted to an active floodplain of approximately 2.6 million acres, which constitutes 10% of its historical floodplain. Extensive habitat losses have resulted in declining populations of recreational and commercial fisheries in the river. In addition, high levels of undesirable nutrients originating primarily from agricultural and urban nonpoint source pollution have adversely affected water quality in the river.

The Nation has become increasingly aware and supportive of the importance of environmental quality, biological diversity, healthy fish and wildlife resources, and the riverine ecosystems that support them. As extrachannel aquatic habitats are lost to sedimentation and leveed floodplain habitats are reduced in size and converted to alternative uses, the ecological health of the Lower Mississippi River, as well as the Gulf of Mexico, is being damaged. Increasing demands for public recreational resources and recognition of the ecological values of river systems have prompted a renewed awareness of the natural resource values of the Lower Mississippi River. Because limited information on the status of environmental resources in the leveed floodplain is available, additional research is required to develop long-term plans for rehabilitation of aquatic habitat.

Work Unit 1: Effects of Dike Fields on Secondary Channels

Channel improvement works by the Corps of Engineers to maintain the authorized navigation channel in the Lower Mississippi River are designed in part to reduce river flow in approximately 85 secondary channels. One of the primary structural techniques utilized to accomplish this objective is the placement of stone dikes at the head of secondary channels to divert flow into the