NOAA - Great Lakes Commission AOC Habitat Restoration Partnership

Muskegon Lake AOC Habitat Restoration

The Bear Creek Restoration Project restored fish passage and removed sediments that contain harmful levels of phosphorus, restoring natural water flow and native fish and wildlife habitat.

Project Highlights

- Reconnected 36.4 acres of coastal wetlands to improve water flow and fish passage to Muskegon Lake
- Removed approximately 120,000 cubic yards of harmful sediment from wetlands along Bear Creek
- Restored 2,015 feet of stream bank and 27.2 acres of adjacent wetlands
- Significantly improved habitat for native fish, turtles, frogs, songbirds, mammals, migrating birds and waterfowl
- Completed restoration required to remove Muskegon Lake from the list of Great Lakes Areas of Concern (AOCs) or "toxic hotspots"
- Funding was provided by the Great Lakes Restoration Initiative (GLRI) and U.S. Environmental Protection Agency (EPA) through the National Oceanic and Atmospheric Administration (NOAA) and the Great Lakes Commission (GLC) Regional Habitat Restoration Partnership
- The West Michigan Shoreline Regional Development Commission (WMSRDC) implemented this project. The Grand Valley State University Annis Water Resources Institute (GVSU AWRI) is monitoring the impact of restoration activities on the aquatic ecosystem

Environmental Benefits

Reconnected natural floodplain wetlands to Muskegon Lake
Improved fish and wildlife habitat

Economic Benefits

Enhanced the fishery of Muskegon Lake, which is conservatively estimated at $1.3 million annually

Community Benefits

Muskegon County acquired the property for the purpose of fish and wildlife habitat restoration and water quality improvements

Background of the AOC

Within the lower Muskegon River watershed lies the Muskegon Lake AOC, a drowned river mouth lake that flows into Lake Michigan at a shoreline that is part of the world's largest assemblage of freshwater sand dunes. Muskegon Lake was designated an AOC in 1985 due to ecological problems caused by industrial discharges, shoreline alterations, and the filling of open water and coastal wetlands. Since 1992, community groups, governmental and nongovernmental organizations have worked collaboratively to remediate contaminated sediments and to restore and protect fish and wildlife species and their habitats. Historic sawmill debris, foundry sand, and slag filled 798 acres of open water and emergent wetlands in the AOC. Nearly 25% of Muskegon Lake's open water and shallow wetlands were filled, and approximately 74% of the shoreline was hardened with wood pilings, sheet metal and concrete. This resulted in the loss and degradation of shallow water ecosystems, isolation and fragmentation of coastal wetlands, and the associated degradation of water quality and fish and wildlife populations. With completion of this and several other related projects the U.S. EPA now expects to remove Muskegon Lake from the list of Great Lakes AOCs as early as 2020.

History of the Creek

One of the barriers to delisting Muskegon Lake as an AOC is eutrophication (an un-naturally high level of phosphorus) in Bear Lake. High phosphorus levels in Bear Lake are a result of fertilizers used at an earlier celery farm located on two ponds along Bear Creek near where it enters Bear Lake. The installation of earthen berms between the celery farm ponds and Bear Creek also prevented water and fish passage between the wetlands, Bear Lake and Muskegon Lake.

> ***"This project will be instrumental to the overall health of Muskegon Lake by removing harmful sediments and creating the conditions that native fish and wildlife need to thrive in these waterways."***
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> **-Kathy Evans**
> **WMSRDC Project Manager**

Project Progress

In 2013, funding from the NOAA Coastal and Estuarine Land Conservation Program allowed Muskegon County to purchase the former farm ponds along Bear Creek in anticipation of future restoration. The Muskegon Lake Watershed Partnership and several private property owners coordinated with project partners to support restoration of the site. Pre-restoration monitoring was completed to assess surface and groundwater quality and fish and wildlife within the project area. During the spring of 2016, native fish and wildlife were relocated and pond water was pumped to the Muskegon County Wastewater Treatment System. Phosphorous laden sediment was removed from the pond bottom before the creek was re-joined to its natural floodplain by removing an artificial earthen dike. Native vegetation was planted as part of the restoration process. Major construction was completed during the summer and fall of 2016 with post-restoration monitoring continuing into 2019.

Funding and Partners

Approximately $7.1 million was spent on this project through the GLRI, a regional program that is supporting implementation of a comprehensive restoration plan for the Great Lakes, including cleaning up the AOCs. The project funding came from NOAA through a partnership with the GLC. The project was managed locally by the West Michigan Shoreline Regional Development Commission (WMSRDC) and ecological monitoring is being performed by GVSU AWRI.

For More Information Contact:

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WMSRDC
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