A Call to Action
Crystal Clear

National Park Service
U.S. Department of the Interior

Great Lakes Parks

Restoring Coastal and Fluvial Processes at Five Great Lakes Parks

Sandscape and Lake Superior shoreline at Apostle Island National Lakeshore (Wisconsin).
NPS/JAY GLASE

Grand Portage National Monument, Isle Royale National Park, and Apostle Islands, Pictured Rocks, and Sleeping Bear Dunes National Lakeshores are affected by changes in sediment transport (coastal and fluvial processes) along the shores of the Great Lakes. Sleeping Bear Dunes includes high perched cliffs along the shoreline of Lake Michigan while the other park units preserve beaches, cliffs, and habitat within and along the shores of Lake Superior. These landscapes are directly affected by changes in sediment deposited (accretion) or removed (erosion) from shoreline features. These dynamic processes can be impacted by manipulation of the shoreline, and park managers need to understand how these processes work in order to preserve and restore the remarkable resources for which these protected areas were established.

Background

Coastal and fluvial (movement of sand and sediment) processes and habitat have been impacted at several Great Lakes parks due to modifications from structures such as docks, bridges, and culverts or from activities such as sand dredging. Additionally, certain features such as sandspits have been affected by changes in vegetation from visitor use or from stabilization structures that change shoreline and sediment movement dynamics.

In 2010, as part of the Great Lakes Restoration Initiative, several restoration projects were initiated at five parks on Lake Superior and Lake Michigan to restore waterway connectivity, stream hydrology, and nearshore sediment routing, as well as bank, floodplain, and sandscape restoration. Projects include riparian and sandspit revegetation, replacement of undersized culverts, and removal or replacement of structures such as docks or rock revetments. These projects will allow for more natural sediment migration to restore and maintain habitats.

Status

At Apostle Islands National Lakeshore, sandspit restoration and dock replacement is returning the natural pattern of sand movement and sand retention to nearshore and riparian areas. At Isle Royale National Park, dock and breakwall modifications will restore nearshore sediment movement leading to reductions in both unnatural deposition and shoreline erosion. Fluvial geomorphology in Grand Portage Creek at Grand Portage National Monument is being restored via streambank and riparian habitat projects that will help maintain normal channel flow and floodplain dynamics. These projects benefit nearshore, instream, and terrestrial habitat and enhance visitor experiences at popular park destinations.

Two projects at Pictured Rocks National Lakeshore will repair impacts from decades-old structures that dammed a Lake Superior tributary and eliminated sand deposition at Sand Point near the park headquarters. The upper watershed of Lowney Creek has been separated from Lake Superior since the early 20th century due to several small impoundments. Removal of these creates a reconnection of this stream to Lake Superior and could potentially allow for the movement of brook trout produced in upstream areas into Lake Superior. Also at Pictured Rocks, modification of a rock revetment placed in the 1980s allows Sand Point to form and reshape itself as sand from Lake Superior will once again move along the shoreline in a more natural pattern.

Projects at Sleeping Bear Dunes will restore waterway connectivity between Little Glen Lake and the Day Mill Pond, creating access to spawning and rearing habitat for native fish. Near the terminus of the Platte River at Sleeping Bear Dunes, removal of decades of sand dredge deposits will allow for the return of nearshore and beach/dune dynamics, returning the lower river to a natural course as it finds its way to Lake Michigan. In addition to a more natural landscape at a popular park destination, this project also benefits the federally threatened piping plover through dune and sandscape restoration.

Surveying Grand Portage Creek for streambank restoration in Grand Portage National Monument (Minnesota).
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More Information

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