Lake Superior Coastal Wetland and Stream Monitoring Project: 2008-2009

Bark Bay Watershed
Project Brief

December 2009

Project Contacts:
Sue O’Halloran
UW-Extension
Amy Eliot
Kurt Schmude
Paul Hlina
UW-Superior
Lake Superior
Research Institute

PO Box 2000
Superior, WI
54880

---

Project Description
Lake Superior coastal wetlands and streams provide vital fish and wildlife habitat and strongly influence the Lake’s ecosystem processes, yet there are significant gaps in what we know about their ecological condition. The goal of The Lake Superior Coastal Wetland and Stream Monitoring Project was to utilize Great Lakes Coastal Wetland Consortium (GLCWC) community indicators and collaborate with professionals and volunteers to assess the condition of five Wisconsin Lake Superior coastal wetlands and their watersheds. Plant and invertebrate communities were assessed through calculation of biotic indices and water quality parameters were monitored. Open land cover acreage was calculated for each subwatershed. Bark Bay and the Flag River Estuary were sampled in 2009. Allouez Bay, Lost Creek Bog and the Sioux River Estuary were sampled in 2008 and again in 2009.

Watershed Description
The Bark Bay watershed is 10,381 acres in size. Open land cover was calculated for the watershed and for each of the three subwatersheds identified for this estuary. Open land calculations included agricultural, pasture, urban yards, impervious surfaces and 0-16 year old stands of trees. A total of 2,090 acres or 20.2% of the watershed was classified as open land. Subwatershed open land amounts ranged from 13.4 to 22.2%. Research shows water quality impairments begin to occur when land cover in a watershed has been converted to more than 60% open land.¹

Estuary Description
Bark Bay is a complex of coastal barrier spit, lagoon, springs, coastal fen and coastal bog wetlands positioned between two rocky headlands³. Wetlands are floristically diverse, in excellent condition, and support many rare species of plants, birds and butterflies³. Breeding birds include the bald eagle, merlin, northern harrier, yellow rail, sandhill crane, Brewer’s blackbird and American bittern³. Substantial numbers of migrating shorebirds have also been noted³. The Great Lakes Coastal Wetland Consortium² (GLCWC) classifies Bark Bay as a barrier-protected beach lagoon (BL). BL wetlands form behind a sand barrier where mixing with lake water is reduced; coastal processes in the wetland are excluded; and water discharge from upland areas and drainages may contribute significantly to the water supply².

Bark River Description
The Bark River is a medium-sized spring-fed stream that flows north into Bark Bay³. The entire river supports reproducing trout and is classified as an outstanding resource water³. Stream bottom types vary, with the lower reaches mostly sand, gravel and clay, while the upper reaches consist of mixed sand, gravel and boulders³. The upper reaches have a steep gradient with large accumulations of debris³. Bank erosion and turbidity may cause potential problems³. The river flows through state (Bark Bay Natural Area) and private lands³.

Sampling Methods and Results
Methods developed by the GLCWC² were used to collect and analyze estuary health. The macroinvertebrate score calculated from samples collected during the summer of 2008 indicate that Bark Bay is among the most pristine of Great Lakes wetlands⁵. The vegetative community received the highest possible score, again indicating a “high” quality wetland². Macroinvertebrate samples from the upper reach of the Bark River collected prior to this project show a “very good” water quality rating⁴. The land cover map shows the distribution of open lands in the watershed (see reverse side).

For more information, the full report can be viewed at http://www.uwsuper.edu/lsri/index.cfm.
~ References ~