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

Flag River Estuary Watershed

Project Brief

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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 Flag River Estuary watershed is 29,563 acres in size. Open land cover was calculated for the watershed and for each of the nine 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 7,325 acres or 24.8% of the watershed was classified as open land. Subwatershed open land amounts ranged from 11.8% to 57.4%. Research shows water quality impairments begin to occur when land cover in a watershed has been converted to more than 60% open land.

Estuary Description
The lower reaches of the Flag River and its associated wetlands and shoreline complex provide important habitat for numerous species of waterfowl. The area supports a rich fishery and the coastal bog contains a number of species not typically found in this kind of bog, such as buckbean, mud sedge, white and sooty beak-rushes, livid sedge and speckled alder. Small tamarack are scattered throughout the community. Two marinas operate in a sheltered backwater near the river mouth. The Great Lakes Coastal Wetland Consortium (GLCWC) classifies the Flag River Estuary as barred drowned river mouth (RRB); barrier-protected beach lagoon (BL). Most RRB streams have a barrier that constricts the stream flow as it enters the lake, however, these wetlands maintain a relatively constant connection to the lakes. 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 supply.

Flag River Description
The Flag River is a moderately large stream with a spring water source that drains about 32 square miles of land. Mixed hardwood and pine forest within the watershed are periodically clear-cut and the stream is crossed several times by sand access roads. It is classified as an outstanding resource water south of the town road at T50N R8W S27 and the middle nine miles are Class I trout waters. The East Fork of the Flag River—designated as an exceptional resource water—drains relatively wild land.

Sampling Methods and Results
Methods developed by the GLCWC were used to collect and analyze estuary health. The macroinvertebrate score calculated from samples collected during the summer of 2008 indicate that the Flag River Estuary has been “mildly impacted and is beginning to show signs indicative of anthropogenic disturbance.” The estuary vegetative community received a score of 40 indicating a “medium” quality wetland. Macroinvertebrate samples collected in spring of 2009 from the Flag River and the East Fork of the Flag River show HBI water quality ratings ranging from “very good” to “excellent.” The land cover map shows the distribution of open lands in the watershed (see reverse side). Anthropogenic disturbances, including the Port Wing wastewater treatment plant and marina are located in the downstream portion of the watershed and may have a more direct impact on the estuary.

For more information, the full report can be viewed at http://www.uwsuper.edu/lsri/index.cfm.
Flag River Estuary Watershed

County: Bayfield

Local Jurisdictions: Clover, Orienta, Port Wing, Washburn Townships

Watershed Size: 29,563 acres

Open Lands: 7,325 acres / 24.8%

GLCWC Classification²: Barred drowned river mouth; barrier-protected beach lagoon

Macroinvertebrate Community Assessment

East Fork Flag River Site

HBI²: 3.41
Excellent

Flag River Site

HBI²: 3.60
Very Good

~ References ~


