

## **Using Hyperspectral Remote Sensing for Manoomin (Wild Rice) Habitat Mapping and Restoration in the Great Lakes**

Lara O'Brien, Lynker at NOAA Office for Coastal Management; Brandon Krumwiede, NOAA Office for Coastal Management

Manoomin (wild rice) is a keystone species for both the wetland ecosystems and tribal communities in the Great Lakes basin. Unfortunately, manoomin is also highly vulnerable to the impacts of climate change, land development, invasive species, and other threats, which have led to a dramatic decline in manoomin populations. To help support manoomin management and restoration efforts in the region, the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management, together with the Bureau of Indian Affairs, collaborated with tribal partners on two projects in the Lake Superior and Lake Michigan-Huron basins. Central to this collaboration was the exchange of cultural and traditional knowledge together with technical assistance, including the use of airborne hyperspectral remote sensing and field data collection and analysis to map and monitor existing manoomin stands.

This presentation will discuss project methods and results as well as various applications of the remote sensing data, including assessing manoomin and other aquatic vegetation and identifying potential suitable habitat for future enhancement and/or restoration projects. Lessons learned for meaningful engagement through workshops and on-the ground coordination with tribal partners will also be discussed, along with other potential applications of the remote sensing methods. NOAA will also provide an update on our upcoming manoomin work, which will continue to focus on addressing remaining geospatial needs and helping develop system resilience indicators to better understand the dynamics and stressors affecting manoomin distribution in the Great Lakes.