Manoomin: investigating the past, present, and future conditions of wild rice lakes

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This five-year project (September 2009-September 2014) uses core samples of mud from the bottoms of six lakes on the Fond du Lac Reservation to reconstruct the historical distribution and abundance of wild rice (manoomin, Zizania palustris). We will connect this record with sedimentary indicators of lake level, nutrient conditions, and substrate composition, as well as with oral history and land use records. Middle school, high school, and Tribal College students conduct field work and laboratory research with guidance from University of Minnesota scientists, Fond du Lac Resource Management staff, and others.

Sediment core samples are collected during the winter from the frozen lake surface during winter science camps. All equipment is hand-operated. Several cores are collected from each lake by students and teachers, with help from U of M scientists. The cores are later studied in the LacCore lab at the University of Minnesota.

Students (middle school through college age) are involved in all stages of the project, including laboratory research and interpretation of results. One small group of students with one or two teachers is in charge of studying each lake, with the help of U of M and other scientists. These "lake teams" visit the U to conduct initial work on the core samples during the winter, and then return for 1-week research internships during the summer.

Some cores are immediately returned to the classroom the day they are collected. These cores are studied in basic ways by the K-12 students at the winter camps. Students describe the color and texture of the mud - using the naked eye as well as microscopes - and wash mud through screens to search for pieces of plants (including wild rice), shells, and pebbles, all of which can tell us about the past environment of the lakes.

Summer interns conduct individual research projects that contribute to the larger goals of the study. Interns might count pollen grains or other plant remains in sediment to determine past abundance of wild rice, sugar maple, paper birch, and other plants; count charcoal fragments to estimate past wildfire frequency; burn mud to determine its composition, or learn to identify some of the many types of algae that grow in the lakes now, or did in the past. All data and ideas generated by the interns will be assembled into presentations for peers, tribal Elders, and scientists; and ultimately published as research papers.