The first year of the manoomin project: place-based research by Native American students on wild rice lakes on the Fond du Lac Band of Lake Superior Ojibwe Reservation, northern Minnesota.

ABSTRACT

Data presented on this poster and interpretation of results to date were generated by manoomin project student interns and their science mentors. Perch Lake was the focus of the first summer’s internships. 

Introduction

We are doing a five year program called Manoomin (Sept. 2009-Sept. 2014). In this program we are taking core samples from lakes that have wild rice (manoomin) in them to see if we can find changes from the past. We are looking at plant macrofossils, pollen, diatoms, phytoliths, and grain size. The goal is to get a better understanding of what the climate was like in the area. Climate change has become a big global issue recently, so we thought it was important to learn what was going on in the past.

We are doing a five year program called Manoomin (Sept. 2009-Sept. 2014). In this program we are taking core samples from lakes that have wild rice (manoomin) in them to see if we can find changes from the past. We are looking at plant macrofossils, pollen, diatoms, phytoliths, and grain size. The goal is to get a better understanding of what the climate was like in the area. Climate change has become a big global issue recently, so we thought it was important to learn what was going on in the past.

The temperature around the lake areas has gotten warmer from 10,000 years ago. This is due to the retreat of the last ice sheet, which opened up the area. We are looking for changes in the area due to climate change. We are looking for changes in the macrofossils. Macrofossils are preserved organic remains that can tell us what plants were living in the area, and therefore what the climate was like. We are looking for changes in the macrofossils. Macrofossils are preserved organic remains that can tell us what plants were living in the area, and therefore what the climate was like. We are looking for changes in the macrofossils. Macrofossils are preserved organic remains that can tell us what plants were living in the area, and therefore what the climate was like.

Phytoliths

Phytoliths are specialized plant cells formed from silicon dioxide, and are found in all grass forms. Wild rice has five or six diagnostic phytoliths that we look for. For each different type of seed case or “glume” they each produce different assemblages. The method of studying phytoliths is getting a sample which contains 100 phytoliths to make an assemblage. By taking pictures of phytoliths we are able to identify and measure the phytoliths that we look for. For each different type of seed case or “glume” they each produce different assemblages.

Synthetic diatoms. Low counts of benthic diatoms indicate turbid (murky) conditions. The presence of benthic diatoms indicates clear (clean) conditions. Benthic diatoms rest at the bottom of the lake and planktonic diatoms float. Synthetic diatoms are diatoms that are created in a lab. There are different types of synthetic diatoms. We are looking for different types of diatoms. We are looking for different types of diatoms. We are looking for different types of diatoms. We are looking for different types of diatoms.

Synthetic diatoms. Low counts of benthic diatoms indicate turbid (murky) conditions. The presence of benthic diatoms indicates clear (clean) conditions. Benthic diatoms rest at the bottom of the lake and planktonic diatoms float. Synthetic diatoms are diatoms that are created in a lab. There are different types of synthetic diatoms. We are looking for different types of diatoms. We are looking for different types of diatoms. We are looking for different types of diatoms. We are looking for different types of diatoms.

Phytoliths

Phytoliths are specialized plant cells formed from silicon dioxide, and are found in all grass forms. Wild rice has five or six diagnostic phytoliths that we look for. For each different type of seed case or “glume” they each produce different assemblages. The method of studying phytoliths is getting a sample which contains 100 phytoliths to make an assemblage. By taking pictures of phytoliths we are able to identify and measure the phytoliths that we look for. For each different type of seed case or “glume” they each produce different assemblages.

Phytoliths

Phytoliths are specialized plant cells formed from silicon dioxide, and are found in all grass forms. Wild rice has five or six diagnostic phytoliths that we look for. For each different type of seed case or “glume” they each produce different assemblages. The method of studying phytoliths is getting a sample which contains 100 phytoliths to make an assemblage. By taking pictures of phytoliths we are able to identify and measure the phytoliths that we look for. For each different type of seed case or “glume” they each produce different assemblages.

X-ray fluorescence and X-radiography

X-ray fluorescence is a method to analyze minerals in the core. X-radiography is a method to see if there are any buried objects in the core. We are using both methods to see if we can find any objects in the core. We are using both methods to see if we can find any objects in the core. We are using both methods to see if we can find any objects in the core.

Data Interpretation

The plot on the right shows the macrofossils in different colors and, in the inset, the dots show the coring locations. The dots are 2010 coring locations. We are looking for changes in the macrofossils. We are looking for changes in the macrofossils. We are looking for changes in the macrofossils.

Coring and Camp

Campers collect lake cores during winter with the assistance of coring specialists. The camps (Gidaakiimanaanimigawig, Our Earth Lodge) for students of a wide range of ages. The primary resource is the Fond du Lac Band of Lake Superior Ojibwe Reservation.

It builds on a successful history of collaboration between these parties, including regular science camps (Gidaakiimanaanimigawig, Our Earth Lodge) for students of a wide range of ages. The primary resource is the Fond du Lac Band of Lake Superior Ojibwe Reservation.

It builds on a successful history of collaboration between these parties, including regular science camps (Gidaakiimanaanimigawig, Our Earth Lodge) for students of a wide range of ages. The primary resource is the Fond du Lac Band of Lake Superior Ojibwe Reservation.

It builds on a successful history of collaboration between these parties, including regular science camps (Gidaakiimanaanimigawig, Our Earth Lodge) for students of a wide range of ages. The primary resource is the Fond du Lac Band of Lake Superior Ojibwe Reservation.

It builds on a successful history of collaboration between these parties, including regular science camps (Gidaakiimanaanimigawig, Our Earth Lodge) for students of a wide range of ages. The primary resource is the Fond du Lac Band of Lake Superior Ojibwe Reservation.

It builds on a successful history of collaboration between these parties, including regular science camps (Gidaakiimanaanimigawig, Our Earth Lodge) for students of a wide range of ages. The primary resource is the Fond du Lac Band of Lake Superior Ojibwe Reservation.