Introduction

Plant macrofossils are plant remains (seeds, fruits, cones, leaves, buds, needles, wood, and sporangia) that are visible to the naked eye and can be manipulated by hand (Birks 2001). They are often studied in conjunction with pollen studies because they help provide more conclusive look at the local record of vegetation, owing to their shorter dispersal range. When analyzed though a sequence of lake sediments macrofossils can reveal vegetation changes over time as well as past lake level fluctuations and climatic change. Macroremains can often be identified to a higher taxonomic resolution (more specific) than pollen – often to the species level.

Materials and Methods:

Samples of 87 cm³ were taken at 3 cm intervals from the top and bottom sections of each core. Using four sieve layers for each interval (1 millimeter, 500 micron, 250 micron, 125 micron), the samples were washed with low purity DI water. The remains from the top two screens – 1 millimeter and 500 micron – were examined with use of a light microscope, and macrofossils were picked with fine tweezers and organized onto a paper-lined Petri dish coated in glycerol to keep specimens moist and in place.

Discussion & Results

Mid Portage Lake

The core taken from the shoreline (4A) of Mid Portage had more plant macrofossils than the core taken in deeper water (3A), which had more aquatic and terrestrial macrofossils in the bottom section of the core, possibly meaning that the lake was shallower when that sediment was deposited.

In core 4A wild rice occurs in both the top and bottom sections indicating that the water depth in this part of the lake has remained favorable for wild rice. The top section examined shows evidence of pondweed, which indicates a slight rise in water depth.

Wild Rice Lake

Cores 3A and 5A, being closer to the shoreline, both contain much higher levels of tree and sedge macrofossils than core 4A which is located near the center of the lake. Also present are Cinquefoils and Pea seeds, which are absent in core 4A indicating that the substrate (vegetation mat) is firm enough to support these plants.

The Chara (algae) oogonia and Najad seed patterns reflect greater water depths in core 4A/5A than in 3A.

Comparison

While it is evident that Wild Rice Lake does not support its namesake – perhaps because of greater water level fluctuations – Mid Portage, with a larger drainage system has does favorable conditions for wild rice. Pine macrofossils are present there but absent from Wild Rice Lake. Birch macrofossils are found in both lakes, but spruce is found only in Wild Rice Lake. Wild Rice Lake also sustains aquatic mosses consistent throughout in all of the cores, but only in core 4A in Mid Portage Lake. Likewise Mid Portage holds more pondweeds than Wild Rice Lake, pointing to a greater water depth.

References: