

Prehistoric Forest and River Channel Found Submerged in the Great Lakes

The **Noble Odyssey Foundation** (NOF) research team is a group of scientists from local universities and museums and divers that undertake submarine and coastal research projects with logistical and dive support from the Research Vessel *Pride of Michigan* and the US Navy Sea Cadets (Great Lakes Division) under the direction of Captain Luke Clyburn, who also serves as the Director of the N.O.F. and PADI instructor Kathy Trax who coordinates the diving programs. The Institute has a long history of collaboration with Captain Clyburn and the diving Sea Cadets including a number of research cruises in support of former Cranbrook Institute staff botanist Dr. Jim Wells. He described the flora of many remote islands in the Great Lakes with Captain Clyburn, helping make the Institute herbarium collection one of the finest in the region.

Last summer (2004) John Zawiskie of Cranbrook Institute of Science and marine biologist Dr. Elliot Smith (Scripps University Marine Biologist) directed the underwater mapping of the geology of the sill at the mouth of Grand Traverse Bay leading to the creation of the first geologic map of the bottom sediments and bedrock in that part of the lake basin and documentation of a drowned river channel cut through lake bottom clay at depth of up to 150 feet. This is a relict channel from the low stand period that formed when the current lake floor was a land area, sometime between 10,000 and 7,500 years ago. A DVD that chronicles the preparation for the expedition and the fieldwork and an accompanying teacher activity guide geared to the Michigan Curriculum Framework benchmarks can be obtained by contacting the N.O.F.

Another N.O.F. project concerned an extensive drowned forest from the low stand period in Lake Huron, now submerged in 40 feet of water off the coast of Lexington. This was a long-term study lead by Dr. Doug Hunter, a biologist from Oakland University in collaboration with researchers at the Laboratory for Tree Ring research at the University of Arizona and Center for Wood Anatomy Research, USDA Forest Products Laboratory in Wisconsin.

The forest bed was systematically mapped over a square kilometer area and is the largest drowned forest reported from the Great Lakes, including ten in place tree stumps and hundreds of log, branch and root specimens. Growth ring analysis indicates several stands of trees were present at the site between 7,000 and 6,400 radiocarbon years ago, when rising lake waters drowned the last trees. The forest was a rich conifer cedar swamp dominated by northern white cedar and eastern hemlock with coexisting pine, spruce and ash, indicative of a relatively cool groundwater influenced wetland. The age of the youngest trees provides an important constraint on the timing of the re-flooding of the southern Lake Huron basin several hundred years before the establishment of the modern St Clair River drainage 6,100 radiocarbon years ago. It took a remarkable set of geological circumstances to cause the extreme prehistoric low stand of the lakes. It does however provide a model for the type of conditions that climate change and massive diversion of waters from the Great Lakes could induce.