

Harlock Pond Paleocological Research

Report to the Seven Gates Farm Community

David Foster & Glenn Mitzkin. Conveyed by Richard Leahy

A group from the Harvard Forest, led by David Foster and Glenn Motzkin, is assessing the long-term development of the landscape and vegetation of Martha's Vineyard in order to understand the factors controlling the characteristics of the modern landscape and vegetation. The work is part of a rather ambitious project undertaken in conjunction with the Trustees of Reservations, The Nature Conservancy, Sherrif's Meadow and other organizations seeking to place modern conservation concerns and planning into a broad and long-term perspective. This larger project embraces Cape Cod, the Islands, and Long Island and includes paleoecological, archeological, and historical study and extensive field sampling of the modern vegetation and environment.

On the Vineyard we are particularly interested in contrasting the long-term history of vegetation and environmental change across major areas of the island, notably the south coast, Great Plain, and western and northern moraines. To date we have assembled eight pollen diagrams across these areas that depict changes in fire regime, vegetation, and human impacts over the past 1000+ years. Our interest in examining the area of Seven Gates Farm is centered on the distinctive vegetation and environment of that area. Due to its western location (windward to the prevailing winds), morainal topography and soils, and land use history this region supports a rich and mesic vegetation and presumably has experienced a low frequency of fire relative to other areas, especially the Great Plain and south shore. To test this notion, and to develop a more complete understanding of historical changes around Seven Gates we sought to take a sediment core from the area and subject this to extensive analyses.

With the assistance of Dick Leahy a group from the Harvard Forest cored Harlock Pond, on August 31, 2000. The coring site was approximately at the middle of the pond, and was located in 5.9m water depth. We retrieved a 176-cm long "surface" core in a plexiglass tube, which gave us a high-quality sample of the upper sediments that cover the past 1000 years or so.. We also retrieved 4 m of the entire sediment column with a Livingstone corer. This metal corer takes a smaller diameter core in 1-m increments. The last drive was extremely stiff and hard to pull up, which usually indicates the "bottom" of the lake sediment and beginning of glacial clay, which is a distinctive gray mineral mud. However in this case the bottom sediment was still brown, indicating it still had some organic content, so it's possible that we didn't actually get to the actual bottom of the sediment.

The surface core was cut into 1-cm intervals and sampled for % organic matter, lead 210 (which gives us a sedimentation rate and date for the top of the core), five radiocarbon dates, and changes in pollen content, which provides an indication of vegetation history. The long core and unused portions of the short core are archived at the Harvard Forest in a refrigerated cooler.