

Proposal for Pollen Analysis at Hopewell Furnace
National Historic Site

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The human use of natural resources which has made Hopewell Furnace National Historic Site such a fascinating place in terms of industrial history has also created a greatly disturbed pattern of vegetation. Different types of land-use and times of abandonment of the land have produced a mosaic of oak, tulip and red maple forest stands, each one the result of the interaction of man and nature.

What we cannot tell from the extant forest is what it was like when European settlers first arrived, to farm and later to cut charcoal for the furnace. What were the patterns of change under repeated cutting for charcoal? What was the importance of chestnut in this forest before the chestnut trees were killed by the chestnut blight early in the 20th century? The answers to such questions would greatly enrich our perceptions of the environment in which the furnace operated, and of the relationship between the present natural landscape and the past.

The major source of information to discern past vegetation is the records left by the plants themselves, because written historical documents tend to be sketchy and vague when referring to the natural environment. Pollen produced by plants is preserved in wet sediments, and where these sediments have accumulated more or less undisturbed, the pollen in them records the changing vegetation of the past.

At Hopewell Furnace, undisturbed sediment appropriate for pollen analysis may exist in two areas of sedge tussock swamps, one west of French Creek near Bethesda Road and the other at the springs southwest of Hopewell Rd. in Chester County. I propose to take several short (less than 1 meter) cores of sediment at each site with a Hiller style peat sampler to find one core at each site which is undisturbed, as determined by the lack of obvious disturbance such as large roots and by changes in the pollen frequencies at long intervals through the cores indicating lack of mixing. If an appropriate sediment core can be located, one from each site would be analyzed at short enough intervals to establish a colonial horizon in the sediment (characterized by an increase in ragweed pollen) and changes in the forest vegetation after that time, compared with the precolonial vegetation and the present as established by the vegetation mapping project.

Budget Proposal
Pollen Analysis - Hopewell Furnace

Preliminary analyses and coring	\$500
Analysis of two cores, minimum of 10 samples/core @\$1000	2000
Total	\$2500