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Dear Beth,

Enclosed is the report on the Benjamin Bannaker flotation results, which Kris Peters asked me to send to you.

If you have any questions or need further information, please do not hesitate to contact me.

Sincerely,

Roger W. Moeller

Roger W. Moeller
ABSTRACT

The flotation and subsequent analysis of soil samples from two features interpreted as being a root cellar and the remains of a log dwelling associated with Benjamin Bannaker revealed the intensive utilization of nuts (walnut?), shellfish, animals, and a few species of wild plants — grape, chenopodium, pokeweed, and milkweed.

INTRODUCTION

The flotation and subsequent analysis of the 20 samples was undertaken in early January, 1986, when a large block of time could be devoted to the project. This immersion technique is essential to understanding the entire collection since differences and similarities among the various features and levels are more apparent than when the study is protracted with many other distractions.

A highly significant aspect of this particular study was the opportunity to see the entire soil matrix and all of its contents, rather than just the materials sorted or processed by others. The background noise (e.g., gravels, clays, obviously recent contaminants) provides an important dimension to the archaeological context and all its associated artifacts and ecofacts. The absence of recent contaminants must be confirmed from the original sample and not just be assumed from the sorted materials. Were the contaminants never present, had they been removed by an astute sorter, was the research design intentionally or unintentionally responsible for precluding their inclusion, or what? Each question must be raised and answered before one can assume that the data are truly reliable indications of what actually happened in the past. Because some contaminants are "always" present and are assumed to be a part of everyday life, their absence is extremely important to document.

Quantification of flotation data is very difficult and should be undertaken carefully and differently in each research design. The simplest quantification is presence/absence. Weights, counts, volumes, and minimum number of individuals (e.g., plants, animals, vessels) are more precise, but the implications of each are complicated by a consideration of the relative and absolute amounts of matrix analyzed from features, levels outside of features, and portions believed not to have cultural deposits.

Counts of seeds must be placed into the context of their abundance on each plant, the role of that plant in the life of the people, and the manner in which seeds come to be in an archaeological context. The mere presence of the seeds is important, whether they are in context or are actually recent contaminants; either way their presence must be explained. Similar features from the same
archaeological components are expected to have similar contents as well as
similar recent contaminants due to modern seed rain and animal action.
Differentiating between true contents and recent contaminants is sometimes
difficult, but given enough samples patterning does emerge.

Because this is a Historic site dating between 1737 and 1806, a very wide
variety of artifacts and ecofacts could be in true association; unlike the case
of prehistoric sites where one can easily exclude European or Asian introduced
species, non-natural hybrids, species known only from hundreds of miles distant,
and "recent" domesticates. The seeds identified from this site individually and
collectively form a meaningful cultural pattern.

SOIL MATRIX

There is no basis for differentiating the samples on the basis of the soil
matrix from which they were taken (Table 1). The heavy fraction in the flota-
tion was consistently a large-grained quartzy sand with occasional occurrences
of fired clay. The light fraction showed slightly more variation in relative
amounts of wood charcoal, roots, and fibers. No one sample is from an espe-
cially disturbed, obviously different, or uniquely cultural context compared to
the others. Because structural evidence suggests the presence of a root cellar
and the log cabin, then association of the artifacts and ecofacts to discrete
functional episodes (storage vs. utilization) must be on the basis of something
other than the soil matrix. The matrix itself is merely a storage medium and
was not altered by the functions occurring above or within it. The coarse-
grained sand within the root cellar may have been part of the extant soil
matrix, may have been brought in to be used, or both. This type of sand in a
Historic root cellar is consistent with the accepted storage practices for root
crops: a layer of sand is covered by a layer of vegetables which are covered by
more sand.

STRATIFICATION

The expected consistency of gradual change from level to level cannot be
assessed in detail because of the small size of each sample and the lack of
stratigraphic, incremental, sampling columns; but the uppermost level in each
feature did have the expected higher fiber/root content (Table 1). This observ-
ervation is of note because it supports the argument that the context of the
deeper levels which lacks large amounts of recent roots and fibers is undis-
turbed by burrowing and nesting animals. Finding no evidence of this typical
form of disturbance which can introduce large numbers of recent seeds into an
archaeological context, however, does not guarantee that other disturbances have
not occurred.

Another item using found in highly organic upper strata is land snails.
Since these were (surprisingly) absent from all samples, they cannot be used to
judge the stratigraphic integrity of the deposits, but their absence is of
note. They are one of the few recent items that is virtually always present.

Given the preceding, there is no reason to believe that there has been any
significant disturbance of the stratigraphic sequence that could account for
recent seeds being found at depth. This coupled with the recent date of the
site precludes any seed from being excluded from the context solely because it
does not appear to be carbonized or otherwise prevented from decaying since the occupation of the site. All seeds found, except for obviously recent ones from upper levels, were considered to be in true association with the archaeological context, because there is no logical basis for excluding them.

IDENTIFICATIONS AND INTERPRETATION

The only definitely carbonized seed was a single nut (walnut? - *Juglans* spp) fragment. Of the other seeds—grape (*Vitis* spp), pokeweed (*Phytolacca americana*), maple (*Acer* spp), chenopodium (*Chenopodium* spp) and milkweed (*Asclepias* sp)—only the maple was recently introduced into the archaeological context. Unidentifiable calcined and non-calcined bone (some of which was probably from a large mammal judging from the thickness of the fragments) and shellfish shell fragments complete the dietary picture. Artifacts included a few glazed ceramic fragments and green glass (Table 1).

The seeds, grape, pokeweed, chenopodium, and milkweed associated with the archaeological contexts are from very prolific and valuable wild food plants. The last three will advent in any disturbed ground and proliferate in spite of any effort to contain them. Given their dietary potential and the absence of domesticates from the archaeological context, it is likely that Benjamin Bannaker even encouraged their spread. Although maligned as weeds by modern gardeners who do not appreciate them, chenopodium (lamb’s quarter or goosefoot) is one of the first greens to be available in early spring. But as the plant matures, the stalk becomes too woody for human consumption. The role of greens in the diet is assumed by later appearing species including pokeweed. In the late summer, each chenopodium plant will produce from 75,000 to 100,000 tiny black seeds which can be eaten as is or added to flour for baking.

When the milkweed stalk first appears above the ground in early spring, it can be prepared and eaten in the same way as asparagus. As it matures the stalk becomes too coarse and toxic for eating, but the blossoms, buds, and even pods provide food through August (Kavasch 1979:21,45,47,52).

Of all of these, however, only chenopodium and grape seeds and walnuts, are likely to be found within a storage context. When the chenopodium seeds are available in late summer, huge quantities can be easily collected, dried, and stored for future use. Walnuts are easily gathered — if you can get there ahead of squirrels — dried, and stored as well. Grapes mature in September and can be dried for later use without removing the seeds. Grape butter, jam, or jelly are other storage alternatives which will necessitate removal of the seeds. Although in these instances the occurrence of seeds in the archaeological context is understandable, one need not always assume that the seed bearing portion of the plant is being stored intentionally or even utilized for food.

Although the pokeweed berries are allegedly toxic, birds eat large quantities of them and redeposit the seeds wherever they roost. The pokeweed seed is extremely hard and will endure a ride through any animal’s digestive tract and come out ready to sprout, which accounts for it being very widespread. Poke berries have other uses that could explain why the seeds are at the site: dye and medicine (Tantaquidgeon 1977:33,74).

Despite all of the reasons why Bannaker should have utilized these plants, there is no actual proof that he did. They require no special procuring and processing implements or facilities; the plants will grow completely untended, and their seeds could have been effectively dispersed into the archaeological
contexts without his knowledge or intent even during the occupation of the cabin and use of the root cellar. Birds, the wind, his clothing, or even the soles of his feet could have brought in all of the seeds. A single walnut fragment would be a small loss to a squirrel who has thousands. On the other hand, Bannaker could have easily destroyed those plants growing close to the cabin before they matured and produced seeds which would have spread. But the evidence is that he did not.

TABLE 1: A Summary of Artifacts and Ecofacts Recovered from Features, Layers, and Levels

| Feature 10 | Level 1 | FS 905 NE Quad | Scant charcoal chunks and bits 1 grape |
| Feature 10 | Level 2 | FS 916 NE Quad | Charcoal chunks, fibers 1 grape, 1 nut (walnut?) |
| Feature 10 | Level 1 | FS 923 NW Quad | Charcoal bits, roots/fibers 7 grapes |
| Feature 10 | Level 3 | FS 928 NE Quad | Roots/fibers, red clay 8 grape, 1 pokeweed, bone fragment |
| Feature 10 | Layer 4 | FS 933 NE Quad | Charcoal chunks 9 grape, 1 pokeweed, 1 chenopodium, |
| Feature 10 | Layer 5 | FS 944 NE Quad | Charcoal chunks, red clay 2 grape, 1 milkweed |
| Feature 10 | Layer 6 | FS 952 NE Quad | Charcoal bits, roots 1 grape, 1 chenopodium, 1 bone splinter, 1 calcined bone, 1 shell fragment |
| Feature 10 | Level 2 | FS 957 NE Quad | Charcoal chunks, roots 5 grape, 1 very recent maple |
| Feature 22 | Level 1 | FS 972 N180 W450 | Charcoal bits 1 grape, 1 glass fragment |
| Feature 22 | Level 1 | FS 976 N185 W450 | Charcoal chunks 1 pokeweed, 1 recent maple, 2 glazed ceramics fragments |
| Feature 10 | Level 3 | FS 987 NW Quad | Fibers 4 grape, 1 pokeweed |
| Feature 10 | Level 4 | FS 994 NW Quad | Charcoal chunks, roots/fiber 1 grape, 1 bone fragment |
| Feature 22 | Level 2 | FS 999 N180 W450 | Charcoal bits, roots Calcined and non calcined bone |
### 5 BANNAKER ARCHAEOLOGICAL PROJECT: FLOTATION ANALYSIS

<table>
<thead>
<tr>
<th>Feature</th>
<th>Layer</th>
<th>Code</th>
<th>Location</th>
<th>Findings</th>
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<tbody>
<tr>
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<td>Layer 5</td>
<td>FS 1004</td>
<td>NW Quad</td>
<td>Numerous charcoal chunks, bits, 1 grape, bone splinter</td>
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<tr>
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<td>Layer 6</td>
<td>FS 1009</td>
<td>NW Quad</td>
<td>Charcoal chunks, Shell fragment</td>
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<tr>
<td>Feature 22</td>
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<td>FS 1014</td>
<td>N180 W450</td>
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<td>FS 1026</td>
<td>NW Quad</td>
<td>Charcoal bits, Shell fragment</td>
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<td>Feature 12</td>
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<td>N250 W455</td>
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<td>FS 1034</td>
<td>N250 W455</td>
<td>Charcoal chunks and bits, 1 chenopodium, calcined bone</td>
</tr>
</tbody>
</table>

**NOTE:** Feature 10—Root Cellar, Feature 22—Dwelling, Features 11 and 12—post holes

### REFERENCES CITED

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Pennsylvania Historical and Museum Commission, Harrisburg.