WORLD ENOUGH AND TIME:

ETHNOBOTANY AND HISTORICAL ARCHAEOLOGY

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INTRODUCTION

It was Binford (1972) who, according to South (1977:14-15), led historic archaeology toward a scientific, nomothetic paradigm. The thrust of historic site archaeology in the period prior to the 1960s is evidenced by what South (1977:5-12) has termed the humanistic and idiographic particularistic paradigms, set in contrast to the nomothetic paradigm. South (1977:31-35) argues that the promise of a <u>scientific</u> historic archaeology must be based on pattern recognition which, in turn, must be based on explicit quantification. South recognizes, however, that "quantification of poorly observed and inadequately collected data will not lead to reliable pattern recognition and a science of archaeology" (South 1977:277). South certainly realizes the importance of collecting all possible data, although he stresses the need to have the data collection interdigitate with the research design to answer specific questions: "by constructing our research designs and our methods around an emphasis on data flow <u>from research situations to data bank</u>, we hopefully can increase the amount of usable archaeological data emerging from our excavations" (South 1977:149; emphasis in original). While it may be argued that the analysis of data not relevant to the research design is unnecessary, it cannot be argued that the failure to collect data which will be destroyed by archaeological excavation techniques is incompatible with the nomothetic paradigm and a scientific outlook.

With this understanding it seems reasonable for historical archaeologists, as anthropologists seeking not only to maximize the useful information flowing into the data bank but also seeking to maximize the collection of data useful for the reconstruction of the historic sociocultural system, to collect ethnobotanical specimens in the same way that faunal materials are routinely collected

Ethnobotany, which is the study of man-plant relationships, has a history going back to J. W. Harshberger's (1896) article in Botanical Gazette entitled "The purposes of ethno-botany." Ethnobotany was rapidly, if not uniformly, accepted by prehistoric archaeologists. As evidence of this acceptance, the first published bibliography of American archaeological plant remains, through about 1965, lists 361 articles, most dealing with material from west of the Mississippi River and all but one article dealing with prehistoric remains (Smith et al. 1966). Yarnell's (1972) update still lists only prehistoric reports. This inclusion of ethnobotanical analysis in the framework of American prehistoric archaeology may have many possible explanations, but certainly one is that both the archaeologist and the ethnobotanist were concerned with a fuller understanding of cultigens and the movement of plants. Consequently, there were numerous opportunities for multidisciplinary studies, and ethnobotanical procedures for the study of archaeological samples have been standardized for over 15 years (see Yarnell 1974:113-114;

Watson and Yarnell 1966:844). Alternate explanations include ethnobotany's ability to provide data useful in the understanding of cultural ecology and subsistence problems routinely addressed by prehistoric archaeologists.

Although historical archaeologists often have different research orientations from their prehistoric colleagues, the failure to integrate ethnobotanical studies is not adequately explained by this alone. The analysis of floral remains can contribute significantly to the understanding of the historic site and to the testing of resulting hypotheses. Ethnobotany has the potential to provide data on many of the recent research emphases of the discipline, including subsistence strategies, status, acculturation, ethnicity, and adaptation to the New World environment. Even to those archaeologists conducting studies on the humanistic or idiographic levels ethnobotanical analysis of feature fill can contribute information on the foods consumed and the nature of the wooden supports in architectural studes (see for example Noel Hume's [1969:20-26] comments on the cherries from the Wetherburn Tavern bottles).

This paper briefly examines the extent to which historical archaeologists, primarily in the last decade, have used the potential of ethnobotanical studies. The types of plant remains most commonly reported from historic sites as well as the types of plant remains which may be reasonably expected are examined. We also discuss the circumstances under which plant remains may be incorporated into the archaeological record at historic sites and note that these circumstances, particularly at urban sites, are radically different from what might be expected at either prehistoric or rural historic sites. Finally, we comment on the methodological problems associated with the collection of ethnobotanical remains at historic sites. We illustrate these points with the preliminary results from our recent investigations in Charleston and at rural lowcountry sites. These include investigations at McCrady's Longroom, an upper status eating establishment, Lodge Alley/38 State Street, lower status sites in downtown Charleston, and a slave/freedman settlement at Greenfield Plantation, Georgetown County.

USE OF ETHNOBOTANY BY HISTORIC ARCHAEOLOGISTS

As South (1977:18-22) has indicated, historical archaeology reports may be written for a number of reasons and may represent a variety of approaches to the analysis of collected data. As we are primarily concerned with the collection and use of plant remains by historical archaeologists, we examined 35 recent archaeological reports for information on the analysis of plant remains. Twenty-two of the reports concern South Carolina historic sites, ranging from the sixteenth through nineteenth centuries. Historic sites investigated include Piedmont farms, Coastal Plain rice plantations, frontier and urban sites, forts, and small tenant structures. Institutions conducting the work include universities, private contractors, and federal agencies. A smaller sample of thirteen reports from outside South Carolina were also examined: three from North Carolina, one from Georgia, one from Florida, three from Virginia, and five from the Northeast.

During this review three general ethnobotanical trends were detected. In a very few cases plant remains were collected (although not always by flotation) and an ethnobotanical report was incorporated. In even fewer situations we found "self analysis," where the responsible archaeologists identified certain food remains based on his or her own ability. Usually such remains are limited to corn and nutshells -- macrofloral specimens common to society today. The validity of this approach, ignoring the obvious sampling bias, is based entirely on the archaeologist's expertise. Few individuals would mistake corn for hickory nuts, but many have misidentified wild honey locust seeds (*Gleditsia triacanthos*) as cultivated beans (*Phaseolus vulgaris*). Because of the emphasis on specimens large enough to be hand picked from the excavation units, most ethnobotanical data are lost and this approach represents little improvement over the failure to collect plant remains at all. In the majority of the reviewed reports the authors either failed to specify if and how plant remains were collected or else implied that no ethnobotanical data were collected. Ethnobotanical analysis is not totally absent from historic archaeological research in South Carolina. Drucker (1979) utilized ethnobotanical analysis of both hand picked and floated samples from Spiers Landing in Berkeley County, South Carolina. South (1980, 1982) has conducted ethnobotanical studies of flotation samples at the sixteenth century Spanish site of Santa Elena in Beaufort County, South Carolina.

We read the various reports for any explanation why plant remains might be ignored during otherwise generally good data collection programs. Shenkel (1977:3-5) noted that waterscreening was started but was discontinued because of "an unprofitable cost/benefit ratio" after which time hand troweling was used. Starbuck provides a more detailed explanation:

> [p]lant material preserves much less well than bone, and consequently the floral portion of the diet is poorly represented archaeologically . . . most of these materials were found very close to the ground surface, suggesting that few -- if any -- were more than several years old. Peach pits, hickory nuts, butternuts, walnuts, chestnuts, and peanuts were the most numerous, but these merely represent the most durable remains that preserved (Starbuck 1980:334-335).

We suspect, however, that Starbuck's failure to identify anything but a few durable (noncarbonized) ethnobotanical remains was a result of his collection techniques -- dry screening fill through ¼- and ½-inch mesh (Starbuck 1980:162-163). South (1974:10) notes that he did not conduct flotation at Fort Moultrie because "such an operation can best be done under the more detailed Phase 3 approach."

What is made obvious during the review of historic reports is that there are abundant opportunities for the collection of ethnobotanical remains. Numerous features, postholes, privies, and wells are reported and some reports contain tantalizing descriptions of strata which should have been sampled by flotation.

The failure to find ethnobotanical data collection and analyses in more historic archaeological investigations does not appear to be the result of plant remains not being present or recognized since many researchers comment on macro-floral material or on the presence of charcoal, even if they chose not to collect the remains. Nor does it appear to be the result of insurmountable methodological problems since some archaeologists (representing a variety of funding/institutional sources and working with a wide range of sites) have succeeded in incorporating ethnobotany in their research designs. Since faunal remains are routinely collected and subjected to at least rudimentary analysis, perhaps the problem is that historic archaeologists are unaware of the type of floral remains which may be encountered and their potential value. Regardless, it is obvious that for ethnobotany to contribute to the research objectives, it must first be incorporated in the research design. Both of these topics are discussed in more detail in the following sections.

POTENTIAL

A variety of Historic sites are found in South Carolina, spanning a number of temporal, ecological, and functional associations. Temporally, historic sites may have dates of occupation ranging from the sixteenth century through 1983. Ecologically, sites can be classified along a rural-urban continuum. Although no clear cut boundaries can be established, the following broad categories have been used in this paper: Farmstead (includes yeoman farm sites, slave sites, plantation sites, etc.), Frontier Settlement (small town; Camden in the eighteenth century, Charleston before 1730), and Urban Center (Charleston after 1730, etc.). Functionally, sites may be placed in three categories: domestic, non-domestic, and combined domestic/non-domestic. Large scale refuse disposal, specifically disposal of food remains, is considered to result primarily from domestic activities. Therefore, non-domestic sites will not be discussed in this paper. Likewise, combined use sites are considered primarily in terms of their domestic occupation, in that most refuse found on combined use sites is the result of domestic activity (Ferguson 1977; South 1974; Honerkamp et al. 1982). For the purposes of this study, domestic activities involved in food preparation, consumption, storage, and disposal are most pertinent. Plant remains, however, may also be the result of other domestic activities, such as the preparation of folk remedies or medicines. Our discussions will concentrate on the activities of preparation and disposal, as we expect the intermediate steps of consumption and storage to have less impact on the record of plant use.

Food preparation activities, specifically the location of such activities on a historic site, may be the result of site function and the socioeconomic status of the site inhabitants. Domestic sites of the middle or upper class had kitchen buildings separate from the main dwelling. Thus food preparation was conducted in a different location from food consumption and other domestic activities. In such situations we would expect a higher density of carbonized plant remains, including plant foods, in the kitchen area and a corresponding lower density of carbonized plant remains in the main structure area. In contrast, cooking activities of the lower class were often conducted in the fireplace of the cabin itself, as in the slave cabins (Singleton 1980; Otto 1979), or white tenant structures (Agee and Evans 1969). The effect of food preparation techniques on the preservation of food remains will be discussed in the Problems section.

Refuse disposal activities have a greater effect on the location of floral remains on a site than do food preparation practices. Historical archaeologists have been concerned with the delineation of refuse disposal patterns, especially since the shift from architecturally oriented excavations to excavation of refuse deposits, or "backyard archaeology" (Fairbanks 1977). South was the first to define a pattern of refuse disposal, labeled the Brunswick Pattern, for historic sites, noting a gradual deposit of secondary refuse adjacent to dwellings, primarily in doorways, on public streets, and in nearby depressions. He suggested that the pattern reflects a British-American disposal practice (South 1977:47).

Colonial sites of different ethnic heritage, such as German (Carrillo et al. 1975) and Spanish (Deagan 1982), exhibit a different pattern of secondary refuse disposal, usually in recycled subsurface features. More recent work at the British colonial settlement of Frederica suggests that the British settlers also used pits and other features for refuse disposal. The disparity between these data and the Brunswick Pattern is probably a result of the architectural orientation of South's excavations (Honerkamp 1980).

The type of refuse disposal practices at a site is probably directly related to population pressure, or as defined in this paper, ecological association. Rural sites, such as slave dwellings or other farm structures with few physical constraints, often have trash deposited in the yards at a convenient distance from the houses with little regard for covering the refuse. Refuse might be deposited in a nearby swamp or marsh, as seen at Butler Island (Singleton 1980), Campfield (Zierden and Calhoun 1983), and possibly Green Grove (Carrillo 1980:49). The result of these disposal practices is the presence of a midden, or zone deposit, at a site, with few discrete features containing secondary refuse.

Different social and environmental factors produce a different type of disposal pattern at frontier settlement and urban sites. Because of spatial constraints at such sites, the need to maximize the disposal potential of a limited area is increased, leading to an increased use of trash pits and a decreased use of more informal methods of disposal (Honerkamp 1980:235). This pattern is seen at urban sites, such as Charleston. As occupational density of a site increases, open space available for refuse accumulation decreases, resulting in extensive reuse of backlot elements, such as wells, cisterns, and privies, as trash repositories (Honerkamp et al. 1982:104, 142; Zierden et al. 1982). As population pressure increases, such practices are replaced by organized refuse collection and mass disposal techniques. Refuse disposal practices, then, are seen as directly relating to population pressure and spatial constraints, along a rural-urban continuum. The more "urban" a site is, the more refuse will be deliberately deposited in subsurface features, as opposed to informal distribution on the ground surface.

The temporal, functional, and ecological association will affect the types of plants used on historic sites. Cultural heritage and socioeconomic status of the site occupants is also expected to affect the types of plants used. Extensive zooarchaeological research has been conducted on historic sites in South Carolina and adjoining states (see for example Miller and Lewis 1978; Mudar 1978; Reitz 1981, 1983; Reitz and Honerkamp 1983). This research suggests that socioeconomic status and site location are the most significant factors in the selective use of available resources. The importance of socioeconomic status and ethnic affiliation is suggested by the data from the nineteenth century Campfield slave settlement where wild plant foods were found in a context suggestive of use as folk medicines (Zierden and Calhoun 1983). Temporal association, in contrast, is expected to be a less significant factor as food availability and preferences appear to have changed little during the historic period. An exception to this involves a non plant food: the gradual replacement of wood by coal for heating and cooking in the late nineteenth century. Further, there may be temporal changes in firewoods observed in the archaeological record as the more desirable species were exhausted in the eighteenth and nineteenth centuries.

Ecological location is expected to most strongly affect the types of plants found on a historic site. A more intensive use of wild plants is expected on rural sites (see Hilliard 1972:38, 40, 89). (For a discussion of this issue in relation to vertebrate faunal remains see Reitz 1983.) Likewise, the primary cash crops of rice, indigo, cotton, and tobacco may be present at a domestic site as the result of the agricultural emphasis of the site (Hilliard 1972:4, 7), although the circumstances favoring preservation of these

FOOD PLANTS

Brassicaceae
- potherbs/greens

Convolvulaceae
- sweet potato

Curcurbitaceae
- cantelope
- pumpkin
- squash
- watermelon

Ebenaceae
- persimmon

Fabaceae
- beans
- peanuts
- peas

Fugaceae
- chestnut

Juglandaceae
- hickory
- walnut

Malvaceae
- okra

Poaceae
- corn
- sorghum

Rosaceae
- apple
- apricot
- blackberry
- cherry
- peach
- pear
- plum
- quince
- raspberry
- strawberry

Solanaceae
- potato

Vitaceae
- grapes
- muskadine

CASH CROPS

Fabaceae
- indigo

Mulvaceae
- cotton

Poaceae
- rice

Solanaceae
- tobacco

OTHER CROPS

Linaceae
- flax

Poaceae
- barley
- "hays"
- oats
- rye
- wheat

Table 1. Generalized list of major cultivated crops.

cash crop seeds are not likely to occur. Cultigens, including at least 30 genera of fruits, vegetables, and grains, may be found in variable quantities, at many sites (Table 1).

PROBLEMS

Although the above discussion, and historical sources on Southern foodways, suggests that plants and plant foods are intensively used on historic sites in South Carolina, many of these may not be preserved in the archaeological record. Moreover, unless proper recovery techniques are used those which are preserved may not be recovered during archaeological excavations. These two problems will be discussed separately.

The type of food preparation practices at a historic site will affect the preservation of plant remains in the archaeological record. Ethnobotanical remains are common at prehistoric sites because many plant foods were prepared in open fires and foods were consumed and discarded in the same location. Seeds were commonly parched (see Styles 1981:93; Richard Yarnell, personal communication) and food remains, such as corn cobs and nutshells were useful as fuels. Although at historic sites cooking was often done over an open fire in a hearth, a common cooking technique, especially among the lower class, was the boiling of meals in a single pot, resulting in stews, soups, and pilaus (Hilliard 1972:51; Atwater and Woods 1897:21; Frissell and Bevier 1899:8; Flanders 1933). Such a cooking technique would not result in the preservation of food remains in most contexts, because carbonization is not an expected outcome. Frying, the next most common method of Southern cooking, also is not expected to encourage preservation of plant foods or food remains, again due to a lack of carbonization. Other techniques, such as roasting or baking, have a greater potential for preservation. Asch and Asch (1981:289) note that even root crops may be preserved under exceptional conditions in the archaeological record (see also Yarnell 1964:21). Plants accidentally, or purposefully, burned in the hearth have the greatest chance of being preserved and may be recovered as primary refuse during excavation of hearth features, or as secondary refuse during excavation of midden deposits. Such remains, though, are expected to represent only a small sample of the discarded plant foods at a site. Food preparation techniques, specifically the predominance of boiling or stewing, may diminish the potential for preservation of plant remains at historic sites. Further, cash crops, because of their inherent value and the associated processing techniques, are not expected to be common in the archaeological record. An exception to this is the use of rice as a foodstuff.

Disposal practices may also affect the preservation of plant remains at historic sites. Charred plant remains deliberately deposited in pits and other subsurface features are more likely to be preserved than those discarded informally on the ground surface. Plant remains deposited as a sheet midden may be destroyed by pedestrian traffic and erosion. This has been noted archaeologically at Lodge Alley in Charleston, where the recovery of extensive faunal remains indicated that food remains were deposited in the alley. Despite careful recovery techniques, and the presence of wood charcoal, no identifiable plant food remains were recovered in the alley. Surface trash piles appear to have been the common disposal pattern of early twentieth century tenant farmers. This disposal practice results in low quantities of identifiable plant remains.

The disposal of food refuse in deep subsurface features, such as wells and privies, often results in excellent preservation conditions. The waterlogged conditions of such deposits may result in the preservation of noncarbonized plant remains as well as charred specimens, a situation unlikely at open prehistoric sites in the Southeast. Waterlogged, preserved plant remains have been recovered at sites in Charleston.

Finally, site formation processes will affect the preservation of plant remains (see Schiffer 1977). Carbonized plant remains are extremely fragile. The effect of trampling is expected to bias the collection toward more durable plant remains, such as wood charcoal. Subsequent ground disturbing activities such as plowing, or the continuous redistribution common on urban sites with long occupational histories (Honerkamp and Fairbanks 1982) may also destroy deposited plant remains.

Despite the numerous problems with plant preservation on historic sites, research in South Carolina has shown that ethnobotanical remains are present on a variety of sites and, furthermore, are recoverable. The successful recovery of these plant remains depends, however, on the use of proper techniques. Regardless of the archaeological context there are three methods which have been extensively used for the collection of ethnobotanical remains: handpicking, waterscreening, and water or chemical flotation. The first two techniques unfortunately are used more often than the third, even though flotation may be conveniently conducted in a field or laboratory setting.

Handpicking "charcoal" from the excavation unit in the field is the simplest method for collecting carbonized remains, but it is highly biased toward the recovery of large pieces of wood charcoal and large, durable food remains, such as hickory nutshell fragments and peach pits (see Asch and Asch 1981:276). Very occasionally the careful excavator will recover plant foods or macro-seeds, such as corn cobs and beans, especially during feature excavation. Handpicking, however, is not only highly biased, but is also prevents any meaningful quantification of the ethnobotanical data. Ethnobotanical research is limited without the ability to meaningfully quantify the recovered remains.

Waterscreening excavation fill, particularly midden or feature fill, will produce quantities of carbonized wood, plant food remains, and small quantities of plant foods and seeds, depending on the size of the screen. Two major biases exist in this technique: first, the recovery of seeds is limited, as mulberry, serviceberry, strawberry, and mustard seeds among others will all pass through even 1/16-inch mesh; and second, the use of high pressure water in the screening process greatly fragments the carbonized remains, either forcing them through the screen or making identification more difficult. While waterscreening may be the preferred technique for the recovery of faunal remains, it is only a marginally adequate technique for collecting floral material.

There have been a variety of papers describing different water and chemical flotation techniques (see for example Struever 1968; Limp 1974; Watson 1976; Styles 1981:Appendix A). Most techniques employ the principal that charcoal floats and that if archaeological soil is dumped into a liquid medium and gently agitated, the carbonized material may be strained from the top. As Struever (1968: 354) points out, charcoal will rarely float for very long, hence the necessity to agitate and rely on the differential settling rates of the heavy and light fractions. Asch and Asch (1981:276) report that flotation recovers charcoal fragments as small as 0.5 mm, and the technique is useful for recovering a variety of very small seeds (see Yarnell 1982:4). The flotation technique also allows easy quantification of soil processed, which permits both intra and intersite comparisons.

Regardless of collection technique, we can do no better than to repeat the advice of Yarnell:

> [a] good collection of smaller samples carefully retrieved, using adequate sampling techniques and protected from fragmentation, can provide data that are more representative of subsistence than larger collections retrieved by more destructive techniques; and the cost in time and money in the laboratory is generally reduced (Yarnell 1982:1).

If flotation samples are collected, the optimum size for ethnobotanical study is 15 to 20 gm of charred plant material. Smaller amounts are likely to provide little reliable data, while larger samples are very time consuming and are likely to be redundant. Obviously, the field archaeologist should provide the ethnobotanist with complete field information, including the amount of soil which was floated to yield the submitted sample.

Analytic techniques will not be described in this paper, as it is necessary for the floral material to be studied by a competent ethnobotanist, skilled in dealing with archaeological materials. Analysis by untrained archaeologists, no matter how good the intentions, cannot be adequately quantified nor can the results be unequivocably accepted. Both Yarnell (1974) and Asch and Asch (1981) discuss commonly accepted methods for the analysis and quantification of recovered remains. Carbonized plant remains are generally divided into three categories: wood charcoal, plant food remains (such as corn cobs and nutshells) and plant foods (such as edible seeds and corn kernals). The distinction between the latter two is important, as the food remains are the discarded inedible plant materials, while the plant foods are lost or discarded edible remains, which are less likely to be found or preserved archaeologically. It may be appropriate to add a fourth category: that of medicinal plants. Usually, however, these remains may also be placed in the plant food or plant food remains categories.

Each category may provide specific cultural data, demonstrating the effects of human occupation (see Yarnell 1982:5). Although identification is tedious, the wood charcoal may provide information on the surrounding environment and human use of this environment, as well as on architectural construction. Preliminary data from Lodge Alley in Charleston suggest that a variety of woods were being burned as fuel, including approximately equal amounts of pine, oak, ash, and maple, with small quantities of birch, cedar, willow, sweetgum, and persimmon. The major species are, with the exception of pine, hardwoods noted as excellent firewoods. Pine, while not commonly considered a good firewood, was often burned (see Reynolds 1942). The minor woods, with the exception of birch, are all only fair firewoods, either providing low relative heat, smoking heavily, or containing too much water when green. A number of these woods, such as the ash, maple, persimmon, and birch, were represented by small branches or limbs, up to an inch in diameter, several with the bark still intact. This provides good evidence that the wood was burned for fuel rather than representing burned architectural remains. There are also large pieces of pine, which probably represent pine logs; similar large pieces of hardwoods are less common because the hardwoods burn hotter and slower, resulting in more complete oxidation. Frequently mixed in the Lodge Alley collections are pieces of coal, testimony to the fact that after 1820 coal came into more common use, essentially replacing wood as a fuel in urban areas by 1880. Wood, such as pine and cedar, however, would still be commonly used as kindling.

Charcoal examined from McCrady's Tavern (Trinkely 1982), another urban Charleston site, dating slightly earlier than Lodge Alley, shows very little species diversity. Only pine, oak, and tupelo were found, with pine dominant. Because of the late eighteenth century date from McCrady's Tavern, no coal was identified in the samples. While it is not possible to document the origin of these woods, it now appears probable that the pine, and probably the oak, were used as firewood in the tavern. This relates to the data obtained from the nineteenth century Campfield slave cabins in Georgetown County. Pine is again the dominant wood charcoal, with some specimens identified to the species level as longleaf pine. Some of the remains at Campfields are definitely architectural, documenting the frequent use of longleaf pine as a strong, rot-resistant building material, although much of the charcoal is more likely the result of use as firewood. Although pine burns rapidly, provides only medium heat, and emits large quantities of smoke (Reynolds 1942:6; USDA 1978), large quantities of this softwood commonly have been burned (Reynolds 1942:15; see also Trinkley 1983). We suggest that there may be a status difference, with the heavier (or denser) woods which burn longer and with a hotter fire being reserved for the higher status dwellings, while lower status individuals (such as black slaves) had to make do with pine. Pine was probably used by all status groups as kindling and may have been used uniformly for cooking, where a smoking, quickly burning fire would have been less objectionable. Use in cooking would explain its presence in collection from McCrady's Tavern.

There are fewer data available for the use of plant foods at historic sites, primarily because it has been only recently that historic archaeologists have begun floating soils from contexts condusive to the preservation of plant food remains. Macro-remains, such as peach pits and corn cobs, have been recovered from Spiers Landing, Lodge Alley, and McCrady's Tavern. Flotation of several samples from the Campfield slave cabins produced a variety of food plants, including china-berry, and the potherbs mustard and dock. While these potherbs may also be considered weedy species common to disturbed habitats, the quantity of seeds recovered and their archaeological context strongly suggest that the remains are subsistence items. Also recovered from Campfield was evidence of squash, and the nutshells of hickory and walnut. Investigations by Paul Gardner (personal communication) at the Curriboo and Yaughan slave sites in Berkeley County provide evidence of corn and rice as dietary staples. Many of the plants from Campfield, including the china-berry, mustard, and dock, may have medicinal importance. Duncan (1971:251) notes that "[h]ome remedies and the services of numerous, but ill-trained physicians were used to cure the maladies of bondsmen in colonial South Carolina" and that "[w]orms of all kinds seem also to have plagued Carolina bondsmen" (Duncan 1971:258). It is therefore interesting to note that china-berry was considered to be a powerful vermifuge and was a commonly recommended treatment for worms (Porcher 1869; Morton 1974). Evidence was also recovered of non-plant food "pioneers of secondary succession" such as sedges and sandspurs.

From Lodge Alley the flotation samples examined have revealed relatively small quantities of "weedy" plant seeds, including the family Brassicaceae. It is probable, because of the low quantity of these remains, that they are accidental inclusions in the archaeological record and do not represent subsistence items.

CONCLUSIONS

Because ethnobotany has been more commonly used on prehistoric sites than at historic occupations some of the underlying assumptions need to be reconsidered. Some of these include that noncarbonized remains are contaminates, that wood charcoal reflects the selective gathering of deadwood found on the ground, and that plant foods are going to be proportionally reflected in the archaeological record.

Yarnell (1982:3) voices the traditional logic that "[u]ncarbonized plant material recovered from mesic open sites must be presumed to be contaminated unless very exceptional circumstances exist." This view may be altered, however, when the ethnobotanist is dealing with historic sites. The circumstances under which noncarbonized remains may survive are more abundant at urban historic sites and include water-logged proveniences (such as wells, cisterns, and privies), as well as desicated environments (such as archaeological strata within roofed buildings in an urban context). Consequently, the problem becomes not simply to eliminate noncarbonized remains from consideration, but rather to depend on the excavation techniques and skill of the archaeologist to eliminate questionable contexts and proveniences from analysis.

The identification of wood charcoal at prehistoric sites has been found to be a relatively effective technique of reconstructing past environmental conditions (see Yarnell 1964:10), although the effects of selective firewood gathering by the Indians and differential self-pruning of the trees has to be considered (Yarnell 1964: 27; Trinkley 1976). At historic sites it is presumed that most wood was cut, not gathered, and that therefore the species identified in the ethnobotanical sample represent primarily cultural, not environmental, factors. Wood, at historic sites, is expected to be selected for factors such as heat yield, ease of lighting, length of burning, and amount of smoking, as well as "cost" of procurement. While the identification of wood charcoal is not commonly undertaken at prehistoric sites, this type of analysis may provide significant data at historic sites.

Yarnell (1982:4) has stated that it is "reasonable to assume that the greater the utilization of any given food, the greater the quantity that is likely to be indicated in good archaeological collections." While, because of the site formation processes, this is likely for prehistoric sites, it does not appear to be uniformly likely for historic sites. We have previously discussed how both food preparation and refuse disposal activities will affect the types and quantities of plant foods and food remains recoverable from historic sites. With the most common historically documented vegetables being turnips, peas, cabbage, and collards (Hilliard 1972:51-60), and with the most common method of cooking being boiling, it is unlikely that there will be a direct relationship between quantity of plant foods prepared and quantity of plant foods observed in the archaeological record. It, however, should be possible to establish an ethnobotanical pattern for various types of historic sites after additional research is available. Elements of this pattern would be predictions about types of plants used at the site, definition of activities affecting the preservation of plant remains, and formation of a predictive model based on the relationship of the two. Such an approach to archaeological data was first suggested by South (1977:31) and has been widely adapted. Formulation of an ethnobotanical pattern would be the first step in the explanation of man-plant relationships on historic sites.

Preliminary work in the Charleston vicinity suggests that food remains are not going to be abundant in an urban context, primarily because of the extensive disturbances which characterize the formation of the urban sites (Honerkamp and Fairbanks 1982) and possibly undetected disposal patterns. Archaeological research on the urban data base is a relatively recent development in American historical archaeology. Extensive research is needed on site formation processes in the urban contexts, including the effects on plant remains. A greater range of plant foods and food remains, however, may be expected at Farmstead and Frontier settlements, because of better preservation conditions. In addition to plant foods and food remains it is possible that medicinal plant remains will be recovered from historic contexts, indicating a cultural, rather than natural presence of some "weedy" plants.

While it may be necessary for both archaeologists and ethnobotanists to rethink the meaning and nature of the plant remains at historic sites, there are certainly sufficient data to indicate that not only are plants present and recoverable, but that these remains are vital to an accurate reconstruction of the past lifeways of the historic population. Certainly there is both "world enough" and "time" to integrate ethnobotanical collection and analysis into all historic excavation projects; further, the scientific paradigm demands as much.

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