major architectural features at the site, such as doors and roofs. Hand-wrought nails form the majority of the metal artifacts recovered. One wrought nail found in Feature 108 is a "dead" nail; i.e., the tip has been bent back. This type of nail could be used in house or door construction or repair (Mercer 1976).

At least 54 straight pins (Plate 27g) were found throughout the site. Two iron scissors were found in Feature 108, and a thimble was recovered from Feature 127. These artifacts, traditionally associated with sewing, may be indicative of the presence of Rachel Strickland, her daughters, and Nan the female slave.

Arms

Only 14 arms-related artifacts were found at the site. All but one of the arms artifacts were gunflints found primarily in Feature 108, though one flint each was found in Feature 147, and in the plow zone excavations. A worm for cleaning a musket barrel was recovered from Feature 127.

Summary

Overall, the artifacts recovered from the Phase III investigations of the William Strickland Plantation Site provide a vivid glimpse of the material culture of a mid-eighteenth century farmstead on the Delaware Coastal Plain. Through the artifacts that were discovered, William Strickland's household is revealed to have been an active and adaptive agricultural work place, where all members of the household, from William and the slaves, to Rachel and her daughters, were involved in the domestic economy and social life of the plantation and local region. Later sections of this report will attempt to address the place that Strickland's plantation occupied in the geographical, social, and cultural landscapes of the Delaware River and Bay, by comparing and contrasting the documentary research and material culture identified at the site with other archaeologically investigated eighteenth century sites in the area.

ECOFACT ANALYSIS

Floral Remains

Flotation samples taken from the deep features contained seeds from a variety of farmland grasses, such as crabgrass (Digitaria filiformis), purslane (Portulaca lanceolata), pigweed (Amaranthus retroflexus), rye grass (Lolium temulentum), tar weed (Madia sativa), timothy (Phleum pratense), wheat (Triticum aestivum), and wormweed (Chenopodium ambrosioides). These plants grow well in disturbed ground and were probably used as fodder. Woodland species represented in the flotation samples included salmonberry (Rubus spectabilis), peach, and unidentifiable nut shell fragments that were consumed by the Strickland family. Wetland grasses were represented by the presence of smartweed seeds (Polygonum hidropiper) and wild millet (Echinochloa colonum). In addition, flotation samples recovered charcoal, bone, fish bone, oyster, snails, egg and turtle shell fragments, teeth, and fish scales.

Faunal Remains

Of the 189 features excavated at the William Strickland Plantation Site, 20 contained bone and produced 8,865 osteological specimens of bone and teeth. The faunal assemblage included both wild and domestic taxa representing 29 species. Domestic species contribute 87.5% to the total assemblage

and are discussed individually. Wild species contribute only 6% to the total assemblage and are not discussed individually. The remaining 6.5% of the total assemblage cannot be identified as domestic or wild.

In general, the faunal remains seem to represent a mixed and redeposited assemblage for three reasons. First, 93% of the osteological remains were recovered from only six of the 189 features (Features 93, 103, 108, 127, 147, and 175). Second, bones were modified in ways that would not have occurred had they been originally deposited in the features from which they were recovered. For example, burned and gnawed bones were recovered from the well features. Finally, bones that mended and articulated were recovered from different levels of different features throughout the site. Therefore, because of the mixed, secondary deposition of the faunal material, it cannot be meaningfully divided into smaller subsets and is considered as a single assemblage.

It should also be noted that the ceramic data support the hypothesis that the artifact and ecofact assemblages have been mixed and redeposited. Forty-four of the vessels listed in Appendix III consisted of sherds found in multiple features, including the two wells. The ceramic and bone data indicate that many of the artifacts and ecofacts from the William Strickland Plantation Site were originally scattered across the landscape as sheet refuse and were later used to backfill the large, deep features, especially the wells.

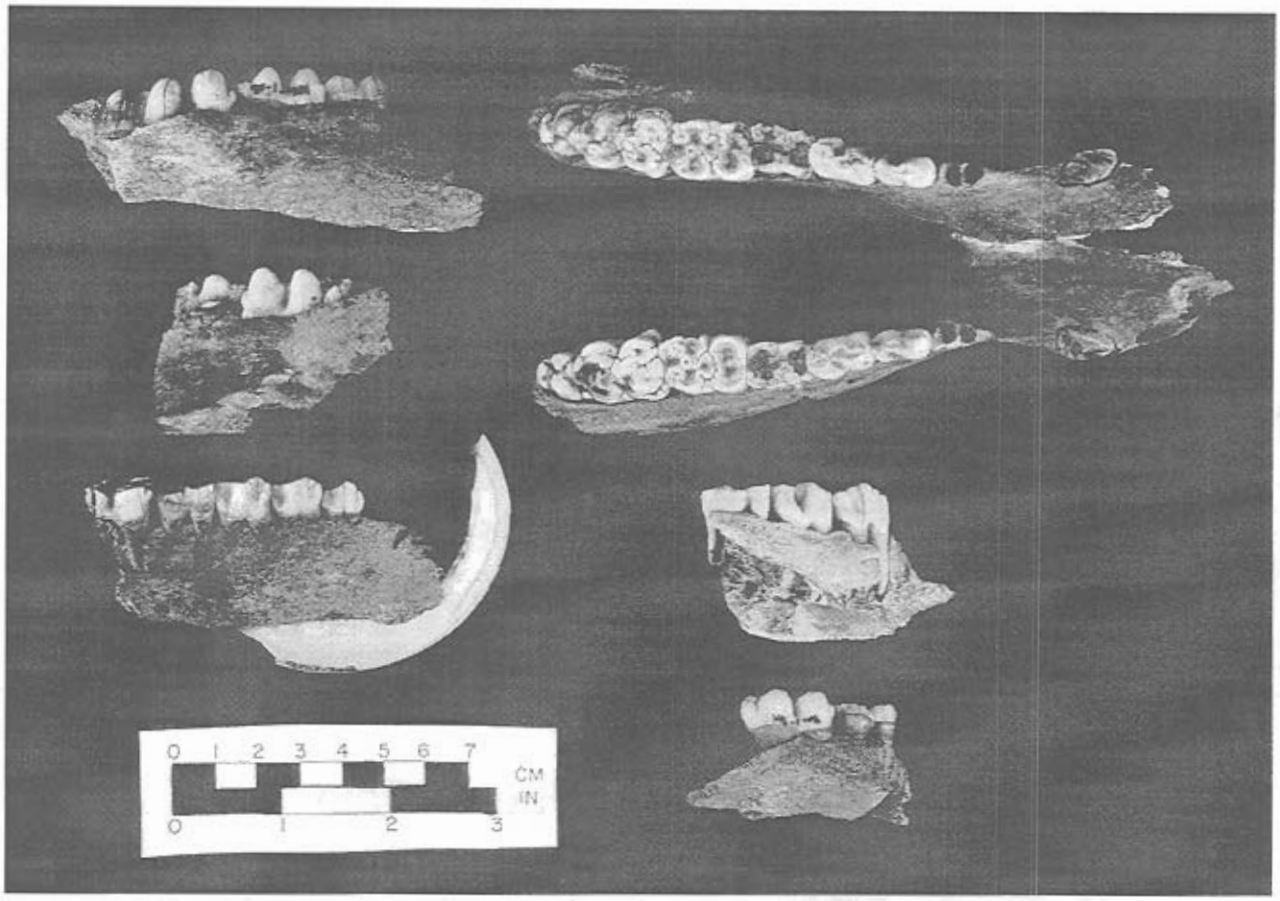
Zooarchaeology, the study of non-human bone remains from archaeological sites is a highly specialized field, and it is useful to clarify abbreviations and terms used in this discussion. The term "specimen" is used throughout the text, and refers to any bone or tooth fragment. "Minimum number of individuals" (MNI) and "number of identifiable specimens" (NISP) are also both used throughout the text. MNI, as defined by Chaplin (1971:70), is "the minimum number of animals that the bones could have come from." NISP, as defined by Grayson (1984:17), is "each bone or tooth or fragment thereof assigned to some taxonomic unit." In some cases, individual species cannot be identified and bones are classified by size. "Unidentifiable large mammals" include cow-sized mammals, "unidentifiable medium mammals" include pig and sheep-sized mammals, and unidentifiable small mammals include mammals that are fox-sized and smaller. Common names for animal species are used here because readers are generally more familiar with them than with scientific names. Although cow and sheep generally refer to Bos and Ovis females respectively, the terms are used in this discussion as common names for Bos and Ovis regardless of sex.

One problem encountered in reports on faunal remains from archaeological sites is an inconsistency in the ways that the data are presented. When reports present data and calculations in different ways, intersite comparisons become difficult or impossible. In an attempt to conform to standards of zooarchaeology, this report follows the blueprint for faunal reports suggested by Grigson (1978) whenever possible. Reitz and Scarry (1985) also suggest that every report should contain (at least) MNI, bone counts, and bone weights, and all three of these measures are given in this report .

Each bone was identified as specifically as possible including species, genus, and large, medium or small mammal. When no identification was possible specimens were recorded as unidentifiable. Identification was facilitated by the use of a comparative skeletal type collection and reference guides (Olsen 1964, Schmid 1972, Sisson and Grossman 1953). Once identified, all bone was examined for modifications, including cut marks, and evidence of gnawing, burning, and weathering. Bone weights were recorded but due to controversy regarding the accuracy of, and approaches to bone/meat weight

PLATE 28

Pig Jaws and Teeth



ratios (cf. Casteel 1978, Chaplin 1971, Crabtree 1985, Grayson 1979, 1981, Hesse and Wapnish 1985, Jolley 1983, Klein and Kruz-Uribe 1984, Lyman 1979). Estimates of edible meat based on bone weights were not made. Age at death determinations were made based on dental eruption, tooth wear, and epiphyseal fusion. Plate 28 shows a series of pig jaws and teeth from which such determinations can be made. The three measures however, may be effected to some extent by diet, health, and environmental factors, as well as age (Grant 1982, Grigson 1982, Levine 1982). Therefore, age determinations were made using Sisson and Grossman's (1953) data on dental eruption and Amorosi's (1989) collection of studies regarding dental eruption and epiphyseal fusion. Tooth wear stage (TWS) was also determined to facilitate intrasite age at death comparisons (Grant 1982). Measures of sex were limited due to the elements represented but were determined when possible.

Measures of species abundances were determined and recorded. MNI was calculated by the "matching" method which considers size, age, sex, and side and portion of bone (Grigson 1978, Klein and Cruz-Uribe 1984). NISP was also recorded. It should be noted that neither MNI nor NISP is the actual number of individuals represented by an assemblage. MNI is the minimum, NISP the maximum, and the actual number of individuals represented by an assemblage is somewhere between the two measures (Jolley 1983, Klein and Cruz-Uribe 1984). For the above reasons, and because of the existing controversy over MNI and NISP (Bobrowsky 1982, Chaplin 1971, Crabtree 1985, Grayson 1979, 1981, Hesse and Wapnish 1985, Klein and Cruz-Uribe 1984, Reitz and Scarry 1985), both measures are included in the analysis of the Strickland Site osteological material. NISP/MNI ratios were calculated for each animal to facilitate intersite comparisons and fragmentation interpretations (Klein and Cruz-Uribe 1984). In addition to the above mentioned measurements, percentages relative to the domestic or wild assemblages and to the total faunal assemblage were calculated for each taxon.

TABLE 10

Wild Species Faunal Data

ANIMAL	# OF IDENTIFIABLE SPECIES	MINIMUM # OF INDIVIDUALS	# OF IDENTIFIABLE SPECIES/MINIMUM # OF INDIVIDUALS RATIO	# BURNT	# CUT	# GNAWED
Goose	10	3	3	–	–	2 rodent
Turkey	3	1	3	–	–	–
Perch	14	4	3.5	–	–	–
Catfish	61	11	5.5	–	–	–
Box turtle	42	2	21	–	–	–
Diamondback turtle	36	6	6	–	–	–
Deer	99	2	50	1 charred	1 knife marked, 4 chopped	–
Crab	2	1	2	2 calcined	–	–
Opossum	3	1	3	1 charred	–	–
Muskrat	2	2	1	–	–	–
Frog/toad	18	1	18	–	–	–
Fish	95	2	47.5	–	–	–
Rat	3	2	1.5	–	–	–
Squirrel	21	2	10.5	–	2 knife marked	–
Turtle	33	–	–	1 charred	–	–
Terrapin	2	–	–	–	–	–
Woodchuck	3	2	1.5	–	–	–
Raccoon	2	1	2	–	–	–
Rabbit	3	1	3	–	–	–
Chipmunk	1	1	1	–	–	–
Small mammal	75	–	–	–	–	–

TABLE 11

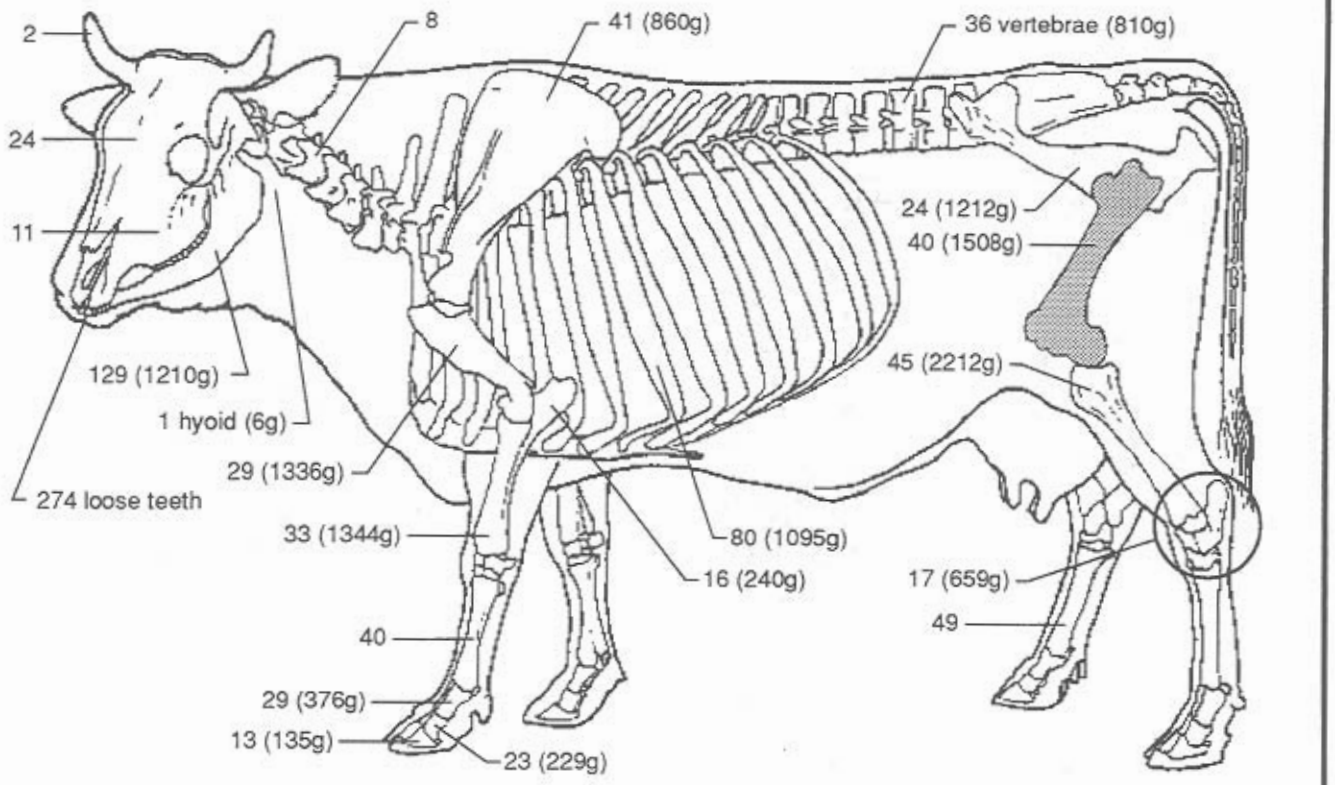
Domestic Species Faunal Data

ANIMAL	# OF IDENTIFIABLE SPECIES	MINIMUM # OF INDIVIDUALS	# OF IDENTIFIABLE SPECIES/MINIMUM # OF INDIVIDUALS RATIO	# BURNT	# CUT	# GNAWED
Cow	987	10	110	18 charred, 1 calcined	79 chopped, 43 knife marked	10 carnivore, 2 rodent
Pig	1139	38	30	12 charred, 10 calcined	12 chopped, 42 knife marked	14 carnivore, 5 rodent
Sheep	249	15	17	5 charred, 1 calcined	15 chopped, 11 knife marked	2 carnivore, 3 rodent
Horse	95	3	32	1 charred	–	–
Dog	75	2	37.5	–	1 knife marked	–
Cat	3	1	3	–	–	–
Rooster	8	2	4	–	1 chopped, 1 knife marked	–
Unidentified medium mammal	4672	–	–	209 charred, 141 calcined	–	2 carnivore, 10 rodent
Unidentified large mammal	530	–	–	63 charred, 8 calcined	–	3 carnivore
TOTAL	7758	71	–	308 charred, 161 calcined	107 chopped, 98 knife marked	31 carnivore, 20 rodent

The William Strickland Plantation Site faunal assemblage is particularly significant because it provides much needed information regarding the foodways practiced at central Delaware farmsteads during the early to mid-eighteenth century. Up to now, such information has been limited due to the lack of data recovery excavations of early historic sites in Delaware. The William Strickland Plantation Site's faunal assemblage will provide a basis of comparison for future Delaware colonial sites.
Due to the secondary, mixed nature of deposition, all faunal material recovered from the Strickland Site is considered as one assemblage. Each domestic taxon is discussed individually, and in relation to the entire assemblage. Deer is the only wild species discussed. Data for other wild species are presented in Table 10 along with the data for deer.

FIGURE 30

Cow Bones by Body Part



(#g) - Number of idetifiable bones (weight in grams)

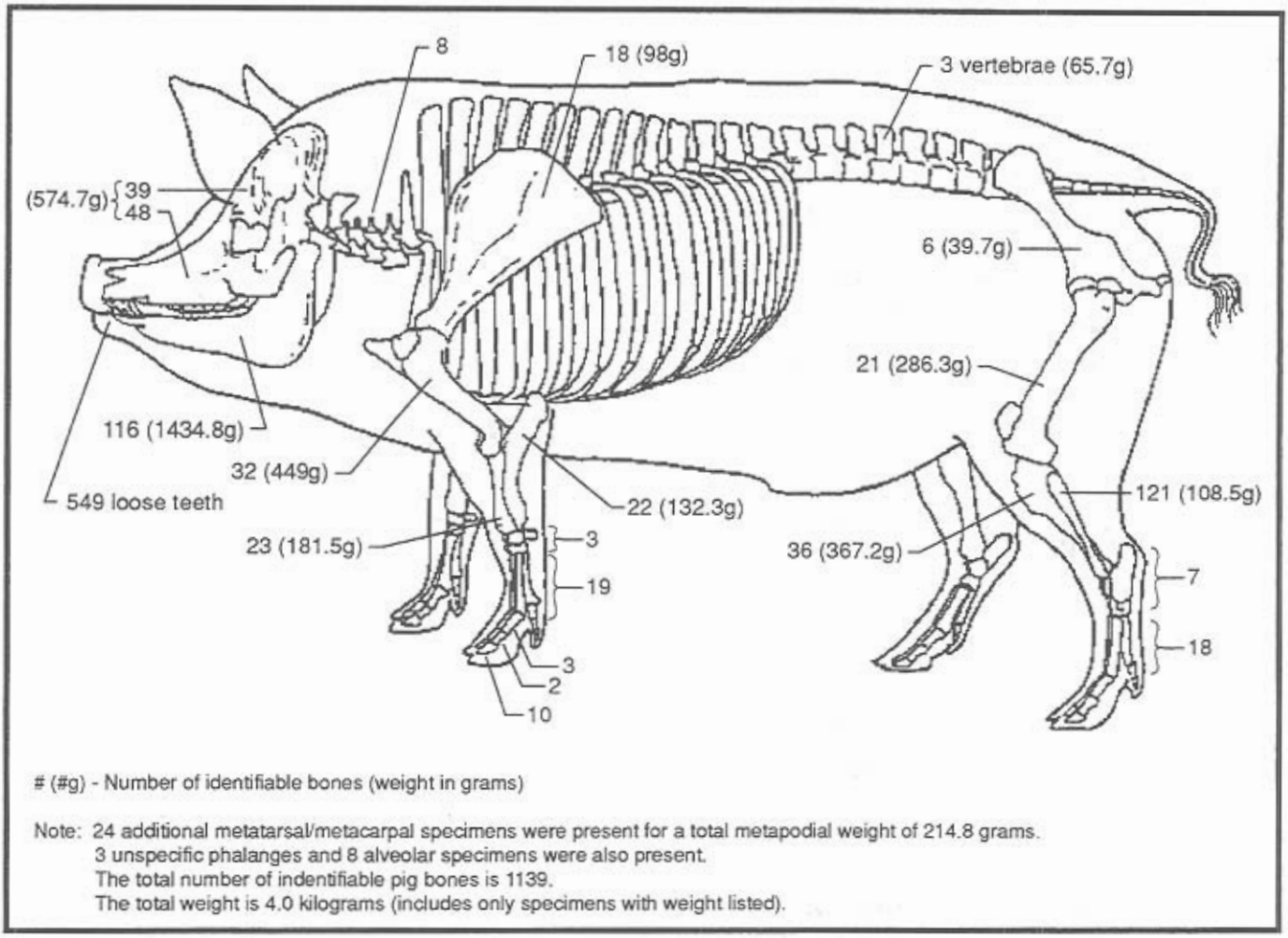
Note: 23 additional metatarsal/metacarpal specimens were present for a total metatarsal/metacarpal weight of 2560 grams.
The total number of indentifiable cow bones is 987.
The total weight is 15.8 kilograms (includes only specimens with weight listed).
Shaded bone is mentioned as an example in text.

Table 11 lists the data for domesticated species. The specimen counts for cow, pig, and sheep are under-representations of the actual number of specimens belonging to the three species. The 530 specimens recorded as unidentified large mammal are almost certainly cow and horse. The majority of the 530 unidentifiable large mammal specimens are also likely to be cows, as fewer horse were identified, and, according to William Strickland's will and the inventory of his property after his death, fewer horses were owned. The 4,672 specimens recorded as unidentifiable medium mammal are the remains of pig, sheep, and possibly deer, and the majority of these are most likely pig and sheep. Unidentifiable small mammals are considered wild species. The osteological remains of the major species are discussed below.

Identifiable cow (Bos taurus) remains consist of 987 specimens, representing 11% of the total assemblage and 39% of the identifiable domestic assemblage. The MNI of cow is 10. All skeletal elements of cow are present, indicating both dietary and butchering refuse. Figure 30 identifies the numbers of each type of cow bone and relates the bones to the overall cow skeleton. The numbers in Figure 30 show the number of specimens for the corresponding bone type (the NISP), and the second number in parentheses notes the bone weight. For example, there were 40 examples of femurs (the large rear upper leg bone shaded in Figure 30) and these weighed 1508 grams. Age at death ranged

FIGURE 31

Pig Bones by Body Part



(#g) - Number of identifiable bones (weight in grams)

Note: 24 additional metatarsal/metacarpal specimens were present for a total metapodial weight of 214.8 grams.
3 unspecific phalanges and 8 alveolar specimens were also present.
The total number of indentifiable pig bones is 1139.
The total weight is 4.0 kilograms (includes only specimens with weight listed).

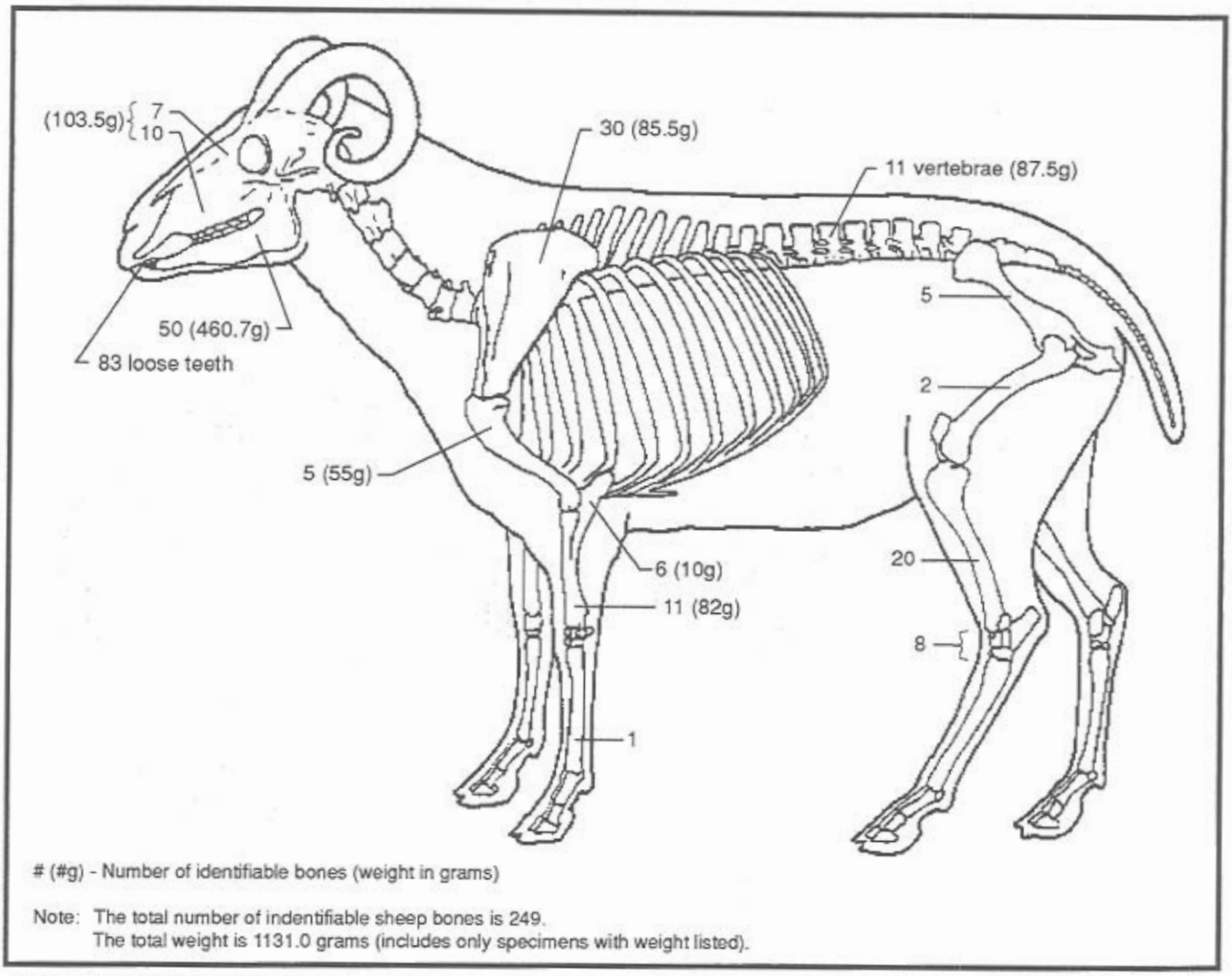
from calves less than 18 months old to cows greater than 40 months old. Although a specific age range for cattle cannot be determined, the age range seems be consistent with James Tilton's notes on Delaware agriculture. Writing in 1788, Tilton points out that "[e]xcepting lambs & calves neither sheep nor horned cattle are customarily sold, under 4 years old. They are not sooner mature or fit to be killed" (Bausman and Munroe 1946). Modified cow bones include rodent and carnivore gnawed bone, and bone burnt to various degrees. Examination of the cow remains also revealed knife marks and specific butchering patterns that will be discussed in more detail later in the report.

Pig (Sus scrofa) was by far the most abundant animal in the assemblage. Identifiable pig remains consist of 1139 specimens, representing 13% of the total assemblage, and 45% of the identifiable domestic assemblage. The MNI of pig is 38. At least 14 female and 18 male pigs are represented in the assemblage. All skeletal elements are present, indicating both butchering and dietary refuse (Figure 31). Age at death ranged from subadults younger than one year to adults older than three years. Modified pig bones include rodent and carnivore gnawed bone and bone burnt to various degrees. In addition, cut marks on some of the pig bones show that they had been butchered and the meat stripped from the bone. The particular way that the pigs were butchered and the treatment of the meat will be discussed later.

The pig bones recovered from the Strickland Site are much smaller and more gracile than those in the modern comparative type collection. The size difference is expected because pigs from colonial times were smaller than modern pigs (Heitman and Irvin 1991, Miller 1988). Reasons for the smaller

FIGURE 32

Sheep Bones by Body Part



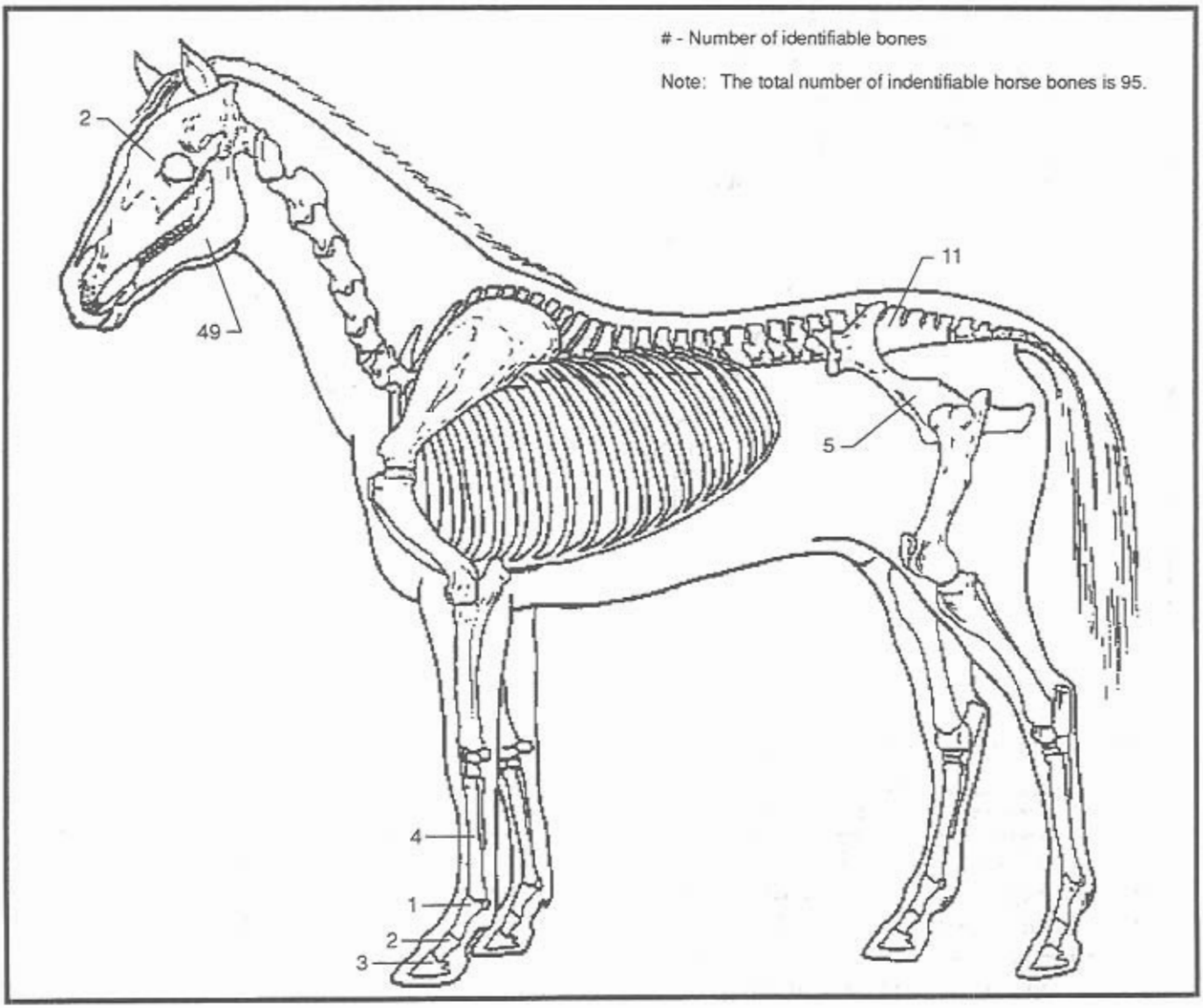
sized pig include the type of breed, diet, and environmental conditions. A 1700s description of the "real American hog" describes a long-legged, short-bodied hog that was narrow in the back and flat on its sides (Passmore, Maske, and Harris 1978). During the 1800s hogs were short and thick, as they were primarily raised for lard and lard based products. It was not until the 1920s that the large hogs known today, became prevalent (Heitman and Irvin 1991).

The small size of colonial hogs was also a product of the type of animal husbandry practiced at the time. It was common practice for farmers to let their hogs run wild, scavenging for any available food (Passmore, Maske, and Harris 1978). R.L. Allen (1848:199) further illustrates how little care the scavenging hogs received; "if [the hogs are] fed at all, it is only to keep them in moderate growth till the second autumn." In autumn, selected pigs were penned and fattened prior to slaughter in November (Allen 1848, Earle 1898, Miller 1988, A. Noel Hume 1978).

Because of the similarity of their skeletal morphology (Boessneck 1970, Reitz and Scarry 1985), bones of sheep and goat are difficult to distinguish and are generally grouped as one taxon (sheep - Ovis aries). Goats, however, were not listed in William Strickland's will or in the property inventory. It is therefore assumed that all bones identified as possibly sheep or goat are actually sheep. Identifiable sheep remains consist of 249 specimens, representing 3% of the total assemblage, and 10% of the identifiable domestic assemblage. The MNI of sheep is 15 (Table 11). All skeletal elements are present, indicating both dietary and butchering refuse (Figure 32). Age at death ranged from lambs less than 24

FIGURE 33

Horse Bones by Body Part

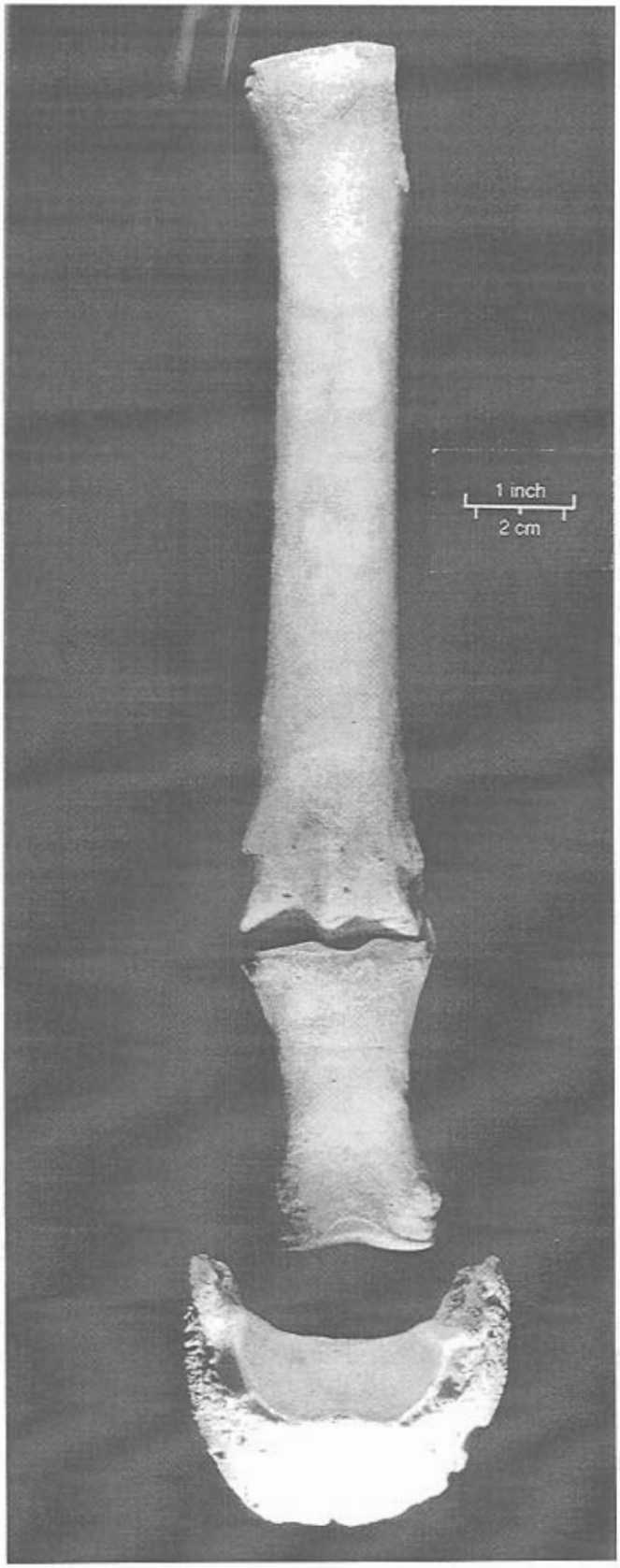


months old to sheep more than 40 months old. Modified sheep bones include rodent and carnivore gnawed bone, and bone burnt to various degrees. In addition, several bones were cut in various ways. The particular butchering practices and techniques involved will be discussed later.

Identifiable horse (Equus caballus) remains consisted of 95 specimens, representing 1% of the total assemblage and 4% of the identifiable domestic assemblage. The MNI established for horse is three. Estimations of age are based on dental eruption, molar root formation and tooth wear patterns. One horse was more than 12 to 14 years old, one was between five and 12, but closer to five years old, and one was less than three years old (Sisson and Grossman 1953). Not all horse body parts were present (Figure 33) in contrast with cows, pigs, and sheep.

PLATE 29

Articulated Lower Horse Leg



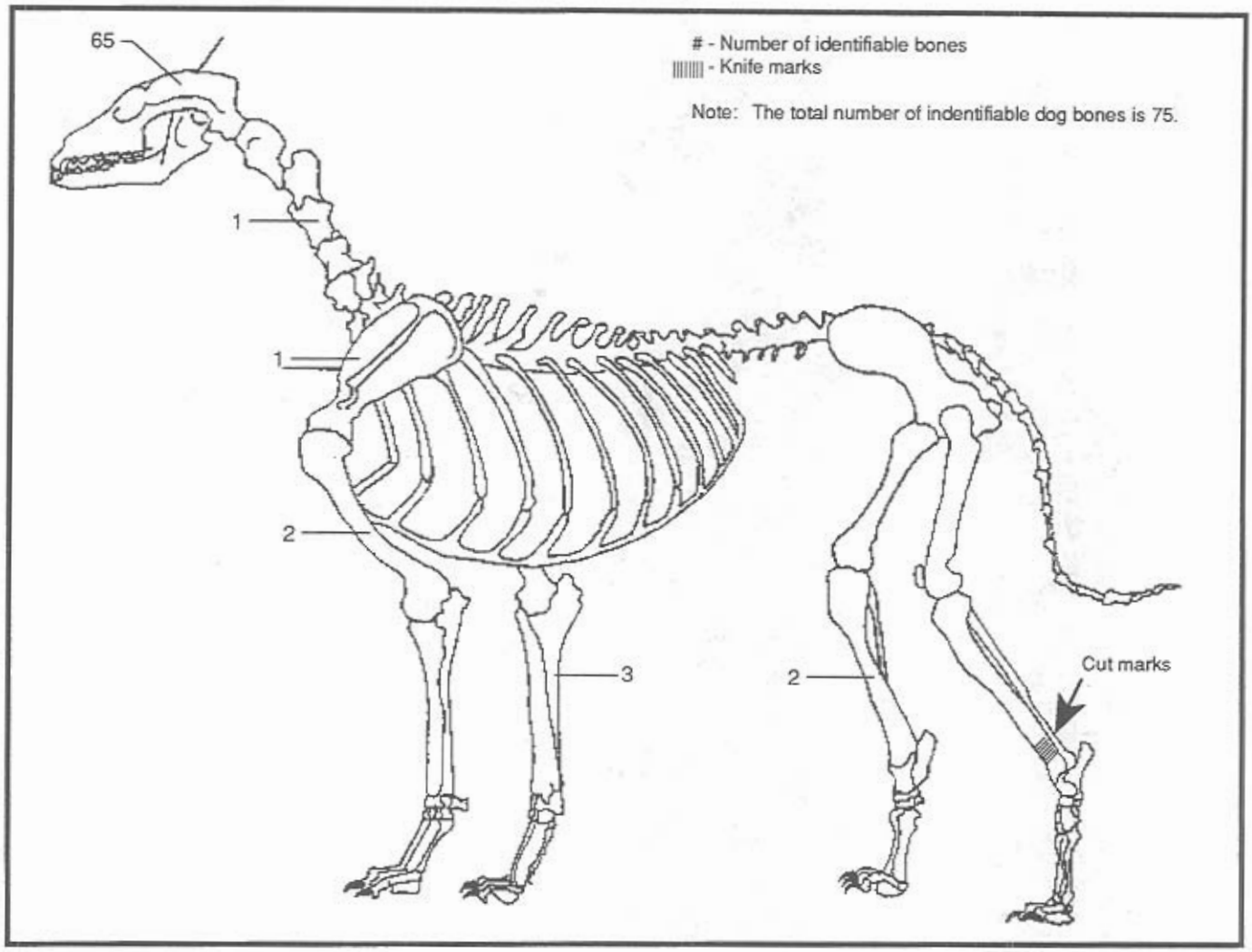
No modifications were made to any of the horse bones, and there is no evidence to suggest that the horses had been butchered. Lancets used for bleeding horses were listed in the probate inventory, suggesting that at least one of Strickland's horse had been unhealthy. It is likely that the horses identified in the assemblage died from ill health, which in one case was probably compounded by old age.

Although no mention of breed was made, William Strickland listed two mares and one horse in his will and one horse colt was listed in his inventory. In 1788 Tilton stated that "very few mules have ever been bred in Delaware. We breed horses for the road & other services; but are not so ambitious of race horses" (Bausman and Munroe 1946:186). Passmore, Maske, and Harris (1978:45) further point out that by 1776 a wide variety of horses were available in Delaware; "Delaware horses included Thoroughbreds, mixed-strain riding and working horses, coach and carriage breeds, draft horses, ponies, and some of the first American mules." The Strickland horses could have been any of the above mentioned breeds and served any of several purposes.

The recovery of horse bones from several features supports the previously discussed interpretation of bone redeposition. Horse specimens were not recovered from the location of original deposition. Specimens that mended to form a single horse mandible, for example, were recovered from Feature 127, Level 1 (outbuilding), Feature 108, Level 4 (well), and from the bottom of Feature 108. Additional horse specimens that mended and articulated (Plate 29) were recovered from various levels of different features throughout the site, again supporting the interpretation of a large scale clearing and subsequent mixing of bones and artifacts.

FIGURE 34

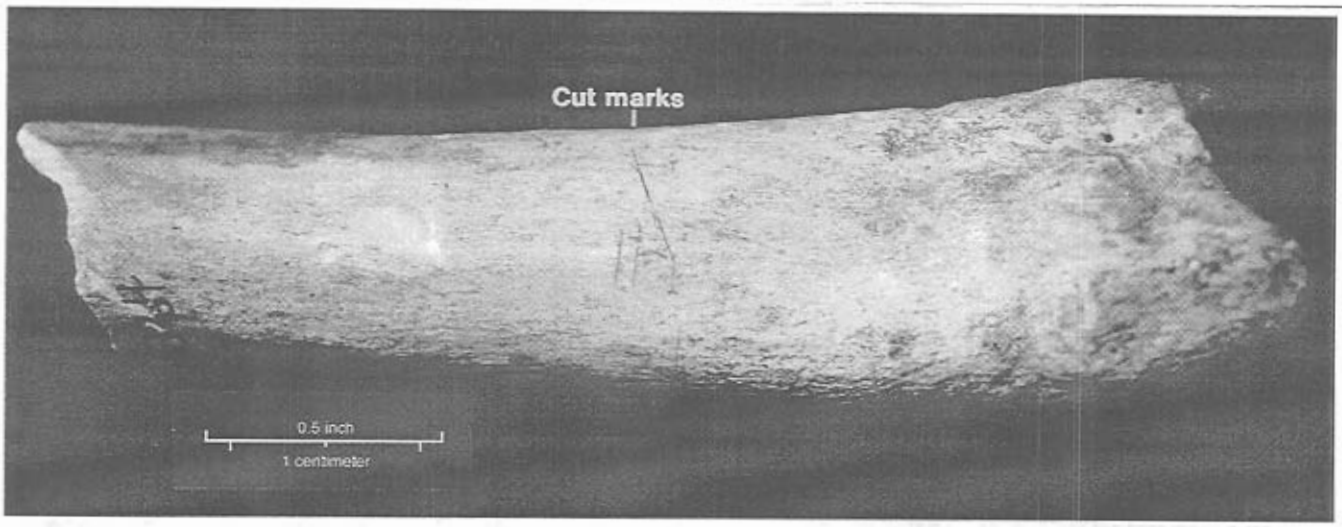
Dog Bones by Body Part



Identifiable dog (Canis familiaris) remains consist of 75 fragments, representing 1% of the total assemblage, and 3% of the identifiable domestic specimens. The MNI established for dog was two. As was the case with horse bones, not all dog body parts are represented (Figure 34). Both dogs were fairly large with a Cephalic Index of less than 54, indicating that the animals were extreme dolichecephalic (at least as large as a German Shepherd). The dentition of both dogs was fairly worn, and in addition, all cranial sutures of one dog were completely fused. These two features suggest that at the time of death both dogs were fairly old.

The role that the dogs played on the Strickland farmstead is unclear, and several factors make it questionable whether the dogs were pets. First, neither dog was recovered from a burial, but rather, from an outbuilding cellar hole and a well, mixed among the other bones and cultural debris. Had the

PLATE 30
Cut Marks on Dog Tibia



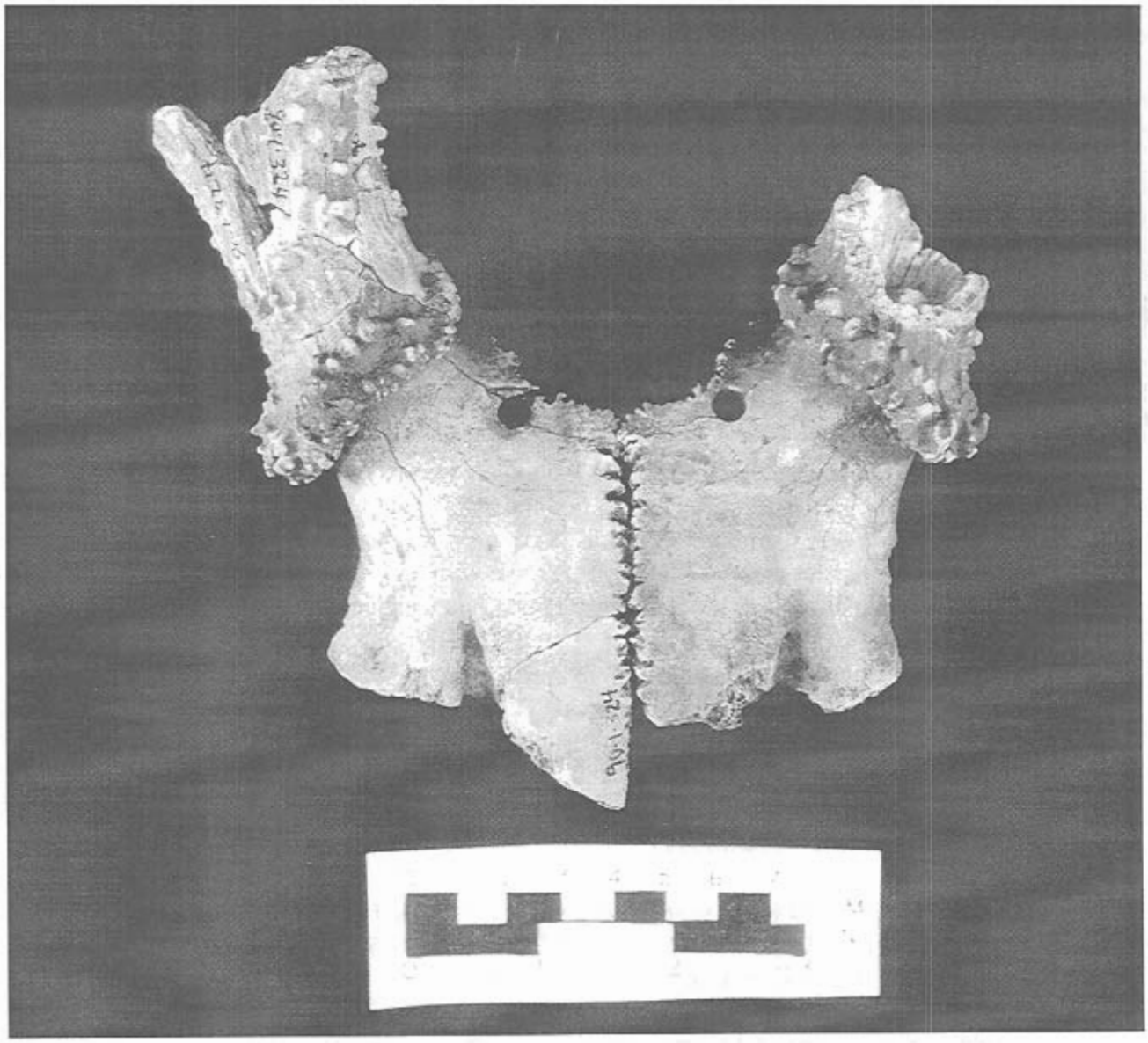
dogs been buried, it is unlikely that the remains would have been dug up and redeposited when the site was cleared. Second, knife marks were present on the distal end of a tibia (lower rear leg - Figure 34, Plate 30). The marks were similar to those occurring on dog and wolf bones recovered from the Buffalo Site, a seventeenth century Indian village located in Putnam County, West Virginia (Guilday 1971). No other modifications to the Strickland dog bones were apparent.

Because all bones identified as dog were fairly large, and because the one bone had been cut, it is possible that canid bones, identified as large dog (Canis familiaris), are actually wolf (Canis lupus). Few morphological differences exist between the two species making specific identification difficult based on bones alone (Olsen 1964, Gilbert 1980). Although rare, wolves did exist in Delaware during colonial times, and bounties for wolves heads were offered in the late seventeenth century by the Pennsylvania Government (Myers 1912).

Three elements of cat (Felis domesticus) were identified, representing less than 1% of the total assemblage and less than 1% of the total identifiable domestic assemblage. No modifications to the bones are apparent. The MNI established for cat was one.

In addition to the domestic animals mentioned, domestic fowl were also present on the Strickland farmstead. Eight avian specimens were identified as rooster. These specimens contributed less than 1% to the total faunal assemblage and less than 1% to the identifiable domestic assemblage. The MNI for rooster is two. Most of the avian remains are highly fragmented and not identifiable beyond the family level (Aves). Although rooster specimens are domestic, and goose and turkey specimens are considered wild, few specimens could be distinguished as domestic or wild. It is possible that a substantial portion of the 324 avian specimens, too fragmentary to identify specifically, were domestic fowl. Hence, the contribution of rooster, and domestic fowl in general, may not be accurately represented, and are likely under-represented, by the few identifiable avian specimens.

PLATE 31
Deer Trophy



As mentioned previously, wild specimens contributed a minimal amount (6%) to the total assemblage and to the diet of the site occupants. However, one wild specimen, a deer trophy, is of particular interest (Plate 31). The trophy included a portion of the cranium and antlers. Although the trophy had the antler bases attached, they were not intact and the actual size could not be determined. However, the mounting of the antlers suggests that they were large enough to warrant display by William Strickland. Numerous other deer antler fragments were also found at the site (Plate 32). Two holes were made in the cranium of the deer trophy and iron rust deposits and stains remained around the holes (Plate 33). The holes and extant iron indicate that at one time the trophy was hung for display.

PLATE 32

Deer Antlers

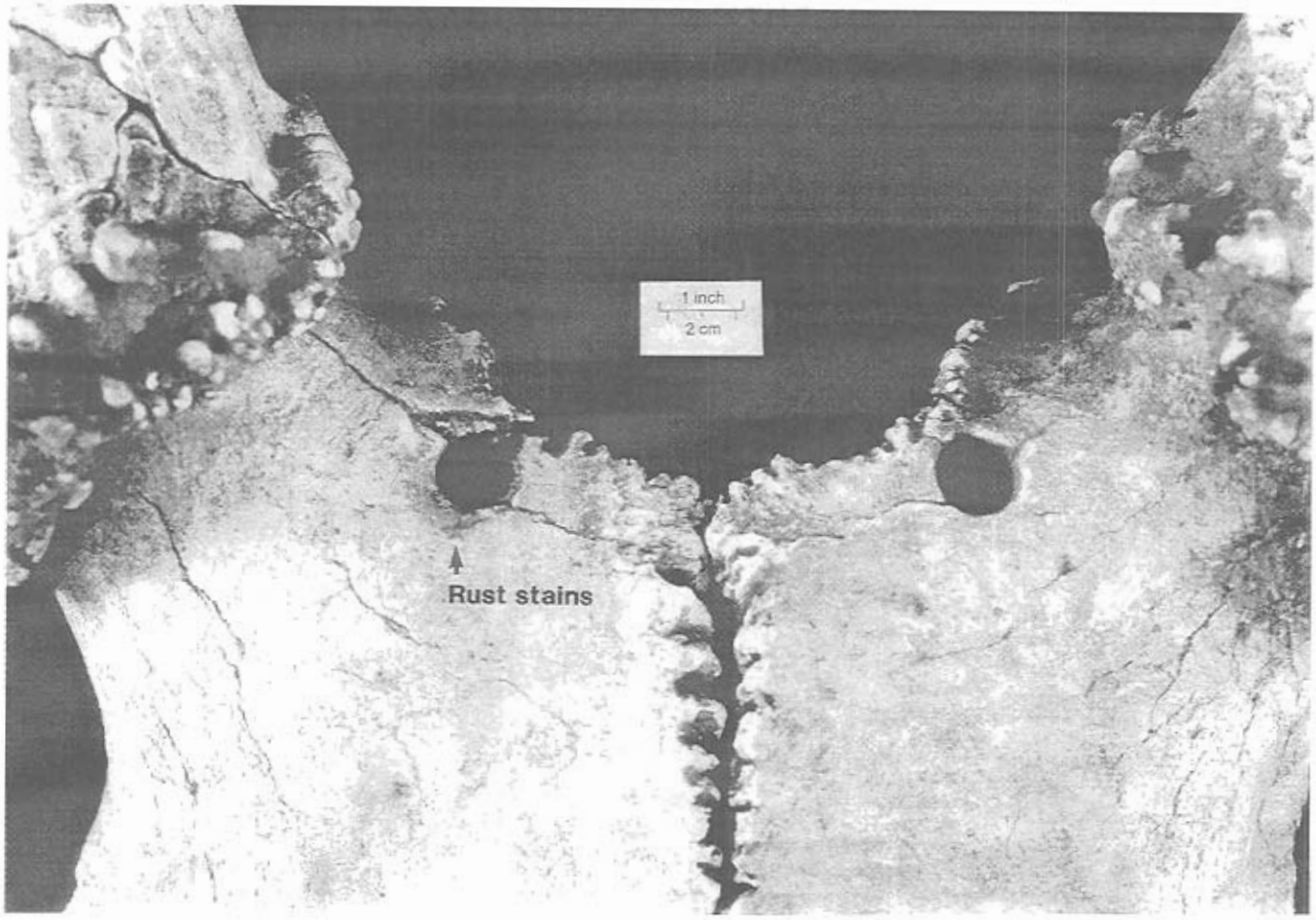
A total of 215 specimens, 2% of the total faunal assemblage, show evidence of having been butchered or cut in some way. The cut marks include knife marks (Plate 30), chop marks, and nonspecific cut marks. Chop marks indicate that the bone had been butchered. Knife marks indicate that the meat had been sliced from the bone after the carcass had been butchered, as in carving. Butchered and cut bone include cow, pig, sheep, deer, squirrel, turtle, dog, rooster and other nonspecific avian specimens.

Of the 215 butchered and cut specimens, 57% (122 specimens) are cow, 25% (54 specimens) are pig, and 12% (26 specimens) are sheep. The remaining 6% (13 specimens) include dog, and various avian and wild species. A higher percentage of cow bones were butchered and cut than were bones of any other species, including pig and sheep. Twelve percent of cow bones, 10% of sheep bones, and only 5% of pig bones were butchered or cut in some way. In addition to the butchered bone, most of the long bone specimens are fragmented, showing primarily spiral fractures from direct percussion impact.

Several butchering patterns are observable among post-cranial butchered and broken cow specimens, and to a lesser extent among pig and sheep specimens. Most of the butchering patterns observable for cow cannot be attributed to differential preservation and identifiability. Most cow

PLATE 33

Rust Marks on Deer Trophy

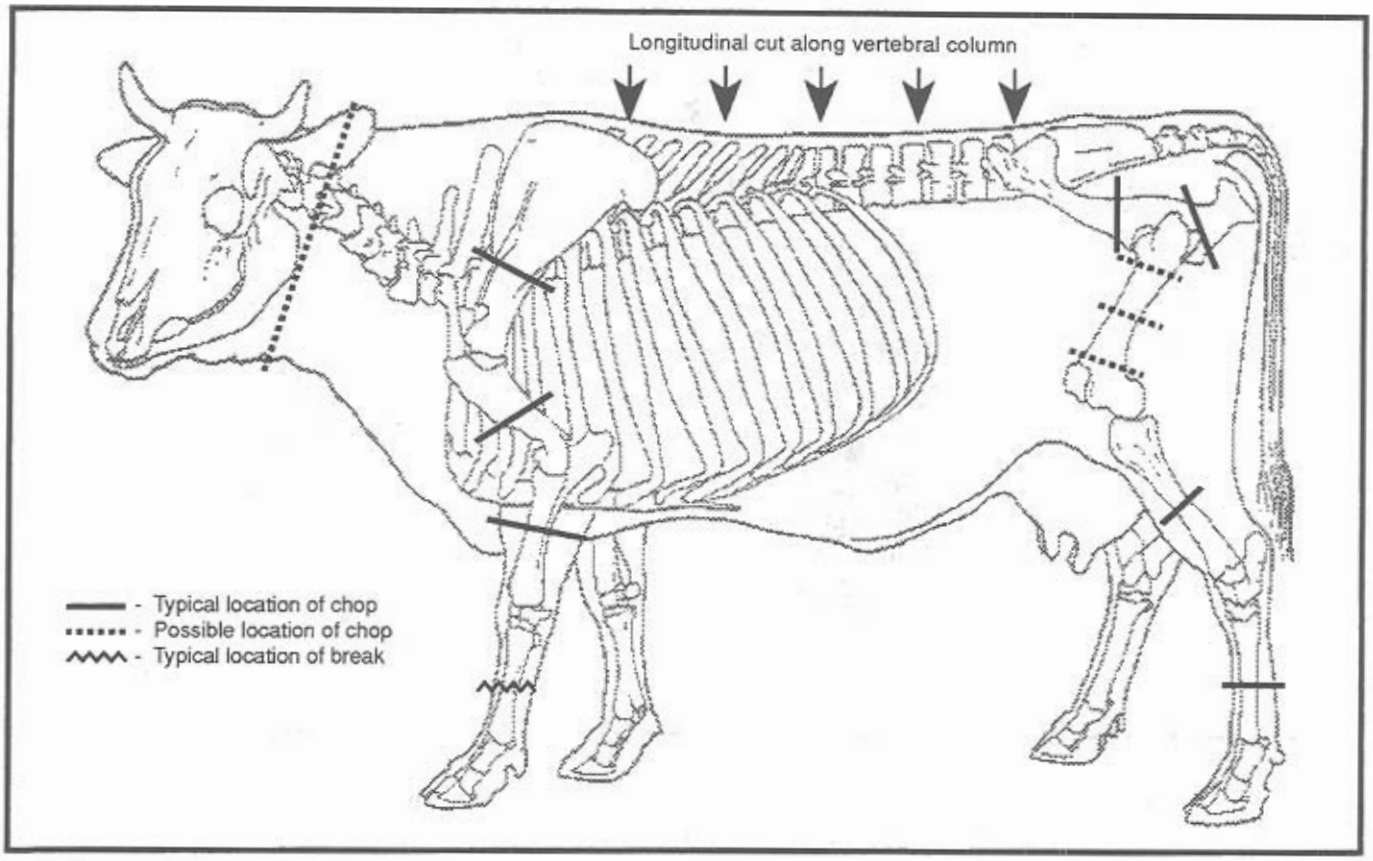


specimens represented are not highly identifiable, nor are they the most likely preserved. Although few cow specimens were chopped or broken in exactly the same location, the general location is consistent for each bone type. When the general pattern of all bone types is examined, the overall butchering pattern for cow (especially for the front and hind limbs) is apparent (Figure 35). Butchering patterns of the axial skeleton (including cranium, ribs, vertebral column, and sacrum) are limited due to the lack of identifiable butchered cow axial bones. Excluding the femur, butchering patterns of the appendicular skeleton (including front limb and scapula, and back limb and innominate) are clear. Unlike other appendicular skeletal elements, the location of the chop marks on femora are not consistent. Explanations for the inconsistencies include the possibilities that the way in which the femora were butchered varied or perhaps each femur was chopped in more than one place. It is also possible that the sample of femora is not adequate to reveal butchering patterns.

Most long bones were cross-sectioned to produced several large cuts of beef. The front limb provided shoulder and foreshank portions and the hind limb provided round, sirloin and shank portions. In addition to producing the particular cuts of meat desired, cross-sectioning the long bones also exposed the marrow. The division of the remainder of the cow carcass (the axial skeleton) and the resulting cuts

FIGURE 35

Cow Butchering Pattern

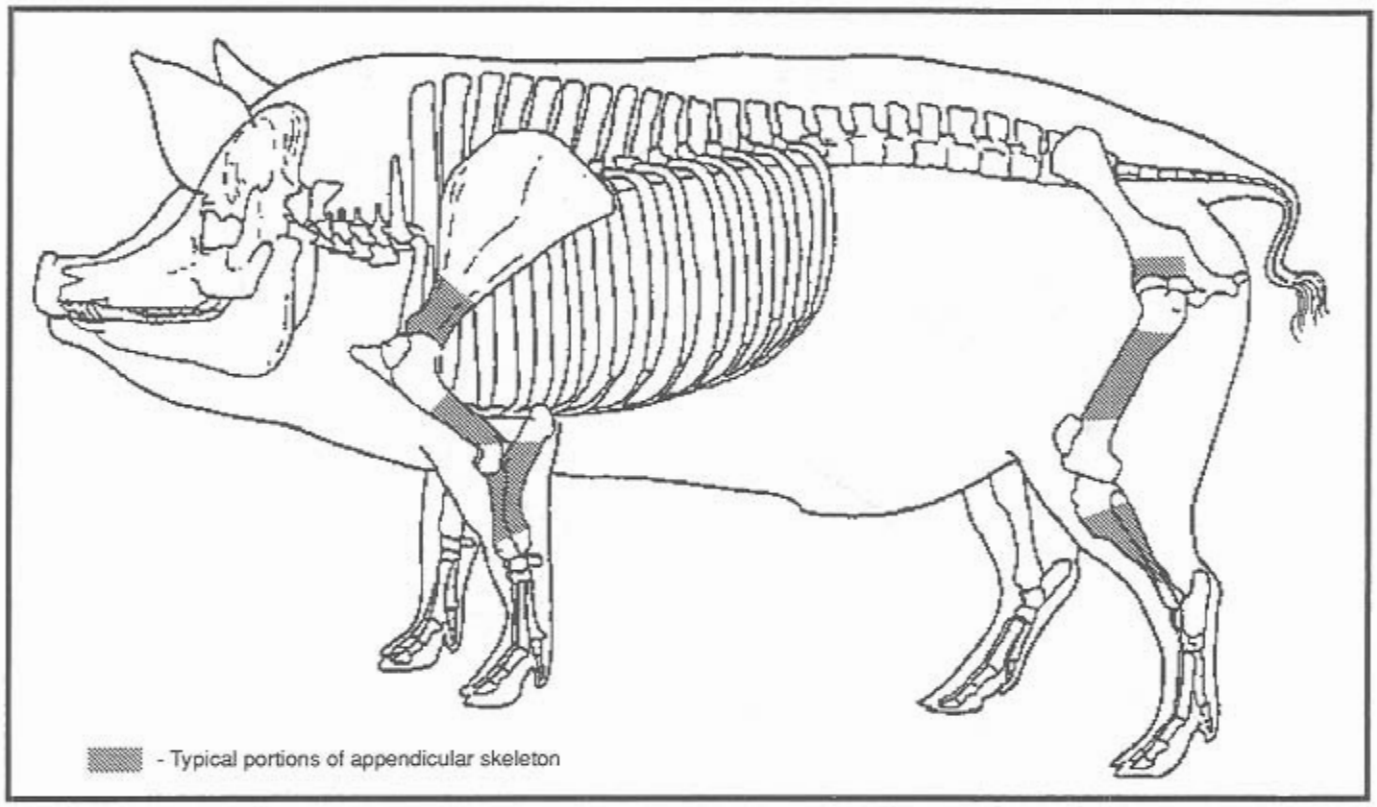


of beef are difficult to determine. Two vertebrae specimens were chopped longitudinally indicating that the carcass was probably split in half along the vertebral column. The cranium was probably removed at the anterior neck prior to splitting the carcass.

Unlike cow, butchering patterns could not be determined for pig. The particular pig specimens present in the assemblage are consistent, but few chop and cut marks were identified. Although butchering patterns were not determined, several interesting trends are observable among pig specimens. For example, few long bones consist of more than a shaft. Humeri, ulnae, femora, and tibia specimens are primarily limited to the shaft portions. Only one tibia distal end, one humerus distal end, and no proximal ends of the above mentioned long bones are present. Only radii (nine of the 23 specimens) include proximal ends. The limited end portions may be due to differential preservation, as shaft portions are more dense and tend to survive better than do end portions. A second trend observable among the pig specimens is the relatively large (rather than fragmentary) portions of the bones (Figure 36). Explanations for the large bone portions include the possibilities that the methods of preserving pork required large meat cuts or perhaps, since larger portions of bones are much more identifiable than small fragments, the greater number of large bone portions are due to biases in identifiability.

FIGURE 36

Common Pig Bone Specimens



As with pig, no clear pattern of butchering is observable for sheep specimens. The lack of a clear pattern is due to the limited number of identifiable sheep specimens and the limited number of cut marks. Of the 249 sheep specimens only one tibia and one ulna have identifiable chop marks. Both bones were chopped near the midshaft. One interesting feature of the sheep bone is identical punctures on three of the six calcanei. The punctures were likely the result of a tool used to hold the carcass or possibly a point used to secure the carcass during butchering.

During the colonial period, methods of food preservation were limited and meat had to be preserved rapidly (A. Noel Hume 1978). Any meat obtained from animals butchered on the Strickland farmstead had to have been eaten or preserved within a few days of their slaughter. Although some animals were butchered during warm weather, butchering in cool weather was preferable because the cold weather slowed the spoiling process. The typical time of slaughter and preservation of animals, especially pig, was in November and December (Earle 1898, Miller 1988, Allen 1848). Methods of preservation included salting, drying, smoking and pickling. Salting was a standard way of preserving beef and pork. Due to the limited success of salting mutton and venison (A. Noel Hume 1978), both were probably eaten fresh more often than beef or pork. Tilton points out that "[s]alted pork & bacon are the meats most used in winter & spring; fresh killed mutton & other cattle ... in the summer & fall of the year" (Bausman and Munroe 1946:186).

Although exact age at death cannot be determined for most of the specimens, the tendency was toward the butchering of older cattle, sheep, and pigs. However, adult and juvenile specimens of horse, cow, pig, and sheep are present, nonetheless. Only two cow specimens, for example, are from

at least one calf younger than 24 months old, whereas 63 specimens (MNI of nine) are from cattle older than 24 months. Two specimens are from at least one lamb younger than 24 months old, whereas 53 specimens (MNI of 10) are from sheep older than 24 months. The same trend is observable for pigs. Twenty-seven specimens are from pigs younger than 24 months old and 377 specimens are from pigs older than 24 months old.

It was not possible to determine whether pigs had been butchered for domestic use, or prepared and marketed as barreled pork after being smoked, pickled, or salted. The pig sample is biased toward butchering refuse. Dental and foot elements represent a higher MNI and NISP than do bones from meat portion suggesting that pigs had indeed been butchered for market purposes. It is cautioned, however, that biases toward butchering refuse may be due to biases in preservation and identifiability rather than presence or absence. Teeth preserve better than bone, and teeth and foot bones are after more identifiable than are other bone fragments. Nearly all pig tooth and foot specimens were identified but not all other pig bones were identified. There are many unidentifiable medium mammal bone fragments that, if they could be identified, would probably increase pig dietary refuse, and possibly equalize the butchering/ dietary refuse ratio.

As with pig, it is difficult to determine whether sheep were being butchered then sold, or butchered only for consumption by the site occupants. There is a bias toward butchered sheep elements but, as with pigs, the bias may be due to preservation and identifiability, and not due to true presence or absences. In addition to dietary use, sheep were raised for wool in colonial Delaware (Bausman and Munroe 1946, Earle 1898). Earle (1898:167) points out that in colonial days "every farmer and his sons raised wool and flax; his wife and daughters spun them into thread and yarn." Due to the importance of wool and the limited number of offspring produced, it is likely that most sheep would have been slaughtered only after several breeding seasons, allowing a sizable herd to be maintained. As discussed above, sheep specimens from the William Strickland Plantation Site show a tendency toward an older age at slaughter.

Unlike pig and sheep, it is clear that all osteological evidence of cattle recovered from the Strickland farmstead represents the foodways of the site occupants, and is not a reflection of beef sale practices. Although more butchering than dietary refuse is present, it is unlikely that cattle were butchered on the Strickland farmstead then sold. As mentioned previously, the NISP does not accurately represent the actual number of cow specimens present. If unidentified large mammal specimens were identified, cow butchering/dietary refuse ratios would possibly equalize. Also, cattle raised for sale were typically sold on the hoof. Cattle raised in lower Delaware for the purpose of sale were typically driven to New Castle County where they were fattened prior to sale near Wilmington and Philadelphia (Bausman and Munroe 1946). It is possible that cattle were being raised on the Strickland farmstead then herded from the farm prior to sale. However, if cattle were sold on hoof, evidence would not prevail in the faunal material recovered from the Strickland site. Hence, all cattle remains recovered from the site most likely resulted from cattle raised and butchered on site specifically for the occupants' consumption.

Five percent of the total faunal assemblage (475 of the 8865 specimens) are burnt. A total of 312 specimens are charred and 163 specimens are calcined. Charred bone results from the bone being directly exposed to flames for a short period of time, such as the time required to roast a meat portion.

Bone burnt to a white, calcined condition results only when bone is directly exposed to flames for an extended period of time, and does not occur when meat is merely cooked over an open flame (Crader 1984). Among the explanations for calcined bone include the possibilities that they could have been used as fuel, swept into hearths while cleaning, processed as garbage, or that they resulted from post depositional fires (Crader 1984, Demeter 1992, Reitz and Scarry 1985). It cannot be determined whether the calcined bone had been burnt to a lesser degree prior to becoming calcined, so the method of cooking cannot be ascertained from these bones. Eighty-nine percent of the burnt bone is broken into small fragments, possibly by trampling, making identification difficult.

Most of the osteological remains (95%) recovered from the site are not burnt, implying that the majority of the cooking was done in a pot rather than over open flames (Crader 1984). Typically, smoked and salted meats were boiled, whereas fresh meats were roasted to some degree rather than boiled (Bausman and Munroe 1946).

In sum, the faunal assemblage recovered from the William Strickland Plantation Site reveals several interesting points about the foodways of the site occupants. Twenty-nine species were recovered and identified from the site. The domestic species include, but are not limited to, species present on the farmstead at the time of William Strickland's death. The types of animals raised did not change significantly during the period of site occupation. According to William Strickland's will and inventory, at the time of his death at least 17 cows, 23 sheep, four horses, 15 hogs and an unspecified number of "hoggs in the penn" were present on the property. Based on the artifacts recovered, the types of structures and numbers of animals present, it is clear that Strickland was raising animals for domestic and probably commercial use. Primary reliance was on domestic species, with wild species contributing minimally to the subsistence of the site occupants. Cattle, pigs, and sheep were raised and butchered, and the meat preserved at the site. Strickland's cellar (Feature 147) may have approximated the following description of the contents of a Dutch colonial cellar (Earle 1898:10): "There were hogsheads of corned beef, barrels of salt pork, tubs of hams being salted in brine, tonnekens of salt shad and mackerel, firkins of butter, kegs of pig's feet, tubs of souse, kilderkins of lard."

Pigs were the most abundant animal, both in terms of MNI and NISP. If slaughtered for domestic purposes only, pigs provided the greatest amount of meat. Cattle provided the next greatest amount of meat and sheep provided the least amount of meat of the three species. The relative amount of meat provided by each of the three species is based on the significant differences in the MNI of each. Although pigs are smaller than cattle, there were over four times more pigs than cattle represented in the assemblage. All three species were typically butchered at an age greater than 24 months.

Although the age at death was biased toward older animals, young animals were also slaughtered, suggesting that Strickland was secure regarding the number of animals he owned and the amount of food and materials they provided. The slaughter of young animals obviously limits the contribution that they can make to the farmstead. Lambs and calves killed while young, for example, will not provide wool and milk. Also, the slaughter of animals before they produce offspring prevents them from contributing to the maintenance of the herds. Apparently the cattle, sheep, and pigs owned by William Strickland were numerous and healthy enough that not all animals had to be maximally utilized. Young animals, which are more tender and tasty, could be slaughtered without detriment to the farmstead.

TABLE 12

Oyster Shell Data

	FEATURES									
	F. 73	F. 77	F. 93	F. 103	F. 108	F. 127	F. 147	F. 175	TOTAL	%
Number of shells	5	6	25	12	46	3	105	36	238	--
SALINITY										
Low	5	6	25	12	44	3	99	36	230	97%
Moderate	0	0	0	0	1	0	5	0	6	2%
High	0	0	0	0	1	0	1	0	2	1%
Very high	0	0	0	0	0	0	0	0	0	0%
SEASONALITY										
Fall (Sept., Oct., Nov.)	0	1	1	1	7	0	31	3	44	18%
Late Fall/Early Winter (Dec.)	2	1	8	8	17	1	36	13	86	36%
Winter (Jan., Feb.)	0	0	8	1	14	1	18	13	55	23%
Late Winter/Early Spring (March)	0	0	0	0	1	0	1	0	2	<1%
Spring (April, May)	0	0	0	0	0	0	2	0	2	<1%
Summer (June, July, August)	0	0	4	1	2	1	5	1	14	6%
Unknown	3	4	5	1	5	0	12	6	36	15%

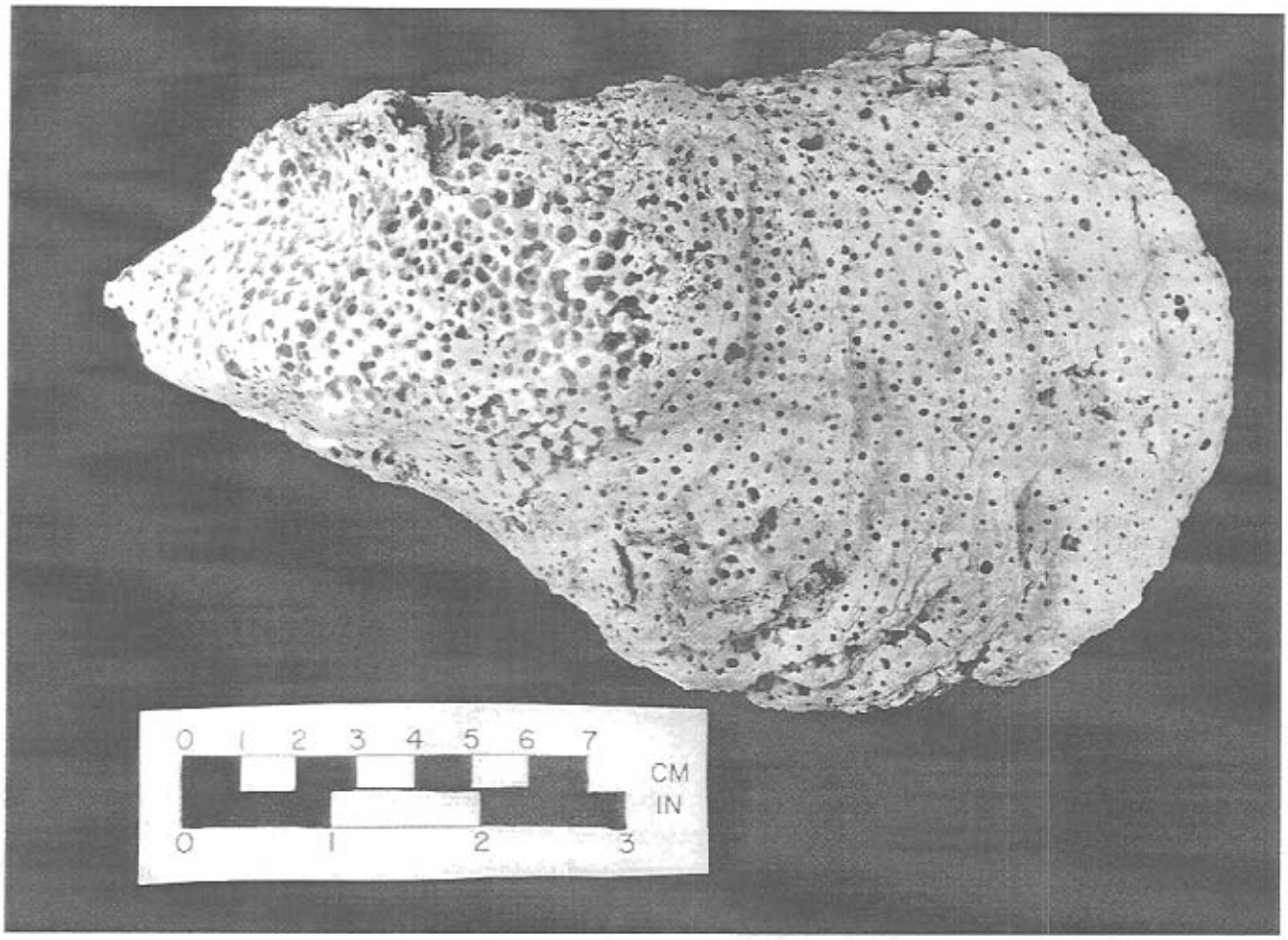
Shell Remains

Large amounts of oyster shell were recovered from the William Strickland Plantation Site, including 238 whole shells. Following the research of Kent (1981; 1988), Doms (1987), and Chaney and Miller (1992), the oyster assemblage was examined to determine patterns, methods, and seasonality of procurement, water salinity, and harvesting and opening methods. Table 12 summarizes the oyster data. The largest number of oyster shells were recovered from Feature 147, the cellar in Structure I, and significant collections were also retrieved from Feature 108 (well), Feature 175 (unfinished cellar or borrow/daub pit), and Feature 93 (well). The salinity of the water within which the oysters grew can be determined by the presence and absence of various parasites, such as worms, sponges, and other molluscs, who bore through oyster shells and leave tell-tale holes (Plate 34). The salinity data in Table 12 shows that the majority of the oysters came from low salinity waters that had salt concentrations of less than 10 parts per thousand (ppt) for half of the year, and 10-20 ppt for the remainder of the year (Kent 1988:41).

Table 12 also shows that oysters from the William Strickland Plantation Site were primarily harvested during cold weather months. Cold weather oyster use may be due to health concerns because various algal tides may be ingested by oysters during warm weather months and cause sickness in human consumers. However, some research has shown that people prefer the taste of cold weather oysters because oysters often undergo anaerobic respiration in winter. This anaerobic respiration causes extra minerals to be ingested by the oysters giving them a more salty taste (Kent 1988). It is also possible that oystering took place during the fall and winter because the time demands of grain farming were lowest during those seasons. Because methods of preserving oysters were limited in colonial time, they were probably consumed within days of their procurement. Therefore, William Strickland's table was graced by oysters, referred to as a shellfish "with sensibilities so fine" by the eighteenth poet William Cowper, only during the cold weather months.

PLATE 34

Oyster Shell with Parasite Bore Holes

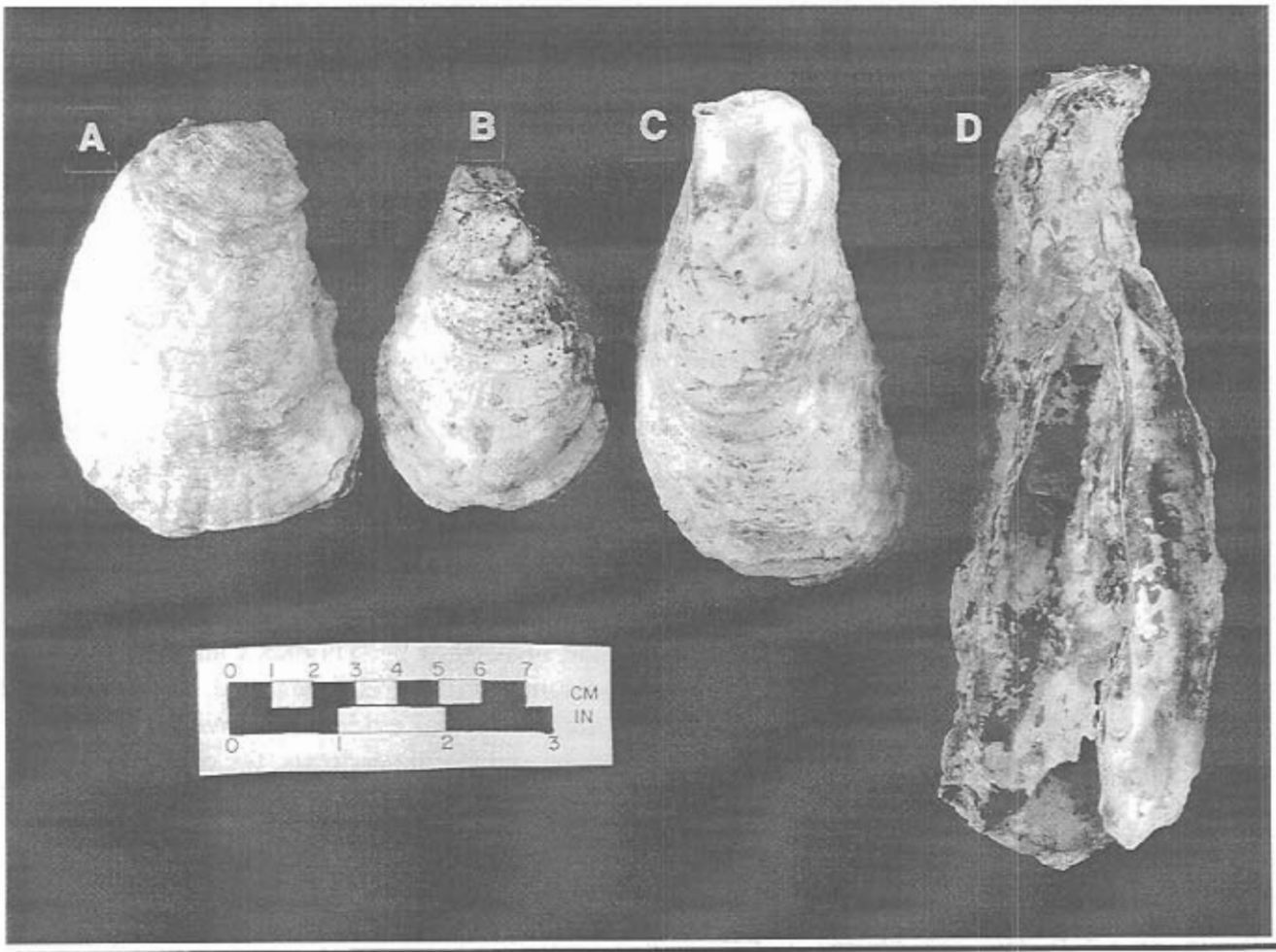


The types of locations from which oysters were collected can be determined by their shapes and Plate 35 shows varied types of oysters based on their shell shapes. As can be seen from Table 13, 78% of the shells recovered were classified as mudflat oysters, with a further 20% recorded as reef oysters. Fewer than 1% of the total were channel oysters. Mudflat and reef oysters are found in shallow waters while channel oysters are found in deep water. Therefore, most of William Strickland's oysters came from shallow-water, near-shore environments. The oyster assemblage shows a remarkably narrow range in the age of the oysters at the time of harvest (Table 14). The median age of oysters in all of the features was between three and four years old, and the average ranged from 2.7 years to 4.5 years. A pattern of this type indicates intensive harvesting and utilization of the oyster population (Kent 1988).

The results of the oyster shell analysis suggest that the inhabitants of the site were collecting mudflat and reef oysters at low tide, and most of the oysters came from relatively fresh or slightly brackish water. This collection pattern is similar to that observed at several seventeenth century sites in Maryland and Virginia, where shallow water oysters, accounting for over 90% of the shells, were harvested during initial colonization (Kent 1988). By the 1740s, however, as seen in the shell assemblage from the John Hicks Site in St. Mary's City, Chesapeake colonists were consuming considerably more deep channel oysters than mudflat oysters (Chaney and Miller 1992). The evidence from the William Strickland Plantation Site indicates that settlers on the Delaware River drainages were using collection strategies that were observed in the Chesapeake nearly a century earlier, and serves to illustrate the frontier setting of the lower Delaware Valley area.

PLATE 35

Types of Oysters Based on Shell Shapes



A and B: Mud flat oysters C and D: Reef oysters

TABLE 13

Oyster Environment Summary

	TYPES			
	MUD FLAT	REEF	CHANNEL	SAND
Feature 73	4	–	–	–
Feature 77	2	2	–	–
Feature 93	21	3	–	1
Feature 103	6	6	–	–
Feature 108	38	1	–	–
Feature 127	2	–	–	–
Feature 147	80	22	2	–
Feature 175	19	11	–	–
TOTAL (220)	172	45	2	1
PERCENTAGE	78%	20%	1%	<1%

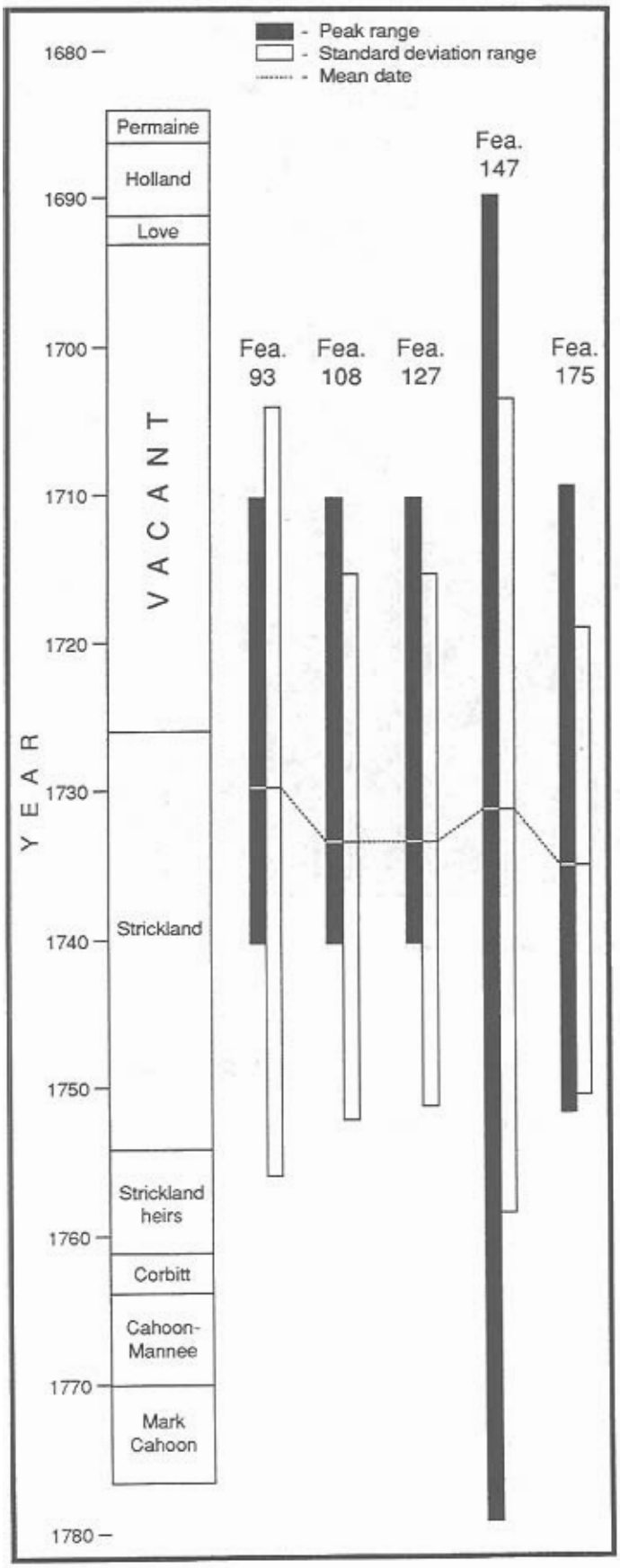
TABLE 14

Age of Oysters at Harvest

	AVERAGE AGE OF OYSTERS (YEARS)
Feature 73	4.50
Feature 77	2.75
Feature 93	3.61
Feature 103	3.41
Feature 108	3.58
Feature 127	2.66
Feature 147	3.20
Feature 175	3.13

FIGURE 37

Household Data Chart



INTRASITE ANALYSES AND INTERPRETATIONS

In this section of the report, analyses of the plow zone artifact distributions and soil chemical sampling will be presented, followed by interpretations of the site utilizing the results of these tests, and data derived from both archaeological and historical investigations. First, however, some chronological considerations are necessary.

The historically-documented occupation of the site up to ca. 1830 can be divided into five periods: 1) the late seventeenth century occupations by, successively, Pearman, Holland, and Love; 2) the decades of the early eighteenth century when the property was apparently vacant; 3) the Strickland occupation from circa 1726 until his death in 1753; 4) the brief period when the land was owned by the Strickland's heirs; 5) and the ownership by Thomas Cahoon and tenant occupation by Peter Mannee. Based on the archaeological evidence recovered from plow zone and feature contexts, the occupation of the excavated site spans a fairly short duration of about 25 years, dating from circa 1730 to circa 1755. Following the work of Mrozowski (1984) a household data chart was prepared (Figure 37) for the deep features. This figure plots the known historical chronology of site household occupation periods along with the peak date ranges of the mean ceramic dates. A one standard deviation range of dates is also plotted. Figure 37 illustrates the relationships among the features at the site, and indicates that each of these features is related to the same general occupation period at the site. Indeed, four of the features (Features 93, 108, 127, and 175) have the same peak ranges, and Feature 147 has a longer peak range of 1710-1780.

Overall, the period illustrated by these data coincides with the occupation of the property by William Strickland, his family, and his slaves. The known earlier occupation (from 1684 to 1730) and the later Peter Mannee occupation (circa 1765 to 1780s) were unfortunately not represented archaeologically at the site, and will not be discussed further.