VI. FLORAL AND FAUNAL ANALYSIS

A. METHODOLOGY

1. Faunal Analysis

Bones and bone fragments were identified anatomically and speciated with the aid of a comparative faunal collection and reference materials (Audubon Society 1983; Chaplin 1971; Cornwall 1956; Gilbert 1973; Miller 1973; Morris 1975; Olsen 1964, 1968, 1979, 1980; Ryder 1969; Schmid 1972). Descriptive data were recorded on catalog sheets according to the standardized code sheet. Each bone and bone fragment was counted, weighed to the nearest gram, described by taxon, element fragmentation, segment of portion, and side. Bone fragments which cross mended or articulating bones which fit together were noted. The presence or absence of epiphyseal fusion of long and short bones was noted. Bone modification by burning was noted as to whether the specimen was charred to a black or white condition. Gnawing of specimens by rodents/dogs were also noted. Bone modification by butchering or breakage was described. Complete or partially complete bones were measured according to von den Driesch (1976). Whole bones were noted as such. Some general length measurements were recorded for rib, longbone and some flat bone fragments. Measurements were recorded in millimeters or centimeters.

The recovered bone comprised three levels of identifiability: highly diagnostic, partially diagnostic and non-diagnostic. Highly diagnostic bone was identified to genus or species and to specific anatomical placement, including side (except for phalanx bones). Partially diagnostic bone refers to bones which could be assigned a class size (small,medium, large mammal) and specific anatomical placement or to bones which are identifiable to general anatomical placement (vertebrae, skull, longbone). Specimens listed as non-diagnostic are merely fragments which gave no hint as to what skeletal elements they once helped comprise. Remains listed as longbone fragments refer to the particular structure of limb bones, and how it is differentiated from the structure of the skull, axial skeleton and girdles (Cornwall 1956).

In cases where the body part could be identified but the species could not, small, medium and large mammal determinations were made by a process of measurement and elimination. The fragments labeled as large are probably cow and not deer. The fragments labeled as medium are probably pig and not sheep. The small category represents animals in the size range of a rabbit, squirrel, opossum, dog or cat. The class size medium/large has lost meaning since this category could encompass several undifferentiated species. Medium/large bones are described but will not be discussed further in the report.

The determination of species frequencies and the relative frequency of meat types in the diet was based on several methods: the total number of fragments for each species, the relative percentages, the minimum number of butchering units (Lyman 1987) and the total bone weight for each species represented. This assemblage was characterized by a great deal of bone fragmentation. Because of the high fragmentation rate, there were numerous cross-mended elements. Numerical accommodation had to be made for the high fragmentation rate so that species frequency would not be skewed. Fragments which cross-mended were noted. Although the total number of fragments (TNF) is recorded on Table 18, the adjusted TNF is the figure which was primarily used in data manipulation. The adjusted TNF accounts for cross mends and is a smaller number than the TNF. For example, in DU 4B, the total number of fragments

TABLE 18. FAUNA BY DEPOSITIONAL UNITS.

SPECIMEN	4A		4B		58A		58B		58C		58D		58E	
	#	WGT	#	WGT	#	WGT	#	WGT	#	WGT	#	WGT	#	WGT
COW	.	.	.	.	16	64.3	.	.	14	348.4	.	.	17	134.8
PIG	36	155.4	10	27.9	123	176.7	34	105.2	195	390.3	3	8.5	.	.
SHEEP	.	.	.	.	23	122.4	22	52.6	55	71.8	.	.	44	240.6
DEER	.	.	.	.	.	.	.	.	13	103.3	.	.	.	.
HORSE	.	.	.	.	.	.	.	.	2	62	.	.	.	.
DOG	.	.	.	.	2	3	.	.	.	.	.	.	.	.
RABBIT	.	.	.	.	1	1.2	.	.	2	1.5	.	.	.	.
SQUIRREL	.	.	.	.	.	.	.	.	1	0.5	.	.	.	.
MOUSE	.	.	.	.	1	0.7	.	.	6	1.2	.	.	.	.
RAT	.	.	.	.	.	.	.	.	3	0.6	.	.	.	.
CHICKEN	2	2.4	.	.	.	.	.	.	.	.	6	4.9	15	27.5
DUCK	.	.	.	.	.	.	12	12.5	15	11.3	.	.	.	.
PIGEON	.	.	.	.	3	4.5	5	3.5	12	5.9	.	.	5	2.4
GROUSE	.	.	.	.	.	.	.	.	10	7.1	.	.	.	.
GOOSE	.	.	.	.	.	.	.	.	3	2.2	.	.	.	.
GUINEA HEN	.	.	.	.	.	.	.	.	.	.	.	.	23	15.5
BASS	.	.	.	.	.	.	.	.	8		.	.	.	.
PERCH	.	.	.	.	.	.	.	.	6	0.2	.	.	.	.
HERRING	.	.	.	.	.	.	.	.	49	-	.	.	.	.
SHAD	.	.	.	.	.	.	.	.	19	-	.	.	.	.
SWORDFISH	.	.	.	.	.	.	.	.	6	-	.	.	.	.
OYSTER		3382		217		4791		2319		3679		44		57
MUSSEL	.	.	.	.	.	.	.	.		4	.	.	.	.
CLAM	.	.	.	.		664		43		972		25		66
RAZOR CLAM	.	.	.	.	.	.	.	.		3	.	.	.	.
SLIPPER	.	.	.	.	.	.		1	.	.	.	.	.	.
SCALLOP	.	.	.	.		1	.	.	.	.	.	.	.	.
WATER SNAIL	.	.	.	.	.	.	.	.		1	.	.	.	.
SM. MAMMAL	.	.	.	.	7	7.1	.	.	4	5.6	.	.	.	.
MED. MAMMAL	13	20.8	.	.	21	31.3	42	51.3	45	86	8	29	3	6.6
MED-LG. MAM.	.	.	.	.	18	58.2	.	.	3	2.7	.	.	.	.
LARGE MAML.	.	.	.	.	5	15.6	.	.	36	119.1	4	38.2	18	52.7
BIRD UNDET.	.	.	.	.	23	11.8	20	5.7	75	20.7	3	0.9	18	17.1
FISH UNDET.	.	.	.	.	21	0.2	1	*	149	*	.	.	2	*
SHELL UNDET.	.	.	.	.		*	.	.		4	.	.	.	.
NON DIAGNOST.	8	3.2	2	2.7	127	74.7	83	31.5	476	187.6	3	2.5	51	32.5

Note: all weights given in grams; *= <.1 gram
Counts indicate total number of fragments (TNF).

identified as pig was 10. All of the 10 fragments were from one pig scapula which cross-mended. The adjusted total number of fragments (TNF*) is therefore only 1.

No single analytical technique, in isolation, is sufficient to compensate for all the variables impacting a faunal assemblage. All species are underrepresented to some degree in any faunal analysis because of numerous preservational and depositional variables. It is more likely that what is derived from analysis is a proportional relationship. The proportional relationship can suggest relative importance placed on various species and the proportional role each played in dietary composition.

2. Floral Analysis

A poppy seed recovery test was used to test effectiveness and consistency of flotation procedures. Poppy seeds range in size from 0.7 mm to 1.4 mm and are an appropriate sized seed to test the effectiveness of micro seed recovery. One hundred charred and one hundred non-charred poppy seeds were added to one sample prior to flotation. The recovery rate is a measure of seed loss, damage and inter-sample contamination. No contamination was noted and recovered control seeds were not fragmented. The control seed recovery rate was 51% and was considered satisfactory.

Thirteen flotation samples were analyzed. The heavy and light fractions derived from the flotation samples were viewed under a binocular dissecting microscope. Each sample was systematically scanned and floral material was removed, identified, counted and placed in a labeled vial. Each floral specimen was given a count value of one. Material was identified in most cases to the species level. Confirmation of species was aided by cross-checking with an extensive type collection of floral specimens and consultation with references (Cox 1985; Fernald 1970; Gunn 1970; Lawrence and Fitzsimons 1985; Martin 1972; Martin and Barkley 1961; Mohlenbrock 1980,1981; Renfrew 1973). The floral analysis includes historical attitudes about the recovered plants as well as about the physical properties of the plant.

B. RESEARCH OBJECTIVES

One fundamental objective was to delineate the self-sufficiency of the site under study. Stewart-Abernathy, in defining "urban farmsteads" states:

> Each household thus when possible had to grow some of its own food, feed and care for some of its own animals, acquire its own water through wells, dispose of its own organic and inorganic waste, and store its own fuel for cooking and heating. All these tasks were undertaken in addition to a trade or craft to provide livelihood for the family Stewart-Abernathy (1986:6).

Records indicate that a cow was kept by the residents of the parsonage. The records also repeatedly refer to a garden area adjacent to the parsonage. In addition, there is reference to a stable. This certainly suggests that the pastor who occupied the parsonage was providing additional foodstuffs as a way of augmenting his reliance on a market subsistence.

The floral and faunal assemblages were examined in order to delineate what food items were produced on-site and which were derived from the market economy. Specifically, the faunal assemblage was analyzed to determine the unit of acquisition for meat and poultry. A primary

goal was to determine what animals had been raised and slaughtered on-site. The floral data was examined specifically to ascertain what kinds of vegetables were grown in the kitchen garden.

Another focus of analysis was examination of the floral and faunal assemblage as they related to the status and economic level of the inhabitants. The clergy is a unique occupational status. To illustrate the social standing of the clergy and his family within the community is a passage from a book Of Swedish Ways. It is said:

> Still persistent is the custom of standing on ceremony when it comes to approaching the coffee table. An awareness of rank is in evidence because no one precedes the first lady of the parish, which in the country would be the clergyman's wife, or any lady of social prominence. It is proper to be modest and stand back waiting one's turn, according to prestige and rank, and in spite of the hostess' solicitous coaxing . . . (Lorenzen 1964:131).

It is of interest to note that the historic records indicate that Pastor Unander for the period 1756 to 1758 purchased several pounds of sugar. Originally, sugar made from sugar cane had been an expensive luxury import which only the rich could afford. In the eighteenth century sugar was so scarce and high priced that wild honey and maple sugar were common substitutes (Earle 1974). By the nineteenth century sugar was widely available on the world market although it was still expensive (Schmit 1982; Tannahill 1973). The purchase of this high priced luxury item gives insight as to the purchasing capability of the site residents.

Despite the high status associated with the clergy, it was (and still is) a position with relatively low remuneration. Although one's income level sets parameters on purchasing options, one's prestige in a society may not set the same parameters. Lyman (1987) makes an important distinction between economic class and social status, which is not just a matter of semantics but rather a distinction critical to understanding and measuring the subtleties of class and economic variables as manifested in an archaeological context. Despite the clergy's low recompense, it is possible that other "perks" or advantages were accorded to them. For a portion of the site's history, housing was provided to the clergy by the church. The Swedish pastors were able to augment their salaries by ministering to other congregations. It is unknown to what extent the clergy were given foodstuff by the members of the congregation in return for specific and/or special services that they rendered such as the performance of a wedding or funeral.

Further, the historic records indicate that the clergy had slaves. This is an important class as well as economic distinction because it increased the labor force of the clergy. Slaves provided a labor pool to tend the garden and livestock present at the site. Given the high status of the clergy it is most likely that it would have been considered inappropriate for the pastor to have performed gardening or animal husbandry chores himself.

The third primary focus of research was delineation of ethnicity from the faunal and floral assemblages. Historic research confirms that the occupants of the site area were of Swedish nationality. The pastors came directly from Sweden, served their church tenure and then returned to Sweden.

Lorenzen (1964:138) in writing of Swedish customs says "Food habits otherwise do not vary much from one part of Sweden to the other, with the exception of the coastal areas where fish is the mainstay. Lorenzen further says:

> it is no wonder that the Swedish emigrant on arrival in America marvelled at the abundance of food available to all. But he never forgot some of the eating habits from the old country. He still ate porridge. Bread and grot remained the staff of life even after he was comfortably settled in new surroundings. For each time a new family moved into the community the neighbors brought a bowl of *flyttgrot*, made of rye meal, oat meal, or rice. It is an agelong Swedish custom to welcome those moving into new quarters with a bowl of porridge Lorenzen (1964:139).

The data were examined to determine if during their tenure in America the Swedish clergy continued to prepare Swedish dishes and maintain Swedish traditions recognizable through the archaeological record.

C. RESULTS

1. Faunal Analysis

A total of 2100 faunal elements (excluding shell) were recovered from the units under study. Table 18 lists the total number of fragments (TNF) recovered for each depositional unit. These totals are the gross number of fragments and do not reflect cross mending. Once fragments of the same bones were matched and mended the gross totals changed and is designated as the adjusted totals or TNF* in the remainder of the text and tables.

A great deal of the faunal assemblage was fragmented. Very few whole bones were recovered. This high fragmentation rate may be caused by the difficulty in retrieval of the faunal material from the compact soil matrix during excavation. This taphonomic variable impacted the assemblage and had to be compensated for in assessing the quantitative aspects of the assemblage. As a result of the high frequency of fragmentation, 35% of the bone assemblage was non-diagnostic. This is a higher percentage than would be expected or desired.

Table 19 aids in understanding the frequencies of recovered species for each context under study. The total number of fragments (TNF) is listed for each recovered species. Adjacent to the TNF is the adjusted figure which accounts for cross mends and multiple fragments of a single skeletal element. A percentage is calculated based on the adjusted TNF for each recovered species. The total bone weight is given for each recovered species and what percentage that weight comprises of the total weight. The tables also give the Minimum Number of Butchering Units (MNBU) the skeletal elements comprise for each species.

The bone fragments represented a variety of domesticated and non- domesticated food animals, birds, and fish; as well as non-food species. The food species included cow *(Bos taurus)*, pig *(Sus scrofa)*, sheep *(Ovis aries)*, deer *(Odocoileus virginicus)*, chicken *(Gallus domesticus)*, grouse *(Bonasa sp.)*, duck *(Aythya collaris)*, dove/pigeon *(Columbidae sp.)*, goose *(Anatidae sp.)*, Guinea Hen *(Numida meleagris)*, striped bass *(Morone saxatilis)*, white perch *(Morone americana)*, herring *(Clupeidae sp.)*, shad *(Alosa cf. sapidissima*, most likely American shad), swordfish *(Xiphias gladius)*, oyster *(Crassostrea virginica)*, clam *(Mercenaria mercenaria)*, mussel *(Mytilus edulis)*, razor clam *(Ensis directus)*, scallop *(Aequipecten irradians)*. The non-food species were dog *(Canis familiaris)*, rat *(Rattus sp.)*, mouse *(Peromyscus sp.)* as well as horse *(Equus sp.)*, slipper *(Crepidula fornicata)*, and water snail. The presence of rabbit

TABLE 19. FAUNA DEPOSITIONAL UNITS--FRAGMENTS, WEIGHT AND BUTCHERING UNITS.

SPECIMEN	TNF	TNF *	% TNF*	WGT	% WGT	MNBU
DU 4A						
PIG	36	6	26%	155.4	4%	5
MED. MAMMAL	13	8	35%	20.8	1%	7
NON-DIAGNOSTIC	8	8	35%	3.2	0%	.
CHICKEN	2	1	4%	2.4	0%	1
OYSTER	.	.	.	3382.0	95%	.
SUB-TOTAL, DU4A	59	23	100%	3563.8	100%	13
DU 4B						
PIG	10	1	25%	27.9	11%	1
NON-DIAGNOSTIC	2	2	75%	2.7	1%	.
OYSTER	.	.	.	217.0	88%	.
SUB-TOTAL, DU4B	12	3	100%	247.6	100%	1
DU 58A						
COW	16	15	6%	64.3	1%	14
PIG	123	32	12%	176.7	3%	12
SHEEP	23	8	3%	122.4	2%	6
DOG	2	2	1%	3.0	0%	.
RABBIT	1	1	0%	1.2	0%	.
MOUSE	1	1	0%	0.7	0%	.
PIGEON	3	3	1%	4.5	0%	.
OYSTER	.	.	.	4790.5	79%	.
CLAM	.	.	.	664.0	11%	.
SCALLOP	.	.	.	1.0	0%	.
SM. MAMMAL	7	7	3%	7.1	0%	5
MED. MAMMAL	21	19	7%	31.3	1%	2
MED.-LG. MAMMAL	18	9	3%	58.2	1%	.
LARGE MAMMAL	5	4	1%	15.6	0%	1
BIRD, UNDET.	23	23	8%	11.8	0%	.
FISH, UNDET.	21	21	8%	0.2	0%	.
SHELL, UNDET.	.	.	.	0.0	0%	.
NON-DIAGNOSTIC	127	127	47%	74.7	1%	.
SUB-TOTAL, DU58A	391	272	100%	6027.2	100%	40
DU 58B						
PIG	34	14	8%	105.2	4%	5
SHEEP	22	6	3%	52.6	2%	4
MED-MAMMAL	42	39	22%	51.3	2%	4
NON-DIAGNOSTIC	83	83	47%	31.5	1%	.
DUCK	12	8	5%	12.5	0%	2
PIGEON	5	5	3%	3.5	0%	2

TABLE 19--Continued.

SPECIMEN	TNF	TNF *	% TNF*	WGT	% WGT	MNBU
DU 58B, Continued						
BIRD, UNDET.	20	20	11%	5.7	0%	.
OYSTER	.	.	.	2319.0	98%	.
CLAM	.	.	.	43.0	2%	.
SLIPPER	.	.	.	1.0	0%	.
FISH, UNDET.	1	1	1%	<.1	0%	.
SUB-TOTAL, DU 58B	219	176	100%	2368.7	100%	17
DU 58C						
COW	14	8	1%	348.4	6%	6
PIG	195	56	6%	390.3	6%	27
SHEEP	55	23	2%	71.8	1%	10
DEER	13	7	1%	103.3	2%	4
HORSE	2	1	0%	62.0	1%	.
RABBIT	2	2	0%	1.5	0%	.
SQUIRREL	1	1	0%	0.5	0%	.
MOUSE	6	6	1%	1.2	0%	.
RAT	3	3	0%	0.6	0%	.
DUCK	15	15	1%	11.3	0%	.
PIGEON	12	9	1%	5.9	0%	.
GROUSE	10	10	1%	7.1	0%	.
GOOSE	3	3	0%	2.2	0%	.
BASS	8	8	1%	<.1	0%	.
PERCH	6	6	1%	0.2	0%	.
HERRING	49	49	5%	0.2	0%	.
SHAD	19	19	2%	<.1	0%	.
SWORDFISH	6	6	1%	<.1	0%	.
OYSTER	.	.	.	3678.6	60%	.
MUSSEL	.	.	.	3.8	0%	.
CLAM	.	.	.	972.0	16%	.
RAZOR CLAM	.	.	.	3.0	0%	.
WATER SNAIL	.	.	.	1.0	0%	.
SM. MAMMAL	4	4	0%	5.6	0%	4
MED. MAMMAL	45	45	4%	86.0	1%	31
MED.-LG. MAMMAL	3	3	0%	2.7	0%	.
LARGE MAMMAL	36	31	3%	119.1	2%	18
BIRD, UNDET.	75	75	7%	20.7	0%	.
FISH, UNDET.	149	149	15%	0.3	0%	.
SHELL, UNDET.	.	.	.	4.0	0%	.
NON-DIAGNOSTIC	476	476	47%	187.6	3%	.
SUB-TOTAL, DU 58C	1207	1015	100%	6090.9	100%	100

TABLE 19--Continued.

SPECIMEN	TNF	TNF *	% TNF*	WGT	% WGT	MNBU
DU 58D						
PIG	3	3	13%	8.5	6%	3
MED. MAMMAL	8	8	33%	29.0	19%	12
LARGE MAM	4	1	4%	38.2	25%	2
NON-DIAGNOSTIC	3	3	13%	2.5	2%	.
CHICKEN	6	6	25%	4.9	3%	.
BIRD, UNDET.	3	3	13%	0.9	1%	.
OYSTER	.	.	0%	43.7	29%	.
CLAM	.	.	0%	25.0	16%	.
SUB-TOTAL, DU 58D	27	24	100%	152.7	100%	17
DU58E						
COW	17	7	4%	134.8	21%	7
SHEEP	44	34	20%	240.6	37%	28
MED. MAMMAL	3	3	2%	6.6	1%	2
LARGE MAMMAL	18	18	10%	52.7	8%	11
NON-DIAGNOSTIC	51	51	29%	32.5	5%	.
CHICKEN	15	15	9%	27.5	4%	.
PIGEON	5	4	2%	2.4	0%	.
GUINEA HEN	23	22	13%	15.5	2%	.
BIRD, UNDET.	18	18	10%	17.1	3%	.
OYSTER	.	.	.	57.0	9%	.
CLAM	.	.	.	66.0	10%	.
FISH, UNDET.	2	2	1%	<.1	0%	.
SUB-TOTAL, DU 58E	196	174	100%	652.7	100%	48
GRAND TOTAL, ALL DUs	2111	1687		19,103.6		236

NOTE: all weights given in grams
TNF-total # fragments
TNF*- adjusted # fragments
MNBU- minimum # butchered units

(Sylvilagus sp.) and squirrel *(Sciurus sp.)* is somewhat ambiguous in terms of whether or not they were food items.

a. Species Frequency

An excerpt from a modern Scandinavian recipe book compiled by Ulla Kakonen says:

> Whole meat dishes, even when I was a child (1940s), were mostly reserved for Sunday and weekend treats. Only with the rise of the standard of living has meat become more common. Pork was in the old times the most common meat in the Finnish diet. Lamb used to be more common than it is now, whereas beef was more rare. Ground meat, liver, kidneys, and especially blood have always had a place in the menu (1974:83).

It is particularly interesting to note that the frequency of recovered pig, sheep and cow parallels the pattern described in the Scandinavian cookbook. Pig was identified in every depositional unit except 58E. In each DU in which pig is identified; it predominates in TNF, TNF* and weight.

Sheep remains were recovered from DUs 58A, 58B, 58C and 58E. Sheep remains occur more frequently than cow but less frequently than pig remains both in TNF* and in recovered weight.

Cow remains were recovered from DUs 58A, 58C and 58E. The TNF* and weight are consistently less than for that of sheep or pig. Although there is historical evidence that a cow was kept on the premises for milking purposes; the faunal evidence does not suggest that beef was the predominant meat animal.

b. Butchering

In some cases, the instrument used for butchering was discernable on the modified bone because knives, cleavers and saws leave different markings on bone. A total of 74 bones from the depositional units under study exhibited traces of butchering modification. Saw marks were observed within the bone assemblage most frequently. Saw marks were observed on 42 bone specimens. A cleaver was the second most predominant butchering implement observed; with some bones exhibiting traces of secondary butchering with the use of a knife. A cleaver cut was identified on cross-section bones as clean cut marks without striations. Cleavers or hand axes often left signs of crushing or splintering. A total of nine specimens were identified as having been modified by a cleaver. Specimens cut by a cleaver were recovered from DUs 58A, 58B, 58C and 58D. Knife marks were shallow and of pencil-line thickness. A total of 22 other bones had been butchered, but the surfaces were not distinct enough to ascertain what implement had been used.

The differences in butchering implements seem to be a factor relating to the size and thickness of the bone to be cut. Vertebrae and smaller bones seem to have been hacked with a cleaver whereas the larger, more dense bones were sawed.

Butchering by breakage must also be considered a butchering technique. Game bird and chicken bone probably was butchered in this way. A large portion of the bird bone was broken. One guinea hen pelvis exhibited knife marks.

The locations of butcher marks were recorded in an attempt to identify general or specific meat cuts. All butchered faunal remains were examined for butchering patterns and resulting meat cuts. Figure 30 illustrates the location and nomenclature of skeletal elements. Figures 31, 32 and 33 illustrate the delineation of skeletal elements into butchering cuts for cow, pig and sheep. Figures 34, 35, 36 and 37 illustrate butchered elements recovered from cow, pig and sheep as well as deer. Figures 38, 39, and 40 illustrate butchered elements recovered from small, medium and large mammals.

c. Butchering Unit Distribution

Butchering activity can produce three different kinds of refuse. Primary refuse generally refers to the waste from the initial slaughtering process and can include skulls and skull fragments, distal metatarsals, and phalanges. If the breast is split for heart and organ removal, then small fragments of sternum and distal ribs may also be found. If tails (caudal vertebrae) are not to be eaten, they are disposed of at this time. Secondary refuse is that discarded when the carcass is cut into quarters or smaller primal cuts of meat. The type of scrap bone varies but generally includes vertebral remains, sternal fragments and heavy, dense bone fragments such as proximal and distal ends of long bones. Tertiary refuse refers to the meat waste such as blade roasts, steak bones, etc. that results from meal preparation.

d. Beef

An entire beef carcass weighs between 600 and 750 pounds before it is divided into two sides to be marketed. Each side of beef is then divided into a forequarter and a hindquarter. From these two portions come what are called the seven primal cuts. Four of the primal cuts come from the forequarter and three from the hindquarter. The two forequarters comprise 52% of the carcass. A forequarter weighs from 155 to 190 pounds and is divided into four primal cuts which are chuck, ribs, brisket and short plate (Evans and Greene 1973).

The neck is generally cut away from the chuck. The neck is one of the least tender beef cuts and is usually boiled. The neck includes the axis, and cervical vertebrae 3-7.

Chuck comes from the neck and shoulder, which is a mobile part of the beef, and consequently this is not a highly tender cut. The whole chuck usually weighs somewhere between 78 and 98 pounds before it is divided into consumer-sized sections. The chuck represents approximately 9% of the entire carcass. Chuck is cut into a variety of steaks and roasts. Chuck includes thoracic vertebrae 1-5, dorsal rib 1-5 and the scapula.

Brisket is a very fibrous part of the beef, with abundant of connective tissue and fat. This cut requires long, slow moist cooking or curing to make it tender enough to eat. Cured brisket is known as corned beef. Brisket includes the sternabrae, costal cartilage 1-5.

Rib of beef is the only immobile primal cut of the forequarter. It yields the most tender steaks and roasts. A beef rib generally weighs about 28-40 pounds. The rib section represents about 10% of the carcass. The rib includes the dorsal ribs 6-13 and the thoracic vertebrae 6-13.

The short plate is a part of the sternum. The cuts obtained from the short plate are adaptable only to moist cooking or grinding. This meat is usually combined with lean parts of the chuck for grinding. Short plate cuts are most frequently used for soup or stews. The short plate includes the coastal cartilage 6-13.

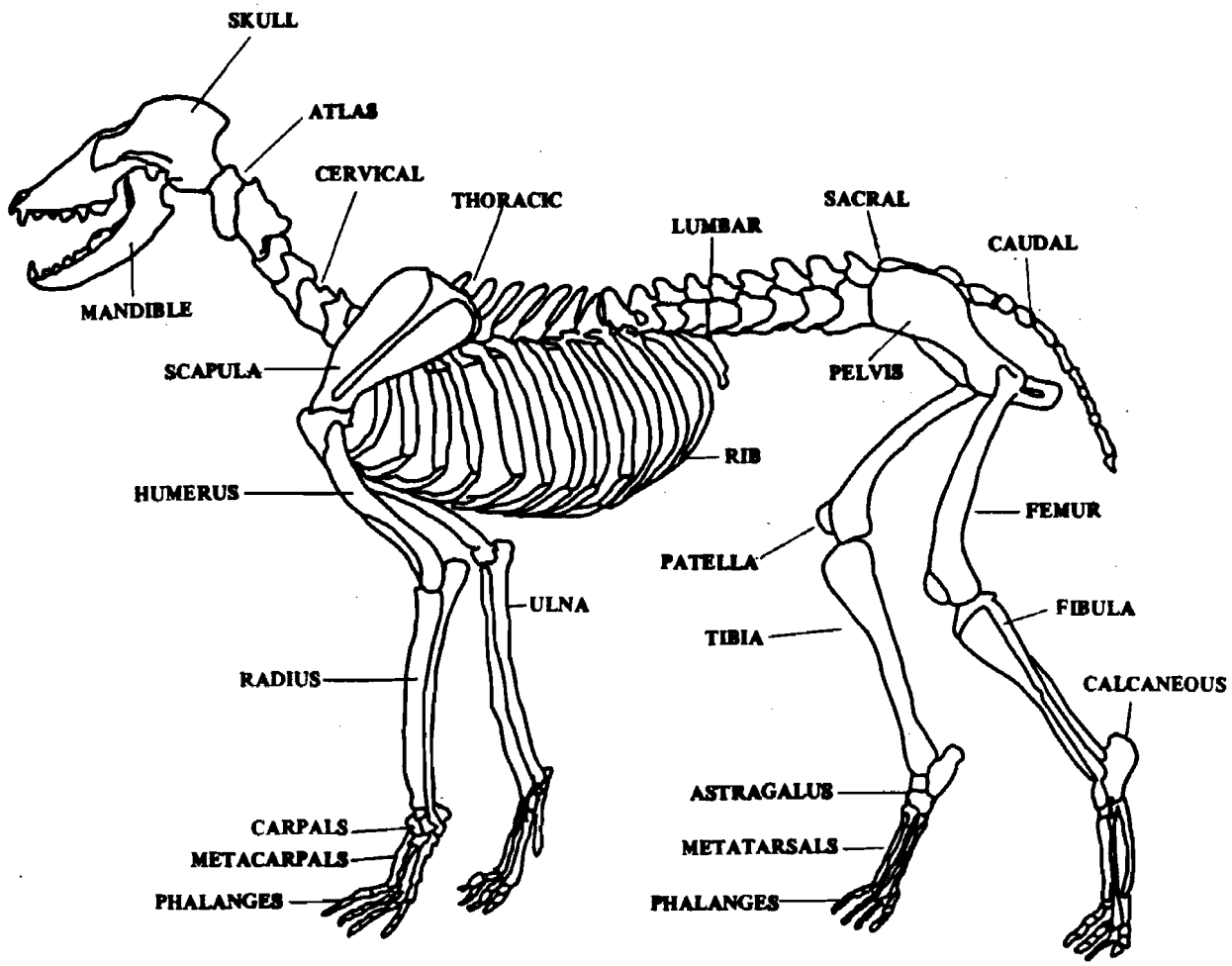


FIGURE 30: Skeletal Diagram Illustrating Osteological Terminology.

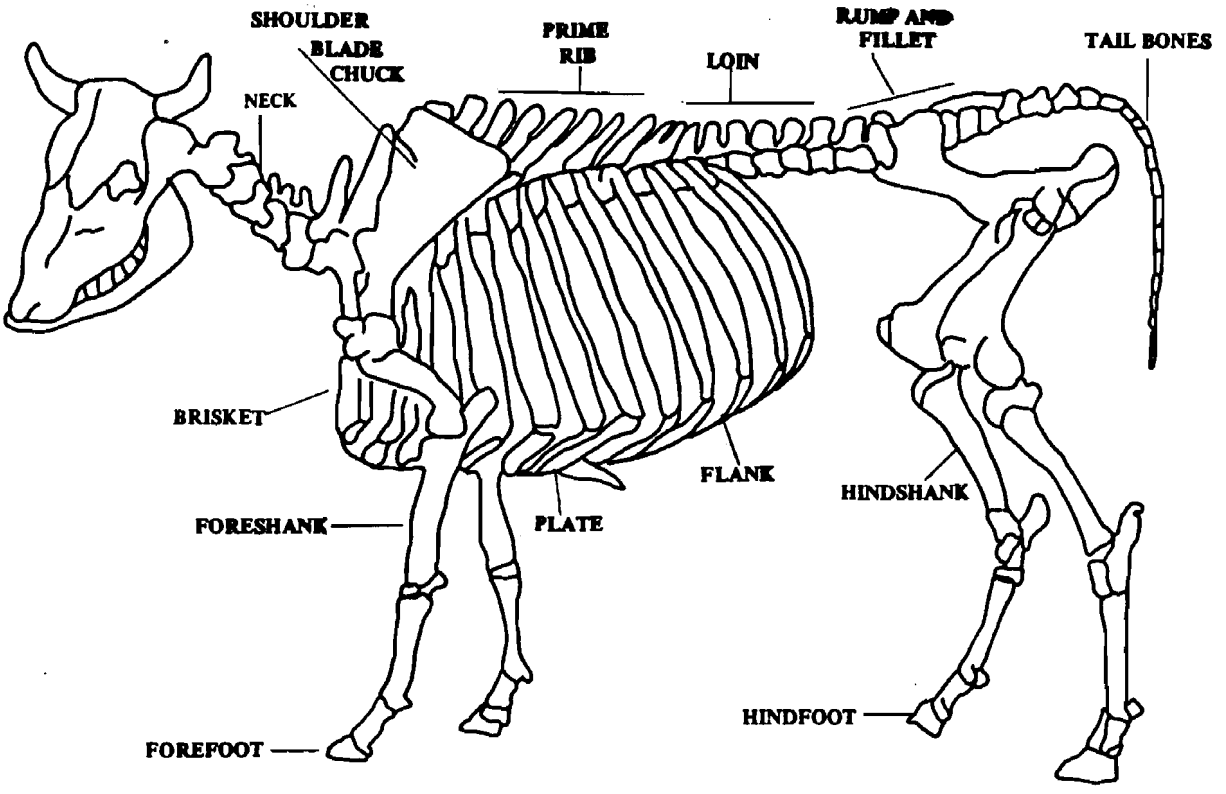


FIGURE 31: Butchering Cuts of Meat for Cow.

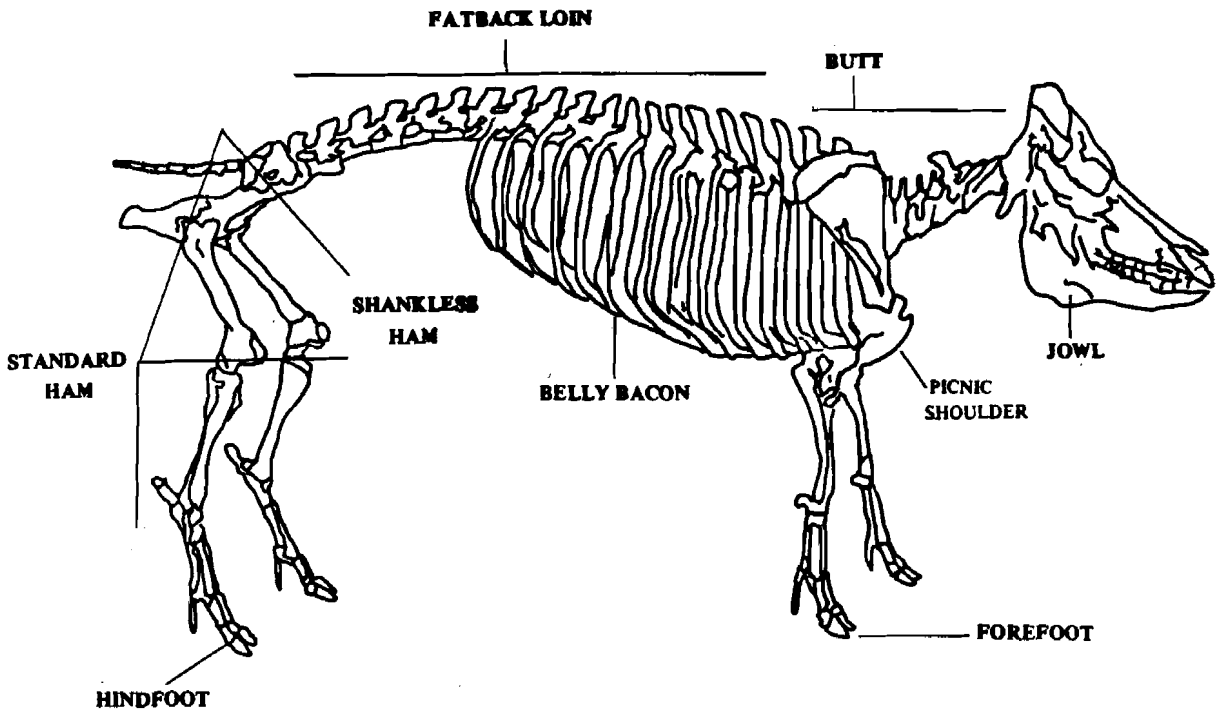


FIGURE 32: Butchering Cuts of Meat for Pig.

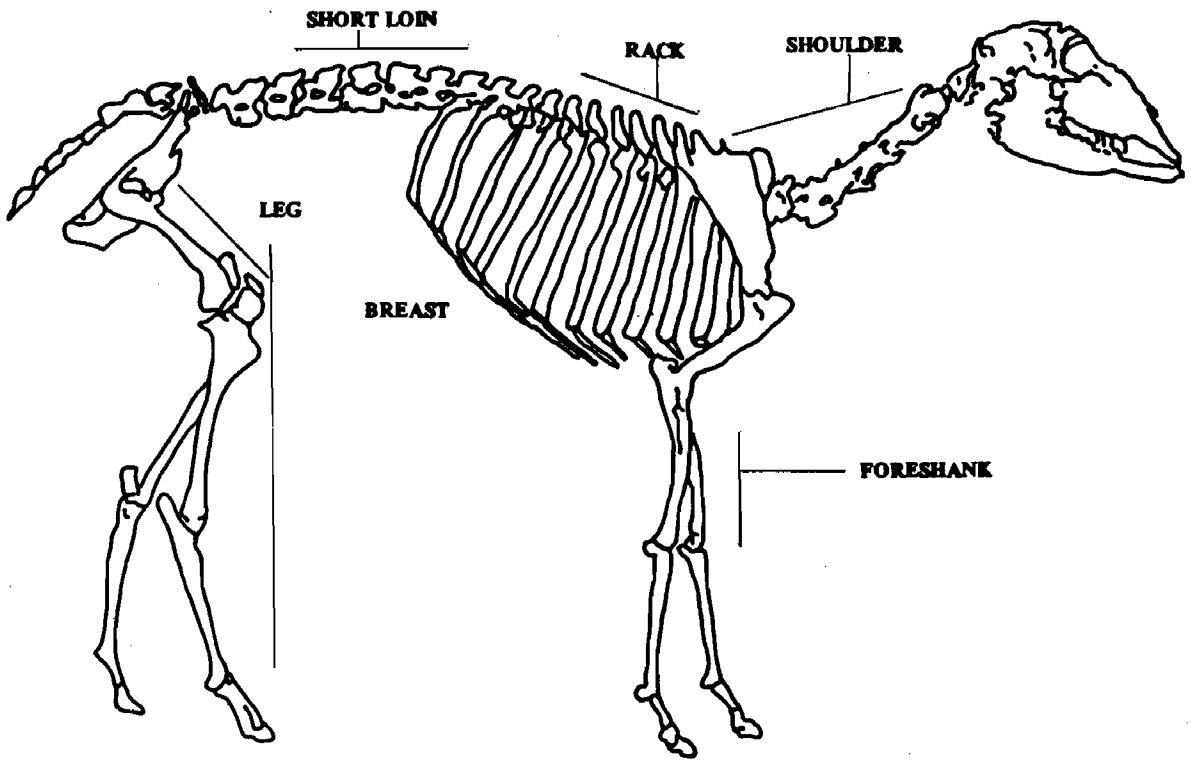
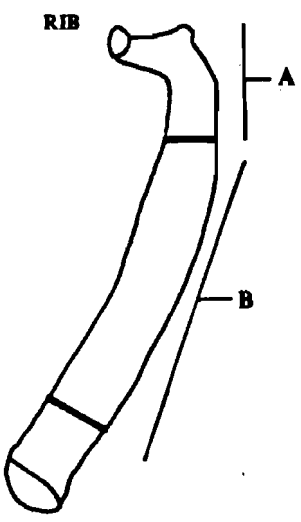
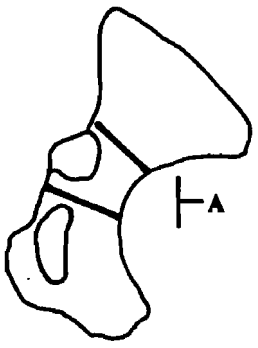


FIGURE 33: Butchering Cuts of Meat for Sheep.

BONE UNIT		# UNITS Left	# UNITS Right	TOOL	# CUTS	COMMENTS
RIB	DU 58A					
	B		(2)	?	2	60 mm, 71 mm
	DU 58E					
	B		(1)	saw	1	68 mm
	A		(2)	saw	2	105 mm, 107 mm both split longitudinally
PELVIS	DU 58E					
	A		(8)	saw	16	2 butchering surfaces on each fragment cross mend with each other and with fragments that don't exhibit butchering
RADIUS	DU 58C					
	A	1		saw	2	sawed on slant from each side resulting in V-shaped cut, then broken





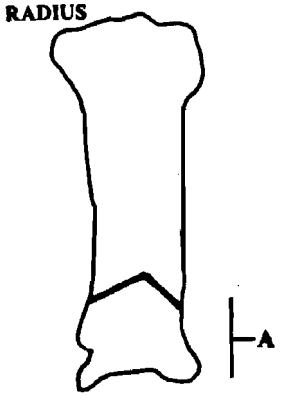


FIGURE 34: Butchered Cow.

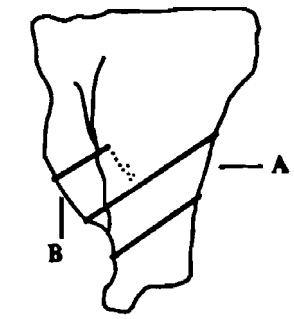
BONE UNIT		# UNITS Left	# UNITS Right	TOOL	# CUTS	COMMENTS
	DU 4A					
SCAPULA 	A		2	saw	4+	82 mm, 79 mm; each has 2 butchered surfaces, stop and start marks
	B		3	saw	6	butchered and broken; 43 mm, 40 mm, 37 mm
	DU 4B					
	B		(1)	indet.	1	1 of 10 scapula fragments exhibits traces of butchering
HUMERUS 	**DU 4A**					
	A		(4)	indet.	4	27 fragments cross mend; 4 exhibit traces of butchering

FIGURE 35: Butchered Pig.

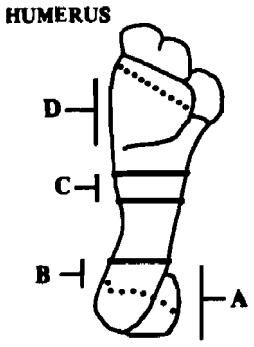
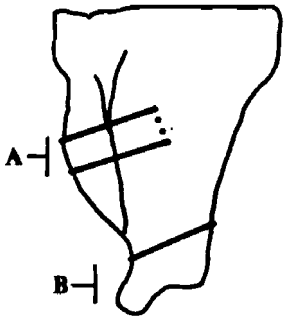
BONE UNIT		# UNITS Left	# UNITS Right	TOOL	# CUTS	COMMENTS
	DU 58A					
HUMERUS 	A	1		saw	1	butchered and broken
	B	1		saw	1	epiphysis missing; see illustration
	C		(1)	saw	2	
	DU 58E					
	C		(2)	saw	4	
	D	1	1	saw	2	epiphysis missing on both; see illustration; left split longitudinally
SCAPULA 	**DU 58A**					
	A		(3)	saw	6	
	DU 58E					
	B		(2)	saw	2	fragments cross mend

FIGURE 36 A: Butchered Sheep.

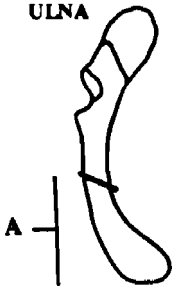
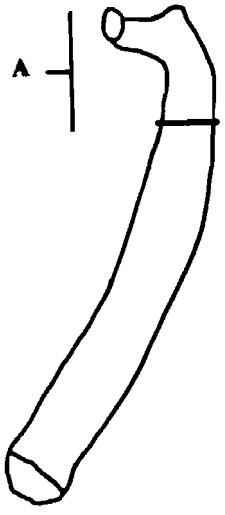
BONE UNIT	# UNITS Left	# UNITS Right	TOOL	# CUTS	COMMENTS
ULNA 					
DU 58E					
A	(1)		saw	1	5 cross-mending fragments; 1 exhibits butchering mark
					
DU 58E					
A	(4)		saw	4+	72 mm, 70 mm, 54 mm, 61 mm; stop and start marks on 1; 2 split longitudinally; rib head missing from 2

FIGURE 36B: Butchered Sheep

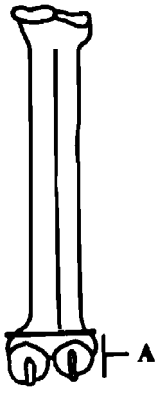
BONE UNIT	# UNITS Left	# UNITS Right	TOOL	# CUTS	COMMENTS
METATARSUS					
					
DU 58C					
A	1		knife ?	1+	represent scraping?

FIGURE 37: Butchered Deer.

BONE UNIT	# UNITS Left	# UNITS Right	TOOL	# CUTS	COMMENTS
RIB					
DU 58A					
A	(1)		indet.	1	22 mm

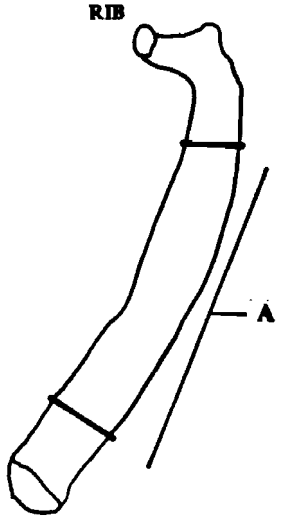


FIGURE 38: Butchered Small Mammal.

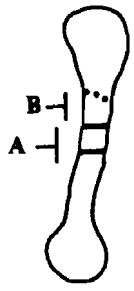
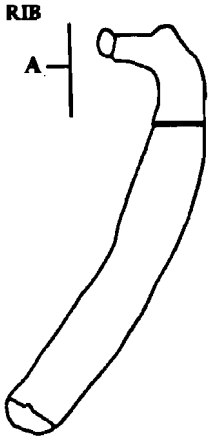
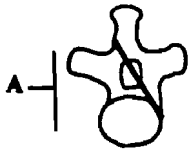
BONE UNIT		# UNITS Left	Right	TOOL	# CUTS	COMMENTS
	**DU 58A**					
	A	(1)		saw	2	21 mm
	DU 58B					
	B	(3)		2 indet. 1 cleaver	3	butchered and broken
	DU 58E					
	B	(1)		saw	1	
RIB 	**DU 58C**					
	A	(2)		indet.	2	
VERTEBRAE 	**DU 58D**					
	A	(1)		cleaver	1	split longitudinally

FIGURE 39: Butchered Medium Mammal.

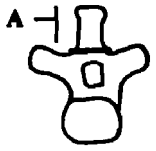
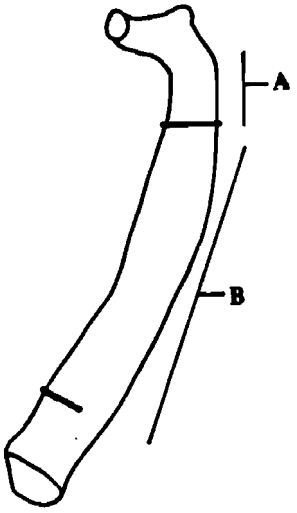
BONE UNIT		# UNITS Left	# UNITS Right	TOOL	# CUTS	COMMENTS
VERTEBRAE						
	**DU 58A**					
	A		(1)	indet.	1	fragmented spine
RIB						
	**DU 58D**					
	A		(1)	cleaver	1	4 fragments cross mend
	DU 58E					
	B		(3)	saw	3	

FIGURE 40: Butchered Large Mammal.

The hindquarters comprise 48% of the steer carcass but yield more steaks, more roast, and less stew and chopped meat than the forequarters. A hindquarter weighs from 145 to 180 pounds and is divided into four primal cuts: the full loin, whole flank, rump and the round (Evans and Greene 1973).

The full loin is the most select section of the hindquarter, and the most tender part of the entire beef carcass. It is the primal cut from which the beef tenderloin, the porterhouse, the sirloin and the filet mignon are cut. The full loin is subdivided into the short loin and the sirloin. The short loin includes the lumbar vertebrae. The sirloin includes the ilium and sacrum.

The round represents 20% of the carcass weight or about 60 pounds of beef. The round is often divided into three section: top round, bottom round and eye of round. The round is represented by the distal femur and diaphysis (Evans and Greene 1973).

The flank is hidden in much fat. Flank steak is also called London Broil. There are no bones associated with the flank section. Archaeologically it is quite difficult to ascertain the extent to which this cut was consumed.

The rump is about 4% of the carcass weight and weighs approximately 12 pounds. The rump is associated with the acetabulum, pubis, ischium and proximal femur.

e. Pork

A hog, when slaughtered, weighs about 200 pounds. The seven primal cuts of pork are: the leg, the loin, pork belly, breast, pork shoulder, jowl, feet (Evans and Greene 1973).

The leg represents 18% of the hog and yields the greatest amount of solid, lean meat for roast and steaks and most importantly hams. Generally a 12 to 16 pound leg is divided into two roasts: a 6 to 8 pound fresh ham butt end and a 6 to 8 pound fresh ham shank end (Dardick 1986).

The loin of pork consists of the greater piece of the vertebrae and encompasses part of the scapula. Young whole pork loins weigh from 10 to 14 pounds and represent about 15% of the animal. The cuts from the extreme loin end contain a great deal of bone. Those from the extreme rib end have more fat. The center cut which is about 8 pounds of a 14 pound loin, corresponds roughly to the rib section of the beef. It yields roasts and chops (Evans and Greene 1973).

The pork belly represents almost 18% of the animal and adapts well to smoking and curing. Pork belly is usually turned into salt pork and bacon. There are no bones associated with the pork belly.

The breast of pork is the primal cut that renders spare ribs. It is only 3% of the entire animal. There are 13 ribs that weigh from 2 to 5 pounds.

The pork shoulder weighs from 12 to 16 pounds and represents 15% of the animal (Dardick 1986). Visually, the shoulder resembles the fresh ham of the leg of pork, but the meat it yields is not as tender and lean. The shoulder can also be divided into butt, picnic, and feet (Dardick 1986). The bones associated with the butt are scapula, atlas, axis, cervical 1-7, dorsal vertebrae

1-2. The bones associated with the picnic are humerus, ulna and radius. Phalanges, metacarpals and carpals are associated with the foot.

f. Lamb/Sheep

The best of domestic lamb is readied for market when it is between five and seven months of age. Spring lamb is purchased between March and September. A lamb carcass weighs from 45 to 60 pounds and is divided across the back into two equal sections: the foresaddle and the hindsaddle (Evans and Greene 1983).

The foresaddle represents 50% of the entire lamb and encompasses four of the primal cuts which are: shoulder, rack, foreshank and breast (Dardick 1986).

The shoulder is cut from the neck, shoulder and part of the shank portions and represents 24% of the carcass. The chuck of lamb corresponds to the chuck of beef in that it is the most mobile part of the animal. Lamb is not as mature, however, and its connective tissue is not as fully developed as those in beef chuck. The meat is therefore still fairly tender and some of the cuts may be roasted or broiled.

The rack of lamb comes from the rib section and is about 12% of the carcass. It is the most tender section of the foresaddle of lamb from which up to fourteen rib chops may be cut. The rack corresponds to that section of beef that yields rib roast and rib steaks.

The foreshanks are the two front legs of the lamb and are 4% of the carcass. This portion of the lamb is more commonly referred to as lamb shanks.

The breast of lamb represents 10% of the carcass and is the least meaty section of the lamb. The breast may either be cut into lamb riblets or de-boned and rolled as a roast or ground. The lamb breast is very boney but it is priced lower than cuts from the shoulder or leg. However, it may well end up costing more after it has been trimmed than those other more solid pieces of meat (Evans and Greene 1973)

Tables 20, 21, 22, 23, 24, 25 and 26 give the minimum number of meat units for cow, pig, sheep, deer, small mammal, medium mammal, large mammal and the archaeological representation of that unit for each location under study.

The data was viewed using meat units because it was thought that this would give more insight as to whether or not a carcass was butchered on-site or purchased at a market. Utilizing butchered meat cuts as an analytical unit also gives insight as to the way the household cooked and the kinds of dishes prepared.

Primary butchering waste such as skull, teeth, mandibles, phalanges, metacarpals,tail and metatarsals were present in the assemblages for cow, sheep and pig (as well as deer). Approximately 37% of the meat units identified as cow are butchering waste. If the meat units identified as large are viewed in conjunction with those identified as cow, then only 22% of the meat units are butchering waste.

Approximately 69% of the meat units identified as pig are butchering waste. However, a total of 92% of the medium meat units are meal refuse and are primarily ribs. If the medium mammals

are viewed in conjunction with the identified pig the figures change and only 37% of the meat units are butchering waste.

A total of 26% of the meat units identified as sheep are considered butchering waste.

Bones and and non-meaty elements were used to flavor stews and soups. The presence of feet or head elements within an assemblage does not necessarily denote wastage but may have been utilized in a culinary manner. Pig's feet as well as calves' foot jelly and calves' brains were a common dietary item in American culture. Deposits of bones from non-meaty cuts may just imply that the occupants utilized all portions of a carcass.

Culinary preferences must be considered. However, the Swedish and Scandinavian cookbooks surveyed for this study did not give recipes for feet or head elements (Halverhout 1973; Kakonen 1974; Lorenzen 1964). The use of these elements as food items did not seem to be a part of the Scandinavian culinary heritage in the same way that they were utilized by segments of the American population.

The mere presence of butchering waste is significant because it signals the fact that the whole animal carcass was present and most likely processed at the site area. The data suggests that pig, sheep and cow were being butchered at the site area. It is likely that the diet was supplemented with market purchased meats but a clear distinction can not be made between those meat cuts which were purchased and those processed on site.

There are several possible explanations for the meat unit patterning. It may be that a functional or locational pattern is discerned from the butchering waste. The depositional units from which the elements were recovered are primarily associated with an early kitchen. Another explanation may be that slaves did live on the property and perhaps this is reflective of their dietary refuse or utilization. Still another explanation is that if slaves were responsible for the cooking duties then their influence may be evidenced by the use of these heads and feet to flavor soups and stews. The slaves may have cooked the dishes that they knew how to cook and would have been unknowledgeable as to Scandinavian cooking customs.

g. Venison

Deer was recovered from only one depositional unit and that was DU 58C. In 1695, a quarter of venison could be bought in New York City for ninepence (Earle 1974:109). Records for the Boston market in 1806 indicate that two stalls were designated for the sale of venison and poultry (Marten 1987). Venison was available through the market network. It is of interest that deer was recovered exclusively from two units, N60/E50 and N70/E50, in Strata E and F. Elements from the hindfoot and forefoot were recovered as well as the shoulder (scapula) and hindshank (tibia). All elements were identified as coming from the left side of the body. It is possible, but not certain, that all recovered elements are from one single side of venison.

A butchering mark was located on a distal epiphysis of the metatarsal. The mark was not distinct enough to ascertain the instrument used for cutting.

During the 1700s reindeer meat was consumed quite regularly in all the Scandinavian countries. It is reported that venison was substituted for reindeer meat by Scandinavians new to America (Ulla Kakonen 1974:xii). It is possible that the recovered venison was used as a substitute meat in order to prepare an ethnic specialty.

h. Squirrel/Rabbit

The utilization of squirrel and rabbit is somewhat ambiguous because rabbits and squirrels were so abundant that they became a nuisance to urban dwellers as well as farmers. They were so destructive to grain fields that local jurisdictions paid a bounty for squirrel. County treasuries were exhausted by these premiums. In Pennsylvania in one year (1749) bounty was paid out for six hundred thousand black and gray squirrel (Earle 1974:110).

Squirrel and rabbit may have played a role in dietary constituency. Recipes from the early 1700s include several ways to prepare rabbit in stews, as well as potted, roasted, and fricasseed (New Jersey Historical Society 1982:88). Squirrel was considered an essential ingredient in Brunswick stew (Jones 1981:108; Sokolov 1983). Squirrel and rabbit were cooked in much the same way and used in similar recipes, although it is reported that rabbit is preferable to squirrel when frying (Jones 1981:108). However, these recipe books are reflective of American attitudes and culinary tastes and not necessarily those of Scandinavian immigrants. A perusal through several Scandinavian cookbooks (Halverhout 1973; Kakonen 1974; Lorenzen 1964) found no mention of using squirrel or rabbits as do early American cookbooks.

No squirrel or rabbit bones were recognized as having any butchering marks. This evidence alone cannot guarantee that these animals were utilized in a dietary manner because butchering marks can indicate that the fur was used rather than the carcass. One squirrel element was recovered in the charred state. This provides little information regarding whether or not these animals were commensal to the site or incorporated into the assemblage because of their use as a food item.

TABLE 20. BUTCHERED MEAT UNITS FOR COW.

LOCATION	MINIMUM NO.	BUTCHERED MEAT UNIT	ARCHAEOLOGICAL REPRESENTATION
DU 58A	10	Rib	10 rib midsections (#1)
	2	Head 1	2 molar frags (#48)
		Head 2	Molar 1,Molar 1 (#35)
	1	Forefoot	1 MC (#49)
	1	Hindfoot	1 proximal MT (#58)
DU 58C	1	Head	1 canine,1 P4 (#23)
	1	Forefoot	5 metacarpus cross mend (#41)
	1	Foot	2 phalange (#25)
	2	Hindshank	2 distal tibia (#16,#23)
	1	Foreshank	1 distal radius (#23)
DU 58E	6	Rib	2 rib midsection, 4 dorsal (#7)
	1	Rump Roast	11 pelvis asetabulum cross mend (#7)

(#) Catalog number of specimens in parenthesis,

TABLE 21. BUTCHERED MEAT UNITS FOR PIG.

LOCATION	MINIMUM NO.	BUTCHERED MEAT UNIT	ARCHAEOLOGICAL REPRESENTATION
DU 4A	1	Butt/Shoulder	6 scapula fragments-3 frags from (#136)cross mend with 3 frags from (#137)
	3	Rib	3 rib fragments (#136)
	1	Picnic Ham	27 cross mend humerus proximal (#125)
DU 4B	1	Butt/Shoulder	10 scapula fragments cross mend (#128)
DU 58A	2	Foot 1	1 phalange 1, 2 phalange frags (#4)
		Foot 2	3 phalange (#63)
	6	Hindfoot 1	1 MT 4 (#46),
		Hindfoot 2	1 MT 2, 1 navicular (#48),
		Hindfoot 3	1 cuboid,1 MT 2 (#35)
		Hindfoot 4	1 astragalus , MT 2,phalange(#21)
		Hindfoot 5	MT3 distal (#63)
		Hindfoot 6	9 MT 2 frags (#73)
	4	Head 1	premolar 1,2,3, molar root (#35)
		Head 2*	16 cross mend skull frag (#21)
			19 cross mend skull (#22)
		Head 3	incisor (#12)
		Head 4	9 canine cross mend (#63)
			33 cross mend mandible, P2,P3, 3 molar frag (#63), 6 mandible frags, M2 (#64)
DU 58B	1	Hindfoot	2 phalange, 1 MT, 1 cuneiform, 1 calcaneous (#37)
	2	Head	2 canine frags, 2 premolar 1, 1 premolar 2, 13 mandible w/M2 cross mend, 1 M2 (#37)**
	1	Forefoot	1 unciform, 3 MC 5 frags(#28)
	1	Shankless Ham	1 femoral head, 5 cross mend pelvis frags (#37)

TABLE 21--Continued.

LOCATION	MINIMUM NO.	BUTCHERED MEAT UNIT	ARCHAEOLOGICAL REPRESENTATION
DU 58C	1	Short Loin	4 lumbar vertebrae frags (#15)
	2	Butt/Shoulder 1	15 scapula frags cross mend (#15)
		Butt/Shoulder 2	13 scapula frags cross mend (#17)
	1	Neck	6 cervical vertebrae frags (#17)
	5	Rib	4 thoracic vertebrae (#15)
			1 dorsal rib (#17)
	4	Hindfoot 1	2 MT 3 frags cross mend (#17)
		Hindfoot 2	2 navicular frags cross mend, 1 MT5, 1 cuboid (#32)
		Hindfoot 3	2 phalange frags, 1 MT, 3 MT condyles, 2 cuneiform,1 astragalus, 1 cuboid, 1 Mt distal epiph, 4 phalange 4/3? frags cross mend (#38)
		Hindfoot 4	4 Mt frags cross mend, 9 MT 3 frags cross mend (#71)
	3	Foot 1	phalange 2,3 (#17)
		Foot 2	phalange 3 (#23)
		Foot 3	6 phalange frags cross mend = 2 elements (#33)
	1	Shankless/Shoulder	7 proximal radius frags cross mend (#31)
	9	Head 1	M1 (#18)
		Head 2*	2 incisor frags, 1 P3, 1 P4, 1 incisor,10 skull frags (#23)
		Head 3	incisor PM (#31)
		Head 4	incisor (#32)**
		Head 5	incisor (#33) **
		Head 6	2 PM2, 14 mandible frags cross mend,3 molar frags, PM4 frag, 2 PM3, incisor (#38)
		Head 7	6 mandible frags cross mend, 10 skull frags cross mend (#38)**
		Head 8	molar fragment (#39)
		Head 9	40 skull frags cross mend, M3, M2 mandible w/M1,M2 (#15)

TABLE 21--Continued.

LOCATION	MINIMUM NO.	BUTCHERED MEAT UNIT	ARCHAEOLOGICAL REPRESENTATION
DU 58D	2?	Head 1	PM 2, (#50)
		Head 2 ?	incisor may be from same animal as in #50 (#51)
	1	Hindfoot	Mt 2 proximal (#53)

** Calculation of # of units based upon tooth eruption patterns, tooth wear patterns, morphological variation, visible differentiation.

(#) Catalog number of specimens in parenthesis

Head* cat#21, 22, 23 cross mend-this cuts through DUs 58A and 58C.

TABLE 22. BUTCHERED MEAT UNITS FOR SHEEP.

LOCATION	MINIMUM NO.	BUTCHERED MEAT UNIT	ARCHAEOLOGICAL REPRESENTATION
DU 58A	2	Foreshank 1	1 humerus distal (#98)
		Foreshank 2	1humerus distal (#3)
			1 humerus distal epiph (#2)
	3	Shoulder 1	11 scapula frags cross mend (#2)
			w/ 3 scapula frags in (#3)
		Shoulder 2	4 scapula blade frags (#4)
		Shoulder 3	humerus mid section (#76)
	1	Hindfoot	cuboid (#76)
DU 58B	1	Forefoot	2 metacarpal frags (#13)
	1	Shoulder	5 scapula frags (#14)
	1	Foot	2 phalanx 2 (#14)
	1	Head	13 cross mend skull frags (#14)
DU 58C	3	Head 1	M2 (#38)
		Head 2	molar (#18)
		Head 3	M1 (23)
	3	Shoulder 1	4 cross mend scapula (#38)
		Shoulder 2	18 scapula cross mend (#65)
		Shoulder 3	8 proximal scapula cross mend (#69)
	1	Foreshank	6 radius cross mend (#38)
	1	Forefoot	1 magnum, 2 MC, 1pisiform,
			phalange 2, 3 (#65)
	1	Rib	1 dorsal rib (#69)
	1	Leg	1 femoral epiphysis (#23)
DU 58E	19	Rib	3 thoracic, 1 dorsal (#8)
			2 thoracic vertebrae spine, 3 dorsal
			(#6), 5 rib frag, 1 vertebrae frag
			(#7) 4 vertebrae epiph (#8)
	2	Shoulder 1	1 humerus proximal, 1 humerus
			midshaft(#6)
		Shoulder 2	1 humerus proximal, 1 humerus
			distal,1 humerus midshaft,
			2 scapula proximal cross mend (#7)
	1	Leg	tibia midshaft (#7)
	1	Head	4 cross mend mandible (#6)
	3	Foot 1	phalange 1 (#6)
		Foot 2,3	4 phalange 2 (#7)
	2	Forefoot	2 cannon (#7)
	1	Foreshank	5 distal ulna cross mend (#6)

(#) Catalog number of specimens in parenthesis.

TABLE 23. BUTCHERED MEAT UNITS FOR DEER.

LOCATION	MINIMUM NO.	BUTCHERED MEAT UNIT	ARCHAEOLOGICAL REPRESENTATION
DU 58 C	1	Hinkshank	Tibia distal (#66)
	1	Forefoot	scaphoid, cuneiform, 2 MC frags (#67)
	1	Shoulder	6 scapula frags cross mend (#67)
	1	HIndfoot	MT distal epiphysis (#18)

(#) Catalog number of specimens in parenthesis.

TABLE 24. BUTCHERED MEAT UNITS FOR SMALL MAMMAL.

LOCATION	MINIMUM NO.	BUTCHERED MEAT UNIT	ARCHAEOLOGICAL REPRESENTATION
DU 58A	5	Rib	2 Vertebrae frag (#48), 1 rib (#21), 1 dorsal rib (#80), rib midsection (27)
DU 58C	4	Rib	1 rib frag (#15), 3 rib frag (#33)

(#) Catalog number of specimens in parenthesis.

TABLE 25. BUTCHERED MEAT UNITS FOR MEDIUM MAMMAL.

LOCATION	MINIMUM NO.	BUTCHERED MEAT UNIT	ARCHAEOLOGICAL REPRESENTATION
DU 4A	4	Rib	2 thoracic vertebrae, 1 rib (#132) 3 vertebrae cross mend (#135)
	2	Foot 1	phalange (#132)
		Foot 2	phalange (#138)
	1	Tail	3 caudal vertebrae frag cross mend (#138)
DU 58A	1	Rib	1 dorsal rib (#102)
	1	Rib Roast	3 thoracic vertebrae frags (#46
DU 58B	3	Rib	3 rib frag (#14)
	1	Neck	4 cervical vertebrae cross mend (#29)
DU 58C	31	Rib	1 rib frag (#15) 12 midsection (#32), 1 vertebrae frag (#33) 4 thoracic spine (#38), 9 dorsal rib frag (#38), 4 vertebrae centrum (#38)
DU 58D	1	Rib Roast	thoracic vertebrae (#47)
	8	Rib	3 rib (#50), 1 vertebrae (#53) 4 rib cross mend dorsal (#54)
	3	Short Loin	lumbar vertebrae (#51)2 ventral rib (#54)
DU 58E	2	Rib	2 dorsal rib (#8)

(#) Catalog number of specimens in parenthesis.

TABLE 26. BUTCHERED MEAT UNITS FOR LARGE MAMMAL.

LOCATION	MINIMUM NO.	BUTCHERED MEAT UNIT	ARCHAEOLOGICAL REPRESENTATION
DU 58A	1	Rib Roast	5 thoracic vertebrae spine cross mend, 1 sternal vertebrae (#48)
DU 58C	13	Short Rib	13 blade midsections (#23)
	1	Rib steak	1 rib head (#23)
	2	Tail 1	1 caudal vertebrae (#23)
		Tail 2	4 cross mend caudal vertebrae (#25)
	2	Rib	4 dorsal rib cross mend=2 (#39)
DU 58D	2	Rib	4 Proximal rib cross mend (#54) 1 vertebrae frag (#66)
DU 58E	1	Foot	4 phalange (#7)
	10	Rib	7 rib, 3 vertebrae (#7)

(#) Catalog number of specimens in parenthesis.

i. Poultry

Chicken, duck, guinea hen, grouse, pigeon and goose were identified from the site area. The variety of fowl within the assemblage suggests that birds, both wild and domesticated, were an important dietary component. Poultry raised on the site would have had the added benefit of providing eggs for consumption.

Poultry can be raised and killed on site. Poultry can be purchased live at the market and killed on site. Poultry can be purchased in the dressed, drawn, or cut-up form. A dressed bird is one that has been killed and plucked. A drawn bird is a dressed bird from which the head, feet, and entrails have been removed. A cut-up bird is a drawn bird that has been cut into small parts. The apportioning of poultry into pieces at the market is a somewhat recent innovation and it is therefore unlikely that the residents at the site area purchased poultry cut-up.

The recovery of phalange, mandible and skull fragments suggest that either the poultry was raised on-site or purchased as whole birds either alive or dressed. Mandible fragments were recovered for pigeon, chicken and goose. Phalange were recovered from grouse and duck. Numerous skull fragments were recovered that could not be specifically identified to species.

Guinea hen is the only identified poultry for which no head or feet elements were recovered. The occurrence of guinea hen was localized within DU 58E (Unit N22/E60, Stratum D level 7) and may represent a single specimen.

A guinea hen is not a domesticated fowl. It has dark flesh like that of wild birds and a gamey taste. It is frequently compared with pheasant (Root 1980:163). They like to roost on topmost tree branches and will descend if grain is offered but are perfectly capable of foraging for themselves and their acceptance of food is wide ranging. Guinea hens are not raised for a mass market except in Europe. Guinea hens are difficult because they will not lay in confinement, and they will not lay in a fashion favorable to farmers. They hide their nests in hollows scratched out of the ground under bushes where they are practically unfindable. Because of the difficulty in killing guineas, they have been in the past and still are considered a delicacy.

An excerpt from a Scandinavian recipe book compiled by Ulla Kakonen says:

> Chicken, until about 20 years ago was considered a special Sunday meat; only lately with the increased production of broilers, has it become as common and inexpensive a meat as in America. That is why there aren't really original chicken recipes: most have been adopted very recently from other cuisines (1974:83).

It is of interest that chicken is not the predominant fowl within the assemblages. Chicken was recovered in low frequencies from DUs 4A, 58D and 58E.

A total of 26 pigeon elements were recovered from DUs 58A, 58B, 58C and 58E. Approximately half of the recovered specimens were from DU 58C. Pigeons were quite plentiful from Maine to Virginia. It is reported that "flights of pigeons darkened the sky, and broke down the limbs of trees on which they lighted" (Earle 1974:110). "Some years pigeons were so plentiful that they were sold for a penny a dozen in Boston" (Earle 1974:110).

The passenger pigeon is now extinct, but it was once an abundant and economically important game species. The collection methods associated with exploitation of passenger pigeon included pushing the young (squabs) from their nest with poles and sticks. Trees in which the pigeons were roosting would be knocked down, killing many of the pigeons when the tree toppled. Game birds were primarily shot and sometimes retrieved by trained dogs.

Goose was recovered exclusively from DU 58C. Geese nest over a wide range of the Northern Hemisphere from Lapland to Spain. In Europe and Scandinavia goose is eaten traditionally on St. Martin's Day (November 11) and it also appears frequently at Christmas in these countries (Root 1980:151). Goose is associated with these holidays in much the same way that turkey is associated with Thanksgiving in the United States. In Europe and Scandinavia goose is the second most popular fowl.

Goose is a grazer capable of fending for itself. Geese turned into a meadow forage much like sheep (and require about as much pasture) Although they are web-footed, they are the most terrestrial of water birds. They need some water in their vicinity, but can make do with much less than ducks. The ability of geese to feed themselves on whatever greenery happens to be handy with a minimum of expensive fattening before they are killed maintains their favor in poorly endowed regions. They are generally raised on a small scale for the farmer's family and perhaps a few of his neighbors. Even today commercial goose production does not exist except in Germany, Austria and Scandinavia (Root 1980).

Grouse was recovered from only one context and that was DU 58C. Grouse resemble hens and share some aspects of their behavior. They are relatively ground bound. Their terrestrial habits account for the fact that their meat is lighter in color than that of most game birds. The breast meat of game birds is dark because a rich blood supply is required by strong flyers. Grouse can fly fast but only for short distances. They nest on the ground and find their food close to it in seeds, berries and young plant shoots.

Duck is present in DU 58B and DU 58C. Ducks have historically been plentiful in America. They were still so plentiful in the first half of the nineteenth century that Charles Dickens told of crossing two wide streams on his way from Philadelphia to Washington: "The water in both was blackened with flights of canvas-backed duck which abound hereabouts" (Root 1980:112).

j. Fish

A total of 279 fish elements were recovered; which primarily consisted of scales, small vertebrae, skull fragments and fins. The fish remains were recovered primarily from flotation samples. Only a few fish remains were recovered from excavation procedures. Fish are usually under-represented within samples because they are difficult to recover, and they are also difficult to identify and quantify. Each individual fish has a large number of small bones which may not have distinguishing characteristics that will enable specific identification. Scales can have unique properties which allow identification, however all fish do not possess scales. Singer estimates (1982:43) that each fish possesses an average of 700 scales. It is somewhat difficult to quantify fish remains and ultimately fish consumption. Despite the numerous negative impacts to fish analysis, five different kinds of fish were identified.

The use of scale characteristics facilitated the identification process and allowed identification of bass, herring, and shad. Perch was identified by skull and lacrymal elements and swordfish was identified by vertebrae. Identified fish remains were recovered exclusively from DU 58C.

Fish remains which could not be determined to species were recovered from DUs 58A, 58B, 58E as well as 58C.

It is of interest to note that the historic records show that during the period of 1756 to 1758, Pastor Unander purchased one barrel of mackerel. Unfortunately, no specimens were identified as mackerel.

Fish can be purchased in a variety of ways. A fish acquired in the steak form would produce an assemblage of relatively large trunk or caudal vertebrae only. Fish purchased dressed would produce vertebrae only, as head, tail and fins would have been removed previously. Fish purchased whole and prepared as fillets would produce an assemblage of cranial and postcranial elements. If head were purchased for stews or chowders, then an assemblage of cranial and pectoral elements would be present (Singer 1987:90). The absence of scales would suggest that the fish had been cleaned prior to purchase and consumption.

Unidentified fish remains are representative of the entire fish. Elements were recovered from the head, body and tail. Scales were also recovered. Fish that could be identified to species formed a somewhat more specific pattern. The identified elements for herring are from the fin, skull and scales. This suggests the use of the whole fish. Perch is represented only by head elements. Shad is represented by scales, skull and the quadrate bone, which is located in the skull region. By Singer's (1987:90) patterning this would suggest that perch and shad were used in chowders and stews and that only the heads were purchased. Only 6 perch specimens were recovered and only 19 shad; and this may be too small a sample to support such a conclusion. Bass is represented entirely by scales. Swordfish is represented solely by vertebrae. Adult Swordfish have no scales. Swordfish may have been purchased as steaks or fillets; because it is such a large fish, it is unlikely that the whole fish was purchased.

One very important factor to bear in mind when analyzing the fish remains from this site is that some of its early inhabitants were Swedish. This ethnicity may affect the frequency of fish consumption. Fish was indeed an important part of their diet. In fact, fish recipes seem to be more numerous in Scandinavian cookbooks than in American cookbooks (Kakonen 1974; Lorenzen 1964).

Ethnicity may also affect the taphonomy of fish remains. Many times the fish was prepared in such a manner that no bones were left. In a cookbook of Scandinavian dishes it is stated that "Fish was often cooked in such a way that the bones softened and could be eaten." It was said to help the brain grow. At least it was certainly an excellent source of minerals, phosphorus and calcium (Kakonen 1974:vii). Clearly this method of cooking, as well as pickling or smoking, would affect the preservation of fish remains in an archaeological site.

For centuries, fish was plentiful and cheap. A traveler wrote of Boston in 1740:

> Fish is exceedingly cheap. They sell a fine cod, will weigh a dozen pounds or more, just taken out of the sea for about twopence sterling. They have smelts, too, which they sell as cheap as sprats in London. Salmon, too, they have in great plenty, and these they sell for about a shilling apiece which will weigh fourteen or fifteen pounds (as quoted in Earle 1974:123).

Salmon and Shad were not prized fish in the 1700s. The price of salmon was less than a penny a pound. Earle reports that farm-laborers in the vicinity of the Connecticut River when engaged to work stipulated that they should have salmon for dinner but once a week (Earle 1974:123).

Shad was profoundly despised; eating it was even held to be somewhat disreputable (Earle 1974:123). Two shad for a penny was the price in 1733 in New York (Earle 1974:124). At first shad were fed chiefly to hogs. Ultimately, however, the ling and herring of the old countries of Europe gave place in America to cod, shad and mackerel (Earle 1974:124).

Shad is a seasonal fish, not particularly good during its seafaring stage, when it tends to be salty, scrawny and dry, but it feeds heavily in preparation for spawning, which makes it fat and succulent (Root 1980:454). Today Shad is not eaten with the frequency it once was, and it is today more prized for its roe.

David Singer (1987) has compiled fish market prices from the 1832-1887 period in Boston. This is considerably later than the temporal framework under study. Shad prices are listed as middle-priced fish and salmon prices are listed as high. This reflects an attitude and economic assessment about shad and salmon that is very different from that held in the 1730s.

Cod and herring alike owed their importance, before the days of refrigeration and rapid transport, to the fact that they could be cured for delivery to the consumer far from the source of supply. Neither of them was eaten fresh very often, except in fishing ports. The cod enjoyed a head start in this respect because it lent itself better than the herring to the simplest methods of preservation. The simplest method for preserving fish is drying it in the air. However, this does not work well for herring which is too oily. Fats account for 6% of its weight. Hung up to dry, it would probably spoil first. Like other fish, herring has undergone changes in status through the centuries. During the twelfth century in Europe, herring was accorded the highest status among saltwater fish and was considered a luxury. A century later, its very abundance had caused it to be demoted in popular esteem to the status of a cheap food for the poor. The herring trade brought prosperity to a number of nations depending on where herring were most numerous at various times (Root 1980).

The sixteenth century saw the apotheosis of the herring, in good times a staple for armies, schools and hospitals and in bad times, the food which saved populations from famine. The Dutch herring fisheries had taken the bulk of the world catch since 1450. Today it is Great Britain which dominates the herring fisheries of Europe. However, traditionally the most enthusiastic consumers of fresh herring are the populations of the Scandinavian countries (Root 1980).

Singer's rank market index of fish in the Northeast for the period 1832-1887 places herring in the low price category (1987:88). The attitudes and prices of Herring changed through time as did those for shad and salmon. Therefore, Singer's ranking may be temporally and geographically specific and hence not applicable to the data under study. In fact, the presence of herring within the assemblage may suggest ethnicity rather than economic capability of the site inhabitants. Herring is the most popular Scandinavian fish even in contemporary times. The high frequency of herring within DU 58C suggests that it was the favored fish of the parsons' households. This is perhaps a reflection of ethnic preference.

Bass and perch are generally considered freshwater species although many saltwater species are also called bass and perch. Furthermore, perches are often confused with bass, which

exacerbates the problem. Singer (1987:88) makes a distinction between saltwater and freshwater perch in terms of their relative ranks on the market index. Freshwater perch as well as swordfish are considered medium-priced fish whereas the saltwater perch is low-priced and in the same category as herring and cod.

In addition to the fish remains, mollusc shell was also recovered. Oyster, clam (hard-shell and razor), mussel and scallop shell are present within the assemblages. Oyster was recovered from every depositional unit and was by far the predominant mollusc represented.

k. Non-Dietary

Two horse phalange 1 fragments (which cross-mended) were recovered from DU 58C. A horse phalange 1 is quite distinctive and is unlikely that to be misidentified. There are several references to the presence of a stable in the historical records, and the horse remains may be related to the presence of the stable. It is not known how a dead horse would have been disposed of but it burial on the lot is a possibility. The death of an animal as large as a horse could have presented quite a problem in terms of disposal. The Board of Health for the City of Boston in 1814, addressed the issue of dead animals and said: "any dead animal thrown into the channel, shall have sufficient weight affixed to it to prevent its floating to the shore" (Marten 1987).

Among the taxa represented, rodents, snails and dogs are not directly associated with dietary activity. A single dog molar and a fibula were recovered from DU 58A. These elements may be representative of a single mid-sized dog. A water snail was recovered from DU 58C. Slipper shell fragments were recovered from DU 58B. In that context, it is quite likely that the shell may have been a part of the mortar.

Rodents are attracted to trash deposits and their inclusion in archaeological deposits is quite common. Field mice were recovered from DU 58A (1 specimen) and DU 58C (6 specimens). Three rat specimens were recovered from DU 58C. It is of interest that the amount of bone modification resulting from rodent gnawing is not in proportion to the number of recovered rodent specimens. The amount of rodent gnawed bone is far greater than the recovery of rodents.

l. Bone Modification

The presence of rodent and/or dog modified bone in an archaeological context can be an indication of the way in which trash was discarded. If trash is left in an open context, then rodents and dogs have easy access to it. If trash is buried, covered, or thrown into a privy or cistern then scavengers are less likely to gain access to it.

A high frequency of bone exhibited traces of having been gnawed on by rodents. A total of 91 bones were identified as having gnaw marks present on their surface. A total of 85% of bones gnawed by rodents were recovered from DU 58E. It was further noted that the high frequency of rodent-gnawed bone was from a context that probably included a rodent burrow (Unit N22/E60, Stratum D, Levels 7 and 8). This factor explains the high frequency of rodent-gnawed bone. It is not surprising that this context had the highest frequency of rodent-gnawed bone because it was interpreted as an open yard deposit. By their nature, yard deposits are subject to greater rodent and dog impact than a more protected area. Dog, pig, sheep and cow, as well as chicken bones, all exhibited traces of having been gnawed by rodents.

Burned bone indicates direct contact with fire or coals. Burning of bones may result as a by-product of roasting, or from disposal in a a hearth. The hearth was a major source of heat and light and provided the means by which all food was prepared. The roasting of meats and fowl in an open hearth was done in front of the fire, not directly over it as in barbecuing. Only the experience of the cook dictated the proper distance between the meat being roasted and the fire. The quality of the fire, not the quantity, was all important, for a roaring fire charred the outside while leaving the inside undercooked. Under the cook's watchful eye the meat or fowl was turned on a wrought iron spit frequently and basted in its own juices. A dripping pan was placed below the roasting meat to catch the juices for gravy (Crump 1986). Pieces of cut-up meat and potatoes were sometimes placed in this pan to cook. Leftover meat was commonly chopped up to be hashed or stewed in a footed pan over the coals. Meat was seldom fried or grilled (Schmit 1982:32-33).

Accidental or purposeful exposure of bone to fire alters the calcium content of bone. If a fresh bone is burned it does not necessarily alter its shape but it does lose weight and becomes very friable. The destruction of organic material in bone through burning can shrink it from 5 to 15% and reduce its weight by 50% (Wing and Brown 1979:109).

Heat can result in the blackening of bone, and deeply blackened bone may suggest that flesh was still present during the burning (Brothwell 1971:19). Charring of bone during roasting is confined to the exposed ends of the bone not protected from the fire by meat. Burning at high temperatures for prolonged periods can leave the bone pure white, friable, soft and porous, suggesting complete oxidation. Some burned bone that is not completely calcined does not reach the fragile state and although light in weight, may be quite strong (Carbone and Keel 1985:7). Burned bone ranges in color from white through grays and blues to black, depending on the completeness of its combustion (Wing and Brown 1979:109). It is of interest to note that not all of the recovered bone was charred in an even fashion. Some bones of the assemblage were only slightly charred, while others within the same context were whitened. This suggest uneven exposure of the bone to the fire, which may reflect the temporal factor of successive fires. Bones exposed to repeated and prolonged fires would exhibit more modification than bones present entering in hearth area for only a short time. Bones might be exposed to less prolonged burning if deposited a short time before the hearth area was cleaned. Debris could have been raked away from the hearth or removed to a trash pit.

A total of 283 faunal elements were charred. Of those, 200 were charred to the blackened state and 83 were charred white. The charred bone was almost exclusively mammal. One duck, one bird, one squirrel and two fish bones were charred. The charred mammal bone was primarily non-diagnostic fragmentation or longbone fragments. However, the charred specimens which could be identified were primarily from the skull or foot. There was significant spatial and temporal concentration of charred specimens in DU 58C. A total of 79% of the charred bone was from DU 58C.

2. Floral Analysis

A total of 13 flotation samples were examined. The samples were from DUs 58A, 58C and 58D. A total of 156 floral specimens were recovered. Of these specimens, 16 were recovered in the charred state. Virtually all floral specimens were recovered from DUs 58A and 58C. Small flecks of charred wood were recovered from DUs 58C and 58D. Charred wood fragments were the only botanical specimens recovered from DU 58D.

The types of seeds recovered included weeds, vegetable, greens, fruit, herb, tree, flower and grass. Table 27 gives the frequencies for each recovered specimen. Table 28 describes the characteristics of each floral species recovered, including the botanical and common name as well as describing whether or not the plant is poisonous, medicinal, edible, a flower, a tree or native to this country.

Since the historical record indicated that a kitchen garden was associated with the parsonage, it was hoped that it could be determined which vegetables were grown in that garden.

Colonial Period (1620-1775) gardens were characterized by a formal or geometric style which closely followed English designs (Favretti and Favretti 1978). In these early gardens, fruit trees were often incorporated into the center of each garden plot or around the edge of the garden border along with bush fruit. Vine fruits were trained on arbors and trellises. This style was an outgrowth of European gardening in tight rectangular spaces between buildings. It is natural that the early settlers brought this style of gardening with them and it was fortuitous that this style was ideal for maximum production in a small space (Favretti and Favretti 1978).

In the cities of the Northeast during the 1700s, the idea of a garden to the front of the house was very common (Favretti and Favretti 1978). These small gardens were the width of the house and extended two-thirds that width toward the front, with a path in the center. These gardens abounded with flowers, fruits and vegetables.

Urbanization promoted the practice of home gardening in several ways. Urban centers allowed specialized enterprises such as nurseries and seedhouses to develop and thrive (Tice 1984:30). Cities also provided transportation facilities which linked nurseries to domestic and foreign markets. Later, in the 1830s, the establishment of municipal water supplies further promoted home gardening by providing a sufficient, reliable water source (Tice 1984:34).

Prior to the establishment of municipal water supplies, rain water was collected in a rain barrel or cistern, but the amount of water thus collected was insufficient to last through prolonged dry weather. The availability of a water source was undoubtedly a variable in decisions concerning the location of the garden plot as well as the species planted. It is not surprising that popular garden vegetables in the 1700s were peas, parsnips and carrots, which are hardy and predictable plants. In urban contexts, small trees, such as pear, peach, apricot, plum and cherry were popular (Favretti and Favretti 1978).

The concept of particularized herb gardens bears little support in the literature. In the seventeenth, eighteenth and early nineteenth century, herbs for medicine, cooking or perfume were rarely set apart in a separate garden but rather grown as a part of the larger garden (Favretti and Favretti 1978). There was close juxtaposition, and intermingling of flowers with herbs, vegetables and fruits (Earle 1974:428). The exception to this practice were doctors who were known to keep "botanical gardens" in order to have the proper herbs to cure patients (Favretti and Favretti 1978:17).

Accounts from the seventeenth and eighteenth centuries list lettuce, sorrel, burnet, summer savory and purslane as being garden favorites (Earle 1974:433). However, accounts from the early nineteenth century cite the scarcity of these greens in an urban context. William Cobbett, author of The American Gardener (1882), recalled his first visit to New York in 1817, stating that "nothing in the shape of greens was to be had for love or money" either in the markets or in

TABLE 27. FLORAL SPECIMENS BY DEPOSITIONAL UNIT.

SPECIMEN	TYPE	58 A	58 C	58 D	TOTALS
BEDSTRAW	FLOWER	.	1	.	1
FORGET-ME-NOT	FLOWER	.	1	.	1
BLACKBERRY	FRUIT	.	51	.	51
BLUEBERRY	FRUIT	.	4	.	4
ELDERBERRY	FRUIT	1	6	.	7
CLOVER	GRASS	.	1	.	1
AMARANTH	GREENS	1	.	.	1
LAMBSQUARTERS	GREENS	.	1	.	1
MUSTARD	GREENS	.	7	.	7
PURSLANE	GREENS	2	.	.	2
PENNYROYAL	HERB	1	.	.	1
SQUASH	VEGETABLE	3	.	.	3
BRISTLEGRASS	WEED	1	.	.	1
CARPETWEED	WEED	.	2	.	2
DODDER	WEED	.	1	.	1
GOOSEGRASS	WEED	1	.	.	1
JIMSONWEED	WEED	3	30	.	33
ELM	TREE	.	1	.	1
CHARRED WOOD	WOOD	.	1	32	33
COLUMN TOTALS		13	107	32	152

TABLE 28. FLORAL SPECIMEN INDEX.

SPECIMEN		CHARACTERISTICS					
Botanical Name	Common Name	Poisonous	Medicinal	Edible	Flower	Tree	Native
Amaranthus sp.	Amaranthus		X	X	X		X
Gallium sp.	Bedstraw	X	X	X	X		?
Rubus sp.	Blackberry		X	X			X
Vaccinium sp.	Blueberry			X			X
Stetaria sp.	Bristlegrass						X
Mollugo verticillata	Carpetweed			X			
Trifolium sp.	Clover		X	X			
Cuscuta gronovii	Dodder	X					X
Sambucus canadensis	Elderberry		X	X		X	X
Ulmus americana	Elm					X	X
Myosotis arvensis	Forget-Me-Not				X		X
Eleusine indica	Goosegrass						
Datura stramonium	Jimsonweed	X	X		X		X
Chenopodium sp.	Lambsquarter		X	X			X
Brassica sp.	Mustard		X	X			
Hedeoma pulegioides	Pennyroyal		X	X			X
Portulaca oleracea	Purslane		X	X	X		
Cucurbitaceae sp.	Squash			X			X

most American gardens (as quoted in Tice 1984:53). By Cobbett's account, the only greens he could find were wild dandelion and dock greens, which were sold in the streets at several pence per bunch.

The character and function of the "kitchen" garden gradually changed for urban Americans. As consumerism increasingly became the dominant characteristic of northeastern American culture, there developed, ironically, an inverse relationship between the need for kitchen gardens and the ability to own enough land to support one. As urbanization accelerated, large numbers of working poor were concentrated on small areas of land in cities and were unable to grow significant amounts of food (Tice 1984:49). The working poor grew dependent upon the network of truck farms and markets (Tice 1984:49). Of course, the middle and upper classes also utilized the market economy to purchase produce. A horticulturalist in the 1800s observed that "The professional gardener...who vends his vegetables at our doors, is likely to grow them cheaper and just as good as we can" (Scott 1870:23).

"Kitchen" gardens were also affected and changed by another significant factor. Epidemics of cholera and typhoid led physicians to warn consumers that raw or unboiled produce spread disease. During the cholera outbreak of 1832, New York banned the sale of fresh fruit and vegetables (Tice 1984:53). The stigma associated with raw produce persisted throughout much of the nineteenth century. The focus of home gardens shifted to produce which could be easily boiled, dried, preserved, stored or "put down" into root cellars. Potatoes, onions, carrots, parsnips, beets, and cabbage continued to be the most common garden vegetables (Tice 1984:53).

By the late 1860s there was an emergence of new nutritional theories which stressed the beneficial properties of fruits and vegetables. Horticultural writers of that time lamented the lack of variety in garden produce. The lack of variety was attributed to ignorance of gardening skills and the propensity to boil all vegetables (Tice 1984:54). Gradually, gardeners began experimenting with new varieties of fruits and vegetables. This in turn led to greater produce variety available in the markets.

a. Vegetable/Herb/Greens

Cucurbits *(Cucurbita sp.)* comprise a large botanical family of gourds, melons, cucumbers, and pumpkins. They are distinctly American and were intensively utilized by the American Indian. Cucurbits have consistently maintained popularity as a desired food item. Cucurbits require cultivation and are not observed in the wild state. Three cucurbit seeds were recovered from DU 58A, but the specimen variety could not be determined beyond genus.

Purslane *(Portulaca oleracea)* is a native of India which was adopted by Europeans as a choice vegetable. Purslane immigrated to America with the first settlers and was a favored potherb and salad green. Purslane could also be dried and stored for year-round use and the seeds could be ground and used as flour (Cox 1985). The juice of the plant was used for coughs and applied externally for skin irritations and sores. The crushed seeds were boiled in wine and given to children as worm medicine. The seeds are eaten by several species of songbirds and both seeds and vegetation are eaten by small mammals.

Today, purslane has escaped cultivation and is considered a serious weed pest in cultivated areas. In fact, purslane was somewhat of a nuisance even when cultivated. A botanical journal from 1640 notes that Purslane delights to grow

> in the alleyes of the Garden between the beds . . . or . . . upon those beds of dung that Gardiners have used to nourse up their Cowcumbers, Melons and Pompions, whereon after they have been taken away, they have sown Purslane (as quoted in Leighton 1970:372).

Two purslane seeds were recovered from DU 58A. One was in the charred state.

The amaranths *(Amaranthus retroflexus, Amaranthus sp.)* were valued as an ornamental as well as a source of fresh greens. An infusion made from dried leaves was used for mouth and throat irritations as well as for excessive menstrual bleeding and diarrhea. The plants of this genus are an important food for many species of birds and small mammals. The plant's success seems to hinge mainly on its tremendous seed production. A single amaranth plant can produce 100,000 seeds. Amaranth seeds, although small, are quite durable and can pass through the digestive tract and still remain viable. Further, amaranth seeds can maintain germinability after 40 years of dormancy in the soil (Martin 1972). One amaranth seed was recovered from DU 58A.

Lambs quarters or goosefoot *(Chenopodium sp.)* and amaranthus are seed types which are "opportunistic" and will invade and flourish in fields, waste spaces or any bare ground that becomes available. These species all have high growth rates and produce large numbers of seeds, which enables them to establish themselves quickly on bare soil. They have similar requirements for soil type, moisture and light. The young leaves can be cooked as greens and it is said that they are better tasting than spinach. The seeds can be boiled and mashed into a porridge-like dish or dried and ground into a flour that tastes somewhat like buckwheat flour (Cox 1985:198). One uncharred goosefoot seed was recovered from DU 58C.

Mustard *(Brassica juncea)* is one of the oldest known culinary medicinal herbs. Mustard was brought to America by the Colonists and has now gained the status of a garden weed (Clarkson 1942). Mustard greens were used in salads and cooked as greens. The seeds were used whole as a pickling spice and were ground to make mustard. As a remedy for various ills, mustard was used in many ways: as oil, tincture, poultice and plaster, for headaches, fevers, whooping-cough, liver and stomach complaints (Clair 1961:210). The crushed seeds were applied as a chest plaster for pneumonia, bronchitis and other respiratory ailments. A total of 7 charred seeds were recovered from DU 58C.

Pennyroyal *(Hedeoma pulegioides)* is a small inconspicuous mint with highly aromatic leaves. The fresh or dried leaves smell strongly of mint and make an excellent tea (Leighton 1976; Peterson 1977:140). One charred seed was recovered from DU 58C.

b. Fruit Trees/Bush Fruit

Elders *(Sambucus canadensis)* were important garden shrubs/trees as early as the 1600s. The elder is native to North America and was immediately utilized by the early settlers because of its similarity to European elders (Reppert 1976). The elder thrives best in moist, well-drained soils but can be grown in a diversity of soils. It was found useful for making screen fences in bleak, exposed situations, and also as a shelter for other shrubs on the outskirts of plantations. By clipping two or three times a year, elders may be made close and compact in growth. The young trees furnish a brittle wood, containing much pith, while the wood of old trees , which is hard and close grained, polishes well and was used for shoemakers pegs, combs, skewers and turned

articles. Young elder twigs, with pith removed, were used for making whistles and other early toys.

The elder was used medicinally as a cathartic. The flowers contain a volatile oil and serve for the distillation of elder-flower water, used in confectionery and perfumes. The elderberry was used to produce a violet or purple dye. The leaves were employed to impart a green color to fat and oil and the berries were used for making wine (a common adulterant of port) and as a tonic for colic, headache, constipation and for treating wounds (Knap 1979). The leaves and bark emit a foul odor which has some repugnancy to insects. One seed was recovered from DU 58A and 6 seeds were recovered from DU 58C.

Botanists conservatively estimate two hundred different species of blackberries *(Rubus sp.)*. Blackberries are shrubs with multi-seeded fruit. The hard seeds can pass through the digestive system of birds and man without harm. Blackberries thrive in poor soils, along fencerows, in clearings and in thick brush. The blackberry grows most plentifully in the eastern United States. Improved varieties have been developed by cultivation but the wild fruit is still eaten in the largest proportion (Root 1980:34). Blackberry was represented by the highest seed recovery frequency. A total of 49 seeds were recovered from DU 58C (Unit N60/E50, Stratum C, Level 7). It has been suggested by Mrozowski (1987:5) that the presence of household yard fences encouraged the spread of weedy vines such as blackberry.

Blueberry *(Vaccinium sp.)* is represented by approximately 20 different species in the eastern United States (Medsger 1966:71). The exact species is often difficult to determine. The American blueberry is second among common fruits (after the blackberry) in being consumed chiefly in its wild rather than in its cultivated form. Four seeds were recovered from DU 58C.

c. Ornamental

It was further hoped that the floral analysis would provide data concerning flower gardens associated with the parsonage. It is reported in Of Swedish Ways that:

> When going to church it was customary to have a little sprig of salvia or lavender in the fold of the handkerchief and to lift it to the nose from time to time when the preaching was apt to lull the listeners into drowsiness. Women of means kept the herbs in a small silver case, which they carried under the hymnbook (Lorenzen 1964:57-58).

The forget-me-not *(Myosotis arvensis)* is a perennial with shallow fibrous root system which was introduced from Europe. It was introduced as an ornamental for moist gardens (Cox 1985:296). One charred seed was recovered from DU 58C.

Bedstraw *(Gallium mollugo)* is a perennial that was introduced from Europe. Bedstraw was a popular garden plant as early as the 1700s, however it has escaped cultivation and is now found in fields, pastures and waste areas. The small, numerous flowers are quite fragrant and were dried and stuffed into mattresses and pillows. The young shoots can be cooked and eaten as greens, and as early as the sixteenth century this plant was described as a food for those who did not wish to become fat. The dried and roasted seeds were used as a substitute for coffee. The seeds may contain caffeol, the oil that gives coffee its flavor. This plant was also used as a tonic and diuretic. The fresh leaves were crushed and made into a salve (Cox 1985). One charred seed was recovered from DU 58C.

Jimsonweed *(Datura stramonium)* is found in fields, abandoned feed lots, barnyards and waste areas. All parts of the plant are poisonous. The early settlers at Jamestown knew about the plant and its properties; thus the common name Jamestown weed (Cox 1985). Jimsonweed is considered a weed by contemporary standards, but it was a popular ornamental as early as the 1600s. by the late 1700s other varieties of Datura replaced the stramonium in popularity (*Datura metal, Datura inoxia*). Three seeds were recovered from DU 58A. A total of 30 seeds were recovered from DU 58C. Mrozowski (1987:7) states: "Jimsonweed appears to have been so prominent in cities that it may have been a convenient narcotic. Its appearance in large numbers, and consistently in cultural contexts, suggest it both grew and was consumed widely in the eighteenth- and nineteenth-century New England cities.

d. Tree

The Elm *(Ulmus americana)* is a conspicuous tree of eastern town streets (Zim and Martin 1952:57). Widely planted, it makes an excellent shade and street tree. It is menaced by insect pests and the Dutch elm disease. The wood is used for furniture, containers, and various small articles. One seed was recovered from DU 58C.

e. Ground Cover

Clover *(Trifolium sp.)* is a biennial introduced from Europe. Clover is a rich source of protein, calcium and vitamins for all classes of livestock. it was widely cultivated as a forage plant. The dried leaves and flower clusters can be used to make a tea and the spring leaves can be added to salads or cooked as greens. The dried flowering plant was used in salves (Cox 1985). Clovers now inhabit a variety of environments from lawns to forests. One charred specimen was recovered from DU 58C.

f. Weed

If there is no general usefulness ascribed to the plant or there is no documented usage of the plant, it is analytically categorized as "background noise" to the assemblage. Weeds were certainly a component of the historic landscape and easily become incorporated into an assemblage. There is no documentation or evidence that dodder, bristlegrass, carpetweed or goosegrass were utilized.

Dodder *(Cuscuta gronovii)* is a parasitic plant with root-like structures that penetrate the conductive system of a host plant. The seeds germinate in the soil and the seedlings soon come into contact with host plants. Contact with the soil is then broken, and they become totally dependent on the hosts. After making a few turns around one shoot the dodder finds its way to another, and continues twining and branching until it resembles fine, closely tangled, wet catgut. Some of its colloquial names are strangle-weed, hellweed, love vine, and devil's guts.

Dodders have been declared noxious weeds in the seed laws of 42 states and by the Federal Seed Act (Cox 1985:304). Preventive or control measures for infestations of dodder include early cutting of fence rows, ditches and weed fields to prevent seed production. In some parts of the United States, dodder has been suspected of causing digestive disorders in horses and cattle (Cox 1985:303). One charred seed was recovered from DU 58C.

Bristlegrass *(Setaria sp.)* are a weed of gardens and lawns but their seeds are a valuable food for man and wild birds. Bristlegrass can grow several feet high but their short production season makes them undesirable as pasture grass (Martin 1972:26). One uncharred seed was recovered from DU 58A.

Goosegrass *(Eleusine indica)* is an annual from Asia. It is mainly an urban weed of gardens, lawns, vacant lots and other waste places. Goosegrass thrives in packed ground such as in paths and poor lawns (Martin 1972:19). One charred seed was recovered from DU 58A.

Carpetweed *(Mollugo verticillata)* is an annual weed with a deep taproot which became naturalized from tropical America (Cox 1985; Fernald 1970). It is not an early spring plant; rather, germination usually occurs later in the season when conditions are more like those of its warmer native habitat. Its late start is compensated for by a very rapid rate of growth in summer and fall when it becomes a nuisance in cultivated areas. It is a common weed in a variety of environmental settings. Two seeds were recovered from DU 58C.

g. Preservation

The historic records indicate that storage cellars were associated with the parsonage. This certainly suggests that fruits or vegetables grown in the garden were "put down" for use during the cold weather.

Fresh fruits have a short season and spoil much too quickly to be stored for any period of time. For most fruits, sugar was the most effective way of preservation. Originally, sugar made from sugar cane had been an expensive luxury import which only the rich could afford. In the eighteenth century sugar was so scarce and high priced that wild honey and maple sugar were common substitutes (Earle 1974). By the nineteenth century sugar was widely available on the world market although it was still expensive (Schmit 1982; Tannahill 1973). By the 1830s Louisiana had also opened up as a sugar-planting area, so that sugar was available to most Americans; but only the affluent could afford the lavish use of sugar (Schmit 1982:38). A large number of sweet dishes was the mark of an elegant dinner in the mid 1800s.

Fruit was boiled in sugar water and made into jams, preserves, marmalade and jelly. The processed fruit was then put in glass bottles or jars. Glass bottles or jars were used so that the fruit could be easily checked for spoilage or fermentation. Fruits such as cherries, plums, peaches and pears were also candied (Earle 1974). The fruits were first cooked in sugar syrup and then dried in the sun to produce crystallization.

Another way to preserve whole fruit was by the addition of brandy. Peaches were a favorite fruit to preserve in this way. Lye was used to remove the fuzz from peaches however this was not thought to adversely affect the flavor of the fruit. A variation on the method of preserving fruit was pickling in a salt solution. An expensive luxury item was pickled mangoes. The exotic mango had been imported to England in the seventeenth century and had become a favorite of the wealthy. Mangoes were not available in America during the eighteenth or nineteenth centuries, so attempts were made by the upper class to duplicate the dish. The most common substitute was cantaloupe. Cantaloupes enjoyed quite a popularity during the eighteenth and nineteenth century in America.

A variety of homemade fruit wines and cordials were also made. The cordials had a base of fresh fruit which was heavily sweetened and to which alcohol (brandy or whiskey) was added.

During the fermentation process, the mixture was stored in casks. When the liquid was drawn off it was then stored in large bottles or jars (Schmit 1982).

The historic records indicate that Pastor Unander for the period 1756 to 1758 made the purchase of several pounds of sugar as well as several quarts of rum, clove water and a quart of anniseed.

Maintaining a source of vegetables throughout the cold months required solutions similar to those used in the preservation of fruit. Root vegetables, such as potatoes, carrots and radishes could be stored in cellars. Corn, peas and beans could be dried and put in containers. Onions and garlic were dried and strung (Schmidt 1982:25). Fleshy vegetables spoiled easily and needed further treatment if they were to be utilized during the cold months. Commercial canning of food in tin cans spread from England to the United States in 1819 (Tannahill 1973). However, canned goods were still not widely used after their introduction, because they were not considered as good or as safe as home-processed foods (Schmidt 1982:25).

Home canning involved boiling vegetables and then placing them in containers. Containers were sealed by pouring a layer of fat over the top and were then stoppered with a waxed cork. Sometimes hot melted wax was poured over cloth. Occasionally paper, leather or bladder was utilized.

Vegetables were also made into sauces. The most popular of these sauces was ketchup. It is interesting to note that it was only in the nineteenth century that ketchup was first made from tomatoes. Prior to that, ketchup was a condiment made from a variety of ingredients, the most common being walnuts, anchovies and mushrooms (Schmidt 1982:26).

Pickled vegetables were quite popular in the eighteenth and nineteenth centuries. Artichokes, asparagus, beans, beets, cabbage, cauliflower, walnuts, as well as cucumbers, green peppers, mushrooms and onions were commonly pickled. The vegetables were immersed in brine and transferred to vinegar and flavored with a variety of spices.

Buckwheat, barley and rye were commonly used in Sweden. The historic records indicate that Pastor Unander for the period 1756 to 1758 made the purchase of a bushel of oats. It was unfortunate that no grain seeds were recovered.

D. SUMMARY

During the middle of the eighteenth century, urban subsistence was an admixture of market participation and self-reliance. Gardens were commonplace as was the raising of livestock and poultry. One of the primary research goals was to ascertain what livestock was raised on-site and what was obtained from the market economy. Delineation of subsistence patterning and quantifying the relationship between self- sufficiency and reliance on market goods is not clear-cut. The site area is located only blocks from stores and markets where fruits, vegetables, spices and meats could have been purchased during the nineteenth century, but no information is available concerning local markets for the early to mid-eighteenth century.

One of the hallmarks of an urban subsistence pattern is retail purchase of professionally butchered meat cuts, commercially prepared foodstuffs, and imported foods. The skeletal element distribution of skull, mandible, teeth, phalange and tarsal fragments for sheep, cow and pig suggested that each of these animals was present on the Parsonage Lot in their entirety. The

data suggested that these animals were butchered on the premises. It is likely that they were raised on-site or else purchased live and slaughtered on-site. Another possibility is that whole sides of pig, sheep or cow were purchased and brought to the site area.

The high frequency of skeletal elements associated with butchering wastage makes the assessment of what was purchased from the market difficult. There is no pattern of butchering implement (cleaver vs. saw) usage which demarks domestic- versus market-butchered meat. There is no skeletal element pattern which would suggest that certain cuts of meat were purchased. Feet and head elements may have been available for purchase at a market. However, the high frequency of butchering waste elements was not thought to have resulted from the purchase of food items. The Swedish and Scandinavian cookbooks surveyed for this study did not give recipes for feet or head elements. The use of these elements as food items did not seem to be a part of the Scandinavian culinary heritage in the same way that such foods were utilized by other segments of the American population. It is likely that the diet was supplemented with market-purchased meats, but a clear distinction cannot be made between those meat cuts which were purchased and those processed on site.

Another focus of analysis was examination of the floral and faunal assemblage as they related to the status and economic level of the inhabitants. Because a clear pattern of market-purchased meat versus domestically-slaughtered livestock and poultry could not be delineated, it is difficult to make an assessment concerning status as it relates to meat cuts.

The historic records indicate that clergy occupied the site under study. Therefore, aspects of status are known. Despite the high status associated with the clergy, it was and still is a position with relatively low recompense. Although one's income level sets parameters on purchasing options, one's prestige in a society may not set the same parameters. Despite the clergy's low pay, it is possible that other "perks" or advantages were accorded to them.

The third primary focus of research was delineation of ethnicity from the faunal or floral assemblages. Historic research confirms that the occupants of the site area were of the Swedish nationality. The pastors came directly from Sweden and served their church tenure and then returned to Sweden.

The data were examined to determine if during their tenure in America they continued to prepare Swedish dishes and maintain Swedish traditions recognizable through the archaeological record. Several patterns emerged which suggest that ethnic Swedish foodways persisted in the colonial situation. The abundance of a wide variety of fish is consistent with a cultural group that traditionally consumes a large quantity of fish. It is more noteworthy that such a high frequency of herring was recovered from the site area. Herring was and still is a Scandinavian favorite. Although Singer (1987) has prepared an economic ranking for the purchase of fish, it is more likely that the occurrence of herring is reflective of cultural choice rather than economic choice.

It is particularly interesting to note that the frequency of recovered pig, sheep and cow parallels the pattern of meat consumption described in a Scandinavian cookbook. A Scandinavian cookbook related that pork was in the old times the most common meat in the Scandinavian diet, that lamb used to be more common than it is now, and that the consumption of beef was more rare. This is indeed one of the most interesting patterns manifested in the assemblage.

This analysis could proceed only to a certain point without knowledge of the specific growth, development and locations of markets in Wilmington. It would be useful to know the

availability and specific pricing of various meats, vegetables, species and exotic goods within the city, as well as information pertaining to city ordinances regulating markets, ordinances regulating domestic livestock, and ordinances regulating disposal of trash.