

Appendix K: Faunal Analysis Report (Heinrich Archaeological Consulting)

**Faunal Analysis of Bones Recovered During Excavations at the Dunham House (28-Mi-220)
in Woodbridge, New Jersey.**

**Analysis and report for
Archaeological Society of New Jersey**

by

Adam R. Heinrich, Ph.D.

March 2020



This report summarizes a faunal collection recovered during excavations by the Archaeological Society of New Jersey (ASNJ) at the Dunham House site (28-Mi-220) in Woodbridge, New Jersey. The faunal remains were recovered off the western face of the house from three excavation units (EUs) dug to investigate rich artifact deposits that were identified in shovel tests. Table 1 summarizes the contexts provided for the faunal analysis.

The site history is detailed in the report by the ASNJ and is only summarized here focusing on the time periods represented by the examined archaeological deposits in order to provide a context for the faunal remains. The property on which the Dunham/Barron house is located was first built upon by Jonathan Dunham (d. 1704) and his family who owned the land from 1696 until 1727. The current house on the site was likely constructed by Jonathan's son Benjamin at about 1709 as indicated by dendrochronological dating of cellar timbers. After the Dunhams, the property was owned by John Van Horne from about 1727-1733 before it was acquired by the Barrons who owned it until 1872. It is unclear if Van Horne occupied the land as he was based out of New York City (Honeyman 1918:500). It is also unknown when the occupancy by Samuel Barron began, but he was occupying the site by 1752 as indicated in a newspaper advertisement (Nelson 1897:133). After the Barrons, a late nineteenth-century addition was built onto the 1709 house and also off its north side likely creating deposits that capped those studied here.

Table 1: Summary of the contexts analyzed with dates and site occupants possibly responsible for the deposits.

Catalog #	EU #	Level #	Stratum	Date	Occupation
152	7	8	Fill 5	Post 1830s	Mixed 18th-19th century material
153	7	9	Fill 5A	Post 1820s	Mixed 18th-19th century material
154	7	10	Fill 6	Early 18th century-1809	Dunham family and Samuel Barron
155	7	11	Fill 7	Early to late 18th century	Dunham family and Samuel Barron
156	7	12	Fill 8	Mid-18th century	Possible Samuel Barron
169	8	5	Fill 2	1760s-1801	Samuel Barron
170	8	6	Fill 2	1760s-1801	Samuel Barron
171	8	7	Fill 2	1760s-1801	Samuel Barron
172	8	9	Fill 3	Post 1762	Possible Samuel Barron
189	9	6	Fill 5	18th-early 19th century	Possible Samuel and John Barron
190	9	7	Fill 6	18th-early 19th century	Possible Samuel and John Barron
191	9	8	Fill 6	18th-early 19th century	Possible Samuel and John Barron

The ASNJ report on the excavations provides some details about animals owned by site occupants, which may have appeared on the site and incorporated into the archaeological deposits. The first mention of livestock is during the ownership by Jonathan Dunham who is recorded to have sold a cow, a calf, and a yoke of oxen to pay for clothes so that Mary Ross, Jonathan's criminal accomplice back in Massachusetts and possible mistress, could be provisioned on a return trip to New England.

During the occupation by Samuel Barron, the 1752 newspaper advertisement alerting of the property's sale identified a convenient salt meadow along Woodbridge Creek that could be used for stock grazing (Nelson 1897:133). Samuel would come to own several pieces of land in Woodbridge, and presumably acquired the site's property when it was put on sale. In addition to his agricultural pursuits, Samuel also controlled a tannery within Woodbridge Township (Myers 1995:502-503; Ward 1934:11). In the later eighteenth century, his tax records note that he owned four horses, 10 horned cattle, and one hog on 227 acres in 1778 (Woodbridge Township Tax Ratable 1778). In 1784, Samuel was taxed on

246 acres with five horses and 30 cattle (Woodbridge Township Tax Ratable 1784). His livestock quantities dropped to four horses and 20 horned cattle in 1785, though now on 196 acres (Woodbridge Township Tax Ratable 1785). By 1786, he was again taxed on 246 acres, but his livestock numbers remains steady through 1793 (Woodbridge Township Tax Ratable 1787, 1788, 1789, 1793). In 1797, his holdings had diminished to only two horses and 12 cattle. Samuel died in 1801 and his probate of September 16th recorded a range of cattle, hogs and sheep in greater quantities than his tax records indicate during the late eighteenth century. Table 2 summarizes the livestock in Samuel's probate with their assessed values.

Samuel's 1801 probate reveals that he was able to rebuild his livestock holdings between 1797 and his death as he was in possession of three horses, at least 25 cattle, five hogs, and 25 sheep (Table 2). His previous tax records and the probate reveals that Samuel's animal economic activities relied heavily on cattle who are identified as performing a range of work including draught by oxen, meat from steers, and milk from cows. While he owned milk cows and "dairy dishes," his inventory also includes butter indicating one type of dairy product produced on the property. His cattle were managed and bred in order to maintain their numbers as indicated by three bulls and several "year old heifers" and "yearling" steers. In addition to the range of cattle, Samuel owned five hogs and 25 sheep. The hogs would have been for food, including meat that could be salted, pickled, or smoked over winter and this may be indicated by "meat casks." The high number of sheep suggests wool production, and three sheep shears were recorded, though no stock of wool fiber or cloth is noted. The large number of sheep in the probate was unexpected as the tax records did not record sheep.

Table 2: Selection of items in Samuel Barron's probate of September 16, 1801 related to livestock and other objects that could have been used for animal products, animal feed, or animal labor.

Items	£	s	d
Sundries of Dairy Dishes	2	18	0
3 Axes and a Saw 20/ Carpet 24/ 3 pr. Sheep Shears 6/	2	10	0
2 Post Butter	0	40	0
Washing Tubs & Meat Casks 50/6 2 Dutch Ploughs 110/	8	0	6
Sythes and Cradle 25/ Old Riding Chair 60/	4	7	0
Chains & Ox Yokes 51/ Flax 40/ Ox Cart £8 0 0	12	11	0
Riding Chair	24	0	0
14 Tons of Hay £6. 1 Stack of Hay & Oats £ 6 1 0	90	1	0
1 Stack Lott £10 0 1 Waggon £8 0 0	18	10	0
1 Cow £7 0 0 1 Yoak Oxen £32 0 0	39	0	0
3 Steers £28 0 0 2 Cows £16 10 0	44	10	0
2 Calves 80/ 3 horses £46 0 0 Barrel of hay £30 0 0	80	0	0
2 Stack Lott Hay £24 0 0 2 Stack Ditto £14 18 0	38	8	0
5 Milk Cows £33 15 0 3 Year old heifers £22 10 0	56	5	0
2 Bulls 3 white face Star £3 5 0	9	15	0
2 Steers £10 0 0 3 yearlings £9 15 0	19	15	0
1 ??? old bull	5	10	0
5 hogs £16 0 0 25 Sheep £22 10 0	38	10	0
Indian Corn in the field	37	0	0
Hay in the little Barn	4	8	0

After Samuel's death, his son John (b. 1760) assumed control of the site, while other portions of his father's properties were distributed to his other sons. John's tax record for 1802 indicates his ownership of 51 acres whereon were three horses and 20 cattle (Woodbridge Township Tax Ratable 1802). By 1809, his livestock decreased to three horses and eight cattle, and a record from 1810 indicates that John had 10 tanning vats that were inherited from his father (Woodbridge Township Tax Ratable 1809, 1810). John's livestock would remain relatively few in number with two horses and between six and seven cattle into the early 1820s. He did acquire a dog by 1817 and a second by 1821, on which he was taxed (Woodbridge Township Tax Ratable 1817, 1818, 1819, 1821). After John's death in about 1826, censuses and mortgages record site occupants, but information about livestock is no longer available. By the later nineteenth century, the house would become the parsonage for Trinity Church, which presumably removes the property from farming activities (Dally 1873:17).

Methodology:

Each bone specimen was examined in order to identify taxon, skeletal part, age, butchery traces, and other relevant information. These examinations were aided by slight magnification with a 10x-power hand lens (Blumenschine et al. 1996).

Identification to the most specific taxonomic level and skeletal element was made for each bone fragment in the collection (see Coding Conventions in Appendix A). A catalog of the faunal remains is presented in Appendix B. Taxonomic and skeletal part identifications were aided by comparative collections. These collections contain domestic animals and a wide range of wild animals. Additional aids include osteological manuals (Cohen and Serjeantson 1996; Schmid 1972). Each bone fragment was measured in maximum width and length dimensions using metric calipers in order to collect the data for assessments of fragmentation and for potential future use if additional excavation occurs at the site. Osteometric measurements were recorded for various bone landmarks according to von den Driessh (1976).

An analyst often encounters bone fragments that cannot be identified to the species level. Understanding coarser taxonomic distinctions that have diagnostic bone forms and landmarks can allow many fragments to be classified as bovidae, artiodactyla, rodentia, carnivora, mammalia, etc. In addition to understanding taxonomic hierarchy, C. K. Brain's (1981) relative body sizes are also applied to specimens that can and cannot be identified to the species level. This provides a more informative identification for fragments that might otherwise be identified coarsely as small, medium, or large mammal. It also allows data to be sorted according to relative bone size. Brain's relative body size categories are more informative than the typical categories used by historical zooarchaeologists for mammals. The small, medium, large distinctions are kept for avian specimens. These size classes are defined in Table 3.

The standard quantification of number of identified specimens (NISP) is used to express the raw count of bone fragments identified to particular analytical categories. The principle of interdependence usually causes NISP to be a less fit quantification when attempting to compare taxonomic abundances because taphonomic processes may not be equal between contexts or even among taxa from the same context. Minimum numbers of individuals (MNI) was also used to determine the abundance of each taxon while accounting for animal age and fragment overlap (Grayson 1973:432-433; 1978:203; 1984:20-24, 28; Klein and Cruz-Urbe 1984:25; Lyman 1979:536).

Table 3: Animal size classes used in the faunal analysis.

Category	Size	Example
Mammals	1a	Rodents
	1b	Larger carnivores, rabbits, domestic cats, raccoons
	2	Sheep, pigs, deer
	3	Cattle, horses
Birds	Small	Song birds
	Medium	Chickens, ducks
	Large	Turkeys, geese

While MNI provides a count of complete animals represented, site occupants could be using specific portions of animals or distributing portions to other places. Ranked organizations such as the military and consumers engaged in capitalist markets can create situations where incomplete animals are purchased or distributed to the consumers based on status such as through purchasing power (Heinrich and Giordano 2015; Huelsbeck 1987; 1991; Lyman 1977; 1979; 1987; Schulz and Gust 1983). These potentially uneven distributions can make MNI a misleading quantification as it implies complete animals. Attention was paid to skeletal element frequencies, such as which parts of skeletons are present. An effort was made to identify meat cuts that became standardized in the nineteenth century to determine if particular cuts or portions of carcasses were preferred if the meat was acquired from a butcher. Meat cuts were determined by information published on zooarchaeological research of market systems (AECOM 2016; Schulz and Gust 1983). Identifications were made to the most specific primary (wholesale) or secondary (retail) meat cuts, when possible (Figures 1 and 2).

The ages at which animals were slaughtered were determined by tooth eruption, by tooth wear, and by bone epiphyseal fusion. Aging data for tooth development is applied to the archaeological material using Silver (1969) and Bull and Payne (1982).

Results:

In total, 622 faunal specimens were catalogued from the 12 contexts presented in Table 1. Likely due to their recovery from redeposited fill layers, the assemblage was excavated by shovel which caused high degrees of fragmentation during excavation. When multiple, freshly broken fragments of an originally individual specimen were identified, they were catalogued as a single entry. Table 4 summarizes the numbers of bone fragments which factor into taphonomic assessments and shell and isolated teeth that are omitted from taphonomic analyses due to their inability to retain traces of butchery and post depositional modifications. While the entire assemblage from the Table 1 contexts was catalogued, the following analysis splits the assemblage into those contexts that are better dated to the Dunham and Barron families (Catalog #s 154-191) and those that date to the mid-nineteenth century (Catalog #s 152-153) and may represent Samuel's son John's or later occupant's activities.

Table 4: Numbers of specimens cataloged for each context.

Catalog #	EU #	Level #	Stratum	Date	Occupation	# Bones	# Isolated Teeth	#Shell
152	7	8	Fill 5	Post 1830s	Mixed 18th-19th century material	74	9	13
153	7	9	Fill 5A	Post 1820s	Mixed 18th-19th century material	26	4	6
154	7	10	Fill 6	Early 18th century-1809	Dunham family and Samuel Barron	14	1	2
155	7	11	Fill 7	Early to late 18th century	Dunham family and Samuel Barron	46	7	2
156	7	12	Fill 8	Mid-18th century	Possible Samuel Barron	2	1	0
169	8	5	Fill 2	1760s-1801	Samuel Barron	47	26	10
170	8	6	Fill 2	1760s-1801	Samuel Barron	90	21	15
171	8	7	Fill 2	1760s-1801	Samuel Barron	73	10	1
172	8	9	Fill 3	Post 1762	Possible Samuel Barron	4	0	6
189	9	6	Fill 5	18th-early 19th century	Possible Samuel and John Barron	18	0	8
190	9	7	Fill 6	18th-early 19th century	Possible Samuel and John Barron	34	7	12
191	9	8	Fill 6	18th-early 19th century	Possible Samuel and John Barron	21	2	10
Total						449	88	85

Taphonomy:

The faunal collection demonstrated a high degree of recent damage. Though it was not quantified, many fragments contained freshly broken edges from being impacted by shovels and possibly other tools. This recent breakage was likely a result of the fauna being recovered from relatively thick fill deposits that were excavated by shovel, which would contrast with a feature that may have been excavated via trowels. While this recent breakage is not confused for historic processes, it does impact identifiability and the depression of other quantifications such as those of scavenging or butchery traces. While some recently broken fragments were mended for the analysis, many were not able to be matched with other specimens from the contexts, which could suggest that the other portion was rendered less identifiable, unmendable, or possibly not recovered in the EU footprint.

Historic breakage patterns were assessed for long bones that contain relatively thick, dense cortical bone (Table 5). Long bone breakage patterns indicate that the bones were largely broken while fresh (breakage types 1 and 7) but some underwent additional fragmentation after having undergone organic decay on ground surfaces or during possible redeposition in the fill deposits. While most bone fragments were broken while still containing their organic part, a total of 19.1 percent of the long bones from Contexts 152-153 and 9.0 percent from Contexts 154-191 contain transverse or stepped breakages (breakage types 2-5) that had occurred after drying, suggesting exposure on the ground surface.

Table 6 presents the frequencies of potential post-depositional causes of fragmentation. While percentages may be slightly suppressed due to the fragmentation, scavenging carnivores seem to have had a moderate effect on bones, as they would typically target fresh bones with their nutritional grease and possible meat scraps. Abrasion caused by trampling or scratching by abrasive inclusions (e.g., brick and stone) was also observed and could have contributed to breakage when the bones were fresh or dry. Rodent damage was very minor, which is expected of a yard deposit that was likely exposed to predators in contrast to a better protected cellar/crawl space area.

Table 5: Breakage patterns for long bone specimens.

Breakage Type	Contexts 152-153				Contexts 154-191			
	Size 2 mammals		Size 3 mammals		Size 2 mammals		Size 3 mammals	
	n	%	n	%	n	%	n	%
1-oblique	10	71.4	5	71.4	47	71.2	23	67.6
2-transverse	1	7.1	0	0.0	1	1.5	1	2.9
3-stepped	0	0.0	0	0.0	0	0.0	1	2.9
4- 1 & 2	1	7.1	1	14.3	2	3.0	1	2.9
5- 1 & 3	1	7.1	0	0.0	3	4.5	0	0.0
6- 2 & 3	0	0.0	0	0.0	0	0.0	0	0.0
7-bone flake	1	7.1	1	14.3	0	0.0	6	17.6
8- 1, 2, & 3	0	0.0	0	0.0	0	0.0	0	0.0
9-indeterminate	0	0.0	0	0.0	13	19.7	2	5.9
Totals	14	100.0	7	100.0	66	100.0	34	100.0

Table 6. Post-depositional taphonomic traces observed on bone surfaces.

	Carnivore		Rodent		Abrasion	
	n	%	n	%	n	%
Contexts 152-153	6	6.0	1	1.0	6	6.0
Contexts 154-191	19	5.4	1	0.3	7	2.0
Total	25	5.6	2	0.4	13	2.9

Taxonomy:

The faunal assemblage indicates that meat availability was dominated by that provided by domestic livestock (Table 7). From Contexts 154-191, cattle predominate by NISP and MNI, including the likelihood that the less diagnostic size 3 mammals are also cattle remains. Sheep and pig seem to have provided relatively equal numbers of individuals to the diet, while fowl, such as chickens, seem to have been limited in the diet. Seafoods were incorporated into the diet including oyster, clam, and crab. No fish were identified in the deposits examined. A cat may indicate a pet or stray that was incorporated into the archaeological deposits.

While the mid-nineteenth-century deposits (Contexts 152-153) provided a smaller sample, sheep, pig, and chicken MNI each outnumber cattle 2:1. The combined NISP for cattle and the larger size 3 mammal fragments (n = 20) are also notably fewer than combined sheep, pig, size 2 mammal, and artiodactyla fragments (n = 70), indicating that the MNI was not depressed much by fragmentation into less identifiable pieces. These comparisons are made with the awareness that the beef provided by a single cow would have surpassed the meat provided by the pairs of the smaller animals. In addition to the domestic animals, seafoods consist of oyster, clam, and an indeterminate fish. A rat and

indeterminate small bird likely represent animals that cohabitated on the property before becoming incorporated in the archaeological deposits.

Table 7: Taxonomic representations.

Taxon	Contexts 152-153		Contexts 154-191		All	
	NISP	MNI	NISP	MNI	NISP	MNI
<u>Mammals:</u>						
<i>Bos taurus</i> , cattle	8	1	90	3	98	3
<i>Ovis aries</i> , sheep	7	2	15	2	22	3
<i>Sus scrofa</i> , pig	10	2	33	2	43	3
<i>Felis catus</i> , cat			2	1	2	1
<i>Rattus</i> sp., rat	1	1			1	1
Artiodactyla, size 2	9	1	13	1	22	1
Mammal, size 1a			1	1	1	1
Mammal, size 2	44	1	115	1	159	1
Mammal, size 3	12	1	139	1	151	1
<u>Fish:</u>						
Fish indeterminate, medium	4	1			4	1
<u>Mollusks/crab:</u>						
<i>Crassostrea virginica</i> , oyster	14	6	38	8	52	14
<i>Mercenaria mercenaria</i> , Quahog clam	5	1	27	2	32	3
Crustacea, crab			1	1	1	1
<u>Birds:</u>						
<i>Gallus gallus</i> , chicken	5	2	2	1	7	2
Aves indeterminate, small	2	1			2	1
Aves indeterminate, medium	11	1	8	1	19	1
<u>Other:</u>						
Unidentified bone			6	1	6	1
TOTALS	132	21	490	26	622	39

Aging:

The domestic livestock are represented by dental and post-cranial specimens that were able to provide aging information. From the mid-nineteenth-century deposits, the cow was slaughtered at a prime age when meat yield would have been optimal in regards to the size and meat quality of the animal in relation to the expenditure in resources, such as feed. An unfused sacral vertebra indicates that the cow was slaughtered younger than about five years of age (Silver 1969). Identified by dentition, one sheep was slaughtered at a prime age between one and three years of age, but a heavily worn first molar indicates that the second was slaughtered notably older between six to 10 years of age (Payne 1973). One pig was slaughtered younger than seven to 13 months of age based on an unerupted second molar, while several teeth indicate the second pig was slaughtered at an age older than 12 months (Bull and Payne 1982).

From the earlier deposits (Contexts 154-191), two cattle were slaughtered at prime ages between approximately two and five years of age. The third cow was slaughtered at an older age between

approximately five and 10 years of age as indicated by a heavily worn incisor (Silver 1969). One sheep was slaughtered at its prime meat yield age at about three to six years. The second sheep was slaughtered younger than two years of age as indicated by a moderately worn deciduous fourth premolar (Payne 1973). If this sheep was about 1.5 to two years of age, it would have been entering the prime age period (e.g., 1.5 to four years of age). The fast maturing pigs were also slaughtered after reaching a suitable body size with first and second molars indicating that one animal slaughtered at about 12-16 months and the second slaughtered at about two years of age (Bull and Payne 1982).

Butchery:

Butchery traces are present in relatively moderate frequencies in the bone samples from both context sets (Table 8). Though likely depressed by the high degree of fragmentation, the butchery mark frequencies are expected for a post-kitchen deposit where animals had undergone primary butchery at an abattoir or yard and then further processed before and possibly after cooking to fit into cooking vessels and for meat removal.

Primary butchery was observed through chopping marks at major anatomical segments such as at joints and at distal limb midshafts to remove the feet. Vertebrae often showed chopping damage in sagittal and transverse planes from splitting the carcass into lateral halves and then into small segments between the next, thoracic, lumbar, and sacral regions.

Cut and scrape marks from meat removal were also observed at expected locations, such as at limb bones that contain larger portions of meat like humeri, femora, and tibiae. A small number of cut marks were also observed on pig foot elements suggesting that they were consumed directly or possibly used to create gelatin by extracting ligaments and other connective tissue.

Table 8: Frequencies of butchery evidence on the bone fragments.

	Chopping		Cutting		Scraping		Sawing	
	n	%	n	%	n	%	n	%
Contexts 152-153	11	11.0	6	6.0	2	2.0	0	0.0
Contexts 154-191	19	5.4	19	5.4	4	1.1	2	0.6
Total	30	6.7	25	5.6	6	1.3	2	0.4

Only three thermally altered bone fragments (2 calcined and 1 charred) were identified, and all were recovered from Contexts 152-153. The bones likely do not represent cooking evidence as calcination results from prolonged contact with intense fire in instance of refuse burning instead of roasting or grilling (Beisaw 2013:109).

Skeletal part frequencies suggest that butchery likely occurred nearby, or that nearly complete carcasses were brought to the site. Skeletal parts representing heads, axial, and appendicular portions are all represented for cattle, sheep, and pigs. Pigs are the only domestic animal represented by distal feet elements, and as already stated with the cut marks, they were consumed at the site. Cattle and sheep are limited by proximal metapodial fragments left behind after the lower feet were separated. The lack of distal feet elements for these animals suggest they were disposed of elsewhere. Context 190 did also contain several fragments from a sizable cattle horn core.

Seasonality is generally not identifiable in domestic animal remains as they don't morphologically change throughout the year, such as deer growing and shedding antlers. A few chicken specimens

though contain medullary bone in the marrow cavity indicating the consumption of a hen around the time of egg laying. Though modern chickens have been bred to lay eggs over a wider length of time, colonial period chickens generally had more limited breeding seasons during the spring and summer, providing a likely season when this bird was killed (Driver 1982:251; Rick 1975).

Discussion:

While the faunal assemblage has limitations due to the fragmentation and the possible mixture of deposits from Dunham and primarily Barron periods of occupation, the remains provide some information about animal livestock use and husbandry on the property. The faunal remains speak to depositional processes as they were recovered from fill deposits, and post-depositional taphonomic traces, such as moderate carnivore scavenging and abrasion damage, dry bone breakage, and minor rodent gnawing reveals that bones were left exposed for some time prior to final burial.

Comparable across all contexts, the butchery evidence indicates post-kitchen refuse with moderate proportions of primary and secondary butchery marks from chopping/sawing, cutting, and scraping. A lack of cooking evidence may indicate a cuisine that emphasized boiled instead of grilled or roasted meat. It is also possible that meat was removed from the bone prior to any close or direct contact with fire, leaving no evidence on the bone. Also notable is the lack of distal foot elements for cattle and sheep. The documentary record of Samuel Barron and his son John both operating tanning vats suggests that the animal hides were taken off site to the tannery. Tannery sites often contain disproportionate amounts of feet bones as the elements are challenging to remove from the skin and are sent with it to the tannery (Shaw 1996).

The deposits that can largely be associated with Samuel Barron (Contexts 154-191) show the consumption of animals in expected patterns based on the information provided by his 1801 probate. His probate emphasized cattle which were kept for meat, draught power, and milk. Their skins also likely supplied his tanning operation. Cattle (with size 3 mammals) comprise the majority of the faunal remains in these contexts in terms of MNI and NISP, and therefore meat yield. Two cattle were slaughtered at prime ages suggesting the consumption of steers. The older cow consumed between five and 10 years of age could represent an animal used for labor, such as milk, draught, or breeding, that had aged and was no longer as fit for the labor as it had been when younger. The sheep and pig were slaughtered at prime ages and they indicate consumption for meat though the sheep likely also provided wool. The sheep could be assumed to have been males (wethers or rams) as ewes were often kept older to continue breeding (Heinrich 2010:214). The emphasis on beef and mutton could reflect a continued northern British cuisine that also frequently included boiled meats instead of baked or fried meats typical of other British regions (Allen 1968:23; Fischer 1989:23).

The deposits that date to the mid-nineteenth century (Contexts 152-153) also appear to reflect the information available in the documentary record regarding animal keeping on the property. While the archaeological sample is small, the decreased proportion of cattle in relation to sheep and pig reflects the tax records for Samuel's son John who notably decreased his cattle ownership by the 1820s to approximately a third of what he owned just after his father's death.

Though the main and earlier dated portion of the assemblage (Contexts 154-191) is small, the quantities (MNI), proportions, and ages of the livestock are relatively consistent with other New Jersey sites dating to the eighteenth and early nineteenth centuries (Table 9). Even though the sites are represented by variable sample sizes from a few hundred to several thousand specimens, the New Jersey sites generally demonstrate relatively equal and low quantity representations of the various

mammalian livestock. The lower quantity and relatively even numbers of animal individuals across these sites may be due to different disposal patterns and preservation for the New Jersey region, a lesser reliance on meat by the occupants, or possibly even analytical methods. The low quantities and relatively even proportions contrast with sites elsewhere, such as in Delaware (Heinrich et al. 2020:6-98). There, though economic efforts included major emphases on beef and mutton/wool production like New Jersey, faunal collections indicate pigs were generally consumed in higher frequencies, perhaps to retain the other livestock for market purposes.

Table 9: Faunal representations at a range of New Jersey archaeological sites showing dates, occupant identity, number of wild fauna taxa, and numbers and relative ages of cattle, pigs, sheep, and horses. Ages key: y = young, p = prime aged, o = older.

	Dates	Identity	Cattle		Pigs		Sheep		Horse		Number of wild species*
			MNI	Ages	MNI	Ages	MNI	Ages	MNI	Ages	
Restore Lippincott Homestead (28-Bu-921)	c. 1690-1830	wealthy farmer/enslaved labor	5	y, p, o	5	y, p, o	6	y, p, o	0		11
Lawrie Farmstead Early (28-Mo-257)	c. 1704-1767	wealthy farmer	2	na	3	na	2	na	1	na	6
Foundation Site (28-Mo-352)	c. 1733-1768	wealthy farmer	1	p	2	p	1	p	0		3
Stites Farm Site (28-Un-36)	c. 1757-1825	wealthy farmer	2	na	3	p	2	y, p	0		1
Manalapan Villages Site (28-Mo-349)	c.1768-1775	wealthy farmer	2	p	2	p	0		0		1
Foundation Site (28-Mo-352)	c. 1768-1787	wealthy farmer	1	p	1	p	0		0		2
Dunham House Site (28-Mi-220)	c.1760-1801	wealthy farmer	3	p, o	2	p	2	p	0		1
Manalapan Villages Site (28-Mo-349)	c.1776-1800	wealthy farmer	1	p	2	p	1	na	0		2
Mount Laurel Road Historic Site (28-Bu-917)	c. 1806-1839	middling farmer	3	p	1	p	0		0		0
Garrett Forman Site (28-Mo-354)	c. 1800-1850	middling farmer	4	p	3	y, p	1	p	0		3

(Gall et al. 2007; Gall et al. 2008; Gall et al. 2009; Gall et al. 2010; Heinrich and Bulger 2018; Heinrich et al. 2020; Young et al. 2015)

^{na} age data not available from literature

*count of consumable terrestrial and aquatic vertebrate species, does not include shellfish (i.e. oyster, clam, crab)

In conclusion, the faunal assemblage from the Dunham House site seems to nicely reflect the documentary record in regards to proportions of animals on site and husbandry practices in regards to ages at which animals were slaughtered due to meat or labor intentions. High proportions of beef and mutton, which were possibly boiled, reflect a traditional English cuisine. In all, the fill deposits around the house contain rich faunal samples and this analysis may serve as a starting point for potential additional work on the site, particularly if features, discrete slave deposits, or deposits from other periods of occupation are found, so that faunal usage can be observed across multiple variables.

References:

AECOM

2016 "I-95 Meat Cuts." *Digging I-95*. <https://diggingi95.com/learn-more/faunal/i-95-meat-cuts/> Accessed January 5, 2020.

Allen, David Ellerton

1968 *British Tastes: An Inquiry into the Likes and Dislikes of the Regional Consumer*. Atkinson, Stephen, Hutchinson, London.

Beisaw, April M.

2013 *Identifying and Interpreting Animal Bones: A Manual*. Texas A&M University Press, Texas.

Blumenschine, Robert J., Curtis W. Marean, and Salvatore Capaldo

1996 Blind Tests of Inter-Analyst Correspondence and Accuracy in the Identification of Cut Marks, Percussion Marks, and Carnivore Tooth Marks on Bone Surfaces. *Journal of Archaeological Science* 23:493-507.

Brain, C. K.

1981 *The Hunters or the Hunted: An Introduction to African Cave Taphonomy*. University of Chicago Press, Chicago, Illinois.

Bull, Gail and Sebastian Payne

1982 Tooth Eruption and Epiphyseal Fusion in Pigs and Wild Boar. In *Ageing and Sexing Animal Bones from Archaeological Sites*, edited by Bob Wilson, Caroline Grigson, and Sebastian Payne, pp. 55-71. BAR British Series 109. London, United Kingdom.

Cohen, Alan and Dale Serjeantson

1996 *A Manual for the Identification of Bird Bones from Archaeological Sites*. Archetype Publications, London, United Kingdom.

Dally, Joseph W.

1873 *Woodbridge and Vicinity: The Story of a New Jersey Township*. A.E. Gordon, New Brunswick, New Jersey.

Driver, Jonathan

1982 Medullary Bone as an Indicator of Sex in Bird Remains from Archaeological Sites. In *Ageing and Sexing Bones from Archaeological Sites*, edited by Bob Wilson, Caroline Grigson, and Sebastian Payne, pp. 251-254. BAR British Series 109, London, United Kingdom.

Fischer, David Hackett

1989 *Albion's Seed, Four British Folkways in America*. Oxford University Press, New York.

Gall, Michael J., Robert Lore, Allison A Savarese, Gerard P. Scharfenberger, and Richard F. Veit.

2007 Life at the Van Kirk/Walton/Forman Farmstead (Ca. 1742-1800): Archaeological Data Recovery at the Manalapan Village House Site (28-Mo-349), Manalapan Township, Monmouth County, New Jersey. Report to Kenderian Zilinski Associates, Inc., Wall, NJ, by Richard Grubb & Associates, Inc., Cranbury, New Jersey.

Gall, Michael J., Robert J. Lore, and Philip Hayden.

2008 Earthfast in Eighteenth-Century New Jersey: Archaeological Data Recovery at the Foundation Site (28-Mo-352), Manalapan Township, Monmouth County, New Jersey. Report to K. Hovnanian at Manalapan II, LLC, Manalapan, NJ, by Richard Grubb & Associates, Inc., Cranbury, NJ.

Gall, Michael J., Robert J. Lore, and Philip Hayden

2009 Farm Life in Nineteenth-Century Monmouth County: Archaeological Data Recovery at the Garret Forman Site (28-Mo-354), Manalapan Township, Monmouth County, New Jersey. On file, New Jersey Historic Preservation Office, Trenton.

Gall, Michael J., Robert J. Lore, Amy Raes, and Michael Tomkins

2010 Life Along the Green Brook: Prehistoric and Historic Settlement in Scotch Plains, Archaeological Data Recovery at the Sites Farmstead and Prehistoric Site (28-Un-36), Scotch Plains Township, Union County, New Jersey. On file, Historic Preservation Office, Trenton, New Jersey.

Grayson, Donald

1973 On the Methodology of Faunal Analysis. *American Antiquity* 39:432-438.

1978 Minimum Numbers and Sample Size in Vertebrate Faunal Analysis. *American Antiquity* 43:53-65.

1984 *Quantitative Zooarchaeology: Topics in the Analysis of Archaeological Fauna*. Academic Press, New York.

Heinrich, Adam R.

2010 A Zooarchaeological Investigation Into the Meat Industry Established at the Cape of Good Hope by the Dutch East India Company in the Seventeenth and Eighteenth Centuries. Doctoral dissertation, Rutgers University, New Brunswick, New Jersey.

Heinrich, Adam R. and Brock Giordano

2015 Late-Nineteenth-Century Foodways in the “Garden State” at the Woodruff House, Rahway, New Jersey: Insights from Small Faunal and Large Macrobotanical Samples. *Historical Archaeology* 49(4):12-29.

Heinrich, Adam R. and Teresa Bulger

2018 Phase III Archaeological Data Recovery, Mount Laurel Road Historic Site (28-Bu-917), the Connell Tract, Mount Laurel Township, Burlington County, New Jersey. On file New Jersey Historic Preservation Office, Trenton, New Jersey.

Heinrich, Adam R. and Virginia Overberger

2020 Phase III Archaeological Data Recovery, Lennar at Rancocas Creek, Block 700, Lot 9, Eastampton Township, Burlington County, New Jersey. Report on file, New Jersey Historic Preservation Office, Trenton, New Jersey.

Honeyman, A. Van Doren

1918 *Documents Relating to the Colonial History of New Jersey, First Series, Vol. XXX, Calendar of New Jersey Wills, Administrations, Etc., Volume II: 1730-1750*. Unionist-Gazette Association, Somerville, New Jersey.

Huelsbeck, David

1987 Zooarchaeological Measures Revisited. *Historical Archaeology* 23:113-117.

1991 Faunal Remains and Consumer Behavior: What Is Being Measured? *Historical Archaeology* 25:62-76.

Klein, Richard and Kathryn Cruz-Uribe

1984 *The Analysis of Animal Bones from Archaeological Sites*. The University of Chicago Press, Chicago, Illinois.

Lyman, R. Lee

1977 Analysis of Historic Faunal Remains. *Historical Archaeology* 11:67-73.

1979 Available Meat from Faunal Remains: A Consideration of Techniques. *American Antiquity* 44:536-545.

1987 On Zooarchaeological Measures of Socioeconomic Position and Cost-Efficient Meat Purchases. *Historical Archaeology* 21:58-66.

Myers, Patty Barthell

1995 Ancestors and Descendants of Lewis Ross Freeman with Related Families, Based Partially on the Work of Freeman Worth Gardner and Willis Freeman. Penobscot Press, Camden, Maine

Rick, Anne Meachem

1975 Bird Medullary Bone: A Seasonal Dating Technique for Faunal Analysts. *Bulletin (Canadian Archaeological Association)* 7:183-190.

Schmid, Elizabeth

1972 *An Atlas of Animal Bones*. Elsevier, Amsterdam, Netherlands.

Schulz, Peter and Sherri Gust

1983 Faunal Remains and Social Status in 19th Century Sacramento. *Historical Archaeology* 17:44-53.

Shaw, Michael

1996 The excavation of a late 15th- to 17th-century tanning complex at The Green, Northampton. *Post-Medieval Archaeology* 30(1):63-127.

Silver, I. A.

1969 The Ageing of Domestic Animals. In *Science in Archaeology: A Survey in Archaeology*, edited by Don Brothwell and Eric Higgs, pp. 283-302. Thames and Hudson, United Kingdom.

Von den Driesch, Angela

1976 *A Guide to the Measurement of Animal Bones from Archaeological Sites*. Peabody Museum of Archaeology and Ethnology, Harvard University, Massachusetts.

Ward, Grace L.C.

1934 The Barron Family Records Presented to the New Jersey State Society, Daughters of the American Revolution by the Nova Caesarea Chapter, Newark, New Jersey. Manuscript.

Woodbridge Township Tax Ratable

1778 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.

1779 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.

1784 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.

- 1785 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1786 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1787 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1788 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1789 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1793 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1797 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1802 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1809 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1810 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1817 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1818 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1819 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.
- 1821 Tax Ratable, Woodbridge Township, Middlesex County, New Jersey. On file, New Jersey State Archives, Trenton, New Jersey.

Young, Michael L., Laura Cushman, and Glenn Modica

- 2015 Galloping Brook Estates, the Lawrie Farmstead Site (Site 28-MO-257), Block 24.01, Lot 7, Upper Freehold Township, Monmouth County, New Jersey. Report on file, Historic Preservation Office, Trenton, New Jersey.

APPENDIX G, 1: Coding Conventions

FIELD	CODE
Sample #	By context and bone specimen number
Taxon	Most specific identifiable taxon
Animal size	Relative size, for mammals according to Bunn 1982
Skeletal part	Appendix 2, 3, and 4
Skeletal portion	Appendix 2, 3, and 4
Skeletal part segment	Appendix 2, 3, and 4
Long bone shaft circumference	0.1-1.0, shafts divided by tenths to assess completeness
Maximum length	millimeter (mm)
Maximum width	millimeter (mm)
Relative age	A= adult S= subadult P= subadult, but partially fused I= indeterminate
Tooth eruption/wear age	Age of eruption according to Bull and Payne 1982; Silver 1969
Side	R= right L= left I= indeterminate
Bone measurements	According to Von den Driesch 1976; Greenfield 2002 sex measurements; mm
BIOGENIC MARKS	
Tooth Mark	0= absent 1= present as isolated marks 2= present as punctures 3= present as gross gnawing 4= low confidence tooth marks
TM location A	1= cortical only 2= medullary only 3= 1&2 4= thickness only 5= 1, 2&3 6= 1&3 7= 2&3 9= cannot see thickness or medullary surface
TM location B	1= <2mm from fracture edge 2= >2mm from fracture edge 3= 1&2 4= on flake platform
TM location C	1= on or towards epiphyseal and NEFs, respectively 2= on or towards midshaft end for epiphyseal and NEFs 3= 1&2 4= indeterminate, on midshaft fragment

Rodent	0= absent 1= present
Root etching	1= absent to isolated spots 2= minor 3= moderate 4= severe, obscuring marks
HUMAN MADE MARKS	
Percussion marks	0= absent 1= present 2= present as isolated patches of microstriations only 3= conspicuous battering fields of PMs 4= low confidence PM
PM location	1= <2mm from fracture edge 2= >2mm from fracture edge 3= 1&2 4= on flake platform
KNIFE MARKS	
Chop marks	0= absent 1= present
Cut marks	0= absent 1= present
Scrape marks	0= absent 1= present
Burning	0= absent 1= charred black 2= burnt, calcined white
Trampling	0= absent 1= present
BONE CONDITION	
Surface color	Specific to specimen
Surface condition	1= pristine, original surface 2= minor exfoliation or flaking 3= minor chemical erosion 4= minor mechanical rounding 5= minor adhering matrix 6= major exfoliation or flaking that obscures marks 7= major chemical erosion that obscures marks 8= major mechanical rounding that obscures marks 9= major adhering matrix that obscures marks
Weathering	0-5, according to Behrensmeyer 1978
Recent breakage	0= none 1= yes, but with less than 10% missing 2= yes, with more than 10% missing 3= modern breaks, but fragments can mend 9= indeterminate

General breakage	<p>1= spiral, oblique 2= transverse 3= stepped 4= 1&2 5= 1&3 6= 2&3 7= bone flake 8= 1, 2&3 9= indeterminate due to condition, modern break, breakage of axial elements, or breakage from butchery where no natural break occurs (chop)</p>
Notching	<p>0= absent 1= percussion mark 2= tooth notch 3= uncertain</p>
Notch associates	<p>0= no mark 1= tooth mark at notch 2= tooth mark opposite notch 3= percussion mark at notch 4= percussion mark opposite notch</p>
Multiple notches	<p>0= none (only 1) 1= on same edge 2= on opposite edge 3= on both edges</p>
Copper stain	<p>0= absent 1= present</p>
Notes	<p>Details relevant about specimen not covered above</p>
Tooth row	<p>Measurements of tooth rows (mm)</p>
Crown height	<p>Height of tooth crown (mm)</p>
Crown breadth	<p>Breadth of tooth crown (mm)</p>
Payne 1973	<p>Tooth wear stage of specific tooth if isolated</p>

APPENDIX G, 2: Osteological Coding Conventions for Mammals

SKELETAL PART

NID-not identified
AX-axial skeleton
 CRA-cranium
 MAND-mandible
 HMAN-hemi-mandible
 TOOTH-isolated tooth (defined by MAX or HMAN for upper of lower and followed by tooth number)
 I-incisor, I1, I2, I3
 C-canine
 P-premolar, P1, P2, P3, P4
 M-molar, M1, M2, M3
VRT-vertebra
 CER-cervical vertebra (followed by number ie. CER1=atlas, CER2= axis)
 THO-thoracic
 LUM-lumbar
 SAC-sacral
 CAUD-caudal
RIB-rib
STR-sternum
HYO-hyoid
APP-Appendicular skeleton
 INN-innominate
 SCA-scapula
 LBN-long bone
 MTP-metapodial MTT-metatarsal, MTC-metacarpal
 HUM-humerus
 RAD-radius
 ULN-ulna
 RADU-fused radio-ulna
 CAR-carpal
 PIS-pisiform
 TPZ-trapezoid
 SCP-scaphoid
 SES-sesamoids
 FEM- femur
 TIB-tibia
 PAT- patella
 FIB- fibula
 TAR- tarsal
 AST- astragalus
 NVC- naviculo-cuboid
 CAL- calcaneum
 NAV-navicular
 CUB-cuboid
 PHA1- first phalange, PHA2- second phalange, PHA3- third phalange

SKELETAL PART PORTION

CO- complete
FOR LONG BONES AND RIBS
 EPI- epiphyseal fragment
 PX- proximal
 DS- distal
 NEF- near epiphyseal fragment
 PSH- proximal
 DSH-distal

MSH- midshaft
 FOR CRANIUM
 HCR- horncore
 FRO- frontal
 OCC- occipital
 TEM-temporal
 ZYG-zygomatic
 NAS-nasal
 MAX-maxilla
 PMAX-premaxilla
 LAC-lacrimal
 PAR-parietal
 FOR MANDIBLE
 HRAM-horizontal ramus
 VRAM-vertical ramus
 CON-condyle
 COR-coronoid process
 GON-gonial angle
 SYMP-symphysis
 FOR VERTEBRAE
 NEUR-neural arch
 CEN-centrum
 FOR INNOMINATE
 ILL-ilium
 ISCH-ischium
 PUB-pubis
 ACET- acetabulum
 FOR SCAPULA
 GLEN-glenoid fossa
 SPINE-spine
 ACR-acromion
 BLADE-blade
 CAUDM-caudal margin

SKELETAL PART SEGMENT

FR-fragment
 ANT- anterior
 POST-posterior
 SUP-superior
 VEN-ventral
 MD-medial
 LAT-lateral
 DOR-dorsal
 INF-inferior
 HF-half
 ORB-at orbit
 ARC-at TEM arch
 PP-petrous pyramid of TEM
 ALV-alveoli of MAX or HMAN
 CON-condyle
 STY-styloid process
 CS-complete shaft cylinder
 CO-complete
 LATPR- lateral process
 PREZ-prezygopophysis, POSZ-postzygopophysis
 DOSP- dorsal spine

APPENDIX G, 3: Osteological Coding Conventions for Fish, Amphibians, and Reptiles

NID- not identified

CRA-cranium

DENT- dentary

OPER-operculum

PROP-preoperculum

SUBO-suboperculum

CERA-ceratohyal

PARA-parasphenoid

HYOM-hyomandibular

CLEI-cleithrum

SCLE-supracleithrum

PSPH-parasphenoid

PREM-premaxilla

PSTT-posttemporal

ACER-anterior ceratohyal

PCER- posterior ceratohyal

QUAD-quadrate

ART-articular

FRO-frontal

EPIH-epihyal

VRT- vertebra

CAUD- caudal

PCAU-precaudal

ULT-ultimate/terminal vertebra

SERS-serrated spine

SPINE-spine

CFIN-caudal fin

RIB- rib

PLAS-plastron

CARA-carapace

MAND- mandible

APPENDIX G, 4: Osteological Coding Conventions for Birds

SKELETAL PART

NID- not identified
EGG-egg shell
AX- axial skeleton
 CRA-cranium
 MAND- mandible
 HMAN- hemi-mandible
 VRT- vertebra
 CER-cervical vertebra (followed by number ie. CER1=atlas, CER2= axis)
 THO- thoracic
 LUM-lumbar
 SAC-sacral
 CAUD- caudal
 RIB- rib
 STR- sternum
 HYO- hyoid
APP- appendicular skeleton
 INN- innominate
 SCA- scapula
 LBN- long bone
 COR-coracoid
 HUM- humerus
 RAD- radius
 ULN- ulna
 FEM- femur
 TIBT-tibiotarsus
 PHA1- first phalange, PHA2- second phalange, PHA3- third phalange

SKELETAL PART PORTION

CO- complete
FOR LONG BONES AND RIBS
 EPI- epiphyseal fragment
 PX- proximal
 DS- distal
 NEF- near epiphyseal fragment
 PSH- proximal
 DSH-distal
 MSH- midshaft
FOR CRANIUM
 HCR- horncore
 FRO- frontal
 OCC- occipital
 TEM-temporal
 ZYG-zygomatic
 NAS-nasal
 MAX-maxilla
 PMAX-premaxilla
 LAC-lacrimal
 PAR-parietal
FOR MANDIBLE
 HRAM-horizontal ramus
 VRAM-vertical ramus
 CON-condyle
 COR-coronoid process
 GON-gonial angle
 SYMP-symphysis

FOR VERTEBRAE

PREZ-prezygopophysis, POSZ-postzygopophysis

DOSP- dorsal spine

NEUR-neural arch

LATPR- lateral process

CEN-centrum

FOR INNOMINATE

ILI-iliac

ISCH-ischium

PUB-pubis

ACET- acetabulum

FOR SCAPULA

GLEN-glenoid fossa

SP-spine

ACR-acromion

BLADE-blade

CAUDM-caudal margin

SKELETAL PART SEGMENT

FR-fragment

ANT- anterior

POST-posterior

SUP-superior

VEN-ventral

MD-medial

LAT-lateral

DOR-dorsal

INF-inferior

HF-half

ORB-at orbit

ARC-at TEM arch

PP-petrous pyramid of TEM

ALV-alveoli of MAX or HMAN

CS-complete shaft cylinder

CO-complete

354	170	8	6	1.55-1.8	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.2	32.1	11.9	I	I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	
355	170	8	6	1.55-1.8	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.1	14.2	9.8	I	I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
356	170	8	6	1.55-1.8	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.3	25.4	14.0	I	I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	4
357	170	8	6	1.55-1.8	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.1	18.6	9.8	I	I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
358	170	8	6	1.55-1.8	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.2	17.2	13.1	I	I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
359	170	8	6	1.55-1.8	Fill 2	1	Bos taurus	3	MAX		M1				I	>5-6 months	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 moderate wear	
360	170	8	6	1.55-1.8	Fill 2	1	Bos taurus	3	MAX		M2				I	>15-18 months	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 moderate wear	
361	170	8	6	1.55-1.8	Fill 2	1	Bos taurus	3	MAX		M3				I	>24-30 months	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 minor wear, 2 FR	
362	170	8	6	1.55-1.8	Fill 2	5	Bos taurus	3	TOOTH		FR				I		I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9		
363	170	8	6	1.55-1.8	Fill 2	1	Ovis aries	2	MAX		M2				I	abt 3-6 years	L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 moderate wear	
364	170	8	6	1.55-1.8	Fill 2	1	Ovis aries	2	MAX		P4				I	>20-24 months	I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 minor wear	
365	170	8	6	1.55-1.8	Fill 2	1	Bos taurus	3	HMAN	HRAM	I1				I	>14-25 months	L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 just into wear	
366	170	8	6	1.55-1.8	Fill 2	1	Bos taurus	3	HMAN	HRAM	I3				I	>22-40 months	L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 just into wear	
367	170	8	6	1.55-1.8	Fill 2	1	Bos taurus	3	MAX		P4				I	>28-36 months	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 mild wear	
368	170	8	6	1.55-1.8	Fill 2	1	Sus scrofa	2	HMAN	HRAM	P4				I	>12-16 months	L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 mild wear, 4 FR	
369	170	8	6	1.55-1.8	Fill 2	1	Sus scrofa	2	HMAN	HRAM	I1				I	>12-17 months	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 just into wear, 3FR	
370	171	8	7	1.8-2.05	Fill 2	1	Crassostrea virginica		SHELL		FR				I		I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9		
371	171	8	7	1.8-2.05	Fill 2	1	Ovis aries	2	HMAN	HRAM	I1				I	>18-24 months	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 in wear	
372	171	8	7	1.8-2.05	Fill 2	1	Ovis aries	2	HMAN	HRAM	I2				I	>18-24 months	R	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 in wear	
373	171	8	7	1.8-2.05	Fill 2	1	Sus scrofa	2	TOOTH		MOLAR				I		I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 FR		
374	171	8	7	1.8-2.05	Fill 2	3	Mammalia	2	TOOTH		ROOT				I		I	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 FR		
375	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		P4				I	>28-36 months	L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 moderate wear	
376	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		M1				I	>5-6 months	L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 moderate wear	
377	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		M2				I	>15-18 months	L	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9 moderate wear	

P4: L:
12.9,
W:10.0
mm

														>24-30																
														months	L															
378	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX						I		0	0	0	0	0	0	0	0	0	0	0	0	9	moderate wear
379	171	8	7	1.8-2.05	Fill 2	1	Sus scrofa	2	TIB	PSH	MD	0.4	82.7	33.2	I		1	0	0	0	0	0	0	0	0	0	0	0	1	
380	171	8	7	1.8-2.05	Fill 2	1	Ovis aries	2	FEM	DSH	CS	1.0	52.6	24.1	I		1	3	1	0	0	0	0	1	0	0	0	1	scrape	DSH ANT
381	171	8	7	1.8-2.05	Fill 2	1	Sus scrofa	2	FEM	DSH	POST	0.7	63.2	23.3	I		1	0	0	0	0	0	1	0	0	0	0	1	12	cut marks
382	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		ALV	18.8	11.9	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
383	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		ALV	27.0	13.1	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
384	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		ALV	31.8	19.1	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
385	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		ALV	35.8	21.6	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
386	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		ALV	38.8	23.4	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
387	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		ALV	31.3	21.1	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
388	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		ALV	18.7	10.0	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
389	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		ALV	18.1	8.2	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
390	171	8	7	1.8-2.05	Fill 2	1	Bos taurus	3	MAX		ALV	15.6	8.7	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
391	171	8	7	1.8-2.05	Fill 2	1	Sus scrofa	2	SAC	NEUR	LATPR	36.9	30.0	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
392	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	CAR		FR	30.6	20.0	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
393	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	NID	NID	FR	37.2	26.2	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
394	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	NID	NID	FR	22.5	15.2	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
395	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	NID	NID	FR	36.9	13.4	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
396	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	NID	NID	FR	26.0	24.0	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
397	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	NID	NID	FR	17.6	16.8	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
398	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	NID	NID	FR	22.0	12.3	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
399	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	NID	NID	FR	31.1	14.1	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
400	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	FIB		FR	50.4	12.3	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
401	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	RIB	MSH	FR	46.9	19.7	I		1	0	0	0	0	0	0	0	1	0	0	1	9	sawn	
402	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	RIB	MSH	FR	25.9	16.4	I		1	0	0	0	0	0	1	0	0	0	0	0	9	2	cut marks
403	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	RIB	MSH	FR	21.1	8.8	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
404	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	RIB	MSH	FR	30.6	10.0	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
405	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	RIB	MSH	FR	26.2	14.7	I		1	0	0	0	0	0	1	0	0	0	0	0	9	4	cut marks
406	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	RIB	MSH	FR	13.8	9.0	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
407	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	RIB	MSH	FR	18.8	13.2	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
408	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	RIB	MSH	FR	14.2	9.1	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
409	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	RIB	MSH	FR	14.3	7.1	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
410	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	RIB	MSH	FR	22.2	13.8	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
411	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	RIB	MSH	FR	40.1	26.2	I		1	0	0	0	0	1	0	0	0	0	0	0	9	chopped	
412	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	RIB	MSH	FR	41.8	24.1	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
413	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	RIB	MSH	FR	26.0	15.1	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
414	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	RIB	MSH	FR	17.8	8.9	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
415	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	RIB	MSH	FR	16.2	13.2	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
416	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	RIB	MSH	FR	20.8	11.4	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
417	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	RIB	MSH	FR	24.9	9.8	I		1	1	1	0	0	0	0	0	0	0	0	0	9		
418	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	RIB	MSH	FR	13.1	8.7	I		1	0	0	0	0	0	0	0	0	0	0	0	9		
419	171	8	7	1.8-2.05	Fill 2	1	Artiodactyla	2	LBN	DSH	FR	0.5	69.5	17.4	I		1	3	1	0	0	0	0	0	0	0	0	1		
420	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.3	33.9	11.0	I		1	0	0	0	0	0	0	0	0	0	0	1		
421	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.2	30.8	16.8	I		1	0	0	0	0	0	0	0	0	0	0	1		
422	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.1	33.2	11.8	I		1	0	0	0	0	0	0	0	0	0	0	1		
423	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.1	21.8	8.9	I		1	0	0	0	0	0	0	0	0	0	0	1		
424	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.2	23.2	13.1	I		1	0	0	0	0	0	0	0	0	0	0	5		
425	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.1	19.1	6.9	I		1	0	0	0	0	0	0	0	0	0	0	1		
426	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.1	28.0	6.8	I		1	0	0	0	0	0	0	0	0	0	0	1		
427	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.1	21.8	5.8	I		1	0	0	0	0	0	0	0	0	0	0	1		
428	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.1	16.8	6.0	I		1	0	0	0	0	0	0	0	0	0	0	1		
429	171	8	7	1.8-2.05	Fill 2	1	Mammalia	2	LBN	MSH	FR	0.1	13.1	10.9	I		1	0	0	0	0	0	0	0	0	0	0	1		
430	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	TIB	MSH	FR	0.3	30.1	24.2	I		1	0	0	0	0	0	0	0	0	0	0	1		
431	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	LBN	MSH	FR	0.2	44.1	20.8	I		1	3	1	0	0	0	0	0	0	0	0	1		
432	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	LBN	MSH	FR	0.2	31.1	19.8	I		1	3	1	0	0	0	0	0	0	0	0	1		
433	171	8	7	1.8-2.05	Fill 2	1	Mammalia	3	LBN	MSH	FR	0.1	23.3	13.6	I		1	0	0	0	0	0	1	0	0	0	0	1	1	cut mark

