

PRELIMINARY ANALYSIS OF FAUNAL REMAINS FROM THE SOUTH AND MIDDLE CELLARS AT THE 17TH-CENTURY HOLLISTER SITE (54-85) IN GLASTONBURY, CONNECTICUT

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Abstract

Animal bones recovered from the 17th-century John Hollister Site (54-85) shed light on foodways, animal husbandry practices, hunting, and fishing activities in early Colonial period Connecticut. The 2016 field season at Hollister resulted in the recovery of a large, well-preserved faunal assemblage consisting of thousands of animal bones and significant quantities of shellfish and fish. The faunal remains discussed here represent a sample of the materials excavated from two large cellar features known as the South and Middle cellars. The cellars, which were initially identified using remote sensing, are part of a complex of structures that stood on the Hollister Farm in the 17th century. This paper outlines the long-term research strategy for investigation of the faunal materials from the site, presents a preliminary analysis of a sample of the material recovered in 2016, and addresses future research directions for the faunal remains from the Hollister Site.

INTRODUCTION

The John Hollister Site (54-85) is a large 17th-century farm complex located on the Connecticut River in present day Glastonbury, Connecticut (Figure 1). The site was identified through oral history and remote sensing in 2015. Excavations at the site were conducted in the summers of 2016-2019 by the late Connecticut State Archaeologist Brian Jones, with members of the Friends of the Office of State Archaeology (FOSA), volunteers, and students from several archaeological field schools. The Hollister Site includes several filled cellar holes which contained large assemblages of remarkably well-preserved artifacts and food remains, including charred plant materials, shellfish, and thousands of animal and fish bones (Jones 2019). The animal bones from two of the cellar features, which were partially excavated in 2016, reveal a wealth of information about food procurement strategies and diet at the Hollister Site, and raise several interesting questions for future research.

BACKGROUND

The Hollister Site is situated on the east side of the Connecticut River, on what was the periphery of English settlement in 17th-century Connecticut. The early history of the farm is still poorly understood, but documentary evidence collected by Brian Jones (2019) suggests that it may have been initially owned by the Reverend Richard Denton, who resided in Wethersfield for only two years (1639-1641) before leaving to settle Stamford. By 1651 the property was in the possession of John and Joanna Hollister. That year, the Hollisters leased the farm, which already included a dwelling and other outbuildings, to Josiah Gilbert (Chapin 1853:182). Secondary sources indicate that the house on the property dated to around 1649 (Case 1886). The suggestion of a house on the property prior to 1651 is not a surprise, as many of the large land owners likely had tenants working their farms and/or herders tending their pastured livestock. The Rev. Matthew

Mitchell, for instance, who originally owned the farm north of the Hollisters, had a cow pen on the east side of the river in the 1630s; it was recorded with his lands in Wethersfield in 1641 and Adams and Stiles (1904:191) indicate that Mitchell had a tenant on the farm shortly after he received it in 1639.

The Gilberts came to the Connecticut Valley from Mt. Wollaston, Massachusetts in the 1640s. In 1639/40, Thomas Gilbert, Josiah's father, received a 28-acre grant of land in Mt. Wollaston (today Quincy, Massachusetts) (Boston Record Commissioners 1881:50). Thomas Gilbert was apparently still in Massachusetts in 1646, as there is record of a dispute regarding his grazing of animals on neighboring lands (*Records of the Colony of Massachusetts Bay* Vol. 2: 49, Vol. 3: 67). Massachusetts records list Thomas as "Goodman Gilbert," indicating the family had middle class standing (Suffolk County Deeds vol. 5, p. 526).

The Gilberts' eldest son, Thomas, was in Connecticut by 1644/45 when he purchased a five-acre houselot in Windsor (Brainard et al. 1953). Thomas and Elizabeth's sons Jonathan and John had arrived in Hartford by about 1645, and it is likely that the rest of the family removed to Connecticut sometime after the 1646 dispute. The documentary record indicates that Josiah Gilbert was leasing Hollister's Nayaug farm by 1651, and it is possible that his mother, father, and younger brother Obadiah were there with him (Jones 2019). By the late 1650s, Thomas and Elizabeth had assumed operation of the farm (Richardson 1992; Jones 2019).

In 1654, the Gilbert family was caught up in Connecticut's witchcraft craze, when the younger Thomas's wife, Lydia, was indicted and apparently executed as a witch. It is unknown what impact this had on the rest of the family, but Thomas quickly remarried and moved to Springfield (Richardson 1992). Both of the elder Gilberts passed away in 1659. An entry in the medical Journal of John Winthrop, Jr. indicates that he attended Thomas Gilbert in his illness earlier that year and notes that Gilbert was 77 years old (Brainard et al 1953).

A probate inventory recorded for Thomas Gilbert in 1659 (Records of the Particular Court, 1663: 205; transcribed in Brainard et al. 1953) sheds some light on his house, farm, and possessions at the time of his death. Gilbert's personal estate was valued at £189, but his debts were extensive. He had a small amount of money in silver and peage (wampum), but livestock valued at £110 comprised the bulk of his wealth. His animals included six young cattle, two bulls, four young steers, five old oxen, six cows, four calves, an old mare, a newborn colt, a young horse, eight hogs, and three piglets, reflecting modest holdings. Stored foods recorded in his inventory included corn, wheat, oats, malt (malted barley), "bife and backon," cheese, butter, and tallow. The inventory also lists tools related to farming, animal husbandry, and carpentry, cheese making equipment, bees and hives, and hemp and linen yarn. The sparse domestic household goods included a chest of woolen and linen clothing, two "ould" beds, bouldsters, and bedclothes, a hand mill, wooden "ware and tubes spones and trenchers," earthen ware, tin ware, pewter, bras, "fring pans & other small things," an iron kettle and pots, hooks, a tramell, a flesh fork, a "swepr," and a Bible. The inventory also provides some information about the Gilbert home. It lists four bushels of wheat in the "chamber," and "wheate in the selor." Traditionally a chamber was an upstairs room, although research from Plymouth, Massachusetts suggests that the term was occasionally used to refer to the parlor in 17th-century probate inventories of hall and parlor style houses (Deetz and Deetz 1998). It is unclear if the cellar referenced in the inventory is part of the house or a separate root cellar.

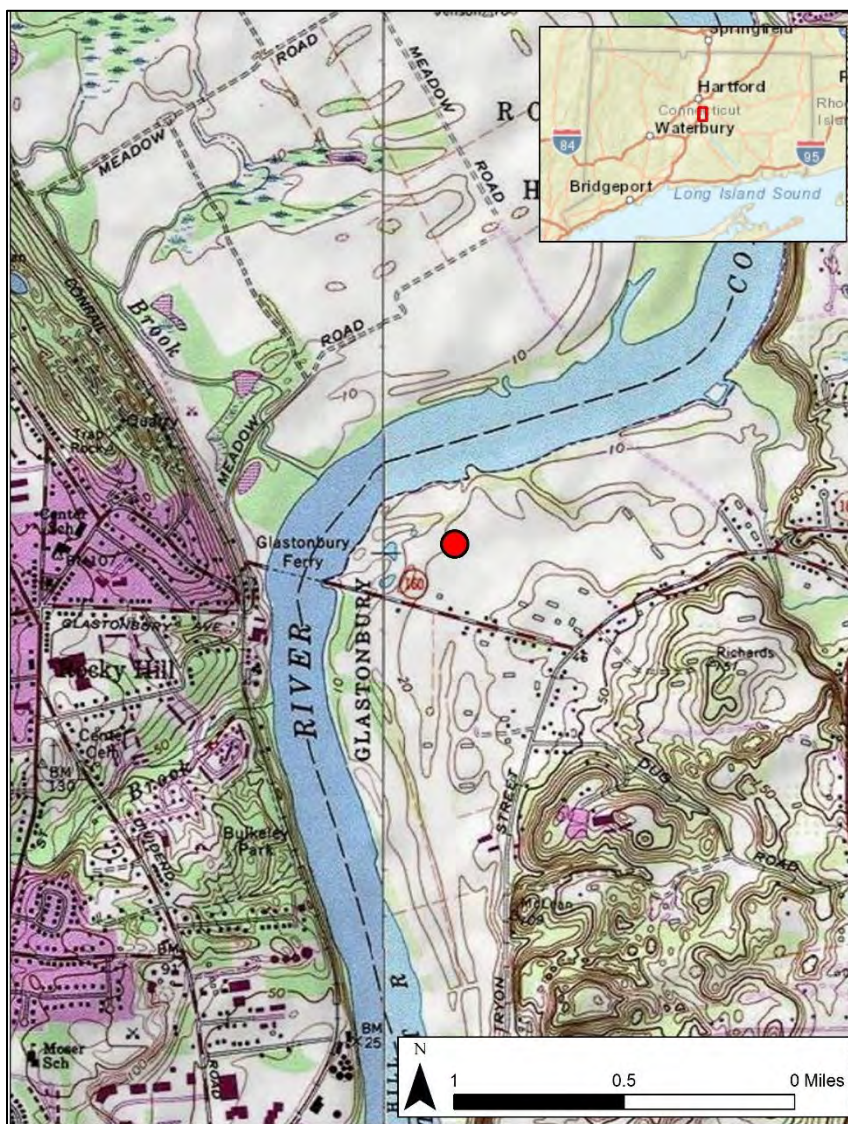


Figure 1: USGS Topographic map, showing the location of the Hollister Site (54-85)

Following the deaths of Thomas and Elizabeth Gilbert, one of their sons, likely Josiah, continued to lease the Hollister farm until 1663. During their occupancy, the Gilberts worked the farm as tenants to the Hollisters. Tenant farmers generally paid their rent either as a fixed portion of farm products, in cash, or as a combination of agricultural products and cash. When Thomas Gilbert died in 1659, his probate inventory recorded charges against his estate and indicated that he paid John Hollister £21 in rent in 1659, as well as £20 as “to what Mr. Hollister is to have left on the farm,” (Records of the Particular Court, 1663:205) suggesting the Gilberts paid the Hollisters with a combination of farm products and cash.

In 1665 Lt. John Hollister died, and left the farm at Nayaug to his oldest son John when he turned 22 in 1667. That year, the younger John married Sarah Goodrich and they took over the farm. As a condition of his father’s will, John was also required to provide his mother with 20

bushels of apples and two barrels of cider as long as the Nayaug orchard should thrive. Jones (2019) infers that John likely worked the farm with the help of his two younger brothers, Thomas and Joseph Hollister, at least until they came of age and claimed their own inheritances. John and Sarah Hollister had eight children who lived to adulthood and grew up on the Hollister farm.

In the fall of 1675, during King Philip's War, the Hollister farm was fortified, and another palisade was built for the local Wangunk community on John Hollister's land at Red Hill (Records of the Colony of Connecticut II: 374-375). The Hollister farm was divided at the end of the 17th century. In 1693, Glastonbury broke off from Wethersfield, and Hollister provided two acres of land to the new minister, Reverend Stevens. Then, between 1698 and 1701, Hollister subdivided his land among his five sons, reserving a 100-rod-wide parcel of land "between the apple trees and the river" for himself and his wife Sarah during their natural lives. They likely remained on the now much reduced farm with their unmarried children David and Elizabeth until their deaths. Sarah Hollister passed away in 1700 and John died in 1711. At the time of his death, John Hollister's probate inventory was valued at only £79. His estate included limited livestock: a cow, a calf, a mare, a colt, and a pair of steers, along with two stocks of bees and household items valued at about 25 pounds. At the time of his death, the farm products included buckwheat, tobacco, flax, apples, cider and honey (Jones 2019).

OVERVIEW OF THE ARCHAEOLOGY (2015-2019)

Archaeological work at the Hollister site began in 2015, when Brian Jones worked with landowners Mark Packard and Kathy Ogden and the Historical Society of Glastonbury to start a public program of research in a horse pasture where oral tradition located the Hollister farm site. Between 2015 and 2016, Dr. Jones assembled a team of graduate students and professional and avocational archaeologists to collaborate on the project. The 2015 field season involved extensive remote sensing work, conducted by Peter Leach, a graduate student at UCONN. The initial ground penetrating radar (GPR) survey identified three large rectangular cellars, probable outbuilding cellar features, a number of pits, and large post-like features (Jones 2019), and a one-day dig produced a small assemblage of artifacts that hinted at an early colonial period site.

In 2016 archaeological work at the site included an expanded remote sensing survey, conducted by graduate students Maeve Herrick and Jasmine Saxon from the University of Denver. Archaeological excavations, carried out that summer with the Office of State Archaeology (OSA), Friends of the Office of State Archaeology (FOSA), the Connecticut State Museum of Natural History (CSMNH), and the Historical Society of Glastonbury, focused on the three cellar features (South, Middle, and North Cellars) identified in the initial radar surveys. Several areas within the site were shovel-tested and a series of 1m-x-3m trenches were excavated into the South, Middle, and North cellars. The excavations extended to the cellar floors, at a depth of about 150 centimeters below surface (cmbs). The cellar features, especially the South and Middle cellars, contained extremely dense and exceptionally well-preserved assemblages of domestic and agricultural artifacts, as well as thousands of plant, animal, fish and shellfish remains.

Subsequent field seasons (2017-2019) focused on exposing and testing other large features identified through remote sensing. To date, six distinct cellar features have been identified at the site, along with a well, and a range of smaller features. The site also contains significant pre-colonial period Native American deposits dating back to the Late Archaic period, reflecting the long human history of settlement on the Connecticut River. Additional excavation and analysis

will be required to understand the spatial and temporal relationships among the historic structures and other features. It remains unclear if they represent a large complex of contemporaneous structures, a succession of structures, or a combination of both. The areas excavated between 2015 and 2017 are shown on the GPR map of the site core generated by Peter Leach and Brian Jones (Figure 2).

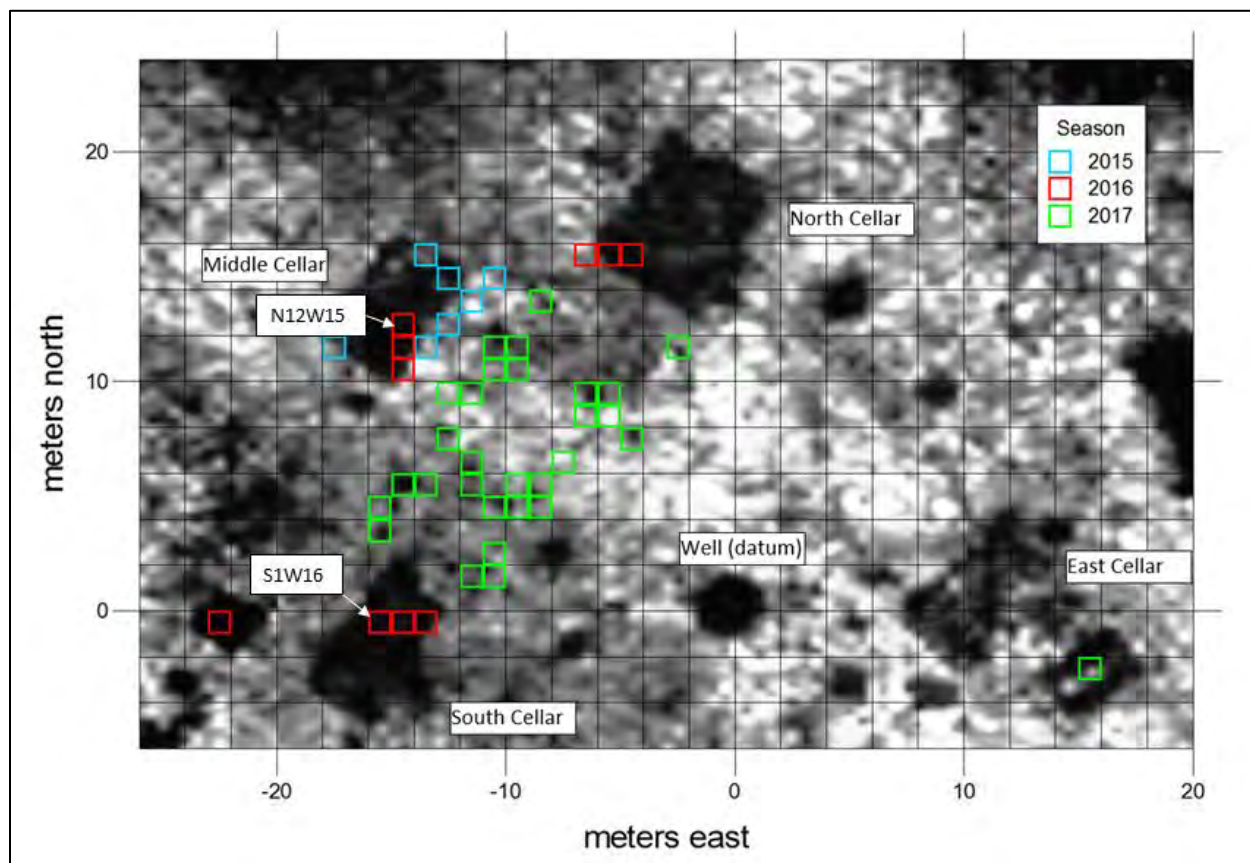


Figure 2: Site Excavations, core habitation area through 2017 and showing the location of the faunal samples addressed in this paper: S1W16 (South Cellar) and N12W15 (North Cellar). Adapted from Jones 2019.

South and Middle Cellars

The three cellar features (South, Middle, and North) excavated in 2016 were encountered at a depth of about 40cmts, at the base of the plowzone. A 1m-x-3m trench was excavated into each of the three cellar features to the depth of their floors at about 150 cmts. The North and Middle cellars are stone-lined, while the South cellar appears to have been lined with wooden planks. A large post was identified in one corner of this feature. To date, it is not known if the cellars were part of a single structure or if they represent two or more separate dwellings. It is important to note that most of the material recovered from the cellar features come from fill layers, presumably deposited in the open cellar holes after the structures were abandoned. Therefore, most of the materials recovered from the cellars likely post-date the structures themselves.

Preliminary analyses, based on recovered artifacts and mean pipe stem dates, suggest that the South and Middle cellars may be among the oldest structures at the Hollister Site. Recovered

kaolin pipe stems from the South and Middle Cellars were dominated by 8/64” and 7/64” bore diameters, indicating mid-17th-century occupation ranges. Pipe stems from the South cellar returned a mean date of 1650, and the stems from the Middle cellar had a mean date of 1652 (Harrington 1954; Binford 1962; Deetz 1966; Jones 2019). The other cellars returned later mean pipe stem dates, ranging from 1665 to 1680, but sample sizes of the pipe stems were variable. Pipe stem dating methods are not without problems (McMillan 2016) and are most useful when applied in conjunction with other lines of information from other artifacts and documentary sources.

The other artifacts recovered from the South and Middle cellars also support a relatively early occupation. The ceramic assemblages are dominated by redwares, a hallmark of early Colonial-period sites, and sherds from a large red earthenware bowl crossmend between the two cellar features, suggesting contemporaneity. Other recovered ceramics include delft or tin-glazed wares, a few sherds of Rhennish stoneware, and possible Border wares. A large sherd of North Italian marbled slipware and sherd of Portuguese delftware, each manufactured in the first half of the 17th century (Straube 2001; Mallios 2000; Valeri 2012) also were found in the South Cellar. Both cellars produced glass trade beads, brass, copper, and iron objects, and Indigenous pottery. At the base of the Middle Cellar, excavators recovered several sherds from a large ceramic pot, made in the 17th-century Shantok tradition (Herrick 2017; Jones 2019). The presence of trade beads and Shantok pottery indicates interaction and trade with local Indigenous people, in this case, probably Wangunks. In the early decades of English settlement in Connecticut, trade with local Indigenous people was a regular and vital part of the economy. It was especially important to supplement the food supply as English settlers worked to establish their crops and herds of domesticated animals. Taken together, the pipe stem dates and the other recovered artifacts suggest that the fill in the South and Middle cellars dates to the pre-Hollister tenant farming period, rather than the subsequent Hollister occupation (1665-1711). Since the histories and chronologies of the cellars are not clearly defined at this time, the samples of faunal remains from each of the cellars is examined separately.

Finally, preliminary analyses of a sample of macrobotanical remains from the South and Middle cellars by Katharine Reinhart resulted in the identification of a mix of domesticated and local wild plant taxa including corn, beans, wheat, peas, rye, hickory nuts, hazelnuts, walnuts, acorns, cherry or plum, chenopodium, and grapes, along with bayberry, spurry, and sedge (Sportman and Reinhart 2019). The plant remains suggest that the residents of the Hollister Site relied on a mix of agriculture and gathered wild plants foods, at least during the period the South and Middle cellars were filled.

Soils

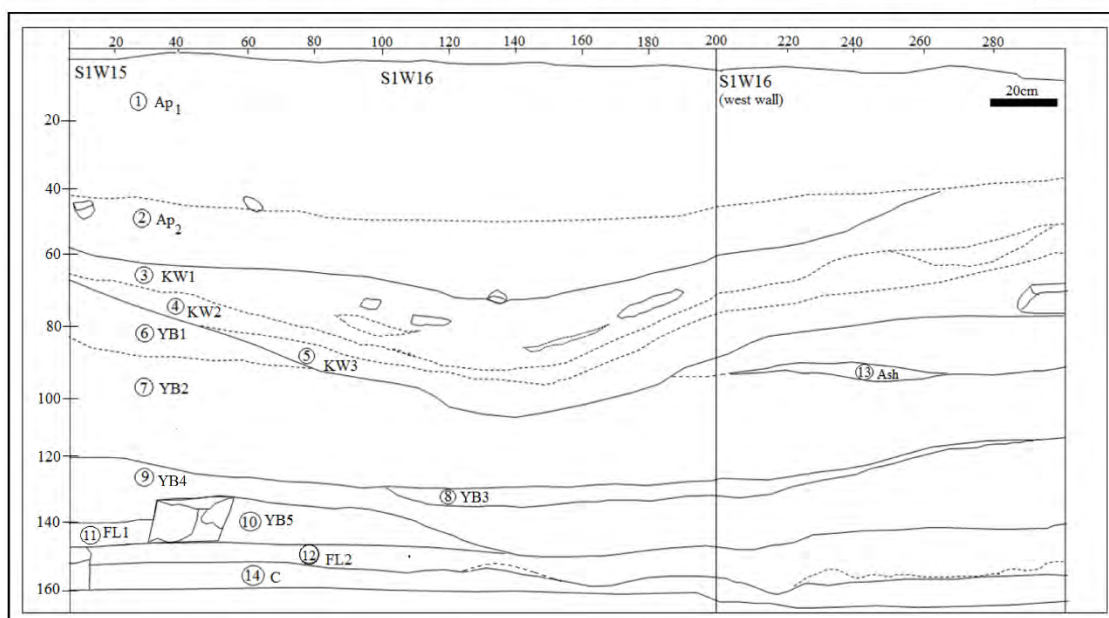
The stratigraphy in the South Cellar generally consisted of a thick plowzone overlying three fill layers described as “kitchen or hearth waste” (Figures 3 and 4). These strata (3-5), which extended from about 58-110cmbs, contained large quantities of bone, shell, and domestic artifacts, along with charcoal and ash. The vast majority of faunal remains collected from unit S1W16 in the South Cellar came from these layers. Below these artifact-dense layers, was a thick layer of yellowish brown fill containing few cultural materials (strata 6-10). This layer sat on top of deposits that were interpreted as the original cellar floor. An ash lens was encountered at the base of this stratum in S1W16. Below the cellar floor, the soils consisted of laminated glacial sands. Most of the faunal remains from the South Cellar were collected from the three layers described in Brian Jones’s notes as “kitchen” or hearth waste (Strata 3-5).

The Middle Cellar is stone-lined and the soil stratigraphy is also complex (Figures 5 and 6). The plowzone extends to a depth of about 35 cmbs and is underlain by a layer of mixed subsoil and stones, suggesting this soil was excavated from another location and deposited here. Below that stratum is the first of several ashy soils layers. These layers are rich in charcoal and food remains, and may represent separate episodes of fireplace cleaning. This layer (stratum 3) extends to a depth of about 44-56cmbs across the unit, and sits atop a relatively clean layer of fill that looks like mixed subsoil; it extends to a maximum depth of 64cmbs. The second ashy layer (stratum 5) was encountered below the clean fill and extends to 72cmbs. Stratum 6 is a layer of fill comprised of mixed subsoils and stone rubble extending to about 86cmbs. Stratum 7, the third ashy layer, is rich in charcoal, food remains, and artifacts and extends to a maximum depth of 112cmbs. Stratum 7 sits atop a thin lens of yellowish-brown soil which separates the third and fourth ashy deposits. The fourth ashy layer (Stratum 9) which extends to a maximum depth of 126cmbs, sits atop a layer of reddish brown fine loamy sand extends to 140cmbs. Below that layer the excavation encountered laminated glacial sands.



Figure 3: Photographs of South Cellar Wall Profiles

Profiles South Cellar; South Walls of S1W15, S1W16 and West Wall of S1W16



Strat #	Strat Name	Description	Notes
1	Plowzone 1 (Ap1)	10YR 4/3 brown fine sandy loam	
2	Plowzone 2(Ap2)	10YR 4/4 dark yellow brown very fine sandy loam	w/ charcoal, small brick fragments, and some bone
3	Kitchen Waste 1 (KW1)	7.5YR 3/3 dark brown fine sandy loam	w/ charcoal and large quantities of bone and shell
4	Kitchen Waste 2 (KW2)	10YR 4/2 dark grayish brown silty loam	w/ ash, bone, and shell
5	Kitchen Waste 3 (KW3)	10YR 4/3 brown silty loam	w/ charcoal, shell, and bone
6	Yellow Brown 1	10YR 4/4 dark yellow brown fine sandy loam	
7	Yellow Brown 2	10YR 4/4 dark yellow brown to Y.5YR 4/4 dark brown fine sandy loam	w/ few artifacts or organics
8	Yellow Brown 3	10YR 4/3 brown Silt	Lens
9	Yellow Brown 4	10YR 4/4 dark yellow brown sandy loam	
10	Yellow Brown 5	10YR 4/3 brown fine sandy loam	w/ dark brown lenses
11	Floor Sediment 1 (FL1)	10YR	
12	Floor Sediment 2 (FL2)	10YR 4/3 brown fine sand w/ charcoal	Cellar floor
13	Ash	7.5 YR 5/3 brown	Ash
14	C	7.5YR 5/3 to 5YR 4/4 laminated sand	

Figure 4: Profiles and soil descriptions, south and west walls of the south cellar (S1W15 &S1W16).

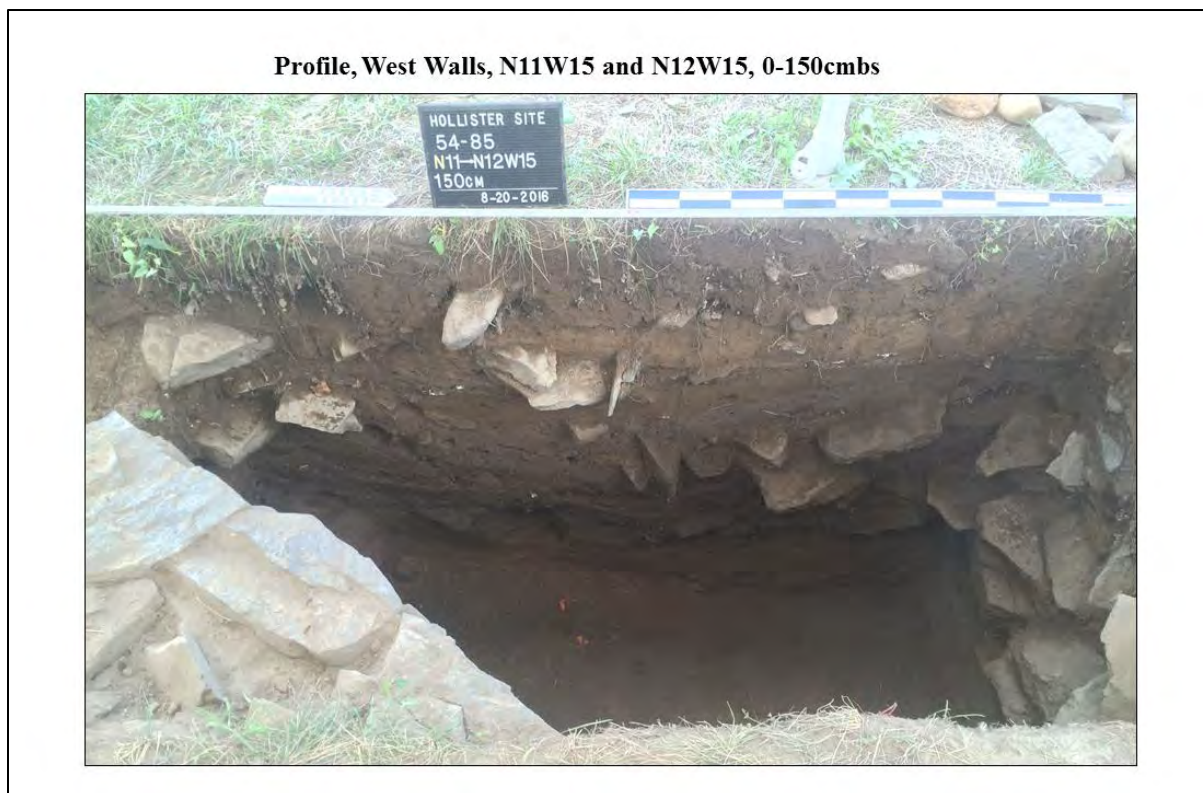


Figure 5: Photograph of Middle Cellar west wall profile.

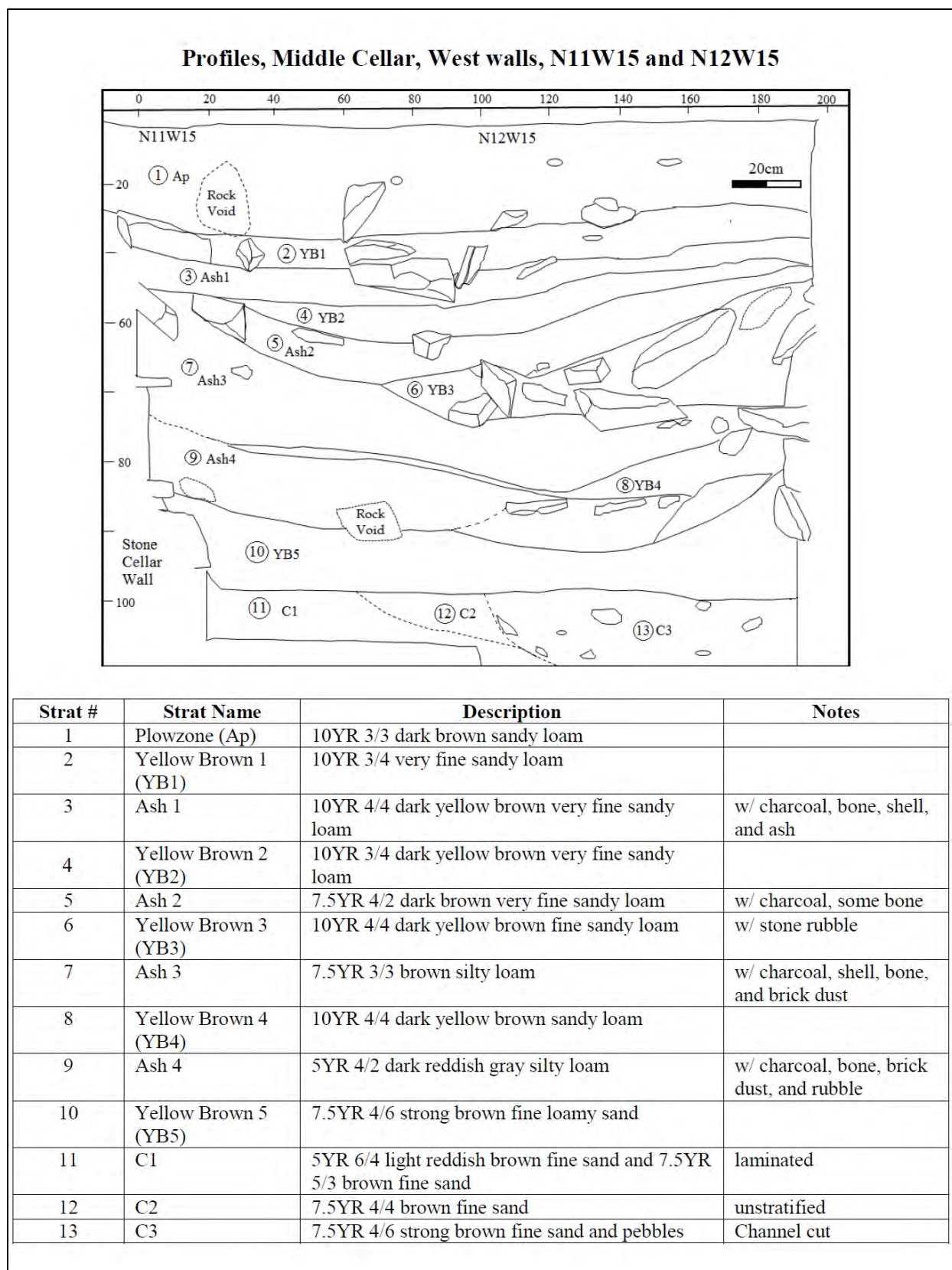


Figure 6: Profile and soil descriptions, west wall of the Middle Cellar (N11W15, N12W15)

FAUNAL ANALYSIS

Research Questions

In 2016, when it became apparent that the Hollister Site contained remarkably rich faunal assemblages, Brian Jones received funding for a series of interdisciplinary analyses, including faunal research. Brian asked me to do the zooarchaeological work, and together we developed a set of research questions to guide the analysis and interpretation of the animal bone and shell recovered from the site (Sportman 2017). The long-term zooarchaeological research program from the site integrates the faunal data with ethnohistoric, documentary, and comparative faunal data from other 17th-century sites to investigate the research questions as outlined below:

- What do the composition, stratigraphic associations, and taphonomy of the assemblage tell us about disposal patterns, site formation processes, and site abandonment?
- What can the Hollister faunal assemblage tell us about foodways, dietary composition, and food procurement strategies at the site?
- What can the assemblage tell us about animal husbandry practices at the Hollister site?
- What do the skeletal part representation and butchery patterns of the various taxa in the assemblage tell us about food production, procurement, and consumption/foodways?
- How does the faunal assemblage at the Hollister Site compare to other known 17th-century sites in southern New England, and how did the site fit into the local and regional economy?

While the preliminary faunal data discussed here cannot provide definitive answers to the research questions, it provides a starting point for understanding foodways and animal husbandry patterns at the site, likely during the earlier part of the site's occupation.

Methods

The faunal sample analyzed here was recovered from two 1m-x-1m excavations units, S1W16 in the South Cellar and N12W15 in the Middle Cellar. The units were excavated in 10-centimeter arbitrary levels and all soils were screened through 1/8" mesh. Soil samples were taken for floatation, and some of the recovered faunal remains were collected from the floated samples. The faunal remains were identified using the author's comparative collection and with a variety of faunal identification manuals (Sisson and Grossman 1953; Schmid 1972; Olsen 1975; Cannon 1987; Gilbert 1990, 1996; Sobolik and Steele 1996; Wolniewicz 2001). Faunal data was recorded in Microsoft Excel. The primary data I collected included basic descriptive data, taxonomic identifications and descriptions, skeletal part variables, animal age variables (bone fusion and tooth wear) and natural and cultural butchery marks, alterations to the bones, including weathering, burning, scavenger damage, and breakage.

Faunal Assemblages

Preliminary faunal analyses were carried out on a sample of the material from the South and Middle cellars. The South Cellar assemblage consisted of 1,486 faunal remains and 312 shells and shell fragments recovered from unit S1W16, and a total of 1,083 faunal remains and 51 shells and shell fragments were analyzed from unit N12W15 in the Middle Cellar. These materials represent

roughly one-third of the faunal remains recovered from the sampled parts of the cellars in 2016. The three “kitchen or hearth waste” strata in the South Cellar produced 1,156 faunal remains, or 77.8% of the total unit S1W16 assemblage. Only 28 (1.8%) specimens were recovered below these strata, from depths of 110-150 cmbs. Of the 1,083 faunal remains from the Middle Cellar, 680 or 62.7% were recovered from the four ashy layers that were interpreted as hearth cleaning episodes: 155 (14.3%) from ash layer 1, 193 (17.8%) from ash layer 2, 287 (26.5%) from ash layer 3, and 45 (4.1%) from ash layer 4. The large quantities of well-preserved faunal remains in the ashy strata in both units is likely due to the alkalinity of ash, which helps to neutralize acidic soils and preserve organic materials.

Taphonomy

Evidence of taphonomic processes (natural and cultural alterations to the bones) on the faunal remains from the South Cellar provide some information about the nature of the deposits and filling of the cellar. About 26% of the total assemblage exhibits signs of weathering, the breakdown of bone through a separation of its organic and inorganic components caused by exposure to soil chemistry, moisture, and temperature changes (Behrensmeyer 1978; Lyman 1994). Weathering damage results from exposure to the elements and suggests that the weathered bones were exposed for a period of time before they were covered with soil or other waste. Within the kitchen waste strata, 30.5% of the assemblage exhibits signs of weathering. Of these, 45% (n=159; stage 1) are slightly weathered, and 55% (n=194; stage 2-4) are moderately to severely weathered. Faunal remains from the Middle Cellar exhibited a slightly higher rate of weathering overall (35.8%). Within the four ashy layers 116 (17%) of the bones are slightly weathered and 74 (11%) are moderately to severely weathered. The presence of weathered bones in the kitchen waste and ashy deposits suggests that the bones were exposed to the elements for a period of time, either in a sheet midden or within the cellar after they were deposited. If the cellar was filled over time, the bones dumped inside would have been exposed to the elements until a new layer of material was thrown into the cellar. This could result in the differential weathering seen in the assemblages.

Scavenger damage is also present on a small number of bones from each cellar, supporting the idea that they were exposed for a period of time before being buried. Evidence of carnivore gnawing, most likely by dogs was identified on 1.1% (n=17) of the South Cellar assemblage and 1.9% (n=21) of the Middle Cellar assemblage. The small number of gnawed bones suggests that the animals had limited access to the bones. The majority of the gnawed material (n=13; 76%) was collected from the “kitchen waste” strata between 60 and 110 cmbs in the South Cellar and in the ashy layers between 40-130 cmbs in the Middle Cellar (n=20; 95.2%), with smaller numbers of gnawed bones in other strata. None of the bones in the analyzed sample showed evidence of rodent gnawing.

Burned bones were found in both cellars. A little more than one quarter of the South Cellar assemblage (n=397; 26.7%) was calcined, as were about 30% (n=215) of the faunal remains from the kitchen waste layers. In the Middle Cellar, calcined bones comprised 14.6% (n=158) of the total assemblage. Calcination occurs as a result of direct exposure to high temperatures, generally when bones are thrown into a fire for disposal. The fact that almost a third of the faunal remains recovered between 60 and 110 cmbs are calcined supports the interpretation of these deposits as “kitchen waste” and suggests that burning food remains may have been a common form of disposal at the Hollister Site. Other types of burning were less common in the two assemblages. The South Cellar assemblage contained 26 scorched bones and 11 that were charred, while the Middle Cellar

assemblage has seven scorched bones and one charred specimen. Scorched bone can result from open-fire roasting, in which case only the ends of the bones are exposed to the flames. Like the calcined bones, the charred fragments likely result from disposal in fire.

Taxonomic Representation

The faunal samples from the South and Middle Cellars included a mix of wild and domesticated mammals and birds, as well as fish, reptiles, and incidental rodents. Shellfish remains, primarily from oysters and soft- and hard-shell clams, were also recovered. About 12.5% (n=186) of the South Cellar animal bone assemblage and 13.6% (n=143) of the Middle Cellar assemblage were identifiable to at least the level of genus, species or family, while 77.2% (n=1,074) of the South Cellar and 90.7% (n=983) of the Middle cellar assemblages were identifiable to the level of class and general size categories (e.g. medium mammal, large bird, etc.).

Mammals comprise the bulk of the fauna in the South Cellar (n=1,155; 83.6%), followed by fish (n=48; 3.5%), birds (n=33; 2.4%), and reptiles (n=24; 1.7%) (Table 1). Over 1,800 fish scales were also recovered from S1W16, but they have not yet been identified are not included in this analysis. Identified wild taxa include deer, black bear, raccoon, skunk, muskrat, mink, woodchuck, weasel family, squirrel, turkey, passenger pigeon, perching birds, musk turtle, painted turtle, snapping turtle, cod, sturgeon, and salmon family. Domesticated animals include cow, pig, caprine (sheep/goat), horse, and chicken. Faunal analysis at other 17th-century sites in the region suggests that the variety of wild animal taxa present at the site is unusual in English faunal assemblages in southern New England, even in the early Colonial period (Sportman et al 2007; Landon and Trigg 2010; Harper et al 2017; Sportman 2018; Sportman and Reinhart 2019).

Wild taxa dominate the South Cellar assemblage, comprising 86.5% (n=160) of the identified specimens in the overall assemblage and 90% (n=152) of those identified in the “kitchen waste” strata. All of the identified wild mammals would have been readily available in the local environment and were likely hunted, trapped, or fished nearby. As noted above, the major European domesticates (cows, pigs, sheep and/or goats, horses, and chickens) are present in the assemblage, but in very small numbers (see Table 1). This suggests at least a small-scale agricultural operation at the site at the time of these deposits, and this is supported by Thomas Gilbert’s probate, which indicates that domesticated animals were being raised at the site by at least the 1650s.

Mammals also dominate the Middle Cellar faunal assemblage (n=840; 77.6%), followed by fish (n=87; 8%), birds (n=48; 4.4%), and amphibians (n=8; 0.7%). Unlike the South Cellar, the Middle Cellar contained no reptile remains. Domesticated animals from the Middle Cellar include cow, pig, sheep/goat, and probable chicken. The recovered wild taxa include deer, beaver, racoon, muskrat, turkey, quail, and pigeon family, as well as cod, sturgeon, and unidentified fish. Frog and mouse bones were also found in the Middle Cellar, but are interpreted as incidental (Table 1).

Table 1: Taxonomic Representation, South and Middle Cellar Samples

	South Cellar (S1W16)		Middle Cellar (N12W15)	
	NSP	%	NSP	%
Total Assemblage	1486	100	1083	100
Class				
Mammals	1155	77.7	840	77.6
Birds	33	2.2	48	4.4
Reptiles	24	1.6	0	0
Amphibians	0	0	8	0.7
Fish	48	3.2	87	8
Unidentified	226	15.2	100	9.2
Mammals				
White-tailed Deer	95	6.4	21	1.9
Black Bear	2	0.1	0	0
Beaver	0	0	2	0.2
Raccoon	1	0.06	1	0.1
Woodchuck	1	0.06	0	0
Muskrat	6	0.4	2	0.2
Skunk	1	0.06	0	0
cf. Mink	1	0.06	0	0
Squirrel	6	0.4	0	0
Short-tailed Shrew	0	0.06	1	0.1
Mustelidae (Weasel Family)	4	0.3	0	0
Muridae (Mouse family)	0	0	9	0.8
Rodentia (Rodents)	1	0.06	0	0
Cow	3	0.2	41	3.8
Horse	1	0.06	0	0
Pig	16	1.1	24	2.2
Caprine (Sheep/Goat)	6	0.4	12	0.86
Sheep/Goat/Deer	18	1.2	2	0.2
Large Mammal	2	0.1	10	0.9
Medium to Large Mammal	128	8.6	123	11.4
Medium Mammal	279	18.8	191	17.6
Small to Medium Mammal	26	1.7	14	1.3
Small Mammal	5	0.3	28	2.6
Micro Mammal	1	0.06	3	0.3
UnID Mammal	552	37.1	356	32.9
Birds				
Turkey	2	0.1	4	0.4
Passenger Pigeon	2	0.1	0	0

Quail	0	0	4	0.4
Chicken	1	0.06	0	0
Columbidae (Pigeon/Dove Family)	1	0.06	3	0.3
Passerines (Perching birds)	1	0.06	0	0
Galliformes (Land Fowl)	0	0	2	0.2
Large Bird	20	1.3	9	0.8
Medium Bird	4	0.3	22	2
Small Bird	1	0.06	1	0.1
UnID Bird	1	0.06	3	0.3
Reptiles				
Musk turtle	1	0.06	0	0
Painted turtle	3	0.2	0	0
Snapping turtle	4	0.3	0	0
Testudines (Turtles)	15	1	0	0
UnID Reptile	1	0.06	0	0
Amphibians				
Ranidae (Frog Family)	0	0	7	0.6
UnID Amphibian	0	0	1	0.1
Fish				
Cod	6	0.4	12	1.1
Sturgeon	5	0.3	1	0.1
Salmonidae (Salmon/Trout Family)	2	0.1	0	0
Large Fish	7	0.5	6	0.6
UnID Fish	28	1.9	68	6.3
Unidentified	226	15.2	100	9.2
Totals	1486	99.7	1083	99.9

Skeletal Part Representation

Deer bones comprise 6.9% of the total South Cellar assemblage and the majority of identified specimens in the South Cellar as a whole (n=95; 59.3%) and within the “kitchen waste” strata (n=92; 60.5%). The deer specimens in the analyzed sample represent the remains of at least three individuals, and a wide range of cranial, limb, axial and foot elements is present, indicating the animals were likely butchered and consumed on-site. Small wild mammals are primarily represented by cranial fragments and teeth, with the exception of racoon, mink, and Mustelidae or weasel family. The assemblage contained a racoon radius, a mink metapodial, a vertebrae and tarsal identified as Mustelidae (weasel family), and five small mammal long bone fragments. Turtle remains in the South Cellar assemblage include a mix of limb and shell elements.

Among the domesticated mammals, the small number of caprine bones (n=6; MNI=1) include upper and lower limb, axial, and cranial elements. The only identified cow remains are a mandible fragment and teeth (N=3; MNI=1) and the pig remains (N=16; MNI=1) include two scapula fragments, 12 cranial/teeth specimens, and 2 lower limb/foot fragments. In addition to the traditional domestic food animals, a single horse bone, in this case a partial tibia, was also

recovered from the “kitchen waste” strata in the South Cellar. While weathering has partially obscured the surface of the break on this bone, it looks as though it was intentionally fractured in a manner consistent with marrow extraction, suggesting the animal was eaten.

A large portion of the assemblage was identified only to the size categories of large, medium-large, and medium mammal. These remains comprise primarily long bone and rib shaft fragments, and vertebrae fragments, elements that are difficult to identify to the species level if they lack diagnostic landmarks. These remains likely represent deer and domesticated animals, and indicate the presence of axial and limb elements from these species.

The Middle Cellar assemblage contains 21 identified deer bones representing 1.9% of the overall assemblage and 24% of identified specimens. Four of the deer specimens were collected at 30-40 cmbs, within the first yellowish-brown stratum below the plowzone. The remaining 17 specimens, which consist primarily of head, lower limb, and foot bones, were collected between 40 and 130 cmbs, primarily from the ashy deposits. The identified small wild mammals from the Middle Cellar include beaver, raccoon, and muskrat, and these taxa are represented only by teeth and caudal vertebrae. Unidentified small mammal specimens include a range of cranial fragments, foot and lower limb bone fragments, rib fragments, and long bone shaft fragments, suggesting that small mammals were processed on site.

As in the South Cellar, domesticated animals comprise a relatively small portion of the identified Middle Cellar assemblage. Of a total of 12 caprine specimens, 10 were collected from the plowzone and the two remaining specimens include a phalanx from Stratum 2 at 30-40cmbs, and a premolar from 100-110, from the third ashy layer (Stratum 7). A total of 41 cow specimens were recovered from the Middle Cellar, but 34 of those are teeth, maxilla, and cranial fragments from a single individual collected between 20-30cmbs, within the plowzone. This suggests that these bones are probably from a fairly modern cow and are not associated with the cellar. The remaining cow specimens consist of an ulna fragment from the first ash layer at 40-50cmbs and four foot bones recovered between 60 and 130cmbs. The 24 pig remains collected from the Middle Cellar are dominated by teeth (n=20; 83%). The remaining pig specimens include a metapodial fragment from the plowzone, an ulna fragment from the ashy layer at 50-55cmbs, a fibula fragment from the third ashy layer at 90-100 cmbs, and a metapodial from the fourth ashy layer at 120-130 cmbs. The MNIs calculated for each of the identified domesticated mammal taxa in the Middle Cellar is one.

As in the South Cellar, a large portion of the assemblage was identified only to the size categories of large (n=10; 0.9%) medium-large (n=123; 11.4%), and medium mammal (n=191; 17.6%). These remains comprise primarily long bone and rib shaft fragments, and vertebrae fragments, elements that are difficult to identify to the species level when incomplete. Ten long bone and rib shaft fragments identified as large mammal were recovered from the Middle cellar deposit and these are probably from a cow. The medium to large remains likely represent deer, although it is possible that some could have come from a very large pig. The medium mammal bones are probably combination of deer, pig, and caprine. Analysis of a larger faunal sample will improve our understanding of the likely proportions of these species in the overall assemblage.

Butchery Patterns

Butchery marks on the deer bones from the South Cellar assemblage include primarily shear and chop marks found at joints and along bone shafts, and reflect carcass dismemberment and division. Most of the marks appear to have been made with metal tools, reflecting English butchery methods. The deer assemblage also exhibits cut marks from cutting ligaments and

tendons and removing meat from the bones. No butchery marks were identified on any of the small animals or fish in the assemblage, but cut marks were identified on the shaft of a turkey humerus.

Three of the deer bones exhibit percussion marks from striking the bone to crack it open, presumably to expose the marrow. Another line of evidence for marrow extraction is spiral fractures, which were recorded on 27% of marrow-bearing deer elements. To determine if the fractures were the result of cultural, rather than natural processes, spirally-fractured elements were assessed in terms of Outram's fracture freshness index (FFI) (Outram 2001), based on the angle, outline, and texture of the fractures. The lower the index result, the fresher the bone when it was fractured. Fresh fractures are more likely the result of cultural, rather than natural causes. The calculated FFI score for the deer bone assemblage is 0.9. This low score suggests that the bones were fractured when fresh.

Butchery patterns in the Middle Cellar assemblage were similar, and dominated by shear and chop marks at joints and along bone shafts of identified deer, medium, and medium to large mammal bones. Cut marks were identified on a deer maxilla fragment and an antler fragment. Butchery marks were also absent on the small mammals, birds, and fish from the Middle Cellar. Spirally-fractured elements were not recorded in high frequencies for the Middle Cellar (n=11), making the application of the FFI problematic.

DISCUSSION

The faunal remains discussed here represent an approximately 33% sample of the materials excavated from the South and Middle Cellars. They do not provide a complete picture of the food remains deposited in those features, but they do provide information about diet, food procurement, and animal husbandry practices at the site. In the discussion I address the original research questions outlined above in terms of the South and Middle Cellar faunal assemblages, and pose new research directions for faunal remains from the site.

The first question addressed the site formation processes and disposal patterns. At this preliminary stage, the materials from the South and Middle Cellars, especially the kaolin pipe stems and ceramic assemblages, indicate that these features were filled in the mid-17th century, which suggests they likely date to the earlier period of the site's occupation. The recovered artifacts are consistent with the date range of the Gilbert family's tenancy, ca. 1651-1663. Based on the stratigraphy, the cellars appear to have been filled gradually, rather than all at once. Each of the cellars exhibits clear stratified layers of variable fill, ranging from layers of relatively clean fill to deposits of domestic waste and ash (see Figures 3-6). This is supported by evidence from the faunal assemblage, which includes specimens that have been weathered and gnawed by dogs, suggesting they were exposed for a period of time before being covered by soil or other trash in the cellar features.

If the cellars were filled gradually in the mid-17th-century, they would have had to have been abandoned, open features at that time. This suggests that these cellars may be some of the earliest English house features at the site, likely representing structures that pre-dated the ca. 1665-1711 Hollister family occupation and perhaps even predating much of the Gilbert family's occupation of the site. To improve our understanding of these features and their role within the overall farm complex, future work at the site should include some excavation of the area surrounding these structures, to identify contemporary artifact deposits and other related features that could better date the cellars and shed light on their relationship and date of abandonment.

The remaining research questions are interrelated and pertain to diet, foodways, butchery patterns, food procurement strategies, and animal husbandry strategies. The diet reflected in the two cellars is dominated by wild taxa, including deer, small game, birds, fish, turtles, and shellfish. Domesticated animals comprised a small proportion of each assemblage. Initial macrobotanical analyses by Katherine Reinhart (Sportman and Reinhart 2019) reflect a similar mix of domesticated and local, wild plant foods. The combination of wild and domestic plant and animal taxa indicates that at the time the South and Middle Cellars were filled, the residents of the Hollister Site practiced a mix of traditional English and new, blended foodways that incorporated a wide range of locally available foods. This raises some interesting questions about the agricultural operation, diet, and the nature of the South and Middle Cellar deposits.

One question raised by the South and Middle cellar deposits is whether these assemblages reflect overall diet at the time of the deposits (ca. 1650s-60s) or if they represent a specialized activity area. Specialized activity areas have been identified at other 17th-century sites, for example at Sylvester Manor on Shelter Island, NY, where archaeologists identified a pit filled with butchery waste that was dominated by pigs. That feature was identified as a mass culling of pigs to provide barreled pork for shipment to the Caribbean (Landon and Trigg 2010). In the case of the South and Middle Cellar deposits, the faunal remains appear reflect the overall diet at the time of the deposits. In each of these features, the faunal remains were found mixed in with a range of domestic materials including ceramics, glass, kaolin pipe fragments, ash and charcoal, botanical remains, and other materials. This suggests that the open cellars were regularly used for household trash disposal. At this time, there is no indication that these deposits were related to a specialized activity.

Animal husbandry practices are generally assessed by analyzing the age and sex profiles of domesticated animals using data on bone fusion, tooth wear, and sexually dimorphic skeletal traits (Payne 1974; Reitz and Wing 1999). The current sample, which reflects an MNI of 1 for each taxon in each cellar feature, is too small to provide the necessary data. Despite the relatively small sample, the dearth of domesticated animals in the cellar assemblages is informative, in that it suggests that farm-raised animals were not used as a major food source at the time of the deposits. Additional analyses of the faunal remains from the South and Middle Cellars and other contexts at the Hollister Site will help to clarify the ratios of wild and domesticated taxa and provide a better understanding of animal husbandry strategies and the overall diet across the site and through time.

The prevalence of wild taxa in the deposits raises the question of why there is so little evidence of domestic animal consumption. The Gilberts were farmers, as were the Hollisters. The fact that both families raised domesticated animals on the site is reflected in Thomas Gilbert's probate inventory, as well as the probate of the younger John Hollister (Jones 2019). It is possible that the Hollisters had a plan for building their herds in the early years of their farming operation. The 1652 "Articles of Agreement" among the original proprietors of Sylvester Manor, a large plantation established in 1652 on Shelter Island, New York, specified that the plantation's herds be allowed to increase for six years; only animals "necessary for housekeeping" were to be slaughtered (Sportman 2003; Mrozowski et al. 2007; Landon and Trigg 2010). While a plan for increasing livestock may not have been formally laid out by the Hollisters, they may have employed a similar strategy as they sought to establish herds of cattle, sheep, and pigs.

The lack of domesticated animals in the assemblages may also reflect the Gilbert family's economic strategy. Preliminary analyses of the artifacts from the South and Middle Cellar deposits suggest they date to the Gilbert family's tenancy in the 1650s and early 1660s. Thomas Gilbert's probate indicates that the bulk of the value of his estate (£110) was tied up in livestock. At the

time of his death, Gilbert had numerous debts and owed both farm products and cash to his landlord, Lt. John Hollister. Living on what was the frontier of English settlement, the Gilberts would have had access to a wide range of locally-available plant and animal resources. They may have focused on hunting, trapping, fishing, and collecting wild plants for their own consumption in order to make as much money as possible from their herds, eating their domesticated animals only when the animals died or had to be culled. The presence of an apparently butchered horse bone in the South Cellar assemblage may reflect this practice.

Detailed analysis of skeletal part representation, which requires a large sample of faunal remains, can shed light on whether animals were killed and consumed on site, or if they were processed for sale or trade (Reitz and Wing 1999). Within the small sample analyzed here, skeletal part representation and butchery patterns appear to reflect processing and consumption of whole animals at the farm. Among the deer remains, for instance, a wide range of cranial, limb, axial and foot elements are present, suggesting the animals were butchered and consumed at the site. This pattern is consistent with procurement and processing for domestic use, rather than sale, trade, or provisioning. Future analysis of larger samples of faunal remains will provide a clearer picture of skeletal part representation and butchery patterns, providing more detailed information about the procurement or production and consumption of animal foods at the site.

Finally, the initial research questions sought to address the Hollister Site faunal assemblage within the context of other known 17th-century sites in the region, and to understand how the site fit into the local and regional economy. At this point, there is limited data on early colonial sites in the region, although some recent research provides a window into food, diet, and trade in the 17th century. Excavations at two slightly earlier sites, the ca. 1630s-40s contexts at the Webb-Deane-Stevens Museum (WDS) in Wethersfield (Sportman and Harper 2017; Sportman 2018; Sportman and Reinhart 2019) and the Waterman Site, a ca. 1640s house site in Marshfield, Massachusetts (Harper et al. 2017) provide comparative contexts. The investigations at both sites were carried out by AHS, Inc./PAST, Inc. A third comparative context with comprehensive faunal data is the Sylvester Manor Site, a large, slaveholding plantation established on Shelter Island in the 1650s for the purpose of provisioning the family's sugar interests in Barbados (Sportman et al. 2007; Landon and Trigg 2010).

A sample of faunal remains from the excavations at WDS indicate that the assemblage was dominated by domesticated animals (pigs, cattle, and caprines), as well as wild and domesticated birds (passenger pigeon, turkey, duck, quail, perching birds, and chicken), eggs, fish, and shellfish. A small number of deer bones also were recovered. While domesticated animals comprised a larger portion of the WDS assemblage than at the Hollister Site, the numbers of identified specimens are still quite low. The residents of this site, Clement and Sarah Chaplin, lived in the town of Wethersfield, but they also owned a large farm on the east side of the river that was likely managed by tenants or younger relatives. The apparently conservative use of domesticated animals at WDS may reflect the struggle to establish large herds in the early days of settlement. Fishing and fowling were important food procurement strategies at both sites, but hunting and trapping of wild mammals was more of a focus at Hollister.

The Waterman House, in Marshfield, Massachusetts, burned down and only calcined bone survived in the archaeological record. Analysis of the fragmented calcined assemblage of 239 specimens recovered from feature contexts indicated that birds dominated the assemblage, followed by medium and large mammals and fish. (Sportman 2016; Harper et al 2017). The importance of fowling in early colonial southern New England is well documented (Bradford

1984; Cronon 1983; Winslow 1963; Wood 1977) and that tradition appears to hold at the Hollister Site, where a range of wild bird specimens was recovered, as well as at WDS.

Finally, at Sylvester Manor, thousands of faunal remains were recovered from a large midden on the plantation grounds. This deposit is interpreted as having been created over a long period, from the 1650s to the early 1700s, and is associated with domestic consumption rather than the provisioning enterprise (Sportman et al. 2007; Landon and Trigg 2010). Domesticated animals, including cattle, sheep, and pigs dominate the midden assemblage, although small numbers of wild animal and bird specimens also were recovered. Fish remains were present in the midden, but they appear to have played a less prominent role in the diet than at the Hollister and WDS sites.

While the research at the Hollister Site is still in its early stages, the documentary and archaeological data collected to date provides some insight into the role of the site in the local colonial economy. The site is situated on a large parcel of land that was owned by John Hollister, who lived in Wethersfield. It was one of many such large farms that were owned by wealthy settlers who did not personally occupy or manage them. Most of these farms were likely run by tenants or younger, less prosperous relatives of the landowners, who paid rent in crops, animals, and cash, but were permitted to keep a share of the crops and animals raised on the farms. The Gilberts lived on the Hollister farm for many years as tenants before the younger John Hollister came of age and took over the property in 1665. We know from the documentary record that Thomas Gilbert owed Lt. John Hollister both cash and farm products when he died in 1659. In the second period of occupation at the site, after the second John Hollister and his wife moved there in 1665, the site operated as a residential farm where all of the products belonged to the occupants. As such, the Hollister Site represents two aspects of the colonial economy. The WDS site, which has not yet been fully analyzed or published, represents a third aspect of the local economy—that of the wealthy landowner who benefitted from large agricultural holdings that were managed by tenants. As more data from WDS is published, it will potentially provide important comparative data for understanding the 17th-century agricultural economy in the Connecticut River Valley.

CONCLUSIONS

The preliminary analysis of faunal remains from two cellar contexts at the Hollister Site provides information about diet, foodways, food procurement, animal husbandry, and economic strategies, and also raises interesting questions for future research at the site. Initial analysis of the material culture recovered from the South and Middle cellars suggests that these deposits were created in the early period of site occupancy, probably in the 1650s and early 1660s, and are likely associated with the Gilbert family, who leased the land as tenant farmers between 1651 and 1665. The documentary record indicates that Thomas Gilbert had livestock on the farm, and his probate reflects the use of animal products including bacon, cheese, butter, and tallow. The dearth of domesticated animal remains in the cellar deposits, however, suggests that the Gilberts did not rely on them as their primary source of meat. The small number of domesticated animal remains in the deposits suggests that the site's occupants occasionally supplemented their diet with pork, beef, or mutton while consuming primarily local wild foods. The range of wild taxa identified in the assemblages, including deer, bear, birds, small mammals, turtles, fish, and shellfish, suggests that at the time of the cellar deposits at least, the inhabitants of the Hollister Site relied heavily on the animal resources available to them in the local environment and focused on hunting, fowling, fishing, and trapping. Preliminary analyses of plant remains from the same contexts also support

the idea of a blended diet, as the assemblage contained a mix of agricultural crops and wild plants. At the time of this death, Thomas Gilbert had many debts. It is possible that the family's economic concerns may have outweighed the desire for English-style foodways. It is also possible that the Gilberts were simply very conservative in their use of domesticated animals, in an attempt to grow their herds as a form of wealth or for the production of secondary products.

The recovered faunal remains raise important avenues for future research. The analyzed bones represent a sample of the remains from two cellars at the site. There are several additional cellar contexts and other features that have yet to be examined. It is possible that other features at the site contain very different assemblages. Continued analysis of the Hollister faunal assemblages, which contain tens of thousands of specimens, will hopefully shed light on additional aspects of diet, foodways, and economy. Larger samples will provide the opportunity to examine age, sex, and skeletal part profiles that will help to clarify animal husbandry practices and trade at the site. As noted above, the Hollister Site played at least two roles in the local economy: a tenant farm in the 1650s-60s and an owner-occupied farm from the 1660s to the early 1700s. As more data becomes available from other 17th-century sites, such as the 17th century site at WDS in Wethersfield, it will provide important comparative contexts for the Hollister Site materials. The food remains from these sites will provide insight not only into foodways and diet in the early colonial period, but also improve our understanding of the local economy and systems of food production.

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