

Radiocarbon Dates

A total of 20 samples from across the site were submitted to Geochron in Cambridge, Massachusetts for either conventional or AMS radiocarbon dating (Table 1) (Appendix H). The contexts are

Table 1. Samples Submitted for Radiocarbon Dating Arranged by Sample Number

Samp#	Fea #	Type	Assoc artif	RC Age	Calibrated Age
1	L1H N315.1 E170.6	Cache Pit	Maize, Shell-Temp Pottery	660 +/- 20	1281-1390 AD
2	L2H N270.5 E217.5	Storage pit	Pendant, Grit-Temp Pottery	300 +/- 220	1383 AD
3	L4S N149.1 E144.7	Cache Pit	Alewife, 2 Levannas, Grit-Temp and Shell-Temp Pottery	2200 +/- 130	552 BC-73 AD
4	L4S N148.8 E145.4	Cache Pit	Alewife, Rhyolite biface, Grit-Temp Pottery	490 +/- 130	1260-1666 AD
5	L4S N147.8 E147.4	Storage pit	Alewife, Saugus Jasper, Small Triangle Point, Grit-Temp Pottery	530 +/-100	1273-1524 AD
6	L4S N144.5 E145.5	Storage pit	Poplar Island Point, Shell-temp Pottery	740+/-110	1116-1412 AD
7	L5H N135 E186.5	Storage pit	Levanna, Grit-Temp and Shell-Temp Pottery	1790+/-120	40 BC-474 AD
8	L5H N130.7 E178.7	Cache Pit	Levanna, Grit-Tempered Pottery	620+/-130	1151-1523 AD
9	L6S N114.3 E248.2	Cache Pit	Small Triangle Point, Shell-Temp Pottery	690+/-110	1150-1440 AD
10	L6S N113.75 E250.8	Cache Pit	Maize, Alewife, chert Levanna, Shell-Temp Pottery	990+/-110	856-1258 AD
11	L6H N108.8 E235.7	Storage pit	Maize, nut, bean, Incised Shell-Temp Pottery, Rocker and Dentate Stamped Grit-Temp Pottery	916+/-120	875-1296 AD
12	L6H N104.5 E243	Storage pit	Maize, Saugus Jasper, Grit-Temp and Shell-Temp Pottery	1090+/-100	763-1155 AD
13	L6H N104 E241.6	Storage pit	Maize, Saugus Jasper, Small Triangle Point, Dentate Stamped Grit-Temp Pottery, Shell-Temp Pottery	660+/-20	1281-1390 AD
14	L6H N103.8 E244	Storage pit	Maize, acorn, bean, Hickory, Small Stemmed Point, Wayland Point, Shell Dec. and Incised Grit Temp Pottery, Incied Shell-Temp Pottery	570+/-20	1313-1416 AD
15	L6H N103.6 E238.75	Cache Pit	Maize, Bear Bone, Acorn, Small Stemmed Point, Saugus Jasper, Small Triangle point, Grit-Temp and Shell-Temp Pottery	500+/-100	1284-1529 AD
16	L6H N100.6 E244	Storage pit	Bear Bone, Small Triangle point, Grit-Temp Pottery, Incised and Dentate Decorated Shell-Temp Pottery	60+/-140	1623 AD

Table 1.(Cont)

Samp#	Fea #	Type	Assoc artif	RC Age	Calibrated Age
17	L7HN N68 E266.8	Cache Pit	Beveled cobble abrader, Grit-Temp Pottery	300+/-110	1425-1707 AD
18	L7SN N72 E257/ N73.2 E254.2	Cache Pit	2 quartz Levanna, Susquehanna point, Grit-Temp Pottery, Incised Shell-Temp Pottery	70+/-180	1609 AD
19	L7SN N74.5 E257.5/ N75.3 E258.75	Cache Pit	Alewife, argillite hoe, quartz Levanna, 2 rhyolite Levannas, Shell-Temp and Grit-Temp Pottery	1420+/-120	386-866 AD
20	L8HN N64.5 E309.8	Storage Pit	Rhyolite Biface, Grit-Temp Pottery	3590+/-140	2349-1611 BC

all either medium size/ medium depth cache pits or large size/ deep depth storage pits. The samples have been chosen from features that have a combination of artifact classes that can benefit from radiocarbon dating- lithic artifacts, maize, seeds, and/ or pottery. Samples came from each of the lots so that a sampling of the occupation across the site was present.

The samples show a distinct distribution when arranged by ages (Table 2) (**Figure 1**). The earliest sample dates to the Late Archaic Period, and was associated with a lenticular rhyolite

Table 2. Samples arranged by Geochron Age/ Calibrated Dates

Samp#	Fea #	Type	Assoc artif	RC Age	Calibrated Age
	Late Archaic				
20	L8HN N64.5 E309.8	Storage Pit	Rhyolite Biface, Grit-Temp Pottery	3590+/-140	2349-1611 BC
	Early Woodland to early Middle Woodland				
3	L4S N149.1 E144.7	Cache Pit	Alewife, 2 Poss. Levannas, Grit-Temp and Shell-Temp Pottery	2200 +/- 130	552 BC-73 AD
	Late Early Woodland to Middle Woodland				
7	L5H N135 E186.5	Storage pit	Levanna, Grit-Temp and Shell-Temp Pottery	1790+/-120	40 BC-474 AD
19	L7SN N74.5 E257.5/ N75.3 E258.75	Cache Pit	Alewife, argillite hoe, quartz Levanna, 2 rhyolite Levannas, Shell-Temp and Grit-Temp Pottery	1420+/-120	386-866 AD
	Late Middle Woodland to middle Late Woodland				
12	L6H N104.5 E243	Storage pit	Maize, Saugus Jasper, Grit-Temp and Shell-Temp Pottery	1090+/-100	763-1155 AD

Table 2. (Cont)

Samp#	Fea #	Type	Assoc artif	RC Age	Calibrated Age
10	L6S N113.75 E250.8	Cache Pit	Maize, Alewife, chert Levanna, Shell-Temp Pottery	990+/-110	856-1258 AD
11	L6H N108.8 E235.7	Storage pit	Maize, nut, bean, Incised Shell-Temp Pottery, Rocker and Dentate Stamped Grit-Temp Pottery	916+/-120	875-1296 AD
	Late Woodland				
6	L4S N144.5 E145.5	Storage pit	Poplar Island Point, Shell-temp Pottery	740+/-110	1116-1412 AD
9	L6S N114.3 E248.2	Cache Pit	Small Triangle Point, Shell-Temp Pottery	690+/-110	1150-1440 AD
1	L1H N315.1 E170.6	Cache Pit	Maize, Shell-Temp Pottery	660 +/- 20	1281-1390 AD
13	L6H N104 E241.6	Storage pit	Maize, Saugus Jasper, Small Triangle Point, Dentate Stamped Grit-Temp Pottery, Shell-Temp Pottery	660+/-20	1281-1390 AD
8	L5H N130.7 E178.7	Cache Pit	Levanna, Grit-Tempered Pottery	620+/-130	1151-1523 AD
14	L6H N103.8 E244	Storage pit	Maize, acorn, bean, Hickory, Small Stemmed Point, Wayland Point, Shell Dec. and Incised Grit-Temp Pottery, Incised Shell-Temp Pottery	570+/-20	1313-1416 AD
5	L4S N147.8 E147.4	Storage pit	Alewife, Saugus Jasper, Small Triangle Point, Grit-Temp Pottery	530 +/-100	1273-1524 AD
15	L6H N103.6 E238.75	Cache Pit	Maize, Bear Bone, Acorn, Small Stemmed Point, Saugus Jasper, Small Triangle point, Grit-Temp and Shell-Temp Pottery	500+/-100	1284-1529 AD
	late Late Woodland to Contact Period				
4	L4S N148.8 E145.4	Cache Pit	Alewife, Rhyolite biface, Grit-Temp Pottery	490 +/- 130	1260-1666 AD
2	L2H N270.5 E217.5	Storage pit	Pendant, Grit-Temp Pottery	300 +/- 220	1383 AD
17	L7HN N68 E266.8	Cache Pit	Beveled cobble abrader, Grit-Temp Pottery	300+/-110	1425-1707 AD
	Contact to Plantation Period				
18	L7SN N72 E257/ N73.2 E254.2	Cache Pit	2 quartz Levanna, Susquehanna point, Grit-Temp Pottery, Incised Shell-Temp Pottery	70+/-180	1609 AD
16	L6H N100.6 E244	Storage pit	Bear Bone, Small Triangle point, Grit-Temp Pottery, Incised and Dentate Decorated Shell-Temp Pottery	60+/-140	1623 AD

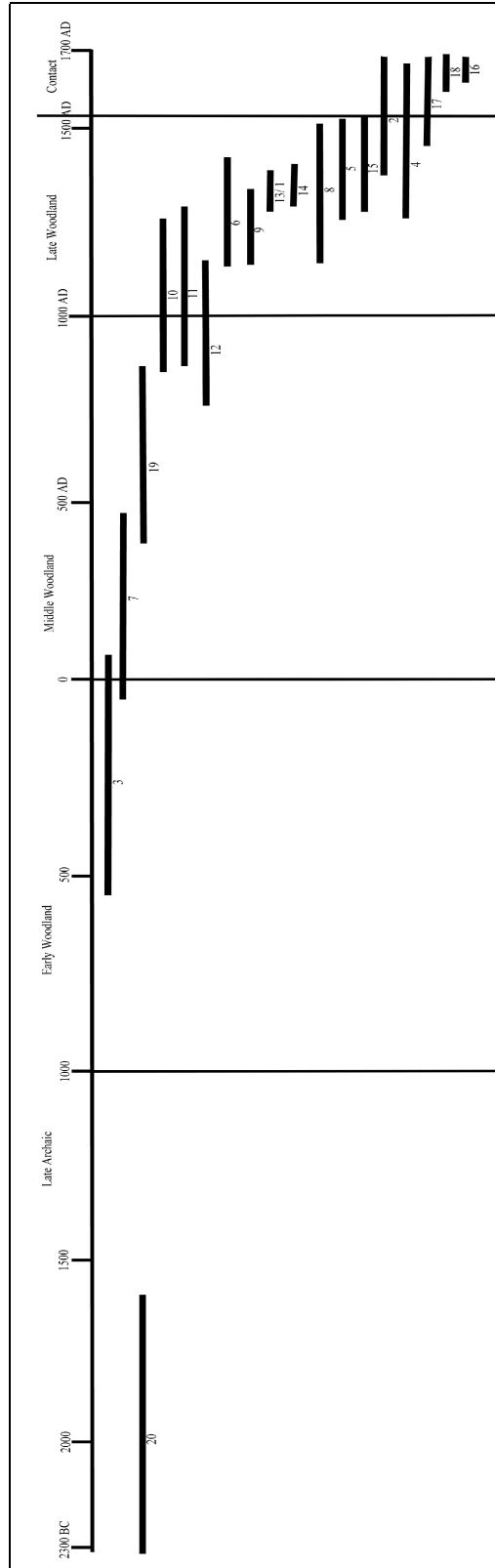


Figure 1. Radiocarbon dates arranged chronologically

biface and grit-tempered pottery (possibly Vinette I style but the pieces are too small to say for sure). The next earliest dates from the Early Woodland to early Middle Woodland periods. Two samples were found to date to the Middle Woodland Period, while the majority dated to the Late Woodland to Plantation periods.

Occupations that may have involved storage of food stuffs or items below ground appear to have begun in the Late Archaic Period, apparently co-occurring with some of the earliest pottery use at the site, in the eastern portion of the project area. Sample 3 was dated at 2200 +/- 130 but contained possible Levannas and shell-tempered pottery. The possible Levannas are represented by fragments of possible ears though, so it is possible that they may be some other form, possibly even a small triangle form. Such a date would be extremely early for shell-tempered pottery in New England, as the current state of our understanding of this ceramic type stands, but it has been documented in the Mid-Atlantic by 500 B.C, so it is possible (Feathers and Peacock 2008: 286). Shell-tempered pottery is generally assumed to be a Late Woodland Period (1000-500 B.P.) phenomena, but other relatively early dates for Shell-tempered pottery were also obtained from the site, which may need to make us rethink the association. Shell-tempered and grit-tempered pottery co-occurs in many of the features, except those dated to the late Late Woodland Period, which only had grit-tempered pottery, but the co-occurrence happens again in the Contact to Plantation Period features.

Maize horticulture is hinted at by Sample 19, dated to the late Early Woodland to Middle Woodland period as evidenced by an argillite possible hoe recovered from the associated feature. The first direct evidence of maize in any feature was from Sample 12 (1090 +/- 100, calibrated 763-1155 AD) after which it was commonly found in the late Middle Woodland to Late Woodland periods, not being present in the late Late Woodland to Plantation period features. Maize and bean horticulture is first represented in Sample 11 (916 +/- 120 calibrated 875-1296 AD) but that does not mean that the two were not grown together prior to that date. Previously, the earliest recorded dates for maize in Massachusetts came from charcoal associated with the maize, dated at 1160 A. D. +/- 80 years calibrated 760-1015 AD) (Ritchie 1969), which is almost exactly contemporaneous with the earliest maize sample from the Muttock-Pauwating site.

One important point to remember on all of these dates is that they are based on charcoal recovered from the features and not on the actual dating of artifacts such as pottery (by radiocarbon dating of carbonized residue on the pieces or by optically stimulated luminescence or thermoluminescence dating), or the maize and beans (by AMS dating of the actual beans or kernels). Researchers such as Little (2002) have called into question the validity of associated radiocarbon dates versus direct dates, due to the possibility that the wood burned to make the charcoal may have come from trees that could be hundreds of years old. More radiocarbon and possibly OSL and TL dates should be submitted for the samples from this site in order to further refine the dating sequence for the pottery and horticultural remains.