INTERPRETATIONS - AREA A

The interpretations of the excavation results from Area A are presented below.

Chronology

Chronological interpretations from Area A can be drawn from diagnostic projectile points and ceramics, and these data are discussed below. The distribution of features with diagnostic artifacts across Area A is also discussed with reference to the history of Area A's occupation.

Diagnostic Projectile Points. Figure 59a-f illustrates the diagnostic projectile points from Area A. Diagnostic projectile points were recovered from plow zone soils during the Phase II and Phase III excavations, but none were recovered from features. Three contracting stem points (Figure 59a-c) were recovered from the plow zone during Phase II excavations. In general, stemmed points are not particularly diagnostic of any limited time range on the Delmarva Peninsula (Custer 1989:144-156). However, recent research (Custer 1994) on collections originally excavated by Kent (1970) at the Piney Island Site in southeastern Pennsylvania has shown that stemmed projectile points can be used to develop some limited chronological interpretations. Figure 60 shows the main types of stemmed points identified. Table 16 lists the dates associated with all diagnostic projectile point types found in all areas of the Pollack Site, based on recent overviews of the central Middle Atlantic region (Custer 1989, 1994). Plate 24 shows examples of the diagnostic point types.

TABLE 16

Diagnostic Projectile Point Types from the Pollack Site

POINT TYPE	DATE RANGE
Middle Paleo-Indian	ca. 9000 BC
Dalton-Hardaway	ca. 8500 BC
Kirk/Palmer	8000 BC - 7000 BC
MacCorkle	7000 BC - 6000 BC
Bifurcate	6500 BC - 6000 BC
Neville/Stanly	6000 BC - 5000 BC
Brewerton Eared	5000 BC - 2000 BC
Type B Stemmed	2500 BC - AD 500
Type D Stemmed	4000 BC - 1000 BC
Type E Stemmed	4000 BC - 1000 BC
Type I Stemmed	5000 BC - 2000 BC
Generalized Side-Notched	3000 BC - AD 1000
Lehigh Koens/Crispin	2500 BC - 1500 BC
Susquehanna Broadspear	1500 BC - 1000 BC
Fishtail	1200 BC - 500 BC
Teardrop	1000 BC - 500 BC
Triangle	AD 1000 - 1600 AD

Other diagnostic projectile point types from Area A, which were recovered during Phase III excavations of the plow zone include a fishtail point (Figure 59d) and two triangular points (Figure 59e-f). The dates for these point types are also noted in Table 16. Figure 61 summarizes the time ranges represented by the projectile points from Area A.

FIGURE 59

Diagnostic Projectile Points from Areas A, D, E, F, and G

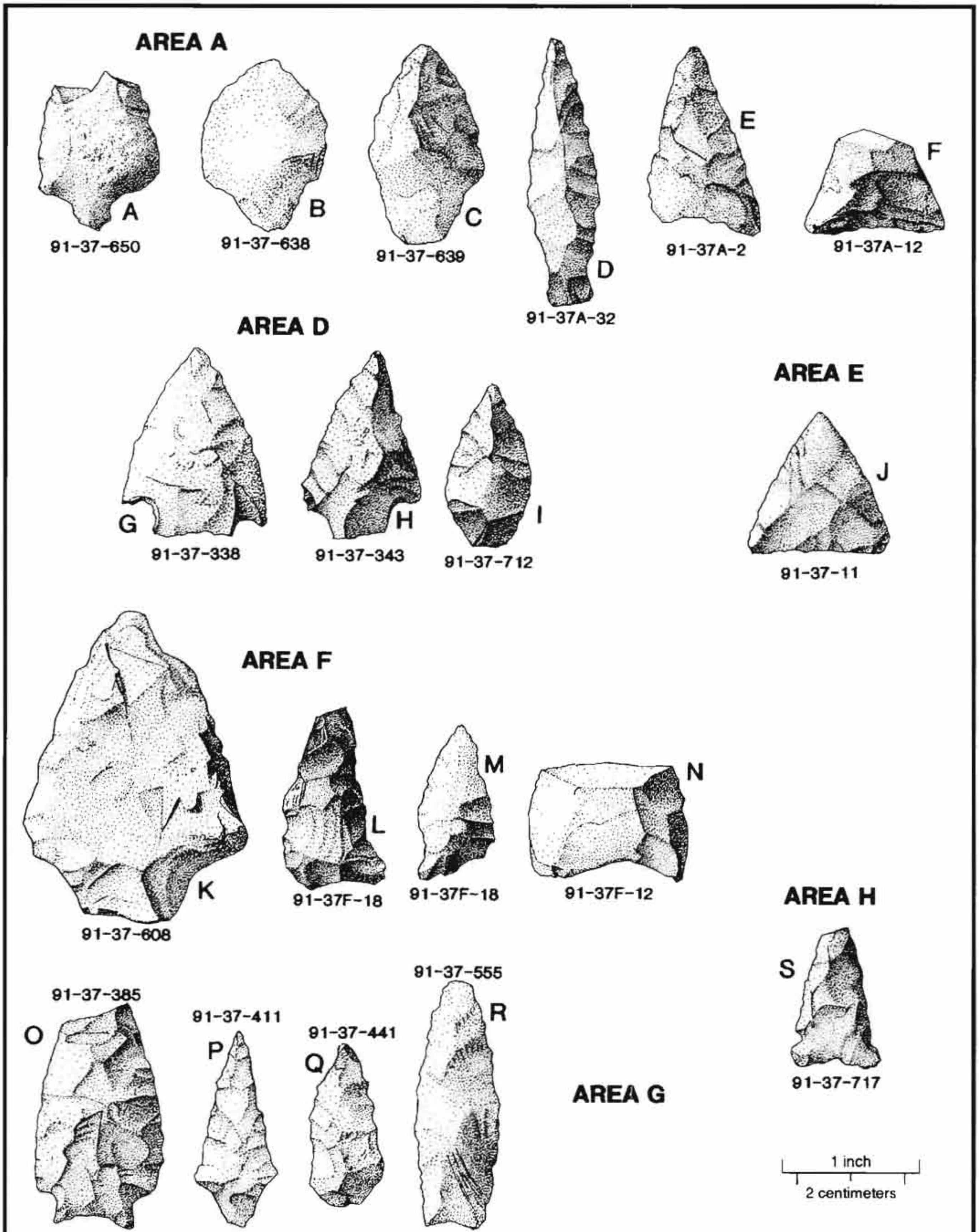
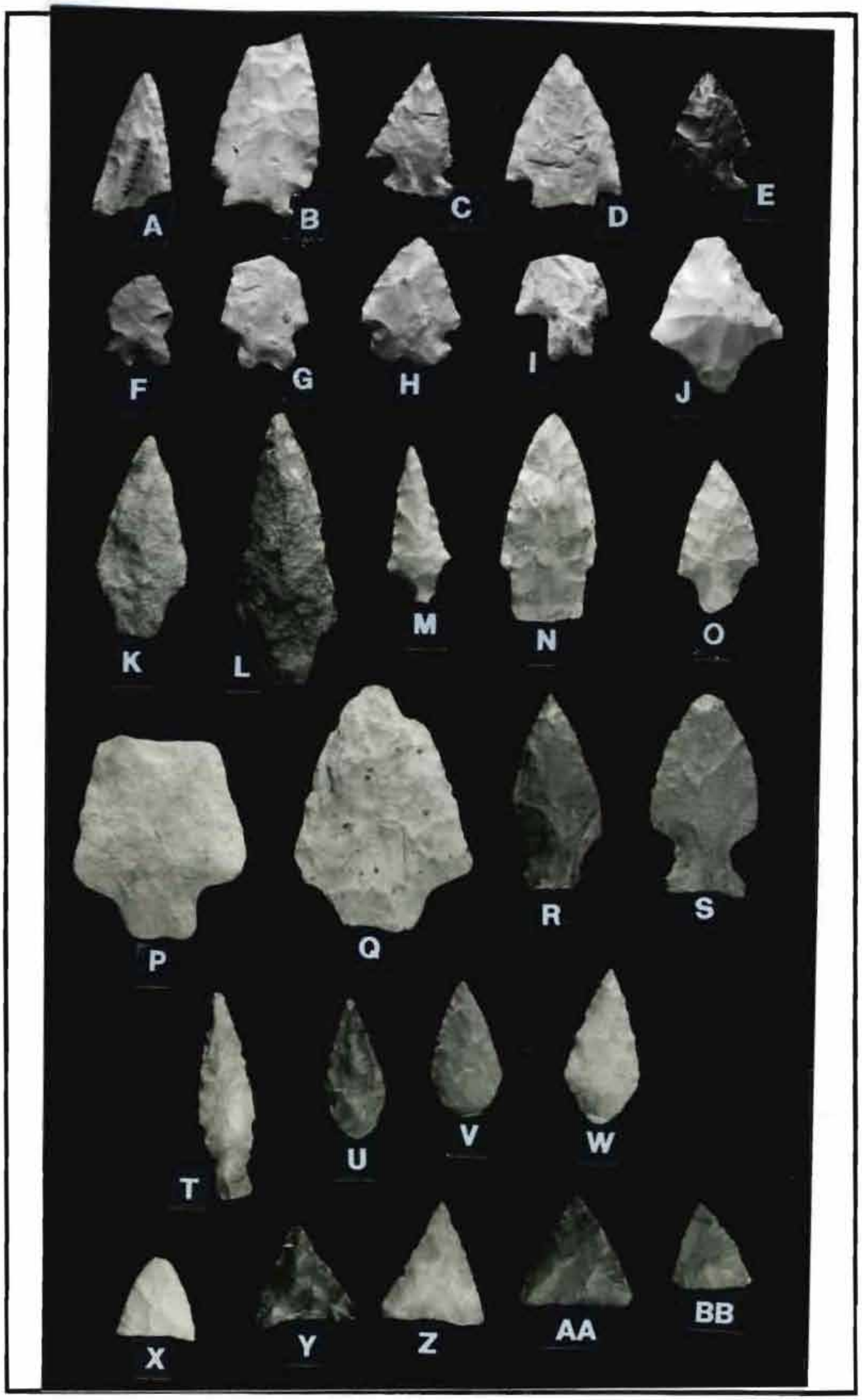


PLATE 24

Examples of Main Diagnostic Point Types from the Pollack Site



1 inch
2 cm

Paleo-Indian (10,000 B.C.-6500 B.C.)
A-Chert Mid-Paleo
(91-37C-574)
B-Jasper Dalton
(91-37-385)
C-Jasper Kirk/Palmer Variant
(91-37-127)
D-Jasper Kirk/Palmer Variant
(91-37-338)
E-Jasper Kirk/Palmer Variant
(91-37C-42)

Archaic Period (6,500 B.C. - 3,000 B.C.)
F-Jasper Bifurcate
(91-37S-153)
G-Jasper Bifurcate
(91-37B-438)
H-Jasper Bifurcate
(91-37S-154)
I-Jasper Stanly/Neville Variant
(91-37C-402)
J-Jasper Stanly/Neville Variant
(91-37-572)

Woodland I (3000 B.C.-A.D. 1000)
K-Argillite Type E stemmed
(91-37C-39)
L-Ironstone Type E stemmed
(91-37-252)
M-Jasper Type B stemmed
(91-37-411)
N-Jasper Type D stemmed
(91-37C-845)
O-Jasper Type B stemmed
(91-37C-233)
P-Argillite Lehigh/Koens-Crispin Broadspear
(91-37-165)
Q-Rhyolite Lehigh/Koens-Crispin Broadspear
(91-37-608)
R-Jasper Susquehanna Broadspear
(91-37B-396)
S-Jasper Susquehanna Broadspear
(91-37C-867)
T-Jasper Fishtail
(91-37A-32)
U-Chert Teardrop
(91-37S-107)
V-Jasper Teardrop
(91-37S-49)
W-Jasper Teardrop
(91-37S-72)

Woodland II (A.D. 1000-A.D. 1600)
X-Jasper Triangle
(91-37C-356)
Y-Chert Triangle
(91-37B-14)
Z-Jasper Triangle
(91-37B-272)
AA-Jasper Triangle
(91-37E-1)
BB-Jasper Triangle
(91-37C-780)

FIGURE 60

Stemmed Point Types

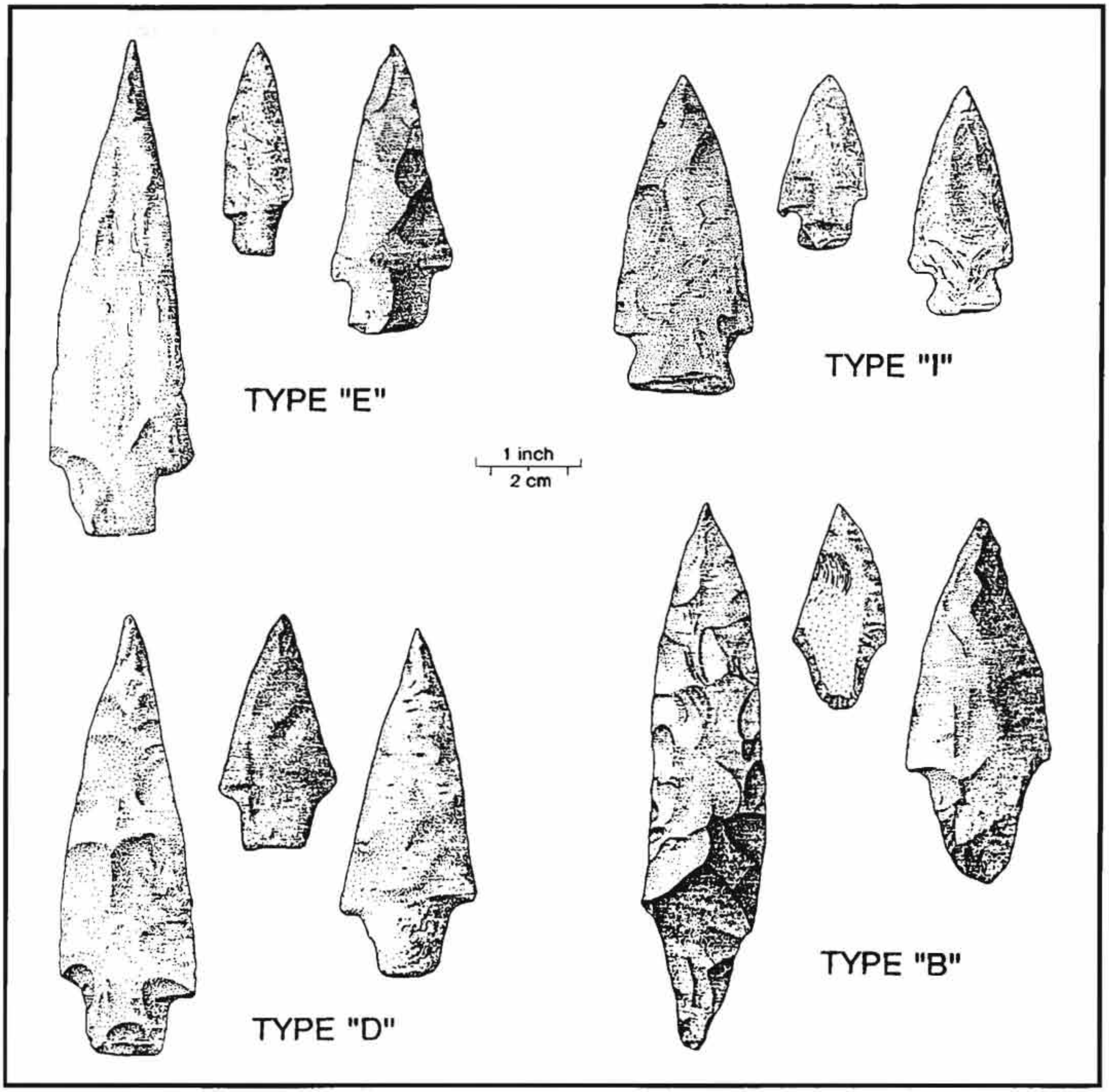


TABLE 17

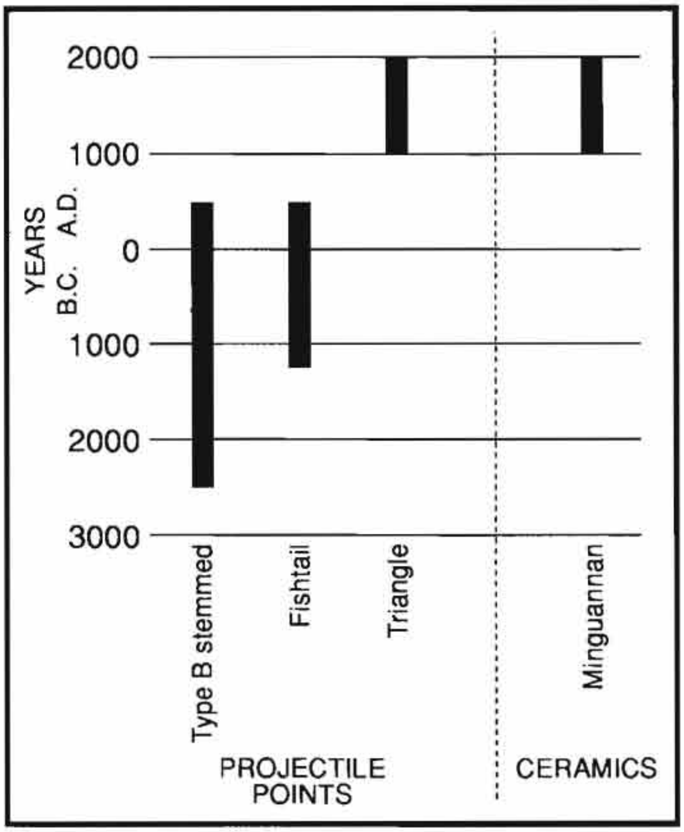
Diagnostic Ceramic Types from the Pollack Site

CERAMIC TYPE*	DATES*	AREAS**			
		A	B	C	Woods
Wolfe Neck	700 BC - 400 BC			X	
Mockley	AD 100 - AD 500			X	
Hell Island	AD 600 - AD 1000		X	X	X
Townsend	AD 1000 - AD 1600		X	X	
Minguannan	AD 1000 - AD 1600	X	X	X	X
Killens	AD 1000 - AD 1600		X	X	X

* Source for type descriptions and dates is Custer 1989: 166-176.
** No diagnostic ceramics were found in Areas D, E, F, or G.

FIGURE 61

Date Ranges - Area A



Ceramics. No diagnostic ceramics were recovered from plow zone units in Area A; however, two features (A1 and A2) did yield diagnostic Minguannan ceramics of the Woodland II Period. No other diagnostic ceramics were found in this area. Table 17 notes the dates associated with all of the types of ceramics found in all areas of the Pollack Site and Figure 61 notes the date range of the Minguannan ceramics in relation to the date ranges of the diagnostic projectile points.

In general, the diagnostic artifacts from Area A suggest that the occupations of this area occurred during the Woodland Period. There are no signs of any earlier occupations, and the presence of Type B stemmed points would indicate that the Woodland I occupation probably post-dates 2000 B.C. during the end of the Clyde Farm Complex. Although the sample is very small, it can be noted that the majority of the diagnostic artifacts date from the Woodland II time period and provide a tentative indication that the most intensive use of Area A occurred at that time. However, the small number of dated features does not allow the identification of any specific areas of occupation during limited time periods and it is impossible to address the issue of identification of individual occupations in Area A.

Plow Zone Artifact Distributions

Figure 62 shows the distribution of total artifacts based on the excavated plow zone units in Area A. The highest artifact densities are seen on the eastern edge of Area A and do not correspond with any zones of high feature densities (Figure 51). In general, the plow zone artifact distribution does not reflect the distribution of features. Features are spread throughout Area A, especially south of the N40 grid line, whereas artifacts are concentrated along the area's eastern edge. The eastern edge of Area A is at the foot of a gentle slope that extends east from grid line W700 across the entire area. There is evidence of substantial erosion in Area A including the exposure of Pleistocene gravels in the plow zone and truncated soil profiles, as was noted earlier. The artifact concentrations on the area's eastern edge may be a result of that erosion.

Figure 63 shows the distribution of debitage and, as might be expected, the debitage distribution is the same as the total artifact distribution because debitage is the most numerous type of artifact. Figures 64 and 65 show the distribution of fire-cracked rock by count and weight. Some of the concentrations are on the eastern edge of Area A with the other artifacts; but, one concentration is toward the middle of the area in the vicinity of grid point N50 W620. This concentration of fire-cracked rock is not associated with either features or other artifacts. The concentration could represent a hearth or processing area that was disturbed by plowing and erosion. The small number of fire-cracked rock in the concentration makes its functional interpretation less than certain, however. No other artifact distributions are noted because of the low artifact counts.

In sum, for the most part, the distribution of artifacts in the plow zone of Area A does not match the distribution of sub-surface features. Erosion of the area from west to east seems to have been the main determinant of the plow zone artifact distributions.

Analysis of Feature Functions

It is difficult to identify the functions of all prehistoric soil pit features. The functions of some pit features are apparent through the application of ethnographic analogies or from artifacts and ecofacts found in the pits. However, determination of the functions of other types are more problematic. This section of the report reviews the inferred functions of the varied types of pit features in Area A of the Pollack Site and the inferences are applicable to all other areas of the site as well.

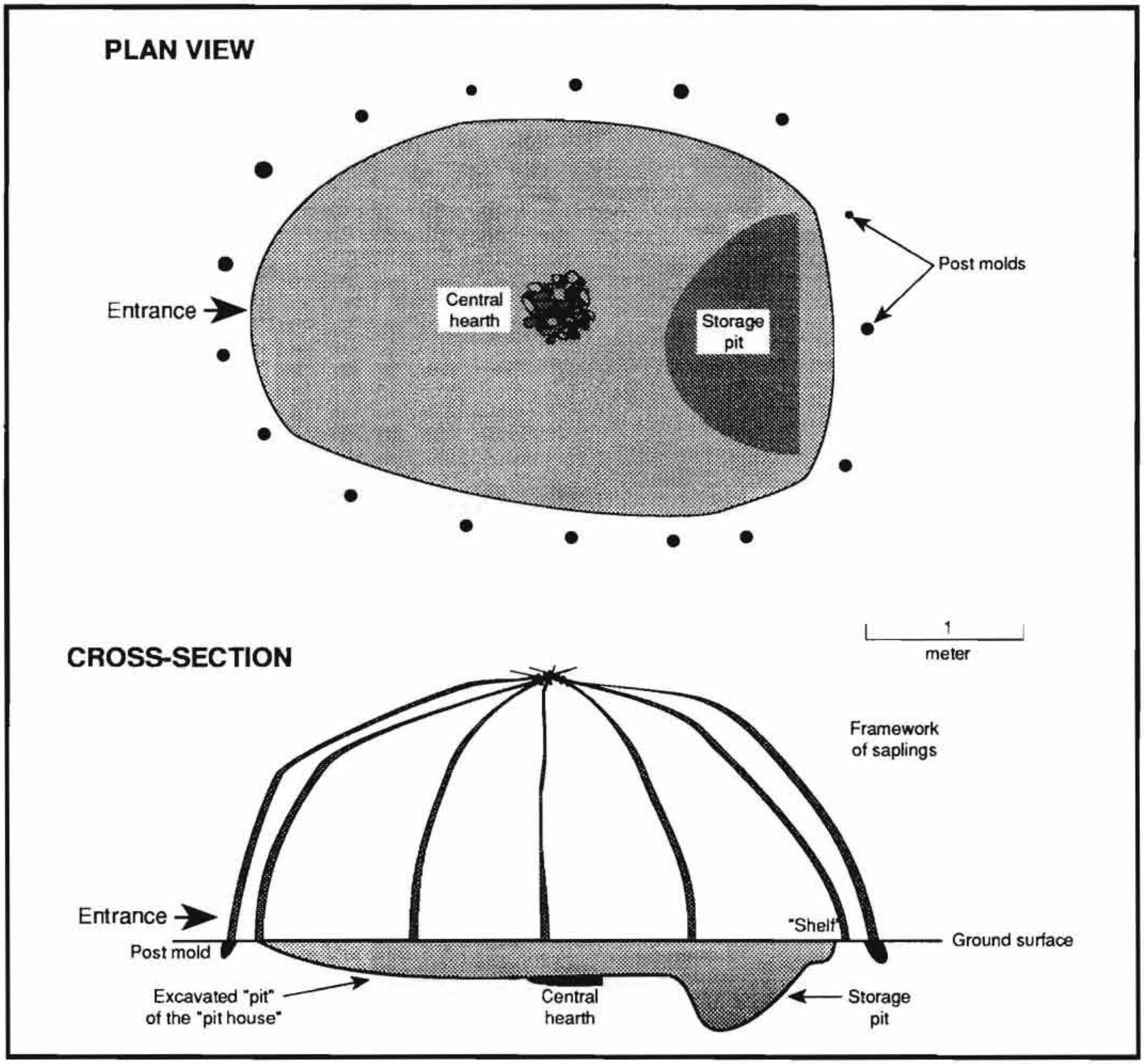
The classification of feature types applied earlier in this report noted possible functions of the varied feature types (Figure 28). Types 1, 2, and 2A are presumed to represent varied portions of prehistoric pit houses. This function was identified based on an especially well-preserved house feature at the Snapp Site (Custer and Silber 1994) and other pit houses found in the southern portion of the state (Artusy and Griffith 1975). Feature 153 at the Snapp Site (Custer and Silber 1994) is the most completely preserved example of a prehistoric pit house found in northern Delaware. Figure 66 and Plate 19 show hypothetical reconstructions of prehistoric pit houses based on Feature 153 and various ethnographic examples from the Middle Atlantic and Northeast (e.g., Bock 1978:113; Conkey, Boissevain, and Goddard 1978:183; Feest 1978a:274, 278; Callender 1978:649, 651; see also discussions in Callahan 1985, 1986 and Thurman 1986).

The typical house is centered upon an excavated pit "basement" up to 3.0 meters long and 2.5 meters wide. The depth of the pit "basement" when identified archaeologically, varies between 0.25 meters and 0.5 meters. However, it is important to note that these features cannot be identified at archaeological sites until <u>after</u> the overlying plow zone soils are removed and these plow zone soils can be between 0.3 meters and 0.5 meters deep. Therefore, these pit "basements" were deeper and larger in plan view (at the time of prehistoric construction) than we now see them.

Within the pit "basement" was a deeper D-shaped storage pit that can be envisioned as a "sub-basement." Charred plant remains are often found in these pits along with flintknapping debris. These artifacts and ecofacts would indicate that the "sub-basement" functioned first as a storage pit and later as a refuse disposal pit. Little stratification is evident in the fill of these pits indicating that they were used, and then filled with refuse, over a rather short period of time. The very fact that these features show signs of use as both storage and refuse disposal facilities implies a short-term use of the structure.

One gets the impression that food resources were stored in the "sub-basement" in the late summer and fall when most local plant food resources are most readily available (see Thomas et al. 1975 for a review of the seasonal variability of food productivity in prehistoric Delaware environments).

FIGURE 66
Pit House Architecture



These resources were then consumed by the house's inhabitants during times of low natural environmental productivity, probably the cold-weather months (Thomas et al. 1975). The use of the pits as refuse disposal facilities strongly implies that the house's inhabitants did not plan to reuse them for food storage. Consequently, the house and associated pit features were probably abandoned prior to the need for a new storage facility during the following winter. In this scenario, the pit houses would represent cold-weather dwellings occupied for a single year.

In some cases, interior hearths are present within the houses. The presence of interior hearths is often seen as a sign of cold-weather occupations (Cordell 1984) and adds further support to the contention that these houses were cold-weather dwellings. However, not all houses have interior hearths, even though they do have interior storage pit features. The houses without interior hearths may not have been inhabited during cold-weather months, but the presence of the storage pits implies otherwise. It is also possible that the personal preferences of the houses' inhabitants determined whether or not hearths were placed inside the houses.

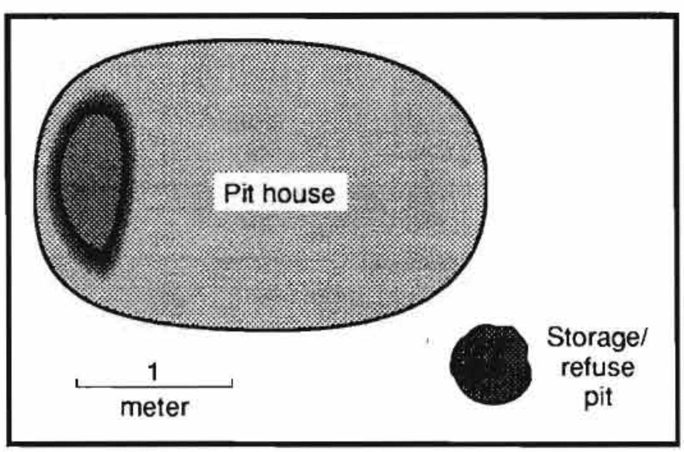
The framework superstructure of the house cannot be determined directly from the archaeological evidence except for post mold stains located around the "basement" pit feature (Figure 66). No prehistoric post molds were found at the Pollack Site, but at the Snapp Site the posts are set outside the "basement" creating a small shelf around the perimeter of the interior of the house. The post mold stains are angled and indicate that the posts leaned toward the middle of the structure. Almost certainly, the roofs of the houses with interior hearths had holes in them to allow smoke to escape. Ethnohistoric data (see review in Callahan 1985) indicate that structures were covered with either thatch, woven mats, or bark. These materials were used both individually and in combinations. The presence of large pieces of bark in a feature at the adjacent Leipsic Site (Custer, Riley, and Mellin 1994), dating to ca. A.D. 778 - A.D. 114, indicates that the houses would have been covered with bark. It is also possible that these bark sheets were part of a covering of the storage/refuse pit.

The storage pits are almost always located so that their long axis is perpendicular to the long axis of the "basement." Because it would be somewhat inconvenient to enter the structure over the storage pit, even if it had a covering, and because food storage is rarely displayed in the front of houses (see discussion in Hart 1993:95-96), the entrances to the houses were probably located on the short end of the oval structures opposite the storage pits. A similar arrangement of entrances and storage facilities is noted for late prehistoric Monogahela (Hart 1993) and Shenks Ferry (Custer, Hoseth, Cheshaek, Guttman, and Iplenski 1993) houses.

The house structures illustrated in Figure 66 and Plate 19 are idealized versions of prehistoric houses recognized in archaeological excavations. The preservation of Feature 153 at the Snapp Site is not commonly encountered in the archaeological record and provides a guide to interpreting other less well preserved house features. For example, feature Types 2 and 2A are presumed to be portions of the "basement" pits of houses. The post molds accompanying these "basements" are no longer present and were destroyed by erosion or leaching of the organic material that gives them their distinctive darker color (Figure 29). It should be noted that the preservation of the post molds in Feature 153 at the Snapp Site is quite rare in the sandy soils of Delaware. Feature Type 1 is presumed to be the remnant stain of the "sub-basement" and is identified as such based on its distinctive "D" shape.

FIGURE 67

Pollack Household Cluster



Feature Types 3, 4, and 5 are identified as pits that were first used as either processing or storage pits outside of houses. Some of these pit features have charcoal and fire-cracked rock associated with them and may have functioned as earth ovens. Earth ovens were used to roast foods by burying heated rocks along with the foods to be cooked. Combined with the pit house features, these features comprise a "household cluster," as defined by Flannery and Winter (1976) to consist of a house, usually with an interior storage pit, and associated external pits that served as storage or processing facilities (Figure 67).

Analysis of Feature Distributions

Only two of the features in Area A can be assigned to any particular time periods and, therefore, feature distributions cannot be assessed in terms of individual occupations. Nevertheless, all of these features were clearly produced by the prehistoric inhabitants of Area A. The inability to determine their ages complicates the discussion of their cultural meaning; however, some insights can be gleaned from observing their distributions.

For the most part, prehistoric features are spread across all of Area A with the largest number clustered between grid lines S40 and N40 (Figure 51). No particular section of Area A seems to have been avoided for prehistoric settlement or excavation of pits, except for the northeast corner of the area.

From the total of 105 features identified in Area A, 96 of them (91%) are associated with prehistoric houses. Figure 51 shows the distribution of houses and in the central section of Area A there is considerable overlap of the houses associated with the "sub-basement" pit features. The feature overlap suggests that the site was repeatedly occupied by small groups over a long period of time, rather than by a large group over a short period of time. The site clearly shows no planned community such as those seen at some sites in the Middle Atlantic region (Kinsey and Graybill 1971; Custer, Hoseth, Cheshaek, Guttman, and Iplenski 1993). Unfortunately, the very low incidence of dated artifacts does not allow any assessment of settlement intensity over time.

Analysis of Lithic Technologies

The interpretations of lithic technologies specific to Area A are presented below. Additional analyses of topics in lithic technologies pertaining to all site areas are discussed in a separate section later in the report. Table 18 shows a summary artifact catalog of the lithic artifacts from Area A and notes the raw materials used and the number of artifacts with cortex present. The presence of cortex is an indicator of utilization of secondary cobble and pebble resources as opposed to primary outcrop raw

TABLE 18

Total Lithic Artifact Assemblage and Raw Materials - Area A

	RAW MATERIALS							
TOOL TYPE	Quartzite	Quartz	Chert	Jasper	Rhyolite	Argillite	Ironstone	TOTAL
Flakes	18 (9)	132 (62)	327 (95)	545 (220)	3 (0)	3 (0)	1 (0)	1029 (386)
Utilized flakes	0	0	13 (7)	16 (9)	1 (0)	0	0	30 (16)
Flake tools	1 (1)	8 (6)	16 (12)	38 (28)	0	0	0	63 (47)
Points	0	0	4 (0)	5 (0)	0	1 (0)	0	10 (0)
Early stage biface rejects	0	1 (1)	2 (2)	0	0	0	0	3 (3)
Late stage biface rejects	0	0	1	0	0	0	0	1 (0)
Other bifaces and fragments	0	0	2 (0)	3 (0)	0	0	0	5 (0)
Miscellaneous stone tools	0	1 (0)	0	3 (3)	0	0	0	4 (3)
Cores	0	1 (1)	2 (1)	5 (4)	0	0	0	8 (6)
TOTAL	19 (10)	143 (70)	367 (117)	615 (264)	4 (0)	4 (0)	1 (0)	1153 (461)

TABLE 19

Total Lithic Artifact Assemblage - Cortex Percentage - Area A

	RAW MATERIALS							
TOOL TYPE	Quartzite	Quartz	Chert	Jasper	Rhyolite	Argillite	Ironstone	TOTAL
Flakes	50	47	29	40	0	0	0	37
Utilized flakes	--	--	54	56	0	--	--	53
Flake tools	100	75	75	74	--	--	--	75
Points	--	--	0	0	--	0	--	0
Early stage biface rejects	--	100	100	--	--	--	--	100
Late stage biface rejects	--	--	0	--	--	--	--	0
Other bifaces and fragments	--	--	0	0	--	--	--	0
Miscellaneous stone tools	--	0	--	100	--	--	--	75
Cores	0	100	50	80	--	--	--	75
TOTAL	53	49	32	43	0	0	0	40

materials (Custer and Galasso 1980). Table 19 is derived from Table 18 and shows the percentage of artifacts with cortex for each raw material. Table 20 is also derived from Table 18 and shows the raw material percentages used for each artifact type.

Table 19 shows that in the overall assemblage from Area A, cortex is present on approximately 40 percent of the artifacts. When individual artifact types are considered, much higher cortex percentages are seen for flake tools, early stage bifaces, miscellaneous tools, and cores. Utilized flakes have a cortex percentage closer to that for flakes. The different cortex percentages may indicate that the prehistoric inhabitants of Area A were using local secondary cobble resources to make a series of tools to replace damaged tools that they had brought with them to the Pollack Site. The lower cortex percentages may also indicate that some primary lithic materials were brought with them to the site as part of a curated tool kit. While living in Area A, the primary materials may have been reduced and produced the debitage with no cortex.

It is also possible that the lower percentages of cortex are due to the fact that reduction and flaking of cobbles and pebbles does produce debitage with no cortex. Splitting of cobbles and pebbles, and flaking of the outer surfaces removes flakes with cortex, but flaking of inner portions of the cobble produces flakes with no cortex. Thus, the lower percentages of flakes with cortex in Area A may simply reflect intensive use of secondary materials, and the natural production of flakes with and without cortex in cobble reduction, rather than any special trends in raw material use by the site's inhabitants.

In general, cortex percentages are very similar among the four main raw material types present (quartzite, quartz, chert, and jasper). These similarities would indicate that there was no differential use of secondary versus primary lithic sources among the major raw materials present in Area A.

Table 20 shows the varied use of lithic raw materials among the various artifact types, and jasper and chert are the most commonly used stones. Jasper is the most commonly used material for all artifact types except for bifaces. Only very small amounts of quartzite, rhyolite, argillite, and ironstone

TABLE 20

Total Lithic Artifact Assemblage - Raw Material Percentage by Tool Types - Area A

				RAW MATERIALS			
TOOL TYPE	Quartzite	Quartz	Chert	Jasper	Rhyolite	Argillite	Ironstone
Flakes	2	13	31	52	<1	<1	<1
Utilized flakes	0	0	43	53	3	0	0
Flake tools	2	13	25	60	0	0	0
Points	0	0	40	50	0	10	0
Early stage biface rejects	0	33	67	0	0	0	0
Late stage biface rejects	0	0	100	0	0	0	0
Other bifaces and fragments	0	0	40	60	0	0	0
Miscellaneous stone tools	0	25	0	75	0	0	0
Cores	0	12	24	63	0	0	0
TOTAL	2	12	32	53	<1	<1	<1

are present. Quartz is used less commonly than the cryptocrystalline materials, but more commonly than the rare lithic types. Because of the relatively high percentage of cortex in the artifact assemblage, most of the cryptocrystalline materials, and the quartz, were probably derived from local cobble and pebble deposits along the Leipsic River and on the surface of the Pollack Site. It is difficult to know what cobble and pebble deposits were exposed for use when Area A was inhabited during prehistoric times, but a cursory survey of the modern cobble and pebble deposits showed that numerous cryptocrystalline cobbles suitable for stone tool manufacture were present. Thus, local cobble deposits in and around Area A were the most likely sources of raw materials for the site's inhabitants.

TABLE 21

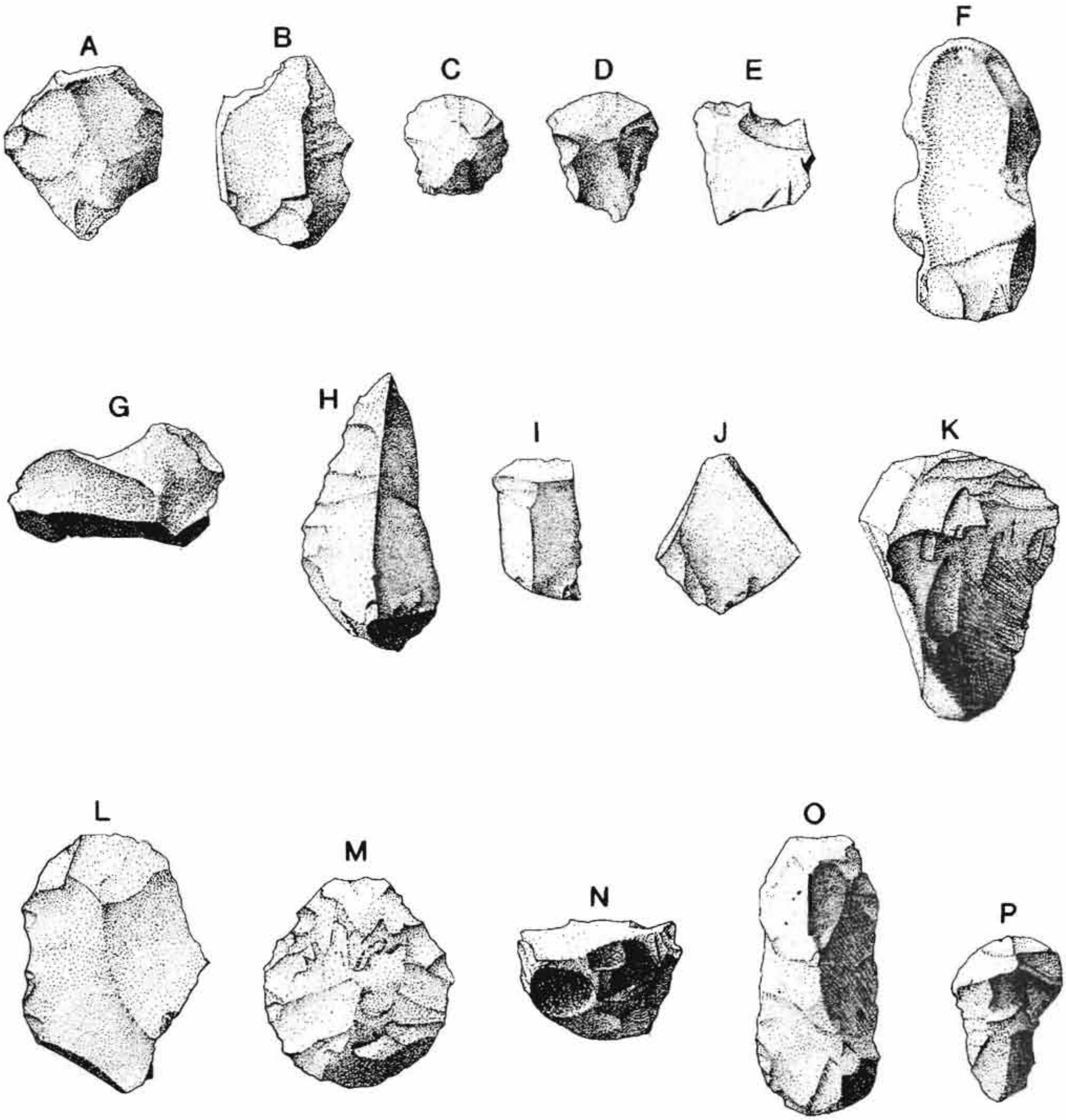
Tool Types - Area A

Points/knives	10
Late stage bifaces	1
Early stage bifaces	3
Drills	0
Concave/biconcave scrapers	1
Bifacial side scrapers	0
Unifacial side scrapers	2
Trianguloid end scrapers	1
Slug-shaped unifaces	0
Wedges	0
Primary cores	2
Secondary cores	6
Denticulates	0
Gravers	1
Regular utilized flakes	30
Blade-like utilized flakes	0
Total	57

Table 21 shows the varied tool types found in Area A. An example of a compound scraper with scraping edges on its end and side is shown in Figure 68a along with a graver (Figure 68b). The categories used in Table 21 are derived from the work of Lowery and Custer (1990) and will be used later in this report for systematic comparisons among the different areas of the Pollack Site and for comparisons with other sites. Not many examples of the varied tool types are present and many tool types are completely missing from the assemblage. The low number of tools may be due to the overall low artifact densities from this area of the site. However, the total lithic assemblage does include more than 1000 artifacts, and it would not be unreasonable to expect more formal tool types, such as the scrapers, other flake tools, and bifaces, to be present.

FIGURE 68

Sample Lithic Tools

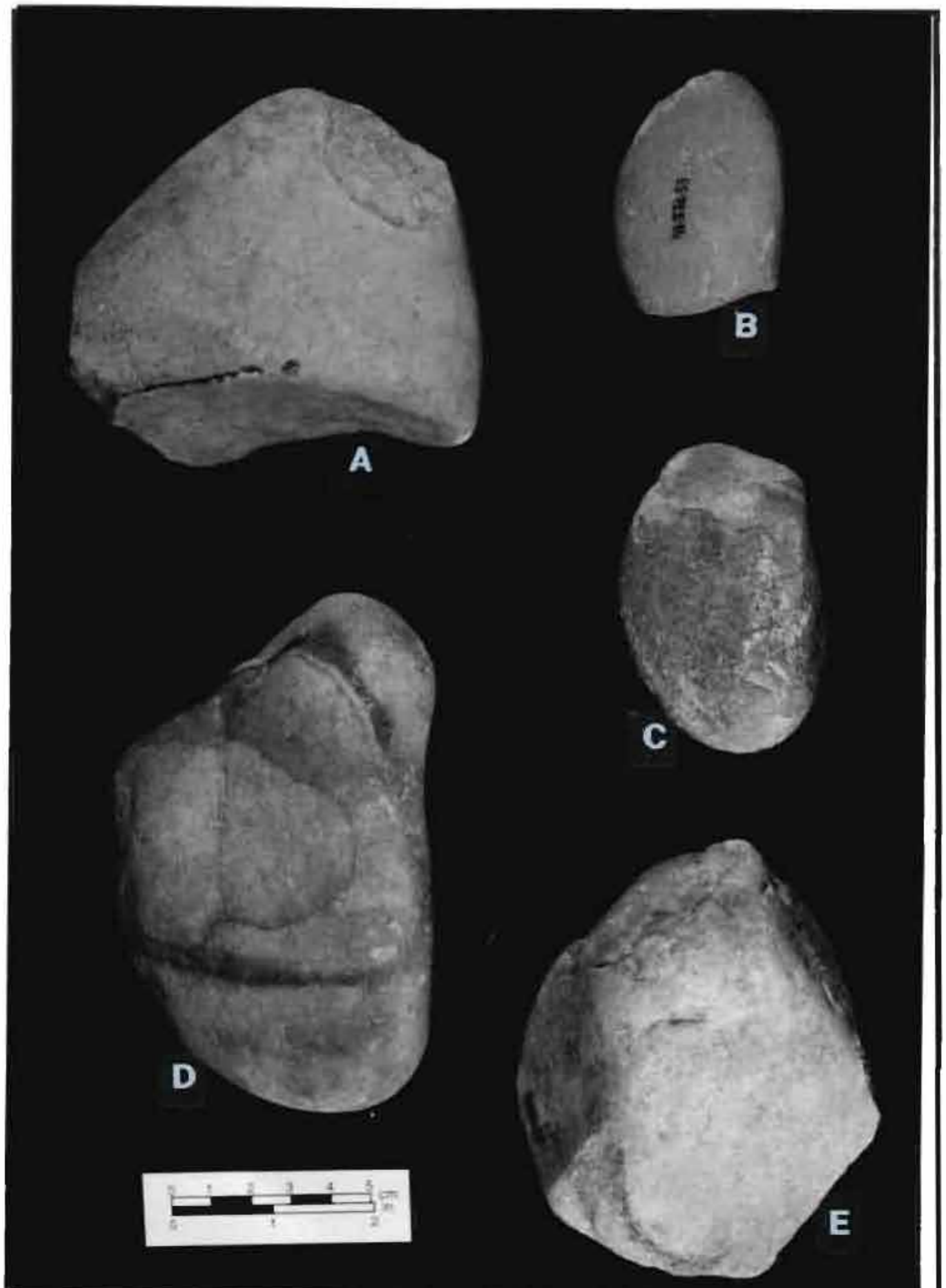


A: Compound scraper (91-37A-43)
B: Graver (91-37A-31)
C: Trianguloid end scraper (91-37-106)
D: Trianguloid end scraper (91-37B-169)
E: Denticulate (91-37B-191)
F: Wedge (91-37B-10)
G: Concave/biconcave scraper (91-37B-6)
H: Bifacial side scraper (91-37B-175)
I: Blade core (91-37C-308)
J: Wedge (91-37C-497)
K: End scraper (91-37C-2)
L: End scraper (91-37C-888)
M: Discoidal (91-37C-921)
N: Micro-core (91-37S-52)
O: Bifacial side scraper (91-37S-92)
P: Trianguloid end scraper (91-37S-104)

1 inch
2 centimeters

PLATE 25

Hammerstones from Area A



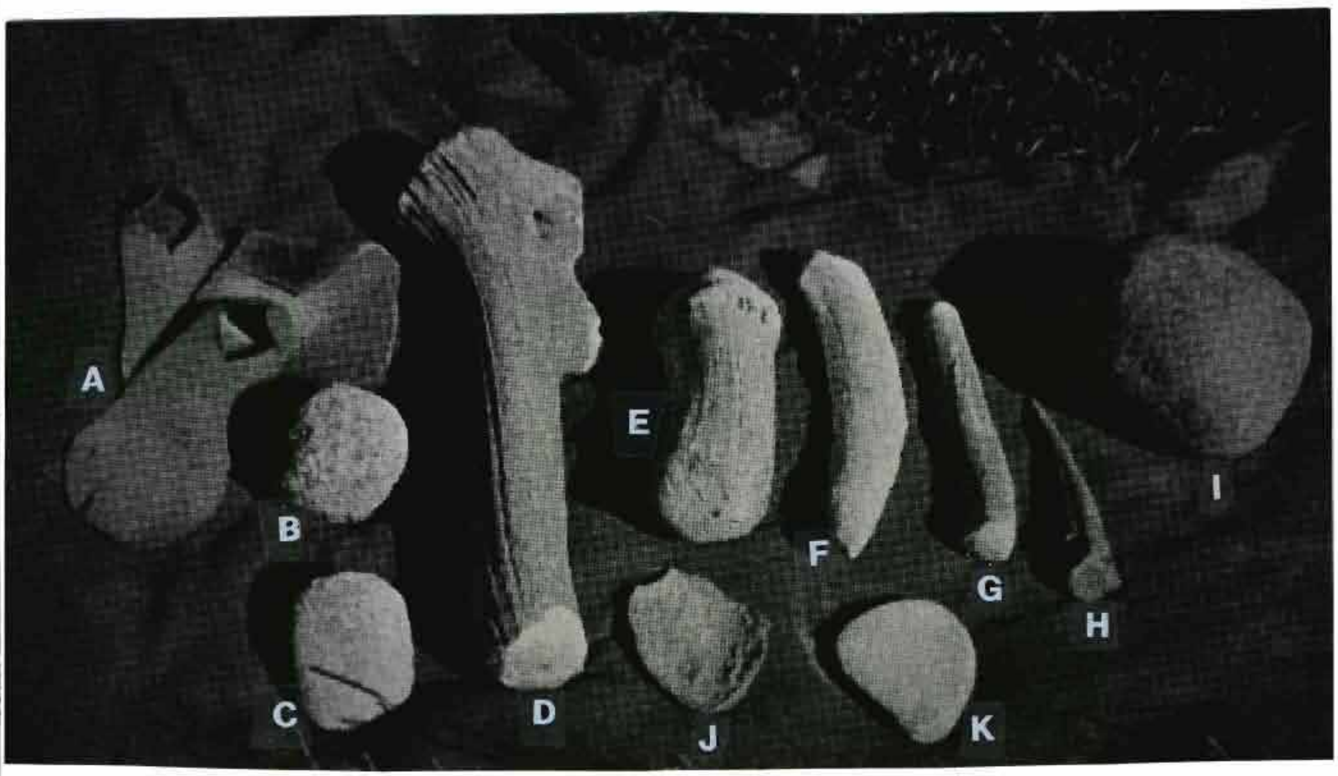
A - 91-37A-86 B - 91-37A-111 C - 91-37A-53 D - 91-37A-20 E - 91-37A-82

A total of only five specialized flake tools is present, but there are 30 general utilized flakes that cannot be placed into the usual formal tool categories. These data would tend to indicate that generalized flake tools, probably derived from cobble and pebble reduction, were used more commonly than formal flake tools designed to fit specific functions. Because the chronological data suggest that the occupation of the site occurred mainly during the Woodland Period, particularly during the Woodland II Period, this technological trend occurred relatively late in Delaware's prehistory. Similar technological trends have been observed at other late prehistoric sites in the region (Custer, Hoseth, Cheshaek, Guttman, and Iplenski 1993).

Five hammerstones were also found in Area A (Plate 25) and can be placed into two main size categories. Two of the hammerstones weighed approximately 200 grams and were rather small. The remaining three hammerstones weighed more approximately 1.25 kilograms and were rather large. The varied sizes of the hammerstones match the sizes of hammerstones used by modern flintknappers (Plate 26). The presence of the different sizes of hammerstones indicate that different stone tool manufacturing activities took place with the larger hammerstones being used for initial stages of tool production, and the smaller ones being used for later stages. The large hammerstones would be particularly useful for splitting cobbles and pebbles (see discussion in Geier 1990).

PLATE 26

Modern Flintknapping Tool Kit



A - Leather Pads for Hand Protection B, C, I - Hammerstones D, E, F - Antler Billets G, H - Antler Pressure Flakers J, K - Stone Abraders