THE TARLTON SITE -- CA-SMA-248

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ABSTRACT

This paper presents a study of the Tarlton site, CA-SMa-248, as it relates to its neighboring deposits--the Hiller Mound and University Village. The Tarlton site is a rich deposit on the bayshore of Menlo Park in close spatial proximity to the two other archeological sites. Radiometric dates are used to show the temporal relationships between the deposits which lead to tentative conclusions and futher research directions about the Tarlton site.

Data from a small excavation of the Tarlton site demonstrate that the site is an extremely rich midden deposit with significant depth--much more than was anticipated on the basis of the surface study alone. The contents are noted as being highly comparable to the faunal and arifact types and frequencies of the neighboring Hiller Mound site. The Tarlton site is an excellent example of a Middle Period deposit in a site complex with Early and Late sister sites.

SITE LOCATION AND DISCOVERY

The Tarlton site is situated near the shoreline on the southwest portion of San Francisco Bay in Menlo Park, San Mateo County (Figure 1). On the U.S. Geological Survey map, Palo Alto 7.5, the Universal Transverse Mercator Grid location is 576000/4148400. The deposit itself is most visible to the south of the Southern Pacific Railroad track, although careful surface reconnaissance indicates that the site extends on the north side of the track as well. A small drainage trench parallel to the railroad tracks has cut through the non-cultural overburden on this portion of the site and unearthed a small amount of midden which is visible in the backdirt off the side of the ditch. Elevation at the site is approximately five feet above sea level.

ARCHEOLOGICAL BACKGROUND

The site was found originally in 1984 by R. Cartier and recorded for trinomial designation with the State at that time. In the Spring of 1985, the Archeological Field Methods class at De Anza College, taught by R. Cartier, visited the site and began to intensively resurvey it as part of a class project. After a test unit was excavated at the site, a des-


SAN FRANCISCO-MONTEREY AREA
N
Scale in Miles
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10
Scale in Kilometers
STUDY AREA
SAN FRANCISCO
Daly City
Pacifica
South San Francisco
San Bruno
San Francisco International Airport
Millbrae
Burlingame
Hillsborough
San Mateo
Foster City
Belmont
San Carlos
Redwood City
Woodside
Atherton
Menlo Pk.
Palo Alto
Portola Valley
Half Moon Bay
El Granada
Princeton
Moss Beach
Montara
Richmond
San Pablo
Pinole
El Cerrito
Albany
Berkeley
Emeryville
Piedmont
Oakland
Alameda
San Leandro
San Lorenzo
Mt. Eden
Union City
Fremont
Newark
Sausalito
Tiburon
Belvedere
Mill Valley
Larkspur
Corte Madera
San Quentin
San Rafael
Santa Venetia
San Anselmo
Fairfax
Ross
Kentfield
Woodacre
Ignacio
Bolinas
Stinson Beach
Colma
Brisbane

Figure 1.

cription was assembled and some constituent comparisons were made with the adjacent sites: University Village and the Hiller Mound.

As background to the archeology in the local region of the Tarlton site, a brief review is given of prior studies of major importance in the region of this study. Those sites which are spatially closest to the Tarlton site are University Village and the Hiller Mound (Figure 2). Excavation near the bayshore in the general vicinity of the Tarlton site was carried out in 1951 and 1952 by B. A. Gerow who recovered an important assemblage of early materials at the University Village site, CA-SMa-77. Radiometric dating and the analysis of grave-lot data indicated that University Village was an early site, approximately 3000 to 3200 B.P., predating the Middle Horizon (Gerow with Force 1968; Helley 1987). However, the characteristics of the early culture at University Village contrasted markedly with the data from early sites in the Sacramento Delta. Gerow concluded that the data from CA-SMa-77 and the lower component of CA-Ala-307 pointed to the existence of an Early Bay Culture distinct from that reported from the Delta. It was further postulated that the two distinct and separate cultures or traditions merged after 1500 to 1000 B.C. forming a convergence in trends in later prehistoric times (Gerow with Force 1968).

Another excavation by B. A. Gerow near the Tarlton site was carried out approximately one-half mile to the west of the Tarlton site at the Hiller Mound. Three seasons of excavation at the Hiller Mound (CA-SMa-160) were carried out in the 1950s, resulting in the hand-excavation of up to thirty ten-by-ten foot test units down to a depth of approximately four feet. The site is described by Gerow as a rich deposit of prehistoric artifacts, burials, and other midden contents. Materials recovered are being studied at the Stanford Museum pending final report.

In 1978, additional study of the Hiller Mound was made by R. Cartier, who recorded a trinomial designation, mapped the site boundaries, excavated midden samples, and analyzed various portions of a newly recovered assemblage (Cartier 1978). Three one-by-one meter hand-excavated units were dug by Cartier with twenty-two of twenty-seven 10 cm. levels wet-screened in 1/4, 1/8, and 1/16 inch mesh. Eighty-six trenches were mechanically excavated around the mound to determine subsurface boundaries. The faunal component at the Hiller Mound is very rich and highly similar in shell frequency to that of the Tarlton site. Radiometric study of the Hiller deposit produced six dates ranging between 660 and 1660 B.P. (Cartier 1978).

Together, the University Village site, the Hiller Mound, and the Tarlton site seem to form a three-site complex for archeological study. There appears to be an environmental

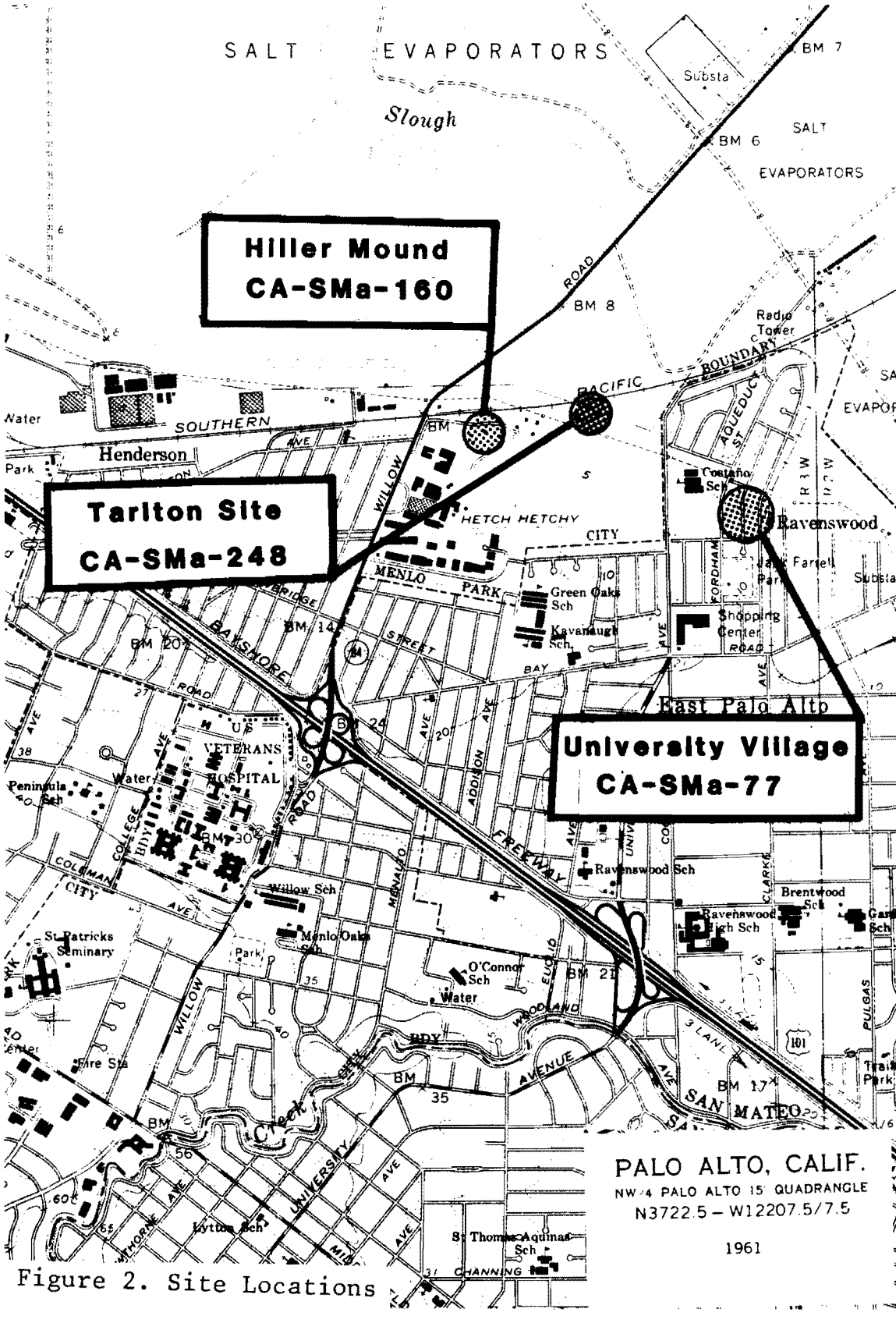


Figure 2. Site Locations

continuity among the sites with their bay shore setting. All of the sites are within a mile radius. Furthermore, there may be a chronological or cultural relationship which is addressed in this study.

RESEARCH HYPOTHESES

Three general research problems are presented in this study of the Tarlton site. All three of the problems are related to intersite relationships of the Tarlton site with the two neighboring deposits. The existing knowledge of the deposits at University Village and the Hiller Mound allows inquiry into diachronic and spatial topics. The clustering of the three sites within one mile radius on the bay shore points to possible physical, chronological, and cultural relationships.

1) Do the data from the sites indicate in any way that they were on a previous creek channel?

All three sites are situated away from current fresh water sources but were possibly supplied with water by San Francisquito Creek in earlier alignments of the water channel. It is questioned if the three sites may be located at places where the Creek once existed, as it progressively altered its course.

2) How does the age of CA-SMa-248 compare with the radiocarbon dates of University Village and the Hiller Mound?

The presence of the three sites may indicate sequential chronological relocation of a prehistoric population over time. This may have been related to either fresh water acquisition as noted in Question #1 or other factors. The chronology is known for CA-SMa-77 and CA-SMa-160. Radiocarbon dating is a methodology which could provide data with which to assign an absolute date to CA-SMa-248 and thus provide a comparison to the two neighboring deposits.

3) Could the Tarlton site have another type of relationship to University Village or the Hiller Mound rather than sequential locations of habitation?

Perhaps the three deposits under discussion do not represent three different and sequential habitation sites. Could the Tarlton site be a loci of functional activity coeval to the use of either University Village or the Hiller Mound? One such possibility may be that the Tarlton site and University Village are related, for it is noted in the report on University Village that this site with its many burials had no well developed midden (Gerow with Force 1968). Could University Village have been the area used as a cemetery for inhabitants of the Tarlton site? Radiometric dating could test this possibility.

Once the diachronic nature of the Tarlton site is established, further avenues of research may become apparent when considering the inter-relationship of the three sites under discussion.

EXCAVATION

The excavation of a single one-by-one meter unit was completed at the Tarlton site and more detailed mapping of the site was accomplished by the class of twenty students, directed by Cartier and assited by J. Carrico. All equipment was carried from the nearest road and shovels were deployed to clear vegetation to stake out Unit #1. The unit datum was positioned in the northwest corner of the unit and measured off the site datum--a switch box on the Southern Pacific Railroad tracks which runs over part of the site (Figure 3). Levels were excavated in 10 cm. increments and screening was done with 1/4" wire mesh shaker screens.

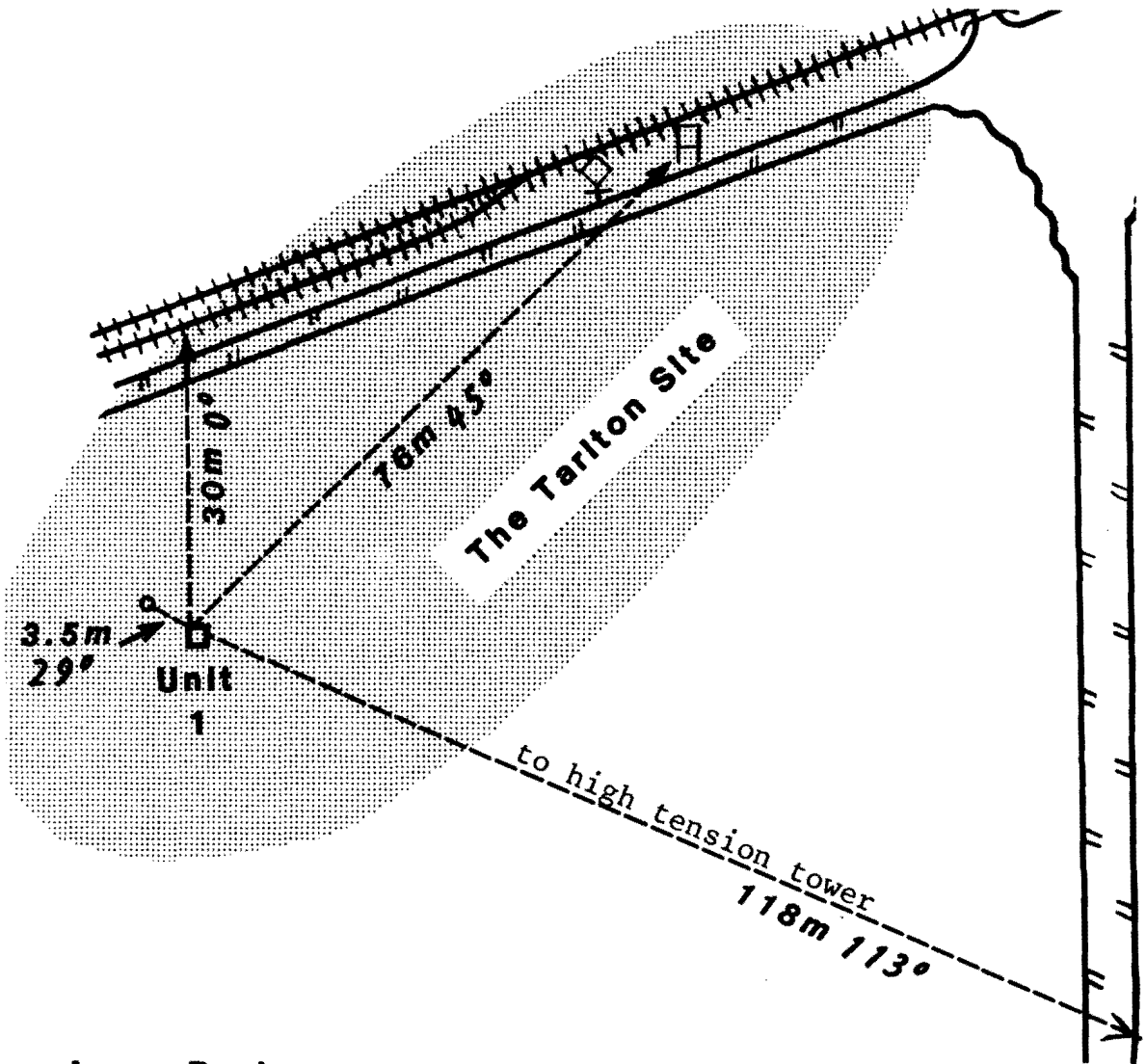
Soil conditions posed a particular problem in that increasing moisture was encountered from the first levels down to standing water at 80 cm. Picks and shovels were used to peel off thin slices of the wet clay and loam. Once in the screen, the soil was difficult to process through the screen. It was apparent that only the larger constituents were being found in the clay and mud. Standing water at 80 cm., together with the liquefied soil at that depth, forced discontinuation of the excavation. Dry screening was judged to be ineffective for recovering the data in these conditions and the excavation was terminated.

A four-inch hand bore auger was used to sample the stratigraphy on the northwest side of Unit 1. Similar stratigraphic findings to those noted in the unit levels were recovered in the auger. Once standing water was reached at 80 cm. the auger samples were continued to a depth of 120 cm. Based on the auger samples between 80-120 cm., it appears that the deposit extends below 120 cm. and is at least as rich in constituents as the levels between 30 and 80 cm. Upon completion of the excavation, the auger boring and unit were filled with backdirt from the excavation.

COMPARISON OF SHELLFISH REMAINS

The Tarlton site is quite comparable in terms of shellfish utilization to the Hiller Mound. However, it is quite different from University Village. These two sites, the nearest to the Tarlton site, will be discussed comparatively.

The Hiller Mound, like the Tarlton site, is a midden deposit, and contains great quantities of shellfish material. As depicted in Figure 3 and Tables 1 and 2, several types of shellfish were recovered at CA-SMa-248. Almost all of the shellfish species found at the Tarlton site are also



o Auger Boring

Water Ditch

Railroad

Signal Flag

Switch Box

MN

Surface indications of burried midden.

0 10 20 Meters

The Tarlton Site
CA-SMa-248
Unit Location Map

Figure 3.

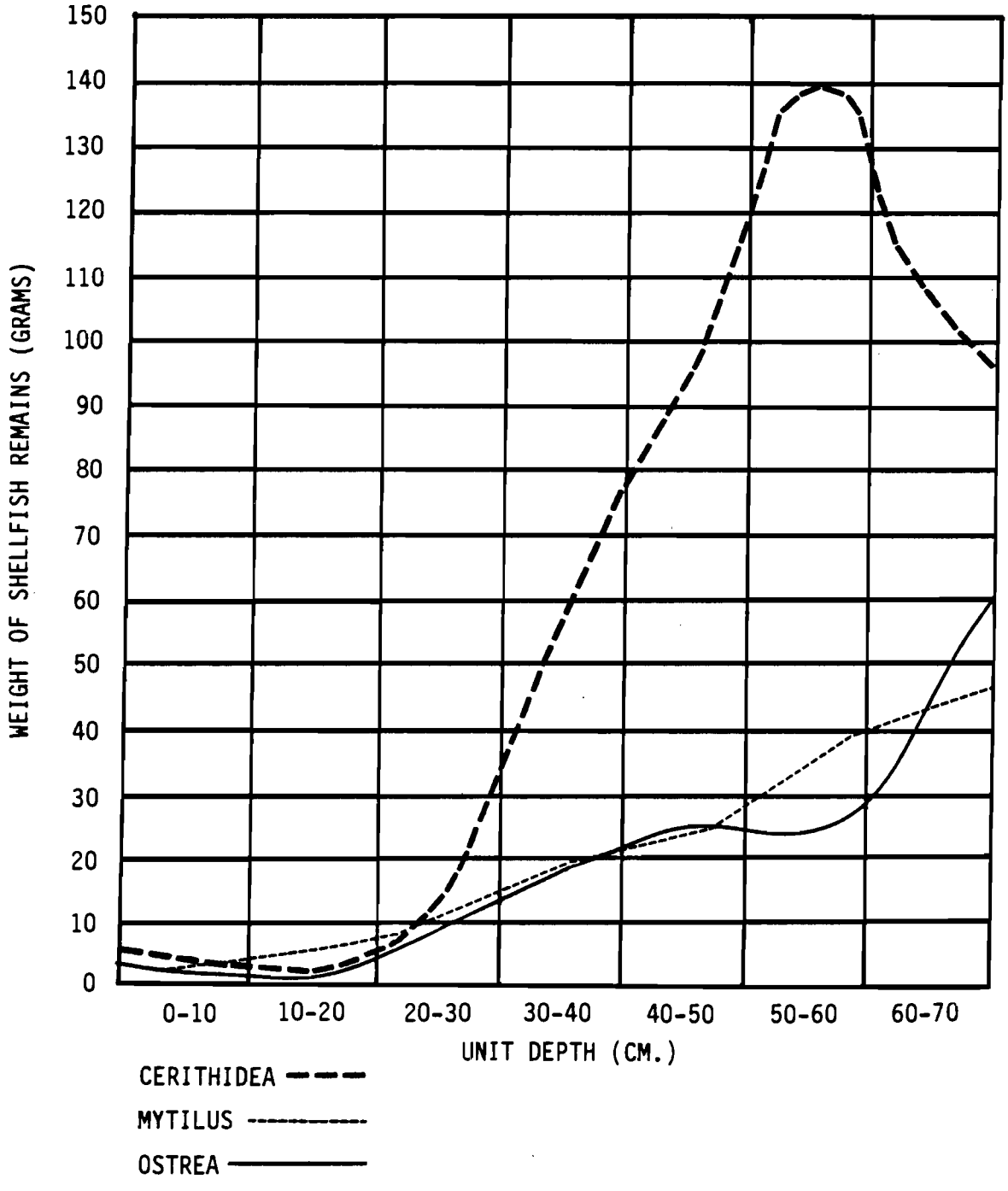


Figure 4. Frequency of Major Shellfish Species

TABLE 1

WET-SCREEN SAMPLE OF SHELLFISH

TABLE: *WET-SCREEN SAMPLE OF SHELLFISH	
SPECIES	WEIGHT (GRAMS)
OSTREA LURIDA CARPENTER	17.2
MYTILUS SP.	37.5
CERITHIDEA CALIFORNICA	24.4
APEXES FROM CERITHIDEA SP.	3.2
BARNEA SUBTRUNCATA	9.1
SMALL GASTROPOD SP.	0.1
CRAB CLAWS	0.2
FISH VERTEBRA (HERRING ?)	0.4
BONE	1.2
RODENT TEETH (GOPHER ?)	0.1
BALANUS SP. (BARNACLE)	**
CHARCOAL	**
PLANT REMAINS	**
UNCLASSIFIED REMAINS	343.0
TOTAL	436.4

* SHELLFISH SPECIES AND OTHER MATERIALS RECOVERED FROM THE 70-80 CM LEVEL (WET-SCREENED WITH 1/16" MESH) SOIL SIZE 2000 CC.

** REMAINS WERE NOTED, BUT NOT WEIGHED

TABLE 2

FREQUENCY OF MINOR SHELLFISH SPECIES

TABLE: FREQUENCY OF MINOR SHELLFISH SPECIES		
LEVEL (CM)	WEIGHT (GRAMS)	
	BARNEA	HELIX
0-10	-0-	0.1
10-20	0.1	-0-
20-30	0.1	-0-
30-40	0.7	2.2
40-50	1.5	0.2
50-60	0.2	0.1
60-70	1.0	0.3

represented at the Hiller Mound. The only exception is the California mussel (Mytilus californianus Conrad). However, since the California mussel is quite hard to differentiate from the Edible mussel, it is possible that it was also used at the Hiller Mound. Another reason to expect the California mussel at the site is that other open-coast species were found at the Hiller Mound. In particular, abalone (Haliotis sp) and the Purple Dwarf Olive were present at the Hiller Mound. This indicates contact with the open coast through either trade or travel. It is possible that these species were traded, as they are highly valued for the manufacturing of shell beads and pendants. If the inhabitants of the Hiller Mound actually did travel to the open coast, it would be very likely that they took advantage of the vast resources provided by the California mussel.

There were also species at the Hiller Mound that were not noted at the Tarlton site. This may be attributable to the fact that only one square meter was excavated at CA-SMa-248 and the standing water encountered during excavation limited the nature of the samples. Thus, the species may be present, but yet undiscovered.

In contrast to the Tarlton site, the deposits of the University Village site are not of the shell midden type, but do contain scattered lenses of shell (Gerow with Force 1968). These lenses of shell are strikingly different in content from the Tarlton site. Of the shell material at the University Village site, 94.2% was California oyster (Gerow with Force 1968), whereas only 17.9% of the shell from the Tarlton site was California oyster. The shell from the University Village site was 3.6% Bay mussel and 1.9% California hornshell. The percentages for the Tarlton site were 19.9% and 61.3% respectively. All of the species are from the protected waters of the bay, and the differences are probably attributable to what was effectively collectable at the times of occupation. It is also possible that the personal tastes of the inhabitants caused the differences in shell material present at the sites.

The University Village site was primarily a cemetery, with small shell features (Moratto 1984). Burial features have not yet been discovered at the Tarlton site, so the shell contrasts between CA-SMa-248 and CA-SMa-77 may relate to the type of prehistoric activities represented or archeologically sampled.

RADIOMETRIC DATING OF CA-SMA-248

A chronological understanding of the Tarlton site is essential in order to comprehend its nature and to address intersite comparisons with the dated deposits in the region. The selection of a dating method to use for the Tarlton site was based on the nature of its physical contents, its esti-

mated age range, and success of various dating methods previously employed in central California. The site contains copious amounts of organic material in the form of shell, bone, and charcoal.

Selecting a sample from the deposit to date gives one several choices with the abundant carbon bearing materials in the assemblage. Shell is chosen in this case over bone or charcoal for several reasons. It has been the experience of the Field Director that charcoal samples allow the possibility of dating historically introduced or noncultural charcoal. Bone samples necessiate large sample quantities and in some cases have produced unreliable dates. Shell in contrast, can be identified as prehistoric and cultural in its introduction to the site as dietary faunal material. It can also be submitted in relatively small amounts. In addition, numerous other radiocarbon dates from sites in the surrounding area--such as the North First Street Complex in San Jose (Cartier 1979) and the Hiller Mound--are based on shell samples. For this reason alone, shell would allow consistency in comparing radiometric dates.

The reliability of radiocarbon dates based on shell samples has, however, been noted as having a potential for errors. The environment of growth for marine shells may play a significant part in the determination of the radiocarbon content of shell carbonate. Some environments may contain diluted amounts of old carbon which would be incorporated into a shellfish during its growth resulting in older-than-actual radiocarbon dates. Shell beds exposed to ocean deep water upwelling are especially likely to foster shells with inproportionate carbon-14 levels and thus inaccurate dates (Berger 1966). However, this factor does not appear to be at work in the marshland area at the Tarlton site. Of the many radiocarbon dates run for the San Francisco Bay, none are currently suspect of being influenced by such contaminations of old carbon.

For the radiocarbon dating of the site, a single sample of shell was taken from level 60-70. Limitations of funding precluded additional submissions. The sample consisted of 104 grams of Cerithidea shell which had been water washed in the lab. Analysis was completed by Beta Analytic of Coral Gables, Florida. Realizing that the sample came from the 60-70 cm. level, it is realized that the deposit probably has a time range which extends both before and after the radiocarbon date. Results from Beta Analytic were received on June 13, 1985, for the shell sample designated CA-SMa-248, Carbon Sample #1; Catalogue reference #031; Radiocarbon Lab #Beta 12928. The date was 2320 $\pm$ 70 B.P. This date is between the earliest date at the Hiller Mound (1660 B.P.) and the radiocarbon date at University Village (3000 B.P.).

To estimate the full range of time associated with the Tarlton deposit a rate of formation is needed. A calculation of the rate of deposit formation can be generated using the known chronological range and deposit of the similar deposit at the Hiller Mound. At CA-SMa-160, the time breadth is 1000 years for approximately one-meter of midden deposit. Using these data, a range of 100 years per 10 cm. level is derived. Applying this to the Tarlton site, we would extend the range by 300 years later between the 30 cm. and 60 cm. level and 500 years earlier between 70-120 cm. This, however, does not take into account the unknown depth of the deposit below 120 cm. One also must realize that a single test unit usually does not reveal all of the deposit stratigraphy/chronology in a site. With this knowledge, it may be reasonable to assume that the majority, if not the entire chronological hiatus between the Hiller Mound and University Village, exists at the Tarlton site (Figure 5).

INTERPRETATIONS AND DISCUSSION OF RESEARCH QUESTIONS

The data recovered from the excavation and the information derived from its analysis can be used to address the research questions posed at the beginning of this report.

1) It was questioned whether the three sites discussed in this study may have been on previous creek alignments which would have supplied fresh water. Excavation at the Tarlton site unearthed significant amounts of small water-worn cobbles and gravel of natural sandstone and chert. Some of this rock, particularly the sandstone, showed traces of thermal alteration from presumed cooking activites, whereas a large amount was unmodified. The small size and abundance of the water-worn rock indicated the presence of a small creek which would make such lithics available at the site. At University Village, Gerow with Force (1968:24-25) describes the evidence for San Francisquito Creek having possibly been at CA-SMa-77 and also notes that there was a gully in the historic past four to five feet deep which merged with Ravenswood Slough. The gully feeding into Ravenswood Slough also may account for the fresh water source for the Hiller Mound, in that the mouth of Ravenswood Slough is only a few hundred feet away from CA-SMa-160.

Several lines of evidence are thus seen to associate prehistoric alignments of San Francisquito Creek with the three sites. Water-worn gravel and cobbles were found in the Tarlton site. Gerow provides a detailed discussion of the creek having once been located at CA-SMa-77. The gully and slough near the Hiller Mound indicate the probable presence of the creek there at one time. The chronology of this site/creek relationship is treated in the next research topic.

2) It was proposed that the Tarlton site would date between 1660 B.P. and 3000 B.P., and that this was determined

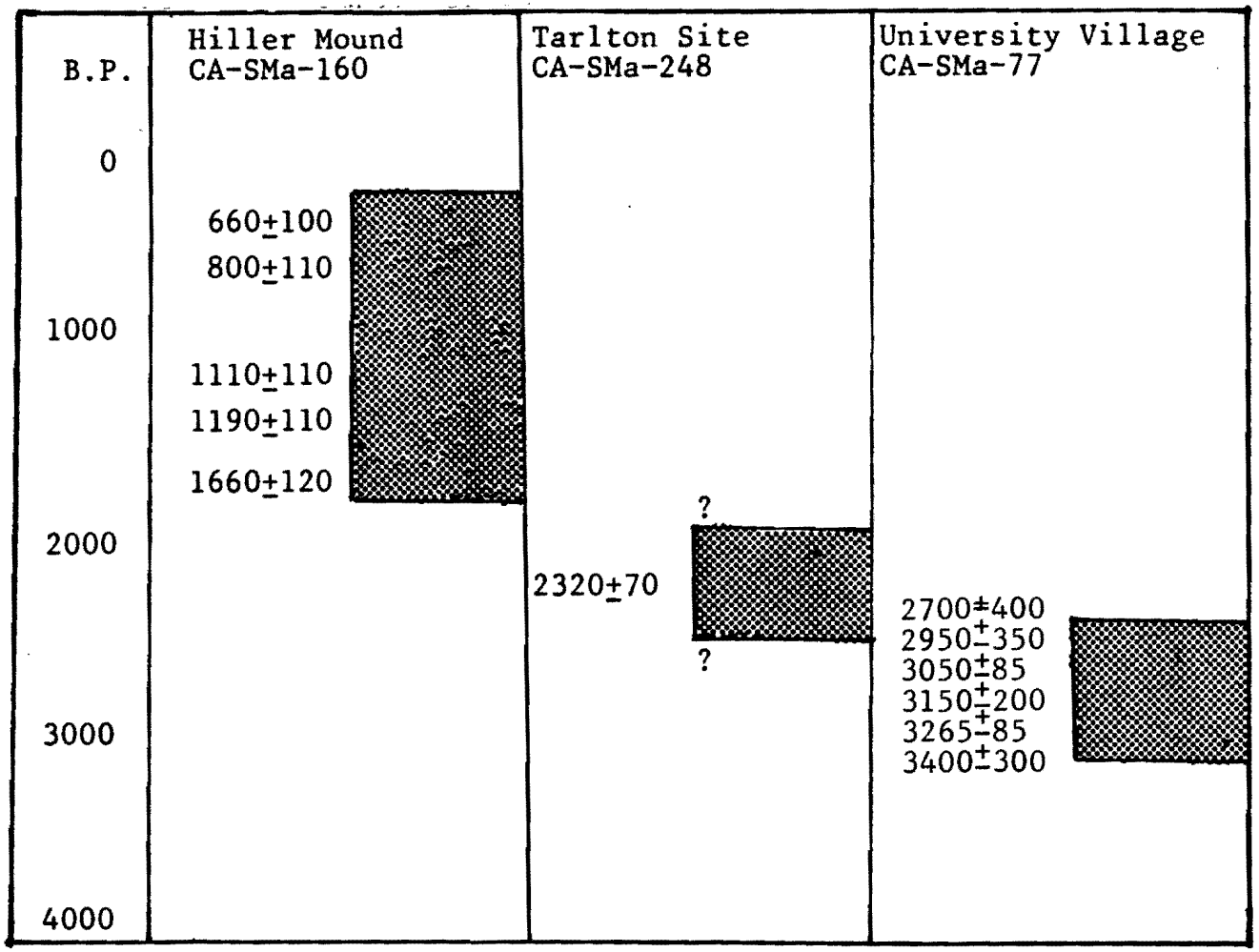


Figure 5. Temporal Relationships

by the sequential relocation of the native inhabitants. The actual radiocarbon date of 2320 B.P. supports this idea. It also further supports the interpretation of the three sites relocating periodically in a uniform direction to follow natural realignments of the local water source between 3000 to 660 B.P. in an easterly to westerly direction.

3) It was questioned whether the Tarlton site was coeval with either of its neighboring sites. The carbon date of 2320 B.P. indicates that it was certainly between the two other sites in its chronology, where sampled. However, the interpretation of the stratigraphy by the Principal Investigator raises the question whether the lower portion of the tested deposit (120 cm.) is possibly as old as 3000 B.P. Furthermore, it appears clear that the deposit significantly exceeds 120 cm. in depth. Additional dating and testing would have to be carried out to support the interpretation that the lower component is potentially contemporaneous with University Village.

Questions for Future Research

In the course of pursuing the original research questions, new questions or topics have emerged for consideration.

1) What is the depth of the Tarlton deposit?

2) Does the chronology of the Tarlton deposit completely fill in the hiatus between CA-SMa-77 and CA-SMa-160 or are there still gaps in time not represented among the three sites?

3) What is the earliest chronology of the Tarlton site, and does it overlap with the burials at University Village?

4) Why are the middens at CA-SMa-160 and the Tarlton site so similar and why do they contrast so much with CA-SMa-77?

5) What artifact types and features are present in the Tarlton site? Do they compare with those at either CA-SMa-77 or CA-SMa-160?

6) Are there changes in the faunal record over time at the Tarlton site which could be used to address environmental changes in the west bay over this range of time?

7) Are data present at the Tarlton site which could be used to discuss Gerow's concepts of cultural/physical convergence (Gerow with Force 1974)?

NOTES

I wish to acknowledge the individuals who directly participated with the Tarlton site excavation and/or the writing of report. These individuals include:

Judy Carrico, Jeff Hall, and

Dari Alexander
Jackie Blank
Brian Boan
Suzanne Collette
Lester Fullbright
Sue Fullbright
Robert Jonston
Nancy Hall
Sean Iverson
Steve Kohler
Richard Lynch
Smoky McLaughlin
William Meuli
Robert Oldham
Filomena Pereira
Karl Price
Harry Simon
Anne Werner

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