

PRELIMINARY DESCRIPTION OF CEMETERY COMPLEX AT CA-ALA-343

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ABSTRACT

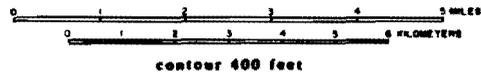
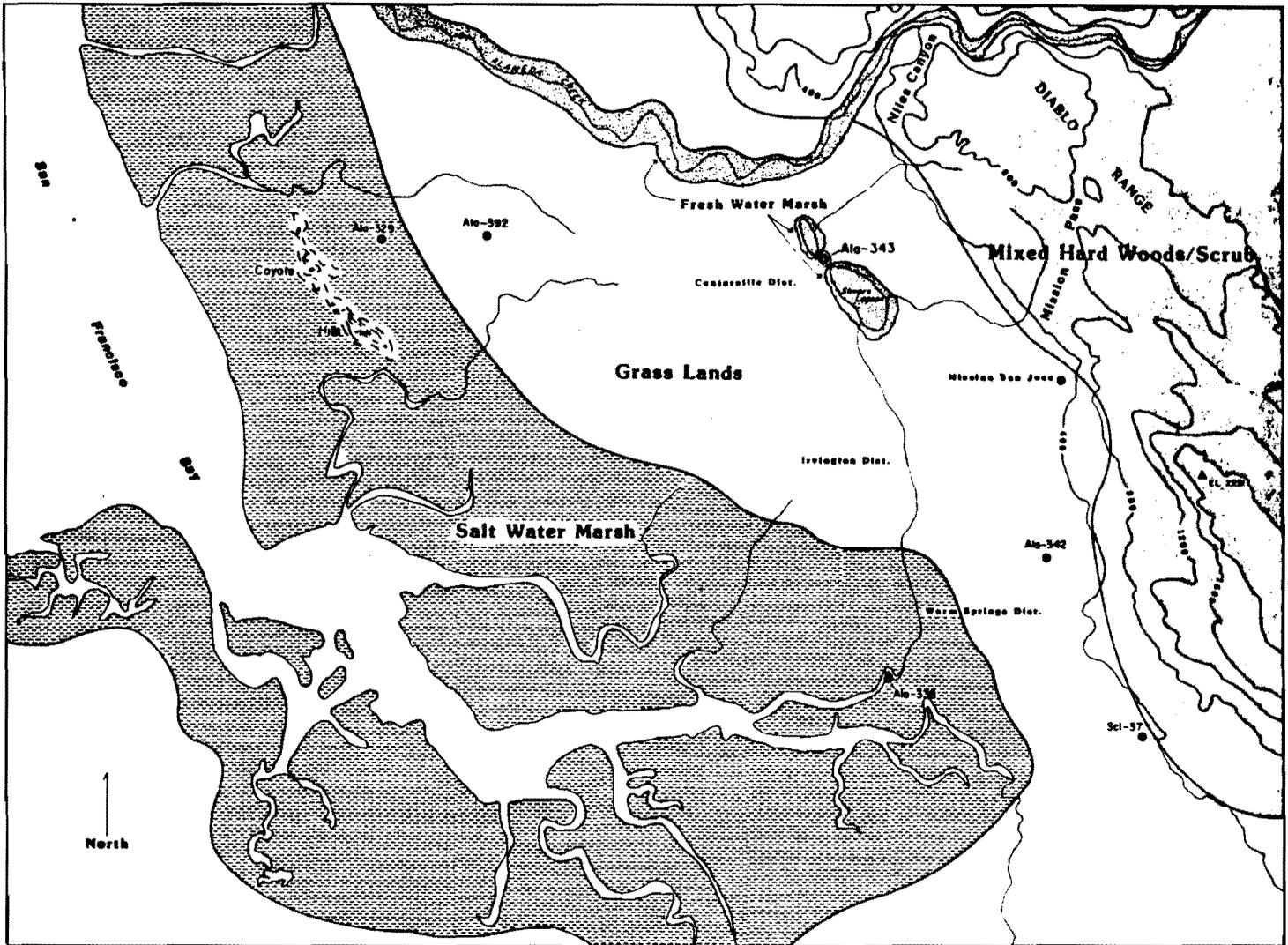
Recent archeological investigations at CA-Ala-343 have uncovered portions of a prehistoric cemetery complex characterized by both ventrally extended and flexed burials, a few exhibiting elaborate and abundant grave associations. Preliminary analyses of the cemetery complex, including burial distribution and position, osteometrics, and distribution of grave associations, indicated that CA-Ala-343 represents a localized co-mingling of extant Windmiller and Bay traditions in the late Middle Period (Figure 1).

INTRODUCTION

The excavations at CA-Ala-343 have uncovered a prehistoric habitation site encompassing a formalized cemetery complex. To date, seventy-one human burials have been excavated and disinterred at the site. An additional two burials have been identified and left in situ. The core of the cemetery complex is characterized by both ventrally extended and flexed burials, with a few individuals exhibiting a great number of grave associations as well as many individuals having single, few, or no grave associations. These grave associations are dominated by Olivella type F3 and G1 beads, Haliotis beads and pendants, mica pendants, red ochre, bone spatulate tools, and bird bone tubes and whistles. Less abundant grave associations include Olivella spire-lopped beads and obsidian blades. Unique grave associations include bone fish spears, a mortar inverted over a cranium, formed oblong phyllite "tinklers" and a partially drilled, pear-shaped steatite object.

Although the levels of analysis accomplished to this date are quite restricted and the single or multi-component nature of the site is yet to be understood, it does appear that the cemetery complex represents a co-mingling of Windmiller and Bay (Berkeley) traditions in the Middle Period, possibly from 500 A.D. to 800 A.D. Elsewhere, notably CA-Ala-413 and -453, similar cemetery complexes have been termed to be variants of the Meganos aspect of the late Middle Period (Bennyhoff 1968). Although social ranking is reflected in differential burial treatment, it is not clear at this time whether status and burial treatment is strictly kinship re-

Figure 1. Habitat Distribution



lated, or is based on characteristics such as age, sex, or behavior.

DESCRIPTION OF CEMETERY COMPLEX

The most notable trait of the horizontal distribution of burials at CA-Ala-343 is the dense clustering of burials in the northeast portion of the parcel (Figure 2). Seventy-seven percent of the burials lie in an elliptical shaped area which borders the lagoon to the east, and are covering only about 8% of the total area of the subject parcel (Figure 3). Of the burials within the cemetery core, 67% possess associated artifacts while outside this area 38% of the burials have accompanying grave associations.

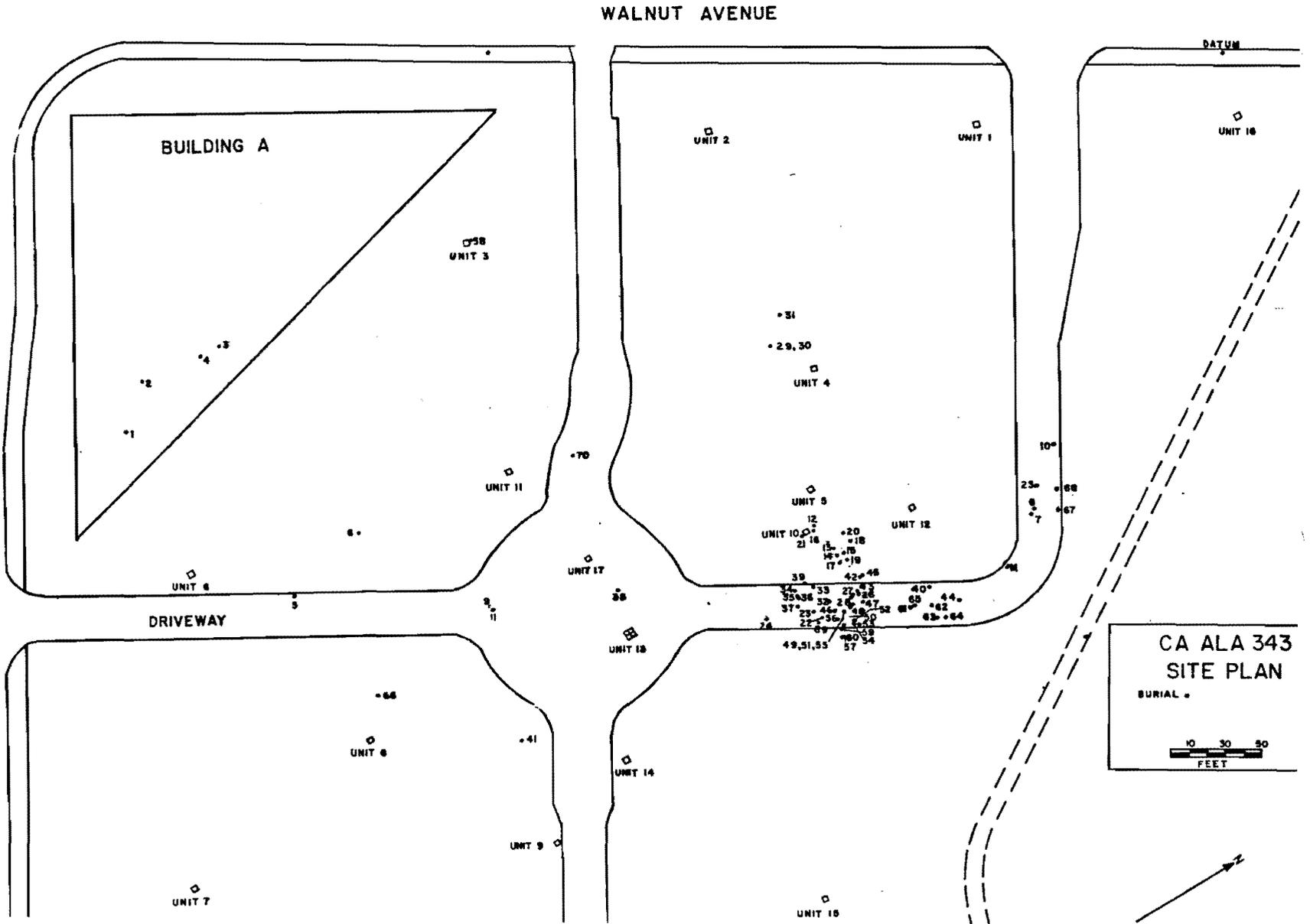
Vertically, virtually all burials were found to lie just above or on the upper border of the yellow/tan silty sub-midden stratum, which varied from 60 cm. to 80 cm. in depth B.S. An exception was Burial 44, an adult in a flexed position, which was found at a depth of 135 cm. within the yellow/tan sub-midden strata. For the site as a whole, extended burials had a mean depth of 66.2 cm. B.S. while flexed burials were found at a mean depth of 70.1 cm. B.S.

Of seventy-one burials, twenty-one were in extended position, thirty-five were in flexed position, and fifteen in an indeterminate position. Of the extended burials, three were dorsal extensions, while eighteen were ventral extensions. Eleven of the extended burials were identified as male, five as female, while five could not be sexed. Sixteen of the twenty-one extended burials, or 76%, had accompanying grave associations.

A great deal of variation was exhibited within the flexed burial class, which exhibited varying tightness and looseness of flexure and placement on the back, left and right sides, and the front. Of the thirty-five flexed burials, eight were identified as male, sixteen as female, and eleven as indeterminate sex. Grave goods accompanied twenty-one, or 60% of the flexed burials.

Body orientation was determined accurately for forty-seven burials. Of these forty-seven, fourteen were oriented to the north, two to the northeast, two to the east, one to the southeast, two to the south, four to the southwest, five to the west, and seventeen to the northwest. Although all directions are represented, an emphasis on northerly and westerly orientation is indicated since 70% (or 33 burials) are oriented between 292.5 and 67.4 degrees and an additional nine burials or 19% are oriented between 202.5 and 292.4 degrees.

Figure 2. Site Plan of CA-ALA-343



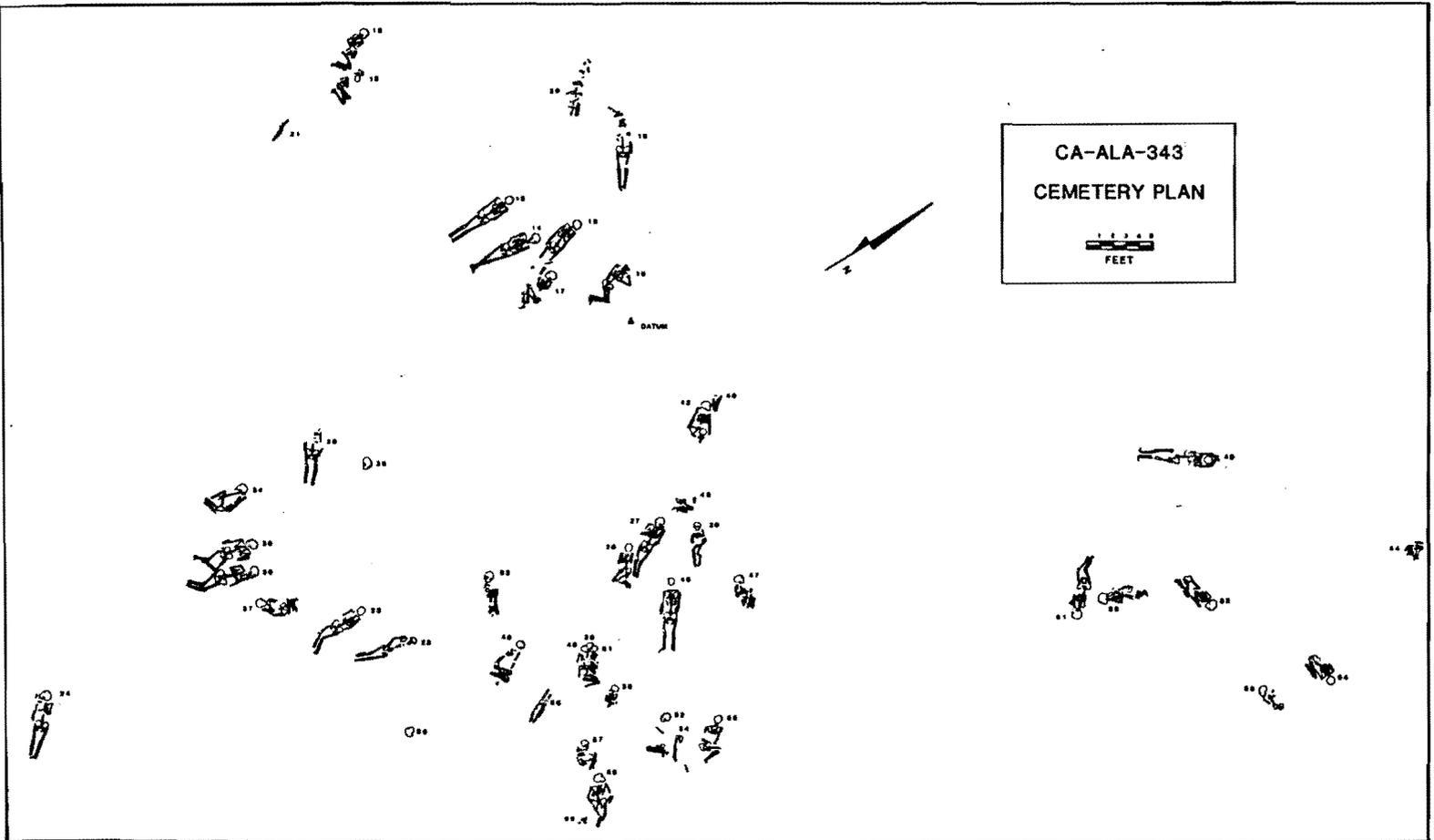


Figure 3. CA-ALA-343 Cemetery Plan

Sex and Age Structure

Eighteen burials (25% of sample) could be sexed reasonably confidently through standard application of morphological criteria, the resulting distribution was eight males, ten females. In addition, another nineteen burials (28% of sample) could be sexed from morphological criteria as "possibly male" or "possibly female." Of these, eight were judged to be male, and eleven as female.

In addition to the standard morphological criteria osteologists have developed osteometric discriminant techniques to aid in the sexing of human skeletal material. In the past most of these techniques have been developed for recent contexts and forensic applications. However, recently a technique has been developed for sexing Central California Indian remains (Dittrick and Suchey 1986). Two of the most sensitive discriminators for this purpose are femur head diameter (maximum) and humerus head diameter (vertical and transverse).

In order to test the viability of this technique in San Francisco Bay samples (and to provide additional information for some of the more fragmentary individuals), we used this technique in analysis of the CA-Ala-343 remains.

In all eighteen cases where sex was assigned unambiguously from morphological criteria, femur head and/or humerus head diameter data were also available. In one case the metric discriminants were intermediate, but in seventeen cases a sex could be assigned. Of these fifteen (88%) agreed with the determinations from morphological assessment. In addition, of the nineteen individuals for which a "possible" sex determination was assigned, ten also had data available for metrical discriminations. Interestingly, all ten agreed with our tentative conclusions. It, therefore, seems reasonable to assume that the tentative assignments are indeed quite accurate.

The combined subsample thus consists of twenty-seven individuals -- of which 25 agree between morphological and metrical determinations (92.6%). These results tally very closely with those presented by Dittrick and Suchey for the Sacramento Valley where a confidence level approaching 90% was attained.

Since this new metrical technique appears to work so well for this sample, it was decided to use it further to assign probable sex to even those remains from which morphologically no determination was possible. In four cases (Burials 7, 12, 16, and 65) a sex could be assigned based solely upon the metrical discriminants, and in all these burials the probable sex is female. The combined totals for

all individuals for whom a definite or likely sex could be assigned are as follows:

16 males	25 females
39%	61%

The remainder of the sample (30 burials) comprising 42% of the data set are of indeterminate sex -- owing primarily to their fragmentary conditions.

From the entire sample, 71 burials could be assigned some age. However, two "adults" (Burials 3 and 58) are so fragmentary that they should be excluded from demographic considerations. Thus, a total of 69 individuals can be used to reconstruct at least some aspects of the demographic profile of the CA-Ala-343 population.

Fourteen individuals are aged as subadults (at less than 16 years), while 55 individuals are aged as adults (at 16 or more years):

Subadults:	14	(20%)
Adults:	55	(80%)

At CA-Ala-342 (located quite close to the CA-Ala-343 site), from a total sample of 42 burials, 24 (57%) are subadult (Jurmain 1983). At the much larger bayshore site, CA-Ala-329, of approximately 290 individuals, 34% are subadult (Jurmain n.d.). Worldwide, preadult mortality in pre-industrial populations also contrasts markedly with the population at CA-Ala-343.

The breakdown by age category of the CA-Ala-343 sample is as follows:

<u>0-2</u>	<u>3-10</u>	<u>11-19</u>	<u>20-29</u>	<u>30+</u>	<u>25+</u>	<u>"Adult"</u>
1	6	10	14	21	7	10
(1%)	(9%)	(15%)	(20%)	(30%)	(10%)	(15%)

The need to use such imprecise categories at "25+," "30+," and "adult" results from two considerations: 1) the fragmentary conditions of many adults and 2) the fact that older adults in particular are difficult to age from skeletal material.

An interesting feature emerges from the age distribution at CA-Ala-343. In most prehistoric California Indian populations (indeed, most non-industrial populations worldwide) infant mortality is quite high. For example, at CA-Ala-329, forty-five infants died before reaching age two (approximately 16% of the sample). Even more strikingly, at the smaller CA-Ala-342 site fully 50% of the individuals died in infancy. Yet, at CA-Ala-343 only one infant is found among the whole sample.

Conversely, childhood and adolescent mortality general are not particularly high. At CA-Ala-329 approximately 19% of individuals died between two years of age and 18 years of age -- contrasted to 24% at CA-Ala-343. At CA-Ala-342 the difference is even more marked with only about 7% of individuals dying in childhood or adolescence.

No immediate demographic explanations emerges to account for this unusual mortality curve. Any normally acting physiological mortality factor (disease such as infection, poor nutrition, etc.) should place a higher load on younger individuals (infants) than on older children and adolescents. It would thus seem that infant mortality was probably high at CA-Ala-343 (given numbers of children and adolescents, but most probably these infants were buried elsewhere.

Osteometrics

The osteometric analysis of the CA-Ala-343 skeletal population has produced interesting but limited results. Most discouraging was the fact that few cranial measurements could be taken from male individuals, restricting significant comparisons within the CA-Ala-343 population and with other populations.

Table 1 summarizes comparisons of mean measurements from CA-Ala-343 to mean measurements of selected skeletal populations. The studies used include one on males for three distinctive temporal periods in the Lower Sacramento Valley (Newman 1957) and another on populations from the Santa Cruz Islands (McKern 1960). In addition, a recently completed thesis on the osteometry of CA-Ala-307 (Haldeman 1986) and other unpublished papers on CA-Ala-329 (Sandusky 1970; Heggen 1971) were used in the comparison.

The Early Delta population was high vaulted, had larger dimensions, and was characteristically more robust than populations of the southern coast of California (Gerow and Force 1968; Gerow 1974). Then, through time, the populations became more homogeneous. This can be seen when the LSV series is compared to CA-Ala-343. The percentage of post-cranial measurements that are greater than these for CA-Ala-343 decreases from early to late.

In summary, the CA-Ala-343 population compares most closely with the LSV middle series, slightly less closely with the LSV late series, and is somewhat intermediate between the LSV early series and the CA-Ala-307 series. The CA-Ala-329 and CA-SCr-1 populations appear to be much smaller in comparison. Thus, the conclusion is that CA-Ala-343 population is a moderate to large sized population and that this is due to greater genetic affinity with Delta populations. Again, the sample size in this population is small and

provides no statistically significant comparison -- only a trend.

TABLE 1

SUMMARY OF COMPARISON OF MEAN OSTEOMETRIC MEASUREMENTS
FROM CA-ALA-343 TO SELECTED SKELETAL POPULATIONS

	LSV EARLY	LSV MIDDLE	LSV LATE
Cranial			
Less than	3 (27%)	4 (36%)	4 (36%)
Equal to	2 (18%)	0 (00%)	1 (09%)
Greater than	6 (55%)	7 (64%)	6 (55%)
Post-cranial			
Less than	10 (29%)	14 (47%)	16 (53%)
Equal to	3 (09%)	5 (17%)	4 (13%)
Greater than	22 (63%)	11 (37%)	10 (33%)
	Ala-329	Ala-307	SCr-I
Cranial			
Less than	5 (45%)	5 (45%)	(early to late) 4 (67%)
Equal to	1 (10%)	2 (18%)	0 (00%)
Greater than	5 (45%)	4 (36%)	2 (33%)
Post Cranial			
Less than	24 (80%)	19 (64%)	25 (96%)
Equal to	0 (00%)	2 (07%)	1 (04%)
Greater than	6 (20%)	9 (30%)	0 (00%)

(References: LSV Series, Newman 1957; Ala-329, Sandowsky 1970, Haggen 1971; Ala-307, Haldeman 1986; Santa Cruz Islands, McKern 1960)

Grave Associations

Of seventy-one burials exhumed from CA-Ala-343, a total of 43 (61%) possess accompanying grave associations. As stated earlier, extended burials were more likely to possess grave associations than flexed burials and burials within the cemetery core were more likely to have associations than those nearer the periphery. As seen in Table 2, Olivella beads are the dominant grave association with thirty-two burials represented. Of these, thirteen are male, 7 female, and 12 are of indeterminate sex. All other burials possess only saddles and/or saucers. The Olivella beads appear to be equally distributed between extended burials (13 represented) and flexed burials (15 represented). Olivella beads from Burial 19 and Burial 50 have been analyzed so far by Milliken. Burial 19, a female, 16-23 years at the time of death, situated in a semi-flexed position at a depth of 70 cm., was found with 602 beads. All are square saddles (Bennyhoff F3; Lilliard Heizer, Fenenga 3b2; Gifford x1b). Most of the beads are quite rectangular, only lacking the really sharp

TABLE 2

CA-ALA-343 - FREQUENCY OF GRAVE ASSOCIATIONS (n=71)

<u>TRAIT</u>	<u>BURIALS WITH TRAIT</u>
<u>Olivella</u> Beads (32)	1, 7, 8, 12, 13, 14, 15, 18, 19, 26, 27, 28, 29, 30, 32, 38, 39, 41, 42, 43, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 59, 67
<u>Haliotis</u> Pendants (20)	8, 12, 18, 19, 22, 24, 26, 28, 41, 42, 43, 46, 48, 49, 50, 51, 52, 55, 57, 59
<u>Haliotis</u> Beads (3)	26, 48, 55
<u>Haliotis</u> Blanks (2)	18, 48
Red Ochre (17)	7, 13, 14, 15, 17, 18, 19, 22, 23, 24, 26, 27, 29, 30, 42, 51, 55
Mica Pendants (16)	1, 8, 13, 14, 15, 17, 19, 26, 27, 28, 32, 42, 49, 53, 69
Bone Spatulates (11)	13, 15, 22, 24, 27, 28, 39, 47, 48, 62, 69
Bird Bone Tubes/Whistles (8)	26, 42, 47, 48, 49, 51, 52, 55
Bone Fish Spears (1)	23
Bone Atlatl Spur (1)	48
Fish Vertebrae (1)	50
Obsidian Blades/Pts. (5)	5, 8, 13, 14, 15
Groundstone (5)	18, 25, 38, 52, 68
Phyllite Notched Stones (1)	34
Steatite Pipe/Bowl (1)	22

corners of Phase I Late Period rectangles. However, the smaller beads (<5 mm. in length) are somewhat more rounded.

Milliken's thoughts at this time are that the beads from burials 19 and 50 both date to the Late or Terminal Middle transition, or from 500 to 800 A.D. Milliken has also observed affinities with bead populations from CA-CCo-31 (Burial 2), and possibly from CA-SC1-302 (Burials 2 and 4).

Haliotis pendants are seen in 21 burials, and appear to be equally distributed between males and females and extended and flexed burials. Although the Haliotis ornaments (along with most grave associations) have not been formally reviewed as yet, Haliotis rufesens appears to be the dominant species represented. Also, many unique forms appear to be present.

Mica pendants are associated with sixteen burials, eight of which are male and four female. Ten extended burials, versus five flexed burials, possess mica pendants. The placement of mica around the cranium and chest suggests an applique in the manner of a cloak. References to layered mica as a manner of armor also have been noted. George Curtis, geologist at San Jose State University, believes the west slope of the Sierra Nevada Range is the most probably source for this moscovite.

Bone spatulate forms were recovered from eleven burials, only one of which was female. Seven extended burials and three flexed burials were represented. The spatulates appear to all originate from elk rather than deer. Variation is seen in the manner of perforation and in decoration, a few spatulates exhibiting Olivella applique with asphaltum.

Bird bone tubes or whistles were recovered from eight burials, four males and one female. They were equally distributed between extended and flexed burials. Most notably, Burial 50 and 48 had large bundles of blank tubes and whistles.

The remaining unique burial associations include a bundle of fish spears associated with an extended male, a collection of fish vertebrae which were concentrated in the spinal region of Burial 50, a bundle of notched phylite stones (most likely from a Sierra source) smeared with red ochre associated with Burial 34, and a strange drilled steatite bowl with asphaltum rings associated with Burial 22.

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