

close proximity. Both expectations are supported by the data. Walls do tend to be found near springs and (in one case) game trails, and, at Peppertree and Oleander Tank, a respectable number of deer bones were found. (See Hammond, "Faunal Remains," in this publication.) This hypothesis is not entirely satisfactory, however, simply because in rocky terrain like that around Peppertree and Oleander Tank, it does not seem that concealment for a hunter or two would require the kinds of architectural feats represented by wall construction.

Defensive Structures

It has also been proposed that the walls served as fortifications against enemy attack, though use of such fortifications is nowhere recorded in local ethnographic literature and seems to run counter to what we know of warfare practices among low-density hunter-gatherer populations. If the proposition were correct, we would expect that (1) the walls would surround something important like a living site, a spring, or conceivably a ceremonial location; and (2) there might be some evidence of warfare in the vicinity. The walls do tend to surround occupation sites, with the primary exception of the 200 m wall stretching south from the vicinity of the Moreno Maze, which presumably had ritual significance. There is, however, very little clear evidence of violence in the vicinity of rock walls. Projectile points are found at adjacent sites, but not in great quantity, and there is virtually no evidence of any other weaponry.

Sheep Corrals

Perhaps the most economical proposition advanced thus far is that the walls were con-

structed by shepherds during the nineteenth or twentieth centuries to prevent their flocks from getting up into the rocks where they might break legs, get lost, or be slain by predators. Were this hypothesis valid, we would expect that (1) walls would occur near places where sheep might be retained in large numbers, such as around water sources and in protected areas where a shepherd might camp; and (2) walls would be associated with some evidence of modern activities in which a shepherd might be expected to engage. Both expectations are only partially supported. The walls at Peppertree and Oleander Tank surround sheltered bays at the edge of the mountains, where water is available. At both Peppertree and Oleander Tank, there is evidence of modern development of springs, possibly as water sources for livestock. The wall south of the Moreno Maze also borders a relatively sheltered area in which a good deal of historic rubbish is found and which is frequented by shepherds today. On the other hand, at Dead Dog, where evidence of use by shepherds is present in abundance, there are no walls. However, there is evidence of the former existence of a large holding pen. (See Bettinger, "Dead Dog Site," in this publication.)

In short, at the present time no hypothesis fully accounts for the presence of the enigmatic rock walls at Perris Reservoir. It seems fairly certain that one wall (the small structure next to a game trail in the canyon far behind the Peppertree site) is a hunting blind, but it is likely that the other walls were built to control sheep or other livestock in recent years, if for no other reason than the fact that this proposition is the most conservative.

a

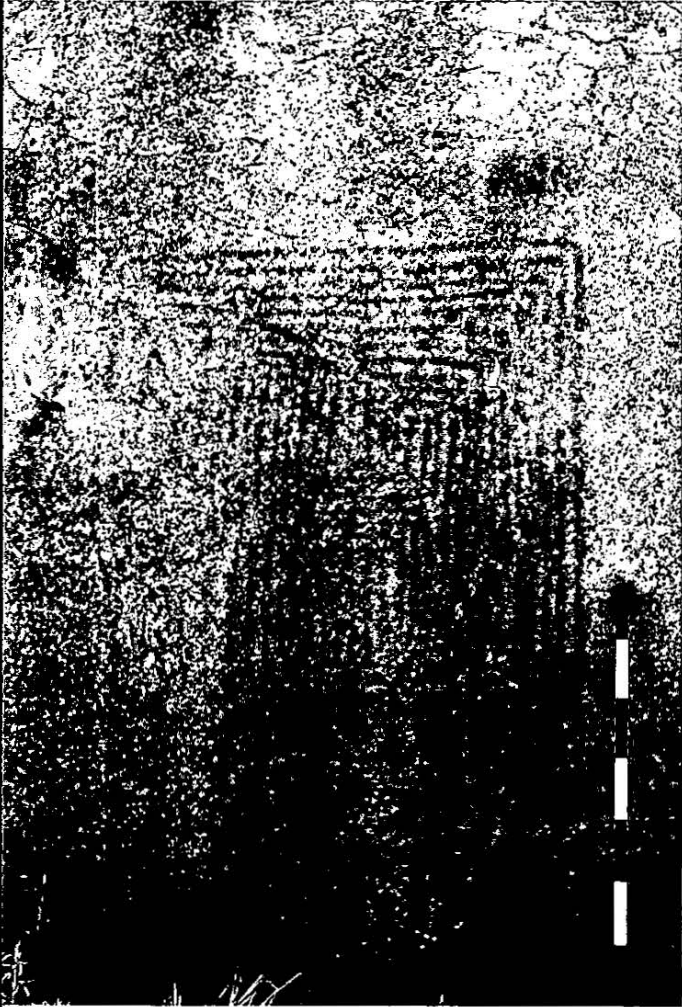
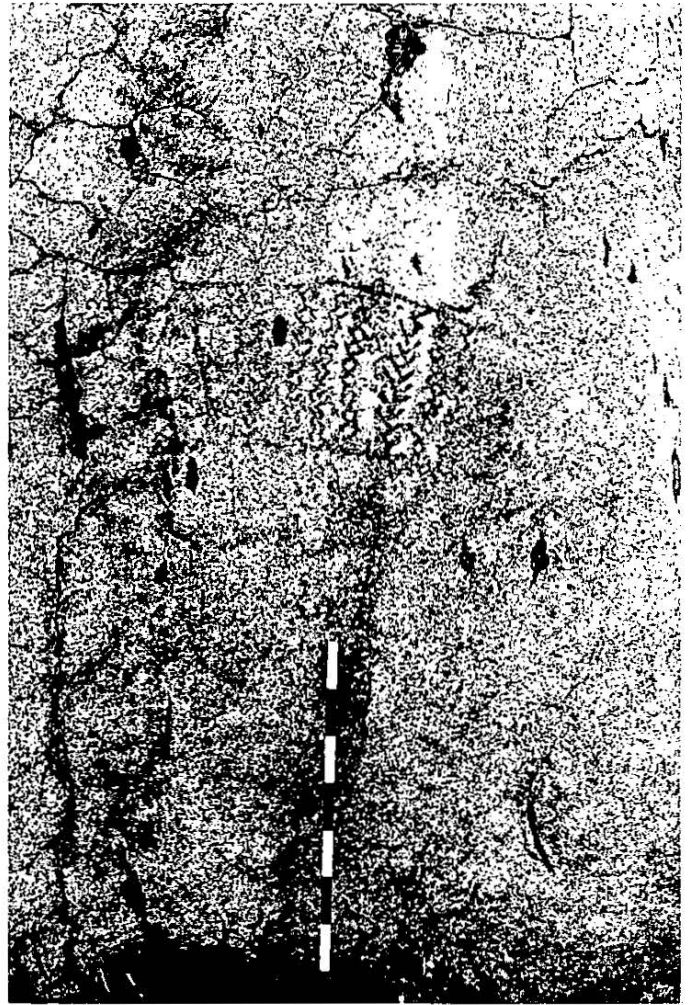


Plate 6. Pictographs, sites 4-Riv-21 and 4-Riv-452. Plate 6a: The Moreno Maze, Site 4-Riv-21. The panel recently suffered heavy damage by vandals with shotguns. Scale has 10 cm increments. Plate 6b: Red painting at the Pictograph site (4-Riv-452). (See also Plate 10a.) Scale with 10 cm increments.

b



ROCK ART OF THE PERRIS RESERVOIR

Linda Delay Joseph

This paper describes the rock art of the Perris Reservoir area (Figure 9). It includes a description of design elements and motifs, along with brief comparative comments on the distribution of similar designs elsewhere in California and the Great Basin. Subsequent sections treat the distribution of elements at various sites in the Perris area and offer some tentative suggestions regarding the function of the rock art in light of available ethnographic information.

Design Elements

The designs represented in the rock art complex at Perris Reservoir are extremely diverse, and it is virtually impossible to devise a descriptive taxonomy that will incorporate all of them. Nevertheless, several designs can be isolated that are consistently repeated in similar if not identical form at several sites and that are also commonly reported from other parts of California and the Great Basin. The following comments pertain primarily to those designs. Other less common or unique figures are shown in the illustrations (Plates 5, 6; Figures 10 through 12) and are discussed as necessary in the general descriptions of the rock art at each of the several sites.

Both pictographs and petroglyphs are found in the Perris area. Petroglyphs are recorded at four sites (Table 2) and fall into three categories. The first and most common category includes examples of the pit and groove style (Heizer and Baumhoff, 1962: 208-209). The style is characterized by simple circular or oval pits and shallow linear grooves, usually U-shaped in section. Pits and grooves may occur singly or in combination with each other and are often connected in intricate networks. Examples of this style are found at three sites in the area. Pits are drilled or pecked conical depressions, averaging 3 to 4 cm in diameter and 1 cm in depth. Grooves are both straight and curved, and range from 2 to 30 cm in length, 2 to 5 cm in width, and 1 to 5 cm in depth. Pits occur singly or in clusters of up to about 100. Grooves are less often encountered. They may be found singly, in clusters, or in association with pits, often connecting two or more of the latter (Figure 12e). Examples of the pit and groove style are widespread in California and the Great Basin (Heizer and Baumhoff, 1962: 209).

A second petroglyph category at Perris Reservoir includes two curvilinear elements, reminiscent of quadrupedal animal figures (Figure 11c). Similar designs are widely encountered in Nevada and

TABLE 2
DISTRIBUTION OF RECOGNIZED ROCK ART DESIGNS AT
PERRIS RESERVOIR LOCALITY*

Category	Site								
	4-Riv-12	4-Riv-419	4-Riv-202	4-Riv-21	4-Riv-464	4-Riv-602	4-Riv-452	4-Riv-62	4-Riv-528
Petroglyphs									
Pit and groove			+		+			+	
Quadruped					+				
Maze (painted)									+
Pictographs									
Naturalistic									
Hands					+				
Feet	+	+							
Geometric									
Zig-zag lines	+	+	+				+		+
Dots	+	+				+ (white)			+
Circles	+	+	+						
Rectangles	+	+	+						
Lines	+	+ (black)	+ (black, white)						
Maze				+					+

* A + indicates presence of such designs at the designated site. All pictographs are red unless otherwise indicated.

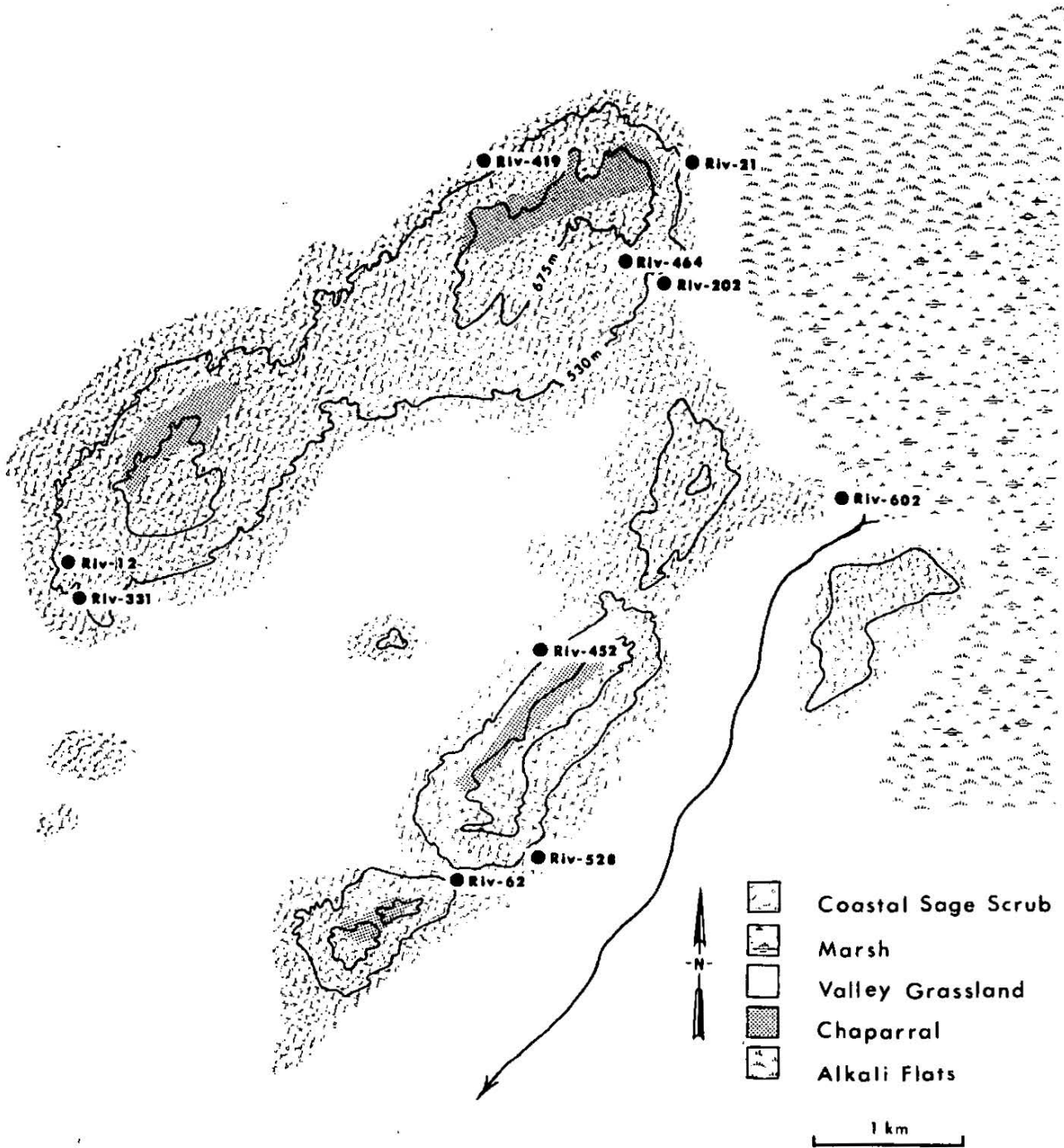


Figure 9. Distribution of rock art at Perris Reservoir.

eastern California (Heizer and Baumhoff, 1962: 336). The third category is represented by a single example, a pecked and painted maze that resembles a set of nested rectangles. It measures 34 x 22 cm and is covered with a faint orange pigment. Maze petroglyphs, both painted and unpainted, are found throughout southern California and adjacent areas of Nevada and Arizona (Steward, 1929: 212).

Pictographs were found at eight sites in the Perris area (Table 2). They may be divided into two naturalistic and six geometric design categories. Naturalistic elements were recorded at three sites but represent only about 5 percent of the total element sample. They include solid red

painted hands and feet, the former found at the Charles Mott site (4-Riv-464), the latter at both 4-Riv-12 and 4-Riv-419. Naturalistic pictographs, including hands and feet, are rarely reported at sites in southern California (Sandburg, 1972; Steward, 1929: 188).

Geometric pictographs were found at eight of the nine rock art sites in the Perris area and may be divided into six categories: zig-zag lines, dots, circles, curved and straight lines, mazes, and rectangular designs. Zig-zag or wavy lines were found at five sites. They occur as single lines (Figure 10a, b),

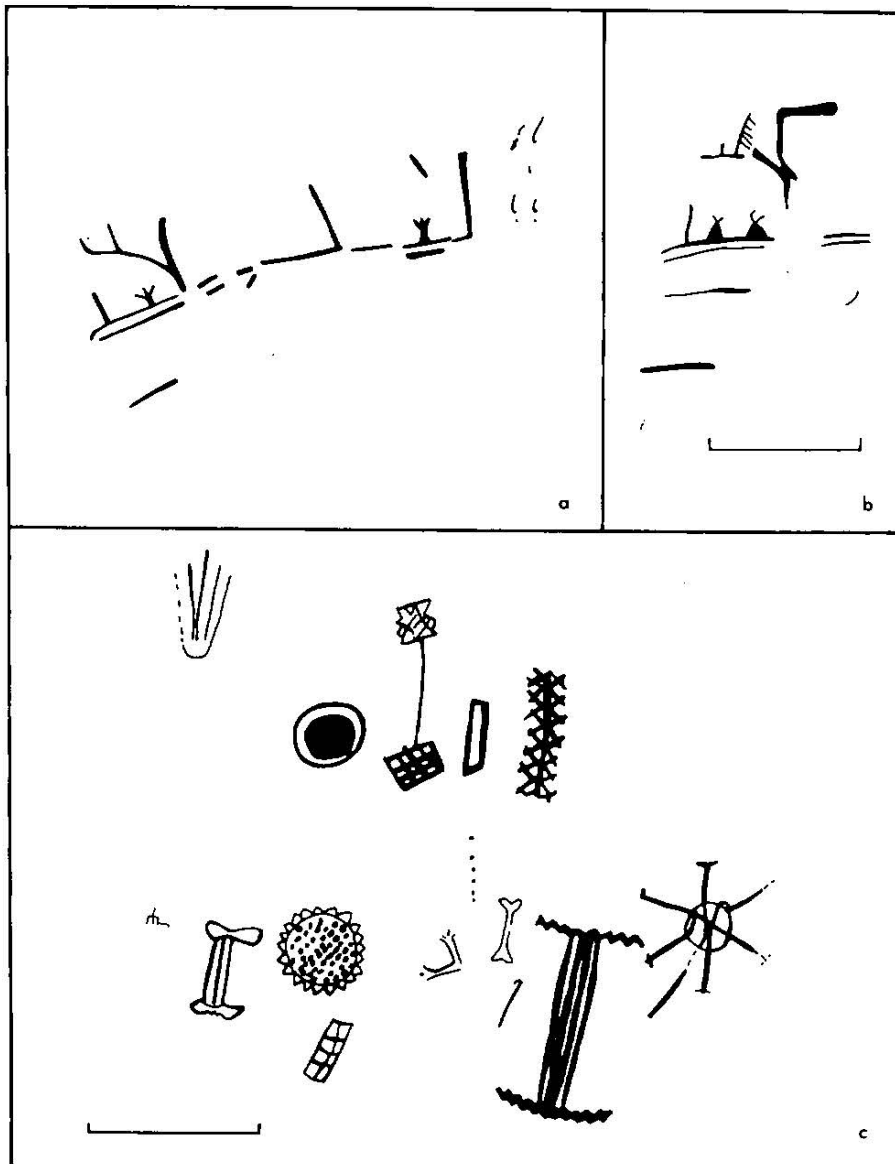
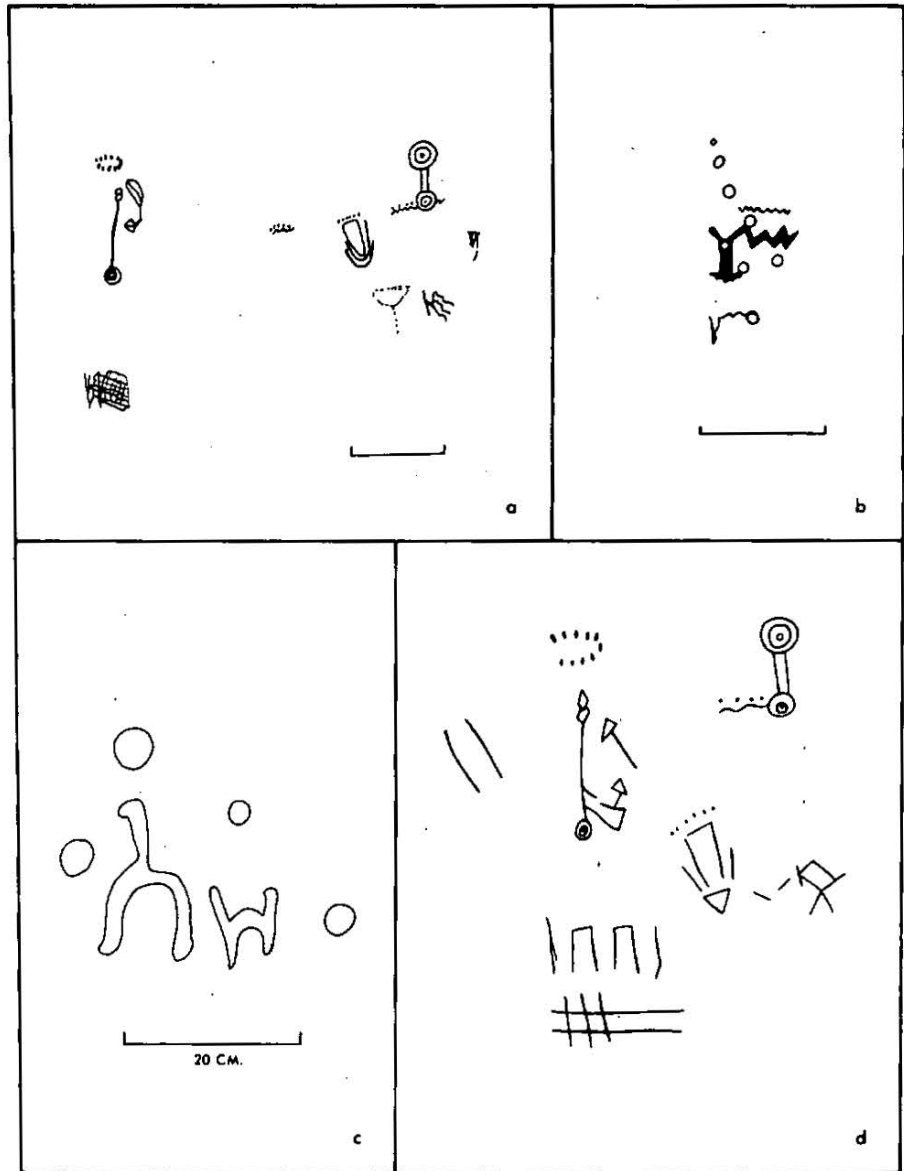


Figure 10. Rock art. Figure 10a: Black pictographs, Panel B, 4-Riv-419, as recorded by Mary O'Neil, 1968 (from site survey records); b: Same, but recorded by the author, 1972; c: Red pictographs at site 4-Riv-12. Scale: 50 cm.

Figure 11. Rock art. Figure 11a, d: Red pictographs, Panel A, site 4-Riv-419 (a: recorded by author, 1972; d: recorded by another investigator and copied from site survey records); b: Petroglyphs and red pictographs, site 4-Riv-528; c: Petroglyphs, site 4-Riv-464. Scale: 50 cm, unless otherwise indicated.



patterns, as in Figure 12c and Plate 6b), or as elements of more complex designs (Figure 10c). All are executed in red paint. Single zig-zag patterns are widely distributed in California (Grant, 1967; Steward, 1929: 179; Sandburg, 1972: 21); but diamond chains are a particularly characteristic southwestern California design. Steward (1929: 203) connects them with female puberty ceremonies on the basis of ethnographic data.

Lines of dots occur at four sites and may be represented by single straight rows, short rows paired with straight lines (Figure 11a, d), or more complex patterns (Figure 11a). Dots may also be used as fillers in elaborate geometric figures (Figure 10c). Almost all dot designs at Perris Reservoir are red, although some, such as those at site 4-Riv-602, are an off-white. Dotted elements are found

throughout California, but are particularly common in the northeastern part of the state (Steward, 1929: 192-193).

Circles were recorded at three sites. They are most often concentric in form (Figure 11a, d), with central sections sometimes painted over (Figure 10c). They are occasionally connected by parallel lines (Figure 11a, d) or incorporated into more complex designs (Figure 10c). All circular elements recorded at Perris were executed in red. Circles, especially in concentric arrangements, are found throughout California and the Great Basin (Steward, 1929: 178-179; Heizer and Baumhoff, 1962: 77).

A fourth category of geometric pictographs includes straight and curved lines. They were found at three sites, where they were represented by sin-

gle examples or by combinations of multiple parallel straight and curved elements. They were found in isolation or in combination with other elements, including zig-zags (Figure 10c), concentric circles (Figure 11a, d), and others (Figure 10a, b). There is some variation in the color of line elements. Those at 4-Riv-12 are red, those at 4-Riv-419 black, and those at the Dead Dog site (4-Riv-202) black and white. Strong (1929) and Grant (1965) suggest that randomly connected lines were executed in connection with female puberty rites.

Rectangular or subrectangular designs were found at three sites. They may be open (Figure 10c) or covered with crosshatching (Figures 10c, 11a). This design element is common in California and the Great Basin (Heizer and Baumhoff, 1962). Two maze designs are known from the Perris area. One is the painted petroglyph described above; the other is a large red pictograph (Plate 6a). In contrast to the wide distribution of maze petroglyphs, maze pictographs are relatively common but are restricted to southern California (Steward, 1929: 212).

Site Descriptions

Nine sites in the immediate area of the Perris Reservoir are known to contain prehistoric rock art (Figure 9). Those sites that were excavated have been described in other sections of this report. Unexcavated midden sites with rock art and sites defined by the presence of rock art alone are treated in greater detail in the following paragraphs.

4-Riv-12

This site is located on a west-facing slope at the extreme southwest end of the Mt. Russell Hills, overlooking the grasslands of the Perris and Moreno valleys. The site itself is situated in a hillside recess that resembles a small amphitheater. Evidence of aboriginal occupation apart from the rock art includes a midden deposit, bedrock mortars, and metates.

Fifteen red pictographs are known from this site. They are located on two faces of a large granite outcrop about 6 m wide and 2.5 m high that forms the ceiling of a small rock shelter. The pictographs cover an area 1.6 x 1.5 m (Figure 10c). Five of the designs are located on the front face of the outcrop, which slopes forward at about 10° out of vertical, while the other ten are on the vertex of the angle formed by the front face and the

ceiling of the overhang, which slopes down toward the back of the shelter at 20° from horizontal. Pictograph colors range from 10R 4/10 to 10R 6/10, 10R 5/8 to 10R 6/8, and 2.5YR 6/8 to 2.5YR 7/8 on the Munsell color scale. There are seven shallow circular mortars on the boulder that forms the floor of the shelter.

4-Riv-419

This large open site is located on a low knoll on the northwestern slope of Mt. Russell. Grassland communities formerly dominated the farmlands north of the site, while coastal sage scrub covers the hills that rise behind it to the south. Discontinuous patches of midden cover an area of more than 5,000 m² and bedrock mortars and metates are widely distributed.

There are two panels with pictographs at this site. Panel A is located on the north face of a large granite boulder about 50 m southwest of the main area of the site. It contains at least ten designs that cover an area 1.4 m high and 2.5 wide (Figure 11a). There are several other designs on the same face to the left of those illustrated, but they are too faded to permit accurate reproduction. All the pictographs on this panel are red, ranging from 10R 5/8 to 10R 6/8.

Panel B is on the north face of a granite outcrop about 50 m southeast of the center of the site. The panel measures about 1.2 m on a side and contains seven black pictographs (Figure 10b). This panel is unlike all others in the Perris area, both in the color used and in the extreme linearity of all elements represented.

Two figures (Figures 10a, 11d) represent previously recorded but unpublished copies of the designs on Panels A and B, both drawn by a competent archeologist about five years ago (Mary O'Neil, field notes). Comparison between these drawings and my own (Figures 10b, 11a) reveals the potential errors that may be introduced in the recording of pictographs by factors such as variations in lighting conditions, attention to different details, and fading over time.

4-Riv-21

Site 4-Riv-21 is defined by the presence of a single red (10R 5/8) pictograph, known locally as the "Moreno Maze Stone." It is located on a large granite boulder, which is in turn situated on a rocky spur at the base of the northeast slope of Mt. Russell. The pictograph is centered on a smooth, slightly forward-sloping face and measures about

1.0 x 0.8 m (Plate 6a). As Steward (1929:90) observed, it resembles the Hemet mazestone in Rheinart Canyon, near Hemet, about 20 km to the southeast. However, it lacks the center square and uncut corners of the latter design, and is substantially more complex in terms of the number of lines incorporated. A low rock wall and a single bedrock metate are the only other evidence of activity in the immediate area.

The Dead Dog Site (4-Riv-202)

The Dead Dog site is described in detail by Bettinger in this publication. Petroglyphs and pictographs are executed on various surfaces of two

large boulder complexes (cf. 1 and 2), located about 75 m apart on opposite sides of a wash that divides the site. Boulder Complex 1 contains two design panels. One of these is located on the roof of a small rock shelter-like arrangement of boulders, while the other is on an adjacent vertical surface.

The first panel measures about 1.0 x 1.2 m and contains 29 pits and three faded red areas (Figure 12d). One of these areas surrounds the pits and forms a circle. There are three other vague red patches, one of which is clearer than the others and forms a circle with a line extending from its edge at three o'clock. Two other small lines are perpendicular to this line. All of the pictographs are red

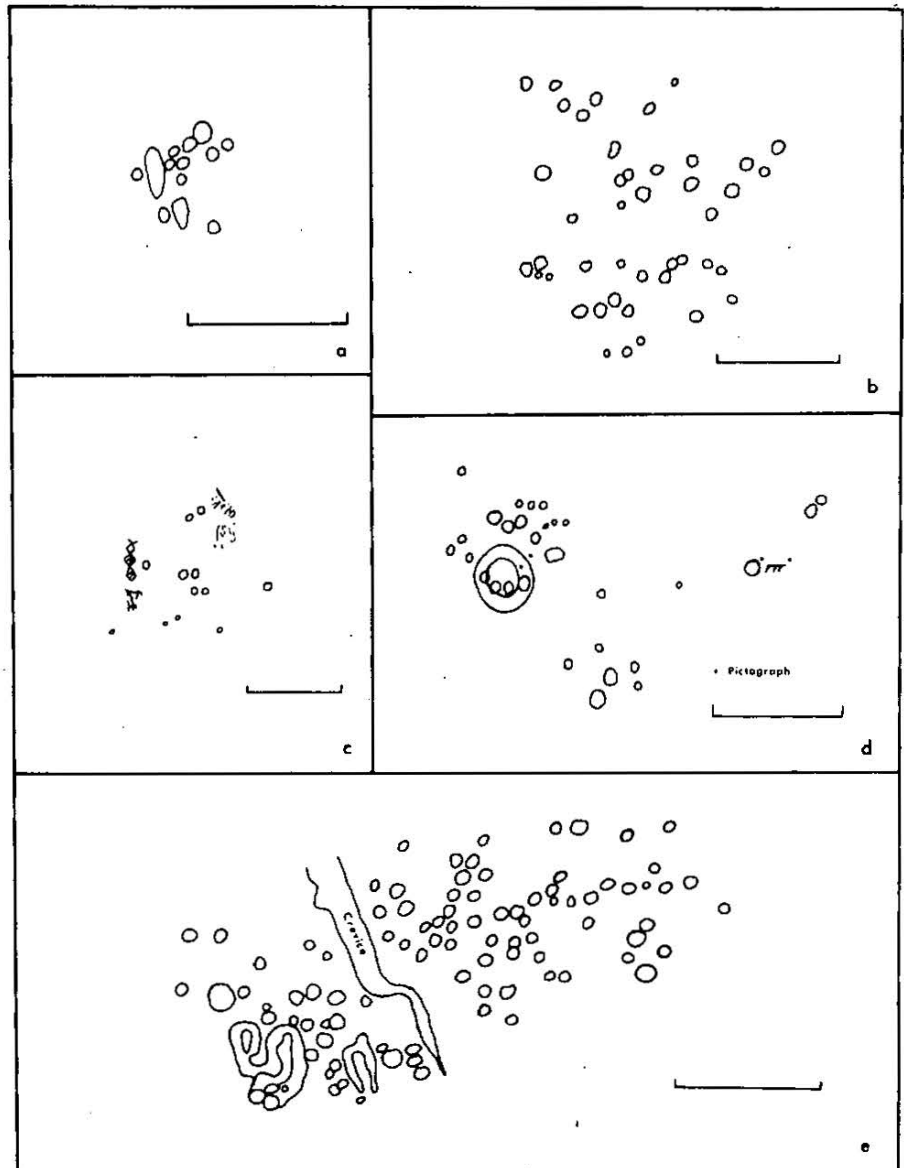


Figure 12. Rock art from Dead Dog site (4-Riv-202). Figure 12a: Petroglyphs, Boulder Complex 2, Panel 2; b: Petroglyphs, Boulder Complex 2, Panel 3; c: Petroglyphs and red pictographs, Boulder Complex 2, Panel 5; d: Petroglyphs and red pictographs, Boulder Complex 1; e: Petroglyphs, Boulder Complex 2, Panel 1. Scale: 50 cm.

(10R 4.5/8). The second panel contains a single faded red pictograph.

Boulder Complex 2 includes six design panels. Three of these contain only pit and groove petroglyphs, but the others combine both petroglyphs and pictographs. Panel 1 is located on the nearly vertical west wall of an enclosed shelter formed by several boulders. The panel includes 92 pits and two elaborate curvilinear grooves (Figure 12e). Panel 2 is located on a small northwest-facing granitic boulder at the entrance to the same shelter. It includes 11 pits, two of which are connected, and two grooves (Figure 12d). On the north and east walls of this shelter are 12 apparently randomly distributed pits. In all, nine pits from both panels in this shelter are 5 cm in depth, while three are 4 cm, five are 3 cm, eight are between 1 and 2 cm, and the remainder are 1 cm or less in depth.

Panels 3 and 4 are located on the west and east walls, respectively, of a small narrow shelter about 4 m north of Panels 1 and 2. Panel 3 consists of 44 pits, several of which are connected by their edges (Figure 12b). Three of these are 5 cm deep, three are 4 cm deep, one is 2 cm deep, and the remainder are 1 cm or less in depth. The panel on which these were made curves slightly at the northern mouth and entrance to the shelter, so that it is about .7 m from the east wall. Panel 4 (not illustrated) has five pits and 14 barely discernible red painted areas, 13 of which are visible only in the form of circular spots averaging 8 cm in diameter. Several of these seem to have either crosshatching within their perimeters or lines protruding from semirounded bases. The fourteenth pictograph consists of two overlapping zig-zag lines forming connected diamonds. It is about 20 cm long and 6 cm wide at the top and narrows to a point at its base. It is severely weathered. The pictographs in this panel range in color from 2.5YR 5/8 to 2.5YR 6/8 and from 10R 4/8 to 10R 5/8.

Panel 5 is located on an almost vertical north-western surface in Boulder Complex 2. The panel includes 12 pits that are less than 1 cm in depth and four partially discernible red painted areas (Figure 12c). One of the latter is a pair of overlapping zig-zag lines forming a chain of diamonds. The others are vaguely linear in form.

Panel 6 (not illustrated) is located on the ceiling of a small boulder shelter about 3 m long, 1.2 m wide, and 0.6 to 1.3 m high. The panel contains six circular patches, the largest of which averages 12 cm in diameter. All are painted red (7.5R 4/8). There are 12 circular pit petroglyphs on various horizontal surfaces inside the alcove.

The Charles Mott Site (4-Riv-464)

The Charles Mott site is described by Robarchek in this publication. Three distinct sets of pictographs and two sets of petroglyphs are known to exist at this site. The first set of pictographs is located about 100 m southwest of the main part of the site (Locus 1) near a small spring. It consists of two red painted (2.5YR 4/6) hands of average size on the vertical face of a granite boulder. The upper, a right hand, is 1.5 m above the ground level, while the lower is about .6 m above the ground and is so eroded that laterality cannot be determined.

A second pictograph panel is located about 15 m east of these hands on a blackened overhang and contains a single circular orange patch (10R 4/8) about 15 cm in diameter. It is associated with a very deep mortar, which has been broken in half by blasting.

A faded red pictograph was also recorded in Locus 5 near the summit of the hill at the eastern edge of the site, in a crevice between two large boulders. Its condition is too poor to permit comment on its original form.

Two petroglyph panels lie in a small valley about 180 m east of the summit of the hill in Locus 5. The first panel consists of 23 randomly placed pits on the fire-blackened walls and floor of a small north-facing shelter. The pits range from 2 to 4 cm wide and 1 to 2 cm deep. Fourteen more pits were recorded on the east face of the boulder which roofs the shelter. They are smaller than those within the shelter, averaging only about 2 cm in diameter and less than 1 cm in depth.

Petroglyphs were also found on a granite boulder 100 m northeast of Locus 5 in the wash that connects the site with the Dead Dog site to the east. The panel contains six elements: four shallow pits and two quadrupeds (Figure 11e).

4-Riv-602

This site is located on the east side of a small isolated hill and is 2 km east of the Bernasconi Hills and 4 km southeast of the Dead Dog site. It overlooks the basin of former Lake San Jacinto and the outlet of the San Jacinto River. It includes a small midden deposit, a bedrock mortar complex, and scattered bedrock metate surfaces. A single pictograph was found on the northwest face of a large granite boulder adjacent to the midden area. It consisted of three sets of three parallel rows of dots with seven to eight dots in each row. All are painted a yellow-white (2.5Y 7/2).

The Pictograph Site (4-Riv-452)

The Pictograph site is described in detail by Hammond in this publication. Rock art there includes one clear design — a series of overlapping zig-zag lines — executed in red (10R 4/6) on the west face of a prominent granite boulder (Plate 6b). Other red pictographs of indeterminate design occur on the south side of the same boulder.

4-Riv-62

This site number is applied to a large petroglyph on a boulder in Bernasconi Pass. The boulder was apparently moved from its original location a short distance downslope in the course of road construction. There is no other evidence of aboriginal activity in the small pass, although there are other sites nearby. The Bernasconi site (4-Riv-395) lies some 400 m to the southeast, and the North Lakeview site (4-Riv-528) is located about 300 m to the northeast. The petroglyph is a large, complex, curvilinear pit and groove design (Plate 5). The top pit is 20 cm across and 10 cm deep and could pass for a bedrock mortar; the other pit is somewhat smaller, about 13 x 3.5 cm.

4-Riv-528

The North Lakeview site is located about 180 m north of the Ramona Expressway, just northeast of Bernasconi Pass. There are two design panels located on the same boulder face separated from each other by a large crevice that measures 30 cm wide. The left or south panel, which measures 1.05 x .59 m, has two similar designs of 12 dots in each of three rows, a zig-zag line, a long slanted grid or crosshatched area, and faded meandering lines. All of these elements are executed in red paint (10R 5/8). The right panel, which is about .8 m square and is partially illustrated in Figure 11b, includes a grooved maze (not shown) that has been painted over with a very light orange paint. The grooves of the maze are 2.5 cm wide and several millimeters in depth. The maze itself is 34 cm long and 22 cm wide.

Discussion

Bean (1972: 75) reports that among the Cahuilla shamans and others sometimes designated certain areas for personal use in connection with ritual or other esoteric activity. He also notes (p. 125) that petroglyphs, stones, or specific geographic features marked the boundaries of terri-

torial units and that "historic rights to the territory had usually been established by a culture hero who named all of the various features and sites within the area, and who left signs in the forms of petroglyphs and pictographs, and other imprinted features within the area."

In southern California rock art also played a role in female initiation rites. Strong (1929), Sparkman (1908), and Driver (1941) report that these ceremonies took place sometime in the late summer or early fall when food was abundant. The initiates were placed in a pit dug in the floor of a permanent ceremonial structure or alternatively in a small brush enclosure. The initiates remained in these pits for an average of three days. At the end of this period, the young women were taken out of the pits, their faces painted, and they were required to run a predetermined route to a rock on which they painted a design. These designs were of several types. Strong (1929: 229) and Steward (1929: 203) report that red painted diamonds or superimposed zig-zags were the most common motifs, although rectilinear designs might also be drawn. In some cases an adult woman would start a line and each girl would add to it, the result being a meandering or rectilinear line pattern. At the end of a month the faces of the girls were again painted. They then went to the same rock and painted the design that was on their faces (Sparkman, 1908: 225).

Male initiation rites also took place during a three-to-four-day period at a time of the year when food was abundant. They were more secret than the girls' rites and generally occurred at a distance from the camp (Driver, 1941; Strong, 1929: 174). During these ceremonies, *toloache* (a *Datura* sp. decoction) was prepared in special shallow, round mortars (Sparkman, 1908: 208). The boys drank this potion and danced around a fire through the night until they fell into a stupor and collapsed. During the day they were taught songs (Strong, 1929: 174). At the end of their ordeal they painted designs on a rock.

Variation in the rock art at Perris Reservoir may reflect the differences in function and execution of rock art known ethnographically, specifically those differences with respect to its roles in marking territory and in initiation rites. In order to test this proposition, it is necessary to summarize the locational and compositional characteristics of the two categories of ethnographic rock art and compare them with the characteristics of the rock art at Perris.

Pictographs or petroglyphs that serve as boundary markers should be located in exposed,

highly visible settings, since they convey a specific message to a broad audience. We may also expect them to be conventional and highly stylized. In contrast, rock art executed in connection with initiation rites should be located in less obvious settings and should be more variable or idiosyncratic in style.

Given these assumptions, we can identify the two mazes at 4-Riv-21 and 4-Riv-528 and the large rectangular panel at 4-Riv-452 as potential boundary markers. All are readily visible, highly conventionalized designs, made up of a minimum number of elements — primarily simple straight or curved lines, or zig-zags. Moreover, the design at Riv-528 is pecked into the surface of the rock, suggesting repeated refurbishing.

With the exception of site 4-Riv-62, which will be discussed below, the remainder of the rock art panels at Perris Reservoir consist of several individual design elements, most of them with no necessary connection with each other. These may be identified as initiation locations. As expected, these panels are for the most part hidden from view, although the exposed locations of the two panels at site 4-Riv-419 are obvious exceptions.

While all rock art sites contain pictograph elements, only three sites (4-Riv-202, 4-Riv-464, and 4-Riv-528) contain petroglyphs, more specifically conical pits. There is also a distinction between pictograph panels consisting of complex single elements (4-Riv-12, 4-Riv-419) and those containing only more simple elements, such as lines or dots (4-Riv-202, 4-Riv-528, 4-Riv-602, 4-Riv-464). It may further be observed that with the exception of site 4-Riv-602, pictograph panels consisting of simple design elements are associated with petroglyphs, while panels with complex design elements are not. This distinction also has a spatial aspect: petroglyphs and simple pictographs occur in the southeast half of the Perris area (Figure 9), while complex pictographs are present only in the north-west half.

It is tempting to speculate that the differences between these two types of rock art panels reflect a differentiation between male and female initiation signatures. Thus, 4-Riv-12 and 4-Riv-419

might be the locations where males were initiated, and 4-Riv-202, 4-Riv-528, and 4-Riv-602 the sites of female initiation rites.

Other interpretations also can be offered. Probably the most obvious is that the variation exhibited is a result of stylistic differences between two sociopolitical groups. It is interesting in this regard that a line drawn between the boundary pictographs very nearly coincides with a line drawn dividing the two types of rock art panels. Both of these explanations are plausible, but we cannot favor one or the other on the basis of data now at hand.

The rock art piece at 4-Riv-62 (Plate 5) is more properly rock sculpture since its apparently unique lines take advantage of the natural form of the boulder. The ground mortar-like basin could have held a liquid, and it is suggested that this is a site where toloache (the previously mentioned hallucinogen) was mixed and administered to male initiates. The basin-like mortars at site 4-Riv-12 may have served a similar function. Strong (1929) suggests that the location of the toloache ordeal and the place where the rock art signatures were made were not necessarily the same.

In conclusion, there are three types of rock art at Perris Reservoir: large rectangular panels made up of one large design, panels consisting of several distinct and independent designs, and one rock sculpture. It seems fairly certain that the large designs were boundary markers and that the small basins at 4-Riv-12 and 4-Riv-62 were used in the preparation of toloache. On the other hand, while it is likely that sites of the remaining category (which includes rock art panels with many unconnected elements) are linked with ordeal signatures, interpretations that can account for the stylistic diversity within this group are certainly not unambiguous. The variation noted within this category may reflect either the difference between male and female initiation signatures or the differences between signatures of two separate sociopolitical groups. Given the small sample upon which the latter interpretations are based, it is probably best to consider these as hypotheses to be considered in further studies rather than as demonstrated conclusions.

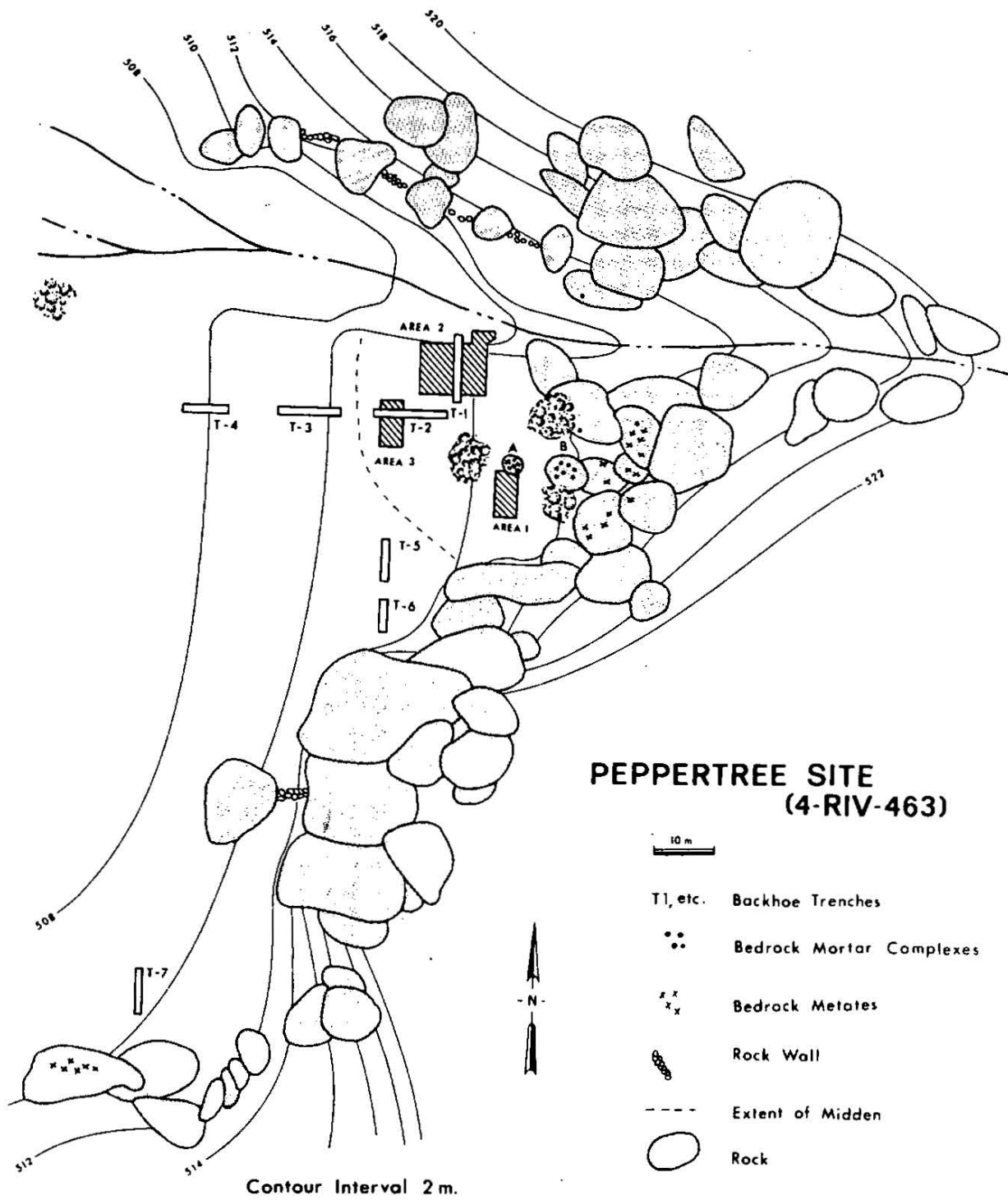


Figure 13. Map of the Peppertree site.



Plate 7. Aerial view of the Peppertree site (4-Riv-463).
(Photo courtesy of K.L. Decroo.)

THE PEPPERTREE SITE (4-Riv-463)

Philip J. Wilke

The Peppertree site is located at the western foot of the Bernasconi Hills in the mouth of a small, steep canyon roughly 500 m northwest of the summit of Bernasconi Pass. The site lies on the boundary between two biotic communities — a coastal sage scrub community that occupies the slopes to the north, east, and south; and a valley grassland community that occupies the more gently sloping alluvium and open plain to the west (Figure 4). Small, isolated chaparral communities are found within a distance of 2 km of the site, and a riparian community formerly existed along the now-dry San Jacinto River some 2 km to the southeast. The midden deposit is restricted to the upper end of an alluvial fan at the canyon mouth and is dissected to a depth of 1 m along its northern periphery by an arroyo, which is presently dry.

There are no active springs in the immediate vicinity of the site, but a small dam of rock and concrete a few meters up the canyon and an excavated catch basin on the adjacent north slope mark

historic attempts to impound the flow of seep springs. The presence of these structures further indicates that a now-defunct spring provided water for the site in the prehistoric past.

On the rocky margins of the canyon mouth are located complexes of bedrock mortars and bedrock metates. There are also remnants of several low rock walls that very roughly fill in the gaps between larger boulders on the north and south margins of the midden deposit. These surface features are described in greater detail below.

Several large Peruvian pepper trees (*Schinus molle*) grow on the site. These introduced trees and historic rubbish on the surface of the ground indicate a recent non-Indian occupation to which the development of the springs is probably linked.

The site location is shown in Figure 4, and the general plan of the site is depicted in Figure 13. Plate 7 is an aerial view showing the location of the site in relation to the surrounding topography.

Surface Features

Bedrock Mortars

There are 15 bedrock mortars at the site. With the exception of a single shallow mortar on the north side of the arroyo, all are located in two clusters just north and northeast of Excavation Area 1. The first of these, designated "Mortar Complex A" (Figure 13) consists of four large and three small mortars on a flat-topped boulder. The dimensions of the large examples are as follows:

Surface diameter (cm)	Depth (cm)
17 x 20	16
20 x 20	15
20 x 20	17
15 x 15	5

The first three mortars are parabolic in profile. The fourth is shallow and was probably used with a basket hopper (Barrows, 1900: 53). Also ground into the upper surface of this boulder are three small mortars with the following dimensions:

Surface diameter (cm)	Depth (cm)
6 x 6	1
5 x 5	2
4 x 4	3

These resemble small mortars at the Charles Mott (4-Riv-464) and Dead Dog (4-Riv-202) sites at the northeast end of the reservoir locality and probably served similar functions. Sparkman (1908: 207), in describing Luiseño mortars, comments, "Another and very small mortar, tamayamal, is said to have been used for mixing paint. This is also polished, and is almost exactly round." However, it is not clear whether Sparkman refers to mortars of the bedrock or portable variety.

The second group of mortars, designated "Mortar Complex B," consists of seven examples of varying sizes and depths. Dimensions are as follows:

Surface diameter (cm)	Depth (cm)
18 x 17	13
16 x 16	10
14 x 15	8
17 x 18	17
17 x 14	8
10 x 11	2
9 x 9	1

In profile these mortars are also conical to parabolic except for the last two, which have received little use. Each of five of these mortars is surrounded by a ground and polished area about 10 cm wide so that it appears to have been ground into the center of bedrock metates. The reason for this polished area is unknown.

Ethnographic records link the mortar with the processing of such foods as acorns (*Quercus* spp.) and the seeds of hollyleaf cherry (*Prunus ilicifolia*), with some accounts indicating use of the mortar and pestle for pounding small animals (Barrows, 1900; Sparkman, 1908; Kroeber, 1908; Hooper, 1920; Bean and Saubel, 1961). Both oak and hollyleaf cherry occur within 2 km of the site, and most of the small animal bones recovered during the excavation were quite fragmentary.

Bedrock Metates

There are 21 bedrock metates at the site. They are very shallow, highly polished depressions on the surface of flat-topped boulders. They are sometimes difficult to recognize if they have not received extensive use, and frequently the polished areas converge, making identification of the individual milling surfaces difficult. Additional examples are undoubtedly concealed by detritus and soil formation on the surface of boulders elsewhere on the site. The dimensions of the milling surfaces are highly variable, ranging from 13 x 12 cm to 38 x 19 cm; the average is about 25 x 15 cm. The depth of the basins averages less than 1 cm. Most of the metates occur near the mortar complexes, but several examples are scattered farther up the canyon mouth. One complex of six bedrock metates is located about 75 m to the southwest of the midden deposit. The approximate locations of bedrock metates are indicated in Figure 13.

In terms of function, the metate is most often associated with the grinding of small seeds, such as those of grasses and herbs (Barrows, 1900: 53).

Rock Walls

Four short segments of rock walls occur at the Peppertree site. Each consists of granitic boulders piled up to three courses (about 1.0 m) in height, the boulders being about 0.5 m across. There is no evidence to indicate that mortar was ever used in their construction.

The walls are located between large boulders, and their general placement is such that they tend to circumscribe the major portion of the site on the north and south sides. The rock walls and

naturally occurring boulders together form a roughly V-shaped configuration with the open end facing west toward the plain and the apex leading into the mouth of the canyon.

There is a suggestion in this configuration that the walls may have been built to facilitate animal drives. Pronghorn antelope (*Antilocapra americana*) would be susceptible to this method of capture (Steward, 1938: 34), but only one antelope bone was found in the excavation. A more probable explanation is that these walls were erected in historic times by shepherds as part of a corral or containment structure.

It seems likely that in former times there were more such structures along the north side of the arroyo, but it is difficult to determine whether rocks that seem to be aligned are actually the remnants of other wall segments. This matter is discussed in greater detail in the paper by Ambrose and King, "Rock Walls," in this publication.

Sampling Procedure

Recent fan alluvium concealed all evidence of a midden deposit except in the bank of the arroyo, where it was visible about 0.6 m below the ground surface. An initial test excavation was opened in Area 1 among the pepper trees near the major complexes of bedrock mortars and metates in an attempt to gain some knowledge of specific activities that had occurred around these features. The remaining, more accessible portions of the site were trenched with a mechanical backhoe to determine the depth and areal extent of subsurface deposits. The locations of the backhoe test trenches are indicated in Figure 13.

On the basis of strata revealed by trenching, excavations were initiated in a second area adjacent to the arroyo on either side of Backhoe Trench No. 1 and in a third area near the center of the fan on either side of Backhoe Trench No. 2. In the latter two areas the overlying alluvium was removed by shovel and discarded prior to excavation and screening of the midden. Excavation was then continued with trowel and shovel, and all fill was passed through a one-quarter-inch mesh screen, except in three excavation units, where one-eighth-inch mesh screen was used as a check for the possible occurrence of small items. No significantly greater yield of artifacts and ecofacts was noted with the smaller mesh, and use of it was discontinued.

About 35 m³ of midden was passed through the screen. All fragmentary bone and debitage was saved. Where possible the excavation followed the

natural stratification of the deposits, but since this was not readily discernible until thoroughly dry, most of the work was done by 10 cm increments. Large soil samples were taken from a stratigraphic control column in Area 2 and from subsurface features in an attempt to recover carbonized food remains by water separation (Struever, 1968a).

Stratigraphy

The natural stratification of the deposits in Area 1 was seriously disturbed. This was in part due to past attempts by parties unknown to remove Mortar Complex A with power equipment and explosives. This disturbance extended to an unknown depth. When bore holes for the placement of explosive charges were encountered in the side of the boulder containing Mortar Complex A, at a depth of 1.2 m, excavation in Area 1 was discontinued. Most of the artifacts recovered in this area were of essentially modern types.

Area 2 was excavated to a depth of 1.8 m and yielded most of the prehistoric cultural materials recovered from the site. Particular emphasis will therefore be placed on the cultural and natural deposits of this area. Six natural depositional units were recognized (Figure 14). From top to bottom these units are as follows:

Unit III: A sandy overburden representing recent alluviation and containing no cultural materials except a few flakes and bone fragments that are believed to be intrusive as a result of rodent activity; average thickness about 50 cm; Munsell color 10YR 6/2.

Unit II: A water-laid sandy clay bed, in a few places discontinuous, and also nearly devoid of cultural material; average thickness about 5 cm; Munsell color 2.5Y 6/2.

Unit IC: A thick midden zone of sandy alluvium containing abundant charcoal. This unit yielded much of the prehistoric cultural material encountered in Area 2, including Features 1 through 8 described below. Average thickness about 0.5 m; Munsell color 10YR 5/1.5. (This stratum is an upper continuation of Unit IA, but over most of Area 2 the two were separated by Unit IB, a fossil arroyo channel.)

Unit ID: A minor fossil arroyo channel that intruded into Unit IC. The intrusion was minor and occurred near the present arroyo channel. No cultural materials were noted in this sandy layer. Munsell color 2.5Y 6/3.

Unit IB: A major fossil arroyo channel of tan sand with many thin clay laminations containing

much less cultural material than the overlying stratum and almost devoid of the scattered charcoal fragments that characterized Unit IC. Sub-surface Features 9 through 14 occurred in this unit. The layer pinched out near the southern edge of the Area 2 excavation but pitched deeply and increased in thickness toward and under the present arroyo channel. Munsell color 2.5Y 6/3.

Unit IA: A sandy alluvium containing little cultural material; encountered only in the southwest portion of the excavation area, where it was a deeper continuation of Unit IC. Munsell color 5Y 5/2.

The earliest occupation of Area 2 occurred while Unit IA was being laid down and consists of a few flakes and bone fragments and one mano fragment. Since no soil horizon separating Units IA and IC was noted, it is believed that the cutting and filling of the fossil arroyo channel designated Unit IB occurred in a relatively short period of time. Most of the earlier campsite debris encountered in Area 2 were laid down in the arroyo channel (Unit IB) while it was filling; Features 9 through 14 occurred in this channel fill.

Unit IC was deposited subsequent to and probably in part coeval with the channel filling. It produced the greatest density of occupational evidence, including Features 1 through 8, which were found on or within a few centimeters of a common level within this depositional unit. Minor cutting and filling in this layer is represented in the northeast corner of the exposure by a second arroyo channel, Unit ID. Occupational debris ceased abruptly at the Unit IC-Unit II interface, and it is likely that after occupation of Area 2 ceased, the surface of the fan underwent minor degradation before the thin clay bed designated Unit II was laid down by water.

Post-occupational alluviation of the fan is represented by Unit III. Detritus from the pepper trees continues to build up the present surface of Unit III, and there is active arroyo cutting along the north edge of the fan. (See Figure 14.)

Area 3 lacked the thin clay bed that was noted as Unit II in Area 2. The excavations disclosed only two strata, a sterile overburden that is probably a continuation of Depositional Unit III of Area 2, and a layer containing cultural material that is believed to be a continuation of Unit IC. These strata were similar in both texture and color in the two excavation areas, but Unit IC in Area 3 did not contain the abundance of charcoal that was present in the Area 2 exposure. Excavation in Area

3 was discontinued at a depth of 80 cm because of a paucity of cultural material.

Subsurface Features (Area 2)

In the following discussion of data from Area 2, the excavation levels on either side of Backhoe Trench No. 1 have been correlated and designated as arbitrary levels *a* through *k* (from upper to lower). Level *a* actually begins about 50 cm below the surface because the sterile overburden was discarded.

Feature Categories

The Area 2 excavation revealed the presence of 14 subsurface features. The following categories were noted.

Small hearths (Features 1, 6, 7, 8, 14)

These are generally circular rock concentrations averaging 0.5 m in diameter and containing quantities of charcoal, burned bones, and the like. Individual rocks average 10 cm in diameter or less and rest on a common plane.

Large hearth (Feature 4)

This roughly circular concentration of rocks was 1.6 m in diameter and occurred throughout 20 cm of depth. It contained much charcoal and food waste. Rocks were of similar sizes as in the small hearths.

Earth oven (Feature 9)

This oval-shaped pit was roughly a meter in diameter and 0.3 m deep, filled with rocks 20-30 cm in diameter and much burned material.

Charcoal lens (Feature 12)

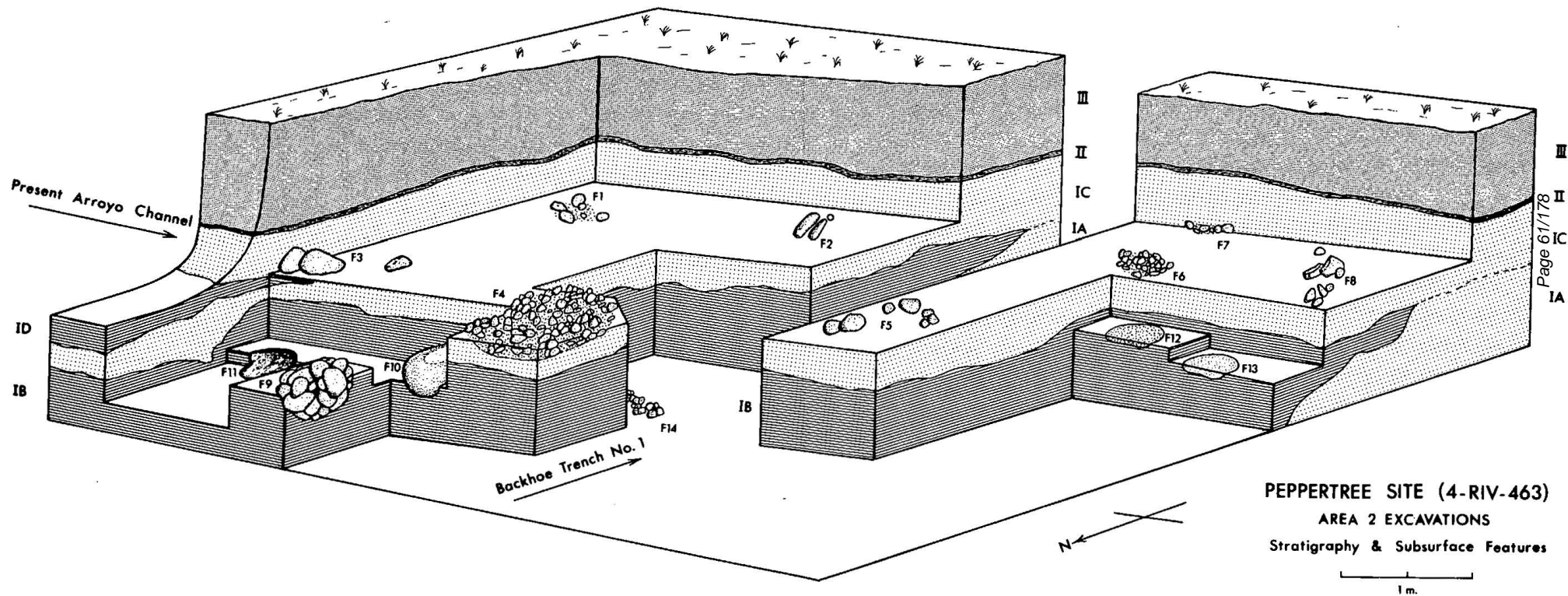
Feature 12 was a lens of charcoal 0.5 m in diameter and several centimeters deep.

Ash lens (Feature 13)

The single ash lens noted was of a form similar to the charcoal lens but was filled with white ash.

Pestles (Feature 2)

Feature 2 consisted of a pair of elongate cobble food processing pestles and a fragment of a mano.



PEPPERTREE SITE (4-RIV-463)
 AREA 2 EXCAVATIONS
 Stratigraphy & Subsurface Features

Figure 14. Stratigraphy and subsurface features of Area 2, Peppertree site.

Basin metate (Feature 10)

This feature was a medium-sized boulder with a milling basin on the upper surface.

Unlined pit (Feature 11)

This small pit was filled with charcoal and burned refuse.

Rock clusters (Features 3, 5)

These were simply nonrandom distributions of rocks of varying sizes, all resting on a common surface.

The stratigraphic and areal distribution of these subsurface features is shown in Figure 14.

Description of features

Eight subsurface features (Features 1 through 8) occurred on or within several centimeters of a common plane in level *d*. This plane apparently represents a major occupation surface. These features are discussed individually as follows:

Feature 1

Feature 1 was a cluster of six rocks, each about 15 cm in diameter. The rocks were burned, and the fill among them contained a quantity of charcoal. A portion of the fill was saved for water separation, and the remainder was screened. Together the screening and water separation yielded 95 bone fragments, 20 of which were charred. Identifiable bones represented jackrabbit (*Lepus californicus*), cottontail (*Sylvilagus* sp.), coyote (*Canis latrans*), and possible bighorn (*Ovis canadensis*). Carbonized seeds representing goosefoot (*Chenopodium* sp.), amaranth (*Amaranthus* sp.), needlerush (*Juncus* sp.), chia (*Salvia Columbariae*), and an unidentified grass were also present. Artifacts in the fill of the feature were four quartz flakes and an unclassified projectile point fragment. This feature is classified as a small hearth.

Feature 2

This feature consisted of two pestles (17-181 and 17-182, Figure 21c) and a small mano fragment. The pestles are unshaped elongate cobbles that are smooth on the ends from use, presumably in bedrock mortars.

Feature 3

Three large rocks, each roughly 25 cm across, constituted this feature. One of these rocks was

burned granite. Another has a slightly concave surface that is painted red-orange (Munsell 10YR 5/8). The color is similar to that of the pictographs at other sites in the study area, although no rock art was found at Peppertree. The concavity may have been used for the preparation of paint, perhaps for blending ingredients as discussed by Sparkman (1908: 209-210). This suggestion is supported by the fact that the concavity has been smoothed slightly.

Feature 4

Feature 4 was a large rock concentration about 1.6 m in diameter. Discounting a portion of it lost in the cutting of Backhoe Trench No. 1, it contained 106 rocks that averaged 5 to 10 cm in diameter. The feature yielded 175 bone fragments, 57 of which were charred. Identifiable fragments represented jackrabbit, cottontail, deer (*Odocoileus hemionus*), and ring-necked duck (*Aythya collaris*). Identified plant remains included the carbonized seeds of saltbush (*Atriplex* sp.), goosefoot, poppy (*Papaver* sp.), juniper (*Juniperus* sp.), and amaranth, as well as carbonized leaf fragments of chamise (*Adenostoma fasciculatum*). There were also 13 flakes and one cottonwood triangular concave-base projectile point (17-137, Plate 15a). The feature is classified as a large hearth. The rocks and fill were apparently not in a pit, but did occur through about 20 cm of depth, suggesting that the facility was probably used repeatedly over a period of time. Charcoal from the fill of the feature yielded a radiocarbon age of 215±60 years BP (UCLA-1816).

Feature 5

This feature consisted of a loose cluster of seven rocks, each up to 20 cm across. There was no concentration of charcoal or ash among them, and the reason for their placement is unknown. They may simply represent rocks discarded from another feature.

Feature 6

Feature 6 was a small circular cluster of 26 rocks, each averaging 5 to 8 cm in diameter. The feature itself was about 50 cm in diameter and contained abundant charcoal from which was recovered a few bones, mostly charred, representing woodrat (*Neotoma* sp.) and an unidentified large ungulate. Identifiable carbonized seeds included those of amaranth, saltbush, goosefoot, and chia. Chamise leaves were also present. The feature is

classified as a small hearth. Near it was a ground stone object that appears to be a very small mano (17-277, Plate 15e).

Feature 7

This feature was only partially exposed in the south wall of the excavation, about 0.6 m from Feature 6. The exposed portion resembled Feature 6 in terms of structure, rock size, and charcoal content, and it is classified as a small hearth.

Feature 8

This feature consisted of eight rocks of varying size surrounding a minor concentration of charcoal. Regrettably, the fill between the rocks was not treated separately. It is classified as a small hearth, the rocks of which had become somewhat scattered.

Because of the sandy nature of Depositional Unit IC, these features were not associated with a recognizable occupation surface or compaction layer. While all of the features occurred within several centimeters of a common level, it is difficult to say whether or not they were all in use at one time. Their horizontal proximity, coupled with the somewhat disarticulated structure of Features 5 and 8, indicates that as hearths were gradually covered by aggradation of the fan, they fell into disuse and some rocks were collected for reuse elsewhere. Alternatively, the possibility that all of the features were used at the same time cannot be ruled out. In either case, it seems reasonable to conclude that the features and artifacts associated with the common level represent the activities of a small group or groups over a relatively short period of time.

The nearly uniform size of the rocks in Features 4, 6, and 7 suggests that rocks of 5 to 8 cm in diameter were consciously selected, perhaps for use in cooking by heat transfer. If this is the case, an absence of ceramic sherds in association with the occupation surface would seem to indicate that the utensils were of a perishable material, such as basketry. However, no trace of containers of any kind was found in association with the occupation surface.

Faunal remains from the hearths and the surrounding deposits of arbitrary level *d* are quite varied. Jackrabbit is most abundant, but cottontail, badger (*Taxidea taxus*), coyote, woodrat, bobcat (*Lynx rufus*), deer, ring-necked duck, and possibly bighorn sheep are also present. Level *c*, the 10 cm level immediately overlying level *d*, yielded in

addition kangaroo rat (*Dipodomys* sp.), pocket gopher (*Thomomys* sp.), bufflehead (*Bucephala albeola*), and an unidentified duck.

Of the carbonized floral remains recovered from Features 1, 4, and 6, goosefoot and amaranth occurred in all three; saltbush, chia, and chamise (leaves only) occurred in two; and needlerush, poppy, and juniper were each present in only a single feature.

Much of the charcoal in Depositional Unit IC is believed to have come from the hearths. The pestles link the use of bedrock mortars with the other activities represented on the occupation surface. In addition to the pestles and mano fragment that constituted Feature 2 and the small mano-like object that was found adjacent to Features 6 and 7, artifacts that occurred on or very near this common level included one probable bone strigil (?) (sweat scraper) fragment (17-301, Plate 20r), one bone-flaking tool (17-377, Plate 20t), and two Cottonwood Triangular concave-base projectile points.

The occupation surface underlay and hence predated the few ceramic vessel sherds found in Area 2. One sherd identified as Jeddito Yellow Ware occurred in the level immediately overlying the occupation surface; a single ceramic pipe fragment underlay it by about 30 cm; and another small fired clay object (discussed below) underlay it by about 10 cm. (See Table 3.)

The remaining subsurface features in Area 2 (Features 9 through 14) occurred deeper in the deposit at varying depths from the surface. All were encountered in the fill of the arroyo channel designated Unit IB (Figure 14). Although Features 9 through 14 predated as a group the features of Unit IC, it is not possible to consider them strictly contemporaneous with one another, since they do not occur on a single occupation surface. These features are considered individually as follows:

Feature 9

Feature 9 was visible in the north wall of the Area 2 exposure, and it occurred stratigraphically in levels *g* through *i*. The excavation was extended to the north under the floor of the present arroyo channel to reveal the feature. It was a pit about 1 x 0.8 m across and 0.3 m deep, and was filled with burned rocks 20 to 30 cm in diameter. The fill among the rocks consisted of sand and a large quantity of charcoal. A portion of the fill was saved for water separation and the remainder passed through the screen to yield 95 bone fragments (35 of which were charred) representing

TABLE 3
DISTRIBUTION OF ARTIFACTS AND ECOFACTS IN
AREA 2, PEPPERTREE SITE (4-Riv-463)*

Category	Number	Level										
		a	b	c	d	e	f	g	h	i	j	k
Bones and Bone Fragments	4973+	880	646	997	1065	597	459	202	127	+	+	+
Shell Fragments	7	--	--	2	3	1	1	--	--	--	--	--
Debitage	594	105	85	104	132	76	44	32	16	+	+	+
Flaked Stone												
Projectile points												
Cottonwood Triangular, concave base	10	2	3	1	2	--	2	--	--	--	--	--
Cottonwood Leaf-shaped	1	--	--	--	--	--	--	1	--	--	--	--
Desert Side-notched	1	--	--	--	--	--	--	1	--	--	--	--
Unclassified fragments	3	--	1	1	1	--	--	--	--	--	--	--
Ground Stone												
Manos												
Unclassified (very small)	1	--	--	--	1	--	--	--	--	--	--	--
Unclassified fragments	5	1	--	--	1	--	--	1	--	--	1	1
Metates												
Basin	2	--	--	--	--	--	--	--	--	1	1	--
Pestle												
Type I (food processing)	2	--	--	--	2	--	--	--	--	--	--	--
Ceramics												
Vessel sherds												
Tizon Brown Ware	3	2	1	--	--	--	--	--	--	--	--	--
Jeditto Yellow Ware	2	--	1	1	--	--	--	--	--	--	--	--
Pipe												
Fragments	2	--	1	--	--	--	1	--	--	--	--	--
Figurine appendage (?)	1	--	--	--	--	1	--	--	--	--	--	--
Worked Shell												
Pendant												
<i>Glycymeris</i> pendant	1	--	--	1	--	--	--	--	--	--	--	--
Beads												
<i>Olivella biplicata</i> , spire removed	1	--	--	--	--	--	--	1	--	--	--	--
<i>Olivella dama</i> , spire removed	2	2	--	--	--	--	--	--	--	--	--	--
Abraded <i>Haliotis</i> fragment	1	1	--	--	--	--	--	--	--	--	--	--
Worked Bone												
Awl fragments	5	2	--	1	--	--	1	--	--	--	--	1
Flakers	2	--	--	1	1	--	--	--	--	--	--	--
Strigil (?) fragment	1	--	--	--	--	1	--	--	--	--	--	--
Notched tools	2	--	--	1	--	--	--	1	--	--	--	--
Unclassified fragments	3	--	--	2	1	--	--	--	--	--	--	--
Historic Items	3	3	--	--	--	--	--	--	--	--	--	--

*All arbitrary levels are 10 cm except for level a which varies from 20-30 cm. Occupation surface containing Features 1 through 8 corresponds to arbitrary level d. Levels i through k were not excavated in all units; therefore bone and flake counts in these levels are not indicated. In these units a + indicates that the item was present in a small quantity.

jackrabbit, cottontail, badger, coyote, deer, and sheep. A complete absence of historic items at this depth, together with a radiocarbon date of nearly 900 years, establishes this sheep as the native big-horn rather than the domestic form.

Water separation of a portion of the fill also yielded bones of California quail (*Lophortyx californica*). Carbonized seed remains included goose-foot, saltbush, chia, juniper, hollyleaf cherry or oak, fescue (*Festuca* sp.), and bentgrass (*Agrostis* sp.). This feature is classified as an earth oven (cf. Sparkman, 1908: 195), much like the one uncovered at the Oleander Tank site about 3 km to

the northwest. Charcoal from the fill of this feature yielded a radiocarbon age of 870±80 years BP (UCLA-1815).

Feature 10

This feature was a single large basin metate that lay in an upright position with the base resting in level i. Its basin-shaped milling surface measured about 40 x 20 x 4 cms. The base of the metate was somewhat rounded, and when in use it was probably stabilized by imbedding it in the sand. It was situated about 1 m from Feature 9, and the two

features may have seen use on the same occupation surface. This was one of two basin metates noted at the Peppertree site.

Feature 11

Feature 11 was a small, unlined pit 40 x 45 cm in diameter and 33 cm deep, excavated into the otherwise nearly sterile sand from level *i*. It was encountered while exposing Feature 9, and the upper limit of it, or at least the fill of it, was plainly visible. The fill consisted of a quantity of charcoal and burned bone fragments representing jackrabbit and deer. Floral remains included seeds of saltbush, goosefoot, an unidentified grass, fragments representing either acorn hulls or hollyleaf cherry seeds, and leaf fragments of chamise. Since the walls of the pit revealed no evidence of burning *in situ*, it is believed that the fill was simply buried in the pit.

Feature 12

Feature 12 consisted of a lens of charcoal measuring about 40 x 50 cm across and several centimeters deep in level *h*. The fill of the lens was not treated separately. Adjacent to the feature was what may have been a small fragment of basketry. It was completely carbonized, fragmented, and beyond recovery.

Feature 13

This small lens of white ash and charcoal occurred in level *i* adjacent to Feature 12. The fill was treated by water separation and yielded a few bone fragments, about half of which were burned, representing jackrabbit, cottontail, and an unidentified large ungulate. The only floral remains present were a few carbonized seeds of amaranth.

Feature 14

The lowermost and unquestionably the oldest feature encountered in Area 2 was a somewhat oval-shaped cluster of rocks in otherwise nearly sterile sand in level *k*. This cluster contained 11 burned rocks up to 11 cm across and a quantity of charcoal. One of the rocks was a mano fragment. The fill was subjected to water separation and yielded a single bone fragment that was unidentifiable, leaf fragments of chamise, and seeds of saltbush. The feature is classified as a small hearth. Charcoal from the feature yielded an age of 2200±80 radiocarbon years BP (UCLA-1817).

As mentioned above, these deeper features were all laid down in the former arroyo channel designated Unit IB. They are older than those associated with the common level some distance above. Rather than suggesting subsistence activities different from those represented in level *d*, they seem to suggest alternate ways of performing the same basic tasks. For example, no basin metates were found in the upper levels, but manos occurred throughout the deposit, and metates associated with the upper levels were probably of the bedrock type. No earth ovens occurred in the upper levels, but the floral and faunal contents of Feature 9 largely matched the contents of the upper hearths (Features 1, 4, and 6). While the Luiseño and Cahuilla used the earth oven (or more probably the roasting pit, which is simply a larger version of the same basic structure) for roasting yucca and agave (Sparkman, 1908: 195; Barrows, 1900: 58-59), no yucca or agave was noted in the study area; but the Luiseño are reported to have used the earth oven in the preparation of deer and rabbits (Sparkman, 1908: 197-198):

Venison was cooked by broiling on hot coals, also in the earth oven . . . (p. 197).

Rabbits and jackrabbits were usually cooked by broiling on hot coals. They were also sometimes cooked in the earth oven. Sometimes after being cooked in the latter manner, their flesh, together with the bones, was pounded in a mortar . . . (p. 198).

It will be recalled that the faunal remains in the earth oven (Feature 9) included deer, cottontail, and jackrabbit. The size of the rocks in the lowermost feature (Feature 14) also suggests cooking by heat transfer, as suggested above for Features 4, 6, and 7. The absence of stone pestles in the lower levels of the deposit may simply be a function of sampling error, or may point to use of the wooden pestle in the earlier deposits.

Aside from the occurrence of basin metates only in the lower levels, other differences in vertical artifact distribution that may have temporal significance are the following: (1) the absence of ceramic vessel sherds in levels *d* through *k*; (2) the appearance of Desert Side-notched and Cottonwood series projectile points in level *g* in association with a radiocarbon date of 870±80 radiocarbon years or AD 1080 (UCLA-1815), which is several hundred years earlier than the usual appearance of these styles (Bettinger and Taylor, n.d.; Clewlow, 1967); and (3) a complete lack of projectile points in the

TABLE 4
DISTRIBUTION OF ARTIFACTS AND ECOFACTS IN
AREA 3, PEPPERTREE SITE*

Category	Number	Depth in cm					
		20-30	30-40	40-50	50-60	60-70	70+
Bones and Bone Fragments	208+	43	44	51	45	25	+
Shell Fragments	1	1	-	-	-	-	-
Debitage	22+	6	-	5	4	7	+
Flaked Stone							
Projectile points							
Cottonwood Triangular, concave base	1	-	-	-	1	-	-
Ceramics							
Vessel sherds							
Tizon Brown Ware	2	1	-	1	-	-	-
Ground Stone							
Unidentified ground slate object	1	-	-	1	-	-	-
Historic Items	2	-	2	-	-	-	-

* A + indicates that the given item is present but only in a small quantity.

lowest levels, which suggests that projectile points were not part of the tool kit in the earlier occupation periods. (See Table 3.) There is a need for further work on this question.

Subsurface Features (Area 3)

Area 3 contained abundant rocks but comparatively few artifacts or ecofacts. There was one rock cluster and one rock scatter, which are designated (Features 15 and 16, respectively). The deposit in which they occurred can probably be identified with Unit IC of Area 2, although particular arbitrary levels cannot be correlated.

Description of features

Feature 15

This rock cluster occurred at a depth of 30 cm. It contained 11 rocks of varying size resting on a common plane in a roughly triangular area about 60 cm across. Only two of the rocks were fire blackened, both of them on the underside. It is possible that other evidence of burning had been leached or washed from the upper surfaces of the rocks. No charcoal occurred in the rock cluster, and the function it served cannot be determined.

Feature 16

This large rock scatter covered the entire exposure in Area 3 at a depth of about 60 cm. A portion of the feature was lost in the excavation of one of the backhoe trenches. The size of the rocks varied from 5 to 30 cm. Several of them showed the effect of burning on the underside, but as with Feature 15, there was no charcoal, and the reason for this rock scatter is unknown.

Area 1

Area 1 contained no subsurface features other than a few scattered rocks. Its deposits were seriously disturbed for reasons already mentioned, and contained historic items almost throughout. The vertical distribution of cultural remains is indicated in Table 5.

Artifacts and Ecofacts

Since the artifacts and ecofacts from the Perris Reservoir locality as a whole are described in detail in a series of other papers in this publication, the present discussion will be brief. The objective here is to discuss briefly the nature of the assemblage from Peppertree without delving into rigor-

TABLE 5
DISTRIBUTION OF ARTIFACTS AND ECOFACTS IN
AREA 1, PEPPERTREE SITE

Category	Number	Depth in cm										
		0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100+
Bones and Bone Fragments	44	11	10	9	7	1	5	1	--	--	--	--
Shell Fragments	2	--	2	--	--	--	--	--	--	--	--	--
Debitage	44	7	11	13	6	--	2	5	--	--	--	--
Flaked Stone												
Projectile points												
Desert Side-notched	1	--	1	--	--	--	--	--	--	--	--	--
Scrapers												
Corner notched	1	--	1	--	--	--	--	--	--	--	--	--
Flake sidescraper	1	--	--	--	--	--	--	1	--	--	--	--
Ground Stone												
Manos												
Type IIA	1	--	--	--	--	--	--	--	--	1	--	--
Type IIB-1	1	1	--	--	--	--	--	--	--	--	--	--
Unclassified fragments	6	1	1	--	1	1	--	--	--	1	--	1
Ceramics												
Vessel sherds												
Tizon Brown Ware	6	2	2	--	2	--	--	--	--	--	--	--
Lower Colorado Buff (Parker Buff)	1	1	--	--	--	--	--	--	--	--	--	--
Historic Items	71	20	14	6	11	5	12	2	--	1	--	--

ous descriptions. The discussion refers to specific classes, categories, and types of artifacts, and the reader is directed to the papers on material culture for detailed descriptions of these. Tables 3, 4, and 5 present the vertical distribution of artifacts in the three areas of the site.

Projectile Points

Projectile points are represented by 19 specimens, including two that were found on the surface in the arroyo. Thirteen of these are classified as the concave-based variant of the type Cottonwood Triangular (Plate 15a, c, h, o, p, q, aa, cc). Most of the specimens occurred in Depositional Unit IC of Area 2. It will be recalled that this unit yielded evidence of the most intensive period of site use. Stratigraphically these artifacts began in level *f*, above level *g*, which yielded a single specimen each of the Cottonwood Leaf-shaped (Plate 16u) and Desert Side-notched types (Plate 16b). One of the latter was also found in Area 1. The Cottonwood Leaf-shaped and Desert Side-notched specimens in Area 2 were the lowermost projectile points found in the excavations at the Peppertree site.

It is noteworthy that projectile points are not represented in levels *h* through *k* of the deposit in Area 2, although seed milling implements and a few bone fragments and waste flakes are. This sug-

gests that projectile points may have replaced untipped foreshafts of hardwood or other perishable material at some point in the occupation. The sample is small, however, and sampling error cannot be ruled out.

Ceramics

With the exception of one pipe fragment and one possible figurine fragment found in Area 2, ceramics were confined to the upper levels of the midden deposit in all three excavation areas. While the sample of vessel sherds is small, it probably indicates that the use of ceramic vessels did not begin, at least at this site, coeval with the small projectile points noted above.

In Area 2 ceramics occurred above the occupational surface containing Features 1 through 8 except for the two fragments just noted, which may be intrusive in the lower levels. Of a total of 22 vessel sherds, 18 are classified as Tizon Brown Ware, 3 as Jeddito Yellow Ware, and 1 as Parker Buff of the Lower Colorado Buff Ware. Evidence of burning on most of the Tizon Brown sherds suggests that they are the remains of cooking vessels.

Two small ceramic pipe fragments were found in Area 2. One of these occurred in level *b*, while the other is possibly intrusive in level *g*.

A single small gourd-shaped fired clay fragment 18 mm long was found in level *e* of Area 2. The bulbar end of this object is 9 mm in diameter and is joined to a short stem 5 mm in diameter. The stem has been broken from another portion of the same object, and the item may be a figurine appendage. Somewhat similar fragments were reported by Kowta *et al* (1965) from the Christensen-Webb site.

Grinding Implements

Manos occurred throughout the depth of the occupational deposit. They were well represented in Areas 1 and 2 but were absent from Area 3. A specimen in Area 1 at a depth of 140 cm, far below all other cultural items, suggests an early period of site use in which small seed milling was an important subsistence activity. This suggestion is reinforced by the occurrence in Area 2 of two manos and two basin metates (one fragmentary) as the only cultural remains, except for a few flakes and bone fragments, in the lowermost levels.

A very small mano, or mano-like object (Plate 14e) was found in Area 2 adjacent to Features 6 and 7. It measures 45 x 38 x 25 mm, is heavily abraded on one face, less so on the other, and may have been used for the preparation of pigment. It will be recalled that Feature 3, at the same stratigraphic level, contained a rock with a painted and slightly polished concavity. One object may have functioned as a grinder and the other as a palette for pigment preparation, although examination of the former did not reveal any evidence of pigment.

Bone and shell artifacts

Thirteen examples of worked bone were found at the Peppertree site, all in Area 2. Five of these were awl fragments and were distributed throughout the depth of the deposit. Two distal ends of flaking tools were found in levels *c* and *d*. One of the specimens is shown in Plate 20t. The function of these items is inferred from damage in the form of cuts, scratches, minor indentations, grooves, and the like, in a rounded tip. Bone tools having shallow, highly polished transverse notches on the edges were represented by one specimen each in levels *c* and *g*. We infer that these items were used in the preparation of fiber, basket material, and the like, which brought the tool into contact with such material in a perpendicular motion and resulted in polished shallow notches. For want of a better term, these have been dubbed "notched tools" (Plate 20q). Other worked bone included a

probable strigil fragment (Plate 20r) and three other specimens of undetermined function.

Worked shell is represented by five items. A very small pendant of *Glycymeris cf. subobsoleta* (Plate 20b) was perforated by grinding off part of the umbo. An abraded *Haliotis* sp. fragment may be a portion of a pendant but is not sufficiently complete to make a judgment. Spire removed beads are represented by two species of olive shell: *Olivella biplicata*, represented by one specimen from level *g* (Plate 20d), and the Gulf species *Olivella dama*, of which two specimens occurred in level *a* of Area 2.

Other Artifacts

Two scrapers were found in the disturbed deposits of Area 1. One is a small flake sidescraper of opal worked on both lateral edges (Plate 19g). The other is a corner-notched scraper not unlike an Elko Corner-notched projectile point in overall outline, but with most of the flaking on one face. It was apparently hafted for use (Plate 19j). A small, thin slate object, triangular in outline, has two abraded edges that meet to form a rather acute point. The remaining edge is broken, and the function of the object is unknown.

Historic Items

Glass fragments, metal foil, and small caliber rimfire rifle cartridges were commonly encountered throughout the deposits of Area 1. In Areas 2 and 3 the few historic objects found were confined in distribution to the upper levels, suggesting that the degree of vertical mixing was not excessive.

Debitage

Of the 688 flakes recovered in the screen, about 60 percent were quartz. Obsidian, for which there is no local source, amounted to about 16 percent. Flakes were nowhere abundant, but the greatest vertical concentration occurred in levels *d* and *c* of Area 2 (on and just above the occupation surface on which Features 1 through 8 occurred). There was littledebitage in levels *i* through *k* but of the 32 flakes noted, none was obsidian. In terms of areal distribution, flakes were most abundant in the southwest portion of Area 2. The ratio of flakes to flaked stone artifacts is 33 to 1. Since no cores or hammerstones were noted, this ratio seems too high. A probable explanation is that quartz occurs abundantly in the natural alluvial deposits,

and a part of what was collected as quartz debitage may be of natural origin.

Faunal Remains

A few unworked fragments of shell were found; all examples were identified as abalone (*Haliotis* sp.). Since the Perris Reservoir locality is some distance from the sea, these fragments probably do not represent food remains. The occurrence of shell artifacts that originated in both the Gulf of California (*Olivella dama*, *Glycymeris* cf. *subobsoleta*) and the Pacific Ocean (*Olivella biplicata*) has already been mentioned.

More than 5,400 bone fragments were recovered, of which some 1,400 were identified. When these are considered in terms of the minimum faunal count per taxon, and in terms of repeated occurrence stratigraphically, jackrabbit and cottontail are probably the most important animal foods, although eight bighorn sheep were also present. Most of the bones were quite fragmentary. In Area 2, which yielded the largest sample, the stratigraphic concentration of bone increased up to level *d* (see Table 3), which contained the living floor with Features 1 through 8. Thereafter the frequency of bone gradually diminished. With respect to areas, the greatest occurrence of bone was in the southwest portion of Area 2 where debitage was also most prevalent. A complete faunal list (exclusive of molluscan species) is as follows:

Black-tailed jackrabbit	<i>Lepus californicus</i>
Cottontail	<i>Sylvilagus</i> spp.
Kangaroo rat	<i>Dipodomys</i> sp.
Pocket gopher	<i>Thomomys bottae</i>
Dusky-footed woodrat	<i>Neotoma fuscipes</i>
California ground squirrel	<i>Citellus beecheyi</i>
Badger	<i>Taxidea taxus</i>
Coyote (or dog?)	<i>Canis</i> cf. <i>latrans</i>
Bobcat	<i>Lynx</i> cf. <i>rufus</i>
Mule deer	<i>Odocoileus hemionus</i>
Pronghorn antelope	<i>Antilocapra americana</i>
Bighorn sheep	<i>Ovis</i> cf. <i>canadensis</i>
Unidentified snake	?
Bufflehead	<i>Bucephala albeola</i>
Ring-necked duck	<i>Aythya collaris</i>
Lesser sandhill crane	<i>Grus canadensis canadensis</i>
California quail	<i>Lophortyx californica</i>
Unidentified duck	?

The faunal remains are discussed in detail in the accompanying paper by Hammond.

Floral remains

Nearly all of the floral remains, including all that might be called food remains, derive from Features 1, 4, 6, 9, 11, 13, and 14. All of the material recovered from these features is carbonized. All of the seed remains are interpreted to represent food material that was lost in the act of seed parching, except for those identified as hollyleaf cherry seed or acorn fragments. These are considered to have been simply discarded after the contents of the fruits were extracted. Listed below are the taxa represented and the features in which each was noted:

Goosefoot	<i>Chenopodium</i> sp.	1, 4, 6, 9, 11
Amaranth	<i>Amaranthus</i> sp.	1, 4, 6, 13
Saltbush	<i>Atriplex</i> sp.	4, 6, 9, 11, 14
Chia	<i>Salvia Columbariae</i>	1, 6, 9
Juniper	<i>Juniperus</i> sp.	4, 9
Poppy	<i>Papaver</i> sp.	4
Fescue	<i>Festuca</i> sp.	9
Bentgrass	<i>Agrostis</i> sp.	9
Hollyleaf cherry	<i>Prunus ilicifolia</i>	
or oak	or <i>Quercus</i> sp.	9, 11
Needlerush	<i>Juncus</i> sp.	1
Unidentified grasses	<i>Graminae</i>	1, 11
Chamise	<i>Adenostoma fasciculatum</i>	4, 6, 11, 14

It will be noted that seeds of goosefoot, amaranth, and saltbush are consistently represented in a number of features both on the living floor and in the lower deposits. Chamise is identified only from leaf fragments and may simply have been used for firewood, although Bean and Saubel (1972: 30) report boiling the leaves for medical preparations.

Chronometrics

Three radiocarbon age determinations were obtained on charcoal collected *in situ* from subsurface features in Area 2 of the Peppertree site:

Feature no.	Arbitrary level	Apparent age	Laboratory no.
4	<i>d</i>	215±60 BP	UCLA-1816
9	<i>g</i>	870±80 BP	UCLA-1815
14	<i>k</i>	2200±80 BP	UCLA-1817

The apparent ages here are given in radiocarbon years rather than calendar years before pre-

sent. The age determinations are consistent with the stratigraphic placement of the features, as indicated in Figure 14, and suggest that the site was occupied intermittently for at least 2,000 years. Comparison of the vertical provenience of the dated features with the vertical distribution of the artifacts and ecofacts from Area 2 (Table 3) indicates that the first 1,000+ years of occupation is represented only by a few milling implements, an awl fragment, and a minor occurrence of debitage and bone fragments. The 870 ± 80 BP date was obtained on a feature dug from level *g*. This level marked the lowest and hence earliest occurrence of small projectile points (Desert Side-notched and Cottonwood Leaf-shaped). The most intensive period of occupation was documented by the living floor in level *d*, where Feature 4 yielded the date of 215 ± 60 BP. These dates and others from Perris Reservoir are corrected for secular variations and discussed, together with their implications, in "Dating the Perris Reservoir Assemblages" by Bettinger in this publication.

Summary and Conclusions

The artifacts and features at the Peppertree site point to a pattern of almost solely subsistence-related activities throughout the period of site use. These activities involved the exploitation of a variety of plant and animal foods. Small seeds (especially goosefoot, saltbush, and amaranth) were apparently parched with live coals and milled with the mano and metate. The occurrence of basin metates only in the lower levels of the deposit may point to use of only bedrock metates in the later part of the occupation. The bedrock mortar and pestle point to processing of acorns and/or hollyleaf cherry fruits, both of which occur in small chaparral communities near the site. The pro-

jectile points are of light weight and small size, attributes that are recognized as indicators of late prehistoric time and that suggest use of the bow and arrow for hunting the variety of animal species represented.

An absence of projectile points in the lowest levels may indicate use of hardwood-tipped projectiles to hunt the animals represented by the bones in those levels. Stone boiling is suggested by a consistent occurrence of rocks 5 to 8 cm in diameter in several of the hearths. The ceramic sample is small but suggests a replacement of perishable containers by those of pottery relatively late in the period of occupation. Except for several scrapers and bone artifacts, implements generally associated

with manufacturing activities are absent or only minimally represented in the artifact inventory, a factor consistent with an interpretation of food resource exploitation as the primary site function. Most of the bone implements present may have actually been used for repair of basketry, which played an important role in the gathering of small seeds, such as those recovered by water separation analysis. The high debitage-to-flaked stone implement ratio (33 to 1) is not entirely consistent with such an interpretation, but, as indicated above, a portion of what has been classed as quartz debitage may be of natural origin.

Features definitely associated with food preparation were noted only in Area 2, where they have been classified as hearths (both small and large), an earth oven, a charcoal-filled pit (the contents of which may be refuse from a cooking facility), charcoal and ash lenses, and milling implements, including cobble pestles and a basin metate.

Floral remains reflect some diversity of genera, but a consistent occurrence of carbonized seeds of goosefoot, amaranth, saltbush, and to a lesser degree chia, in several features points to exploitation of a complex of food plants as a major site function. The occurrence of a particular plant, such as bentgrass or fescue, in only one feature is here considered inconclusive evidence of the importance of the plant in local aboriginal diets.

Species identification of the floral remains is in most cases not available. However, when the flowering season of indigenous species of goosefoot, amaranth, and saltbush is plotted and one month added for maturity of the seed, it would appear that harvest of this complex must have occurred from midsummer to early autumn. This time bracket would permit exploitation of the small-seeded herbs and grasses in the summer and lead into harvest of hollyleaf cherry in late summer and of acorns in the fall. Such an exploitation window would also explain the presence of the waterfowl, which are only seasonally available (Hammond, "Faunal Remains," this publication; Pyle, 1961).

If the seasonal characterization of the exploitation pattern is accurate, one should expect to find immature ungulates represented in the faunal remains, and they are. Assuming that the period of site use had not ceased by that time, this interpretation is consistent with observations of Don Juan Bautista de Anza and Padres attached to his two California expeditions. The expeditions apparently crossed Bernasconi Pass three times (spending the night at the pass on two occasions) on April

15, 1774, December 31, 1775, and May 4, 1776, passing within 200 m of the site on each occasion. No Indians were seen at the site or anywhere else in the study area (Bolton, 1930 [Vol. II]: 350; 1930 [Vol. IV]: 167, 474-475).

In addition to providing limited information on the season of occupation, the faunal remains indicate a primary reliance on jackrabbits and cottontails among animal foods, with a variety of other forms present in lesser quantity. Most of the species are common to the valley grassland and coastal sage scrub biotic communities, but waterfowl indicate exploitation of the riparian zone along San Jacinto River or in the marshes around extinct Lake San Jacinto in the valley to the east. Since most of the bones are quite fragmentary, they would seem to indicate pounding of animals in the mortar, as noted by Sparkman (1908: 198) for the Luiseno.

Because vegetal foods such as seeds are better

suited to storage and preservation than animal foods, and given the seasonal availability of the plant genera represented, it is assumed that use of the Peppertree site is more directly linked to the exploitation of plants than of animals.

The radiocarbon age determinations indicate that the initial use of the site occurred approximately 2,200 radiocarbon years ago, and that the first 1,000 years of occupation was probably intermittent, resulting in only minimal artifact deposition. Other artifact categories besides milling stones are represented after 870±80 radiocarbon years ago, and the most intensive period of site use is dated at 215±60 radiocarbon years ago.

The time placement and sequence of artifact forms at Peppertree finds an almost direct parallel in the San Luis Rey I and II phases defined by Meighan (1954) on the San Luis Rey River some distance to the south.



THE OLEANDER TANK SITE (4-Riv-331)

Thomas P. O'Brien

The Oleander Tank site is located on the southwest corner of the Mt. Russell-Bernasconi Hills complex at the southern end of the Mt. Russell Hills (Figure 4). It lies at the apex of an alluvial fan formed at the mouth of a small canyon that opens to the southwest. The slopes around the site are composed of rugged granite outcrops where shallow rock shelters occur frequently. The site lies on the ecotone between the coastal sage vegetational zone and the grassland zone, the biotic setting in which most occupational sites occur at Perris Reservoir.

Dominant plants in the vicinity of the site include sunflower (*Helianthus* sp.), willow (*Salix lasiolepis*), and desert encelia (*Encelia farinosa*). The faunal community includes species that are not dependent on recurring water, but that obtain water from plants and from small evanescent pools. Among the more common animals are cottontail (*Sylvilagus* spp.), jackrabbit (*Lepus californicus*), pocket gopher (*Thomomys bottae*), and ground squirrel (*Citellus* sp.). Local residents have reported a small herd of deer (*Odocoileus hemionus*) in the hills behind the site. Quail (*Lophortyx californica*) and doves are also frequently encountered nearby, as are a variety of snakes and other reptiles.

The principal source of water is a perennial spring located at the base of a granite outcrop on the north edge of the site. Water seeps to the surface here and stands for some months in a small pool. Even at times when the pool has evaporated, water may be obtained near the surface by digging. The stream bed in the canyon behind the site is dry throughout most of the year and carries an ephemeral stream only after heavy rainstorms.

In addition to the Oleander Tank site proper, another separate area of prehistoric human activity has been identified nearby. This locus is in a small sheltered meadow 150 m to the northeast, about 25 m higher in elevation. Here two small bedrock metates were found on a granite outcrop. The area otherwise lacks evidence of use.

The Site

The Oleander Tank site covers an area of about 80 x 100 m atop the open, gently sloping surface of the alluvial fan (Figure 15; Plate 8). It is bounded on the north and east by rocky slopes that flank the fan. The western and southern limits of the site cannot now be determined because of recent construction activity, although the occupied area probably did not extend far beyond the shelter of the low hills that flank the canyon mouth. The midden deposit caps the fan and has a maximum depth of 1.5 m. Small quantities of chipping waste and ceramics are exposed on the surface by sheetwash.

The site has sustained substantial damage in recent years from natural causes and from construction activity. Runoff from the canyon behind the site has begun to cut down into the surface of the fan, forming a deep arroyo that bisects the site. This erosion has resulted in the removal of up to 25 percent of the midden deposit. Additional erosion along the arroyo that emerges from the spring has trimmed about 10 or 15 percent of the midden deposit along its northern edge.

Further damage to the site has resulted from activities connected with construction of the Oleander Tank, which lies just to the southwest and after which the site is named. Perhaps as much as 35 percent of the original midden deposit was destroyed by bulldozing in this vicinity.

The largest part of the midden that remains nearly intact is a narrow peninsula situated about 60 m northeast of the tank and bounded by arroyo channels and bulldozer cuts. The peninsula measures about 15 x 30 m. Additional remnants of midden form a nearly continuous terrace along the sides of the canyon. Even there, small areas are still subject to disturbance. Trash is regularly dumped on the site.

Surface Features

Surface features at the site include bedrock metates, bedrock mortars, and rock walls.

Bedrock Metates

Bedrock metates are scattered around the pe-

←
Plate 8. The Oleander Tank site (4-Riv-331). The view is toward the southeast. Excavations were conducted on the small peninsula between the arroyo channels just below and left of center. There is a spring in the willows on the left.

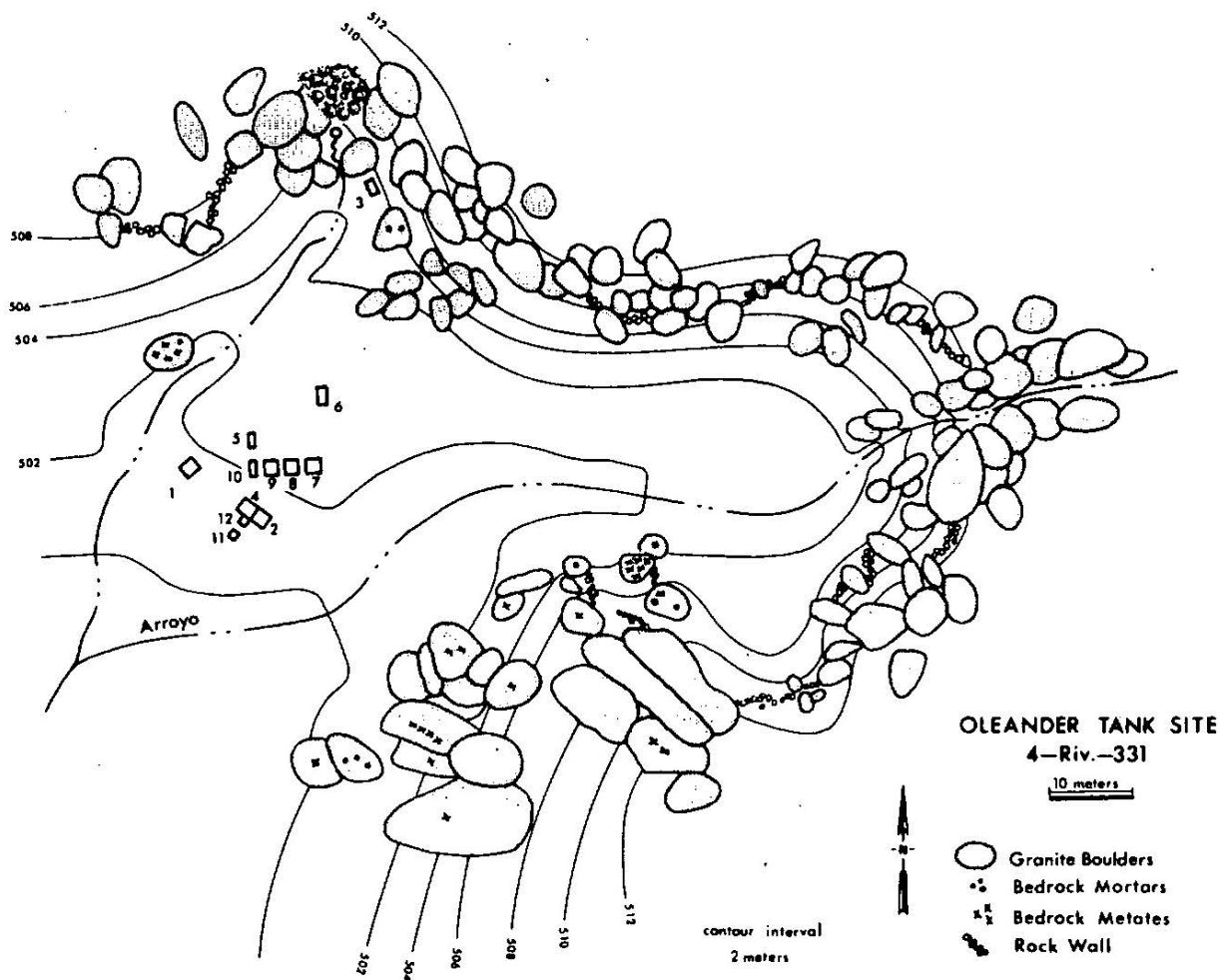


Figure 15. Map of the Oleander Tank site.

riphery of the site, but most are located in a large milling complex in a granite outcrop on the south side of the main wash and in two clusters on smaller outcrops along the northwestern perimeter of the site (Figure 15). Of a total of 31 metate surfaces, 22 represent a single large milling complex. Six are included in the smaller clusters, and the remainder occur in pairs or as isolated examples. Metate surfaces are irregular in dimension, averaging about 15 x 25 cm.

Bedrock Mortars

There are 13 bedrock mortars at the Oleander Tank site. Nine of these are part of the large milling complex on the south side of the main wash. The remaining four are isolated at various points along the perimeter of the site. The mortars had the following average dimensions: diameter — 15 cm; depth — 9 cm.

Rock Walls

A series of rock walls forms a roughly continuous line that borders the site on the north and east sides. The walls are located up the slope of the hillsides and canyon walls at a regular elevation that averages 3 to 5 m above the midden deposit. At least 18 individual sections of this wall are believed represented, but some of them are quite hard to distinguish. These sections are usually situated between granite outcrops. They range up to 3.5 m or more in length and are seldom more than 3 courses (1.5 m) high.

The origin and significance of these walls is unknown, as is their relationship to the site. Two explanations that seem reasonable have been offered. The walls may have been constructed by herdsmen as containment structures, either for use as corrals or to prevent domestic sheep or other livestock from venturing up into the rocks. Alter-

natively, they may have been used as blinds or containment structures for antelope (*Antilocapra americana*) driving. These options are discussed in detail in a paper by Ambrose and King contained in this publication.

Sampling Procedure

Because the major portion of the site had been destroyed by the time excavation began there, efforts were primarily directed to sampling the relatively undisturbed section of the midden deposit bounded by the washes. Six 2 x 2 m units and four 1 x 2 m units were excavated in this area to a maximum depth of 2 m. Two 1 m² extensions facilitated the complete exposure of features uncovered in larger units. In general this work revealed that the midden deposit was reasonably intact toward the center of the peninsula but that marginal areas had been subjected to substantial erosion and that the midden there was largely reworked or redeposited. Additional units were excavated in the vicinity of a rock wall segment on the south side of the canyon for the purpose of testing its associations.

All material was excavated by shove and trowel and passed through a one-quarter-inch mesh screen. A one-eighth-inch mesh screen was used on certain units as a check on the effectiveness of the larger screen, revealing that some small debitage and bone did pass through the larger screen. However, the loss was negligible. A total of 35.5 m³ of midden was excavated at the site.

Stratigraphy

Evidence of the physical stratigraphy at the Oleander Tank site was derived from the excavations and from an inspection of the profiles exposed in the arroyos that transect the site. Two stratigraphic units were recognized, but only one, the upper unit, produced *in situ* occupation refuse. These two units are described as follows:

Stratum 1 (lower): Light brownish-gray sands (Munsell color 2.5Y 6/3). This unit is exposed in the stream cuts and the deepest excavations at a depth of 100 to 150 cm below the present ground surface. The sands are uncompacted, friable, massive and unbedded. The depth and horizontal limits of the deposit are unknown, although it may formerly have capped the entire fan. Chipping waste and artifacts are occasionally encountered in this unit, but their presence is certainly due to rodent disturbance.

Stratum 2 (upper): Light brownish-gray to very dark grayish-brown sandy loam (Munsell color 2.5Y 6/2 to 2.5Y 3/2). This is the midden deposit. It lies unconformably atop Stratum 1 and is occasionally separated from it by discontinuous lenses of banded clay. It is massive and unbedded. Repeated attempts to discern horizontal stratification were unsuccessful, although the deposit becomes somewhat darker in color with increased depth. Occupation refuse in the form of debitage, bone fragments, artifacts, and charcoal fragments occurs throughout. Rodent disturbance has been substantial, if one can judge by the number of burrows.

Both strata were probably deposited by alluviation. Judging by the scattered lenses of clay and segments of redeposited midden, both strata were occasionally subjected to stream erosion in the past just as they are today. The midden deposit on the south central part of the peninsula appears to be reasonably well preserved. Little evidence of past erosion or redeposition was found in this area.

Subsurface Features

The 11 subsurface features were of three kinds: hearths, rock scatters, and earth ovens.

Hearths

These features were recognized by the presence of the following identifying characteristics: presence of fireburned rock; presence of concentrations of ash and/or charcoal; rocks either concentrated in a small area or in the form of a recognizable structure. Two such features fit this description.

Feature 1

This feature occurred in portions of Excavation Units 2 and 4. The hearth consisted of 33 burned rocks arranged in a loose concentration measuring 80 x 150 cm in horizontal dimension on a common surface. Associated with the rocks was a large amount of charcoal. The fill from the hearth contained fragments of cottontail (*Sylvilagus* sp.) bone, and water separation produced carbonized seeds of goosefoot (*Chenopodium* sp.), amaranth (*Amaranthus* sp.), chia (*Salvia Columbariae*), salt-bush (*Atriplex* sp.), and carbonized leaves of chamise (*Adenostoma fasciculatum*). A concave-based Cottonwood Triangular projectile point (20-123, Plate 15x) was found *in situ* amid the

burned rocks. The feature occurred in the 60 to 70 cm level.

Feature 2

This feature occurred in Unit 4 at a depth of 48 cm. It was a circular hearth approximately 40 cm in diameter and contained 16 burned rocks. The interior was lined with smaller rocks and large amounts of carbon. Water separation of a portion of the fill yielded a carbonized seed of an unidentified grass and a fragment of either acorn hull or the seed of hollyleaf cherry (*Prunus ilicifolia*).

Rock Scatters

Rock scatters were loose arrangements of rocks distributed laterally rather than vertically. The rocks were often fire burned, and they may represent the remains of hearths. The distribution of these features is as follows:

Feature designation	Unit	Depth from ground surface
F3	4	60-70 cm
F4	4	80-90 cm
F5	4	90-100 cm
F6	8	70-80 cm
F7	9	70 cm
F8	9	80 cm
F9	9	80 cm
F10	9	90 cm

These features were variable in dimension.

Earth Ovens

Only one example (Feature 11) of this category was recognized. It consisted of a cluster of burned rocks up to 20 cm in diameter, filling a pit roughly 60 x 70 cm in diameter and 40 cm deep. Large quantities of carbon were among the rocks. Also present were a few bone fragments and carbonized seeds of goosefoot and unidentified grasses. This feature is classified as an earth oven and was probably used in a manner described by Sparkman (1908: 195-98) for the Luiseño.

Living Surfaces

The dispersal of excavation units and substantial post-depositional mixing of the sediments made it difficult to recognize buried living surfaces. Nevertheless, portions of two such surfaces were identified. Both were exposed in Excavation Units 2

and 4, which are located adjacent to one another in a relatively intact section of the midden deposit. These surfaces were identified by clusters of features occurring at a common depth below the present ground surface. The first living surface includes a hearth (Feature 2) and 20 scattered rocks, all buried at a depth of 48 cm. Carbon fragments, flaking waste, and faunal remains are also more common in this level than in adjacent levels. The faunal remains consisted primarily of jackrabbit and cottontail, although coyote (*Canis* sp.) and deer were also represented. There was no increased artifact frequency at this level. In fact, the reverse seemed to be true; fewer artifacts than usual were recovered from the 40 to 50 cm level.

The second living surface was also exposed in Unit 4 at 60 to 70 cm below the present land surface. It included a hearth (Feature 1) and a rock scatter (Feature 3) as well as six isolated cobbles. Carbon, debitage, and faunal remains were also present in increased frequency in this level. The faunal remains included jackrabbit, cottontail, pocket gopher, and woodrat (*Neotoma fuscipes*). Again, jackrabbit and cottontail were by far the most prevalent. The frequency of finished artifacts was not significantly greater in this level.

Artifacts and Ecofacts

Since artifacts are described in detail elsewhere in this publication, this brief discussion will be concerned with the nature and distribution of the site assemblage in general rather than with precise taxonomy and description. Table 6 is a summary of the distribution of artifacts by depth. It includes only those specimens found in relatively undisturbed portions of the deposit; i.e., from Excavation Units 2 through 6 and 8 and 9. Artifacts found in other areas are likely to have been redeposited and are therefore excluded from discussion.

Ground Stone

These items fall into two general categories — manos and metates. Representatives of both categories were concentrated primarily at a depth of 40 to 100 cm. Manos are of four recognizable types. (See Robarchek, "Ground Stone Artifacts," in this publication.) Each is represented by a single specimen, plus 20 unclassified fragments. Types IA and IB representatives were located at 80 to 90 cm and 100+ cm, respectively. The IIB-1 and IIB-2 representatives occurred in the 50 to 60 cm level. The unclassified fragments of manos were scattered

TABLE 6
DISTRIBUTION OF ARTIFACTS AND ECOFACTS,
OLEANDER TANK SITE (4-Riv-331)*

Category	Number	Depth in cm										
		0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100+
Bones and Bone Fragments	4021	56	251	426	443	404	478	479	483	400	301	300+
Shell Fragments	6	--	--	3	--	--	1	--	1	--	--	1
Debitage	534	52	43	50	64	47	43	63	51	33	25	63
Flaked Stone												
Projectile points												
Cottonwood Triangular, concave base	15	4	--	2	2	--	1	2	1	3	--	--
Cottonwood Triangular, straight base	1	--	--	--	--	--	--	1	--	--	--	--
Cottonwood Triangular, narrow blade	2	--	--	--	1	--	--	--	1	--	--	--
Unclassified fragments	4	--	--	1	--	--	--	1	1	--	--	1
Graver	1	--	--	--	--	1	--	--	--	--	--	--
Knives												
Triangular bifacial	1	1	--	--	--	--	--	--	--	--	--	--
Bifacial fragment	1	--	--	--	--	--	--	--	--	--	1	--
Chopper	1	--	1	--	--	--	--	--	--	--	--	--
Cores	5	1	1	2	--	--	1	--	--	--	--	--
Hammerstones	2	2	--	--	--	--	--	--	--	--	--	--
Ceramics												
Vessel sherds												
Lower Colorado Buff	6	1	1	--	1	--	--	1	--	1	1	--
Tizon Brown Ware	10	6	1	--	--	1	1	1	--	--	--	--
Pipes												
Fragments	4	2	--	1	--	--	1	--	--	--	--	--
Worked Shell												
Beads												
<i>Olivella biplicata</i> , spire removed	2	--	--	--	--	--	1	--	--	1	--	--
<i>Olivella dama</i> , spire removed	1	--	--	--	--	--	1	--	--	--	--	--
<i>Olivella dama</i> , barrel	2	--	--	--	--	--	--	1	--	--	--	1
<i>Olivella biplicata</i> , lipped beads												
Thin lipped round	1	--	1	--	--	--	--	--	--	--	--	--
Thin lipped oval	1	--	--	--	--	--	--	--	1	--	--	--
Full lipped	1	--	--	--	--	--	--	--	1	--	--	--
Lipped bead fragment	1	--	--	--	1	--	--	--	--	--	--	--
Worked Bone												
Awl fragments	11	--	2	1	--	--	2	2	1	--	2	1
Notched tool	1	--	--	--	--	--	--	--	--	--	1	--
Unclassified worked bone	7	1	--	--	1	1	--	1	2	--	--	1
Ground Stone												
Manos												
Type IA	1	--	--	--	--	--	--	--	--	1	--	--
Type IB	1	--	--	--	--	--	--	--	--	--	--	1
Type IIB-1	1	--	--	--	--	--	1	--	--	--	--	--
Type IIB-2	1	--	--	--	--	--	1	--	--	--	--	--
Unclassified fragments	20	--	--	3	4	1	2	3	--	--	3	4
Metates												
Basin	1	--	--	--	--	--	--	--	--	--	1	--
Unclassified fragments	2	--	--	--	--	--	--	--	1	--	--	1
Historic Items	647	517	75	22	16	6	3	2	3	1	1	1

* Items from excavation units 1 and 7 are not included.

throughout the deposit with the exception of the uppermost 20 cm, where they were lacking. A single basin metate (Figure 21a) was discovered at 90 to 100 cm, and two unclassified milling stone fragments were unearthed at 70 to 80 cm and 100+ cm, respectively.

The distribution of metates is in agreement with that at the Peppertree site (4-Riv-463), where these implements were also confined to the lower levels. (See Wilke's article in this publication.) This suggests a transition to nonportable metates in the later portion of the occupational period.

Flaked Stone

Flaked stone artifacts are represented primarily by projectile points, although a variety of other categories is represented in low frequency.

Sixteen Cottonwood Triangular concave-base projectile points (Plates 15e, f, i, s, v, x, z, ee, ff) made up 85 percent of the projectile point total, while one Cottonwood Triangular straight-base (Plate 16t) and two examples of the Cottonwood Triangular narrow-blade (Plate 16f, h) variety accounted for the remaining 15 percent. Concave-base points were present throughout the upper 90 cm of the deposit. The single straight-base occurred at 60 to 70 cm and the two narrow-blade specimens occurred at 30 to 40 cm and 70 to 80 cm. With the exception of one unclassified fragment, projectile points were absent below a depth of 90 cm. However, it should be recalled that while the midden had a maximum depth of more than 150 cm, it was sometimes not more than 100 cm deep.

The other flaked stone artifacts included one multipurpose chopper-hammerstone, one bifacial knife fragment, one triangular bifacial knife (20-78, Plate 19b) and one graver (20-98, Plate 19e). These were scattered throughout the depth of the deposit.

Ceramics

Ceramic artifacts from the Oleander Tank site consisted of ten Tizon Brown vessel sherds, six Lower Colorado Buff sherds, and four pipe fragments (Plate 14g). Ceramic artifacts were most numerous in the top 10 cm of the midden, with 45 percent of the total occurring there. No ceramics occurred deeper than 100 cm. Tizon Brown and Lower Colorado Buff Wares covaried in frequency throughout the midden.

Worked Shell

Although present in low frequency, as at other sites in the reservoir area, the Oleander Tank site had the greatest diversity of worked shell objects of any of the sites tested. These included both Pacific Coast and Gulf of California species.

Spire-removed olive shells are represented by two specimens of *Olivella biplicata* from the 50 to 60 cm and 80 to 90 cm levels, and one specimen of *Olivella dama* (Gulf species) from the 50 to 60 cm level (Plate 20e). Two *Olivella dama* barrel-shaped beads occurred at 60 to 70 cm and at 100+ cm, respectively (Plate 20j). There were also four lipped beads. One of these was fragmentary, and the precise variant it represented could not be determined. The remaining three are classified and distributed as follows: thin-lipped round, 10 to 20 cm; thin-lipped oval, 70 to 80 cm (Plate 20g); full-lipped, 70 to 80 cm (Plate 20h). All of the lipped beads were of the species *Olivella biplicata*. The shell objects are discussed in detail in the accompanying paper by Mix, "Bone and Shell Artifacts."

Worked Bone

Nineteen examples of worked bone were recovered. Eleven of these were awl fragments, two of which are shown in Plate 20 m, n. Awls were distributed throughout the depth of the deposit. A single notched bone implement is represented by a small fragment from the 90 to 100 cm level (20-138, Plate 20o). Mix has suggested that these implements may have functioned in basket manufacture or repair. If so, the awls and notched tools are apparently elements of the same tool kits. Seven fragments of worked bone could not be classified due to their extremely fragmentary condition. They were also distributed throughout the deposit.

Faunal Remains

Nearly 7,000 animal bones and bone fragments were recovered from the excavations at the Oleander Tank site. Of these, about 1,600 were identifiable and were found to represent a minimum of 325 individual animals belonging to 15 taxa. More than 70 percent of these were lagomorphs, either jackrabbits or cottontails. The bulk of the rest of the sample was made up of small mammals, including ground squirrel, pocket gopher, and woodrat. Large herbivores were represented by nine mule deer and two bighorn sheep. These are discussed in detail in the accompanying faunal analysis by Hammond.

Common name	Scientific name	F1	F2	F11
Goosefoot	<i>Chenopodium</i> sp.	x		x
Amaranth	<i>A. maranthus</i> sp.	x		
Chia sage	<i>Salvia Columbariae</i>	x		
Saltbush	<i>A. triplex</i> sp.	x		
Chamise (leaves)	<i>A. denostoma fasciculatum</i>	x		
Unidentified grass	<i>Graminae</i>		x	x
Hollyleaf cherry or oak (acorn)	<i>Frunus ilicifolia</i> or <i>Quercus</i> sp.		x	

Floral Remains

Floral remains were recovered by subjecting portions of the contents of both hearths (Features 1 and 2) and the earth oven (Feature 11) to water separation analysis. Floral remains recovered by this process were distributed as shown above.

The small sample size precludes definitive statements of the exploitation of plant foods at Oleander Tank. It is worth mentioning, however, that at this and other sites in the reservoir locality, the exploitation of goosefoot, amaranth, chia, and saltbush as a complex seems to be represented. (See also the accompanying paper by Gardner, McCoy, and Brown.)

Summary and Functional Implications

The extensive surface milling complex and the presence of a number of milling implements (especially manos) in the midden indicates that the gathering and processing of vegetal foods was an important activity at the Oleander Tank site. It is possible that seeds of grasses, goosefoot, amaranth, and the like were more extensively exploited than were acorns and other pulpy seeds, since the ratio of metate surfaces to bedrock mortars is approximately 3 to 1. Similarly, although manos and mano fragments were common in the midden, no pestles were found. The evidence of the floral remains is consistent with this notion, and the fact that chaparral communities are more distant than from other sites sampled provides additional support for it.

The large number of projectile points and the frequency of small mammal remains indicate that hunting and trapping were of some importance at the site.

Maintenance and manufacturing tools were relatively infrequent, which suggests that the site was not used primarily for habitation. Some contradictory evidence is provided by the presence of 11 bone awl fragments, indicating that at least a limited range of fabrication activities was conducted at the site. However, if seed gathering were as important as the frequency of milling implements seems to indicate, the occurrence of these awls might be explained as a result of the manufacture and/or repair of collecting baskets and seed beaters. Such activities would not be inconsistent with exclusive use of the site by small groups engaged in food procurement tasks.

In general, then, it seems most satisfactory to infer that the Oleander Tank site was used by small groups of people engaged in a limited set of gathering and hunting activities, probably during the summer and autumn months. It is certainly possible, however, that the excavations have sampled only one limited activity area of the site, other areas having been destroyed by the erosion and construction discussed above. There is little evidence to suggest that any activities monitored at the site occurred prior to the late prehistoric period. The artifact assemblage bears a strong resemblance to other assemblages at Perris Reservoir and elsewhere in interior southern California, for example at the Christensen-Webb site (Kowta *et al*, 1965) and in the San Luis Rey Basin (Meighan, 1954).

THE PICTOGRAPH SITE

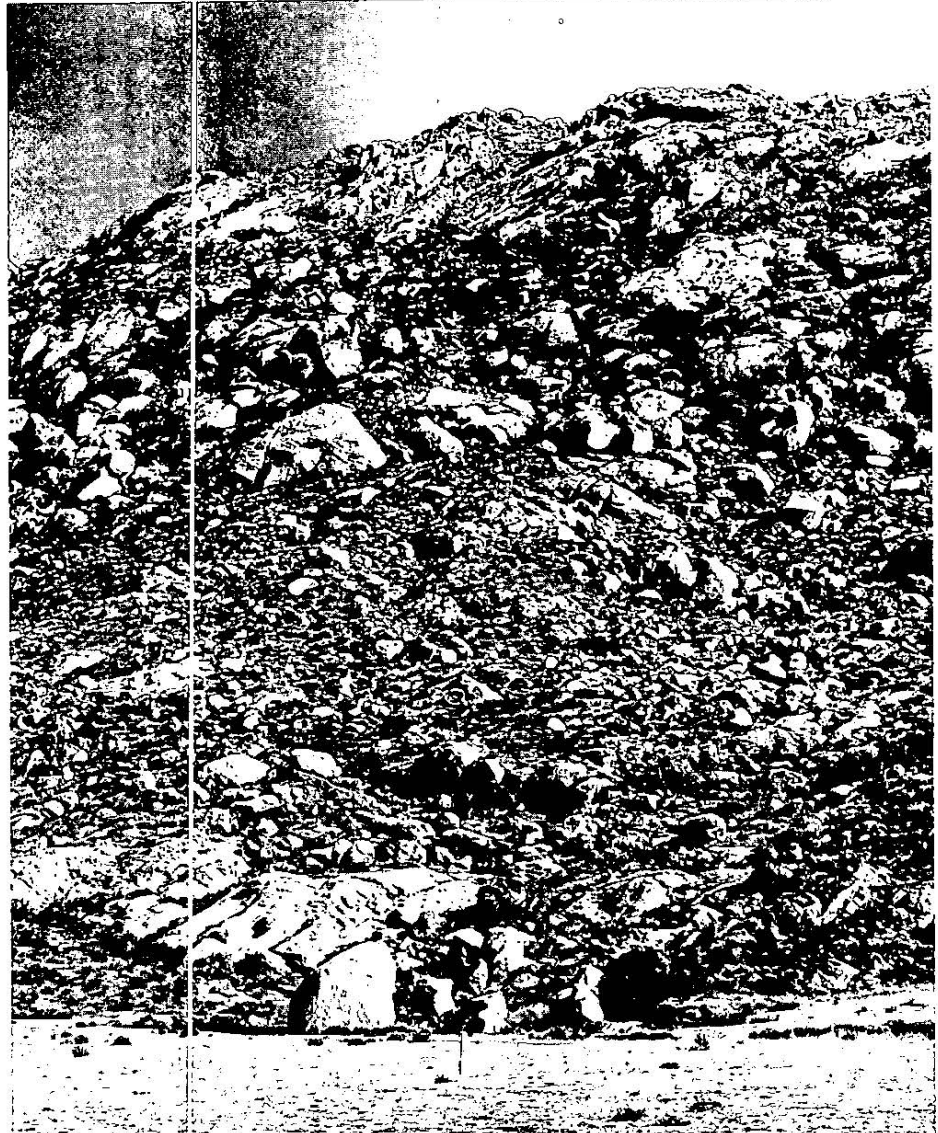
(4-Riv-452)

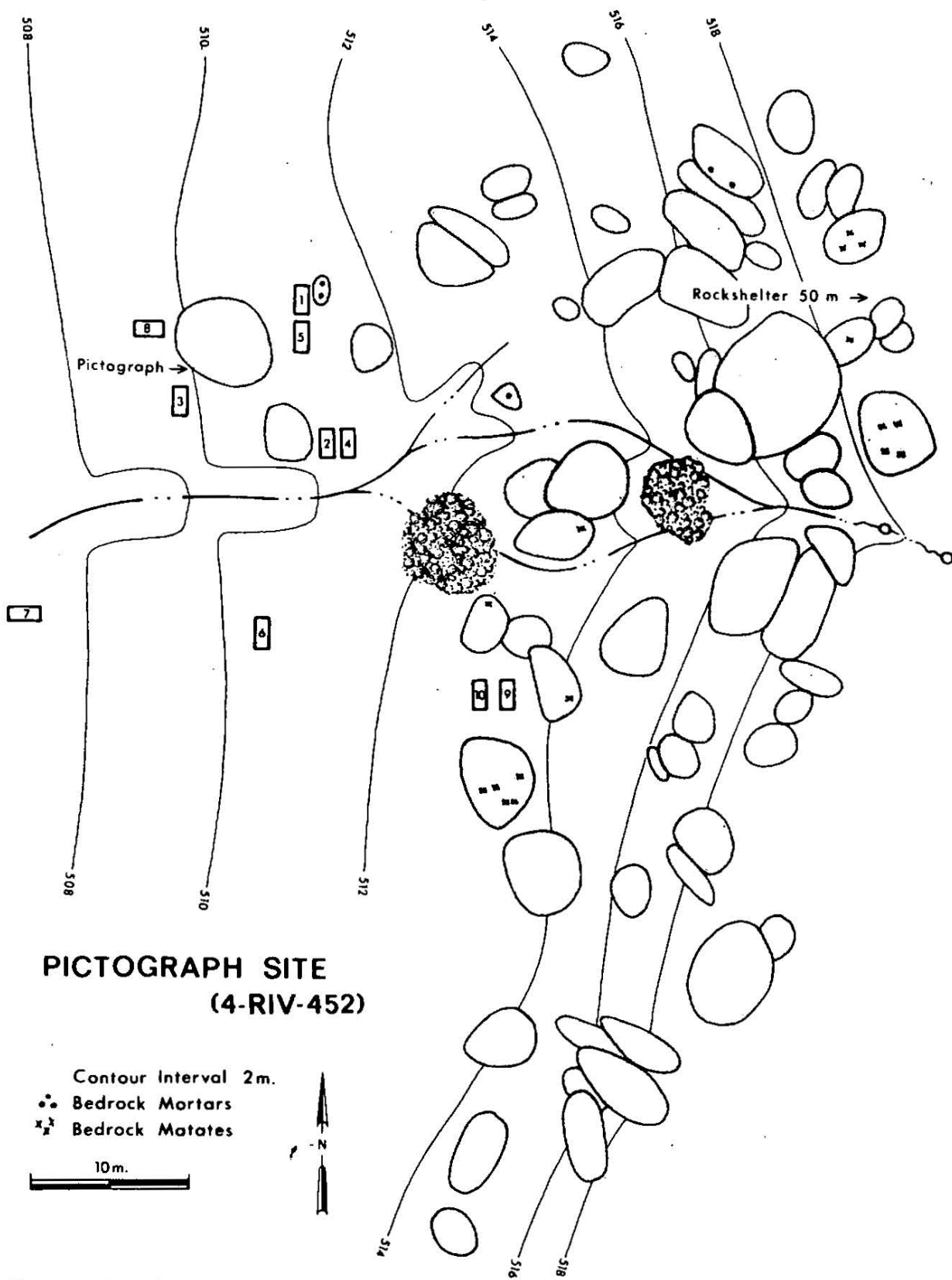
Stephen Hammond

The Pictograph site is located at the base of the northwest slope of the Bernasconi Hills, about 1 km northeast of the Peppertree site (Figure 4). The hills rise quite sharply behind the site, reaching an elevation of 670 m, more than 260 m above the site, within a distance of 500 m (Plate 9). From the base of the hills, a gently sloping alluvial plain extends out to the valley floor west of the site. The site lies on the boundary between the grassland plant community, which covers the valley floor, and the coastal sage scrub community, which blankets the lower portions of the slope. On the higher portions of the northwest slope, the sage scrub is replaced by a chaparral plant complex, dominated by dense stands of hollyleaf cherry and scrub oak. Among the more common animals found today in

the vicinity of the site are cottontail rabbit and woodrat, both of which inhabit the brushy slopes behind the site. Jackrabbit and ground squirrel are found on the more open valley floor. In times past, one might have expected to encounter mountain sheep and deer in the former area, antelope in the latter.

Plate 9. The Pictograph site (4-Riv-452). The view is to the southeast at the slope of the Bernasconi Hills. The site is located at the base of the slope in the lower foreground. A rock painting (Plate 10a) is located on the southwest face of the large monolith on the valley floor. A rock shelter with a low rock wall across its mouth (Plate 10b) is in the shadows just below the center of the photograph. A chaparral community is clearly visible high up on the slope.





**PICTOGRAPH SITE
(4-RIV-452)**

Contour Interval 2m.
 •• Bedrock Mortars
 x x Bedrock Matates

10m.

Figure 16. Map of the Pictograph site.

The Site

The site covers an area about 30 x 100 m (Figure 16). Its upper limit is marked by a line of small springs or seeps about 100 m above the base of the hill. In times past, these were probably the principal source of water for residents of the site. A conspicuous feature at the site is a large granite boulder, bearing the pictograph after which the site is named.

Unlike some other sites in the Perris area, the Pictograph site has sustained only minor damage in recent years, probably in part because of its relative inaccessibility. Runoff from the slope has cut a deep arroyo across the site, washing away perhaps 10 percent of the midden deposit in the process.

Surface Features

Bedrock Metates and Mortars

There are 16 bedrock metates and 6 bedrock mortars at the site. The mortars are relatively small and shallow. They range from 8 to 15 cm in diameter, averaging about 13 cm, and from 1 to 8 cm in depth, with an average of 4 cm. These mortars appear to be randomly scattered over the site. (See Figure 16.) Of the 16 bedrock metates, almost all were highly eroded. Thus their dimensions were not readily determined. The average size of those bedrock metates that were measured is 30 cm in length, 22 cm in width. They are located on boulders and bedrock outcrops at the base of the northwest slope almost to the spring line.

Pictograph

The pictograph is described in detail by Joseph in this publication. It is about 40 cm on a side, square in outline and consists of at least six vertical rows of crisscrossing red lines (Plate 6b; 10a).

Rock Shelter

There is a small rock shelter about 100 m up the face of the slope from the pictograph rock adjacent to the spring already described. The dimensions of the shelter are as follows: 3 m across the base of the entrance, 1 m in height from the base of the entrance to the roof of the shelter, and about 2 m from the dripline to the back edge. The floor of the shelter is formed by bedrock, which appears to have been water polished.

There is a stone wall in front of the shelter, which levels off the entrance. It is 2 m in length, 30 cm in height, and formed by two tiers of five rectangular rocks each. A sample excavation behind this wall produced no artifactual material. A 1 x 1 m test pit was excavated in front of the rock wall from the ground surface to bedrock (a depth of less than 20 cm). The fill was passed through a one-quarter-inch mesh screen. This material proved sterile with the exception of one mano fragment. In view of the relative lack of prehistoric artifacts or other refuse, we suspect that the rock wall may be a recent phenomenon, perhaps a shepherd's storage caché (Plate 10b).

Sampling Procedure

Ten 1 x 2 m units were excavated at the Pictograph site. The distribution of these units was based on the results of preliminary tests of the depth of the deposit with a barrel auger. Excavation was initiated in those areas that seemed to have the deepest midden deposit, the objective being to determine the maximum span of site occupation.

The excavation procedure was the same in all cases. All fill was removed in 10 cm levels measured from the ground surface. It was passed through a one-quarter-inch mesh screen, and all refuse that failed to pass the screen was saved. A total of 12.4 m³ of soil was excavated.

Stratigraphy

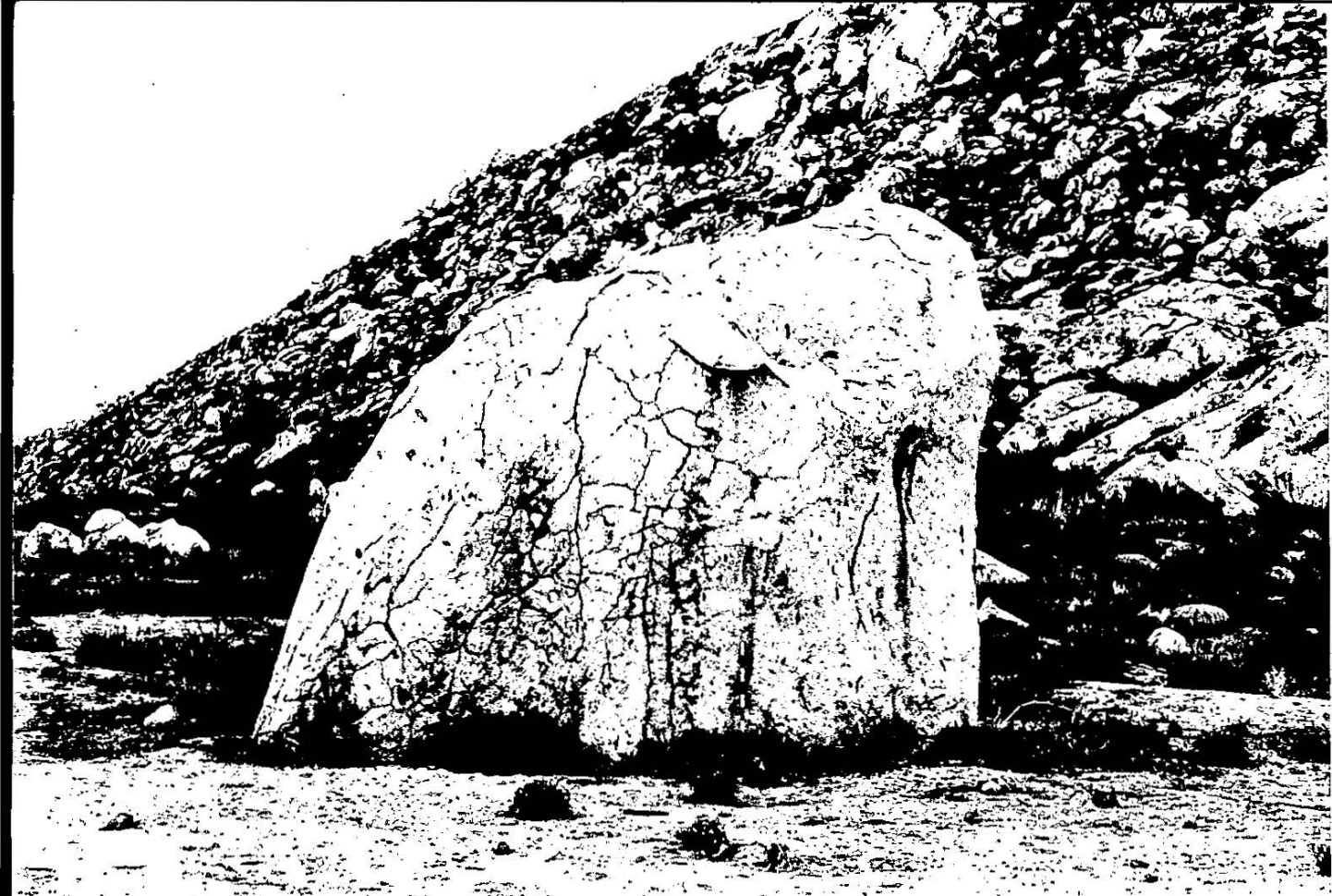
Evidence of the physical stratigraphy at the Pictograph site was derived from the excavations and from an inspection of the profiles exposed in the stream wash that transects the site. Three stratigraphic units were recognized. From bottom to top they are:

Unit I: Very pale brown, sterile sand (Munsell 10YR 8/4). This unit is very loosely compacted.

It extends down from the base of Unit II and is composed of large cobbles, gravel, and sand.

Unit II: Dark brown midden (Munsell 10YR 3/3).

Compaction is less than in Unit III. Numerous large fire-blackened and cracked cobbles, sand, gravel, and charcoal flecks were found throughout this deposit. This soil unit extends down from the base of Unit III to a maximum depth of 80 cm. There are many small, thin clay lenses distributed throughout the unit, none of which forms a continuous stratum.



a

Plate 10. Surface features at the Pictograph site (4-Riv-452). Plate 10a: Large monolith with red painting. Scale

has 10 cm increments. (See also Plate 6b.) Plate 10b: Small rock shelter with rock wall.

b



Unit III: Very dark grayish brown midden (Munsell 10YR 3/2). Compaction is very hard from ground surface to a depth of 15 cm. This soil unit was differentiated to a depth of not more than 30 cm and not less than 5 cm. This stratum did not appear to be internally differentiated. Numerous large cobbles, sand, and gravel and charcoal flecks were encountered throughout the deposit.

All strata were deposited by slope wash. Some areas may have been exposed to stream erosion and deposition, but we observed no evidence of this other than in the vicinity of the presently eroding arroyo. The division of the midden into two separate strata is the result of the process of soil formation, so that the association of artifacts with

one or another stratum is not in itself an indication of relative age.

Subsurface Features

Seven rock clusters consisting of fire-blackened rocks in association with varying amounts of charcoal may represent aboriginal hearths. These rock clusters were recorded in Units 1, 3, 4, and 8 (Figure 16). While two of these rock clusters were located in the 0 to 20 cm levels, the other five were found in the 30 to 60 cm levels. The rock clusters were roughly circular, and each was made up of an average of ten large cobble-sized rocks. The mean diameter of these features was 45 cm, the average depth 15 cm. Almost all the rocks associated with the features were fire blackened

TABLE 7
DISTRIBUTION OF ARTIFACTS AND ECOFACTS, PICTOGRAPH SITE (4-Riv-452)

Category	Number	Level											Arroyo
		0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	100-110	
Bones and Bone Fragments	779	22	114	92	113	105	121	79	51	40	23	19	--
Shell Fragments	4	1	1	--	--	--	--	2	--	--	--	--	--
Debitage	162	27	29	20	25	22	11	5	29	6	4	4	--
Flaked Stone													
Projectile points													
Cottonwood Triangular, concave base	1	--	--	1	--	--	--	--	--	--	--	--	--
Unclassified	1	1	--	--	--	--	--	--	--	--	--	--	--
Scraper planes													
Tabular scraper plane	1	--	--	--	--	--	--	--	--	--	1	--	--
Cores	1	--	--	1	--	--	--	--	--	--	--	--	--
Ground Stone													
Manos													
Type 11B-1	1	--	--	--	--	--	--	--	--	--	--	--	1
Unclassified fragments	8	1	--	1	6	--	--	--	--	--	--	--	--
Metates													
Slab	3	--	--	--	--	--	--	--	--	--	--	--	3
Basin	2	--	--	--	1	--	--	--	--	--	--	--	1
Unclassified fragments	3	--	--	1	--	--	1	--	--	--	--	--	1
Pestles													
Food processing	2	--	--	--	--	--	--	--	--	--	--	--	2
Unclassified ground stone	1	--	1	--	--	--	--	--	--	--	--	--	--
Ceramics													
Vessel sherds													
Lower Colorado Buff	2	--	1	1	--	--	--	--	--	--	--	--	--
Pipes													
Modified bow pipe	1	--	1	--	--	--	--	--	--	--	--	--	--
Worked Bone													
Awl fragment	1	--	--	--	--	--	--	--	1	--	--	--	--
Unclassified worked fragment	1	--	--	--	--	--	1	--	--	--	--	--	--
Historic Items	58	30	14	4	2	7	1	--	--	--	--	--	--

and cracked and were found in association with charcoal flecks but not with wood ash. With the exception of a few mano and metate fragments, artifacts were not encountered with these features.

Artifacts and Ecofacts

The total number of artifacts recovered from excavation at the Pictograph site is comparatively small (Table 7). Ceramics, including Lower Colorado Buff sherds, a bow pipe, and projectile points are confined to the top 30 cm of the deposit. Food grinding implements are more widely distributed, reaching a maximum depth of 60 cm. A single scraper plane was found at 95 cm below the present ground surface. Debitage and bone fragments were encountered throughout the deposit, with maximum densities recorded in the top 20 cm and 50 to 60 cm levels, respectively.

Interpretations

In times past the Pictograph site had much to offer in terms of biotic resources. Various seed-producing grasses were available on the flats adja-

cent to the site, hollyleaf cherry and oak trees grew on the north slope above the site, and a variety of game was available, including jackrabbits, cottontails, woodrats, quail, deer, and mountain sheep. The fact that aboriginal people exploited these resources is evident. Bedrock metates, bedrock mortars, manos, pestles, and milling stones all indicate processing of plant resources. Projectile points and animal bones, almost half of which were charred, indicate hunting and consuming of animals, especially jackrabbit and cottontail.

The paucity of all artifacts and ecofacts, however, suggests that the site served as a very temporary collecting and processing station, rather than as a base camp.

There is no direct evidence for seasonal occupation of the Pictograph site, but indirect evidence would suggest use of the site for resource exploitation between late spring and early fall. During the late spring and early summer, grass seeds are available, while acorns and hollyleaf cherry fruits are available during the early fall. If indeed Pictograph was used as a collecting and processing station, aboriginal people would have frequented the site during periods when food resources were available for collecting and processing.

Plate 11. The Dead Dog site (4-Riv-202). The view is to the southeast up San Jacinto Valley. The site extends across the lower foreground of the photograph. Rock art is concentrated in two boulder outcrops, one at the lower left and the other just beyond the road at the lower right. Extensive marshes formerly occupied much of the valley floor, and Lake San Jacinto was at the upper left. Letters indicate loci discussed in the text.

THE DEAD DOG SITE
(4-Riv-202)

Robert L. Bettinger

The Dead Dog site is located at the base of the eastern slope of Mt. Russell, overlooking the northern San Jacinto Valley (Figure 4, Plate 11). It lies near the apex of an alluvial fan formed at the mouth of a small canyon, which opens to the southeast. Like most sites in the Perris area, it is located on the boundary between two major biotic communities — coastal sage scrub, which covers the slopes of Mt. Russell, and grassland, which blankets the site and formerly extended over much of the now cultivated valley floor to the east. Prior to the recent draining of San Jacinto Lake, two other communities were also present in the immediate area. These were freshwater marsh and alkali flats, both of which extended to within a few hundred meters of the foot of the alluvial fan on which the

site is located. Among the more common plant species now found on the site are black and white sages (*Salvia mellifera*, *S. apiana*), sagebrush (*Artemisia* spp.), desert encelia or brittle bush (*Encelia farinosa*), and flat-topped buckwheat (*Eriogonum fasciculatum*).

The southern edge of the site is cut by an arroyo channel that extends from the mouth of the canyon diagonally to the southeast along the margin of the fan (Plate 11). This channel is dry during most of the year but carries some water for short periods during the winter months when the springs are active. The principal source of water for aboriginal inhabitants was probably this complex of small seep springs in the canyon just above the site. In prehistoric times overflow from these springs may have supported a live stream.



The Site

The Dead Dog site covers an area of about 150 x 200 m just below the apex of the alluvial fan (Figure 17). It is bounded on the north and west by the steep slopes of Mt. Russell and adjacent hills, and it extends about 30 m to the south beyond the arroyo previously mentioned. The eastern limit is not clearly defined, but it is no more than 200 m east of the canyon mouth. The midden deposit is distributed in two or more apparently discontinuous circular patches, each measuring about 75 m in diameter. At the center of one of these midden concentrations is a large mass of granitic boulders, referred to as Boulder Complex 1. About 50 m to the south, just across the arroyo, is a similar feature referred to as Boulder Complex 2. Both of these clusters are marked by petroglyphs, pictographs, and bedrock mortars and metates.

The site has sustained substantial damage within the historic period. Much of the surface of the fan has been cultivated for more than 50 years, so that refuse from the midden deposit has been scattered widely over the area. Plowing has disturbed the upper portions of the midden deposit to a depth of at least 20 cm. An access road has been bulldozed along the northern edge of the fan to a point just below the canyon mouth, then south across the arroyo. A long, V-shaped trench about 1 m deep parallels the road on the uphill side, presumably to channel runoff. This trench cuts directly into the patch of midden at the canyon mouth. Earth fill for the culvert that crosses the arroyo channel was obtained from a borrow pit situated in the same midden deposit. Additional damage has been caused by uncontrolled and undocumented "archeological" excavations at various points on the surface of the site.

Surface Features

Bedrock Mortars and Milling Surfaces

Bedrock processing features consist of two kinds, metates and mortars, each of which is further subdivided. Bedrock metates are of two distinct forms — those that are basically circular and those that are ovoid. Both forms vary in depth from perfectly flat polished surfaces to basins about 2 cm deep, also highly polished. Bedrock mortars are either of two forms — large or small.

Large mortars are circular in top-section, 10 to 17 cm in diameter and 10 to 20 cm deep. Small mortars are 3 to 4 cm in diameter and 1 to 3 cm

deep. Although small mortars may be interpreted as large mortars less heavily used, two considerations make this unlikely. First, their diameters are too small to have accommodated large cobble pestles; and second, in at least one instance, 14 of these small mortars are closely spaced on a single boulder. True (1970: 17) has described small, shallow mortars encountered in San Diego County, and concluded that they cannot be satisfactorily explained as either nut anvils or paint mortars. Nevertheless, the association of these small mortars with seed processing facilities at Dead Dog would appear to imply an economic rather than ritual or other function.

The bedrock processing facility at Boulder Complex 1 consists of 17 metates and 4 mortars dispersed on 14 separate boulders. Nine metates and three small mortars appear as single features; the remaining eight metates and one large mortar are distributed between two boulders with five metates on one and three metates and one large mortar on the other. Metates of both types vary in surface dimension, with the largest ovoid form being 30 x 47 cm. The single large mortar in Boulder Complex 1 has an opening that measures 20 x 18 cm and is 17 cm deep.

At Boulder Complex 2 there is a large outcrop of exfoliating granite divided on its east-west axis by the deep arroyo channel mentioned above. The southern portion of this outcrop contains four metates and one small mortar, all as single features. One boulder with 14 small mortars and another with two metates and one small mortar are located at the northern end of this outcrop.

Rock Art

Petroglyphs and pictographs occur on the two large granite outcrops (Boulder Complexes 1 and 2) at the Dead Dog site. The petroglyphs include conically ground pits measuring about 4 cm in diameter and .5 to 2 cm in depth, and shallow grooves up to 30 cm long, 4 cm wide, and 1 cm deep.

Pictograph elements include filled and open circles, and straight and curvilinear lines. All are drawn in red pigment, probably hematite. In most cases, the weathering of these features is advanced, and their outlines are faded and vague. It is likely that some designs have disappeared completely.

The two design panels at Boulder Complex 1 occur on a single boulder. One panel, consisting of 29 pits and 4 pictograph designs (Figure 12d), is located on the ventral surface of a sharply undercut north-facing portion of the boulder; the other is composed of a single pictograph design on a per-

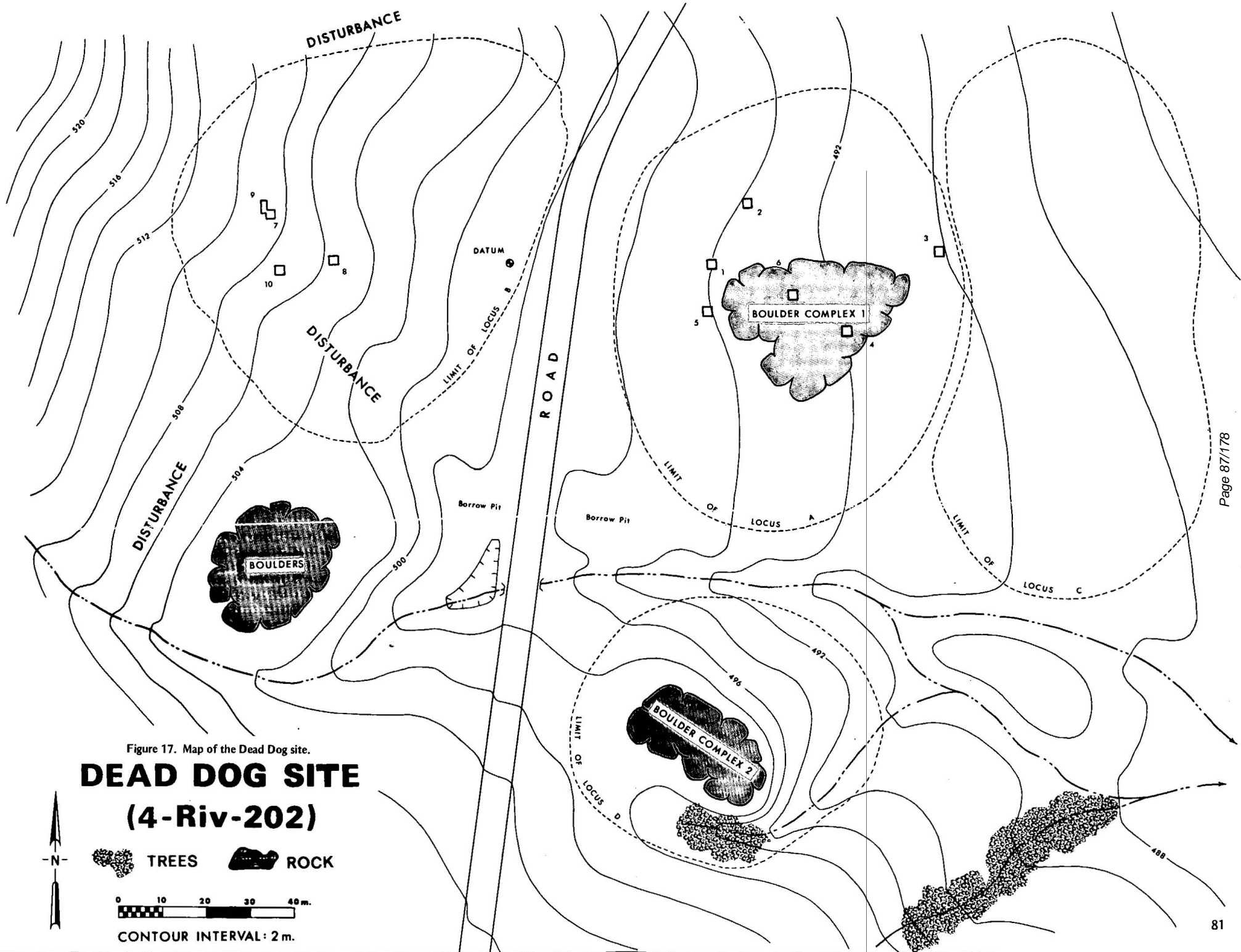
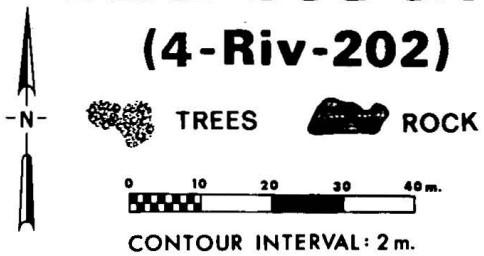


Figure 17. Map of the Dead Dog site.
DEAD DOG SITE
(4-Riv-202)



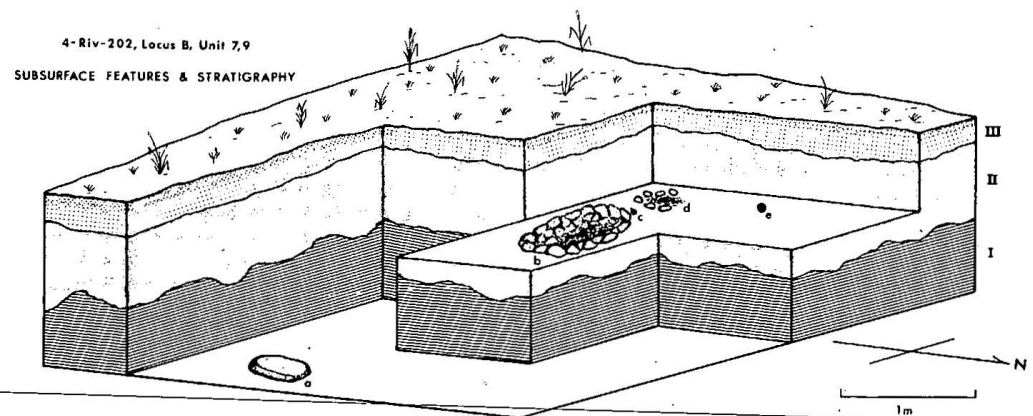


Figure 18. Stratigraphy and subsurface features of Locus B, Dead Dog site. Figure 18a: Basin metate; b: Earth oven; c: Unclassified projectile point (Plate 16x); d: Hearth; e: Perforated *Argopecten* valve (Plate 20a).