

# SANDSTONE FEATURES ADJACENT TO LAKE CAHUILLA

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## ABSTRACT

Recent investigations at the Salton Sea Test Base revealed a number of features, including 110 hearths or fire-affected rock clusters, 22 fish traps, and 198 rock enclosures. All of these features are located at very low elevations, ranging from 20 to 225 feet below sea level. Excavations in and around these features provided information on their structure and composition, as well as their possible function. Although little was recovered from the hearths and fish traps, units excavated at the rock enclosures contained fish bone, sometimes in substantial quantities.

## INTRODUCTION

Investigations at Salton Sea Test Base (SSTB), on the west side of the Salton Sea, recorded 170 archaeological sites. These sites contained a total of 336 prehistoric features, including 110 hearths, 22 rock constructions interpreted as fish traps, and 198 sandstone rock enclosures. Subsurface data were provided by 135 shovel test pits and 25 units, placed at 159 of the features. Radiocarbon dates from charcoal recovered from 15 features suggest that most, if not all, of these features were used during the late prehistoric and protohistoric periods, coinciding with the recessional episodes of the ancient Lake Cahuilla (Schaefer 1986, 1994; Laylander 1994). Ethnographical data supports the use of Lake Cahuilla for fishing during this period (Gifford 1931: 29-94; Treganza 1945; 285-294).

## HEARTHES

At 39 sites, 110 features were recorded as hearths. Most of these were characterized by fire-reddened sandstone concentrations, although an additional 14 sparse scatters of a few pieces of fire-affected rock (FAR) were also noted. The hearths range from approximately 50 cm up to 6 m in diameter. Associated flaked stone tools or debitage were found at all but three of the sites with hearths, and ceramics were found at 23. Rock enclosures and hearths were found

together at 16 sites, and a single site consisted of a hearth feature with no visible associated cultural material. Subsurface examinations were conducted in 40 hearths. Only about 30% of these had positive results, generally consisting of a thin layer of charcoal flecks and a small amount of fish bone. Little additional cultural material was recovered subsurface.

## FISH TRAPS

A total of 22 stone features were recorded as fish traps at five sites on SSTB. Found along the shorelines of Lake Cahuilla, these structures were generally "v" or "u" shaped, made of the local sandstone stacked one to three courses high, oriented with the wide opening up slope, and narrowing to an apex downslope. They range in size from 2.9 to 7.0 m long and 1.8 to 3.7 m wide. The traps are found in clusters, numbering between 2 and 8, within sites and always in association with hearths or rock enclosures, suggesting that fish were caught and then processed immediately nearby. The elevations of the traps ranged from 70 ft to 130 ft below sea level. Within the clusters, elevations were about the same, indicating that those clustered were probably used at the same time. Excavations conducted at six of the fish traps revealed little subsurface deposit, with the only clearly related cultural item, a quartzite flake tool, recovered from 0-10 cm at CA-IMP-7578.

Ethnographic evidence suggests that nets and baskets were often used in conjunction with the fish traps (Bean et al. 1991). As Wilke surmised (1988:8) the traps were used to provide quiet spots that would attract spawning fish. Once inside, they would be easy to catch with nets. The two types of fish most commonly found in the archaeological record, the razorback sucker and the bonytail chub, both spawn between late winter and early summer (Moyle 1976). The implication is that the inhabitants were using the traps during this same time period.

The fish traps have been recorded at SSTB as low as 130 ft below sea level, well below the -99 ft level Wilke (1978) noted as the lowest observed occurrence of traps. Previous to KEA's work, it was assumed that the humpback sucker and the bonytail could not survive in the increasingly saline lake below the -99 foot level.

## ROCK ENCLOSURES

Most of the 198 prehistoric rock enclosures found on SSTB are associated with outcroppings of the Brawley formation which dominates the eastern portion of the base. Typically, these features are circular or semi-circular in shape, and constructed of the local sandstone slabs or cobbles (Figure 1). These are stacked either vertically or horizontally, one to three courses high, with a well defined opening generally to the east, away from the prevailing winds. Interior dimensions ranged from 50 cm to about 6 m across, with the average between 2-3 m. The height of the courses did not exceed 75 cm, with the average height of between 20 and 40 cm. The number of rocks used ranged from a minimum of 7 to a maximum of more than 200. Forty to fifty rocks per enclosure was most typical. Variations of these include features that resembled slightly curved lines of stacked stones, those with openings to the south, north or west, and those with no visible opening at all. The state of preservation was likewise variable. While some were intact, many others exhibited some form of degradation, with a few barely discernable from the surrounding rocky environment.

Subsurface investigations, consisting of 90 shovel tests and 20 excavation units, were

conducted at 104 of the 198 rock enclosures. Fish bone was by far the most prevalent form of cultural material, found in 61 enclosures (58.6%). Ninety percent of the excavation units yielded fish remains.

Additional cultural material associated with the rock enclosures include sparse scatters of debitage, tools and ceramics. Excavation recovered 88 pieces (17.3%) of debitage from 18 enclosures, 20 (6.7%) pieces of ceramic from 7 enclosures, and charcoal in varying amounts from 49 of the enclosures.

Little internal structure was revealed during the investigations of the enclosures. Most of the enclosures contain sparse cultural material in a relatively shallow deposit. Three of the enclosures displayed slightly more substantial deposits, with strata of 10 to 20 cm consisting of dense charcoal and fish bone beneath an overburden of 10 to 50 cm of aeolian silt (Feature 6 at CA-IMP-7526, Feature 1 at CA-IMP-7620, and Feature 1 at CA-IMP-7632). Because these strata appear to slope gently down towards the center of the enclosure, a basin-shaped living or working surface is implied. There is further evidence of a somewhat subterranean use in the form of charcoal staining at 60 cm below surface in Feature 1 at CA-IMP-7586. The high winds could account for the poor preservation found at some enclosures, by scouring out the lightweight charcoal and faunal remains, and the good preservation at others by burying the deposit with sand/silt shortly after abandonment.

Investigation concerning the possible functions of the rock enclosures in the area has been limited. The excavation of three enclosures by Rosen (1985) resulted in the interpretation that the two smaller enclosures were hearths while the larger example was a facility for processing the local fish. Other, still larger enclosures were stated to be either roasting pits or the remains of shelters (Rosen 1985; Rogers n.d.). The enclosures excavated during the recent work at the Salton Sea indicate a focus on the processing of fish. This is based on the depth of the deposit, the sheer volume of both burned and unburned fish bone, and the nearly total absence of other faunal remains. Charcoal was present in at least small amounts in most of the enclosures, indicating that

fires were built within them. The structures were oriented away from the prevailing wind from the west/northwest and may have anchored brush which acted as a windbreak for the fire. Those rock enclosures of larger dimensions may have allowed for the accommodation of people as well as hearths.

Ninety-seven percent of the faunal material recovered from the SSTB consists of fish remains (Figure 2). A total of 4,118 specimens of identifiable fish remains were recovered from 44 sites, in 61 rock enclosures (99%), three hearths (<0.01%), and one fish trap (<0.01%). In all, five species, from 31 sites, were identified and analyzed by Kenneth Gobalet and Richard Huddleston. Of the identifiable fish remains, 99.5% of the assemblage is dominated by two species, razorback sucker (*Xurauchen texanus*) with 2,551 specimens (61.9%) and bonytail chub (*Gila elganus*) with 1,549 specimens (37.6%). Small amounts of striped mullet (*Migul cephalus*) and Mozambique tilapia (*Tilapia mosambica*) were also represented along with a single otolith from a Colorado squawfish (*Ptychocheilus iuius*) (Gobalet 1992, 1994).

Excavations reveal that fish remains in association with rock enclosures have been found as far down as -190 m, indicating that these fish were still collected from the shrinking lake despite its high salinity, although fish traps were not identified at the lower elevations.

The fish remains recovered during excavation revealed that the average size of the fish caught tended to be much smaller than the maximum possible for either fish. The razorback sucker commonly reaches a length of 60 cm and weighs 4 to 5 kg (Apple et al. 1997), but has been known to reach a length of 1 m and weight of 7 kg (Eighmey and Cheever 1992). The bonytail chub averages

35 cm in length and weighs less than 0.5 kg (Moyle 1976). Regardless of the elevation from which they were recovered, both fish appear to have only reached about 30 cm in length (Gobalet 1996).

## CONCLUSION

Based on the information gathered on SSTB, questions were raised concerning further possible uses of these features as related to the procurement and processing of the ancient lake resources. A change of technology is indicated by continued fishing after the apparent abandonment of fish traps below the -130 foot contour. It is plausible that some of the hearths may have been used in conjunction with nets to catch fish at night. The habits of the humpback sucker and the bonytail chub support this (Marsh 1998; Young 1998). During the day, the humpback sucker is relatively inactive and difficult to find, but it comes out at night to feed on algae and detritus along the lake bottom (Moyle 1976). The bonytail chub feeds on a variety of insects, algae and plant debris. The light from hearths could have been used to hunt the sub-adult fish of both species, which are drawn to insects attracted by the light source (Marsh 1998). As suggested by the ethnographic evidence, the fish could then be scooped up with a net. This offers a possible explanation for the sometimes sizable isolated hearths and scatters of fire-affected sandstone found without related cultural material, and predominantly lower in elevation than the clusters of fish traps. It might also provide an additional reason for the relatively small size of the fish recovered. Although much was learned during the SSTB study, much remains unanswered about the archaeological record regarding rock features.

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LEGEND

- △ DATUM
- SITE BOUNDARY
- EXCAVATION UNIT
- + SHOVEL TEST PIT
- F# FEATURE
- POTTERY SCATTER
- CORE
- ROCK (SANDSTONE)
- ☼ CREOSOTE BUSH

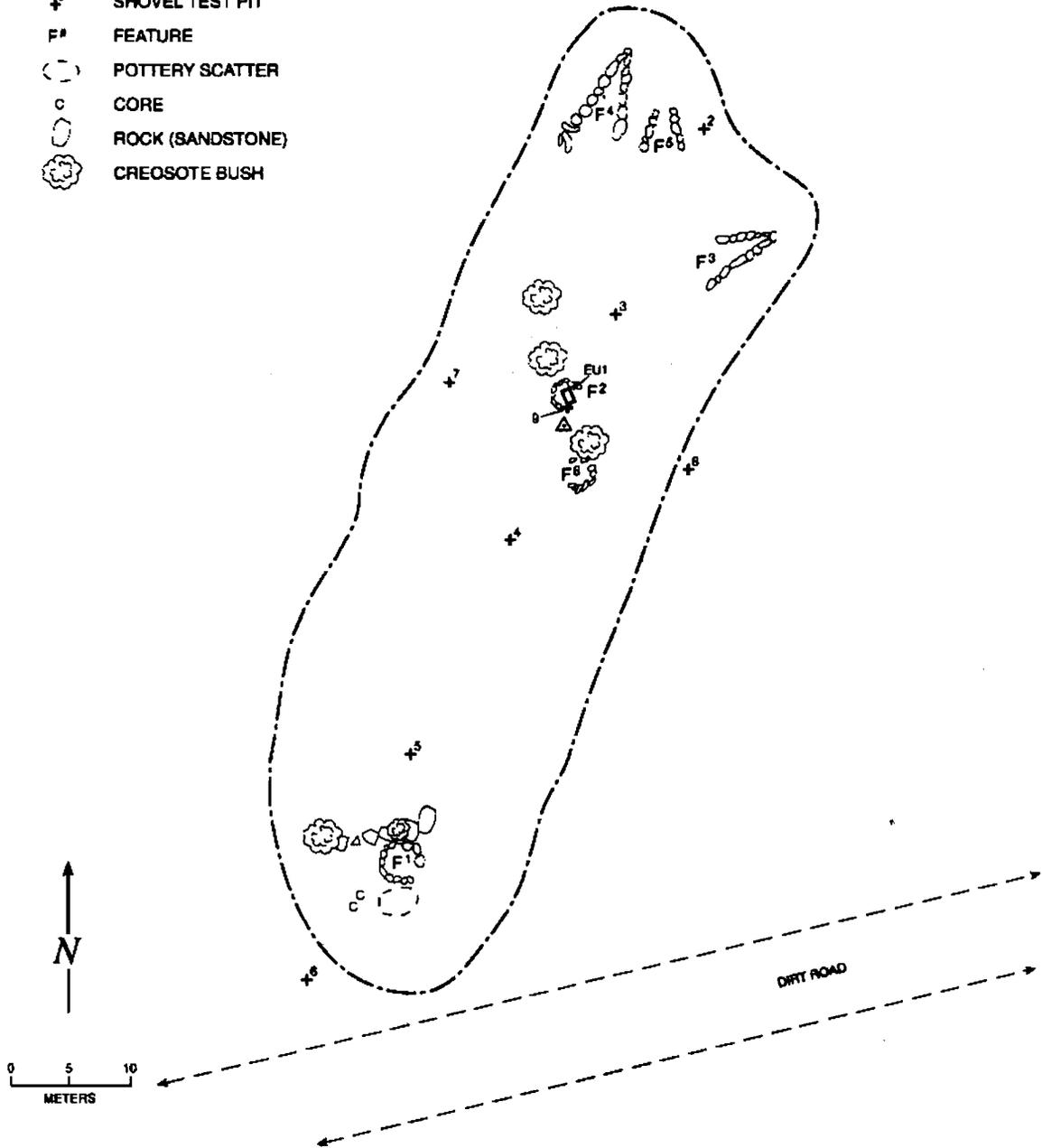
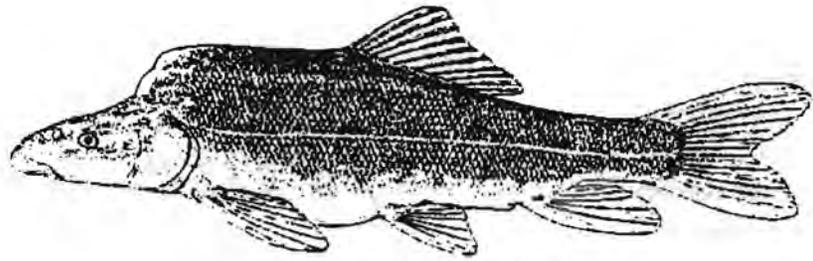
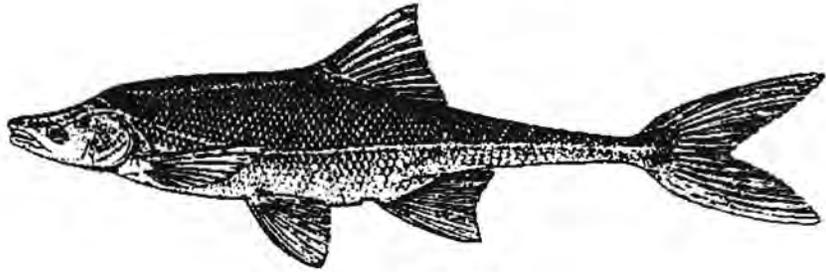


Figure 1. Site CA-IMP-7581 with Fish Traps and Rock Enclosures.



Razorback Sucker



Bonytail

Minimum Number of Individuals

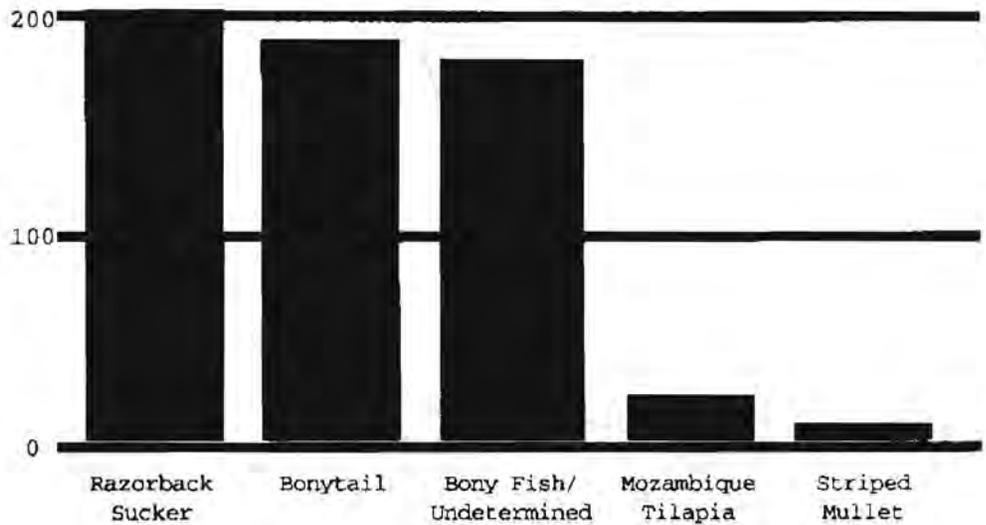


Figure 2. Predominate fish remains found at Salton Sea Test Base.