

# Revisiting the Archaeology of Baja California Sur's Bahía de la Concepción

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## **Abstract**

Archaeological explorations in the 1970s by University of California, Davis, researchers along Bahía de la Concepción in Baja California Sur revealed abundant and diverse discoveries covering thousands of years. This work is highlighted by discoveries along the inner side of this bay, especially at smaller Bahía Coyote and the Arroyo del Tordillo basin. These coastal/near-coastal locations were particularly informative in their evidence of presumed residential, ritual, and special-use activities. This paper highlights the research sampling methods and findings and how they contribute as building blocks toward comprehending peninsular prehistory.

## **Introduction**

The complexities of the archaeological record regarding the ancient peoples of Baja California have become increasingly apparent as scholars transition into the early decades of the twenty-first century. Archaeologists working in the peninsula have focused more and more attention on the diversity of remains left behind by these past hunters-foragers-fishers, or foragers for short (and historical evidence as well). With a blending of theoretical paradigms in the field of archaeology and the growing sophistication of methodological approaches and questions being asked, the constructed lifeways and behavioral patterns of these prehistoric peoples are becoming clearer. There also exist earlier archaeological studies that deserve reexamination or amplification in light of the decades of intensified but often still pioneering examinations of the peninsular prehistory. Such reexaminations can expand our archaeological perspectives on the production of knowledge and add new information to our understanding of the peninsular past.

This paper will center on reexamining archaeological sample results from a study of one of the Baja California peninsula's major Gulf-side bays, Bahía de la Concepción, especially around secondary Coyote Bay and an adjoining small coastal drainage, the Arroyo del Tordillo watershed, a locality studied by a team of researchers under the author's direction in the early to mid-1970s (Ritter 1979) (Figures 1 and 2).

## **Local environment**

Conception Bay is some 40 km long and 8 km wide, with a varied, irregular shoreline. One of the central adjoining watersheds studied in some depth is the Tordillo basin or watershed, some 2,475 hectares in size. The east-trending watershed begins in the Sierra El Cardonal draining into

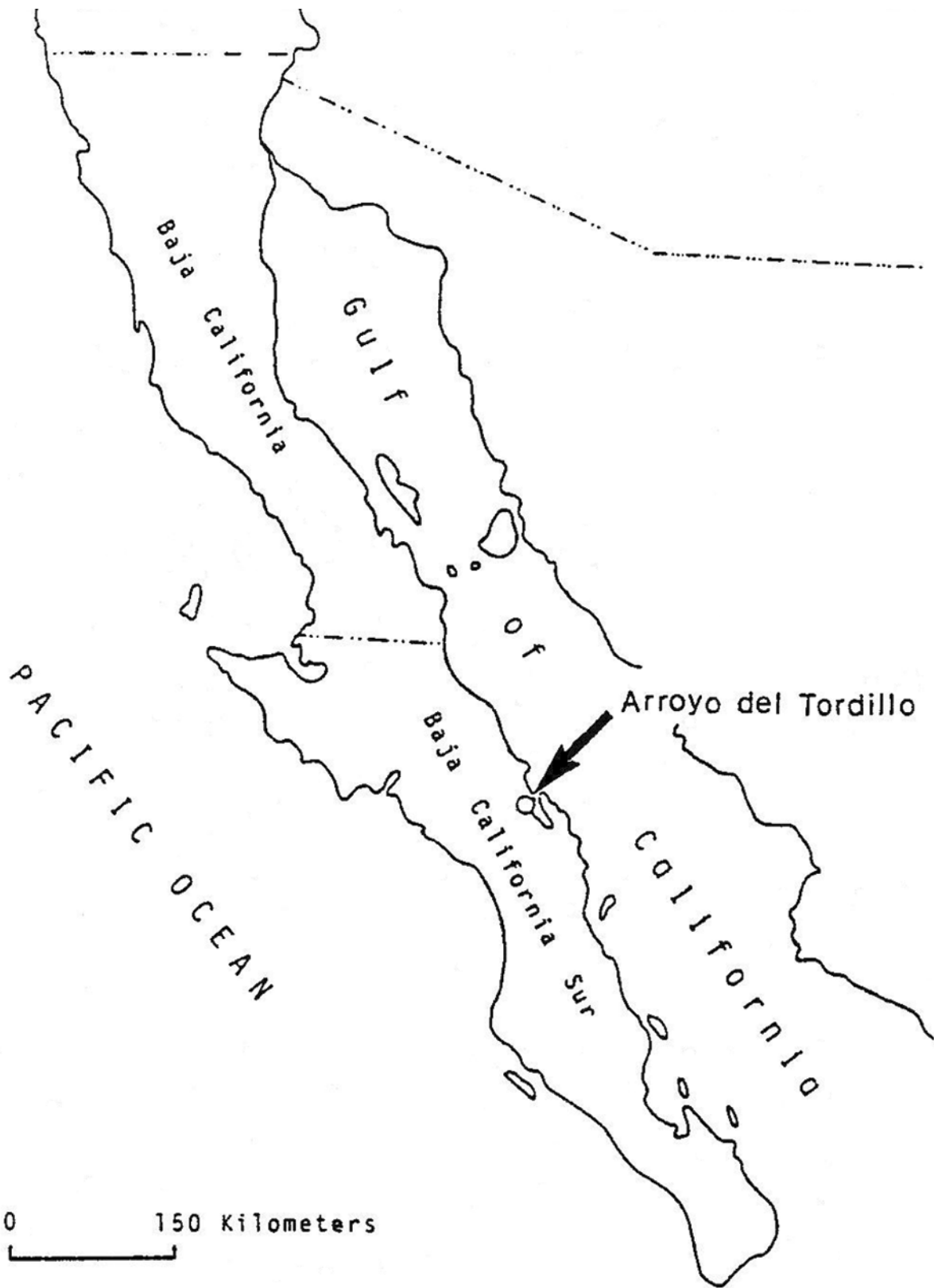


Figure 1. Location map.



Figure 2. Tordillo basin and Bahía de la Concepción.

Bahía Coyote (Figure 2). Alluvial deposits in the form of terraces and drainage bottoms are flanked by Miocene volcanics (andesite agglomerates, flows, and tuffs) (McFall 1968:Plate 1) that are laced with rock shelters. Vegetation along this larger bay and its basins is typical of the Sarculescent Desert, with cacti, shrubs, and many herbaceous plants (Shreve 1951; Wiggins 1980:21-25). Arroyo bottoms are rich in legumes. Near the ocean, there can be found various halophytes and a small mangrove grove. Terrestrial vertebrate fauna encompasses nearly all taxa of the Desert West (Nelson 1921:110). The greater bay in the past was rich in a variety of marine fauna, including vertebrates and invertebrates from shallow to deep water, including juxtaposed estuarine, sandy, rocky, and muddy shores. Both fixed and seasonal marine animals are present in diminishing numbers. Major canyons along the bay hold natural seasonal to year-round water tanks or *tinajas*.

### **Archaeological background**

To put this paper in its proper context, it is appropriate to summarize the larger regional study presented in a dissertation (Ritter 1979) and published in an abbreviated version (Ritter 1985). The greater Bahía de la Concepción region study of 1969-1979 was directed primarily at understanding the cultural history and behavioral ecology of the region's past prehistoric inhabitants through systematic and purposive inventories and sample excavations and surface collections. Understanding at an initial, testable level the relationships between changing human activities of the past and associated landscapes/ geomorphology, fixed and mobile resources, environmental/resource transformations, and ideological factors was the lofty goal of the study.

Five geomorphic/environmental domains were sampled: Littoral, Bajada, Interior Mountain and Canyon, Highland, and Ecotone. More emphasis was placed on the coastal locations primarily owing to logistical constraints. Twenty-five 1-km<sup>2</sup> areas scattered from the central mountains to the sea were sampled in total, including one on the coastal edge of the Tordillo basin by its drainage mouth (Figure 3). This must be coupled with the purposive surveys that included portions of the Arroyo del Tordillo basin and Coyote Bay itself.

Prehistoric sites recorded within the region include 160, of which 34 are located within the Tordillo basin or along the hillside by its mouth, including three additional sites not formally recorded. Dozens and dozens of sites occur along Conception Bay, especially around smaller embayments. Sites were categorized based on cultural content, configuration, and whether they occurred within an open or enclosed setting. Site categories that predominated included Lithic Scatters (Category I), Lithic Scatter/Milling (Category II), Lithic Scatter/Other Cultural (Category III), Shellmounds (Category IV), Midden Rock Shelters (Category V), Rock Shelter/Milling (Category VI), Rock Shelter/Other Cultural (Category VII), and Rock Art sites—both open and within shelters (Category VIII). Rarer sites or locations included stone quarries, trails, mortuary shelters or caves, rock cairns and walls, and isolated finds.

Time-sensitive artifacts such as projectile points, radiocarbon determinations, and obsidian hydration results were used to construct a series of pre-Mission periods. The chronology includes a Paleoindian/early human period lasting to around 8000 B.P., best represented by large, stemmed projectile points, and several Archaic periods (Concepción with hallmark Pinto points, and Coyote with trademark Elko-like points, among others). The best-known period is Comondú, dating from roughly 1,000-1,500 years before present to contact.

In an informal trip to the area in 1969, local residents directed the author to several of the rock art shelters and open sites around Coyote Bay and the Tordillo basin. The indefatigable archaeologist Emma Lou Davis was also visiting the area as part of a peninsula-length archaeological reconnaissance. A rich corpus of sites within and near this basin convinced the author that this was indeed a fertile, little-explored archaeological zone worthy of determined research. Several years later, when the focused research began, this basin and nearby bays were explored further for archaeological evidence. A local collector even commented on the richness of open sites in the Tordillo basin. This report proved true, with close attention paid to both the shelter sites and the nearby terrace sites.

Little of the Tordillo basin can be considered 100 percent inventoried for archaeological sites, as upper rocky areas, upper areas of feeder canyons, and some of the alluvial landform components were not searched. Perhaps one-half of the lower Tordillo basin, for instance, has been searched in an irregular fashion during walks across the basin, along the lower escarpments, and in the lower ends of the feeder canyons. A littoral survey quadrant at the basin mouth on a rocky hillside fronting the larger Bahía Coyote was surveyed (Figure 3). It is likely most of the principal or larger native-used shelters have been found in the Tordillo basin (and locals with even more knowledge of the terrain have not reported sites in the upper reaches of this basin). Nevertheless, with hidden finds in systematic plots elsewhere in the area, such as small burial and cache shelters, including the location high up the escarpment along the southwest fringes of Conception Bay that yielded a known religious implement, a *tabla*, and the possibility of quarry rock such as silicified tuff in outcrops, there is a high likelihood of other archaeological sites. Travel over passes to the west on trails to the nearby Portreo Valley is suspected as well.

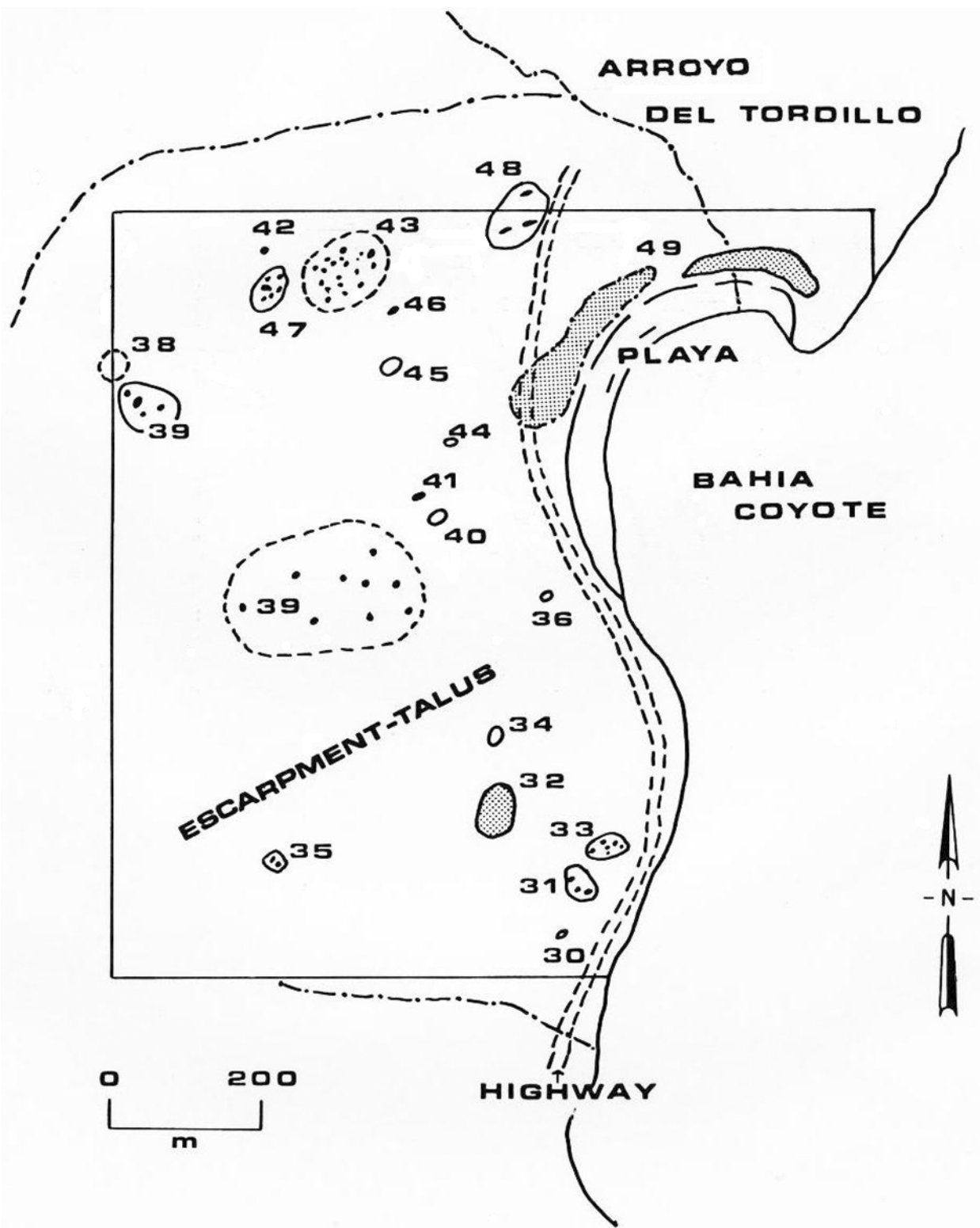


Figure 3. Map of Bahía de la Concepción region survey, transect 3, quad 2 (littoral stratum).

## The archaeological sites

Archaeological sites in the classic sense that were documented during the project represent discrete surface clusters or artificial mounding of remnants of past human activities. Locations recorded as archaeological sites are those individual places of past human activities over 50 m from other cultural evidence. These locations can be singular or closely grouped rock shelters (within a few meters of each other). Within the coastal or littoral survey quadrat adjoining the mouth of Arroyo del Tordillo, 20 “sites” were recorded (Figure 3). Informal survey in the basin itself resulted in the documentation or notation of an additional 14 sites. The overall Conception Bay survey indicates that the western side of the bay contains at least one shellmound or occupation rock shelter for every km<sup>2</sup>, as well as many secondary sites such as rock art locations, mortuary caves, lithic workshops, talus depressions, trails, and light multiple use artifact/ecofact scatters.

Because of the irregular coastline and the sampling strategy in which a randomly selected quadrat must have at least one-half or more of its present-day landmass present, the one Tordillo drainage quadrat is about 0.6-0.7 km<sup>2</sup> in size. The quadrat proved to have an extremely dense concentration of archaeological loci, in part owing to a great number of small rock shelters that formed a series of shelter staircases climbing the hillside. In addition, the ecologically variable littoral fringe, with its changing marine life habitats, meshed with the natural occurrence of sheltered locations. The 20 sites recorded (BS-D30 through BS-D49) included 61 rock shelters noted singularly or in tight clusters of up to 16 in one instance. All but one site, a flaked stone scatter, contained local coastal shellfish remains, ranging from light shell scatters to true shell mounds, both in open situations and as rock shelter fill, with shell remains sometimes spilling out of shelter mouths to form aprons or shell taluses. These sites range from small shelters no more than 4-5 m<sup>2</sup> in floor space to a shell mound over 40,000 m<sup>2</sup> in size. All but this latter site are less than 6,250 m<sup>2</sup> in spatial extent, and in the case of shelters, less than 150 m<sup>2</sup> in area.

Six of the sites have block milling slabs in association. Fifteen of the sites have basalt flaked stone, usually flakes and sometimes stone tools. Basalt occurs naturally in these hills, and local cobbles and small boulders were clearly tested at two of these sites. One larger site has not only scattered flaked stone tools, debitage, and metates, but several rock enclosures or rock rings and one talus pit. Three of the rock shelters contain fish or shellfish, flaked stone, and a milling slab but also single petroglyphs (two cases) or a pictograph—generally rather indistinct figures with the exception of a turtle figure at an unrecorded site (previously visited but likely destroyed by highway construction) very close to the shore, and a small circular abstract petroglyph at BS-D39. Around the hillside corner, north from the quadrat area along the south side of the basin proper, there are a number of shelters with numerous rock art images, as discussed in detail in a previous publication (Ritter 1994), and there is a major petroglyph site on the coast less than 1 km away, along Coyote Bay (Brewer 1978). A deep shell mound within this bay yielded an uncorrected radiocarbon date of over 2,000 years in age from the 140-150 cm level of BS-D50 (Ritter 1979:97).

During the sampling program for this greater study area, 13 random littoral survey quads averaged 4.5 sites per km<sup>2</sup>. Obviously, this one quadrat with 20 sites is the most prolific of those Gulf coast areas sampled along Bahía de la Concepción (Ritter 1979:Table 30). Other areas around Coyote Bay are nearly as dense in terms of ancient human uses. Furthermore, in looking at site types, it is understandable that this section of the coast, with its abundance of used rock shelters, differs from those coastal surveyed quadrats that were geomorphologically less diverse, with fewer rock shelters and more open complex sites with flaked stone, milling tools, and shellfish remains.

None of these Tordillo quadrat sites were tested archaeologically, and there were no clear time markers present, such as projectile points or obsidian suitable for hydration. Accordingly, the dating of these sites is an unknown, although they are expected to be pre-contact, ranging back a few thousand years or more before the present. On the other hand, archaeological work, especially at sites within the interior basin and at nearby Coyote Bay, provides a better handle on the dating of prehistoric use in this locality.

Within the Tordillo basin, most sites documented are along its southern portion, with one major exception. Among these 14 sites, test excavations, random surface unit collections, feature documentation, selective artifact compilation, and rock art recording were undertaken. These are summarized or highlighted below, based on more focused and specific descriptions from previous works (Ritter 1979, 1981, 1994), with a new look at the data from archaeological work conducted in the peninsula decades later.

The sites documented in the basin proper include four open cultural deposits and features (Type II); four rock shelters with midden (Type IV), and six rock shelters with midden and other cultural evidence such as rock art, mostly pictographs. Two of these latter sites were test excavated, and one of the open cultural deposits was extensively surface sampled through systematic procedures. Surface collections were made at other open sites.

#### *BS-D52 (Cueva de los Dos Pescadores)*

Random, limited test excavations were conducted at this rock shelter since there was an evident cultural deposit beneath a panel of painted anthropomorphic and fish figures (Figure 4) with a surface milling slab and evidence of midden development. Upon excavation, the shallow deposit (30 m<sup>2</sup> in extent) yielded basalt flakes, shellfish remains, charcoal, and various plant remains indicative of limited residential activity of uncertain date and uncertain affiliation with the manufacture of the shelter pictographic images.

#### *BS-D55 (Cueva Lupe Diaz)*

Compared to the preceding site, this larger rock shelter (150 m<sup>2</sup>) with a low, fronting, semicircular rock wall proved to be rich in archaeological information, including a number of perishable items (Figure 5). Two relatively shallow (30 and 70 cm) 1.5-m units revealed an extensive variety of artifacts. One unit hit scattered human bone, and an association for some of the items as mortuary offerings is likely. Similar recoveries were made at excavated site Cueva Cola de Ballena along Coyote Bay, discussed below.

Over seven metates were scattered on the surface of the undisturbed deposit. Eleven flaked basalt tools (knife and scraper-like forms), along with a single obsidian flake, were recovered from the site. Shell beads included 43 small and large *Olivella* spire-lopped beads, one with fiber cordage still present; 15 *Olivella* spire-lopped, side-perforated beads; two *Olivella* spire beads; and a single *Theodoxus* bead (Figure 6). Other shell items included a red ochre-stained *Glycymeris* valve and a perforated *Argopecten circularis* valve. Several bone awl fragments and unidentified bone tool pieces were also recovered.

Significantly, 1,053 fragments of cordage and netting were found (see Schulz 1977) (Figure 7). Two types of cordage twist, three types of simple knots, and one knotless netting technique are represented. The 501 unknotted cordage specimens, with three exceptions, are S-spun, 2-ply, Z-twist. The other three are Z-spun, 2-ply, S-twist with several re-plied S-twist.



Figure 4. Views of Cueva de los Dos Pescadores (BS-D52) and its pictographs.





Figure 5. Cueva Lupe Diaz (BS-D-55).

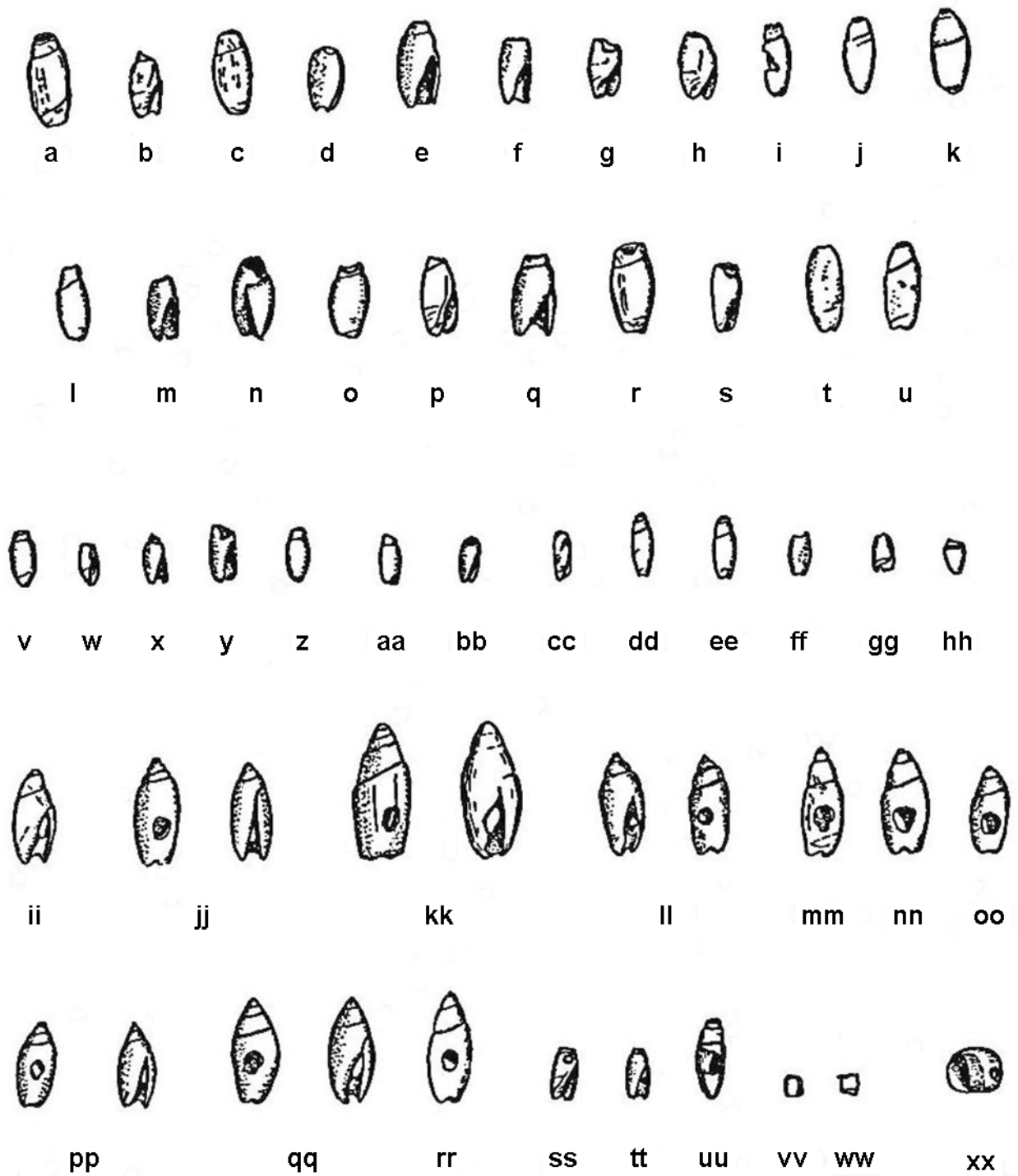


Figure 6. *Olivella* and *Theodoxus* beads.

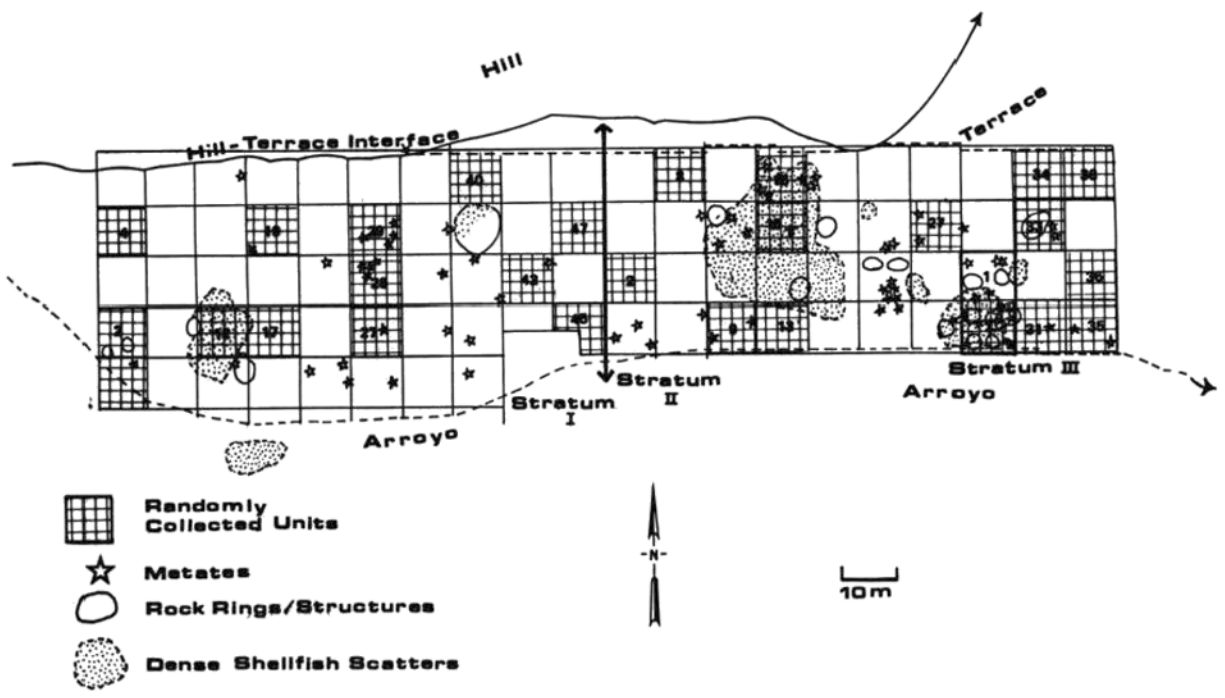
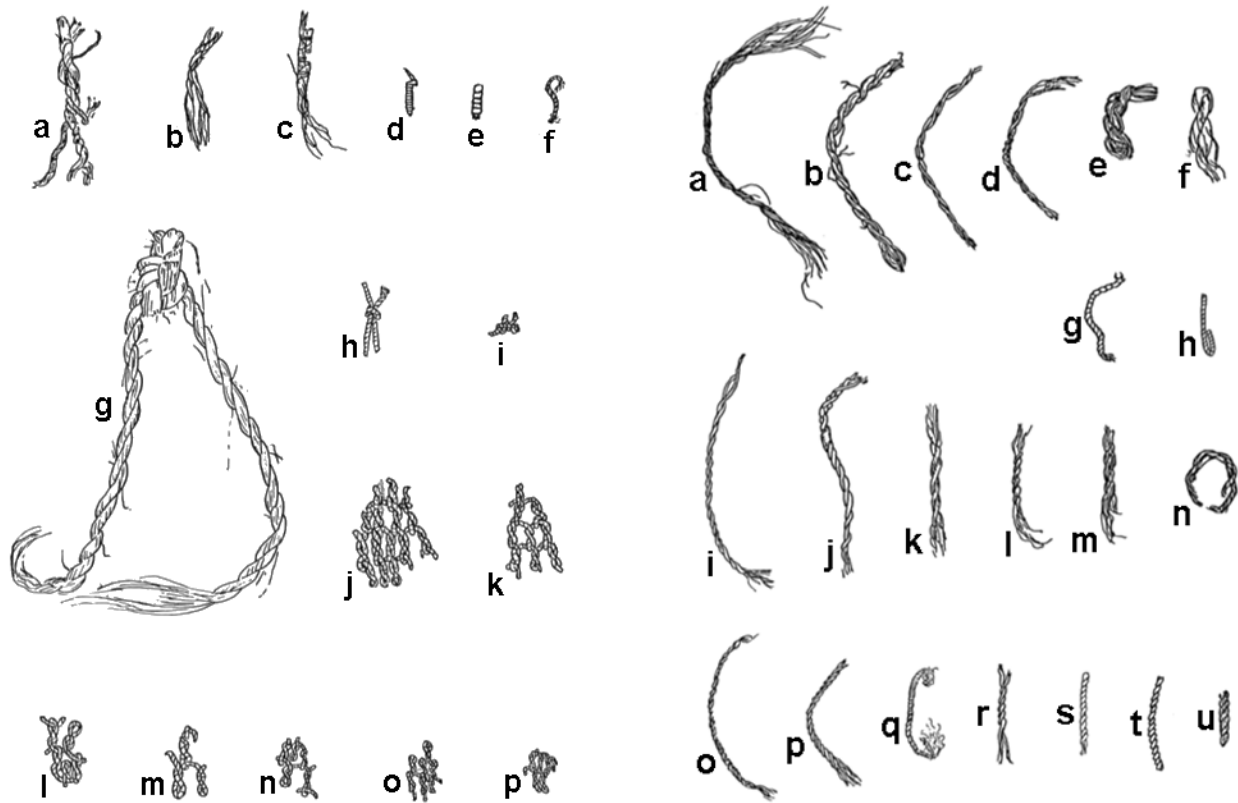


Figure 7. Knots, cordage, and netting (upper); map of BS-D58 (lower).

Subject to further analysis, about half appear to be *Apocynum*, 30 percent grass, and the remainder *Agave* or *Yucca*. Some cordage appears to have been used to string shell beads, as in a necklace. The 32 knots include cow hitch or Lark's head (17), square (6), and overhand (10). Unknotted loop-and-twist netting characterizes all 511 specimens, all made from *Agave* or *Yucca*. As found in an archaeological setting, the netting (possibly hair nets or small carrying bags) appears relatively tight, with mesh (unstretched) not exceeding 1.3 cm in height—many times smaller, for instance, than the knotted utilitarian *Agave* net bags manufactured by the modern Paipai, where mesh openings can exceed 7 cm in height. Also found were six bunches of folded grass leaves, one cluster of bark strips, and three bunches of grass tightly wrapped with 2-ply Z-twist cord.

A feature of note from the shelter is a cane leaf (*Phragmites*) mat on bedrock. This mat measures 70 x 45 x 5 cm and may have served as a secondary burial bedding, with nearby disarticulated human bone and an ash lens in apparent association. Eight *Argopecten* shells were also found in possible association. An uncorrected radiocarbon date on the mat or padding is A.D. 1016-1156 (Calib 6.0) (GaK-4363) placing this feature and likely the deposit in the Comondú period. Interestingly, no projectile points or heavy-duty flaked stone tools were found, and very little debitage was present.

### *Open basin sites*

Four Tordillo basin terrace sites—BS-D54, BS-D57, BS-D58, and BS-D59—are surface and near-surface scatters of artifacts, ecofacts, and features (Figures 8 and 9). These sites, respectively, are 70,000, 8,000, 11,000 and 20,000 m<sup>2</sup> in size. The densest concentration of cultural materials per unit area was at BS-D58, where systematic documentation and collection by sample unit (Figure 7, lower) was undertaken, as discussed below. No collections were made for BS-D57. Collections from BS-D54 and BS-D59 were sampled for artifact analysis by collecting for general form and approximate frequency through extensive back-and-forth canvassing at intervals approaching 5-10 m, with cross-sweeps. Debitage was not collected nor analyzed in detail, as most was basalt/rhyolitic and primarily hard-hammer percussion. It is likely that these sites could be considered one cultural setting, due to their proximity to each other and similarity. All have shellfish remains, basalt/rhyolitic flaked stone tools, flaked stone tool production and maintenance debris, projectile points, whole lightly to moderately used milling slabs and manos, and, with one possible exception, low rock enclosures or “rock rings.”

BS-D58 (Arroyo con una Terraza or ACUT) is situated on the north edge of the basin, adjoining a braided arroyo and just east of a canyon mouth (Figure 9). Within a few hundred meters in the adjoining canyon is a year-round *tinaja*. During the fieldwork of the 1970s, this site appeared little-disturbed, aside from a pile of metates and a small twentieth-century woodcutter's camp with scattered tin cans and one broken glazed pottery bowl. It is suspected that collectors over the years have likely hit the terrace sites here in their search for projectile points and small bifaces. This is certainly true for the larger region, judging by the famous Castaldi collection (Massey 1966), collections in the museum in nearby Mulegé, and local collections held by ranchers and seasonal visitors examined by the author. On the other hand, the limited rock shelter excavation and survey here and nearby failed to yield projectile points.

Aside from cultural materials, the site is covered by sandy patches intermixed with concentrations of pebbles, cobbles, and boulders that have moved onto the terrace from the adjoining hillside. The geomorphology and cultural material suggest this is largely a surface site and a relict landform. However, no subsurface testing was conducted, and rock enclosures



Figure 8. View of site BS-D-54, including close-up of terrace.



Figure 9. Arroyo con una Terraza (ACUT), northeast view.

excavated by Hyland (1997:176-185) to the north in the Sierra San Alberto yielded subsurface deposits, even below rock enclosure walls.

The site was gridded into 10-x-10-m collection units and further divided into three sampling strata, including approximate eastern and western halves of the site and a third small area of clear intense human activity where a concentration of rock enclosures and milling slabs was present (Figure 7 lower). Stratum I, with 48 units, included 13 randomly selected units that were collected. Stratum II, with 38 units, also had 13 randomly selected units collected, while Stratum III, with two units, had one unit collected. Together these 27 units represent a 31-percent sample.

The collection procedure included moving on hands and knees back and forth over the unit, collecting all artifactual remains, including debitage and thermal-affected rock, and noting all cultural features. Shellfish remains were also collected for analysis, including a *Chama* sp. shell that yielded a marine reservoir correction (404 ±34) radiocarbon age of A.D. 1632-1848 (GaK-4366).

### *Artifacts and features*

The assemblages from the basin terrace sites and for the Conception Bay area overall do not outwardly demonstrate a great deal of variation in the flaked or ground stone industries. The ACUT site is best represented by the sampling procedures. Furthermore, with a possible palimpsest of human activities apparently over hundreds if not thousands of years on these terraces, it is very difficult with the data at hand to tease out variations in human activities and tool use. Excavation would have been a means of determining the degree of multiple-age association of assemblages. Data are not yet available to be firm in identifying non-point shell bead and cordage time markers on these sites. Certainly these sites exhibit a generalized forager lifestyle, with coastal foods in play. Common to these open sites is a range of bifaces, tools, and preforms/rejects. Local fine-grained volcanic rock was being used. Flaked stone tools of the same material that seem to fall in the knife-scraper-chopper-cleaver functions are also common, along with smaller edge-modified flakes, often difficult to identify and probably underrepresented by the numbers in Table 1.

Whole milling tools also seem similar across sites and across the region, with the pitted mano more common at coastal or near-coastal sites. Four small ground stone palettes were found at UC-BC-58.

Table 1. Arroyo del Tordillo open-site archaeological associations.

Category	BS-D54	BS-D57	BS-D58	BS-D59	Totals
Small Bifaces	60		17	16	93
Large Bifaces	66		15	6	87
Hammerstones/Anvils	4		1		5
Cores	1+		36		37+
Debitage	+	+	+	+	+
Drill/Perforators	1			1	2
Cleaver-like	1		4		5
Edge Modified Flakes	22		60	14	96
Knife-like Forms	6		9	3	18
Scrapers/Scraping Planes	19		30	1	50
Chopper-like	8		42	1	51
Comondú Points			3	1	4
Guajademi Points					0
Elko-like Points	9		1	3	13
Unnamed Expanding Base Points	1			1	2
La Paz/Gypsum Cave-like Points				1	1
Loreto Points					0
San Pedro Points	5				5
Zacatecas Points					0
Pinto-like Points			1		1
Silver Lake-like Points	1			1	2
Pitted Manos	1		2		3
Other Manos	1	+	6		7
Metates/Palettes	+	+	72+	+	72+
Rock Enclosures/Rings	likely	+	16	+	16+

The sample of projectile points is most revealing in terms of cross-dating these Tordillo basin sites. A biased sample is assumed. The range of point types is suggestive of a long history of terrace/basin use. Still, these sites present a microcosm of the problems in dating sites with projectile points since many forms have relatively poor chronological control in Baja California, especially those that precede the late prehistoric Comondú period. Only generalities as to dating are possible.

In looking at the point forms or types present, and considering the very real likelihood of a depleted inventory due to modern collecting, there are seven point types at hand, including Comondú Triangular and Comondú Serrated (Figure 10); Elko-like and possibly related San Pedro and Pinto types; La Paz- Gypsum Cave-like; an unnamed mid-sized expanding-base point; and a larger stemmed point that resembles the Silver Lake type of Alta California (see discussion in Ritter 1979:162-210; cf. Hyland 1997:298-302; Laylander 2010). Hyland (1997:302) has noted that his findings in the Sierra de San Francisco suggest a post-A.D. 1000 date for the Comondú point series and that Elko-like and La Paz-Gypsum Cave points predate approximately A.D. 800. It is also appropriate to consider Laylander's (2007:14) study of large projectile points and their dating and presence in southern Baja California. He concluded that it appears that large projectile points continued to coexist with smaller points throughout the coastal Californias, and throughout the Spanish period. Despite issues such as time lag (with a possible derivation of types from northerly sources such as the Great Basin) and identification of historically reported large points, there seems a good chance that the larger points are, at least in part, pre-Comondú and go back thousands of years in age.

Another line of evidence for dating these terrace sites is an examination of obsidian

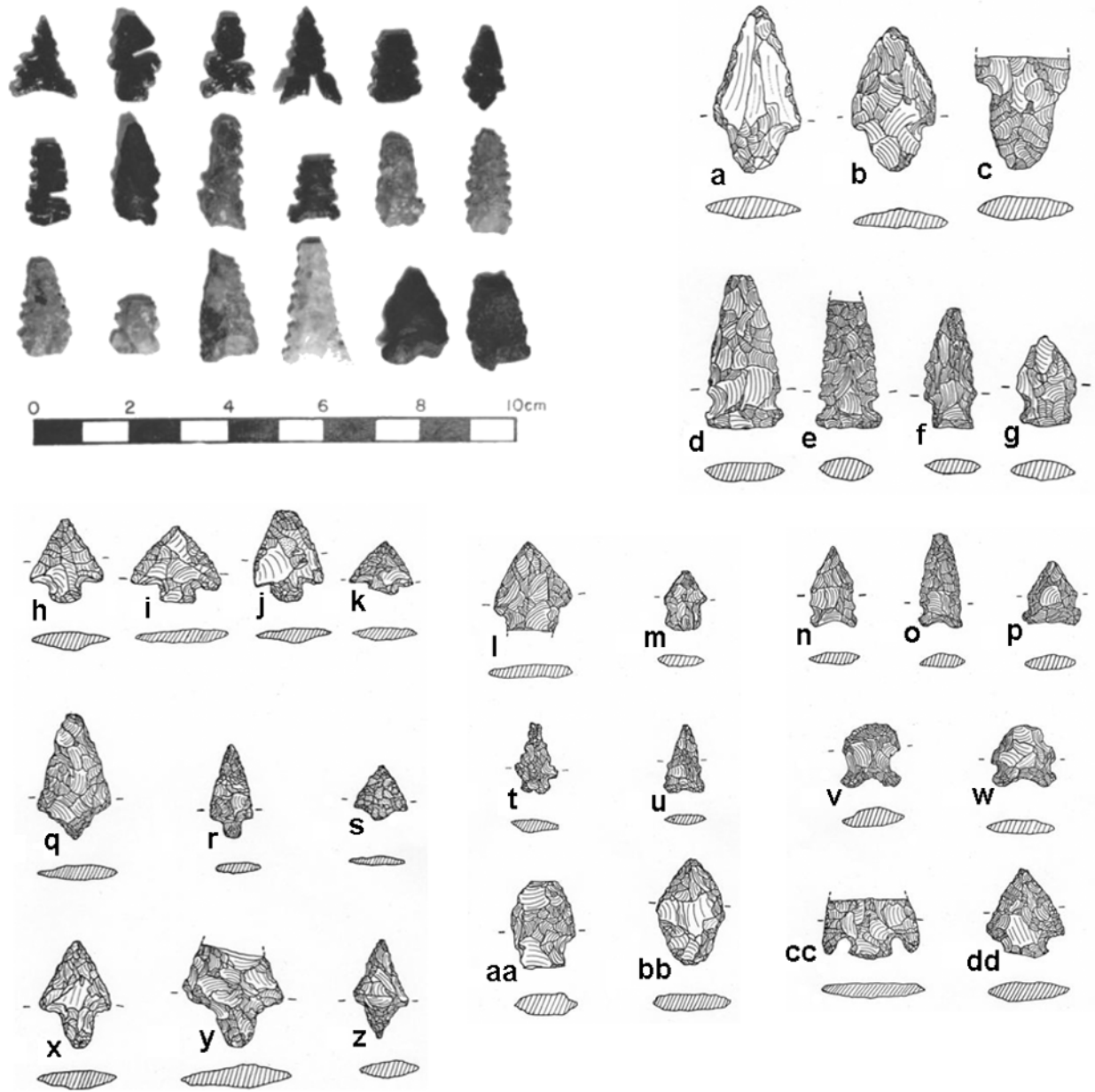


Figure 10. Regional projectile points. Upper left photo: Comondú series. Drawings: Loreto (a, b, c), San Pedro (d, e, f, g), Elko (n, o, p, v, w, cc, dd), Zacatecas (l, m), La Paz-Gypsum Cave (q, r, s, x, y, z), Pinto-like (t, u), Silver Lake-like (aa), Lake Mojave-like (bb), unnamed (h, i, j, k); point l is 3.6 cm long.

hydration readings. These readings are all on small flakes or flake tools. They include four readings from BS-D54 (including a double band on one specimen), two from BS-D58, and seven from BS-D59. The double rim from BS-D53 is 2.6 and 5.8 microns, demonstrating scavenging of older artifacts. Other readings from this site are 3.8 and 4.3 microns. For BS-58 the readings are 2.9 and 4.1 microns. Finally, at BS-D59 there are readings of 1.8, 1.8, 1.9, 2.4, 2.5, 3.1, and 6.2 microns. Several factors must be considered in interpreting the above readings. One is the source of the obsidian, and a second is their environmental history such as open versus closed sites, surface or non-surface, temperature/evaporation, climatic change, etc., all affecting hydration rates.

Shackley and others (1996:727) discuss the sourcing of a number of these study specimens



and others from the region and to the south. He found that 87 percent of those 23 tested from around Bahía de la Concepción were from the Valle de Azufre source to the north, with the others from the closer Punta Mangles source and an unknown source. Thus the sample appears to be predominantly from one source, and samples have been left in open surface to near-surface conditions. Originally a rough approximation for hydration readings of 300-500 years per micron for the last several thousand years was posited (Ritter 1979:120). Laylander (2005a) favored an exponential rather than linear formula and presented a proposed graph showing his proposed rate. Using Laylander's graph, the oldest reading (6.2 micros) would fall somewhere in the neighborhood of 5,000 years ago with the smallest readings (1.8 microns) falling somewhere around 540-1,000 years ago. Taken as a whole and with the caveats mentioned above, obsidian hydration alone would suggest use of the basin and region from 5,000 to 500 years ago as a rough approximation.

With regard to features, the rock enclosures are an important signature of site function and, to some extent, of local demography (Figure 11). BS-D58 is the only site of the group with systematically gathered data in this regard. Rock features in the region have been discussed previously in some detail (Ritter 1981), but some particulars are worth a further examination with regard to this site and others in the region.

The 16 rock enclosure features documented at ACUT (and there may have been a few more obscured) fall within circular (four) and oval (14) forms. They are constructed of relatively loosely placed cobbles and small boulders. Wall heights range from 20 to 40 cm. Wall widths (assuming some collapse and displacement) vary between 30 cm and 150 cm, sometimes variable (especially the wider ones), with a mean width of 56 cm (SD = 39.1). A large possible "rock ring" is discussed separately below. The oval enclosures range in outside dimensions between 1.9 and 5.0 m in the major axis with the minor axis varying between 1.1 and 4.0 m. The major axis mean is 3.5 m (SD = 0.9), with the minor axis averaging 2.8 m (SD = 0.8). Circular features are 1.2, 2.5, and 3.5 m in outside dimension. Floor space for these features (lumping oval and circular features) ranges between 0.33 and 11 m<sup>2</sup>, with a mean of 4.6 m<sup>2</sup> (SD = 3.3). Inside maximum dimension ranges between 0.7 and 4.0 m (mean = 2.5, SD = 1.0), while those oval features have minor axis dimensions between 0.6 and 3.4 m (mean = 2.0, SD = 0.8). The possible large ring is 8.5 m in outside diameter, with an interior floor space around 44 m<sup>2</sup>.

As previously reported (Ritter 1981:29), with the exception of the very small enclosures and the large enclosure, these features most likely represent foundation remnants of single-family structures, with the larger ones perhaps related to extended family use. The very small features may have served storage or cooking functions. The large ring may have served as a place of celebration and/or ritual (see Aschmann 1959:109), a function that might be expected for a relatively large camp or nearby series of related camps.

The work to the north in the central peninsula at Los Corralitos (12 km inland) by Hyland (1997) documented 45 walled circular stone enclosures that are likely similar in size to those reported here (one measured feature is 2.7 m by 2.65 m in diameter). Twenty metates, nine manos, points from the Comondú culture and at least one earlier period, bone, and shell were found.

A bit further north of Hyland's work in the vicinity of Bahía de los Ángeles, investigations (Ritter 1995) documented 188 oval and circular rock enclosures, several of which had clear openings and several had shared walls. Four categories of rock enclosures were arbitrarily established, based on size clustering: features 1.8 m<sup>2</sup> or less of floor space, features between 2.0 and 5.9 m<sup>2</sup> of floor space, features over 10 m<sup>2</sup> in floor space, and a single large feature 24 m<sup>2</sup> in floor space. A sample of all rock enclosures revealed an interior floor space mean of 2.8 m<sup>2</sup> (SD =



Figure 11. Structure foundations at BS-D58.

1.7), smaller than the sample from BS-D58. Variations in function seem a likely explanation, considering that some of the Bahía de los Ángeles enclosures could be non-habitation features such as vision quest rings and very small features could be rock ovens. Overall, the Bahía de los Ángeles enclosures that are associated with habitation debris seem very similar to those from the Bahía de la Concepción region and those recorded by Hyland.

Both Hyland's Los Corralitos site and such sites around Bahía de los Ángeles are more frequent across the landscape and include sites with more features clustered together, suggesting (if the contemporaneity of the features is assumed) larger population clusters and perhaps less dispersal of population. On Isla Cedros, Des Lauriers (2010:118) documented at least six large prehistoric villages with over 50 proposed house remnants measuring between 3 and 5 m in diameter. One site had 481 such features, possibly due to its location relative to a contact point with the mainland (Des Lauriers 2010:175). These various foundations (absent stone enclosures) are thought by Des Lauriers (2010:134) to have been for pole-and-thatch houses, certainly a possibility for many of the rock enclosures discussed for Bahía de la Concepción. The proposed larger (in population) villages on Isla Cedros suggest to Des Lauriers (2010:135) a restricted mobility in the pre-contact period compared to contact times. If so, then perhaps the patterns along the main central Gulf Coast bays (e.g., Bahía de la Concepción, Bahía de los Ángeles) suggest more mobility (more seasonal settlement and perhaps smaller groups) for some of the late prehistoric mainland foraging populations.

With regard to the ACUT site, it is of assistance to look at the overall feature and artifact patterning. The enclosures are dispersed to some extent, with a clear clustering toward the eastern side of the site and even more clustering in one location on this side near the arroyo edge where one-half of the structures occur within a 15 m diameter (Figure 7). The larger structure foundation is clearly located away from the smaller rock enclosures. Hyland's (1997:Fig 7-29) Los Corralitos sites also shows several clear clusters of rock enclosures, perhaps representing concentrations of lineage-related groups. The main cluster at ACUT may be related to a kin group. Among the Filipino Agta, for instance, Rai (1990:39) noted that living structure "distribution in a particular camp generally maps the genealogical relations of the Agta band." Obviously, we do not know how many structures at ACUT may have been used at one time.

Milling slabs and flaked stone artifacts almost exclusively occur outside the rock enclosures. This implies a predominant shelter function with milling, flaked stone tool manufacture, utilization of flaked stone tools for various cutting, scraping, perforating functions, and tool discard occurring predominantly outside the domicile or shelter. Surface shellfish remains occur within and outside the enclosure walls. Some shellfish within the wall of at least one structure and other shellfish within enclosed rock features suggest that some shellfish discard occurred after shelter abandonment.

Since a stratified random collection sample of surface artifacts and ecofacts was undertaken at the ACUT site, an examination can be made of variability, if any, in the artifact distribution that might imply activity variation at the site, at least during a period of time represented by the surface remains. Because of the relative small numbers in certain artifact categories, for purposes of the analysis flaked stone artifacts (excluding debitage) were lumped into large or more heavy-duty flaked stone artifacts (e.g., cleavers, scraping planes, cores/choppers, hammer stones) and small or lighter-duty flaked stone artifacts (such as bifaces, projectile points, edge-modified flakes, knife-like tools), and these two categories were compared with the distribution of the three collecting strata. It is realized that the third stratum may bias the sample to some extent because it was selected due to its structure and milling stone concentration and it was already evident that this

Table 2. Flaked stone variation by stratum.

	Large Flaked Stone	Small Flaked Stone
Stratum I	27	27
Stratum II	52	83

Chi-square = 2.09; df = 1; p-value = 0.14826607

Table 3. Flaked stone and milling stone variation by stratum.

	Large Flaked Stone	Small Flaked Stone	Metates
Stratum I	27	27	26
Stratum II	52	83	34

Chi-square = 6.51; df = 2; p-value = 0.03863874

was a focused activity/residential area of the site. Twelve milling slabs and 14 large and small flaked stone artifacts occur here.

To eliminate the possible Stratum III bias and the relative size difference in the aerial extent of each stratum, only the flaked stone artifact categories for each of the larger two strata were compared, since they each contained 10 sampling units. In comparing the variation in the flaked stone categories in the two large strata, a chi-square test demonstrated that the null hypothesis of similarity across the site was upheld, but with a slight tendency for proportionately fewer of the larger flaked stone tools to occur in the western section of the site (83 small versus 52 large tools) (Table 2). When milling tools as a whole by each of the two larger strata are added as a comparison to the flaked stone tool distribution in a chi-square test, the results suggests the null hypothesis of even distribution can be rejected at a 98 percent confidence level (Table 3). Interestingly, more milling tools occur where there are fewer rock enclosures on the western half of the site. In fact, some meters further to the west of ACUT there are 19 undocumented metates found in close approximation, possibly female activity zones.

There is no doubt that more activity overall was being conducted within the eastern side of the site, and this is also where the few projectile points were found. Other artifact categories were found in both sides of the site. Most impressive were the scores of milling tools found at ACUT and in the basin as a whole, including within rock shelters, a reflection of the dense desert riparian, cacti, and annual seed-bearing plants prevalent in this basin. Activity seems most focused during the fall when legumes and other seed-bearing plants became ripe. The rather pronounced biface industry both here and throughout the region may suggest actions such as agave heart collecting and other plant and animal processing functions.

In looking at the shellfish distribution across ACUT, surface shellfish remains occurred in clusters throughout the site, as discussed in detail in Ritter (1979:552-556). In certain areas, the ground was littered with a variety of molluscan remains. In other areas, there were concentrations of single species, possibly representing a single day's harvest and processing for consumption, including concentrations just outside a rock enclosure. Shellfish remains were present also within rock enclosures. In total, there were 30 genera or species recovered at the site. The occurrence of these 30 genera or species by sample unit was tabulated by presence/absence in sample units and then subjected to a multivariate analysis following Sokal and Michener (1958). Up to 14 genera/species were found in any one collection unit.

The most frequent mollusks by unit were *Chama* sp. and *Chione californiensis*. These were followed in frequency by *Cardita* sp., *Argopecten* sp., *Glycymeris multicostata*, *Ostrea* sp., and

*Chione undatella*. Overall, *Chione* is the most abundant genus and highest shellfish food value represented. The statistical analysis failed to reveal significant spatial variability by species at ACUT, other than the visually obvious clustering.

Shellfish at this site were collected prehistorically from all available habitats along the nearby coast, including rocky, sandy, and muddy locations. Some prehistoric shoreline trips were obviously oriented toward a particular species. Without better dating, the surface scatter at ACUT cannot be sorted by time period other than to say some of it occurred during Comondú times, based on the radiocarbon date cited above. Also, there does not appear to be significant buildup of shellfish remains that would suggest intensive shellfish collecting by a large group or occurring consistently over a long period of time, compared to the shell mounds found closer to the shore. However, there is no control over how much shellfish was eaten during daily gathering trips or was shucked, with only the meat brought back to the camp. For instance, in Meehan's (1982:117) ethnoarchaeological study of the Australian Anbarra (Gidjingali) in Arnhem Land, she found that during 1972-1973 the bulk of the shells from food gathering were "dumped at the home base, dinnertime camps, and processing sites lying within a range of a few kilometers of the mouth of the Blyth River. Shellfish remains disposed of at home bases represented only a small fraction of the total amount eaten during that time." Meehan (1982:117) also mentions that certain species are cooked at sites where they are gathered, and usually only flesh is brought back to the home base. McGee (1898:214) and Aschmann (1959:103) estimate from ethnographic evidence and historical accounts that the coastal Seri and the Baja California Central Desert people had shellfish contributing 10 and 11 percent of the diet respectively. In comparison, Meehan's (1982) work among a 31-person coastal band found the Anbarra diet of shellfish over several months of observation was generally less than 10 percent of the overall caloric intake.

With over 100 metates documented in the incomplete survey of the Arroyo del Tordillo basin, as well as a lesser number of manos, use of these tools was clearly an important aspect of daily life there. No other location in the overall study zone had so many milling tools in such concentration. It is probably no coincidence that these basin arroyos today—and likely still more in the past, prior to woodcutters, etc.—are lined with numerous leguminous trees (Fabaceae) and surrounded by other plants with seeds such as Amaranthaceae and Chenopodiaceae, various cacti, etc. that were consumed historically by the Cochimí Indians. Aschmann (1959:84) quoted a 1765 Spanish manuscript by Father Norberto Ducrue:

When there is an abundance of this seed [Parkinsonia, paloverde, etc.] one cannot stay in the rancherías because of the continuous noise they make by day and even more so by night, breaking and grinding these seeds with stones. There appears to be an arrangement among the Indians whereby, scarcely have some of them begun, that others are ready to continue the noise.

Aschmann (1959:93) believed the historic evidence "supports the thesis that foods of vegetable rather than animal origin constituted the basis of the aboriginal diet" for the Central Desert Indians as a whole.

Hyland (1997) found 588 metates and a lesser number of manos, types similar in form to those found in this author's 1979 study, in his regional survey to the north in the central peninsula. Two coastal sites had the most metates, 67 and 63, with next highest site total being 15. Isolated milling tools were also common, and metates occurred across all of Hyland's project area environments. Depending on the local setting, Hyland (1997:248) believed the metates were used to grind legume and cactus seeds but also, in places, ephemeral grasses like *Panicum* sp. and *Setaria* sp.

## *Basin rock art sites*

Six rock shelters with rock art in the Tordillo basin have been previously studied in detail (Ritter 1994). Mention has already been made of the only one excavated, BS-D52 (Cueva de los Dos Pescadores) (Figure 4). All these shelters, including BS-D52, are along the southern flank of the basin within a 2-km stretch. BS-D52 occurs in a mountainous, rough staircase alignment with BS-D51 (Cueva Pez Gallo) and BS-D53 (Cueva Pescadito), all facing north. Cueva Cochi (BS-D53) is just across a small secondary arroyo. Two decorated rock shelters occur closer to the coast: Cueva Manuel Diaz (unnumbered) and an unnamed rock shelter. Briefly listed below are cultural features of these small rock shelters (except BS-D52, discussed previously).

BS-D51 (Cueva Pez Gallo). A shallow shell midden is present, with flaked stone tools, debitage, and milling stones. Ten panels with 86 red to orange and black pictographs are present (Figure 12). Almost half the figures are vulva-like representations. Eleven of the 14 small anthropomorphs recorded in the basin are found here. Abstract/geometric figures are dots and diagonal sequences of lines. Several Gulf species of fish are also depicted, including a possible migratory red rooster fish (*Nematistius pectoralis*). An unidentified rat-like animal and a sea turtle round out the rock art corpus.

BS-D53 (Cueva Pescadito). This is the most decorated rock shelter, with 10 panels of petroglyphs and pictographs. A shallow midden is present, with shell, flaked stone tools, debitage, and milling stones. There are 130 painted and pecked figures within this rock shelter, clearly visible from outside the shelter. There are fish forms, vulva-like motifs, incised and scratched lines in parallel fashion, possible quadrupeds, and several abstract/geometric or obscure forms. About one-quarter of the figures are fish images, including jack forms. There are also sea turtle and handprint images.

Cueva Cochi. This rock shelter has only a few paintings, along with shell, turtle bone, basalt flakes, and four metates. Five pictograph figures are painted in this shelter, including a white fish, possibly a trigger-fish (*Balistes polyepis*), common along the shore in the recent past.

Cueva Manuel Diaz. This rock shelter near the basin mouth contains a shallow, patchy cultural deposit with eight panels of pictographs. Among the figures are two unusual three-digit figures, perhaps lizards, and a sun-like motif, probably a depiction of a crown of thorns (*Acanthaster ellisii*) or gulf sun star (*Heliaster kubiniji*). Among the 22+ figures, there are also two negative handprints, a positive handprint with a missing finger, a red scorpion-like figure, and several obscure forms.

Unnamed Rock Shelter. A small rock shelter contains a single red curvilinear pictograph.

The rock art in this basin is a localized reflection of the concentration of rock art around Bahía de la Concepción that appears to be a sub-style of what occurs more dominantly in the nearby Sierra Guadalupe and is designated the Great Mural tradition (Crosby 1975). It is hypothesized that this art was related to ritual/cosmological behavior and events associated with the Comondú period (ca. A.D. 1000-1700) and with earlier period(s) such as the Coyote tradition dating from approximately 1000 B.C. to A.D. 1000 (Ritter 1979:405), if not even earlier (see Watchman et al. 2002). Some of the rock art may be shaman-derived or influenced and may be attributable to female initiation rites. It has been hypothesized that “symbols of sexuality and fertility coupled with possible symbols of spirit helpers are depicted as reminders of the attainment of womanhood and its social responsibilities” (Ritter 1994:24). Certainly the basin seems to have been a place of concentrated activities like food foraging and milling that were dependent largely on women. For the Great Mural art of the Sierra de San Francisco, Hyland (1997:366) suggested

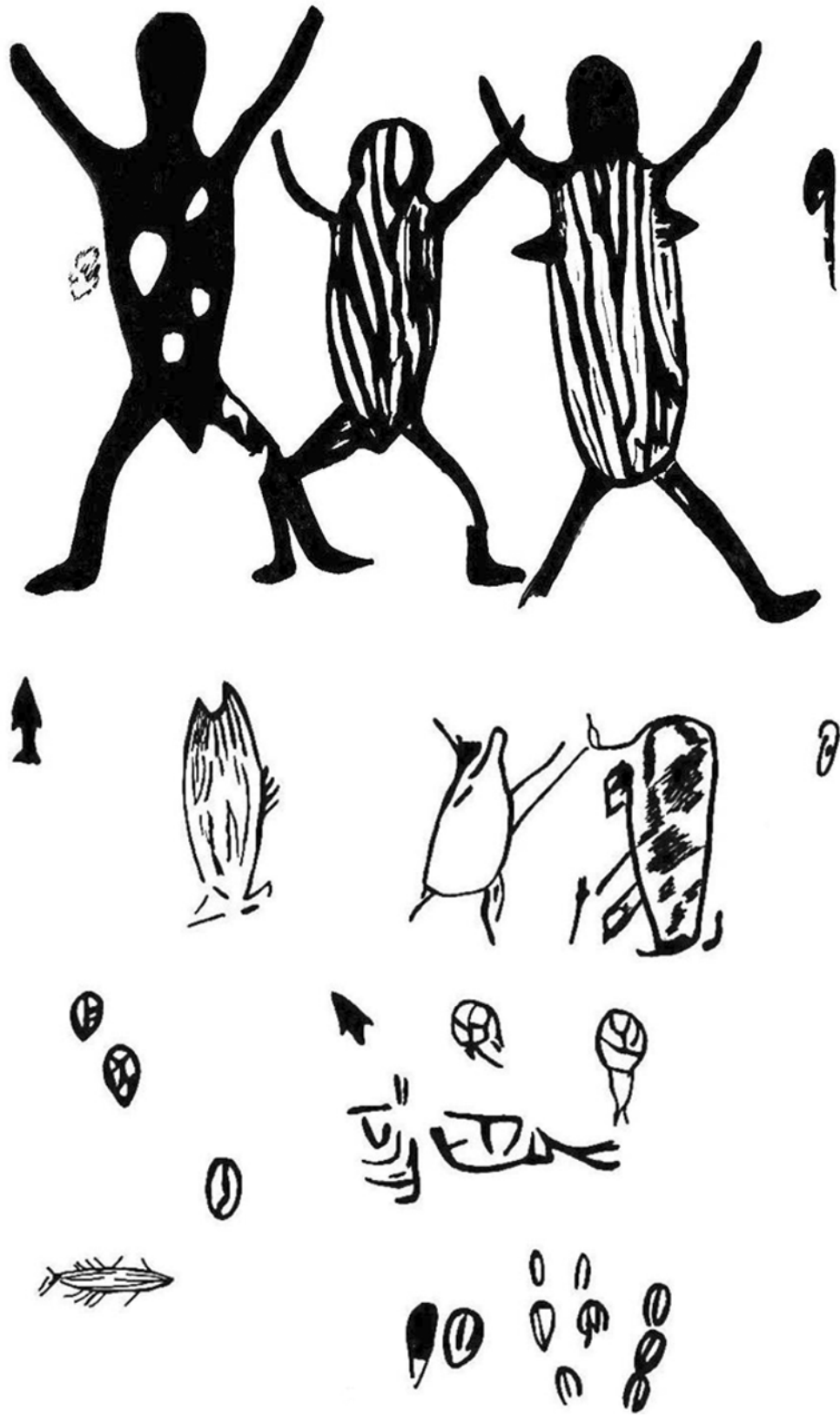


Figure 12. Pictographs at Cueva Pez Gallo, Tordillo basin.

some of the images (especially the anthropomorphs) were related to metaphors of death and dying, ancestry, and myth figure impersonation and communication. On the other hand, Laylander (2005b) saw the human figures as representing the painters' enemies. Ewing (2012:101) interpreted Great Mural art as possibly "highlighting the web of relationships between the sun, rain, the seasons, and themes of rebirth and renewal."

The marine depictions could be associated with ritual or even casual art production related to favored foods or perhaps resource renewal. It is very likely that this rock art was multifunctional, created neither often nor in overlapping images. Images were seemingly created both under very special circumstances in special places but also in more mundane places. Interestingly, Nicholson and Cane's (1991:305) ethnohistoric study of Australian Aborigine rock shelter debris found that sacred sites had distinctive artifact assemblages compared to domestic shelters. In a more general observation, Kyriakidis (2007) remarked that places where ritual activities take place may not categorically exclude day-to-day, routine activities. Intriguingly, painted or pecked images are not present in the later prehistoric rock shelter Cueva Lupe Diaz with its more expansive midden deposit, nor do they occur within other known late prehistoric coastal rock shelters with developed middens (with the possible exception of BS-D9 with a radiocarbon date within the first millennium A.D. [Ritter 1994:23]). Furthermore, no rupestrian art is known from local mortuary caves that are at least in some instances late prehistoric. But there are large concentrations of rock art at select locations within a kilometer or two. Ecological stress or unusual events or circumstances may be behind some of rock art's production.

### **Concluding remarks**

For prehistoric foragers, there is little doubt that the Conception Bay as a whole and the more localized Tordillo basin site complex is a reflection of the favorable fusion of geology/geomorphology, hydrology, availability of raw materials, vegetation communities, a rich, varied, and protective shore and bay, and easy access to hinterland resources and relatives and/or trading partners. Sites along the coast and in immediately adjoining basins are relatively dense, closely spaced, and varied in their composition and presumed function(s), apparently mirroring camp, task group, and ceremony/ritual functions, at least in the late prehistoric Comondú period and most likely for several millennia prior to that. The fact that many of these sites are at least late prehistoric suggests an increased use of the basin and shore from perhaps as early as the mid-Holocene. There are also data of occupation over 2,000 years ago from the nearby shore (within several kilometers) (Ritter 1979:97).

As stated in a 2006 regional archaeology overview (Ritter 2006:113), during middle to late Holocene times the relatively long-term predictability, diversity, and abundance of animal and plant resources in highland and coastal settings were apparently sufficient at times to support multiseasonal residential bases near permanent water sources. These foragers exhibited a strong preference for the profitable patches or niches fortuitously available here. Coyote Bay and the Arroyo del Tordillo basin were two such coastal settings, part of a particularly rich environment from the Rio Mulegé in the north to well down the west side of Bahía de la Concepción.

Just to the north of the Tordillo basin along the Gulf Coast, Aschmann (1959:180) inferred that even the most productive shorelines did not support more than five persons per linear mile. Likely this bay along its western shore supported more than this by late prehistoric times. One can only estimate what the population of the localized Tordillo basin and nearby localized bays was at its height. From archival records for the Central Desert just to the north of Coyote Bay and the



Tordillo basin, Aschmann (1959:122) estimated that a rancheria or band-like group may have a population from 50 to 200 people. Binford (2001:Table 8.01), tenuously based on post-contact historic accounts, gave the contact-period Guaicura group to the south of the study locality a population aggregate when most dispersed at about 12; most aggregated at 45; and 128 when there were periodic multigroup aggregations. Based on site size, dispersion, dating, and content, it seems reasonable that somewhere in the neighborhood of 50 people inhabited the Tordillo basin during periods of aggregation (when food was plentiful), with perhaps 50 more along Coyote Bay and the immediately adjoining coast at its highest density, likely in late prehistoric times. Even larger groups may have been there temporarily during specialized gatherings, perhaps reflected in the larger rock enclosure and/or local rock art concentrations.

A sample of 30 North American desert/desert shrub groups, including the Guaicura, exhibited between two and 14 moves per year (Binford 2001:Table 8.04). The coastal resources seemingly would have mitigated the need for frequent camp moves to some extent, and likely the groups in the northwestern section of Conception Bay probably moved somewhere in the lower range of this spread, at least during late prehistory. This agrees with Binford's (2001:390) observation that "groups primarily dependent upon terrestrial animal resources are most mobile, plant-dependent cases are less mobile, and although groups primarily dependent upon aquatic resources overlap with plant-dependent peoples, on the whole they are even less mobile."

Greater apparent late prehistoric use may imply a level of intense niche resource intensification (as with fisheries, legumes, annual seeds, etc.) coupled with population growth, possibly even dispersal into scattered camps within kilometers of potable water sources, and the introduction of newer technologies such as the bow and arrow and ceremonial/ideological concepts such as the Peninsular Ceremonial complex (Hyland 1997:356-357). Hunting of big game does not seem to have been prevalent in these coastal settings, with fewer projectile points found compared to highland settings, setting aside the bias from prior collection. But these conclusions are largely conjecture, pending further excavation and more complete analyses and dating.

Because of the relative environmental richness of this coastal zone as reflected in the archaeological record, it appears that camp movement was likely seasonal at best, at least during late prehistory. It can be hypothesized that less movement and a coastal focus was balanced to some extent with a similar pattern in the resource-rich highlands, with developing kin groups and periodic interaction and trade of goods, although Aschmann (1966:32) cited a missionary account for some Baja California Sur dialect groups that indicates there were hostilities between them at times. Bernbeck (1991:49) proposed that "in foraging societies, local groups are forced to contact each other. One reason is that a reproductive network cannot function without intergroup connections." If obsidian use, which was so prevalent to the north in the Sierra de San Francisco over millennia, is any indicator, little interaction occurred with groups there, judging by the low number of obsidian artifacts (but consider earlier casual artifact collecting by locals and visitors as perhaps exemplified in the Mulegé area obsidian points in the Castaldí collection [Massey 1966]). This may have been partially offset in turn by the relative abundance of high-quality silicified tuff in the locality.

There is tantalizing but far from conclusive evidence in the Arroyo del Tordillo basin and nearby Conception Bay coastal/near coastal fringes and valleys that by late prehistoric times populations were less transient and perhaps even better off economically, at least in terms of caloric intake, than during either pre-Comondú, late Archaic times or the period of Spanish contact and missionization. There is no evidence of protohistoric interaction with the Spanish intruders at the Tordillo basin sites. However, old bottle glass was found in a shelter nearby along Coyote Bay,

and the stashing of a religious *tabla* in a remote shelter further south along Conception Bay may be related to missionary eradication of implements of the native religion. Overall, though, it can be proposed that these coastal populations were forced into interior refuges to avoid further decimation by disease and oppression, consequently not leaving behind much evidence of historic contact.

Bahía de la Concepción has proved in modern times to have been a prolific producer of marine life, although now overexploited. The west side of the bay has been a beacon of tourism and settlement, with looting of archaeological sites apparent as early as the late 1960s, if not before and local collections of projectile points and other “collectibles” ongoing from at least the early twentieth century and likely earlier. Tourism and related economic support are manifested in coastal developments since the early 1970s with completion of the trans-peninsular highway. Both Coyote Bay and the Arroyo del Tordillo basin since the early 1970s have seen road and building construction. Even the sampling undertaken by this author would likely have been further biased by modern developments if it were undertaken today. Hopefully the results reported here can serve as a sturdy spoke in the wheel of an understanding of the cultures of the hardy people who lived and died in this greater bay/basin environment.

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