

Fragments of archaeological landscapes in north-central Baja California, Mexico

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Abstract

The patterns of prehistoric and contact-period Indian lifeways and interactions in north-central Baja California can productively be viewed and interpreted from a dynamic landscape perspective. Our understanding of regional past human behavior is becoming more evident as we piece together the archaeological evidence from assorted fragments of precedent landscapes, including east coast, west coast, and interior basin, hill and mountain. Placement of sites, features and scattered remnants of human use across the terrain and sea provisionally suggests a variably changing use of the land and sea during prehistoric times. The socialized landscape seems to have been correlated to a high degree with fresh water sources, diverse and productive resource patches and coastal or near-coastal stretches, presumed ritual centers, and relatively easy pathways of travel. Many nodes of settlement and ritual seem to have persisted for centuries on at least on a seasonal or intermittent basis. Social groups and individuals were apparently more focused on east-west dealings than north-south interactions that appear to have been of a different order and likely more sporadic and diffuse. Environmental changes coupled with socioeconomic and ideological amendments and prescriptions, both in prehistoric and contact times, are among the factors that appear to have altered landscape use and social behavior.

One of the more informative means of examining the prehistoric and contact-period past of Baja California is to view precedent behavior in terms of archaeological landscapes. Auschuetz et al. (2001) noted the relevance of such a study “through its ability to facilitate the recognition and evaluation of the dynamic, interdependent relationships that people maintain with the physical, social, and cultural dimensions of their environments across space and over time.” Further, in following Knapp and Ashmore (1999:1) and Thomas (2001:166), a prominent concept of landscape is a view of its socio-symbolic dimensions through its ability by past inhabitants to be perceived, experienced, and contextualized, looking at landscape as a cultural phenomenon. The holistic landscape perspective is linked to the interrelationships among past peoples and natural and cultural places and features temporally and spatially.

The archaeological landscape represents a creation or product of prehistoric, historical and local conditions, including environmental change, and is continuously open to reinterpretation and subject to reproduction (Van Dommelan 1987:277). It is our belief that archaeological landscapes cannot be appreciated without an understanding of local geomorphology, present and past environments and ethnological and ethnoarchaeological considerations, as well as a reflection on the so-called empty spaces of a landscape (see Rossignol 1992:4). As a caveat to the above, we are reminded by Winterhalder (1980:152) of the



Figure 1. Study zone.

necessity to consider not only foraging and migratory range but also extended interaction with outside groups and influences and even shared use of space.

Auschuetz et al.'s (2001:177) call for a settlement ecology approach to landscape is a multidisciplinary focus we also share, one that does not divorce the ideational from the ecological or economic aspects of culture. We are likewise aware of the difficulties in interpreting landscape archaeology or its native conceptual and contemporary studied fragments due to many causes (see Wandsnider 1992; Zvelebil et al. 1992).

Relatively early in the inception of modern Baja California archaeology, Roger Owen (1971) and Owen and Ralph Michelsen (1976) cautioned archaeologists that the social patterns of recent Indian populations -- and by extrapolation, earlier hunters and foragers -- blur formal socio-cultural distinctions and bring about fortuitous, non-representative deposition of cultural remains that will, upon analysis, indicate relationships entirely fictive. While these authors are perhaps overly pessimistic, we believe much can be learned from the archaeological remnants observed in the central peninsula study area described below as representing as yet unconnected fragments of various archaeological landscapes. Certainly the uniqueness of the narrow peninsula offers its own set of conditions and situations for human use over the countryside, circumstances influencing past sociocultural behavior that archaeologists are trying to understand piece by piece and fragment by fragment, bearing in mind the cautions expressed by such Baja California scholars as Owen and Michelsen.

The study zone

On the broad-spectrum level, the study zone includes north-central Baja California as the desert region was encountered during the time of European contact, a situation likely not greatly changed since at least mid-Holocene times (Van Devender et al. 1994) (Figure 1). The study zone more specifically includes a rather loosely demarcated north-central peninsula swath

ranging in the interior from the northern Sierra San Borja to the dry lake basins in the vicinity of Chapala, and a bit farther north to Cataviña. This zone includes both the cooler California Current-influenced coast from about Bahía San Carlos as far south as the Guerrero Negro and Manuela lagoons on the one side and the drier, warmer Bahía de las Animas to Bahía San Luis Gonzaga coastal strip on the eastern side, together with near-coastal islands of the Gulf. There are also climatic variations on a north-to-south basis (Pacific storms having more influence to the north, and monsoonal flows more to the south) and based on elevation differences. This study zone corresponds with portions of Aschmann's (1959:Map 2) generalized Central and Vizcaino deserts and rather closely with Arnold's (1957:Map 8) Chapala-Punta Prieta study area. This rough study zone is about 160 km long and between 70 and 105 km wide.

There are general geographical parameters for this study zone focus that give it some heuristic value -- geographical assignments by no means absolute. But most importantly, this is also a zone where there has been a concentration of past and recent archaeological efforts on both a systematic and more intuitive level, providing scattered data from which we can posit at least working behavioral inferences regarding the lifeways and land use of prehistoric and historic Indian peoples of this central peninsular terrain. We make no pretense that prehistoric or contact-era landscapes are well understood or completely covered in this zone of study. Rather, it would appear that we are dealing with fragments of archaeological landscapes, some more complete than others. But since archaeology is a study of limited remnants of what has been left behind as evidences, one can build on information derived from these scraps of information and fragments of archaeological landscapes toward a more informative picture of past human life in this central peninsula zone.

At the southern end of the study zone, Aschmann (1959:55) noted that there is a decrease in tropical plants known to have been important to the historic Cochimí inhabitants, such as the pitahaya dulce (*Lemaireocereus (Stenocereus) thurberi*). There is a concomitant increase to the north in certain sectors in the important food agave (*Agave deserti*) found from the United States south (Casterter et al. 1938; Roberts 1989:82), as well as other vegetation changes. As related by Aschmann (1959:19) and Wiggins (1980:Map 4), there is also a relatively sharp east-west vegetation division near the drainage divide, which is closer to the east coast. Gulf-side plants generally become larger and more widely spaced. Such an east-west division is also apparent in the terrestrial fauna as noted by Murphy (1983).

Locations within the Vizcaino Desert include various plant associations (León et al. 1991), including dune and halophytic and the more general sacrophyllous desert of Wiggins (1980:21-22) counting areas with some of the scantiest vegetation of the peninsula. This study zone also corresponds with a large portion of the Mexican government's "Área de Protección de Flora y Fauna Silvestre Valle de los Cirios" with the southern boundary roughly equivalent to the southern extent of the cirio (*Idria [Fouquieria] columnaris*) occurrence of today. Aside from the coastal halophytic plant associations, following the INEGI (2000) classification there is also a chaparral community in the higher mountain reaches, a Vizcaíno plant community over much of the western coastal plains and hills, the baja Colorado community along the northern Gulf coast and the central gulf community beginning below Bahía Calamajué and continuing south of the study area.

Another factor in considering the southern boundary of our study zone as lying near the northern end of the Sierra San Borja and the mission of the same name is the approximate correspondence with the proposed north-south Cochimí Indian dialectical shift in this area (Aschmann 1959:55; Laylander 1997:Figure 3, 41-43), although Mixco (2006:57) would place

this boundary closer to San Ignacio further south. In either case, the linguistic evidence would position the study location largely within the territory of the northern Cochimí or Borjeño. (Of interest, there are no east-west linguistic divisions among historic-period aboriginal groups known to exist).

There are three geomorphic provinces present in the study location, each influencing various environmental conditions and to some extent intermingled. Following Minch et al. (1998:1), the study location includes the northern reaches of the volcanic tableland with its broad plateaus and mesas and interlaying canyons and alluvial basins; the Cretaceous syncline represented by the broad Vizcaino Plains, and the basin ranges with a largely granitic character and including the broad basins of the Pleistocene lakes of Laguna Chapala, Laguna La Guija and Laguna Agua Amarga, among others. Characteristically, the central peninsula has a rather steep gradient from the Gulf toward the interior mountains, with a maximum height of about 1,600 m, with a more gradual decline toward the Pacific.

While there are many differences between the Pacific and Gulf coasts in terms of sharpness of topography, littoral variability such as between reef and non-reef habitats, water temperature and other factors affecting past human shoreline use and marine animals present, the one constant was the general abundance throughout prehistory of marine foods and products on both coasts (see Aschmann 1959). As would be expected in this zone of dynamic and highly variable arid and semiarid environments, potable water more than any other factor would have influenced many human land uses, whether coastal or interior, north or south (see Aschmann 1959:58). This was likely true by the season, by the year, for longer periods and across the terrain, and the economics in transporting such water to various locations was very likely a mitigating factor to many human uses within the study zone.

Investigative antecedents

Naturalist Edward Palmer initiated formal archaeological work in the study zone in 1887 when he recovered an extraordinary assemblage of human internments and associations in a small shelter above the town of Bahía de los Ángeles and collected some materials from a shell mound nearby. The human remains were subsequently studied by Rose A. Tyson (1975; Noble 1973a, 1973b) and the many artifacts, including quality perishables such as carrying nets, a human hair “cape”, feathered “apron”, a bull roarer and many other items, were reported by William C. Massey and Carolyn M. Osborne (1961). Artifacts originating from some distance include west coast abalone ornaments and cotton cloth, perhaps from the Colorado delta area or across the Gulf.

Massey himself undertook a reconnaissance of portions of the study zone in the late 1940s (Massey 1947), only a short time after Malcolm Rogers’s (1939, 1966) investigation that incorporated brief observations in the Laguna Seca Chapala basin near the north end of the study zone. The relatively early interest in lake basins in the desert west (cf. Campbell et al. 1937; Rogers 1939, 1966) has led to a number of subsequent studies in this and neighboring dry lake basins (cf. Aceves 2005; Arnold 1957, 1984; Bryan and Gruhn 1999; Davis 1968; Davis 2003; Gruhn and Bryan 2001; Ritter 1976, 1979, 1991a; Ritter et al. 1978, 1984) where interest was largely oriented toward late Pleistocene-early Holocene cultural remains. Arnold (1957) undertook very general reconnaissance surveys of much of the study zone in 1949 and 1950 as part of the “Associates in Tropical Bio-Geography” program at the University of California, Berkeley. Aschmann (1959) offered some general remarks and impressions regarding the

archaeology of the central desert, observations heavily influenced by his Associates' colleagues Arnold and Massey.

Carl Hubbs and others (Hubbs et al. 1960, 1962, 1965; Moriarty 1968), in their paleoenvironmental work during the 1960s obtained radiocarbon dates from shell middens along Bahía de los Ángeles as well as others locations throughout the peninsula. Dry lake explorers Davis (1968) and Arnold (1957) also explored this Gulf-side location, with the latter also visiting Isla Ángel de la Guarda. Rozaire (1963) discussed a petroglyph site and rock structure on the Pacific coast.

Studies of rock art have a lengthy history in Baja California, although such studies in this area are generally later, aside from a mention of one pictograph site by Arnold (1957:275) near Laguna Seca Chapala and Rozaire's 1963 note. Earnest studies began with work by Raul López (1972), with subsequent examinations ongoing into the twenty-first century (cf. Álvarez 1973; Christian and Cordy-Collins 1986; Crosby 1975, 1997; Ewing 1985, 1986a, 1986b, 1988, 1990, 1993, 1995; Ewing and Patchen 1991; Ewing and Robin 1987; Grant 1974, 1976; Hambleton 1979; Ritter 1994, 1995a, 1995b, 1997; Robin and Ewing 1989; Schwartz 1975; Uriarte 1981; Watchman 1995; Workman 1983).

In the locality from Bahía de los Ángeles to Bahía las Ánimas, considerable work has been accomplished since the earlier efforts by Palmer, Hubbs and Davis. Foster (1984) examined archaeological evidence with possible cross-Gulf Seri connections. Bendímez and associates (1993) test excavated the principal shell mound (Aguaje de San Juan) at Bahía de los Ángeles, finding a diversity of shellfish utilized over the site's 6,000-year occupation but a paucity of artifacts. The senior author and a number of colleagues have conducted a variable random and intuitive sampling program along this coastal stretch, beginning in 1988 and running well into the 1990s. This work followed a behavioral ecology approach for the most part.

These efforts have been summarized in several publications (Ritter 2001, 2006a). More specific reports with appendices by a number of scholars include Ritter et al. (1994, 1995) and Ritter (1994, 1995a, 1997). Both Arnold (1957) and the senior author have also explored several locations along the Gulf coast to the north, including Bahía San Luis Gonzaga and Bahía Calamajué. Bowen et al. (2005) have offered some archaeological observations regarding the Bahía de los Ángeles Biosphere Reserve, including Isla Ángel de la Guarda (also see Castetter et al. 1938:60 regarding M. J. Rogers's observations). Thomas Bowen continues his studies on Isla Ángel de la Guarda, and Jepson Herbarium botanist Peter García (personal communication 2006) has made numerous discoveries of prehistoric locations on the island as well, including cairns, rock structures, obsidian workshops, shellfish scatters and possible agave roasting pits, but no rock art. King (1997) has studied the isotopic characteristics of radiocarbon-dated late prehistoric burials from Bahía de los Ángeles and Bahía las Ánimas, revealing a maritime diet emphasis.

The senior author's work along the Gulf coast was supplemented by reconnaissance-level surveys in the interior (Ritter 1994, 1995a, 1997) between Mission San Francisco de Borja Adac/San Ignacito and Laguna Seca, where a handful of sites were documented. This interior work has been considerably expanded in an archaeological inventory/sampling program by the junior author in her Master's work (Aceves 2005).

Aside from Arnold, Rozaire and Massey's early reconnaissance along the Pacific side north of Laguna Manuela, and the brief study by Christian and Cordy-Collins (1986) at Mesa San Carlos below El Rosario, the major west-side effort has been the systematic and intuitive surveys by the senior author and his colleagues along the coast of Laguna Guerrero Negro and Laguna Manuela resulting in a number of reports and publications (Ritter 1999, 2002a, 2002b,

2006b; Ritter and Burcell 1998). Ritter continues his studies of Laguna Manuela and areas around Rosarito and Mission San Francisco de Borja Adac, looking at coast-to-interior corridor use.

Regional Chronology

Any archaeological study in the peninsula must deal with the problem of chronology, whether it is individual location or broader in scope. The study location suffers from relatively poor temporal controls relying on projectile point cross-dating, presence or absence of ceramics and contact goods and features, very relative flaked stone rock coating development, obsidian hydration (where rates on various obsidian sources are as yet very approximate), a handful of radiocarbon determinations, a few other rare technological clues and historic accounts. These other technological clues include items such as stone tubes (*chacuacos*) and pipes, a human hair cape, and square-knot netting as found in association with other late prehistoric items or noted in ethnographic accounts (cf. Aschmann 1959; Massey and Osborne 1961). By and large, the best-dated evidence is for early Holocene post-Clovis Paleoindian remains, late prehistoric sites (Comondú period), and contact-era sites.

The broad span of Archaic time between Paleoindian locations, such as those identified around Laguna Seca Chapala, up to about 7,000 years ago (cf. Davis 2003:216), and the late prehistoric Comondú period is the poorest of record. This expansive episode of human occupation includes hallmark dart-size projectile points such as the Elko and possible Pinto-like forms. Based on work by Hubbs et al. (1962, 1965) and Bendímez et al. (1993), we know that occupation along the Gulf coast occurred at least 6,000 years ago. Dates from Laguna Seca Chapala (Davis 2003) show early Holocene cultural deposits between ca. 7,000 and 9,000 years before present. The senior author's work around the Three Sisters lagoons (Ritter 2006b) suggests most use was over the last 2,000 years (projectile point forms, radiocarbon dating, obsidian hydration readings and other formed artifact information), with hints of earlier use based on a handful of large obsidian hydration bands and larger hafted points. While no specific evidence of Clovis-era peoples is known from the study area, Clovis points have been discovered in adjoining locations to the south and on Isla Cedros (see Aschmann 1952; Des Lauriers 2005; Hyland and Gutiérrez 1995) suggesting Clovis folks were in the area.

Emma Lou Davis's 1968 study of the Laguna Seca Chapala, Laguna Agua Amarga and Bahía de los Ángeles locations resulted in the documentation of 46 "sites" that she divided (Davis 1968:190-192) into four prehistoric periods: Paleoindian, Early Archaic or early period, middle period, and late period. This division is largely based on projectile point/biface forms, with stemmed forms present in the first two periods (Lake Mojave and San Dieguito-like), stemmed Elko-like and serrated quartz points in the middle period, and small arrow points in the late period. Paleoindian sites, according to Davis (1968:191), also are characterized by lightly scuffed slabs, rounded end scrapers, keeled, beaked planes and thick ovate bifaces. Early Archaic sites have flat milling stones, chopping tools and, like the earlier period, horse-hoof planes. Both of the earlier periods have reported well-executed biface pressure flaking. The middle period also included horse-hoof planes and basined milling slabs. Other characteristics that Davis listed for the late period, especially along the Gulf coast, are crude core tools and rare biface series, along with basined milling tools. Brown ware ceramics are sometimes found on late sites. Overall, the best distinctions chronologically and technologically are between the earlier and later cultural expressions, with middle Holocene associations most obscure. This is evident in Aceves's



Figure 2. View of the Laguna Chapala basin (1971)

(2005:10-13) regional landscape study where she divided the area into Paleoindian (ca. 11,000-7000 B.P.), with San Dieguito similarities; an Archaic period from 7,000-8,000 years ago until about 1,500 years ago; the late prehistoric Comondú period from ca. 1,500 years ago until contact; and the Mission epoch from contact about 1539 until the 1850s or so.

Overall, chronological divisions as one proceeds further back into prehistory are increasingly provisional except for early Holocene results where, as mentioned, widespread Paleoindian traditions are relatively well known. This is not surprising in the study locality, since a number of researchers have chosen to focus their efforts on late Pleistocene-early Holocene evidence. The greatest gap in radiocarbon dating is between 3,000 and 6,000 years ago (see Bowen et al. 2005), much like the results of Hyland (1997:275). Dated samples, though, remain few. Furthermore, a small sample of obsidian hydration results from two separate sources and radiocarbon determinations may be suggestive of a continuum of sorts of use along the Gulf coast from 6,000 years ago until contact (Ritter 1997:132). Likewise, Aceves's (2005:65) obsidian hydration results at Agua de Higuera in the interior hint at a relatively long use of this location.

Laguna Seca Chapala studies

One of the most studied locations in the central peninsula is the Laguna Seca Chapala basin (Figure 2), a location of research focus primarily because of the potentiality for early human sites. Arnold's (1957) work is the most extensive. He recorded some 38 locations or sites both along the current playas margins as well as in higher basin recesses. A number of these clusters of archaeological material were likely re-documented by later workers discussed below. His "sites" include quarry workshops with elongate bifaces in the eastern embayment of the east playa, a "Scraper Plane" assemblage in the central east basin and sand hills with a diverse

cultural material array that can be characterized as primarily residential debris of Holocene age (e.g., Elko-like and arrow size projectile points), and a “Flake-Core-Chopper” assemblage from the sand hills of both lake basins. This later assemblage appears residential-related and late prehistoric in time (arrow points, one brown ware pottery sherd). Furthermore, this last assemblage in our estimation is likely part of the multi-period intermittent occupation of the basin over at least the Holocene. The attraction was periodic lake stands and lacustrine and near-shore plant and animal subsistence targets and material resources such as useable stone (felsite, granite slabs, basalt, etc.).

Davis visited the basin with her team in 1964-1965 and recorded a dozen locations, including seven she placed in her Archaic category (middle period), found along sand and gravel ridges and sand dunes near the south and southeast end of the east basin; two late prehistoric camp sites, one within a rock shelter setting and the other on the lake flats; two quarry workshops; and one Paleoindian camp near the lake margin. (Davis also documented a similar place by Laguna Agua Amarga.)

The senior author’s studies of the basin were conducted in the winter of 1971-1972 (Ritter 1979) and resulted in the documentation of 10 cultural material concentrations, some previously noted by earlier researchers. These “sites” include an extensive east playa lakeside cluster of what appear to be residential debris, including flaked stone tools and evidence of extensive core-biface reduction, milling stones, shell pendant, quartz crystal, projectile points of early and later types, and at least one hearth-like feature. Nearby is a cluster of granitic boulders with a scattering of bifaces, flakes, flaked stone tools and milling tools. In the southeastern embayment of the east basin a series of quarry workshops and possible hunting/special use locations was documented. No milling stones were found in this embayment, although one site has marine shellfish remnants. Surface occurrences in clusters only suggest association and there may be multiple uses evident in the embayment. A few projectile points were found nearby to the workshop/quarry loci, including those of the Lake Mohave, Pinto and Cottonwood series as well as various flaked stone artifacts aside from bifaces and debitage. The points alone suggest a long use of the embayment. Along the southern portion of the western playa basin, about 100 m from the current shoreline, a residential camp of probable late prehistoric age was documented. Scattered artifacts, including a stemmed point, a mano, and other flaked stone artifacts, were found between the two playa basins in no particular concentration. On the edge and extending into the western playa, a boulder alignment of unknown function and age was discovered. (See also Ewing and Patchen’s 1991 discussion of alignments/pathways further north in the peninsula.)

The most recent work in the Laguna Seca Chapala basin is by Alan Bryan, Ruth Gruhn and Loren Davis, as previously cited. Their emphasis was on the excavation of one early lithic production camp along the eastern side of the eastern playa and an analysis of the geoarchaeology and geochronology of the lake basin. The camp area yielded radiocarbon dates of 8650 ±60 B.P. (Beta-11541) and 9070 ±60 B.P. (Beta-115420) (Davis 2003:209), and the geomorphologic analysis demonstrates a large lake prior to the earlier date cited above which desiccated by 7450 B.P., promoting rapid dune growth (Davis 2003:205).

Laguna La Guija studies

Archaeological investigations around the perimeter of neighboring Laguna La Guija (Ritter et al. 1978, 1984) and one of its feeder drainages, undertaken in 1977, 1980 and 1981,

provide a relatively rich corpus of archaeological evidence of multiple activities over a time span likely similar to that at Laguna Seca Chapala but with considerable evidence more likely late prehistoric in age, based on projectile point styles (quartz Desert Side-notched and Cottonwood series). There is also the consideration of Davis and Cerutti (n.d.) regarding extinct megafauna found at the lake, but lacking cultural associations. Thirty-two distinct locations of human activity were documented by Ritter et al. (1978, 1984) divided into eight categories thought to represent one or more activity types or functions. Particularly important is the apparent lack of disturbances and any significant prior collection around this lake. Over one-third of the locations are believed to be multi-activity camps or residential bases, two of which contain structure enclosures or “rock rings.”

Other places include milling stations, roasting sites (for agave?), quarries (quartz), lithic scatters/workshops, combination roasting/milling clusters, a stone platform, a bedrock pounding or anvil stone, and isolated artifacts. One rock shelter is associated with a quarry, and one *tinaja* or natural water tank was observed in an adjoining drainage.

Spatial variability is evident in the locations of cultural material concentrations with likely multi-function campsites around the south, east and southwest sectors of the basin. Between these centers are presumed special-use sites, including quarries in the central-east sector, flaked stone workshops along the east shoreline, milling stations along the west side of the basin situated in dune areas and on low rocky outcrops extending into the playa, roasting sites within the northern sector where agave flourishes to this day, and combination roasting/milling centers, stone platform and pounded boulder in the middle, south and northwest sectors of the basin.

The focus of use around and on the playa is clear, with up to a quarter of the playa edge exhibiting signs of prehistoric human use that clearly diminishes about 75 to 100 m away from the playa perimeter. The evidence at presumed campsites in the form of shellfish remains (*Haliotis* sp., *Strombus* sp., *Mytilus californianus*, *Chione* sp., *Trachycardium* sp., *Pecten* sp.) and unmodified beach cobbles and cobble tools and flakes suggests interaction largely with the Pacific side of the peninsula, understandable since nearby drainages flow in that direction. The evidence of coastal interactions is less clear for sites around Laguna Seca Chapala. Both Arnold's 1957 work and the unpublished work by the senior author (Ritter 1979) suggest species of shellfish (for food, utensils and decorative purposes) from both coasts (i.e., in addition to those species listed above, *Cardita affinis*, *Trachycardium* sp., *Collisella dalliana*, *Tellina coani*, and others), although temporal variability is at best vague. Gruhn and Bryan's (2001) rock shelter work proposed that Pacific coast species were imported, but once again temporal assignments are unclear.

Arnold's central peninsula study

In addition to his observations at Laguna Seca Chapala, Arnold (1957) provided information regarding 18 sites or concentrations of archaeological material scattered across the north-central peninsula. The documented sites were found during nonrandom or purposive visits Arnold made to pre-selected locations, generally looking for early human uses. Nonetheless, they offer a small but informative comparative body of data regarding prehistoric human use over the variety of terrains he visited. In essence Arnold's work was a pioneering landscape focus. Arnold's observations were oriented to the positioning of sites with respect to recent and older geomorphologic features such as terraces, current and relict fresh water sources (seasonal and

permanent) and marine shorelines; artifact types, flake scar coating development and presence or absence of such features as human created rock structures, agave roasting pits and pictographs. The 18 sites include 10 within the interior, six along the Pacific side near Santa Rosalita, and single sites at San Luis Gonzaga and Isla Ángel de la Guarda.

There is a certain level of impression in Arnold's general chronological controls (see critiques by Ritter 1976 and Davis 2003), since stages of biface manufacture, scraper plane form, landform position and rock coating development (see Dorn 1998) are not necessarily indicators of age. Still, there are data in Arnold's early observations that assist in the beginnings of understanding human uses and economic trends across the study location's physical landscapes.

Along a stretch of the Pacific coast north of the major central lagoon systems, generally near Santa Rosalita, Arnold (1957) found a series of shell middens, sites with circular rock structures or rings (10-12 ft. diameter), a quarry workshop with bifaces and debitage, scraping planes, "rough" choppers and debitage and fewer grinding stones than interior sites. Rozaire (1963) also briefly described a rock structure with petroglyph and shellfish remains nearly 1 km from the coast. Temporal and sampling factors notwithstanding, the characteristics of those sites described above differ in many respects from the lagoon sites to the south, a situation clearly the result of such factors as protected lagoon environment versus the more open sea and the proximity in the lagoon to a relatively rich interior ecosystem (see Hyland 1997). Furthermore, the Gulf-side bays, as at Bahía de los Ángeles and Bahía las Ánimas, have a multitude of grinding stones evident at many presumed residential locations.

The scattered inland inventory of Arnold revealed cultural locations he would place in all periods of prehistoric as well as Mission-period use. However, no clear-cut Paleoindian (vis-à-vis Clovis or large stemmed series points) sites were found, with the exception of stemmed points at Laguna Seca Chapala. Several of his earliest locations (based largely on ambiguous flake scar coatings) are characterized by bifaces and flakes, apparent workshops and quarries or prospect stations. The one archaeological location from the Laguna Agua Amarga basin contains undated quartz flakes sparsely scattered, a pattern observed by the senior author (Ritter 1994, 1995a).

Other inland places of cultural activity with less-weathered or coated flaked stone include loci with a variety of cultural evidence, often including rock structures or rings, cleared circular areas, milling tools, scraping planes, debitage, bifaces, and other flaked stone tools. Arnold's latest sites include those with flaked stone artifacts exhibiting little flake scar coating, arrow-size projectile points, milling tools, occasional midden development, shellfish debris, agave roasting pits (Calamajué mission only) (also see Aschmann's 1959:65 discussion of possible agave roasting pits at this mission and Santa María, possibly missionary-influenced) and pictographs (one instance). Because of the generally poor chronological control, nonsystematic inventory techniques, and apparent lack of documentation of Indian activities away from main site complexes where one might find isolated artifacts and features and perhaps very small sites or cultural debris scatters, only very general conclusions can be offered in line with the other studies discussed elsewhere in this section.

The central Pacific lagoons

Along the central Pacific coast, aside from the few observations by early missionaries (cf. Miguel del Barco [1973]; and Wenceslaus Linck [Burrus 1967]) and by archaeologists William Massey (1947), Brigham Arnold (1957), Charles Rozaire (1963) and Christian and Cordy-

Collins (1986), the more comprehensive record to date is from work by the senior author and his colleagues at Laguna Guerrero Negro and Laguna Manuela, unique protected and expansive coastal bays (Ritter 1999, 2002a, 2002b, 2006b; Ritter and Burcell 1998). Based on an informal reconnaissance by the senior author to these lagoons in 1985 where large concentrations of archaeological material with prehistoric and contact-era items were observed, a formal program of archaeological investigation including survey and test excavations was devised and conducted, beginning in 1997 and continuing into 2006. Other work related to historic use of the outer coast of Laguna Guerrero Negro (Ashley et al. 2003; Breiner et al. 1999) has also led to discoveries of aboriginal artifacts.

The main thrust of the archaeological inventory was to define the spatial and temporal cultural and environmental variability in shoreline use along the two lagoons (with a consideration of earlier work along neighboring Laguna Ojo de Liebre by Ritter and Payen 1992) and to assess the local culture history and proposed interior-inland interaction network. An interdisciplinary cultural ecology approach might best describe the theoretical orientation. The walking inventory of closely spaced investigators involved a sampling of some 20 km of connected coastline along the eastern perimeter of the two lagoons. Rectangular survey blocks were purposively spaced along the general shoreline area, following the known or predicted ribbon of well-exposed surface aboriginal cultural debris. Adjustment of block placement was made, as sterile zones of human activity were encountered, such as in highly mobile dune fields and marine tidal zones. Blocks were spaced to sample nearly the entire eastern shoreline, within logistical constraints. Informal observations were also made of near-shore areas (within 1-2 km of the shore) during ingress and egress to sampling units. The informal surveys behind the main shoreline area revealed little other than very lightly scattered debitage here and there, but there is an obvious need for better sampling and attention to the areas between the coast and the highlands. A first brush study in this regard was initiated by the senior author in 2002, and the results are preliminarily discussed further below.

Thirty-four distinct concentrations or clusters of cultural debris were documented in the lagoon work: 32 along the eastern ancestral shoreline, and two near the mouth of Laguna Guerrero Negro. Other nearby locations were informally recorded by avocational archaeologists along all three western lagoons. These largely surface or near-surface clusters of thousands to millions of shellfish remains, numerous fish and other animal bones, crab carapace parts, artifacts and other cultural debris range from small patches of just under 100 m² to sites with a patchwork of concentrations over 39,000 m² in extent covering about 30% of the total site area in this largest site and with variable coverage at the other sites. More than one-half of the clusters or concentrated patches of human debris within intra-dune pans and dune pockets are less than 5,000 m² in size. Overall, as previously mentioned, considerable use, likely on a short-term, periodic basis for at least 2,000 years or so, is apparent, with sporadic earlier activity. Radiocarbon dates, obsidian hydration readings, artifact styles and historic artifact presence at a few sites suggest that much of the two lagoon's use was late prehistoric, a proposed Guerrero Negro maritime focus of the Comondú period. Obviously, from a landscape perspective the place this extensive coastal use played in the overall cultural and ecological setting of user groups is an important consideration.

Even within the two-lagoon system, there are distinct differences in human uses reflected in the artifactual and faunal remains. These differences are related not only to the local ecological variability and temporal use (there are no contact-era artifacts known from Laguna Manuela sites, for instance) but also, hypothetically, to the variability in uses of the two lagoons

by those groups that lived in the biologically and hydrologically rich Sierra de San Francisco versus those groups more to the north, inhabiting less rich zones and largely outside the main obsidian acquisition/transportation zone. We see far fewer obsidian artifacts around Laguna Manuela than at Laguna Guerrero Negro and little or no evidence of certain obsidian technologies such as core reduction, burin spall use, and manufacture of the triangular Guerrero Negro projectile point, a possible harpoon tip inset. Sites on the eastern side of Laguna Manuela are generally smaller and less complex than those farther south, with far fewer ecofacts and little sea turtle or sea mammal remains noted. Milling tools continue to be important in the tool kit, and larger corner-notched points are found at these sites, possibly a misrepresentation due to selective collecting by non-archaeologists in the past. We note a northern and eastern connection to several sites along Laguna Manuela, with rare obsidian artifacts or small pieces of obsidian for later working coming from as far away as Arroyo Matomí and Isla Ángel de la Guarda geochemical sources on the Gulf side. Furthermore, at sites analyzed only from Laguna Guerrero Negro, San Diego State University geologist Gordon Gastil found samples of granitic rock that originated mostly in the eastern portion of the peninsula.

The eastern bays

Attention to the archaeology of major central peninsular Gulf-side bays including Bahía las Ánimas, Bahía de los Ángeles and Bahía San Luis Gonzaga and select interior and insular areas nearby has provided important insights to use of the local landscape over time. Archaeological work along the two southern listed bays and intervening coastal areas, along with a discussion of work on Isla Ángel de la Guarda, has been discussed or summarized by Ritter (1998, 2006a), Ritter et al. (1994, 1995), and Thomas Bowen et al. (2005). Work at Bahía San Luis Gonzaga includes the observation by Arnold (1957) of a single shell midden and informal coastal observations by the senior author of approximately nine locations spaced irregularly along the bay's shore and the principal island.

The studies by the senior author and his colleagues at Bahía de los Ángeles included systematic random inventory of 0.5-by-0.5-km blocks of about one-third of the bay's shorelines, along with intuitive examinations of most of the shoreline of Bahía las Ánimas and areas within several kilometers of the coast. Arnold also found one quarry site on Isla Ángel de la Guarda, and Thomas Bowen's ongoing work has resulted in the discovery of rock cairns and circular rock structures and clearings, shellfish scatters; and rhyolite, andesite, quartz and obsidian quarry-workshops. Obsidian found its way prehistorically to the mainland, to the southern portion of the overall study area, primarily along the coast. Poor-quality obsidian on Isla San Luis near Bahía San Luis Gonzaga was not noted on the scattered cultural locations observed at that bay, although rare worked pieces have been found at Bahía de los Ángeles.

Over 125 concentrations of cultural materials are known from the first two bays listed above, including a number likely previously recorded by Davis (1968) in her work. Davis (1968:189-190) believed that the assemblages at her Bahía de los Ángeles coastal sites indicate mostly late prehistoric use, with several exceptions.

Coastal shell loci with scattered artifacts are the most numerous, including major shell middens at each of the three main bays listed above near estuaries and presumed or known fresh water sources. These cultural locations vary between small shellfish and other cultural remains in patches only a few meters across to strips more than 1.5 km long as at Bahía de los Ángeles. Both flaked stone (modified and unmodified flakes, cleavers, core tools, etc.), shell, and ground

stone tools are present in many of these places. Projectile points and late-stage bifaces are occasionally found in the lower two bays. We know from the work of Bendímez et al. (1993) that maritime uses go back along this Gulf side at least 6,000 years, with remains at these coastal places extending into the Mission period, as evident by historic brown ware ceramic sherds at some loci in all three bays listed. Less common coastal cultural evidence includes trails, a rock alignment, and cobble-cleared boat slipways of unknown age.

Many cultural resource concentrations along or within a kilometer or two of the shore of Bahía de los Ángeles, often on alluvial fans or hill or ridge tops, contain cairns and rock enclosures of an oval to circular character. As many as 62 rock structures have been found at a single location, and residential as well as special use (possible ritual use like visual questing) is apparent or proposed. A few rock enclosure places were observed in limited observations along the shore and hills adjoining Bahía San Luis Gonzaga and the bay's principal island. Other locations of human activity at all three bays include the presence of known or possible rock-covered burials in hillsides, small shelters, and/or talus slopes. The Massey and Osborne (1961) report described a shelter burial chamber and its elaborate contents. All burials in primary or secondary contexts and from single to multiple interments in each chamber appear to be late prehistoric. Inland from the coast a short distance (up to several kilometers) in Bahía de los Ángeles occur residential rock shelters, at least some late prehistoric in age. Pictographs were found adjoining one residential complex in a separate shelter. Otherwise, rock art seems rare near these bays. Isolated milling features also seem infrequent near or along the coastal bays, with many milling tools found at presumed residential camps with varied artifact and ecofact contents.

Archaeological material concentrations along Bahía San Luis Gonzaga in a very preliminary scan vary to some extent from those bays farther south (less complexity, density and variability). Part of this variation is no doubt due to the historically less fertile areas behind the bay, where plant and animal diversity and likely productivity for human uses at least during late Holocene times are not as great as further south, and fresh water sources are seemingly less present on any kind of permanent basis. For instance, depending on the veracity of accounts, it may be some distance to likely areas of *tinajas* or fresh water rivulets, although coastal wells or *batequis* are possible. Historic accounts mention small rivulets of brackish water with scarce fresh water either some kilometers distant or present at the upper end of the bay at a place called San Estanislao (see Consag's 1747 map in Engelhardt 1929; Lazcano and Pericic 2001:175; Taylor 1971:90). It is known from these accounts that considerable fisheries used by the Indians in the bay and estuary were observed. Vast creosote bush-covered alluvial fans are present behind sections of shore. One near-shore modern well is 16 ft. deep to water, and the water table may have been higher in prehistoric times for well or *batequi* construction. Aschmann (1959:226) noted that mission records indicate a rancheria existed in this bay until after 1805, although the missionaries themselves established their Santa María mission (1767) a number of kilometers to the west, where potable water was available in sufficient quantity to support such a complex and potential Indian neophytes were present in some numbers at the local settlement.

At Bahía San Luis Gonzaga, larger shell and artifact scatters and midden buildup are most prevalent along the main bay's estuary. Loci farther away are small and less complex, with scattered surface or near-surface shellfish remains, infrequent basalt or rare cryptocrystalline flakes, volcanic cores, an occasional metate, beach cobbles with no visible wear or facially pitted like an anvil stone, very little bone and no projectile points or bifaces noted. (A few of the cryptocrystalline flakes are biface thinning flakes). A few very small near-shore rock shelters with similar cultural remains were observed. There are a variety of shellfish remains at sites, and



Figure 3. Stone structure along Bahía San Luis Gonzaga, looking north.

it would appear that, as in the historical record, marine resource procurement was the unsurprising major focus of coastal users. The tool kit appears simple and expedient. One place has a rectangular building with low wall remnants composed of cobbles (Figure 3). This may be the location of the Spanish embarcadero for the mission. Nearby are two boat slips or cleared pathway in the tidal shore for landing as found at Bahía de los Ángeles. Aside from contact-era and presumed late prehistoric use, the age of sites and bay use has yet to be determined. It is likely that at historic times and probably earlier there was a mountain-sea cultural interface with perhaps a semblance of seasonal or periodic transhumance at least in late prehistoric/ protohistoric times.

Not a great deal is known of the coastal stretches between these bays, especially below Bahía las Ánimas, and between Bahía de los Ángeles and Bahía San Luis Gonzaga. A few observations of areas between the lower two bays, which are not separated by a great distance, show coastal use and trails with presumed small marine food procurement locations and camps in smaller bays evident.

A review of Ferdinando Consag's 1747 map in Engelhardt (1929) shows a number of water sources along this coast that likely were major locations of prehistoric activity. The more open coastline without freshwater sources would seem to have been sporadically used, based on very little inventory. This is a situation of use perhaps even less intensive than that described by Hyland (1997:385) for that coastal section between Sierra El Caracol and Punta Santa Ana, where he saw at least late prehistoric if not somewhat earlier evidence of what appears to be short-term, probably seasonal, occupation coupled with the relatively long-distance transport of collected marine resources to inland sites, probably at most a day or two travel.

Rock art studies

Avocationalist and professional attention to rock art and its place in the landscape and cultures of the study area is particularly revealing with respect to how past inhabitants appear to have related to their places and spaces, to these apparent spiritual or ideational nodes of land use. Guenther (1999:426) stated that hunter-gatherer groups

have both their practical and conceptual consciousness focused on animals, plants, the landscape and seasons, and meteorological and astronomical phenomena. At the metaphysical level, hunters-gatherers regard nature as pervasively animated with moral, mystical, and mythical significance.

Archaeologically speaking, in the absence of any ethnohistoric record of natural terrain locations of special religious or spiritual significance, rock art, rock features lacking habitation residue, and burial locations are the most palpable in this regard.

As related by Taçon (1999:40) in other world locations, we can look at regional rock art sites as mostly richly adorned locations often with elaborate imagery and symbols and a sense of aesthetics that reflect the unique identities and experiences of their makers. One can perhaps visualize these places as symbolically charged and integrated with larger systems of land use. Certainly in the study zone there is a range of rock art site complexity, cultural and environmental association, placement, and content, but there are some general patterns that seem to hold.

Eve Ewing and her associates, as cited above, have explored and documented more locations of rock art in the study area than any other researchers. Their 1980s-1990s work has led to the definition of a Northern Baja California Abstract style (see Ewing 1988), one favored over Grant's (1974) Cochimi Abstract, since both dating and cultural affiliation are uncertain. The senior author (Ritter 1991b:25) has noted that some of the abstract-geometric rock art of the north peninsula may have relationships with Great Basin and southwestern styles of Archaic times, possibly even exceeding 2,000 years in age. Hedges (1998) has also reported on similarities between some of the northernmost Baja California abstract-representational rock art and Kumeyaay ceramic designs.

The rock art of the study area is noteworthy in its absence of historic-period figures. Ewing (1988:42) suggested some of the Northern Abstract art is older than the Great Mural art to the south, due to superpositioning of representational Great Mural figures over abstract figures. This issue is far from clear since Great Mural rock art may have extended for thousands of years (see Watchman et al. 2002).

The various rock art studies are important in many regards, in terms of not only interpretation but also clues to settlement-subsistence and overall land use. Many of the rock art authors have noted the presence of other cultural remains in association. Arnold (1957:275) described paintings in a small rock shelter to the northwest of the Laguna Seca Chapala basin. Habitation debris and bedrock milling slicks were noted nearby. Christian and Cordy-Collins (1986), Ewing and Robin (1987), Robin and Ewing (1989), and Ewing (1990, 1995) in their work on San Carlos Mesa on the west side of the peninsula reported on undated marine terrace residential locations with up to 40 individual or small family-sized rock structures (rings and crescent-shaped features), milling tools, shellfish deposits, and animal and fish bone, along with at least one trail containing scattered petroglyphs leading to the interior mesa several kilometers inland. The mesa edge incorporates at least four petroglyph complexes with shellfish deposits, along with rock shelters showing shell midden characteristics. Few flakes and no projectile

points were noted. The petroglyphs are abstract-geometric of apparent variable age, commonly with intricately detailed circles. The well-known Cataviñá site to the east in the central interior, on the other hand, has no cultural remains within the painted shelter (cf. Grant 1976; Workman 1983).

Another more widely dispersed pattern of significant rock art sites, mainly pictographs, occurs in the mountain foothills of the northern end of the Sierra San Borja and the southwestern foothills of the greater Sierra de Calamajué y San José or San Luis, also designated at least in part as the Sierra la Asamblea or San Luis, and the smaller Sierra Mescalera. This area is generally west and northwest of Bahía de los Ángeles. Natural water tanks (*tinajas*) and ephemeral streams are noted in the vicinity of these sites. At Tinaja Yubay near the 29th parallel and along the El Camino Real (and likely an older Indian travel route), Ewing (1985:2) noted: "Signs of Indian habitation are evident in the area, and the ground is littered with chipped stone along the main trail into Yubay." A dozen or so shelters with rock art were noted, not all with direct cultural associations. Two other sites some 8 mi. north were mentioned in passing. It is not clear if these are among the dozen or more pictograph and petroglyph sites described later by Ewing (1993) and Ewing and Robin (1987) that lie about 5 mi. north of Yubay over an area of about 500 hectares. At the larger sites, reference was made to midden, shellfish remains and debitage. However, not all rock art sites have associated cultural remains here either.

Our own observations at the major southernmost rock art sites of Montevideo, Las Tinajitas and La Angostura reveal modest to extensive midden deposits in association. A small testing of a shallow shelter deposit at the Montevideo site (Ritter 1997) revealed domestic refuse, obsidian debitage and a biface from the Isla Ángel de la Guarda source. Work in progress by the senior author includes results from test excavations of two small rock shelters directly beneath pictographs at the La Angostura site near Rosarito in Ejido Nuevo Rosarito. This work revealed domestic debris in the shelters and on an adjoining terrace. A small arrow point, obsidian flakes and biface/projectile points of obsidian from Isla Ángel de la Guarda with relatively small hydration readings (3.8, 3.9 microns) and a measured radiocarbon age of 2790 ±40 B.P. (Beta-195010) may apply to the age of some of the rock art. Artifacts and dating methods seemingly place the rock shelter deposit at least in the late Archaic, likely extending into the Comondú period.

Two smaller painted sites, one at Mission San Borja and the other at a nearby *visita*, San Ignacito, have native cultural remains of late prehistoric/protohistoric times in their vicinity, but any association is tenuous. Mention must also be made of the test excavations at Cuevas Abraham within a hillside of Bahía de los Ángeles. The cluster of granitic shelters includes one with a few red pictographs and immediately adjoining another with a modest midden development of domestic debris that yielded an uncorrected radiocarbon determination of 450 ±40 B.P. on charcoal (Ritter 1997). Hydration readings on Isla Ángel de la Guarda obsidian from the shelter area are 2.6-4.3 microns, hinting at later prehistoric era including pre-Comondú times if these are associated.

The authors are aware of approximately 40 rock art locations in the study zone that can in the traditional sense be labeled sites, areas of rock images separated by some distance from other locations, sometimes scores of meters to many kilometers. These sites or clusters of sites include locations with only a handful of motifs as well as those major locations with scores to hundreds of motifs or figures. There are a number of clear centers of rock art, all but Mesa San Carlos in the inner reaches of the north-central peninsula. These are both rock shelter sites and those on open cliff and boulder faces. The major known hubs of image production include, roughly from



Figure 4. Polychrome pictographs of the Northern Baja California Abstract style, Cataviña.

north to south: La Angostura, Las Tinajitas, Montevideo, Yubay, Sierra Mescalera/San Luis, Sierra Asamblea, Cataviña and Mesa San Carlos. Lesser sites occur either in the general vicinity of these major hubs (within ca. 10-20 km) or in apparent isolation, recognizing how little-studied many areas are in the north-central peninsula. Only one pictograph site and four minor petroglyph sites are as yet known from the north-central Gulf coast, and none as yet from Isla Ángel de la Guarda. A case can obviously be made for the lack of rock art coinciding with a lack of suitable rock canvases along much of the central Pacific coast, but far less so for the Gulf side.

The rock art is generally moderately consistent in content, subject to more detailed studies. A few Great Mural figures are present, such as anthropomorphs and zoomorphs (see Crosby 1975). Most of the sites of this Northern Baja California Abstract style contain pictographs dominated by red figures, but with black, white and yellow also occurring alone or in combination (Figure 4). Petroglyph sites of geometric/abstract design or cupules are also present in smaller numbers, concentrated in places like San Carlos Mesa and found as a minor contribution to some of the painted sites in the central peninsula, in possible rare isolation, or as four known small scratched sites along Bahía las Ánimas and Bahía de los Ángeles (Ritter 1995a). At La Angostura, a number of painted panels also include relatively obscure scratching.

Certainly the occurrence of rock art complexes pales in comparison to the hundreds of sites in the volcanic center of the peninsula to the south, with those large complexes other than Mesa San Carlos not far north of the Great Mural area. The hydrologic and terrestrial biotic richness of this Great Mural area in contrast to those zones to the north under consideration here is no coincidence, as previously discussed (see Wenceslaus Linck in Aschmann 1959:38; Ritter

1995b).

The figures have considerable variety beyond simple rectilinear and curvilinear geometric and combination rectilinear-curvilinear designs with variations on concentric circles, rakes, meandering lines, dots and dashes, grids, triangles, diamond chains, chevrons, parallel lines, spoked circles, sunburst-like images, shields, dog-bone-like figures, enclosed designs, bands, dark and light images, repeats, line and area, etc., as well as a handful of relatively simple and fanciful zoomorphic and anthropomorphic images (some possible “spirit” figures or “spirit helpers”), cupules, and possible vulva and atlatl symbols.

Dating these sites is still problematical. As indicated, radiocarbon and obsidian hydration determinations on adjoining deposits at two locations suggest pre-contact going back some 2,800 years or so. Atlatl-like figures at Yubay could indicate possible pre-bow and arrow times, perhaps 500-1,500 years ago or older. The few Great Mural art figures could be Comondú or many thousands of years in age (see Watchman et al. 2002). Many of the sites show little superpositioning of figures, but there is clear evidence at larger sites of extended use, judging from the sheer number of figures, variations in weathering and design, and re-painting and over painting.

Scholarly interpretations rely primarily on content, cultural and environmental association, location and visibility, ethnographic analogy and principles of human perception under altered states of consciousness, the so-called neuropsychological approach of Lewis-Williams and Dowson (1988), an interpretation earlier discussed briefly by Grant (1976) for the Cataviña site in the study zone. While there is an aesthetic aspect to the art, at least from a Eurocentric perspective and likely from a Native American outlook as well, the rock art found in the central peninsula likely cannot be ascribed to a singular meaning or purpose. Much of the literature cited above for the regional sites places the rock art within the ritual/sacred realm, proposed as associated with visions and dreams, mythology and mythic beings, human and resource fertility, death and rebirth, creation, initiation, shamanism, solstice and equinox celebrations, continuance of societal order and group maintenance. Some of the locations are more secretive than others, and specific places may be associated with given lineages or clans.

It would appear that these rupestrian art locations were generally places of high religious/spiritual importance to past peoples in their use and recognition of the greater cultural landscape, perhaps also places for portraying instructional messages of an esoteric/mystical order and/or displaying dream or visionary experiences related to historic/mythological/ancestral beings or events and tied, in cases, to trans-state imagery. Some of the symbols in this regard may relate to designs on known shaman’s religious *tablas* or boards with designs meant to serve mnemonic purposes and used as symbols of power connected with death observances (cf. Hedges 1973; King 1978:158-159). It is also interesting that almost all of the sites are interior, possibly related to general locations of seasonal gathering and ceremony when interior resources were of sufficient quantity to bring groups together. This does not preclude individuals trekking to these special places, either for manufacture during a special time and/or as a place for veneration/instruction, for instance. Not a single site, interestingly, has been found directly on coastal rocks, despite closely positioned residential/activity locales and suitable “canvases” in places.

A landscape study of the greater Bahía de los Ángeles region

One of us (Aceves 2005) has examined in the field the archaeological record of an

interior area generally west of Bahía de los Ángeles, building on the results from the coastal studies in this bay's vicinity as previously discussed. The work was cultural landscape-oriented, merging research and management interests. The thesis used an archaeological landscape focus to show the integration over time of relationships between human populations and territory, a social construction related to former groups and individuals sharing resources and symbolic values, looking at a series of places that manifested themselves in a spatial scale. Particularly important was the identification of possible corridors, trails, routes, and paths connecting distinct uses of the landscape, aiding in the identification of the form of spatial appropriation by the prehistoric groups.

A mixed inventory strategy was conducted, looking for prehistoric, contact, and historic-period patterns of landscape use within the Paleoindian, Archaic and historic periods. The senior author has undertaken continuing work on an overlapping area farther to the west, looking for east-west prehistoric and contact-era interactions within a corridor that generally runs from Laguna Manuela to Rosarito, San Borja and Bahía de los Ángeles with a focus on the Arroyo El Rosario and the San Borja mission area. Together, these opening studies add a small but important sample of data regarding landscape use within the southern and southeastern part of the greater study area. These studies have been facilitated by a pedestrian field sampling approach involving the selection of dispersed, previously recognized locations of rock art, mission and *visita* vicinities and travel passageways of proposed or known historic and prehistoric times, fresh water sources, and selected drainage and lake systems. This work was supplemented by a more intuitive exam of selected locations around Laguna Agua Amarga, Mission San Francisco de Borja Adac, the San Ignacito mesquital and rock art site and the Las Tinajitas rock art complex.

The senior author's block sample within the Rosarito-San Borja corridor was completed near La Angostura along Arroyo Rosarito and adjoining volcanic cliffs. This rectangular block was oriented in a north-south direction. The survey block measured 1.0 km true north-south by 0.7 km wide, and intensive survey within 25-m spaced transects was used. The purpose of the inventory was not only to see prehistoric corridor use along the arroyo but also to see what archaeological associations could be found adjoining a major rock art complex. Dispersed open residential use of protohistoric and prehistoric age was noted, as well as domestic debris within two rock shelter deposits and several rock enclosures on the cliff top.

The sampling by the junior author involved 14 locations. The sampling incorporated transects or rectangular survey blocks of varying sizes, with surveyors generally spaced about 25 m apart, or in the case of the spring at Agua Higuera, a radial survey from the spring with eight individuals surveying a path out from the spring at a 45° separation for 250 m distance. These 14 locations and survey particulars are listed below:

- Laguna Agua Amarga. An east-west transect 2 km long by 225 m wide across the northern end of older lake terraces.
- A north-south transect 5 km long by 150 m wide covering the east side terrace of arroyo within Valle de San Julián.
- Transect 1.6 km long by 225 m wide in the terrace-foothill location of Mesa Tinaja Blanca (Portezuelo), with an aim to intersect El Camino Real between missions San Francisco de Borja Adac and Calamajué.
- Transect 1.1 km long by 225 m wide from Mission San Francisco de Borja Adac north along El Camino Real.
- Transect 1.5 km long by 225 m wide along the terrace/foothill location of the route

east from San Ignacito to Mission San Francisco de Borja Adac.

- Transect 1 km long by 200 m wide along the stream and terrace at Rancho Santa Ana.
- 500 m quadrant within alluvial valley fronting the Montevideo pictograph site.
- Radial survey coverage centered on Agua Higuera.
- Transect 1 km long by 150 m wide along the old route between Mission San Borja de Adac and Bahía de los Ángeles.
- Non-systematic survey around Laguna Agua Amarga.
- Non-systematic survey around Rancho Santa Ana.
- Non-systematic survey around Las Tinajitas rock art complex.
- Survey by mule and foot of the ancient trail from Bahía de los Ángeles up to and on Mesa San Borja.
- Survey by mule and foot along El Camino Real south from Mission San Borja de Adac, then following a trail up to and on Mesa El Quemado and the adjoining canyon El Ranchito.

The surveys resulted in the documentation of 83 sites or clusters of archaeological evidence, mostly known or presumed late prehistoric locations. Mission and later historic-period places were further identified by information from local ranchers and ethnohistoric documentation (see Aschmann 1959). No sites of known Paleoindian age were found, although cleared circular areas were noted at Laguna Agua Amarga. Also found in this location were several trails and dispersed flakes and flaked stone with milling tools, shell and bone.

Work along the major arroyo in Valle de San Julián led to the discovery of nine sites (using Aceves's 2005 traditional site designations), mostly lithic scatters with a variety of flaked stone tools, debitage (typically felsitic, basaltic and rare obsidian) and a few projectile points and milling stones. The isolates and clusters of archaeological materials (sites) were almost continuous and also included a cache of shell utensils perhaps implying a ritual offering or a decision to return to the location (see Figure 5).

The Mesa Tinaja Blanca work led to the documentation of five sites including a small rock alignment, lithic scatters, a few milling tools and one possible roasting area, presumably for agave. It was thought this transect would cross El Camino Real, but the route proved to be along Cañón El Principio, the actual road from Mission San Borja to Bahía de los Ángeles.

The transect following El Camino Real north from Mission San Francisco de Borja Adac along an arroyo and mesa foothills proved to be one of the richest locations for sites, with 13, including a number of roasting areas, trails, a rock alignment, utilized rock shelter, dispersed lithic scatters and milling tools and the oven feature for roasting the caliche mined from the stratigraphic layers along the nearby high arroyo bank. This material was subsequently used for plastering mission building walls.

The San Ignacito transect along valley terrain yielded a few scattered flakes and flaked stone tools and a major open midden deposit with flaked and ground stone tools, shell and bone remains, bifaces, an abrader, and projectile points of multiple ages (Comondú and earlier Archaic types) (Figure 6). A survey by the senior author nearby led to the discovery of historic-period (Mexican-era and possibly earlier) building ruins, rock walls and other historic features and a late prehistoric Comondú projectile point and a few flaked stone items. A Spanish-style cross has been pecked into a basalt boulder above the complex.

At Rancho Santa Ana, transect work and purposive survey led to the finding of two sites: one a lithic scatter with oven feature, and the other, scattered flaked stone and milling tools and

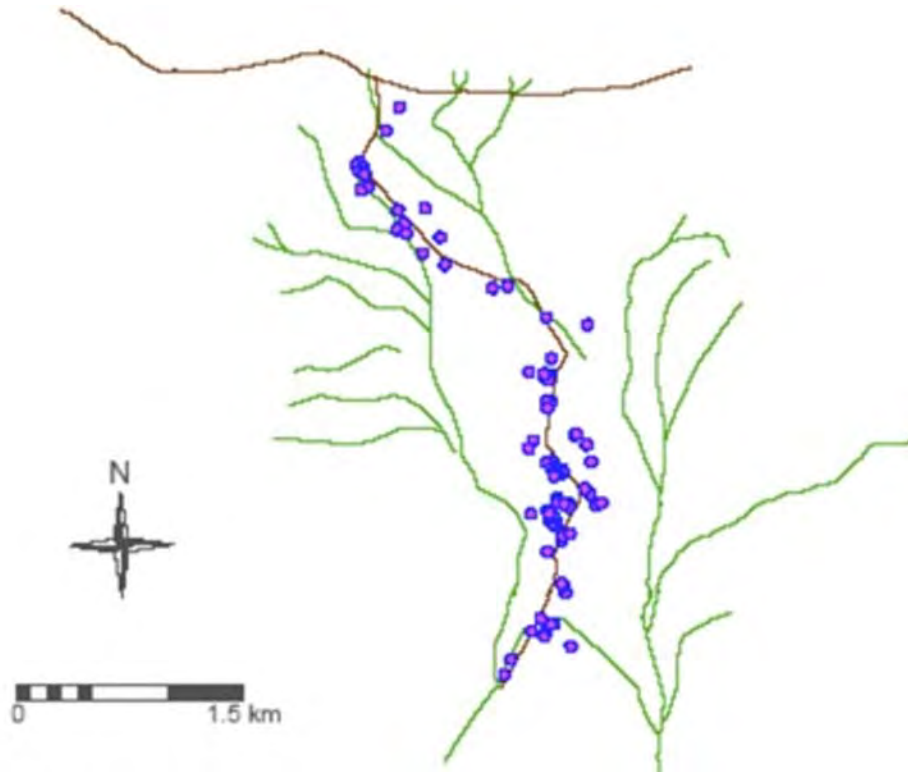


Figure 5. Prehistoric cultural corridor in the Valle de San Julián.



Figure 6. Bifaces and projectile points from the San Ignacio midden location. Material includes quartz, basalt, obsidian and cryptocrystalline silica. Leaf-shaped, triangular, Elko-like and possibly Comondú forms are illustrated. Larger bolded squares equal ½ in.

fire-affected rock. A felsite biface, single obsidian Comondú series and basalt Elko-like projectile points, and Mexican-era buildings, foundations, features, cleared fields, and rock walls of unknown historic age were also noted. No Spanish-era items or features of certainty were found. The points demonstrate a light but perhaps prolonged prehistoric use of this oasis.

At Montevideo, aside from the scattered pictographs and adjoining rock shelters with deposits, there occur dispersed flaked stone and shellfish fragments. However, the alluvial valley quadrant proved generally sterile, in part likely due to recent erosional and depositional activities.

At Agua Higuera seven sites were located, mostly flaked stone scatters, including some locations with bifaces, projectile points, one or more milling slabs, bone and shell fragments, and an oyster shell ornament. Obsidian hydration readings suggest a relatively long use of this location, perhaps extending back into the middle Archaic.

Survey along the old road between Mission San Francisco de Borja Adac and Bahía de los Ángeles yielded evidence of the still-used trail as well as dispersed flaked stone and ground stone milling slabs along with a complex of sizeable roasting areas or ovens. No time markers were observed.

A general reconnaissance of the Las Tinajitas rock art complex showed a series of walls and small shelters with hundreds of pictograph motifs, along with at least one sizeable shelter midden deposit.

The general reconnaissance to Mesa and Cañon San Borja produced the most sites of the project, with 29. These sites included dispersed flaked stone, shellfish remains, and limited rock shelter use in the canyon. On the mesa top, there are numerous oven features approximately 3-8 m across (at 22 of 24 sites documented), occasional flaked stone, trails, a light scatter of shellfish remains, at least one Elko-like projectile point, milling tools, rock enclosures and a small midden deposit just beyond the head of the canyon.

The area of Mesa El Quemado yielded several roasting areas, a trail, dispersed stone flakes and flaked stone tools, several milling utensils and a few pieces of marine shell. Unlike Mesa San Borja to the north, there was far less agave present and, not unexpectedly, fewer roasting areas.

Nearly all of the areas investigated have milling tools present, mostly metates (19 sites). They are more abundant in areas of denser vegetation today or in the presence of a rich annual flora as in the Valle de San Julián.

Roasting features dominate the hillsides and mesa tops around Mission San Francisco de Borja Adac, likely used in agave processing. While no exact measurements of feature density were calculated, it is estimated that there are locations with at least 35 such features per hectare. Four such features contained milling tools.

There are definite sites with midden development and use over a protracted period of time in this interior area. Rock art is found concentrated in select locations of low escarpments, often with small rock shelters in conjunction, and nearby seasonal to permanent natural water sources. Twenty-two of the documented sites have a few shellfish remains in association, and obsidian continues to be rare in the assemblage, mainly at lowland sites. Sites with such residues appear to be those with a diverse assemblage, suggesting they were campsites that had obvious connections to coastal locations and/or peoples.

Trails and pathways were found in the Laguna Agua Amarga area connecting barren cleared circular pavement areas of possible ritual use. Trails are also abundant in highland areas of presumed agave roasting areas, a number of which are used to this day. Otherwise, trails with

cultural materials are the same as employed by the Spanish in connecting important religious or supply centers notable also by the presence of Indian/rancheria activity/living centers.

Local collections of projectile points from the general Mission San Borja de Adac locality as well as from the Bahía de los Ángeles locality suggest long-term use, at least since middle to late Archaic times into the historic era. Particularly vexing as yet throughout the greater study zone is the chronological placement of the small, well-made bifaces, many manufactured from quartz.

Aceves (2005) conducted a multivariate statistical test (Legendre and Legendre 1998) on the presence/absence of various cultural and environmental variables from her samples using the program XLSTAT 6.1.9 (Addinsoft 2003). The results show a general distribution of concentrated cultural remains presumed to be associated with hunting (projectile points, bifaces, flaked stone, etc.) in more alluvial basin areas, locations with symbolic characteristics (rock art) in obvious rocky areas interfacing with alluvial deposits and presumed food processing settings (milling tools, oven features, fire affected rock) in higher rocky areas. In a lower to upper dimension of the resulting graph there is a gradation from presumed food processing locations and living structure remains to places more symbolic, such as pictograph locations and concentrations of circular cleared pavement features.

The persistently used places, the nodes of articulating with the historic landscape, include those routes that transitioned from ancient trails, as where there exist fresh water sources and areas near resource richness such as agave colonies. Major contact-era historic trails certainly indicate a persistence of earlier trails, but in the case of El Camino Real the north-south interaction is stressed.

Discussion and conclusions

While much has and can be said about the archaeological phenomena and their contents and placement across the terrain in the study zone (and across segments of adjoining seas), the fact remains that there is still poor chronological resolution and sampling deficiencies. Our conclusions are in many respects informed speculation and generalized. As with the entire peninsula, we are dealing in this study with cultural processes and changes in a zone with considerable geographic and environmental diversity. While in the ideal sense we would like to be able with great confidence to construct a model of prehistoric and contact-period holistic use of the study zone, including those locations with little or no use (and in full consideration of outside cultural influences), such is not the case. We have a very disconnected perspective of those fragments and accounts left behind as well as a nascent picture of existing environmental conditions and changes in these natural and physical surroundings over time in the study zone such as with climate, landform, hydrology, plant communities, fisheries and the like. But study by study over a relatively long, sporadic episode of research, the building blocks are assembling and we can offer some observations regarding those landscape fragments present, attempting to avoid the pitfall of misinterpreting the archaeological record of complex past social patterns at the hunter-forager-fisher folk level.

There are increasing data from coastal and inland locations that Paleoindian people were differentially using both interior lake basins as well as coastal areas. Assemblages such as those documented by Gruhn and Bryan (2001), Davis (1968) and other workers, especially at Laguna Seca Chapala in the interior, and to a lesser degree Laguna Agua Amarga, are each different from coastal archaeological assemblages (in addition to ecofact evidence), and the clear case for

maritime resource use on the coast and at least hunting and flaked stone tool preparation and use in the interior lake basins seems evident (also see Des Lauriers's 2005 information from Isla Cedros). Areas of activity away from these two settings are more equivocal, based on rather limited work, and as is the case in much of the peninsula, preservation or exposure factors must be considered. It is unclear whether interior and coastal folks were one and the same, but it is recognized that at some point in time persons using Laguna Seca Chapala were bringing or obtaining shellfish or shellfish remains from both coasts. It is also apparent that the late Paleoindian complex or tradition (i.e., stemmed point assemblages) has a correlation at least with areas widespread over the desert west, implying considerable mobility and influence, at least technologically speaking in terms of point styles and possibly other artifact forms such as horse-hoof-beaked planes and rounded end scrapers.

The use of maritime resources along portions of both coasts appears to have been long-standing, with possibly increasing specialization through time as evident in the diverse tool kits at Laguna Guerrero Negro and Laguna Manuela. The technology for sea travel was clearly early, as witnessed by Des Lauriers's (2005) studies on Isla Cedros. Bowen et al. (2005) have shown that prehistoric peninsular inhabitants traveled to coastal and inland reaches of Isla Ángel de la Guarda for some time for resource procurement (and possibly spiritual/religious observances as indicated by many rock cairns and rock structures) based on a broad range of obsidian hydration readings obtained from worked glass from this island that were found on central peninsula sites.

The central western peninsula lagoons along their shores exhibit often-extensive scatters of cultural debris from maritime specialists dating for the most part from about 2,000 years ago into the historic contact period, with a late prehistoric florescence likely related to interior circumstances such as demographic growth, climatic change, group movement and interactions, resource intensification (see Binford 2001:386), etc. There is a clear focus on specialized marine exploitation along the lagoons, although inland areas are little known. These ribbons of shoreline refuse contain scattered artifacts imported mostly from central mountain locations. These artifacts of flaked and ground stone, shell and bone are diverse, with a well-developed staged biface industry; a variety of projectile points; flaked stone tools of various sizes and shapes and edge angles; debitage, burin spalls, milling implements, hammer stones, bone awls and harpoons; etc. (see Ritter 2006b). Flaked stone, especially obsidian, indicates abundant use, reuse, reshaping and exhaustion of material. Obsidian mainly came from Valle de Azufre, scores of kilometers to the interior, in core, nodule, and blank and finished tool forms. Granite milling tools in some cases show an introduction of raw or fabricated stone from the east side of the peninsula. Even inferred ritual related to cremation, burial and shamanism/doctoring is likely evident in mortuary remains and *chacuacos* or stone pipes. The lagoon visits by mobile family and perhaps task-oriented groups seem to reflect variable interior interactions.

There is a culture change in lagoon use between Laguna Guerrero Negro and Laguna Manuela, both technologically, likely reflecting the location of higher elevation camps, and also in lagoon resources, as previously discussed. Projectile point forms at Laguna Guerrero Negro and the southern reaches of Laguna Manuela may reflect styles more common to the south and southeast and more interaction toward that direction. The implication is that more to the south along these lagoons people are primarily coming periodically from locations such as the Sierra de San Francisco, while to the north they are coming from the Sierra San Borja or places even more distant. Inland explorations may help define various travel corridors or pathways from the east to the west, perhaps evident in the Arroyo Rosarito-Adac corridor. Milling stones could reflect processing spots for localized interior seed gathering, a proposed pattern of dispersed

special task group gathering and milling known from far into the Vizcaíno Desert to the southeast (Hyland 1997:246-249).

Traveling up the Pacific coast, the archaeological evidence is poorly known. However, there are shell mounds, rock enclosures (presumed shelters), a quarry, occasional milling tools, and, at Mesa San Carlos, extensive habitation refuse, trails and rock art production. Christian and Cordy-Collins offer the opinion that the later cultural complex could be the seat of one association of contact-era rancherías, the Guiricatás, Mesa San Carlos being perhaps a place of inter-ranchería gathering and ceremony with users associated with interior locations such as Mission San Fernando Velicatá. These sites appear to be far less complex than around the more enclosed bays to the south, where interior populations seem to have flourished over time owing to greater resource productivity and more abundant fresh water sources. Arnold's early work and that of others does demonstrate the presence of Archaic to Comondú-period activities and possibly even mission-era residential-like bases and stone tool workshops such as with felsite and quartz within the central interior, as in the Punta Prieta trough and Calamajué location.

Aside from Laguna Seca Chapala cultural remains that appear to run throughout much of the Holocene, at least on a periodic basis over the centuries, there is the complex of cultural locations at Laguna La Guija. These locations are dominated by presumed late prehistoric clusters of archaeological evidence derived from apparent family groups who presumably moved back and forth to the Pacific coast. Particularly evident here is the seemingly extensive use of agave, milling activities, and hunting of local game, likely including bighorn sheep, deer, rabbits and the like. There is at least one and possibly two pictograph sites of mid to late prehistoric age in the vicinity and one rock alignment, all presumed sacred or especially revered locations for groups or segments of groups whose territory included this locality.

The Gulf-side archaeological phenomena are diverse and considerably different from Pacific-side locations, especially those at the central lagoons. There has been a persistent localized marine exploitation focus here for six millennia or more, but the record is not homogeneous, whether one is discussing the major bays or less protected coastal stretches between these bays. While the major bays have received the most attention by scientists and proved to have a rich cultural resource base, sporadic, as yet perfunctory visits to open-coastal stretches shows past use through scattered shellfish remains and occasional tools, but far less prehistoric activity in these stretches appears evident than in the foremost bays. Hyland (1997:244) found a similar pattern of transitory coastal use for at least 2,000 years or so to the south in the less protected and possibly potable-water-impooverished coast to the south. It is apparent that south to north (bay to bay and bay to open coast) and peninsula-to-island differences are noteworthy (see Bowen et al. 2005; Ritter 2006a). Preserved tool kits are generally more rudimentary at Gulf-side cultural material clusters, although a look at the perishable assemblage discussed by Massey and Osborne (1961) demonstrates what might be missing from many locations. These marine-oriented peoples during late prehistoric times had what appears to have been relatively involved mortuary customs with specialized sites. The landscape contains plentiful rock cairns, clusters of cleared areas near burials, rock enclosures lacking residential debris in places with vistas, a few rock art sites and pathways leading to what appear to be special areas like vista rings and mortuary locations, many of which are likely late prehistoric. These locations in places are clustered at apparent special hills such as Cerro Los Angelitos and Cerro El Almacén.

In a previous study, the senior author (Ritter 2006a:175-176) has offered a working model of prehistoric land use and interaction for at least the late prehistoric times in the Bahía de

los Ángeles/Bahía las Ánimas locality, where there seems to have been an increase in population and changes in subsistence strategies with a broadening and intensification of resources exploited such as sea turtles, legumes, root crops and annuals and an increase in storage with a continued or enhanced reliance on exchange networks to buffer negative fluctuations in resource productivity. There may have been a few residential areas near major water sources occupied along the coast for much of the year. Some groups may have practiced a fusion-fission model, with fragmentation into smaller groups in the winter/spring when seasonal water sources were available. In this model, population aggregations occurred as they did at the time of contact during late spring or summer as at special centers. These would include oases in the mountains where ripening cactus fruits, for instance, became available. There appears to have been a coast-interior interaction sphere where, for instance, marine resources and obsidian could be exchanged for agave products (see Aschmann 1959:101). Archaeological evidence at Bahía San Luis Gonzaga tentatively suggests at least late prehistoric marine exploitation with an interior-coast group movement and far less habitation on any multi-month basis, mostly due to water shortages and near-shore impoverishment of food resources like agave, cactus fruits, legumes and the like. The apparent absence of deep shell mounds at least hints at such a proposition.

A look at the historic land use pattern as discussed by Homer Aschmann (1959:101) from early Jesuit accounts indicates there was a cultural-social differentiation between the beach and interior peoples and some organized trade between them. Highland people also are reported to have gone to the beaches to utilize marine resources and that “members of a typical rancheria moved enough to exploit all sorts of resources.”

Hohenthal (2001:21, 61, 73) noted that while certain clans, lineages or groups favored certain localities, there was an overall wide range of movement by Kiliwa, Paipai and Tipai groups to the north, even into territories of other groups. The archaeological evidence suggests such a case generally speaking in this zone as well, for millennia. Both coasts were used and well-traveled trails across the terrain existed. The Jesuit priest Wenceslaus Linck (Burrus 1967:44) noted that during mission times a trip from Bahía de los Ángeles through Mission San Francisco de Borja Adac to the Pacific side only took about a day.

The landscape-oriented work of Aceves is the most focused and systematic for a relatively broad inland area. Interior occupation in the hinterland of Bahía de los Ángeles/Bahía las Ánimas and near Mission San Francisco de Borja Adac was relatively prolonged, based on Archaic (Elko-like) projectile points and obsidian hydration readings. Certainly midden locations with dart and arrow points suggest a lengthy time span for interior use in this southern part of the study zone. This heterogeneous landscape and local climatic/altitudinal variability has resulted in contemporary and likely older diverse plant assemblages (mesquite thickets, cactus forests, agave colonies, etc.). This, of course, affected group mobility and composition. Obsidian was available in limited amounts from Gulf sources, and a local source is evident but only lightly used. Marine resources are evident in campsites from presumed multiple ages, again suggesting coastal-interior interactions.

Archaeological evidence from the Valle de San Julián is dense and abundant, exemplifying the existence of a late prehistoric, if not earlier, archaeological corridor still used today. We would expect similar corridors of use along major drainages in this interior zone, perhaps routes of itinerant short-term resource exploitation between larger camps with more permanent water sources than could be found in the arroyo. Interestingly, while obsidian artifacts are not very common within this corridor, those pieces sourced indicate not only obsidian coming from Isla Ángel de la Guarda from the Gulf to the east but also the Valle de Azufre

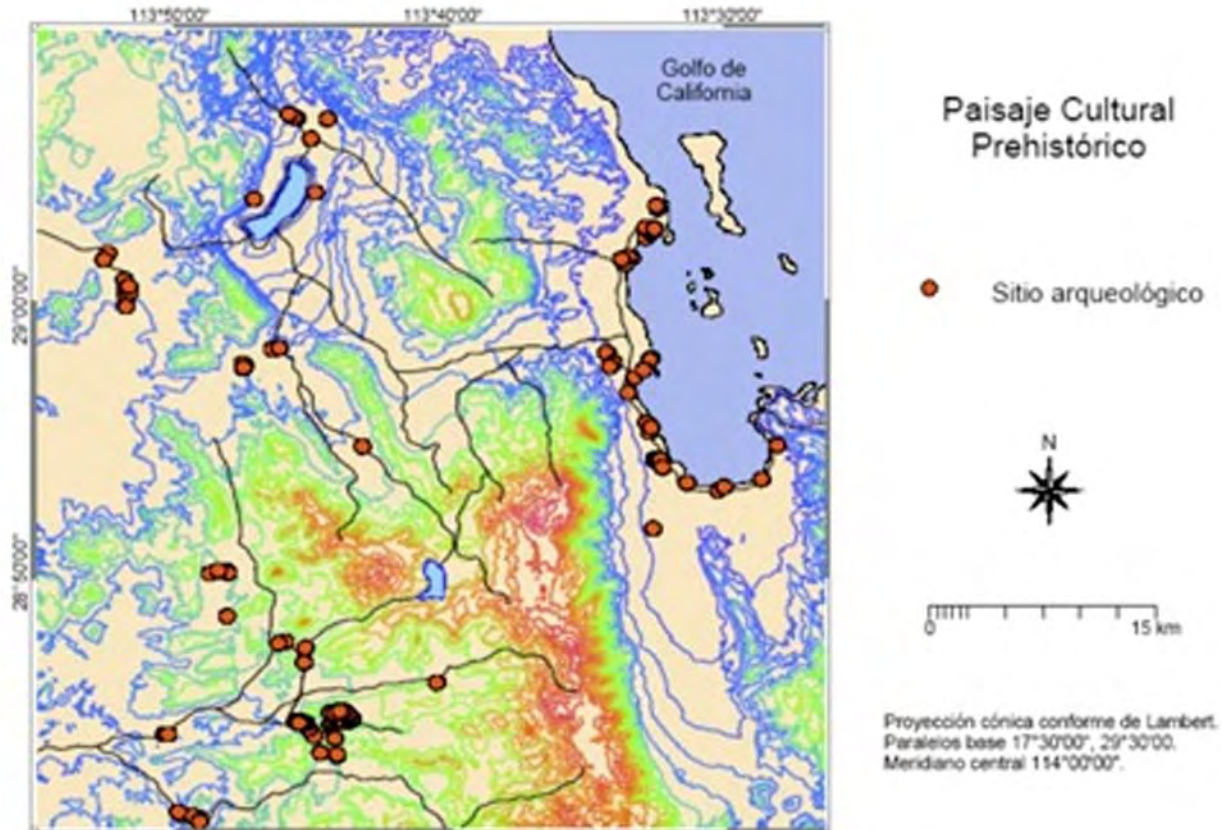


Figure 7. Locations of archaeological material clusters and known or proposed connecting corridors of interaction as derived from the Aceves thesis (2005: Chapter 2, Figure2) regarding the interior Bahía de los Ángeles locality.

source to the south, well beyond the study zone. Such rare occurrences likely indicate minor contact with groups toward the south.

On hillsides and high in the mesas, especially near Mission San Francisco de Borja Adac, there are areas of agave where numerous oven-like features are associated, areas presumed to have been used to roast agave hearts for use at the mission and nearby camps (cf. Engelhardt 1929:285). In association are access trails, a flake or flaked stone tool or two, and a few other domestic items at times. This agave use pattern at Mission San Francisco de Borja Adac seems to have been present in the vicinity of missions Calamajué and Santa María as well (Aschmann 1959:65).

The interior oases are generally long-term (thousands of years) locations of multiple-use and residency, and places of historic activities from Mission times to the present. They were sometimes prehistoric centers of religious/ceremonial behavior judging from rock art in their vicinity. The synchronism of such activities, however, is poorly understood.

As in all of the study area, the prehistoric and contact-period landscape with various economic and settlement locations and the presumed ritual or religious centers with rock art and special stone or ground features are interconnected by corridors or pathways of movement and transportation (Figure 7). These corridors in some cases are long-standing and sometimes obvious in their passageways of least resistance through the mountains and hills. They vary in width and length, of course. They are from coast to interior, camp to camp, camp to resource patch or location, mission to mission, and even camp to presumed spiritual/religious center.

There are very apparent special, long-term spiritual/religious locations both at and away from residential bases, locations of special landscape features such as low cliffs and rock shelters often with vistas. These inland areas and their use may correspond with groups congregating during times of plenty, as with the ripening of cactus fruits and legumes, and various annual seed harvests. These special places may extend back in age at least several thousand years. There is no indication that such places were being used in Mission times, although such activities would generally have been hidden from the missionaries. There are no historical images, for instance, except for one pecked cross in the cliff face at San Ignacito.

It is very likely that the rock art sites, for illustration, were related to the natural topography and were often reused and revisited, at least by certain individuals or segments of the population. These were places aesthetically and symbolically infused. The artistic achievements are noteworthy, and pigments were apparently derived from regional volcanic deposits not fully identified. The overall study zone has apparent concentrations of these power spots, in the interior mostly in the general vicinity of Mission San Francisco de Borja Adac and the southern end of the Sierra Calamajué, sporadically in other locations such as at Cataviña, La Bocana, and near Laguna Seca Chapala, with very few on the Pacific coast with the major exception of Mesa San Carlos. The western portion of the study area, of course, is also less diverse in terms of major plant foods used aboriginally and has fewer water sources for settlement. This was an area not favored for mission settlement, and our first impression is one of transitory use between interior oases and select Pacific shoreline bays and inlets north of the major central Pacific lagoons where use was linearly dispersed but substantial.

Important clues to late prehistoric and contact era landscape use can be derived from those historic accounts of the explorers and missionaries and from hunter-forager accounts elsewhere. Aschmann (1959:170) reported that there was less potable water north of Mission San Francisco de Borja Adac, with mineralization a problem. As a result, there were larger rancherías at the fewer water sources. Aschmann (1959:173, 179) noted that in this study zone agave was a significant control on population but that Mission San Francisco de Borja Adac Indians were most dependent on marine resources. Such an observation must be tempered until the extensive apparent agave use issue can be better appraised through archaeological work. Based on mission records, there was a slightly lower population density for areas serviced by missions Calamajué, Santa María and San Fernando Velicatá than for Mission San Francisco de Borja Adac. At this latter mission, Aschmann (1959:173) estimated that in its expansive territory there were somewhere in the neighborhood of 100 rancherías, and numerous rancherías at the other missions to the north listed above. These were likely persistent if not intermittently used places of residency for hundreds if not thousands of years in cases and likely often places of contact between geologic or landform units, locations near water courses or flat bedrock units where natural basins for water catchments existed. From these places, groups, task forces, interest groups, or individuals moved out to secondary camps and special-use areas like coastal or interior zones with fisheries and mollusk beds, agave colonies, mesquite groves, spiritual locations, and many others resource or symbolic/sacred places.

Over the epochs, perhaps since early Holocene times, there is an evident east-west orientation in use and interaction. A highland focus and a Gulf coast focus are also apparent, at least late in prehistory if not considerably prior. North-south influences are also evident, such as a few Great Mural art figures among the dominant Northern Abstract rock art, mortuary cults shared with Yuman groups to the north, projectile point styles from earliest forms to latest common to the north, sea craft, and other cultural traits. There was always the maritime food

basket to fall back on, although local overexploitation of mollusk beds, sea turtle feeding areas, crab beds, and sea mammal rookeries along the coast and agave colonies, root plants (e.g., zaya), larger mammals and other foods in the interior is likely. Conflicts between groups are also a recorded fact ethnographically, as at Mission San Francisco de Borja Adac where war expeditions were noted (Aschmann 1959:112), and these conflicts in some cases were somewhat exacerbated with the missionization process.

The various landscapes, or landscape fragments, represent a rather distinct form or forms of perception and use during the early Holocene, whereas thereafter during Archaic times into the Comondú period the distinctions are less clear and gradational until European contact. This seems the case except for apparent demographic increases and dispersion into little-used niches such as the western lagoons. These realignments of behavior were likely transitional rather than abrupt, with the exception of the European intrusion. Even in mission times, the padres were unable to feed their flock from the agricultural, livestock and import sources from other missions and mainland Mexico, and the various rancherías were charged with procuring foods in their pre-contact manner. Rival groups, on the other hand, were forced together into mission life, disrupting social patterns. Certainly the religious centers and burial locations changed with religious conversion, and visitation to native sacred places unidirectionally or as part of a ceremonial circuit over a linkage of pathways likely decreased rather dramatically. Assorted corridors of travel and transport along with major oases remained persistent throughout much of prehistory into Mission times.

As fragmented as our view is of the various pieces of socialized landscapes where a modicum of archaeological knowledge has been secured, from regional studies to date we can begin to understand the changing settlement ecology and arenas of human activities. There is a variable density of remains of past human behavior across this study zone, evidence that points to patterns of ordinary, sacred and spiritual human use rather broadly displaced across the terrain and sea. There are numerous problems in understanding these past cultural landscapes as we gather their fragments. It is clear today with encroaching development and visitation that this past human component of the reconstructed and modern landscapes must be incorporated into the biophysical protective zones already designated so that future researchers can better piece together into a more meaningful whole the cultural landscape fragments discussed herein.

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