

COMPREHENDING THE PREHISTORY OF LAGUNA MANUELA, BAJA CALIFORNIA: A SUMMARY

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Archaeological studies along the eastern shore of Laguna Manuela in west-central Baja California have provided modest, incremental improvements to understanding the prehistoric human use of the lagoon with implications for a broader region. About 500 to 2,000 years of prehistoric visits left evidence of a ribbon of closely spaced, very temporary residential/activity loci relating to marine and, less intensively, terrestrial food searches and tool production, maintenance and, in cases, discard. The archaeological patterning shows differences compared to neighboring lagoons, indicating differing regional group visits with varying access to inland commodities such as obsidian and an absence of historic-period use.

Along the arid central Baja California coast of the Vizcaíno Desert lie a number of fisheries-rich lagoons (Figure 1). The ethnographic record is somewhat vague on the use of these lagoons. Aschmann (1959:180), in his compilation of such records, notes that “even the most productive shorelines of central Baja California did not support more than five persons per linear mile.” Jesuit missionary Miguel del Barco (1973:252-253) noted that natives did not live on the area’s beaches: “they traveled there to catch seafood, but only stayed for a day to a day and a half to two days as long as the water in the skin bladders or other containers lasted after which thirst compelled them to retreat inland” (English translation of the Spanish by Peter von der Porten). What recent research has shown in the central peninsular Pacific lagoon systems (Ritter 1999, 2002, 2006, 2009; Ritter and Payen 1992) is that population density estimates are a poor measure of the periodic intensity of late prehistoric/protohistoric use of these lagoons.

The principal focus of this study is on the archaeological results from several field seasons of work along Laguna Manuela and how the archaeological discoveries from this lagoon in particular, especially examining the 2002 results, compare or contrast to previous lagoon archaeological discoveries at the south end of Laguna Manuela and neighboring Laguna Guerrero Negro and Laguna Ojo de Liebre, as presented in works cited above.

LOCAL ENVIRONMENT

Laguna Manuela, also known as Upper, North, or Santo Domingo Lagoon (Henderson 1972:117), is the smallest and northernmost of the central west coast lagoons. This lagoon lies in the Central or Vizcaíno Desert. Shreve (1951) and Wiggins (1980) designate this general location as part of the Sarcophyllous Desert, *Agave-Ambrosia*, or Vizcaíno Region.

The lagoons historically were rich in sea life (Hubbs 1960; Nelson 1919), and terrestrial and marine vertebrate species together number 309 in this Vizcaíno Desert region in recent observations (Galina et al. 1991:177). The greatest limiting factor to habitation here now and during late prehistoric times at least was fresh water, and waterholes were quite rare (see Henderson 1972:111).

A detailed geomorphological study of these lagoons has been completed by Phleger (1965:205), who notes that old storm berms occur on the lagoon barrier thousands of feet inland. He found that the sea level has been at its approximate position for about 2,000 years and that the barrier has prograded westwards some 5,000 ft. in that time. The protected eastern shoreline of Laguna Manuela includes relict and active dunes (see Figure 1).



Figure 1. (left) Map of central western Baja California lagoons and study area; (right) view of site LM-16 looking out southwesterly at dry upper reaches of Laguna Manuela.

FIELD INVENTORY

Site survey generally followed past formats (Ritter 2002) and was not focused on potential buried or covered sites. Three variable-sized survey units, all less than 1.75 km on a side, were inventoried along the ancient eastern shoreline, with units set to follow the general predicted pathway of archaeological debris.

The examination of the survey blocks along the central and northerly portions of the eastern shoreline of Laguna Manuela in fact demonstrates a continuation of the strip of remains from prehistoric use of the eastern coast further to the north beyond previously surveyed areas. The ribbon of cultural residue likely extends around the north end of the lagoon.

THE SITES

The 2002 inventory along Laguna Manuela's shores resulted in the documentation of 11 sites (LM-8 to LM-18) and one new site along Laguna Guerrero Negro (LGN-33). Previous informal work led to the documentation of several sites along Laguna Ojo de Liebre (Hubbs et al. 1962; Moriarty 1968; Ritter and Payen 1992). There are also a number of locations reported to this writer by a local avocationalist and results from historic maritime inventories near the mouth of Laguna Guerrero Negro (Briener et al. 1999). Regionally, there are currently 54 documented sites, 18 in the vicinity of Laguna Manuela, of which 11 form the primary focus of this paper. These sites are sparse to thick concentrations of shellfish remains and stone artifacts and small rock debris with occasional bone residue or even shallow bone bed concentrations as found at one site (LM-18). Most do not appear to be more than 10-15 cm deep, with dune deflation revealing the cultural remains.

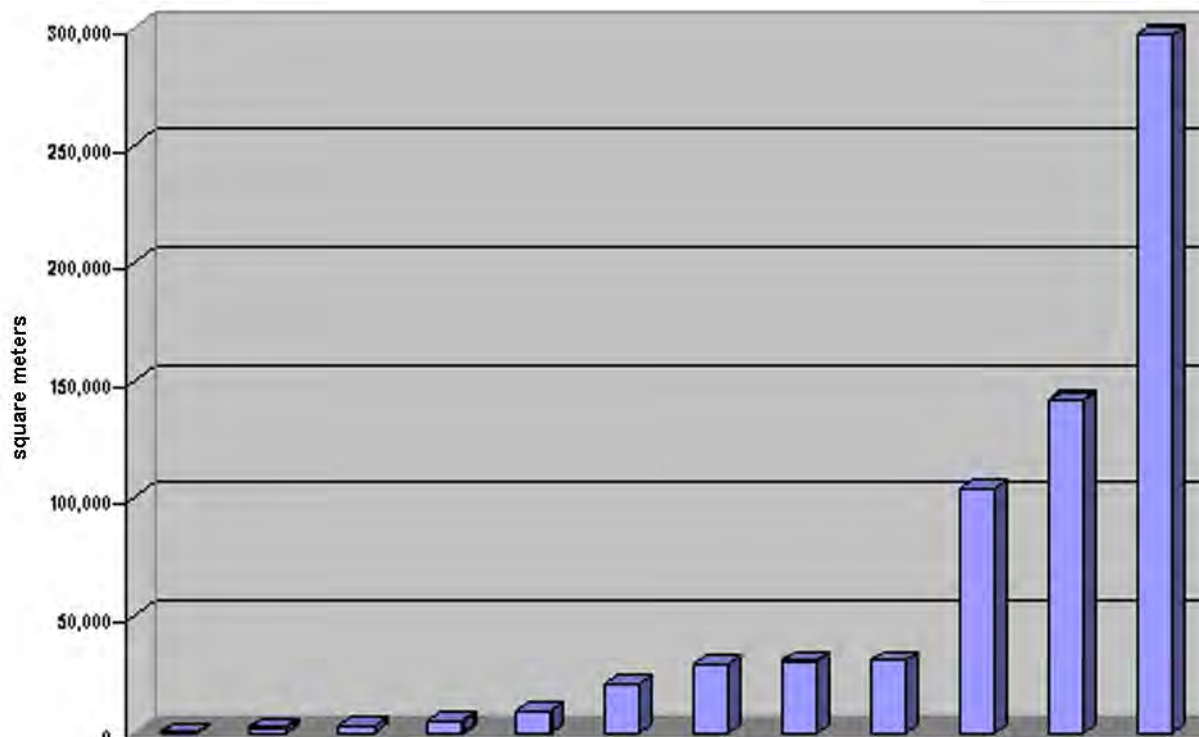


Figure 2. Graph of sizes of sites from 2002 work.

There appear to be changes in site configuration, size, and content as one moves from Laguna Guerrero Negro and the southeast extremes of Laguna Manuela and continues north. An examination of Table 1 shows some of this variability, as does the site description text in Ritter (2009). There are also diminished concentrations of shellfish at sites during the 2002 work compared to the thick blankets of remains at some sites earlier recorded along Laguna Guerrero Negro's northeastern shore and the southeastern extremes of Laguna Manuela. The northern lagoon has had more sediment infilling than Laguna Guerrero Negro and hence it is a shallower water body. Differences in tidal ranges have created variations in fishery and sea mammal and marine reptile presence in at least late prehistoric into historic times.

There is a possible difference in the size ranges of sites between Laguna Guerrero Negro and Laguna Manuela. As indicated in Figure 2, three sites along Laguna Manuela were over 100,000 m² in size, but each is over 80 percent barren. Otherwise, the remaining sites are less than 31,000 m² in size. Overall, the most intense use and larger sites regionally are close to the northeastern extent of Laguna Guerrero Negro.

As seen in Table 1, the Laguna Manuela sites (sampling issues aside) express some variability in the assemblages present, only in part as an expression of the size of the site. All sites have artifacts of a flaked stone tool industry. Most have projectile points and bifaces. Many but not all of the sites have milling stones present. Specialty tools such as perforators and abraders are sporadic in occurrence. Only one site has human remains: a cremation located at the north end of the 2002 inventory area. A further look at the attached table shows that the more northerly Laguna Manuela sites lack the burin spall industry, with one possible exception. This is likely in part related to the drastic reduction in obsidian use in these sites.

Table 1. Sites (Laguna Manuela, 2002)

CATEGORIES	LM-8	LM-9	LM-10	LM-11	LM-12	LM-13	LM-14	LM-15	LM-16	LM-17	LM-18
No. of loci	2	2	2	1	9	2	2	10	6	15	15+
Features	2		1				1				1
Cremations										+	
Principal shellfish*	A	A	A	A	A	C	A	A	A	C, A, S?	C
Faunal bone	+	+	+	+	+		+	+	+	+	+
Cores	+	+	+	+	+	+	+	+	+		+
Flakes	+	+	+	+	+	+	+	+	+	+	+
Projectile points	+	+	+	+	+	+	+	+			+
Bifaces	+	+	+	+	+	+	+	+			+
Perforators		+	+	+				?			
Burin flakes						+					
Flaked stone tools	+	+	+	+	+	+	+	+	+	+?	+
Manos	+		+		+		+	+	+		+
Metates			+		+			+		+	+
Mortars						+					
Hammer stones	+	+	+	+	+	+	+	+	+	+	+
Abraders			+	+	+	+					+
Ornaments of shell			+								
Bone tools					+						
Pottery											
Historic Artifacts											

A = *Argopecten*; C = *Chione*; S = *Solen*

ARTIFACT INVENTORY (See Ritter 2009 for more details)

Manos

Seven of the 11 Laguna Manuela sites contained manos (Figure 3). These all fall within patterns observed at previous regional sites and include sandstone, volcanic, and quartz specimens. Specific specimens are shaped and illustrate edge battering and single and bifacial grinding. Pitted manos like those found here (see Figure 3) occur at Gulf sites as well (cf. Ritter 1995a).

Metates/Palettes and Mortar

Portable mortars are uncommon in the lagoon vicinity and rare in reported assemblages throughout the peninsula. Only one was found during the most recent lagoon survey. Five of the Laguna Manuela sites contain metates or metate fragments, and, as a whole, 18 of the eastern shore Laguna Guerrero Negro-Laguna Manuela sites have such devices, with no obvious regional variation (Figure 3). Milling was obviously important enough in this coastal setting to bring in the grinding assemblage, in cases from many kilometers distant.

Hammer Stones

Cobble hammer stones were found in all Laguna Manuela sites and are common at most sites along the various lagoon edges (Figure 3). All specimens are manufactured from dense cobbles. Overall, hammer stones were likely used for many functions such as hammering, battering, pounding, and grinding on a variety of materials, such as described by McGee (1898:234) for the Seri/Comcáac.

Abrading Stones

Scoria or vesicular basalt abraders were found at four of the 11 Laguna Manuela sites (Figure 4). These appear infrequently along the lagoons' eastern shore and likely served numerous functions.



Figure 3. (left) Top row are manos, bottom row are metate fragments, including “d” manufactured from caliche; (center) hammer stones; (right) vesicular basalt metate.

Stone/Fossil Oddities

Nine unusual stones or fossils were collected during the expedition to Laguna Manuela (Figure 4). These include stones including coquina, hematite, galena, and sandstone, as well as an exotic fossil shellfish and elongated unmodified beach pebbles.

Large Perforated Disk

An ovate vesicular basalt slab from site LM-13 has been perforated centrally, possibly for use as a balsa/canoe anchor or as a net weight (Figure 5).

Large Flaked Knife and Scraper-like Tools

This is a rather catchall category of common edge-modified, moderate- to large-sized flakes and flake fragments (ca. 3-9 cm in length), as well as small flaked cobble forms (Figure 6). It is assumed that these artifacts served in heavy-duty cutting and scraping functions.

Edge-modified Flakes

Smaller than the above listed items, these flake tools are abundant in the documented sites and include many made from phaneritic to glassy materials with a variety of worked or utilized edge configurations (Figure 6). A nonrandom sample of 89 such artifacts was recovered from the 2002 sites, bringing to 278 the number of such artifacts from regional sites, a small fraction of those present. These ubiquitous items seem typical of a tool kit component that might be expected where hunter-gatherer domestic activities were being conducted (cf. Nicholson and Crane 1991:338). Kelly (2001:71) relates that “the longer the logistical foray, the greater the likelihood that a variety of tasks will have to be performed, especially if the group must remain overnight.”



Figure 4. Various abraders and exotic rocks.

Perforators/Gravers

Perforator or graver-like flaked stone tools number 16 from the 2002 sample sites (Figure 7). The artifacts have bits or beaks well-shaped through pressure flaking, mostly on the edges, on various types of flakes but also on a biface and a Laguna Manuela series projectile point. It is perhaps noteworthy that with far fewer bone awl-like tools from the Laguna Manuela sites compared to the Laguna Guerrero Negro sites, there is a presence of these artifacts.

Unifaces and Bifaces

Unifaces are not frequent in the overall assemblages, and only two were recovered through various means at two Laguna Manuela sites (Figure 8). Together, there are 41 such tools in collections from the two northerly lagoons. They represent both whole tools and broken specimens often utilized after breakage. The scraping function seems most prevalent.

There is an extensive biface tradition at these lagoons, with 236 small to large examples recovered from the two northerly lagoons (Figure 7). A staged biface technology was used in the occupation sequence for knife-like tools, to produce burins, and to manufacture projectile points of various sizes (see Massey 1966 and Ritter 1979 for comparative results). These northerly Laguna Manuela sites studied seem to have less representation of a biface industry compared to Laguna Guerrero Negro sites and, not coincidentally, less use of obsidian.



Figure 5. (left) Cores and core tools; (right) perforated vesicular basalt rock, perhaps used as an anchor.

Projectile Points

The Laguna Manuela sites documented were revealing in their diversity of projectile point finds. The 2002 expedition recovered 54 whole and partial points or un-typeable point fragments. The types include eight principal categories or forms, with two unique specimens that may be single examples of other unnamed types (Figures 9, 10). These types have been discussed in previous reports for the locality by the author (Ritter 1999, 2002) and in a publication by the author and Julie Burcell (1998). Nomenclature follows these works and studies by Carmean (1994), Hyland (1997), Massey (1966), Ritter (1979, 1994, 1999), Ritter and Payen (1992), and Smith (1986). The categories include the Comondú and Guerrero Negro series, the Guajademí Split-stem, the Manuela Contracting-stem (named for the location since they have been formally identified in this locality), Elko-like points, small leaf-shaped points, triangular points, and a large concave base, corner-notched type, proposed as the Vizcaíno Corner-notched.

What the 2002 expedition revealed is that there continues to be diversity in the projectile point (and biface) forms found along the lagoons, and there seems to be a south-to-north variation from previous results. For instance, larger forms are found in more abundance as one proceeds from Laguna Guerrero Negro to Laguna Manuela. There is the very real possibility of older evidence of human use more apparent in the northern lagoon, as well as functional (hunting-fishing) variations.



Figure 6. (left) Edge-modified flakes; (right) larger knife and scraper-like flaked stone tools.

Cores and Core Tools

There continues to be found here a wide variety of artifacts that can be labeled cores or core tools, manufactured from a variety of materials from obsidian to coarser-grained volcanics (Figure 5). Most of these artifacts are likely derived from nearby beach cobbles, but the obsidian is a long-distance import. There are two general core forms present: small bipolar obsidian nodule cores, and larger non-obsidian cores representing a number of techniques. Some of these cores resemble the long-standing centripetal core as discussed from nearby Cedros Island by Des Lauriers (2010:105-110). Bifacial cores resemble discoidals, sometimes humpbacked in appearance.

Debitage

Stone flakes are the most abundant artifact found at lagoon sites. These artifacts come from tool manufacture, use, and rejuvenation. Debitage includes obsidian, quartz, and fine-grained to cryptocrystalline and microcrystalline rock, generally volcanic in nature.



Figure 7. (left) Perforators of obsidian and crystalline volcanic rock; (right) various bifaces of volcanic material (scale is in cm).

There is a clear decline in the presence of obsidian debitage from south to north. In the central-northern Laguna Manuela samples, 6 percent or less of the debitage analyzed systematically is obsidian, and in general far fewer flakes and flake fragments of obsidian occur here. Compare this with the 74 percent obsidian debitage frequency at one Laguna Ojo de Liebre site (Ritter and Payen 1992). Quartz debitage, on the other hand, generally increases as one proceeds north up the Laguna Manuela coast, at least in the sample sites. There is also a tendency for obsidian raw materials to be smaller in size as one progresses northward up the eastern shore of Laguna Manuela. The obsidian debitage is primarily from bifacial production and maintenance. Heavier-duty core tools and larger flakes and bifaces are non-obsidian.

Burins/Burin Spalls

A burin/burin flake or spall industry, including “core” specimens from which these spalls have been derived has been identified for the two northerly lagoons (Figure 8). Most are obsidian. However, there are far fewer specimens in the Laguna Manuela sites, likely related to a dramatic drop in the availability of workable obsidian. These artifacts are derived from removing the spall or flake transversely from a larger flake or biface edge, or they are either tools in their own right or represent the rejuvenation of an obtuse-edged tool through formation by spall removal or to form a new obtuse edge. An interesting parallel in Alaska was discussed by Wenzel and Shelly (2001:119) in discussing the Arctic Small Tool Tradition, where they found that high quality and nonlocal stone material (vis-à-vis obsidian) was reserved for formal tool production, including the production of burins and burin spalls.

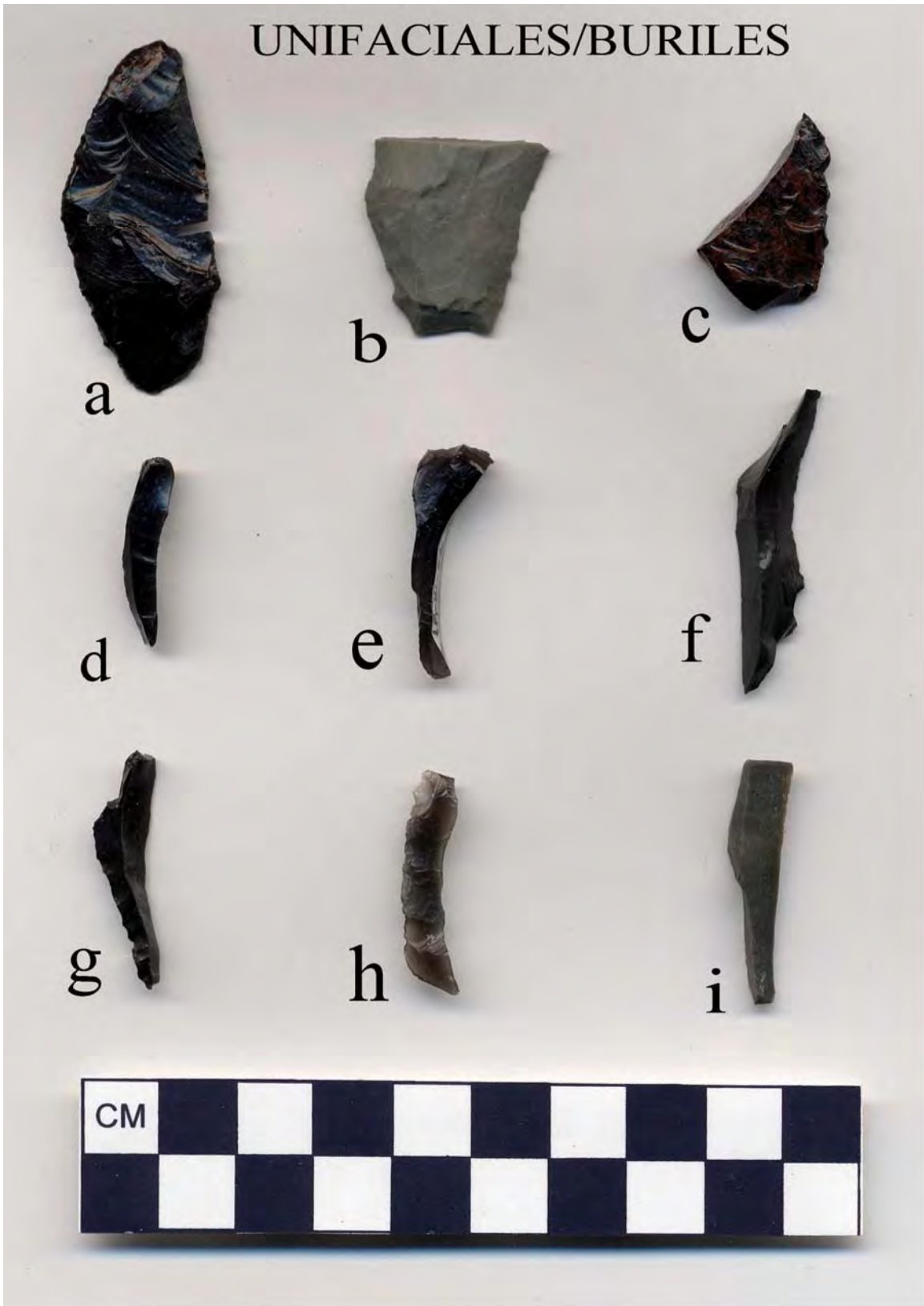


Figure 8. Upper row artifacts are unifaces; bottom two rows are burins or burin spalls.

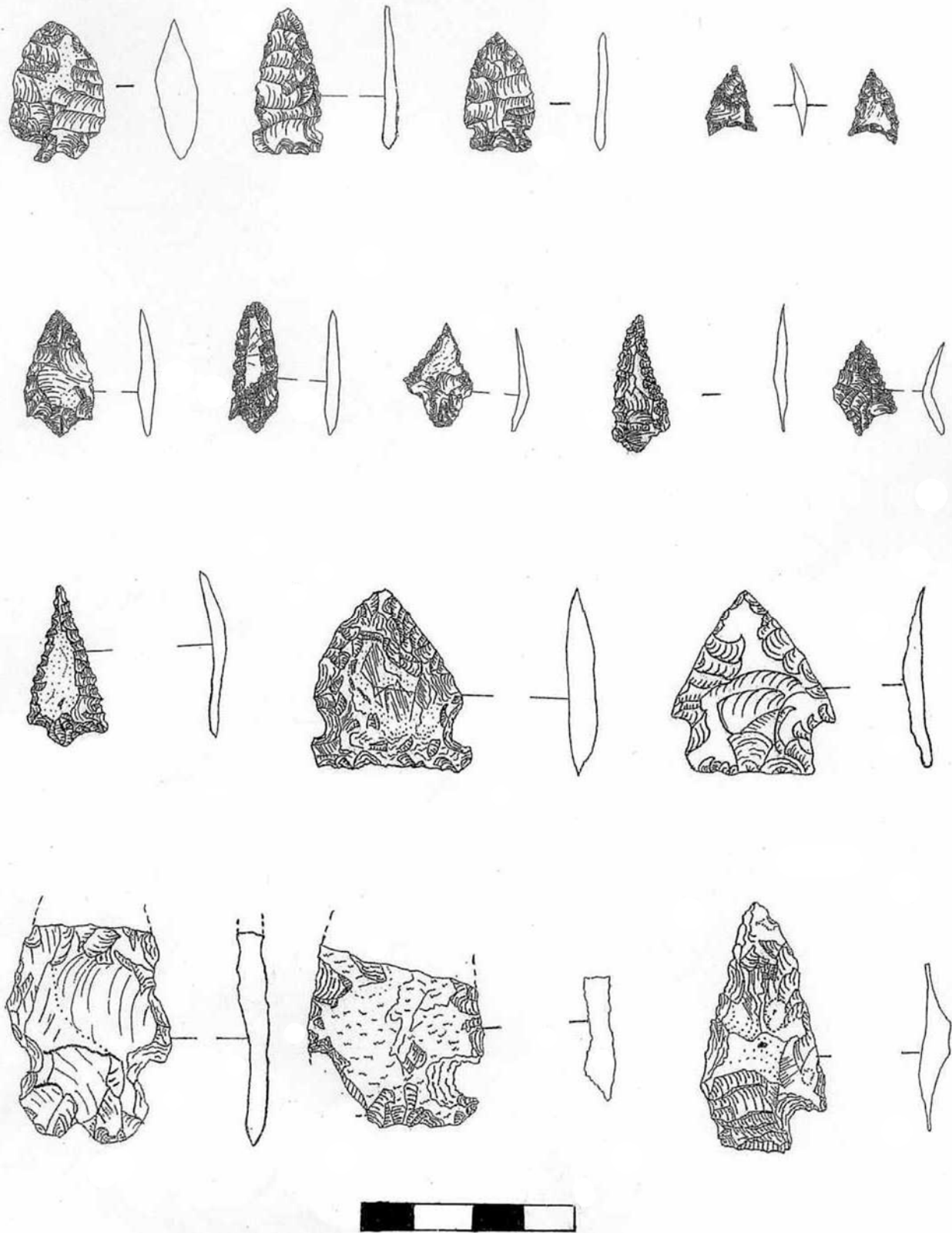


Figure 9. Projectile points; top row, left three are Guajademí Split-stemmed forms; right figure in top row is a Guerrero Negro series point; second row and left specimen in third row illustrate Manuela Contracting-stemmed points; the remaining drawings are likely Elko series points (scale is in cm).

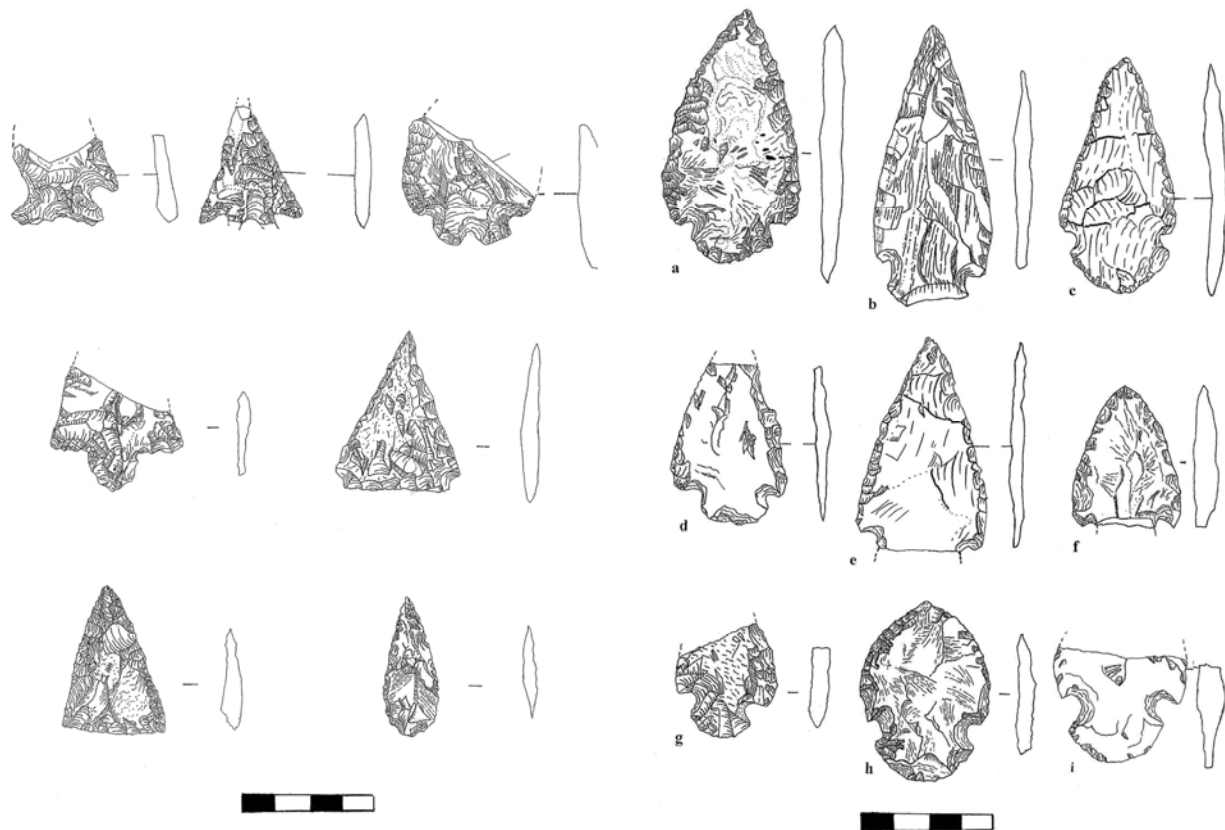


Figure 10. (left) Upper row points are Elko-like; second row, left side drawing may be of a La Paz style point; second row, right side and third row down are miscellaneous forms unique to the locality; (right) Viscaíno Corner-notched points of fine-grained to crystalline volcanic material (scale is in cm).

Shell Artifacts

Two classes of shell artifacts were recovered or noted during the 2002 season: flaked *Dosinia* sp. valves and resulting debitage, and a mother-of-pearl oval flat shell bead (Figure 11 a, c, d). Also found during the expedition was a beautiful circular ornament (about 4 cm across), slightly cupped, with 44 approximately evenly spaced notches cut around the inner or cupped edge (Figure 11b). This artifact may have been woven into a hair net (also see Massey and Osborne 1961:Plate 13). Williams (1975) has noted the widespread tradition of shell ornamentation in the ethnographic and archaeological record for the peninsula.

Faunal Remains

Southerly Laguna Manuela sample sites LM-8 through LM-12 and LM-14 are dominated by scallop (*Argopecten circularis*) shell remains, with low percentages of other shellfish species present. Toward the north, LM-13 is dominated by *Chione* sp. While the shellfish remains are not as abundant at Laguna Manuela sites as found at camps along the east shore of Laguna Guerrero Negro, Laguna Manuela sites nevertheless contain thousands to tens of thousands of these food animals.

All sites have fish bone, and many have crab remains. Infrequent occurrences of turtle (*Chelonidae*) and sea mammal bone were noted. While not quantified nor always identified by species, it is not surprising to see subsistence remains dominated by shellfish, fish, and crab, with less frequent sea mammal and terrestrial animal evidence.

ARTEFACTOS DE CONCHA

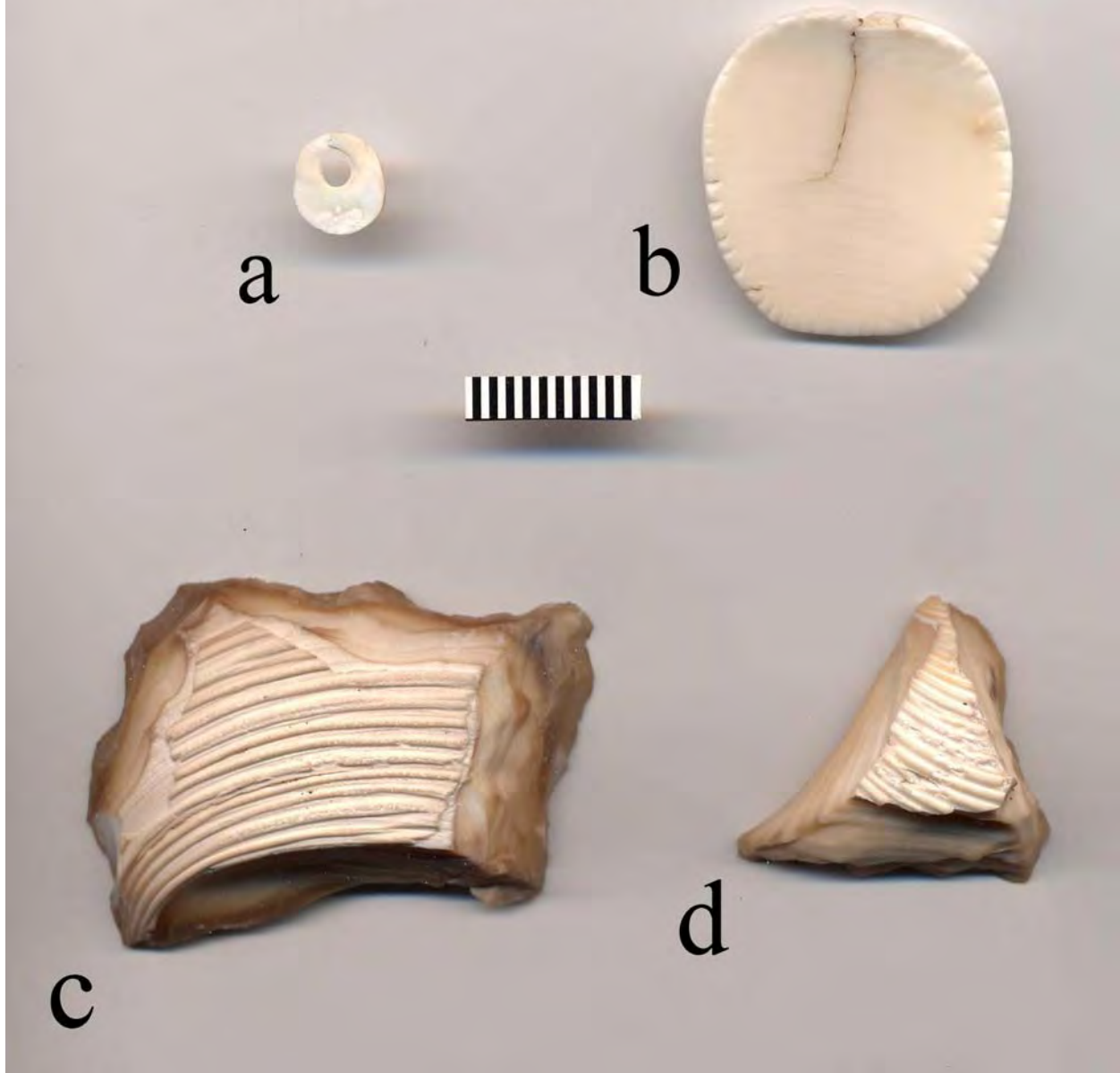


Figure 11. Shell artifacts: a. mother-of-pearl bead; b. notched rim ornament; c. and d. *Dosinia* artifacts.

Obsidian Studies

Eighteen obsidian artifacts were sampled. Thirteen are from the mountainous Valle de Azufre source, the source dominant in the various lagoon assemblages. One edge-modified flake was made from obsidian that was derived from the cross-peninsula Ángel de la Guarda geochemical source, and one possible Comondú point is made from obsidian that comes from the Puerto el Parral geochemical source in the far-off mountains near San Felipe. This and previous work continues to demonstrate a connection of sorts between lagoon visitors and central peninsula and Gulf coast locations.

The obsidian hydration calculations on 17 specimens from the 2002 season from seven sites resulted in 18 readings. Results from the Valle de Azufre specimens ranged from 2.61 to 4.09 microns. The Manuela Contracting-stem arrow points range in hydration readings on the Valle de Azufre source from 2.91 microns to 3.89, a range that can most likely be considered late prehistoric in this locality. The findings overall are generally consistent with a late prehistoric use of the eastern edge of Laguna Manuela for apparently at least hundreds if not a few thousands of years.

CONCLUSIONS

Radiocarbon dating and obsidian hydration readings, as discussed in Ritter (2006:142) for the central-west lagoons, suggest use dates here in the range of about 500 to 2,000 years ago. This time frame of human occupation has been designated the Guerrero Negro focus of the Comondú period (ca. A.D. 500 to contact), with an earlier, as-yet-unnamed period preceding.

Very few late prehistoric/protohistoric Guerrero Negro and Comondú series projectile points were found in the Laguna Manuela sites. More prevalent were Manuela Contracting-stem and Guajaderní Split-stem types (proposed late prehistoric types). Elko-like and Vizcaíno Corner-notched points at certain Laguna Manuela sites suggest coastal visits may predate the late periods, and/or there may have been scavenging of earlier points by later people or retention into the late prehistoric period.

Technology

The work in the northern part of the western lagoon system demonstrates the presence of a diverse tool kit with a predominant but not exclusive marine focus. Within the flaked stone tool category, there is a range of both locally made and rejuvenated projectile point types, but also what appears to be considerable import of point types of similar and differing forms.

Also included among the stone tools observed at the documented lagoon-edge sites are unifaces and bifaces, relatively large and small bifacial and uniface edge-flaked and/or utilized edge-damaged tools, perforators, cores and core tools, debitage, hammer stones, abraders, and milling tools. Absent from the Laguna Manuela sites observed during 2002 are burin spalls (with one possible exception) and bone tools such as awls or perforators.

The biface industry as represented in all lagoon sites can continue to be described as well-developed. There is a general continuum in forms from thinner, narrower specimens to thicker, wider ones for knife-like tools, to produce burin spalls in more southerly lagoon sites, and to manufacture projectile points.

The locality-abundant edge-modified flakes and flake fragments seem typical of a tool kit component for hunter-gatherer-forager-fisher folk undertaking frequent logistical forays.

Cores and core tools are common in sites variably ranging from small obsidian bipolar cores to larger discoidal cores. The small bipolar obsidian examples likely represent a byproduct of the manufacture of small flake tools and wedges (small tools present infrequently at Laguna Guerrero Negro sites). Larger cores/core tools probably served many purposes.

The abundance of debitage and rock fragments attests to the widespread onsite manufacture and maintenance of stone tools. Clearly, obsidian use declines as one moves from the south to the north into the Laguna Manuela zone, compensated by use of quartz and other siliceous stone. The lagoon visitors were noticeably astute at flaked stone tool reduction processes, especially with obsidian.

Abrading and milling tools are widespread in the lagoon setting. Relatively common hammer stones are present at most sites, but cobble tools generally appear to be multifunctional. Of interest is a possible stone anchor, implying the use of canoes or balsas. Overall, residential and special activity uses of the lagoons show heavy utilization of a range of tools with scavenging, reuse, caching, and implement diversity associated with the exploitation of the rich oceanic setting. It can be proposed that there was a mobile, time-stressed, freshwater-impooverished economy at the lagoons, resulting in a small tool

technology on superior imported stone that provided efficient manufacturing strategies in the direct and indirect exploitation and processing of marine foods. Kelly (2001:72) notes that a complex technology may be largely a function of acquiring fish and sea mammals, and not a direct function of sedentism.

Subsistence/Intensification

A summary of subsistence remains has been previously presented (see Ritter 1999, 2002, 2006:147-148). Overall, the tens of millions of shellfish remains indicate heavy exploitation of lagoon gastropods and bivalves. There is an apparent decline in the intensity of faunal exploitation as one proceeds from the eastern shoreline sites of Laguna Guerrero Negro to the eastern shoreline sites of Laguna Manuela. This may be from fewer folks visiting this vicinity, fewer trips, shorter durations of overall human use, or some combination of factors. Fish remains are also abundant and were a profound component of the local diet.

While there is no formal faunal analysis undertaken at the newly discovered Laguna Manuela sites, there is evident a clear paucity of use of sea turtles and sea mammals by the residents. Furthermore, few bone remains of terrestrial mammals were observed. One must be mindful of studies such as Politis (2007:324) where certain food taboos and exploitation variations may have an ideational-cosmological basis affecting the zooarchaeological record.

Maritime food acquisition skills were well-developed by late prehistoric times, if not before. Why there was an apparent surge in exploitation of the central Pacific coast in late prehistoric times remains something of a mystery. Are the data misrepresentative, due to site preservation factors? This author (Ritter 2002:178) has previously offered some suggestions, but the 2002 work does little to clarify this issue.

Residential/Activity Locations

There is a continuation from the Laguna Guerrero Negro shore (in reduced size) of closely spaced presumed residential/activity locations or archaeological patches forming a ribbon along the late Holocene shoreline/coastal dune setting on the east side of Laguna Manuela (Figure 1).

While far from certain, it would seem that the bay ecosystems differ between Manuela and Guerrero Negro, with the former shallower (infilling with sediments at a more rapid rate than lagoons to the south) and experiencing dramatic tidal fluctuations. Overall, the Laguna Manuela data indicate very temporary residency by work/family groups, with multiple tasks undertaken related to marine and terrestrial food searches and tool production and maintenance. It would appear that the Laguna Manuela and Laguna Guerrero Negro shorelines experienced relatively long-term (2,000+ years), overlapping use by visiting family and work groups from areas to the east and northeast (see Figure 12).

Mobility

The archaeological evidence is suggestive of the Gulf pattern of the Comcáac (Seri) (see Felger and Moser 1985:3), where fresh water limited the coastal visits to small, mobile social groups of a few extended families utilizing temporary camps.

Labor and Cooperation

There may have been a surplus of sorts (beyond the day-to-day needs) in food and animal byproducts produced for transportation back to mountain camps (see Ritter 2006:149-150). This could have included items like dried and powdered foods, such as fish and mollusks.

Territoriality

Over the course of peninsular prehistory, it is proposed that native groups of hunter-foragers established territoriality measured at contact by linguistic and cultural variability (cf. Massey 1949). One

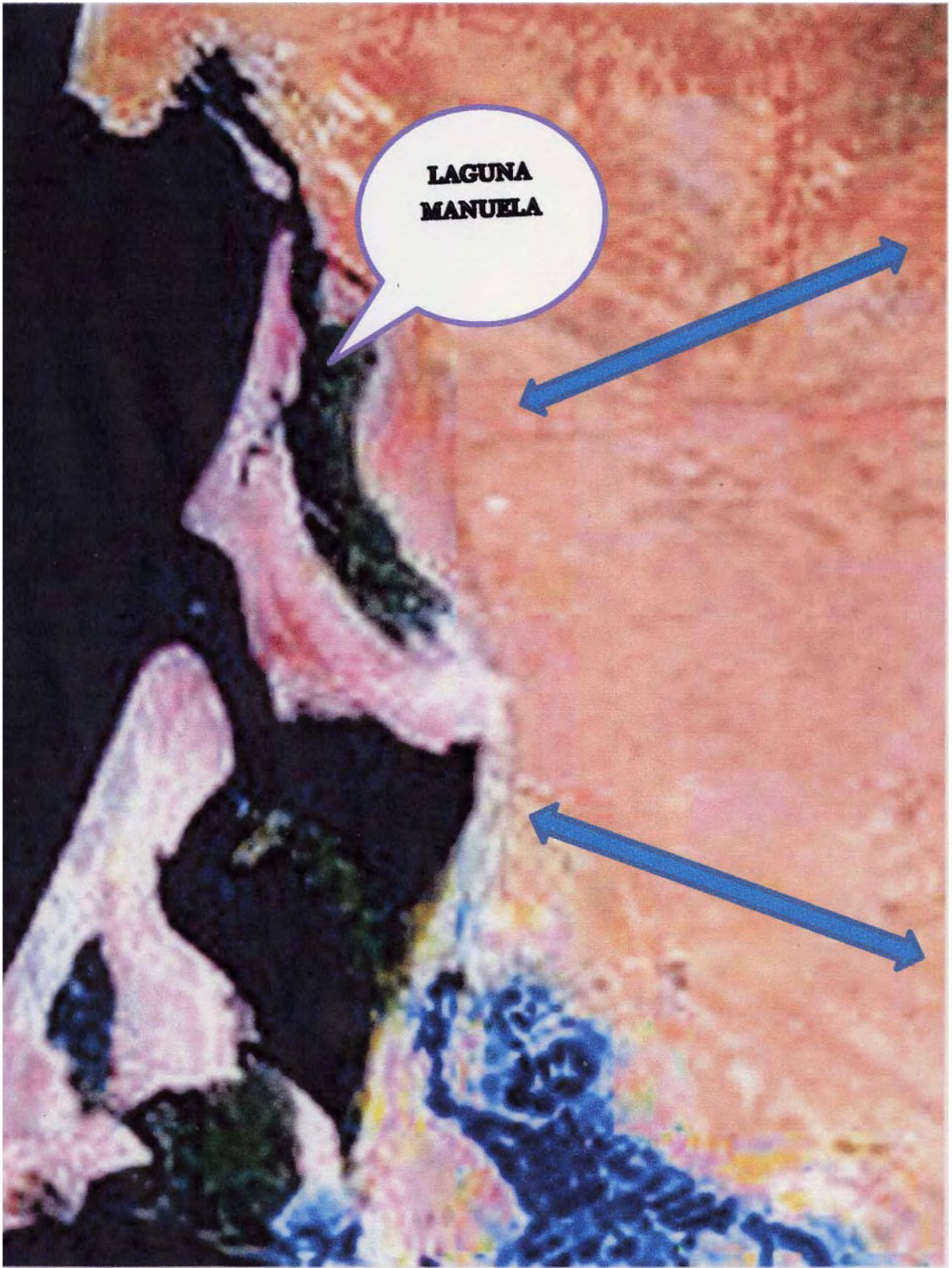


Figure 12. Satellite image of west-central peninsular lagoons illustrating proposed mobility pattern from mountain settlements to the study lagoons.

such locality that has been shown to have a measure of cultural and, to a lesser extent, environmental variability is the multi-lagoon system discussed herein. What might this variability reflect? An ecological model of Dyson-Hudson and Smith (1978) in hunter-gatherer research was tested positively by Andrews (1994) among Alaskan *Yup'ik*. These people, who rely heavily on aquatic resources, were found to have territoriality occurring where critical food resources were dense and predictable, very possibly the case in these lagoons as well.

Silberbauer (1994:133), in studies among the *G/wi* of the central Kalahari of South Africa, found territorial boundaries reached by band agreement, in essence providing convenient security in the use of resources. Among Australia's *Pitjantjatjara*, a similar situation exists, with territory being the space surrounding the group, not a fixed area of land with band responsibility (Silberbauer 1994:126). As noted by Chapman (1986), hunter-gatherer territory should be considered flexible, and delineation considerable. Peterson (1979:111, 125) even goes so far as to consider territoriality among hunters-gatherers to perhaps be a fallacy. In any case, there seems to be archaeological evidence that suggests lagoon use was culturally differentiated not so much in exactitude but more by degree or cline.

Thus, the variability in the archaeological assemblages at the two northerly lagoons may reflect a late prehistoric cultural division that was manifested in inland and west-coast locations, similar to that reported historically (see Figure 12). This variation may approximate the historic division of groups around Mission San Borja and the Sierra de San Borja and groups around Santa Gertrudis and San Ignacio in the Sierra de San Juan and Sierra de San Francisco (Aschmann 1959:Maps 8 and 9). A set of lagoons rich in food resources may well have encouraged the roots of this regional differentiation, coupled with sierran or inland variations reflected in the upland geography, hydrology, and plant and animal resources and, possibly, even in ideologically related space as perhaps exhibited in the rock art (cf. Ritter 1995b).

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