Matanchen Complex: New Radiocarbon Dates on Early Coastal Adaptation in West Mexico

Abstract. *Samples of marine shell from archeological context on the coast of Nayarit, Mexico, have given radiocarbon determinations of 1810 ± 80 B.C., 2000 ± 100 B.C., and 2100 ± 100 B.C. Even with maximum correction for upwelling these are the earliest dates for coastal occupation in West Mexico north of Acapulco, Guerrero. Analysis of the midden contents has provided new insights regarding early coastal adaptation.*

During 14 months in 1967–68, archeological research was conducted in the municipality of San Blas along the coast of south-central Nayarit, Mexico (Fig. 1). The investigations yielded information on five major archeological complexes that appear to represent separate distinctive ecologically adaptive systems (*1*). On the basis of internal evidence and external comparisons, plus 52 obsidian hydration measurements and two preliminary radiocarbon determinations, a sequential ordering of the five complexes was proposed (*1, 2*). An important initial result of this study was the postulation of one archeological unit, the San Blas complex, as predating the Early Ixtlán complex—previously the earliest cultural development known for coastal Nayarit.

The cultural debris of the San Blas complex appears to indicate an ecological orientation based on exploitation of a great variety of naturally productive microenvironments found concentrated within a short distance of the San Blas complex sites (Fig. 1a, SB-16 and SB-17), and the artifacts seem to reveal some relationship with early Formative developments along the Pacific coast of Guatemala and Chiapas. A concentrated microenvironment hypothesis, based on the studies by Coe and Flannery (*3*), has been suggested to explain the nature of San Blas complex adaptation and cultural affiliation (*4*).

At the time of Mountjoy's original study an even earlier cultural adaptation, the Matanchén complex, was proposed (*1, 2*), although it was represented at only one of the 46 sites studied and a secure placement in time was not available for the deposit. Now, however, three samples of marine shell from the Matanchén complex deposit have been radiocarbon dated. These dates not only confirm the original placement for the Matanchén complex in the local sequence, but show it to represent the earliest known coastal occupation yet found in West Mexico north of Acapulco, Guerrero (*5*). Study of the Matanchén complex deposit, therefore, provides some new insights for understanding man's early adaptation to the West Mexican coast.

The Matanchén complex is known from investigations at one site (SB-4, Lower Ceboruco), situated on the eastern (leeward) side of Cerro Ceboruco near the base of the hill (Fig. 1a). Ceboruco is one of three volcanic hills that jut up from the flat coastal plain around San Blas. To the south, Ceboruco overlooks the Pacific Ocean and Matanchén Bay, and to the southeast lies the sandy expanse behind Matanchén Beach, which stretches back toward the foothills that rise to the east. Northward are the mangrove swamps and the spring-fed Paseo de la Tovara, which empties into the Estero de San Cristóbal bordering Cerro Ceboruco on the west. The SB-4 site is located in a sheltered spot about 5 to 10 m above sea level, between the Paseo de la Tovara stream and the northern end of Matanchén Beach.

Due to limitations of time, funding, and overall research design, it was impossible to deal extensively with the SB-4 site during the 1967–68 field season. At that time the site was being excavated and hauled away for use as road-fill, despite attempts (at both local and national levels) to prevent its destruction. An effort was made, however, to visit the site periodically in order to collect at least a sample of every species of shell in the deposit and note any artifacts that were unearthed. The site was visited again, briefly, during the summer of 1970.

Because of the extensive damage that had occurred by the time the site was discovered, it is impossible to describe the original condition of the midden. As best can be determined, it once measured at least 90 m long (north-south) and 40 m wide. In one place about 4 m of deposit was found exposed in a vertical profile, but the total depth of the midden may extend down another meter or more. The upper meter of the deposit was quite distinctive. It consisted of dark soil with relatively few shells, some flakes of obsidian, and a few pottery sherds. Because some of the sherds were of the locally defined Los Cocos complex (*6*), it is be-

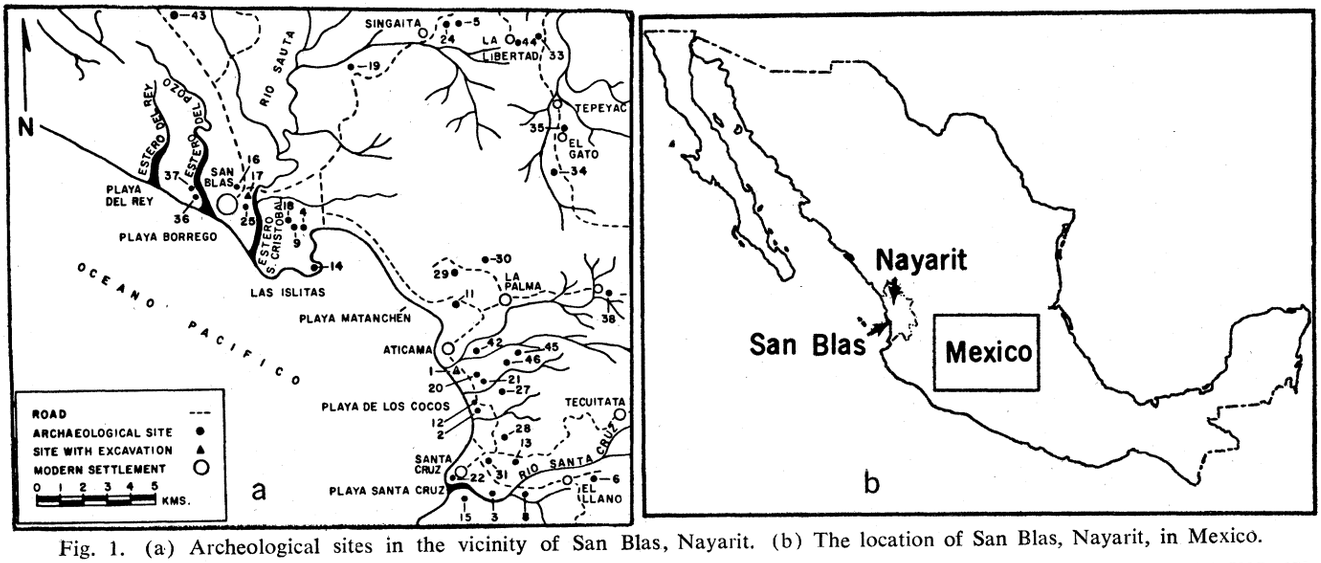

Fig. 1. (a) Archeological sites in the vicinity of San Blas, Nayarit. (b) The location of San Blas, Nayarit, in Mexico.

lieved that the upper meter can be attributed to the people who inhabited terraces on the upper eastern slope of Ceboruco (Fig. 1a, SB-9) during the early part of the West Mexican Postclassic period.

The lower 3 m of the deposit, however, consisted almost entirely of shell, and no pottery was found. In all, 13 different species of shell were recovered from exposed profiles and areas of the disturbed deposit that appeared to correspond to the nonceramic strata at the site (Table 1). By far the most abundant shells were of *Aequipecten circularis*, *Chione undatella*, and *Cardita laticostata* (*7*). These were also the most prevalent species found in the San Blas complex deposit at the SB-17 site. Within the exposed shell-midden deposit were large lenses comprised almost entirely of *Aequipecten circularis* and *Chione undatella*, which apparently indicates that at certain times they were specifically sought or obtained exclusive of other genera. According to Feldman, the abundance of *Aequipecten circularis* in the San Blas area in an archeological context during early times is extraordinary. Because these free-swimming shellfish live at a distance of 11 to 65 m from shore, their presence may indicate the existence of a deepwater shell-fishing industry (*8*). The other species of shell are primarily from intertidal sand beaches, sand flats, and areas of shallow water along rocky shoreline.

The undamaged condition of so many of the pelecypod shells that were found in the downslope portion of the SB-4 site indicates that they may have been boiled or baked before consumption of the inhabitant. Such a process would cause the shells to open slightly and make the meat more readily accessible. Few of these shells are burned, but many fractured rocks were found scattered among them. The gastropod shells (*Melongena patula* and *Muricanthus nigritus*), however, have been bashed open in order to extract the inhabitant. Perhaps in their case boiling or baking would not make the inhabitant any more accessible. Upslope, the shell deposit is much more compacted and the shell extremely fragmented, and there are some charred areas that appear as if fires were once built on top of former midden surfaces.

The evidence at SB-4, especially when compared to the succeeding San Blas complex, suggests that the people responsible for the Matanchén complex debris had a decidedly one-dimensional adaptive orientation, and a pattern of seasonal movement for exploitation of various food resources may be indicated (*9*). In all of the shell deposit inspected, bones are rare. Only ten fragements that can be attributed to the nonceramic (Matanchén complex) deposit have been recovered. This can be compared with a bone-to-shell ratio of approximately 1 : 23 for the later San Blas complex deposit. The bones include one fish vertebra, a few sea turtle bones, and one large bird bone, possibly pelican.

Also, stone tools are quite scarce. In all, 44 irregular obsidian flakes with chipping along the edges indicative of use, two crude obsidian projectile points (?), and two chert flakes were recovered from the general area of the SB-4 site. However, it is likely that most, if not all, of them pertain to the Los Cocos complex stratum. Only three obsidian flakes and one disk-shaped rhyolite flake with chipping along one edge could be directly associated with the nonceramic (Matachén complex) strata. In addition, three small rhyolite cobbles with notches in the sides are believed to pertain to the nonceramic levels. One of these is chipped along one edge and could have been used as a chopping tool. The other two are smooth and may have been hafted to serve as hammers, although it is possible that all three were used as weights for fishing nets.

Samples of marine shell were obtained from three different areas of the nonceramic strata at a depth of about 2 to 3 m below the original surface of the shell midden. One of these samples (UCLA-1652E) has yielded a radiocarbon date of 1810 ± 80 B.C., the second (UCLA-1652A) a date of 2000 ± 100 B.C., and the third (UCLA-1652C) a date of 2100 ± 100 B.C. The maximum correction of these results for possible error caused by upwelling (*10*) would indicate dates no younger than about 1570 B.C. Three samples of marine shell from the succeeding San Blas complex deposit substantiate the priority of the Matanchén complex. Their radiocarbon ages have been determined, with maximum correction for upwelling, as no younger than 450 ± 85 B.C. (UCLA-1451B), 475 ± 80 B.C. (UCLA-1652D), and 485 ± 80 B.C. (UCLA-1451A) (*11*).

It is believed that the Matanchén complex adds another link to the growing chain of preceramic shell-midden deposits which have been found from central California to perhaps as far south as Panama at a date of around 2000 B.C. At present we do not know to what extent these early shell-midden deposits represent parallel, independent adaptations to similar ecological settings or unified, specialized coastal adaptation by historically related peoples. Certainly this problem deserves further investigation.

Table 1. Classification of shell found at the SB-4 site. It is possible that all of the samples in the general collection pertain to the nonceramic deposit since they were collected from areas of disturbed deposit where no pottery was found.

Genus and species	General	Lower 3 m
Aequipecten circularis	X	X
Chione undatella	X	X
Cardita laticostata	X	X
Muricanthus nigritus	X	X
Melongena patula	X	X
Anadara grandis		X
Anadara tuberculosa	X	
Ostrea iridescens	X	
Arca pacifica		X
Megapitaria squalida		X
Pitar sp.		X
Pitar lupanaria	X	
Chama sp.	X	
Chama frondosa		X
Calliostoma bonita	X	X
Natica chemnitzii	X	X
Patella mexicana		X
Fisurella virescens	X	

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References and Notes

1. J. B. Mountjoy, dissertation, Southern Illinois University, Carbondale (1970).
2. ———, *Boletín* **39**, 41 (1970).
3. M. D. Coe and K. Flannery, *Science* **143**, 650 (1964).
4. J. B. Mountjoy, "San Blas complex ecology," paper presented at the 35th annual meeting of the Society for American Archaeology, Mexico City, Mexico, 1970.
5. C. F. Brush, *Science* **149**, 194 (1965).
6. The complex is believed to date in the range of about A.D. 500 to A.D. 900.
7. The initial sorting was by J. B. Mountjoy and the classification by L. H. Feldman.
8. L. H. Feldman, in preparation.
9. Feldman notes that *Patella mexicana* can only be harvested in the dry season at Teacapán, Nayarit.
10. Upwelling refers to the removal of surface ocean water and its replacement by water welling up from deeper layers characterized by a greater apparent radiocarbon age [R. Berger, R. E. Taylor, W. F. Libby, *Science* **153**, 864 (1966)]. A maximum correction of 240 radiocarbon years is being used.
11. R. E. Taylor, dissertation, University of California, Los Angeles (1970).
12. Supported by NSF grant GS-1387 and the Southern Illinois University Graduate School and Department of Research and Projects. Radiocarbon studies were funded by NSF grant GA-4349. Permission to carry on the investigations was granted by the Instituto Nacional de Antropología e Historia, Departmento de Monumentos Prehispánicos, Mexico.

16 November 1971; revised 3 January 1972