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THE JELÍ PHASE COMPLEX AT LA EMERENCIANA,
A LATE VALDIVIA SITE IN SOUTHERN EL ORO PROVINCE, ECUADOR

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Introduction

Over forty years ago, Emilio Estrada (1956, 1958) initiated excavations at a shell midden (G-31)¹ in Guayas Province, east of the fishing village of Valdivia. There he identified a previously unknown ceramic complex which he classified as the Valdivia Phase. The Valdivia deposit was, on the basis of stylistic similarities, initially estimated to be contemporaneous with Initial Period pottery from the Early Ancón and Guañape cultures of coastal Peru (Estrada 1956: 9-16; 1958:98). Estrada (1958:7, 12) correctly surmised that Valdivia pertained to the Early Formative Period. Later radiocarbon evidence supported his conclusions, revealing Valdivia as one of the preeminent early ceramic cultures of the New World (Bishof 1972, 1980; Bishof and Viteri Gamboa 1972; Damp 1984a, 1984b; Lanning 1968; Lathrap *et al.* 1977; Lippi 1983; Marcos 1988a; Meggers *et al.* 1965; Norton 1977; Raymond 1989, 1993; Raymond *et al.* 1994).

Despite extensive research on Valdivia, the final portion of the sequence was not well understood, and its relationship to the Middle Formative Period Machalilla Phase has remained problematic. Early conclusions about the relationship of these cultures were based upon a few sites with deeply stratified middens, all in coastal Guayas Province or southern Manabí Province. Excavators of some sites in these regions reported remnants of habitation

structures with evidence of related domestic activities. These scholars concluded that the Valdivia population was sedentary. Their investigations recorded evidence of early mound building and U-shaped village plans at ceremonial sites such as Real Alto (Damp 1979:61-68, 72-79, 1984a, 1984b; Lathrap *et al.* 1977; Marcos 1988a:137-140, 1988b:9-13; Marcos *et al.* 1976; Raymond 1993; Stahl and Zeidler 1990; Zeidler 1984:59, 63-64, 68-70, tables 2-3, maps 8-34, 1987).

Recent research in northern Manabí, the Gulf of Guayaquil region, and southern El Oro has revealed sites pertaining primarily to the final portion of the Valdivia sequence. In northern Manabí a terminal Phase VII occupation was identified in regional survey and at the site of San Isidro. In the Gulf of Guayaquil area a Phase VII-VIII component was reported at San Lorenzo del Mate. Valdivia occupation dated to between 2000 and 1600 B.C. has been identified in El Oro Province (Figure 1).

Southern El Oro encompasses the coastal lowlands from the Jubones River to the Zarumilla River at the border with Peru (Figures 1-2). The climate in this region is semi-arid, with annual precipitation between 129 and 709 mm. The vegetation is xerophytic tropical forest. In addition, mangrove forests and wetlands are extremely rich in natural resources and play an important role in long-term human adaptation to this region (Figure 3). Until recently, the prehistory of coastal El Oro Province was largely unknown (Burger 1984; Netherly *et al.* 1980; Quilter 1981).

¹ The site numbering system employed in this paper is that established by Ecuador's Patrimonio Cultural del Litoral de Ecuador.

The research presented in this paper includes results from survey between the Arenillas and Buenavista Rivers, and analysis of sherds from La Emerenciana, a Late Valdivia site north of the town of Santa Rosa (Figure 4). La Emerenciana (OOSrSr-42) was one of eleven Late Valdivia sites identified in my survey (Figure 5). Excavations have revealed a previously unreported Late Valdivia component designated the Jelí Phase (Staller 1994).

This analysis represents a reconsideration of Valdivia and Machalilla chronology and affiliations achieved through a comparative analysis of diagnostic ceramic attributes. I identify and describe the Jelí Phase diagnostic pottery on the basis of attribute analysis of over 30,000 sherds from large-scale excavations at La Emerenciana. Diagnostic ceramics are reconstructed as whole vessels and put into formal classes. The archaeological results force us to reconsider the role of southern coastal Ecuador in Formative prehistory. I briefly re-examine sociocultural developments in the highlands of Ecuador and Peru, and in coastal Peru during the final epochs of the Early Formative Period (ca. 1850-1650 B.C.).

Early Research in El Oro Province

Archeological survey by Estrada, Meggers, and Evans along the mangrove islands of coastal El Oro Province concluded that this area was not occupied until late in the prehispanic sequence of the region. Estrada and his colleagues suggested that this was a political and geographic frontier, with a culture history distinct from southwestern Ecuador and far northern Peru (Burger 1984; Estrada *et al.* 1964:489; Evans *et al.* 1959: figure 1; Meggers *et al.* 1965: figure 2). Specifically, the division falls between the lowlands south of the Jubones River in southern Ecuador and the Chira Desert in far northern Peru (Figure 2). The region was thought to have been first occupied by mangrove fishing people whose Jambelí culture was dated, on the basis of pottery, to the Regional

Developmental Period (ca. 500 B.C. to A.D. 500) (Figure 6).

Contrary to the early conclusions, a large Early Formative Period (3500-1500 B.C.) Valdivia occupation zone extends to southern coastal El Oro (Figure 5). This study presents the first evidence of extensive Late Valdivia occupation in the region. In this case, it is dated to the end of the sequence, the portion that is the least known archaeologically (Figure 6).

The relationship between Valdivia and Machalilla has been debated for some time by archaeologists working in coastal Ecuador. This study shows that there is archaeological evidence for a development transition linking these cultures. The transition is regional in nature and appears to be related to the elaboration of long-distance interaction networks. Various studies have suggested that the development of interaction spheres was a major factor in stimulating changes in prehispanic economies and social organization in western South America (Lathrap 1971, 1973; Burger 1992:102-103, 209, 211-212). The archaeological evidence linking the Valdivia and Machalilla Phases with various highland and coastal cultures is compared to similar links reported by archaeologists for other parts of the world.

Archaeological Evidence for the Valdivia Chronology

The Valdivia Phase has commanded considerable attention from South American scholars because of its great antiquity. It represents one of the oldest complexes in the prehispanic New World and has been believed to have played an important role in the development of ceramic innovations in other regions of the hemisphere (Ford 1969). Comparisons reveal that early pottery complexes from different geographic areas resemble one another. Stylistically, these complexes diverged radially in the later Formative complexes (Hoopes 1994). Valdivia was interpreted as a nomadic coastal culture with subsistence dependant upon shellfish collecting,

fishing, and gathering (Meggers *et al.* 1965:23-25). This interpretation contradicted a prevailing notion among archaeologists that pottery was a marker of sedentary Formative agriculture (Lathrap 1967:82-88, 1970:58, 68-179; Lathrap *et al.* 1975:19-22).

Most early investigators working in coastal Ecuador perceived culture change as the end result of either stimulus diffusion, migration, or invasion, generally radiating from areas of greater sociopolitical complexity to regions of less complex social organization, and from regions with richer environments to more marginal areas (Staller 1994:12-16). Esmeraldas Province and the Guayas Basin were the only areas in coastal Ecuador where the environment and climate are apparently amenable to intensive agriculture, and, therefore, social stratification and cultural innovation (Evans and Meggers 1957). However, in coastal Ecuador aquatic resources are available year-round (Meggers 1966:20-21). Nevertheless, most early theoretical constructs interpreted cultural complexity in tropical coastal environments as either intrusive from the Andean highlands, or a result of diffusion, migration, or invasion from the nuclear areas of Mesoamerica or highland Peru. The early origin of pottery technology in coastal Ecuador was also considered to be a result of diffusionary processes (Estrada *et al.* 1964; Lathrap *et al.* 1975:21, 23, 30, 45, 47; Meggers 1987; Meggers *et al.* 1965:157-178; Meggers and Evans 1966a, 1966b). All these scholars envisioned the environment as the most critical factor for understanding sociocultural development (Roosevelt 1980:13-24, 39-49, 1991:107). However, it was differences in specific, disputed details that formed the basis for the theoretical underpinnings and research designs of most of the archaeological research in coastal Ecuador (Staller 1994: figure 6).

The Valdivia chronology was initially established on the basis of 21 radiocarbon dates

ranging from 3000 to 1000 B.C.,² and the phase was divided chronologically into four subphases designated from early to late, as Periods A to D (Evans *et al.* 1959; Meggers 1966:34-42; Meggers *et al.* 1965:149, 151). The Columbia University excavations directed by Lanning (1968:40) at two sites (G-42A and G-172) reported uncalibrated radiocarbon dates ranging from 2700 to 1500 B.C. (Lanning 1967:85; Willey 1971:270). However, radiocarbon samples subsequently taken from the Loma Alta site (G-182) indicated that the beginning of the Valdivia cultural sequence was between 3500 and 3300 B.C. (Damp 1979, 1984a; Norton 1972, 1977; Stahl 1984). A number of coastal chronologies were published for Valdivia (Figure 6). Differences in the chronological ranges primarily reflect the intensity of archaeological research, and time of Valdivia occupation of various regions of the coast (Staller 1994: figure 7).

Various Valdivia settlement surveys in coastal Guayas and southern Manabí suggested that sites pertaining to the final portion of the sequence were fewer and smaller than those from earlier periods. A Late Valdivia occupation in the Gulf of Guayaquil at Punta Arenas Peninsula was explained by Meggers and her colleagues (1965:90, 95, 172) as the result of a migration. In fact, they used sherds from sites from the area as diagnostic ceramic markers of Period D. However, in over twenty years of research on Valdivia, a firm terminal date for the culture has not been established through ceramic seriations, excavations, or radiocarbon dates. Despite the absence of such direct evidence, the end of the Valdivia sequence has been tentatively estimated at around 1500 B.C. (Damp 1984b; Lathrap *et al.* 1975:16, 33). The difficulty in documenting the end of the phase is to some extent related to the fact that all

²Following standard practice among Ecuadorian archaeologists, unless otherwise noted dates are reported here as uncalibrated radiocarbon dates converted to B.C. dates by subtracting 1950 years. Calibrated dates are denoted as "cal B.C." and given as a one sigma range.

early research in coastal Ecuador was confined to the Santa Elena Peninsula and coastal Guayas between the Verde and Valdivia Rivers, regions where sites pertaining to the early portion of the sequence predominate (Figure 7).

On the basis of survey and excavated collections from the Santa Elena Peninsula, southern Manabí, and the Guayas Coast, Edward Lanning proposed a preliminary Valdivia ceramic sequence of nine phases (Lanning 1968). It is significant in this regard that Lanning was the only archaeologist to study Early Formative pottery from both coastal Guayas and early Initial Period assemblages from the northern and central coasts of Peru (Lanning 1960, 1963, 1968). Drawing on this background, Lanning (1968) expressed the opinion that Valdivia ceramic technology was a pristine coastal phenomenon that developed *in situ*, and that Machalilla was directly derived from the Valdivia tradition.

One of Lanning's students, Betsy Hill, reanalyzed the Columbia University sherd collections and presented a revised eight-phase Valdivia sequence (Hill 1972-74). In this seriation, sherds were analyzed by stylistic attributes, vessel forms, themes, and decorative patterns (Rowe 1961). Hill (1972-74:19, 24) discovered while attempting to merge Period C material from the site of Buena Vista (G-54) with diagnostic sherds excavated at Valdivia (G-31) that there was a discontinuous frequency curve in fillet appliqué and brushed attributes. The discontinuity in attribute frequencies was considered to be related to mixing in the Cut 1 excavations at Buena Vista, because it was dug by 10 cm increments on a sloping river terrace at the base of a steep hill (Meggers *et al.* 1965: 18). The frequency distributions suggested that inverted stratigraphy or secondary deposits and late Period C diagnostics corresponding to Phases VII and VIII were, in fact, early Period C (Hill 1972-74:19-20, 25). Most Ecuadorian scholars prefer the eight-phase sequence over the Period A-D seriation because it recognizes that Period C sherds excavated at Buena Vista

are representative of Phase VI (Figure 8). The Phase VIII diagnostic ceramics were derived from a small site (OGSE-46B) located a few meters from the shore of La Libertad on the Santa Elena Peninsula (*ibid.*:20-21). Nevertheless, the middle portion of the sequence (Phases III-V) was based solely upon surface finds from four disturbed middens west of La Libertad, and divisions between these phases were arbitrary because reliable temporal differences could not be discerned in the collections (*ibid.*:13, 15). An absence of dates or stratigraphic evidence to establish phase distinctions was due to shallow and disturbed archaeological deposits and small sherd samples (*ibid.*:15). Lanning (1968) isolated Phase VI diagnostic sherds, but noted that they were rare in the Santa Elena Peninsula.

Table 1: Conventional Radiocarbon Dates from La Emerenciana

Laboratory N ^o	¹⁴ C Age B.P./ Corrected ¹⁴ C Age B.P.	Calib 4.1.2 1-σ age range B.C.
SMU-2241	3361 ± 246 B.P.	1935-1323 cal B.C.
SMU-2226	3400 ± 220 B.P.	1941-1428 cal B.C.
Beta-125106	3720 ± 40 B.P./ 3700 ± 40 B.P.	2137-1979 cal B.C.
SMU-2225	3707 ± 148 B.P.	2288-2245 cal B.C.
Beta-125107	3810 ± 50 B.P./ 3860 ± 50 B.P.	2240-2201 cal B.C.
SMU-2563	3775 ± 165 B.P.	2459-1922 cal B.C.

Note: All material dated is charcoal. Beta dates are AMS dates corrected for ¹³C/¹⁴C fractionation. SMU dates are standard assays. All dates were calibrated using Calib 4.1.2 (Stuiver *et al.* 1998), with the minus 24-year Southern Hemisphere atmospheric sample adjustment and are reported here as a one-sigma range. Staller (1994: figure 5, p. 55, pp. 393-394, 396) provides further information on the SMU dates. All dates are from Stratum 5 except for SMU-2241 which is from Stratum 6.

A date for the end of the Valdivia sequence was tentatively fixed by Hill on the basis of two uncalibrated dates from site OGSE-46B, a 2870-1940 B.C. (L-1232H) date, and another 2570-1740 B.C. (L-1232I) date associated with Phase VII pottery (Hill 1972-74:21). These dates suggested the culture sequence ended sometime after 2300 B.C. A shell sample from Valdivia layers at Buena Vista, 1890-1620 B.C. (SI-69)

suggested an end date of around 1700 B.C. for Valdivia (Meggers *et al.* 1965:149). A clear ceramic transition between Late Valdivia and Early Machalilla pottery was never identified by investigators on the Santa Elena Peninsula, or elsewhere in coastal Guayas (Hill 1972-74:20). In northern Manabí Province, at San Isidro, recent radiocarbon dates have more firmly established an end date of 1650 B.C. (uncalibrated) for Valdivia in this region (Zeidler 1988, 1992). An uncalibrated radiocarbon sample from the final occupation layer (Stratum 6) at La Emerenciana and associated with Valdivia Phase VIII pottery was 3361 ± 246 B.P. (1411 B.C. uncalibrated). One of the five radiocarbon samples from the underlying Stratum 5 (Phases VII-VIII) was similar, at 3400 ± 220 B.P. (1450 B.C. uncalibrated), though the other dates for this Stratum ranged from 1750-1910 B.C. (uncalibrated) (Table 1). The two dates around 1450 B.C. may suggest a late end for Valdivia in El Oro, but their large standard deviations do overlap at one sigma with the Manabí date. Thus, the end date for Valdivia remains in question, but probably falls somewhere between 1650 and 1450 B.C.

The stylistic and formal distinctions of these ceramic assemblages appear to be both contemporary and regional in nature and reflect sociocultural developments and settlement patterns. With ever increasing detailed information on specific regional sequences, the ability of pottery seriations to make broad comparisons significantly declines (Hoopes 1994). It is obvious from what is presented in the following ceramic analysis that the formal and stylistic attributes that defined the later phases of the Hill seriation were derived from sherd collections that did not contain the total range of variability of pottery forms and attributes found in northern Manabí, southern El Oro, or the Punta Arenas Peninsula.

For coastal Guayas, Damp (1984b) suggested subdividing Valdivia into three major periods, an early Period A, a middle Period B, and a late Period C (Figure 8). Zeidler (1991:

figure 2) proposed a similar division (early-middle-late) for northern Manabí, but added a Terminal Valdivia subphase (1800-1650 B.C.) called Piquigua Phase. This reflects technical and stylistic differences in northern Manabí. Most archaeologists recognize a significant technical and stylistic divergence from earlier phases in Valdivia pottery during and after Phase III (Lathrap *et al.* 1977; Zeidler 1984). Pottery underwent another technological and stylistic divergence outside the area of initial development in the final portion (Phases VII-VIII) of the Valdivia sequence (Staller 1994:355).

The problem of developing a finer chronology was compounded by the homogeneous grey ashy matrix that characterizes most Valdivia sites, making excavation by natural layers extremely difficult. Moreover, most early excavations at Valdivia sites focused upon developing a ceramic seriation by digging primarily in deep deposits that contained the greater portion of the culture sequence (Damp 1979; Lathrap *et al.* 1975; Meggers *et al.* 1965). The possibility for mixed and inverted stratigraphy was greater given the deep, complex stratigraphy.

In the Gulf of Guayaquil region Spath (1980) examined Late Valdivia pottery from sites on the Punta Arenas Peninsula and Puná Island. The pottery from the El Encanto site pertained to the middle and final portion of the Valdivia sequence (Porrás Garcés 1973: figures 19-43; Spath 1980:73-77). Valdivia pottery at El Encanto and from sites around the Gulf of Guayaquil represented a regional variant, distinct from Valdivia pottery in the rest of coastal Guayas or southern Manabí (Spath 1980:71-74, 167). Spath (*ibid.*: 166), along with a growing number of archaeologists, believed the "Valdivia D" sequence at Buena Vista was problematic, because sherds from this area of the coast did not "fit" Late Valdivia seriations of pottery from the Santa Elena Peninsula. Such regional differences in pottery were interpreted as being related to greater specialization in maritime resource exploitation, relative to "mainland

Valdivia". In this model the Late Valdivia occupation at El Encanto and in the Gulf of Guayaquil region was seen as an example of cultural drift, a regional variant affected in various ways by independent cultural developments, and based upon a maritime subsistence economy.

The pottery at El Encanto was interpreted as an example of regional conservatism, yet the pottery has many attributes that are only slight variations or continuations of techniques employed in Middle Valdivia phases (e.g., shell scraping, brushing, combing, appliqué fillet). Underlying ceramic comparisons was an implicit assumption that previous seriations reflected the total range of variability in the Valdivia tradition. There is no convincing evidence indicating that differences in the pottery of the Gulf of Guayaquil region are the result of greater maritime resource exploitation during Middle and Late Valdivia times. Faunal analysis of remains from coastal Guayas middens also imply a greater maritime economic focus for coastal sites in the final portion of the cultural sequence in those areas (Byrd 1976: tables 2, 85, 90).

Valdivia Occupations in Coastal El Oro Province

La Emerenciana is a large ceremonial site in southern El Oro Province. It was surrounded by supporting hamlets. A similar pattern exists with Late Valdivia villages and hamlets along the coastal streams, and with those inland along the Arenillas River. There, ceremonial mounds were also identified at the Jumon Site (OOSrSr-43) and at the site of Laguna de Cañas (OOSrSr-16). However, it could not be determined with certainty if the mounds at the latter site are associated with the Valdivia or the Late Formative occupation. Nevertheless, these large Early Formative sites are dispersed in a lineal fashion along the Arenillas River at approximately 5 km intervals (Figure 5). The presence of three large (greater than 10 ha in total area) ceremonial sites, two on the ancient shoreline and a third further inland beside the

stream reflects changes in sociopolitical organization, possibly related to the development of long-distance exchange with the sierra (Staller 1994: figure 8). Direct evidence of long-distance exchange with the Ecuadorian highlands is apparent at La Emerenciana from two highland obsidian flakes found in the excavations there (*ibid.*:331-332). Highland obsidian has also been reported from terminal Valdivia sites in northern Manabí (Zeidler *et al.* 1994:141-144).

Neutron activation analysis by Burger and associates of the obsidian flakes from La Emerenciana indicates that they originate from two different sources in the Ecuadorian Andes (Staller 1994:331). One obsidian flake (Cat. No. RLB045) comes from an obsidian outcrop at Mullumica in the Quito Valley, while the other flake (Cat. No. RLB046) is from the Quiscatola-Yanaurco Source, southeast of Quito, near Cotopaxi (Asaro *et al.* 1994:559). In terms of distance from the Ecuadorian coast, these outcrops in the high Andes are the closest and most accessible sources of volcanic glass. The obsidian flakes excavated at La Emerenciana are compelling evidence for highland-coastal interaction by the end of the Early Formative (Staller 1994:259, 330-332, 423). The nature and complexity of this exchange network is further implied by the fact that raw material from two different obsidian sources was accessible to coastal societies. A growing body of research points to the early development of coastal-highland long-distance interaction, directly supporting Lathrap's (1971) contention that such networks have their origins in Early Formative periods.

Archaeological evidence suggests that between 1850 and 1650 B.C. long-standing exchange networks along the coast underwent significant changes. These led to considerable regional autonomy and the development of political systems of greater complexity and scale in the Peruvian highlands and coastal deserts (Burger 1992:53-55, 101-103, 125-127, 209, 211-212). The consequences of long-distance

interregional interaction in forming distinct sociocultural trajectories is relevant to the timing and nature of developmental changes in the prehistoric record.

Archaeological Evidence for the Machalilla Chronology

The Machalilla Phase was initially identified by G. H. S. Bushnell (1951:17-21) at two sites (G-46 and G-47 according to Lanning's numeration) near La Libertad on the Santa Elena Peninsula. Estrada (1958:13, 53) described the phase in terms of its diagnostic attributes at Machalilla in southern coastal Manabí, and assigned it a chronological position intermediate between Valdivia and Chorrera, asserting that red-banded and engraved sherds represent a single ceramic component designated as the Machalilla Phase (*ibid.*:55). A number of Machalilla shell middens were found in coastal Guayas and southern Manabí Province (*ibid.*: 94; Meggers *et al.* 1965: figure 2). In terms of ceramic affinities, Estrada (1958:55, 111) contended that corrugated sherds had similarities to pottery from the Amazon Delta, but argued nevertheless that Machalilla represented a diffusion of Formative societies from Mesoamerica at approximately the same time Valdivia sites were disappearing from the region. Although he considered the possibility that Valdivia and Machalilla were part of the same ceramic tradition, no apparent pottery transition linking these cultures was identified (*ibid.*:93-94). The absence of an early component at the type site compounded the difficulty of linking the phases from excavated collections.

In later excavations at Machalilla and La Cabuya (G-110) Meggers and Evans (1962) identified six pottery types diagnostic of Machalilla. Meggers *et al.* (1965) expanded their earlier seriation (Estrada 1958; Meggers and Evans 1962) and identified five plain and fifteen decorated types diagnostic of the complex. On the basis of type frequencies, they divided the complex into three subphases, A to C, ranging between 2000 B.C. and 1050 B.C. (Figure 8).

The 2000 B.C. beginning date for Machalilla was based upon a radiocarbon date (4050 ± 200 B.P. [W-630], uncalibrated) from Valdivia layers thought to have Machalilla trade ware sherds (Meggers and Evans 1962:191; Meggers *et al.* 1965:172). The chronological range for Machalilla was initially established by radiocarbon dates from Valdivia C and D deposits that contained presumed Machalilla trade sherds, as well as by an obsidian hydration date of 1500 B.C., thought to mark the upper limit of the cultural sequence (Meggers *et al.* 1965). In their conclusions, Meggers *et al.* (*ibid.*:148: figure 93) used additional radiocarbon dates for Valdivia C and three radiocarbon dates from site G-159 to place Machalilla at 2100 to 1050 B.C. Three Machalilla radiocarbon dates from the site of La Cabuya extended the temporal range to 800 B.C., but were ignored because they were out of alignment with the rest of the evidence (*ibid.*:149-152). However, reported evidence contradicted these conclusions, because all three Machalilla dates are centered on years later than 1400 B.C. (*ibid.*:149; Willey 1971: 353). Meggers (1966: 25, figure 3) later revised the Machalilla chronology to 2000 to 1600 B.C., placing a question mark beside the terminal date, but giving no explanation for the revision.

The ceramic attributes at the sites of Buena Vista and La Cabuya suggested to Meggers *et al.* (1965:173-178; Meggers 1966:47-51) that Machalilla was a diffusion from an undetermined region beyond the Ecuadorian coast and coeval with, and later than, Valdivia. This model was reinforced by the stirrup-spout fragments and slip-banded sherds on the surface and in the uppermost layers at the Valdivia type site (Estrada 1958: figure 2; Meggers *et al.* 1965:110-146). In this highly controversial model, Machalilla was seen as a site-unit intrusion distinct from Valdivia, and despite an overlap of 600 to 700 years, there was a seeming absence of stylistic or technological similarities in the pottery to suggest any acculturation (Meggers and Evans 1962:191; Meggers *et al.* 1965:147-148). Several archaeologists presented a similar reconstruction for the Chorrera Phase (Coe

1960:368-369; Evans and Meggers 1957:243; Meggers and Evans 1962:125; Lathrap 1960:126; 1963:74-75.)

The chronological overlap hypothesis was immediately challenged. Many archaeologists suggested that there was mixing or inverted stratigraphy in the Cut 1 excavations at Buena Vista (Bischof 1967:219, 1975:50; Collier 1968:271; Hill 1972-74:19; Lanning 1968:47; Lathrap 1967:98; Paulsen and McDougale 1974:4-5, 1981:13-14). Lanning (1968:46-50) was dubious that two cultures existing together for several hundreds of years in the same region would have no evidence of acculturation in their pottery. In a survey report, Lanning presented three radiocarbon dates from Machalilla layers at La Cabuya ranging from 1370 to 880 B.C. Although there was continuity in site location between Valdivia and Machalilla occupations in these regions, the Machalilla levels were usually between 5 and 25 cm thick and often separated by a thin sterile layer from underlying Valdivia levels (Lippi 1983:322, 344-345; Paulsen and McDougale 1974:6). The possible mixing of Machalilla and Valdivia layers may have been related in part to the shallow Machalilla layers typical of the Santa Elena Peninsula and coastal Guayas (Estrada 1958:55; Lanning 1968). The Cut 1 excavations at Buena Vista were dug on a sloping river terrace at the base of a hill, and of the 9,800 sherds recovered from below 80 cm, only 21 were Machalilla diagnostic ceramics (Hill 1972-74:19-20; Lathrap 1967: 98; Meggers *et al.* 1965:18-21). The Machalilla deposits were presumably buried below some Valdivia slope-wash, so the context was disturbed and the layers probably inverted (Lathrap 1967:98). Therefore, rather than being a site-unit intrusion, Machalilla was thought to have succeeded Valdivia in the culture sequence (Bischof 1967:217; Hill 1972-74: 19; Lanning 1967:9, 1968:47-50; Lathrap 1967: 98, 1971:84-85; Lathrap *et al.* 1975:33; Staller 1994:39, 41, 54-55).

Inverted stratigraphy is difficult to verify at Buena Vista because the grey ash midden has no visible natural stratigraphy and was dug in arbitrary 10 cm increments (Meggers *et al.* 1965:15, 20). However, there is evidence that some levels at Cut 1 were disturbed. There also are reasons to suspect mixing at La Cabuya because the radiocarbon dates suggest a reverse sequence. Significantly, all of the Early Machalilla dates are derived from Buena Vista (*ibid.*:149-152).

The End of the Valdivia Culture Sequence

Early estimates for the end of the Valdivia culture sequence were based upon several Machalilla radiocarbon dates, as well as some Chorrera dates (Meggers *et al.* 1965:149-152, 156; Meggers 1966: figure 4). However, there were no radiocarbon dates to document the end of Valdivia. An increasing number of archaeologists accepted Estrada's initial conclusions that Machalilla followed Valdivia chronologically, adding that Machalilla was an evolutionary outgrowth of the Valdivia pottery tradition (Bischof 1967:217, 1975; Lanning 1967:9, 1968:39, 41-42; Lathrap 1971:84-85; Lathrap *et al.* 1975:16, 33-34; Lathrap *et al.* 1977:6; Pearsall 1979:6). The consensus placed the Valdivia/Machalilla chronological dividing line somewhere around 1500 \pm 200 B.C. and the end of the Machalilla Phase at about 1000 B.C. (Willey 1971:353). This date is in accord with my analysis suggesting an end to Valdivia between 1650 and 1450 B.C. (see above).

Henning Bischof (1975b:51) excavated at Palmar 3 (G-88) in 1960. One goal of Bischof's excavation was to define Early Machalilla diagnostic traits. Another was to examine the possibility of a link to Valdivia (*ibid.*:54-55). The Early Machalilla component of Palmar 3 was distinguished stratigraphically, but a separation between Late Valdivia layers and overlying Early Machalilla layers made the results inconclusive (*ibid.*) The isolation of an early Phase 2 component at Palmar was attributed to excavation by natural stratigraphic levels. In his con-

clusions, Bischof (*ibid.*:51) subdivided the complex into five subphases (Figure 8). Using the same information as Meggers *et al.* (1965), Bischof counted backwards from the 2900 B.P. Machalilla date at La Cabuya, and estimated a total of five 150 to 200 year periods, with an initial date for Phase 2 at about 3750 ± 200 B.P. (2000-1600 B.C.) (Bischof 1975b). Because Machalilla diagnostic sherds pertaining to the earliest and final portions of the sequence (Phases 1 and 5) were absent from the excavated samples, these parts of the sequence were left for future investigations (*ibid.*). On the basis of ceramic analysis, Bischof (*ibid.*) outlined what the transitional diagnostic traits would be. Bischof's predictions have proved prescient in the light of Jelí Phase pottery.

Paulsen and McDougale (1974, 1981) also uncovered a stratigraphic separation between Late Valdivia and Early Machalilla deposits in excavations at two sites on the Santa Elena peninsula. They concluded that Machalilla was distinct from, and later than, Valdivia, and subdivided Machalilla into five subphases (Figure 8) ranging between 1300 and 900 B.C. (Paulsen and McDougale 1974:7-14). They followed Lanning (1968) and others (Bischof and Viteri Gamboa 1972:549; Lathrap 1967:97) in contending that Valdivia and Machalilla were not coeval. They argued that the possibility of mixed deposits at Buena Vista and La Cabuya had mislead researchers (Meggers *et al.* (1965: 149-153), prompting them to assert that these Formative cultures were contemporaneous (Paulsen and McDougale 1981). Paulsen and McDougale's assessment is supported by the two recent dates for late Valdivia from La Emerenciana.

Archaeological investigations of the Machalilla Phase by Lippi (1982, 1983) were carried out in coastal Guayas at La Ponga and at Río Perdido (G-20), a small locality on the lower Verde River in coastal Guayas. The site of Río Perdido is one of 29 Machalilla sites identified outside the lower Verde and Zapotal drainages as surveyed by Zeidler (1977). The La Ponga

dates were from stratified deposits, and ranged from 1200 to 800 B.C. (Lippi 1983). A stratigraphic separation between Machalilla and the underlying Valdivia layers at Río Perdido suggested to Lippi (*ibid.*:39) that Machalilla succeeded Valdivia chronologically and was an *in situ* and unrelated coastal development representing the Middle Formative Period. Lippi suggested (*ibid.*: 354) that Machalilla sites in southern Manabí and coastal Guayas spanned the time between 1400 and 900 B.C. As with Paulsen and McDougale's assessment, Lippi's initial date for Machalilla is in line with my terminal dates for Valdivia from La Emerenciana. Lippi introduced a revised seriation subdividing the Machalilla pottery sequence into eight phases averaging 50 years each (Figure 8).

The locations of Valdivia and Machalilla middens along the coast clarify, to some extent, the chronology of these cultures (see Damp 1984a; Lanning 1968; Raymond 1989; Willey 1971:274; Zeidler 1977). Around the villages of Valdivia and Machalilla, Valdivia sites are located on lagoonal inlets or on the present-day salt flats near mangrove settings, while Machalilla sites are on high cliffs overlooking sandy beaches (Estrada 1958:8; Evans and Meggers 1958:177; Lanning 1968; Meggers *et al.*, 1965: figure 2). The differences in site locations suggests that Machalilla occupations occurred after geomorphic changes had taken place, and that they were therefore later in time (Damp *et al.*:1990; Willey 1971:274).

Lathrap (1970:67) argued on the basis of pottery diagnostic traits that Machalilla was of tropical origin, and he cited stylistic affinities between Machalilla and late Tutishcainyo and Sanandine pottery in the Ucayali Valley, and also sherds from the earlier levels at the site of Cerro Narrío in the southern highlands of Ecuador. Lathrap stated that Valdivia and Machalilla are both diffusions of flood plain agriculturalists from the tropical forests east of the Andes. The tropical forest model was a provocative alternative to traditional ways of

thinking about culture change, but, at the same time, it was diffusionist (Lathrap 1970:28, 68-179, 1971, 1973, 1974). This line of reasoning was based upon a primary assumption that ceramic technology was the result of a Formative sedentary agricultural adaptation (Lathrap 1963:239-240, 1970:58, 67, 107, 1973:170). Most early models regarding Valdivia and Machalilla origins were ensconced in such a cultural-historical diffusionist framework that saw significant degrees of similarities among the various Formative ceramic complexes (Hoopes 1994).

A change in settlement patterns, from the large nucleated village sites such as Punta Concepción, Real Alto, and Loma Alta, to a seasonally dispersed pattern during Late Valdivia, is characteristic of coastal Guayas. The absence of mound sites in this region in Late Valdivia times mirrors an apparent decline of Valdivia societies in these regions. This seeming reduction of Valdivia habitation sites to a few small, specialized shell middens and small inland sites reflects a cultural decline in the final epochs of the Early Formative Period. An absence of Late Valdivia ceremonial mounds in the Santa Elena Peninsula and southern Manabí supports the contention that this region experienced changes in population density. In contrast, large Valdivia ceremonial sites are present in southern El Oro, the Gulf of Guayaquil, the Guayas Basin, and in northern Manabí. The large Valdivia VIII civic ceremonial centers in former frontier regions suggest fundamental changes in the locus of sociopolitical development during Valdivia VII-VIII times or around 1950 to 1450 B.C. (Figure 9).³

³ There are regional differences in the Valdivia-to-Machalilla sequence. In southern El Oro Province, Valdivia becomes Machalilla after 1650 B.C. In northern Manabí Province a volcanic event terminates the Valdivia sequence. This event greatly reduced population density in Manabí and seems to have caused an absence of Machalilla occupation. See Figure 6.

Reduction in size of inland riverine settlements in Guayas was probably related to a greater overall reliance upon agriculture than in previous times (Pearsall and Piperno 1990). The regions of cultural florescence during Late Valdivia times are also those areas that are more environmentally suitable for year-round cultivation (*ibid.*). The current evidence from archaeological surveys indicates that throughout Valdivia times, there was an increase of specialized sites in coastal settings with direct access to maritime and estuarine resources (Estrada 1956; Meggers *et al.* 1965; Hill 1972-74). However, it should not be seen as contradictory that there are contemporaneous Valdivia sites along the coastal streams.

The Valdivia settlement patterns suggest that the earliest development of the culture occurred along coastal Guayas and the Santa Elena Peninsula. This region essentially represented the nucleus of cultural development for Early Valdivia society (Figure 7). A reduction of ancient mangroves on the Santa Elena Peninsula and the rest of coastal Guayas (Ferdon 1981), possibly in response to tectonic processes, resulted in the gradual abandonment of Valdivia ceremonial centers and coastal sites after Phase V (ca. 2300 B.C.). It has been noted by archaeologists that Late Valdivia (Phases VII-VIII) sites are not as well represented as those from earlier periods in coastal Guayas, including the Santa Elena Peninsula, and in southern Manabí, the regions in which most of the Early Valdivia sites were identified (Lanning 1968; Staller 1994: figures 5, 55; Zeidler 1987). In fact, coastal Guayas shows a decrease in both Late Valdivia site size and number, and such sites have no evidence of large civic ceremonial centers, with the exception of San Lorenzo del Mate in the Gulf of Guayaquil region (Figure 9). The excavations at La Emerenciana address the issue of a radiation of Late Valdivia culture into previously peripheral areas of the coast, and how such sociocultural developments affect our understanding of the developmental relationships of Valdivia and Machalilla.

Excavations at the Valdivia Ceremonial Center of La Emerenciana (OOSrSr-42)

La Emerenciana is a Valdivia ceremonial center on the landward side of the intertidal salt flats directly adjacent to the Buenavista River (Figure 10). Excavation strategy at La Emerenciana involved both area excavation and trenching, the former to uncover living floors, and the latter to obtain a site chronology derived from the stratigraphic sequence of occupation layers (Staller 1994:202-204). A reconstruction of the archaeological record was accomplished through the identification of prehistoric features and analysis of pattern variability in the prehistoric remains (Binford 1968, 1980). The excavations at La Emerenciana were dug by natural stratigraphic layers as discerned both vertically and horizontally. Stratigraphic layers were delimited by the physical properties of the strata and followed the interfaces and contours of sediments. In portions of the site where a 40-50 cm sub-layer of shell midden deposits overlies the occupation floor, arbitrary increments of 20 cm were used, because the smallest natural unit of analysis (*i.e.*, shell layer) was too large to detect changes in the vertical distribution of shells and artifacts (Staller 1994:206).

The overall site dimensions of still-intact midden are 200 m (N-S) by 150 m (E-W). However, systematic survey of exposed profiles and artifact distributions across disturbed portions of the midden suggest that before modification it had an overall extent of roughly 530 m (N-S) by 240 m (E-W) or 12.72 hectares, making it the largest Valdivia site reported thus far from coastal Ecuador (Staller 1994:209-210). The excavation strategy was designed to generate stratigraphic and chronological information about the prehistoric occupations. A series of four trenches (Trenches A-D) were dug to sterile and 331 m² of a buried Valdivia VIII paleosol (Stratum 5 also called Living Floor 2) were exposed in a platform mound in the southwest sector of the site (Figure 11). In order to gain a greater understanding of stratigraphic variability across different parts of the site, a

total of 5 m² units, and a 1 by 2 m pit (Cuts 1-6) were excavated to sterile. A 29 m vertical section (Profile A) was exposed in the north-eastern portion of the excavations as an additional source of information in reconstructing the archaeological and geological significance of the various stratigraphic units. Color references are based upon designations given by the 1975 edition of the Munsell Soil Color Charts.

The vertical sections were drawn using a meter grid of 10 cm squares. The sections were drawn at the end of the field season and every visible sherd, shell, stone, and bone or piece of charcoal larger than one cm was illustrated (Staller 1994:216, 223-224). The boundaries of the various stratigraphic layers were divided and separated on the basis of differences in matrix color and texture.

The six layers were continuous across all exposed and excavated portions of the site. The excavations indicated that three stratigraphic layers contained prehistoric artifacts and shells pertaining to the Valdivia Phase (Table 2). The stratigraphic layers at La Emerenciana are A-Bw/Btn-Bk horizon sequences characteristic of well-drained, semi-arid conditions (Gasche and Tunca 1983: 528; Siemens 1987: figure 3, 1989; Staller 1994:216).

The uppermost layer at La Emerenciana is a dark brown silt (Stratum 6) extending between 10 cm to 55 cm in thickness across the north-western portion of the site (Staller 1994:221, table 14). The surface of Stratum 6 was covered by artifacts consisting of ancient shells and sherds diagnostic of the final portion of the Valdivia sequence (Table 2). Although the sub-layer was deposited during a brief final occupation, the surface remains were, for the most part, disturbed or secondary deposits related to bioturbation through plant root action or recent agricultural activities (*ibid.*).

Analysis of sherds from Stratum 6 suggested that they are, in most cases, the same kinds of sherds found in Stratum 5, except that there

were greater frequencies of Machalilla attributes. The similarity in the pottery from the uppermost layer and near the top of Stratum 5 suggests that the site was reoccupied after only a very brief period of abandonment (1994: table 11). There was a significant reduction in the number and size of oyster shells found in Stratum 6, reflecting changes in the aquatic habitats and barrier reef during the period of abandonment and the final prehistoric reoccupation.

Table 2: Artifacts by Stratigraphic Layer (OOSrSr-42) (See Figure 12)

Stratum	Artifact Type	Temporal Association
Stratum 6 brown silt (Living Floor 3)	ceramics, shells, lithics	Valdivia Phase VIII (ca. 1450 B.C.)
Stratum 5 grey ash (Living Floor 2)	ceramics, shells, lithics, cane im- pressed daub	Valdivia Phases VII - VIII (1900-1450 B.C.)
Stratum 4 white dune sand	[none found]	[sterile layer]
Stratum 3 pink sand (Living Floor 1)	ceramics, shells	Valdivia Phase V-VI (ca. 2000 B.C.)
Stratum 2 yellow sand	[none found]	[sterile layer]
Stratum 1 olive sand	[none found]	[sterile layer]

Source: Staller 1994: table 22.

A fine grey ashy loam (Stratum 5), extending between 10 cm to just under one meter in depth, underlies the brown silt layer over the northwestern portion of the site (Figure 13). Stratum 5, floor 2 is a Phase VII-VIII Valdivia living surface, and the vast majority of artifacts recovered in the excavations were from the uppermost levels of this layer (Figures 12, 13). The lower interface of Stratum 5 had extensive evidence of disconformities corresponding to pit and post features (Figure 13). Archaeological features associated with floor 2 included two

oval or elliptically shaped daub platforms (Figure 14), four Valdivia burials, a number of lined pits, and various post impressions (Staller 1994). The Jeli Phase diagnostic pottery in Stratum 5 suggests this layer represents a 350-year occupation (*ibid.*).

In summary, La Emerenciana was first settled during Valdivia Phases V-VI (ca. 2000 B.C.). Floor 1 (Stratum 3) corresponds to this occupation. This was followed by site abandonment and dune encroachment. A reoccupation occurred sometime during Valdivia Phases VII-VIII (ca. 1950-1450 B.C.) and this occupation corresponds to floor 2 (Stratum 5). Artifacts on the surface of Stratum 6 represent Living Floor 3, the final Valdivia occupation at this site, dated to ca. 1450 B.C. (Figure 12).

There are two elliptical, asymmetrical earthen mounds about 1.5 m high on the northwestern and southern portions of La Emerenciana as measured from the datum point (Figure 10; Staller 1994:319). The northwest mound was excavated and found to measure 74 by 47 m at the base, with evidence of resurfacing and rebuilding episodes, and two oval daub platforms on the summit (Figure 14). A total of 139 archaeological features were found associated with this platform mound, and they included numerous clay-lined pits containing faunal remains and smashed pottery, post impressions, four human burials, and artificial, prepared floors. The large disturbed area nearest the Buena Vista River (Figure 10) is a sand dune which had been mined for glass making.

Jeli Phase Pottery at La Emerenciana

A sample of 32,069 sherds from excavations at the site of La Emerenciana were analyzed to create the following ceramic reconstructions. The collections included a subsample of 1,863 rims, representing 5.8% of the total. The rim sherds were essential to gathering information about vessel shape, orifice size, and related stylistic and morphological attributes, and only rims preserving more than 10% of the total

diameter are included in the morphological reconstructions. The major subdivisions of pottery vessel shapes in this analysis are taken from various sources (Rice 1987: figure 7.2-7.5; Shepard 1976: figure 18-25). The goal of the ceramic analysis was reconstruction of vessel morphology and the discernment of related stylistic attributes. The 15 formal classes identified are a compilation of vessel forms and stylistic modes derived in the course of analysis (Staller 1994: figures 38-54). Body sherds from different portions of whole vessels were also studied for functional, morphological, and stylistic attributes. The sherds were sorted according to formal and stylistic attributes, and many hours and months were spent in the laboratory attempting to find conjoins or direct fits for vessel reconstructions. These sherds are from units excavated by natural stratigraphic layers, were screened through 3 mm mesh, and were brought to the field laboratory in Arenillas, where they were washed and numbered according to unit and layer provenience or feature association. Wall thickness measurements refer to maximum and minimum widths.

I classified the Late Valdivia pottery from Stratum 5 at La Emerenciana as the Jelí Phase. Similar diagnostic ceramics were found in survey indicating an estimated geographic distribution between the Buenavista River and the Peruvian border, representing the southernmost expression of the Valdivia ceramic tradition (Staller 1994). The formal classes presented here describe the range of formal and stylistic variability from the study of sherds recovered from both surface survey and excavations. Although the totality of the diagnostic features of the Jelí Phase ceramics is somewhat different from Late Valdivia pottery diagnostics identified in other regions of coastal Ecuador, Jelí Phase attributes are within the range of variability known for the ceramic tradition as a whole.

The following is an analytical, as opposed to a taxonomic classification, in which attributes are used to differentiate modes (Rouse 1960:313-315). Modes are stylistic and techni-

cal attributes that reflect the standards or customs governing the manufacture of pottery vessels, and two different kinds are recognized, conceptual modes which refer to stylistic and formal attributes, and procedural modes which are related to techniques used in the manufacture of the pottery (*ibid.*). This analysis primarily concerns conceptual modes.

Jelí Phase diagnostic attributes and vessel forms have been identified in Late Valdivia pottery from other regions of the Ecuadorian coast. They were found in the pottery from San Lorenzo del Mate (Marcos 1989). Included are a variety of bottle forms, bowls with pedestal and annular bases, as well as composite forms including restricted bowls and neckless jars or ollas (Marcos 1989:19; Staller 1994: figure 55).

The pottery from Stratum 3 is diagnostic of Valdivia Phases V-VI. However, the major portion of the sherd collections is from Strata 5 and 6. These are diagnostic of Phases VII-VIII, the final portion of the Valdivia culture sequence, or ca. 1900-1450 B.C.

The 15 reconstructed formal classes presented in this study are those forms and stylistic attributes most common in the collections. The only exceptions are ceramic bottles found in small numbers in the excavation and survey. These are included because of their significance to the study of the origins of such vessels in western South America.

The following descriptions represent the reconstructed vessel forms and conceptual modes diagnostic or characteristic of Jelí Phase pottery from the northwest platform mound at La Emerenciana. Rim diameters refer to the maximum distance measured from the interior edge of the lip. The percentages in parentheses beside rim diameter measurements are the portion of the total rim obtained in the reconstruction of vessel morphology. The surprisingly high overall percentages of total rim diameters are related to the activities carried out at the platform mound, activities that would include

smashing pottery vessels in place and leaving them as offerings in pits. The archaeological evidence of the ritual nature of such pit features at La Emerenciana is indicated by the orientation of patamula (*Anadara grandis*) shells on the apertures of some pits, oriented to the cardinal directions, and hard-packed clay lining the interiors of the pits, or sometimes mixed with the contents of the pits. The hard clay matrix is distinct in color and texture from the surrounding layers (Staller 1994: figures 44-54). Such ritual practices have been reported in earlier periods at the mounds at Real Alto and from a number of other Valdivia sites, and are an integral part of Valdivia ceremonial practices (Damp 1984b; Lathrap *et al.* 1977; Marcos 1988a:35-36, 49, 54-55, 68-69, 71-72; Marcos and Norton 1981; Marcos *et al.* 1976; Norton 1972, 1977; Raymond 1993).

Formal Class 1

Cambered jars with direct or rounded rims and rim diameters ranging from 9 to 11 cm (100%) and wall thicknesses of 10 mm (rim), and 6 to 8 mm (body) make up Formal Class 1 (Figure 15). The interiors are burnished from the edge of the rim down to the neck, or have a matte, and semi-transparent, post-fired slip 3 to 5 cm from the outer edge of the lip. The lower body is usually shell-scraped, smoothed, or wiped. The exterior rim is vertically thickened or cambered. These vessels are manufactured by coiling, and plastic techniques involve the application of an extra coil on the collar of the vessel that is shell-impressed at a 45° angle when the clay is still damp. A few examples are impressed with the edge of a sharp, flat instrument. The shell-impressed motif (made using *Anadara similus* or the closely related *A. tuberculosa*) is highly variable.

The body has carelessly applied white (5YR 8/1) pigment, or red slip, laid out as 20 to 35 mm wide bands. Some bodies are shell-scraped, carelessly smoothed and wiped, or covered in thin angular or parallel gashed fillet appliqué strips. Some rim exteriors have ridges of clay on

the lip made when forming the rim while the clay was still damp. The interior collar is vertical-to-concave in shape, and constricted, suggesting such vessels may have had lids (Marcos 1989:115-16; Zeidler and Sutliff 1994: 113). The majority of rim diameters measure 10 cm, but collar width is variable. Replication experiments showed that the impressions can be duplicated using mangrove clam (*Anadara similus*), the *concha prieta*. Decorations include shell impressions made while the clay is still damp. In some areas of the coast, rim exteriors are decorated with fineline incisions (Porras Garcés 1973: figure 28-3; Zeidler and Sutliff 1994: figure 7.1e). Sherds of this formal class are present at all known Late Valdivia sites in the region, and are found in great numbers in excavations (Hill 1972-74: figure 67; Lathrap *et al.* 1975: artifacts 47, 50; Marcos 1988b: artifacts 364, 365; 1989:15; Meggers *et al.* 1965: figures 26-5, 41-9, 43-3).

Formal Class 2

Carinated jars with rounded or everted rims ranging from 8 to 11 cm (95%) in diameter, and with wall thicknesses between 8 to 11 mm (rim) and 4 to 7 mm (body) make up Formal Class 2 (Figure 16a). The interior neck and collar are often red-slipped (2.5YR 5/6). The lower body is shell-scraped or wiped, smoothed, or simply left untreated. The exterior collars are usually red-slipped (2.5YR 5/6), and with fine-line incisions made when the paste is leather-hard. Most examples have an encircling fine-line incision just below the rim and the zoned punctation at the bottom of the carination. The decorative motifs include semicircular, rectangular, free-form designs outlined by incision and filled with small punctations. Body and basal sherds indicate a rounded bottom. The technique of manufacture is coiling, and sherds of this class are found in Strata 3 and 5, pertaining to Valdivia VI-VIII. The form is diagnostic for Phase V, and probably is multi-functional because it continues in later periods in southern El Oro, and is commonly encountered in excavations (Hill 1972-74:17-18, figures 57-59; La-

thrap *et al.* 1975: artifact 44; Marcos 1988b: artifacts 303, 344; 1989:17a; Meggers *et al.* 1965: figures 35-6, 39-1; Porras Garcés 1973: figure 35-9; Zeidler and Sutliff 1994: figure 7.1d).

Formal Class 3

Open, or slightly constricted bowls with direct, or rounded rims ranging from 13 to 17 cm (25%) in diameter and wall thicknesses of between 8 to 11 mm (rim) and 7 to 11 mm (body) make up Formal Class 3 (Figure 16b). The interior edge of the lip has a reddish brown (2.5YR 4/4) slip or burnishing extending 16 to 20 mm. The rim exterior and walls have a red (2.5YR 4/6) to reddish brown slip, smoothed, burnished, or polished throughout. Plastic techniques include excision, fingernail impression, and broad line incisions made while the vessel is leather-hard. There is usually an encircling fine or broad line incision just below the rim. The technique of manufacture is coiling. The sherds come from Stratum 5 in Phases VII-VIII contexts, but are diagnostic of Phase VI in other regions of the coast (Hill 1972-74: figure 54; Meggers *et al.* 1965: figures 27-2, 38-3, 46-2; Zeidler and Sutliff 1994: figure 7.1b).

Formal Class 4

Everted jars with everted or rounded rims between 14 to 18 cm (72%) in diameter, and a wall thickness of 8 mm (rim), 5 to 7 mm (body) make up Formal Class 4 (Figure 17). The end point or edge of the lip interior is smoothed and covered in a thin red (2.5YR 5/8) or yellow (10YR 5/8) fugitive slip that extends downwards about 30 mm. The post-fired slip has a matte finish and is semi-transparent, and applied, while the neck is burnished or polished to the throat. The interior surfaces show evidence of fire clouding and sooting. The exterior surface has a thin red (2.5YR 5/6-2.5YR 6/8) fugitive slip, except on the collar, where plastic techniques are executed while the clay is still damp. Surface decorations include parallel rows of punctations, fingernail impressions, and care-

lessly executed incisions in a zig-zag motif, made up of parallel rows of broad line incisions set against each other at various angles. Several examples have broad lines carved in geometric motifs when the clay was dry.

The background of the decorated collar is always left untreated, with a matte finish, and the collar contrasts with the smoothed or burnished slip on the lower body that begins at the throat and extends to the outer edge of the rim. The external rim angle is formed when the clay is still moist and sometimes leaves a slight ridge of clay on the outer edge of the lip. Lower body sherds suggest that these vessels have rounded or globular bases. The technique of manufacture is coiling, and sherds come primarily from Strata 5 and 6 in Phases VII-VIII contexts. This form has vertical concave-walled necks and slightly-to-strongly everted rims. Plastic decoration is almost always carried out while the clay is damp, and non-decorated portions of the vessels usually have a thin red post-fired fugitive slip. Sherds from everted jars are commonly encountered in excavations and surfaces of all Late Valdivia sites in the region. It is possible that some of these vessels are ollas (cooking pots) (Marcos 1988a: figure 15, 1988b: artifacts 351-354; Meggers *et al.* 1965: figure 26-1, 35-4; Porras Garcés 1973: figure 26-2; Zeidler and Sutliff 1994: figure 7.1c).

Formal Class 5

Constricted bowls with rounded or tapered rims and a diameter of 8 to 10 cm (45%) and a wall thickness of 7 mm (rim), 5 to 7 mm (body) make up Formal Class 5 (Figure 18a). The interior surface is shell-scraped, wiped, smoothed, or left untreated, and several rim and body sherds have evidence of spalling. The exterior is usually smudged dark grey (10YR 3/1), or left untreated, with plastic techniques restricted to the shoulder, and executed when the clay is still damp. Some sherds have parallel rows of punctations or fingernail impressions bordering on carelessly executed broad line incisions in a zig-zag motif, made up of angular

broad line incisions set against each other and placed at various angles. The background of the shoulder is left untreated, and the matte finish contrasts with the smoothed or burnished lower body. Some vessels have undecorated shoulders, and lower body sherds have carelessly applied bands of a thick white pigment or kaolin paint set against a smoothed, shell-scraped, or untreated background. The external rim angle is formed when the clay is still moist and sometimes has a slight ridge of clay on the end point of the lip. The lower body sherds suggest such vessels have rounded bases and evidence of sooting and fire clouding. Broad line incisions and punctations appeared to be executed with a beveled-edged instrument, or the edge of a bivalve. Plastic decoration was almost always carried out when the clay was still damp. Techniques of manufacturing include coiling and modeling. The upper and lower portion of the vessel are usually joined by an interior coil at the corner point, and, as a result, breakage generally occurs at the neck. Constricted bowls are found in the excavations and surfaces of all known Late Valdivia sites in the region. Sherds of this class are found in Strata 5 and 6 in Phases VII-VIII contexts, but are diagnostic of Valdivia Phase VII in other parts of the coast such as San Lorenzo del Mate and El Encanto, and have similarities to Ayangue Incised bowls (Lathrap *et al.* 1975: artifact 49; Marcos 1989; Meggers *et al.* 1965: figure 73-9; Porras Garcés 1973: figure 25-11).

Formal Class 6

Constricted jars with everted or direct rims make up Formal Class 6 (Figure 18b). Such vessels have rim diameters ranging from 13-14 cm (55%), and a wall thickness of 7 to 8 mm (rim) and 6 to 8 mm (body). The interior surface is wiped, smoothed, slipped, and burnished, while the neck is slipped, pattern burnished, or polished. The interior lower body sherds are generally left untreated, shell-scraped, or smoothed. The exterior surface is red or light red (2.5YR 5/6-2.5YRr 6/6) slipped, wiped, or smoothed. The interior lower body

sherds are generally left untreated, shell-scraped, or smoothed. The exterior lower body sherds are polished or treated with a thin post-fired fugitive slip that leaves a matte finish. Plastic techniques restricted to the neck and shoulder of the vessel include parallel rows of punctations or fingernail impressions executed when the clay was still damp. The broad line incisions were executed while the clay was dry or leather-hard, and the field of decoration is bordered by red slip bands extending over the lip to just below the rim, and at the corner point covering the lower body. The background on the decorated neck is untreated, with a matte finish contrasting with the slipped, burnished, or polished lower body. Exceptions include vessels with broad line incised or excised geometric motifs. The background of these motifs are slipped, polished, or burnished, and the geometric designs are carefully executed, and essentially identical to those on carinated-spout bottles. Lower body sherds indicate that these are globular or rounded vessels with concave bases. Broad line incisions and punctations appear in some instances to be executed with bird bones. The technique of manufacture is coiling, with the upper and lower portions of the vessel usually joined by an interior coil at the corner point, where most of the breaks occur. Constricted jars are diagnostic of the Jelí Phase, and are found in the excavations and surfaces of all Late Valdivia sites in the region. Sherds of this class are from Strata 5 and 6 in Phases VII-VIII contexts, and diagnostic of this period throughout the coast (Meggers *et al.* 1965: figure 44-11; Porras Garcés 1973: figure 21-5).

Formal Class 7

Simple bowls with direct, or rounded thickened rims and a rim diameter of 10 to 14 cm (100%) and wall thicknesses of 8 mm (rim) and 8 to 9 mm (body) constitute Formal Class 7 (Figure 19a). The interior end point or edge of the lip has a thin red (2.5YR 5/8) fugitive or post-fired slip, and some are polished and smoothed throughout and others left untreated. Upper walls are pattern-burnished and slipped.

The exterior surfaces are shell-scraped, brushed, or combed when the clay is moist. Some are untreated or red-slipped when the clay is leather-hard, or the slip is done as a post-fired application. Bowls are shell-scraped, combed, or brushed, and have plastic decorations on their bottoms and walls. These decorative techniques were executed while the clay was damp. Sometimes part of the original surface treatment has been obliterated by subsequent smoothing or wiping. Manufacturing techniques include both coiling and modeling. Such forms appear during the middle of the sequence, and constitute everyday serving vessels. The sherds come from Strata 5 and 6 in Phases VII-VIII contexts. However, this formal class is not a sensitive temporal marker because it occurs from Phases VI through VIII in other parts of the coast (Hill 1972-74: figure 68; Meggers *et al.* 1965: figures 22-5, 24-4, 26-6, 31-2, 41-11; Porras Garcés 1973: figures 33-3, 34-2; Zeidler and Sutliff 1994: figure 7.1a).

Formal Class 8

Vertical open bowls with direct or rounded rims ranging from 14 to 24 cm (100%) and wall thicknesses of 7 to 11 mm (rim) and 8 to 11 mm (body) make up Formal Class 8 (Figure 19b). The end point or edge of the interior lip is red- (2.5YR 5/8) or yellow- (10YR 5/8) slipped, or smoothed throughout, with pattern burnishing or polishing on the upper wall. However, some lips are smoothed and left untreated. The exterior walls have broad or fine line incisions, or excisions in geometric motifs bordering zoned punctation, executed while the clay was dry-to-leather hard with incisions or excisions filled with a white or red post-fired pigment, with very standardized motifs almost identical to those on carinated-spout bottles (Formal Class 13). The walls are vertical to slightly incurving and average about 6 to 9 cm high, with flat bottoms and rounded corners. The manufacturing techniques include coiling and modeling. Sherds are from Strata 5 and 6, diagnostic of Phase VII, and have similarities to Machalilla Ayangue Incised carinated bowls (Hill 1972-74: figure 69;

Lathrap *et al.* 1975: artifacts 52, 58; Meggers *et al.* 1965: figures 38-3, 73-4; Porras Garcés 1973: figures 33-1, 33-2;).

Formal Class 9

Everted jars or ollas with tapered or externally everted rims, about 13 to 14 cm (40%) in diameter and with wall thicknesses ranging between 7 to 9 mm (rim) and 6 to 10 mm (body) make up Formal Class 9 (Figure 20a). The interior lip to the base of the neck is red-slipped (2.5YR 4/8) or pattern burnished, while some examples are untreated except for pattern burnishing to the base of the neck, or they are only slipped on the rim. Geometric fine line incisions on the collars were made when the clay was leather-hard, and the lower body is wiped, smoothed, or shell scraped, with evidence of fire clouding. Rims usually have slight exterior ridges of clay made when the clay was still damp. Lower body sherds suggest that these vessels represent plain wares, primarily globular ollas, with evidence of fire clouding, sooting, and pitting. The manufacturing technique is coiling, with the upper and lower portions of the vessel continuous. The everted jars or ollas are similar to the plain pottery reported from Punta Arenas. Sherds of this class come from Strata 5 and 6 in Phases VII-VIII contexts, diagnostic of the end of the sequence (Lathrap *et al.* 1975: artifact 65; Marcos 1988b: artifacts 354, 355; Meggers *et al.* 1965: figure 22-2).

Formal Class 10

Shallow open bowls with inverted or rounded rims and a rim diameter of 19 to 22 cm (100%), and wall thicknesses of 10 mm (rim) and 8 to 9 mm (body) make up Formal Class 10 (Figure 20b). The interior surface is either slipped, pattern burnished, or polished. The exterior surface of a Class 10 vessel is treated with a red, brown, or buff slip with thickened rims with a row of punctations executed while the clay was leather-hard. Plastic techniques are restricted to the base and bottom of Class 10 vessels, and include carving, broad line inci-

sions, fine line incisions, and punctations when the clay was slipped, burnished, and leather-hard. The rim is sometimes tapered or thickened just below the lip, and the walls are pattern burnished or polished throughout. Decorations include half crescents surrounding a single punctation bordered by fine line incision on a pattern burnished surface, and fine and broad line incision in various arrangements. The manufacturing technique is coiling, and the upper and lower portions of the vessels are joined at the corner point. Sherds of this class are from Stratum 5 in Phases VII-VIII contexts, and are diagnostic of Valdivia Phase VIII (Hill 1972-74: figure 69; Marcos 1988b: artifacts 456, 457, 1989; Meggers *et al.* 1965: figures 25-8, 27-3; Porras Garcés 1973: figure 34-5).

Formal Class 11

Globular everted jars with direct, or everted rims and a rim diameter of 10.5 cm (100%), 8 cm (necks) and a wall thickness of 7 to 9 mm (rim) and 6 to 8 mm (body) make up Formal Class 11 (Figure 21). The interior edge of the lip is slipped or pattern burnished to the base of the neck. The neck interior is covered with a red (2.5YR 4/6) slip and is pattern burnished to the base of the orifice. The lower body is wiped, smoothed, or shell scraped. The exterior upper body and shoulder are red- 2.5 YR 4/6-2.5YR 6/6) slipped, patterned burnished throughout, and globular in shape. Decorative attributes include carefully executed excisions, broad line incisions, or punctations in geometric designs on the collar made when the clay was leather-hard. There is usually a single row of large (8 mm) punctations on the shoulder of the vessel just below the throat. The geometric designs are similar to motifs on carinated-spout bottles (Formal Class 13). The lower body has wide (2-3 cm) pattern burnished or slipped bands extending vertically, which contrast with the matte, untreated surface that covers most of the lower vessel. Such forms are only found in the Jelí Phase, and only in excavations. Undecorated everted jars are reported for Machalilla (Lathrap *et al.* 1975: artifact 222), but the Jelí

Phase jars are larger and include geometric motifs on the collar similar to those found on the carinated-spout bottles. The manufacturing technique is coiling. The upper and lower portions of Class 11 vessels are continuous, and wear on the interior neck suggests they may have had a lid (Marcos 1989: 15). Sherds come from Strata 5 and 6 in Phases VII-VIII contexts and are diagnostic of Phase VIII.

Formal Class 12

Formal Class 12 consists of long-neck cylindrical-spout bottles with rounded, or direct rims, rim diameters of 2 to 3 cm (100%), 3 cm at the neck, and a wall thickness ranging from 4 to 6 mm (rim), 2.5 mm (neck), and 5 to 7 mm (body) (Figures 22a-b, 23a-f). The interior body sherds are untreated, wiped, smoothed, or shell-scraped. The exterior upper body and shoulders are slipped a dark reddish brown (2.5YR 3/4) or polished throughout. Cylindrical-spout shapes are slightly everted with plastic techniques on the neck consisting of carefully executed broad line incisions, fingernail impressions, and punctations made when the clay is dry. The manufacturing technique is coiling. The cylindrical-spout is joined to the neck by an additional coil on the interior of the throat suggesting that the body and spout are constructed separately. Long-neck cylindrical-spout bottles are rare in the excavations and have only been identified elsewhere at San Lorenzo del Mate in Phases VII-VIII contexts (Marcos 1989).

Formal Class 13

Carinated-spout bottles with rounded or tapered rims and a rim diameter of 3 cm (100%), 2 cm (neck) and a wall thickness of 8 mm (rim), and 7 to 8 mm (body) make up Formal Class 13 (Figures 22c, 24-26). Interiors are wiped or smoothed, while the exterior upper bodies and necks are slipped dark reddish brown (2.5YR 3/4) or red (2.5YR 4/6), and polished. The carinated-spout is decorated with plastic techniques consisting of carefully executed broad line or fine line incised geometric motifs

on the collar of the spout (Figure 26). The broad or fine line incisions are made when the clay is pattern burnished and leather-hard, and the geometric designs all appear very similar to one another (Figure 26). The manufacturing technique is coiling, the carinated-spout is joined to the lower body by a coil located on the neck interior. Sherds from carinated-spout bottles are encountered in excavation and also on the surfaces of a number of sites in the region. Such bottles have also been reported at Valdivia sites in the Guayas Basin at San Lorenzo del Mate and around Milagro (Felipe Cruz, personal communication, 1991; González de Merino 1984:34, 97; Marcos 1989: figure 17d). These bottle forms are no doubt for the consumption of fermented beverages (chicha), and are from Strata 5 and 6 and are diagnostic of Valdivia Phase VIII.

Formal Class 14

Stirrup-spout bottles with rounded rims and rim diameters of 3-4 cm (10%) and a wall thickness of 8 mm (rim), 5 to 7 mm (body) make up Formal Class 14 (Figures 27 and 28). The interior surface is wiped, smoothed, or untreated. Class 14 vessels have thick and bulbous spouts which expand laterally from the mouth to the junction with the body (Figure 27a), as well as longer, thinner, parallel stirrups (Figure 27b). Reconstructed forms include two distinct vessels, a globular form, and another one with one or two tier high angular shoulders (Figure 27b). The exterior surface is slipped dark reddish brown (2.5YR 3/4), or red (2.5YR 4/6), and is usually polished or pattern burnished throughout. The manufacturing technique is coiling. The spout is joined to the lower body by an extra coil on the interior of the spout and shoulder. Stirrup-spout bottles are found in the excavations, and also are present in surface collections at a number of Late Valdivia sites in the region. Although no complete Late Valdivia stirrup-spout rims were found, they are essentially identical to those reported for Early Machalilla in other regions of the coast (Andersen 1978; Estrada 1958: figures 31-32; Lippi

1983:328, figure 50; Meggers *et al.* 1965: figures 78-8, 88-12, plates 155, 156). A bowl with hollow stirrup handles was also found (Figure 27c). Stirrup-spouts were first excavated at Valdivia and Buena Vista along the Valdivia River in coastal Guayas but were thought to represent Machalilla trade sherds (Meggers *et al.* 1965: figure 53). Spouts from this collection are evidence that stirrup-spouts begin during Valdivia. All stirrup-spout sherds are from Strata 5 and 6 in Phases VII-VIII contexts and are diagnostic of Phase VIII. Such vessels have only been identified in the Jelí Phase, but are reported for Machalilla in other regions of the coast (Estrada 1958: figures 31-32; Lathrap *et al.* 1975: artifacts 230-232; Meggers *et al.* 1965: figures 78-8, 88-12).

Formal Class 15

Pedestal bowls with rounded rims and rim diameters ranging from 23 to 26 cm (80%), and wall thicknesses of 8 mm (rim) and 7 to 8 mm (body) constitute Formal Class 15 (Figure 29). Interior surfaces are wiped, smoothed, polished, and red- (2.5YR 5/8) slipped. Exterior lower body and walls are red- (2.5YR 5/8 or 2.5YR 4/8) slipped and polished through, and are slightly everted, vertical, or concave. Rims from bases are difficult to differentiate from jar rims, except for evidence of use wear on the lip. The area inside the pedestal base is usually shell-scraped or left untreated. Breaks usually occur where the base joins the lower body. The technique of manufacture is coiling, the bases were made separately and attached to the bottom of the vessel with an extra coil where the base joins the body. The pedestal bowls appear to be constructed to maximize stability. Such bowls usually have large rim diameters and appear to have been used as serving vessels. The pedestal bases measure 2-3 cm high and range from 8 to 11 cm in diameter. Pedestal bowls were found in excavations as well as surface finds at Late Valdivia sites in the region, but have thus far only been identified at a few late sites in other parts of coastal Ecuador (Marcos 1989). Sherds come from Strata 5 and 6 in Phases VII-VIII

contexts. They are diagnostic of Valdivia Phase VIII.

Jelí Phase Diagnostic Features and the Valdivia Pottery Sequence

Despite some regional differences in the Late Valdivia pottery from southern El Oro, the Jelí Phase pottery is clearly similar in technological and stylistic attributes to Valdivia Phases VII-VIII diagnostic vessels found at sites to the north and northwest in the Gulf of Guayaquil region. Some Jelí Phase pottery diagnostic ceramics are also found in coastal Guayas and in southern Manabí province. The clear stylistic and formal similarities among these pottery complexes indicate that they are regional expressions of the same cultural phase.

The regional variability of Late Valdivia pottery from the Ecuadorian coast is consistent with the variability for early coastal pottery assemblages throughout western South America during this time (Hoopes 1994; Lanning 1967:85-87). The variability in forms and modes at La Emerenciana is greater than that of Late Valdivia pottery from other parts of the Ecuadorian coast. The increased variability of formal and functional vessel categories is not only related to considerations of use or activities, but is also related to specialization of production and level of sociocultural complexity (Rice 1987:171, 188-91, 201, 204).

The platform mound construction and increased variability of formal functional vessel categories at La Emerenciana and large sites found elsewhere in its region date to the final portion of the Valdivia Phase. These data suggest that these coastal societies, occupying such sites as San Isidro and San Lorenzo del Mate had developed complex levels of social organization. Such developmental processes have been recorded at Phase VIII sites in other regions of the Ecuadorian coast. Moreover, similar sociopolitical developments were occurring simultaneously in the Quito Valley at Cótocollao and in the regions to the south.

The pottery found during excavation primarily represents ritual offerings and includes forms and attributes which have heretofore not been reported for Valdivia. However, with the exception of the ceramic bottle forms, almost all of the classes described for Jelí Phase pottery have been reported from Valdivia ceramic complexes in other parts of the coast. What distinguishes the Jelí Phase component from pottery of the earlier periods is the increase in specialized forms particularly composite forms and bottles.

The Valdivia ceramic tradition consists primarily of small open bowls, jars, and cooking pots that have a similarity, yet show sophistication in manufacturing skill (Estrada 1956, 1958: figure 8; Meggers *et al.* 1965:42-43, figure 54; Raymond *et al.* 1994; Willey 1971:275). A hallmark of Valdivia pottery is a dichotomy in the decorative motifs on cooking pots with clearly demarcated necks and vessels with restricted openings, and those on small bowls (Lathrap *et al.* 1975: 29). The dichotomy holds in the Jelí Phase where demarcated, necked forms have decorations that were carried out when the clay was moist, and which are associated with a red or maroon slip. Most open bowl forms have broad and fine line geometric motifs made when the vessel was leather-hard and are associated with a dark brown slip (Staller 1995). Another trait of Valdivia pottery first noted by Lathrap *et al.* (1975:30) is a tendency for pots and bowls to have slightly concave walls with a ridge or angle between the side and bottom of vessels.

Machalilla pottery shares some features with Valdivia, but is distinguished in a number of ways. Vessel walls are thinner in cross section, and made with finer paste (Meggers *et al.* 1965:142, 145-146). The most common Machalilla plastic techniques are similar to those used in middle and late Valdivia pottery, but distinct in that incisions are predominantly fine line, and are executed after the vessel is leather-hard (*ibid.* 1965; Lathrap *et al.* 1975:29). Another Machalilla trait is the application of

thick red slip bands set in parallel geometric arrangements on the body of the vessel (Estrada 1958: 45, 58-59; Meggers and Evans 1962). Previously, the maroon or red slip bands had only been identified on Machalilla sherds from sites in coastal Guayas or southern Manabí (Estrada 1958:45, 58, 59; Lippi 1983: figures 75-76, 78-82; Meggers *et al.* 1965: 134, 136, 146; Meggers and Evans 1962), but they are also present in modified form on Jelí Phase pottery. A variant of the thick slip bands found on Jelí Phase pottery incorporates pattern burnished bands or thin red- or white-slipped bands that are wider, and usually placed vertically on the body of the vessel, while parallel bands on Machalilla pottery are thick-slipped, narrower, and usually highly polished. An important textural difference is that parallel slip bands can be easily felt when rubbing the surface of Machalilla pottery, while this is not the case with Jelí Phase pottery.

The ceramic analysis suggests that some of the neckless bowls and constricted jars functioned as cooking pots (*ollas*). It has long been assumed that neckless *ollas* or *tecomate* forms were not present in the Valdivia ceramic tradition (Ford 1969; Hoopes 1994), in part because earlier analyses concentrated primarily on plastic techniques in classifying and distinguishing the various types rather than whole vessels (Meggers *et al.* 1965). Moreover, functional categories were not a primary focus in the descriptions, which mislead later scholars attempting to make correlations between Late Valdivia pottery and the earliest ceramics of what is now coastal and northern highland Peru. These latter assemblages almost always included neckless *ollas* in the early assemblages (Hoopes 1994; Kaulike 1981; Lanning 1967). Ceramists working with Valdivia pottery collections have at times remarked to me on this problem and contended, on the basis of use wear on complete vessels, and on lower body sherds, that neckless *olla* forms are, in fact, present throughout the Valdivia sequence (Damp 1979: figures 23-26; Marcos 1988a: figure 14). Such forms essentially replicate cut gourds (Lanning 1967).

The stylistic elements or modes that distinguish Jelí Phase pottery include a preoccupation with contrasting matte, untreated, and treated (polished, slipped, or burnished) surfaces. Such stylistic patterns are a hallmark of the Chorrera Phase and early Chavín-related assemblages. This pattern is particularly apparent in the Jelí Phase by the use of burnished and slipped banding, and the application of thick white kaolin pigment against a matte shell-combed or untreated surface. The bands are often created by simply burnishing the lower body, rubbing the polishing stone in a single direction. The use of parallel bands as a field of decoration is characteristic of the Machalilla Phase, and also present as painted bands in early highland pottery (Collier and Murra 1943: plates 16-23; Meggers *et al.* 1965: figures 73-3, 73-4, 73-5, 73-7, 73-8, 74-1, 77; Villalba 1988: figure 105). The use of contrasting surface finishes is characteristic of pottery from later periods. Techniques such as negative resist and iridescent painting in Late Formative and Regional Developmental Period pottery are the ultimate expression of this stylistic trend along the coast (Evans and Meggers 1957; Lathrap *et al.* 1975: artifacts 334, 335, 337, 353).

The Jelí Phase vessels include a number of forms treated with a translucent, post-fired, fugitive slip. Such techniques are a developmental antecedent to the use of paint in decoration on later Machalilla and Chorrera Phase pottery. Modeling in the manufacture of some vessels has affinities to pottery techniques in regions to the south, in northern Peru. Jelí Phase necked jars are almost always slipped and burnished in the interior to the base of the neck, usually extending to the exterior edge of the rim. The plastic techniques on cambered and carinated jar forms were almost always applied when the clay was still moist, with the background usually left untreated. Open bowls were often slipped and polished or burnished on both sides, with carefully executed broad or fine line incision, often of geometric motifs, made when the surface was leather-hard. The carefully executed geometric motifs on bowls are consis-

tent with the Valdivia tradition. Exceptions are constricted bowls.

The shell-impressed cambered jars have rims that consistently average around 9-10 cm in diameter. The standardized diameters and overall rim shape suggest these vessels probably had lids or were regularly stacked. The extra coil with shell impressions was decorated when the clay was damp and is highly characteristic of the Jelí Phase complex, distinguishing it from similar cambered jars in other Valdivia assemblages that employ different plastic techniques on the exterior camber (Hill 1972-74: figure 67; Marcos 1988b: 171; Meggers *et al.* 1965: figures 26-5, 41-9, 48-3; Lathrap *et al.* 1975: artifact 50).

The ceramic bottles and stirrup-spouts provide a clear linkage to Machalilla (Figures 23-28). The variability in cylindrical-spout shapes reflects experimentation in the manufacture of such forms. The shape and restricted orifices indicate that they were designed for carrying and primarily functioned to hold liquids and prevent spilling. The standardized geometric motifs on carinated-spout bottles suggest they had a ritual importance and may have been used to consume beer (*chicha*) during rituals, although the reconstructed bottles and stirrup-spouts hold no more than a liter of liquid.

The bottle forms at La Emerenciana include various kinds of long-neck cylindrical-spout bottles, carinated-spout bottles (*picos fállicos*), and globular everted jars with elaborate geometric motifs (Figure 21). Cylindrical-spout bottles were thought to originate with Machalilla (Ford 1969:119-120; Lathrap *et al.* 1975: figure 33; Meggers *et al.* 1965: figure 88-11). For many years it was believed that stirrup-spouts also originated with the Machalilla culture (Coe 1963; Estrada 1958: figure 55; Ford 1969:117-118; Lathrap 1963; Meggers and Evans 1962; Meggers *et al.* 1965:137-139). In the Jelí Phase pottery, the earlier association of stirrup-spout bottles and jars occurs at several Late Valdivia sites in regional survey and in excavated con-

texts at La Emerenciana. Forms such as carinated bowls, pedestal bowls, stirrup-handled jars, cylindrical-spout bottles, and stirrup-spouts previously differentiated Machalilla from Valdivia pottery (Lathrap *et al.* 1975:33-34; Meggers *et al.* 1965:110-146). However, any of these reconstructed forms and diagnostic attributes link the Late Valdivia Jelí Phase pottery to early Machalilla (Staller 1994).

Origins and Associations

Most early studies were primarily concerned with establishing a pottery sequence, and secondarily with understanding the origins of these cultural components. The early conclusions were drawn from excavations at deep multicomponent sites with long continuous occupations (Lathrap 1960, 1963, 1966; Lathrap *et al.* 1977:2-6; Meggers and Evans 1962; Meggers *et al.* 1965:110-146). Since almost all these excavations were dug by arbitrary levels there was some mixing of layers. Original interpretations of the evolutionary relationship between Valdivia and Machalilla were also influenced by coastal geography, because research was carried out in portions of the coast with relatively small and restricted Late Valdivia occupations, and few studies isolated single phase components. Complicating the issue were thin layers of Machalilla refuse at almost all the known Late Valdivia occupations south of the Valdivia River and north of the Verde River (see Figure 1) (Bischof 1975b; Lippi 1982, 1983:322, 344-345; Paulsen and McDougale 1981; Zeidler 1977).

The evidence presented in this ceramic analysis suggests that forms which previously were thought to distinguish Valdivia from Machalilla such as carinated jars, ceramic bottles, and pedestal bowls are present in Late Valdivia sites in southern El Oro Province. Decorative techniques such as red slip banding and post-fired decoration, generally considered Machalilla attributes, are also present in the Jelí Phase complex. The previously outlined stylistic and technological trends in the pottery complex

are developmental antecedents to attributes which later characterized Machalilla, and, for that matter, Chorrera phase diagnostic ceramics in the Guayas Basin. These provide direct evidence of developmental continuity. The Jelí Phase diagnostic pottery supports the contention that Machalilla was a developmental outgrowth of the Valdivia tradition (Bischof 1975b; Cruz and Holm 1982; Feldman and Moseley 1983: 156; Jadán 1986; Lathrap 1971:84-85; Lathrap *et al.* 1975: 33).

Comparative analysis of the ceramics shows that the Jelí Phase complex from southern El Oro has stylistic affinities to Formative (1500-500 B.C.) pottery at Cotocollao in the Valley of Quito in the northern highlands of Ecuador (Meyers 1976; Villalba 1988: figures 83, 88, 92, 100, 111, 118), as well as the southern highlands at Cerro Narrío in Azuay Province near present day Cuenca (Collier and Murra 1943: plates 18, 19 [1-10], 20 [1-4], 14, 18, 22, 23, pp. 35-36, map 3, figures 5-9). Jelí Phase pottery can also be very closely linked to early pottery along the Chotano River in the northern highlands of Cajamarca, at Pandanche, and also at the site of Machaipungo (Kaulicke 1981: figures 6-10; Rosas and Shady 1970). In far northern Peru, on the nearby Chira coast, sherds recovered at the Casita 2 site (Ford 1969:160; Laning 1963: figure 21a-aa), and San Juan Phase pottery from around the Tumbes River (Ford 1969:159-160; Izumi and Terada 1966a: plate 25a) also have strong affinities to Jelí Phase diagnostic pottery from southern coastal El Oro. Early Cupisnique Phase pottery from the shell mounds at Ancón on the central coast of Peru (Burger 1992:90-96; Larco Hoyle 1941, 1946; Willey and Corbett 1954: figures 6a, 6b, 6h-l, 7j, 7k, 8c, 8e) have formal and stylistic attributes similar to Jelí Phase pottery and pottery from San Lorenzo del Mate, as does early pottery at Kotosh in the Peruvian montaña (Ford 1969:162-165; Izumi and Sono 1963: plates 55b, 64a, 67b, 71; Izumi and Terada 1966b). These similarities probably reflect changes in form and structure of long-distance interaction linking Late Preceramic and Initial Period cultures on

the North Coast of Peru, the Ecuadorian highlands, the northern highlands of Peru, and the tropical forest.

The archaeological evidence suggests that, far from being the recipient of technological innovations, the prehispanic cultures of coastal Ecuador introduced a number of innovations to coastal and highland Peru as well as to highland Ecuador. The regional differences in Late Valdivia pottery from the northern and southern frontiers represent a stylistic and technological break from the earlier portion of the ceramic sequence, and are probably a reflection of regional sociocultural differences between coastal peoples and inland farmers in the final portion of the cultural sequence. Despite an apparent increased dependence upon agriculture during the final portion of the sequence (Phases VII-VIII), sites continued to be found in coastal settings in the Santa Elena Peninsula and in areas rich in mangrove resources. In the Gulf of Guayaquil region east of the present-day town of Playas, there is a concentration of Late Valdivia middens located at the mouth of coastal estuaries such as Punta Arenas, Posorja, Ayalán, El Encanto, and at San Lorenzo del Mate (Cruz and Holm 1982; Lubensky 1980, 2000:372-373; Marcos 1989; Porras Garcés 1973:17, 23, 25; Spath 1980:69-71). A Late Valdivia occupation was also recorded in the uppermost layers of the Valdivia type site (Estrada 1956; Staller 1994). Sherds from these sites essentially form the basis for the diagnostic criteria of the final portion of the cultural sequence, and their regional distributions reflect the expansion of Late Valdivia sites proposed in this analysis (Figure 7).

Estrada (1956) first recognized stylistic affinities between Late Valdivia pottery from the Guayas Basin and the Valdivia type site and Early Initial Period pottery from coastal Peru. These ceramic affinities suggest that cultural influences emanating from the south and the highlands of Ecuador and Peru were somehow involved in the development of complex social organization in the northern and southern frontiers. It is increasingly apparent that during

the final portion of the cultural sequence, Valdivia society was involved in long-distance exchange with societies beyond the coast and experienced a cultural florescence. Archaeological research in northern Manabí Province indicates rapid Valdivia VIII colonization to at least the Jama River (Zeidler 1988, 1994:71, 87). The location of a Valdivia VIII Piquigua Phase occupation at San Isidro reinforces the notion that inland site locations, in much wetter subtropical environmental settings, were favored late in the sequence (Pearsall and Zeidler 1994: 207, 211; Staller 1994:393-394, figure 55; Zeidler 1992). The archaeological data suggest that similar Valdivia VIII settlements of greater scale are also known in the Guayas Basin around Playas, and in coastal El Oro. These sites were along the coastline following the ancient mangrove forest at least as far south as the Tumbes River in far northern Peru.

The problem of documenting a ceramic development from Valdivia to Machalilla is historic and regional in nature, and is in part a byproduct of assumptions about the nature of culture change and the spread of technological innovations. The geographic areas where archaeological research occurred, and the methods used in carrying it out, created a data base that did not contain the total range of variability in the pottery or settlement distributions. Because all of the archaeologists working on the Valdivia and Machalilla cultures concentrated solely on the Guayas coast and southern Manabí, there was, until recently, an incomplete record of coastal lowland Valdivia prehistory. It is also apparent that the absence of evidence of a transition led to a number of erroneous models of the nature of these Formative cultures, and the relationship between them. The most recent ceramic evidence indicates substantial regional diversity in early pottery technology throughout the New World (Hoopes 1994). The current data suggest that Late Valdivia societies in the northern and southern areas of the coast had culture histories distinct from those of coastal Guayas. As more Late Valdivia assemblages are identified, the nature of the

developmental relationships will be clarified and the significance of the ancient ceramic complex to ceramic innovation beyond coastal Ecuador will be more clearly understood.

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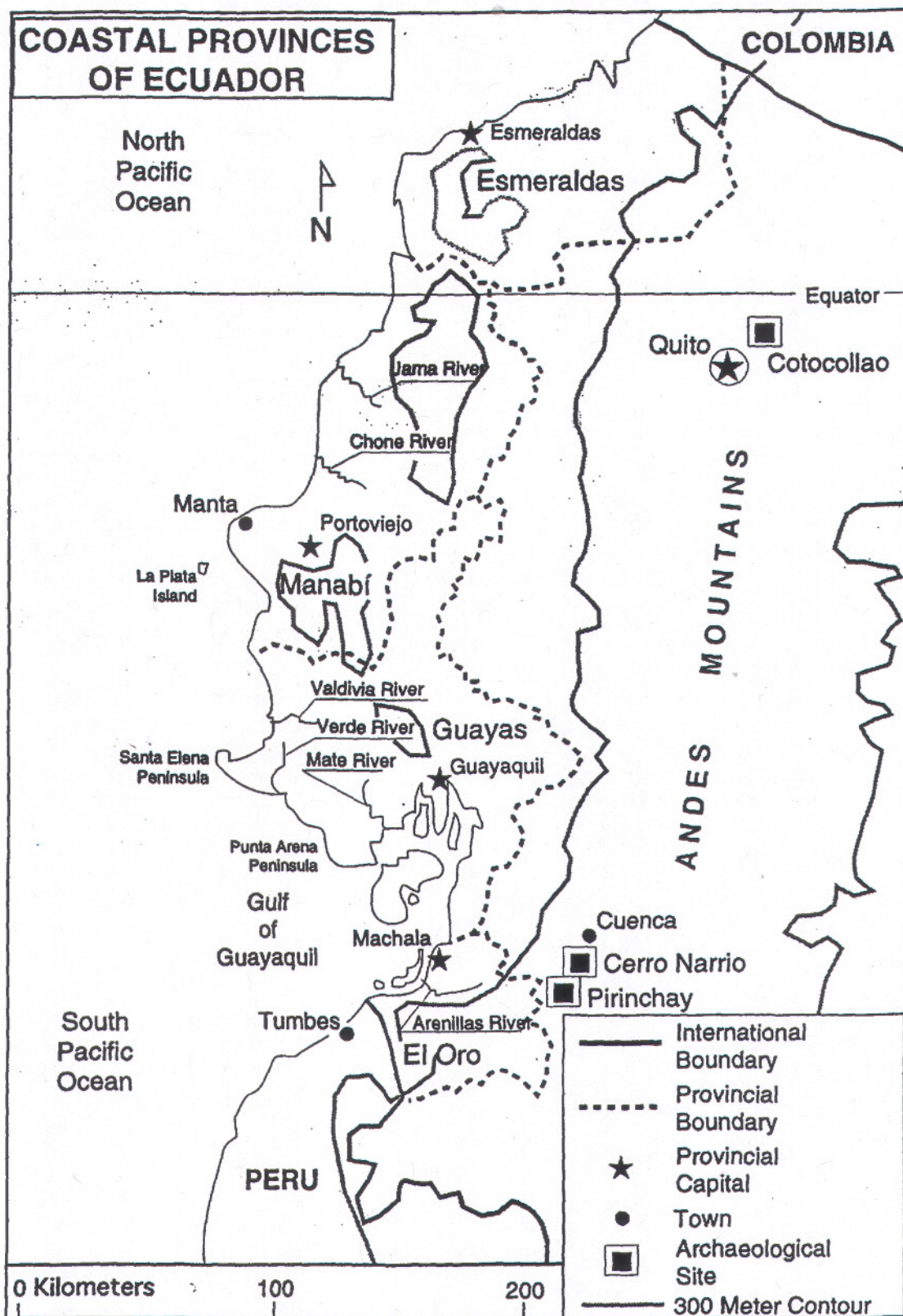


Figure 1. Coastal provinces and streams mentioned in text.

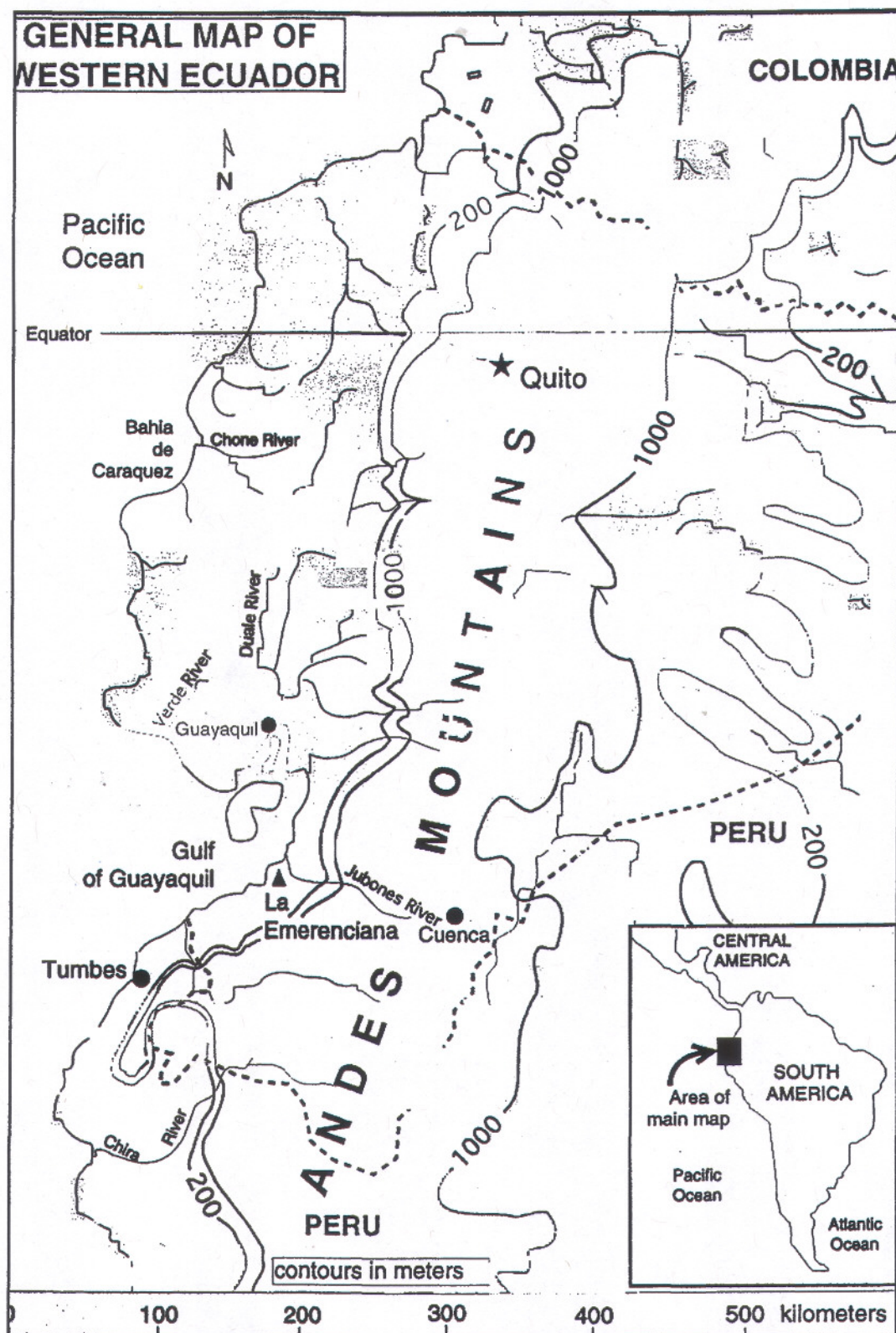


Figure 2. The site of La Emerenciana and towns in western Ecuador and northwestern Peru.

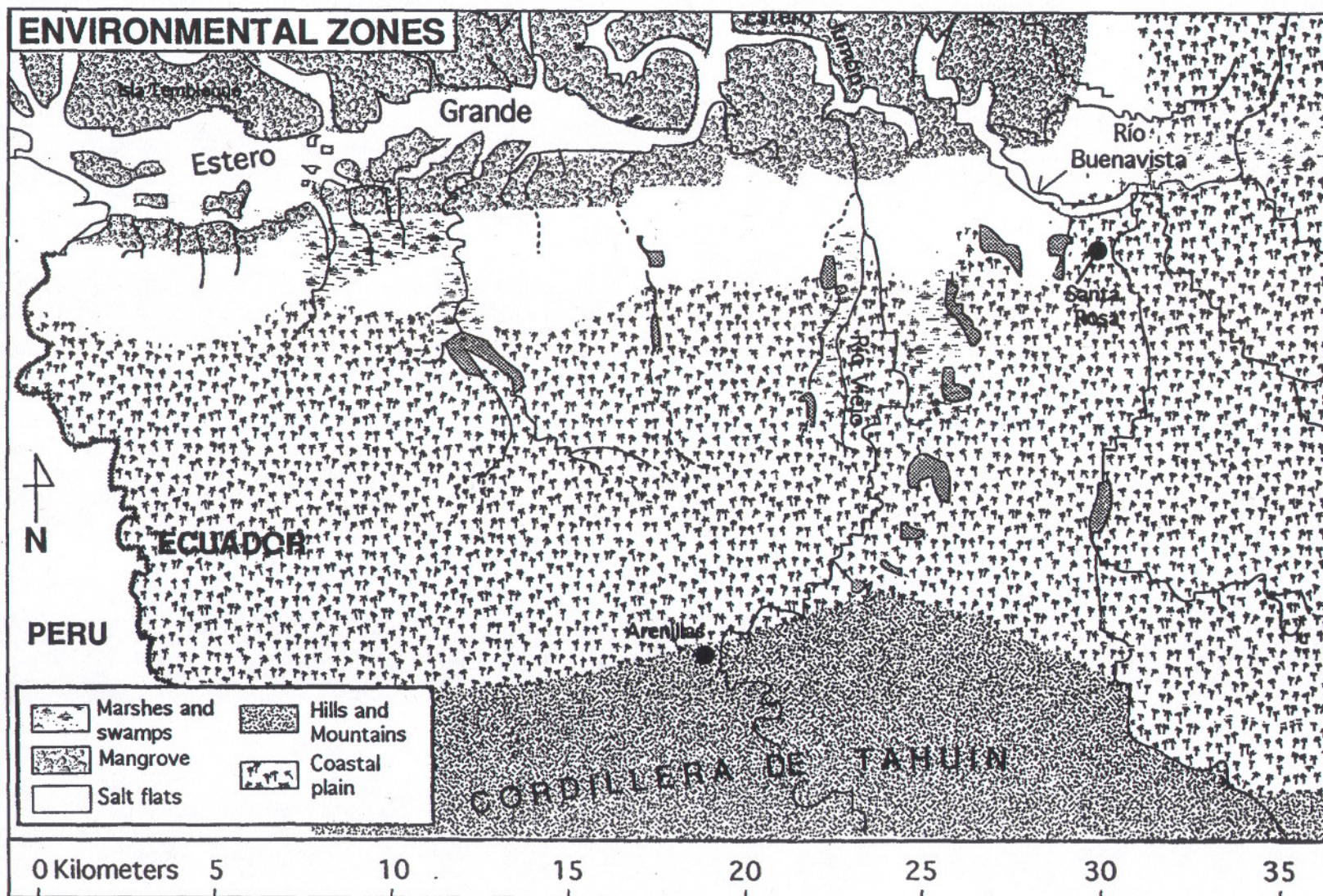


Figure 3. Distribution of major environmental zones in southern coastal El Oro province.

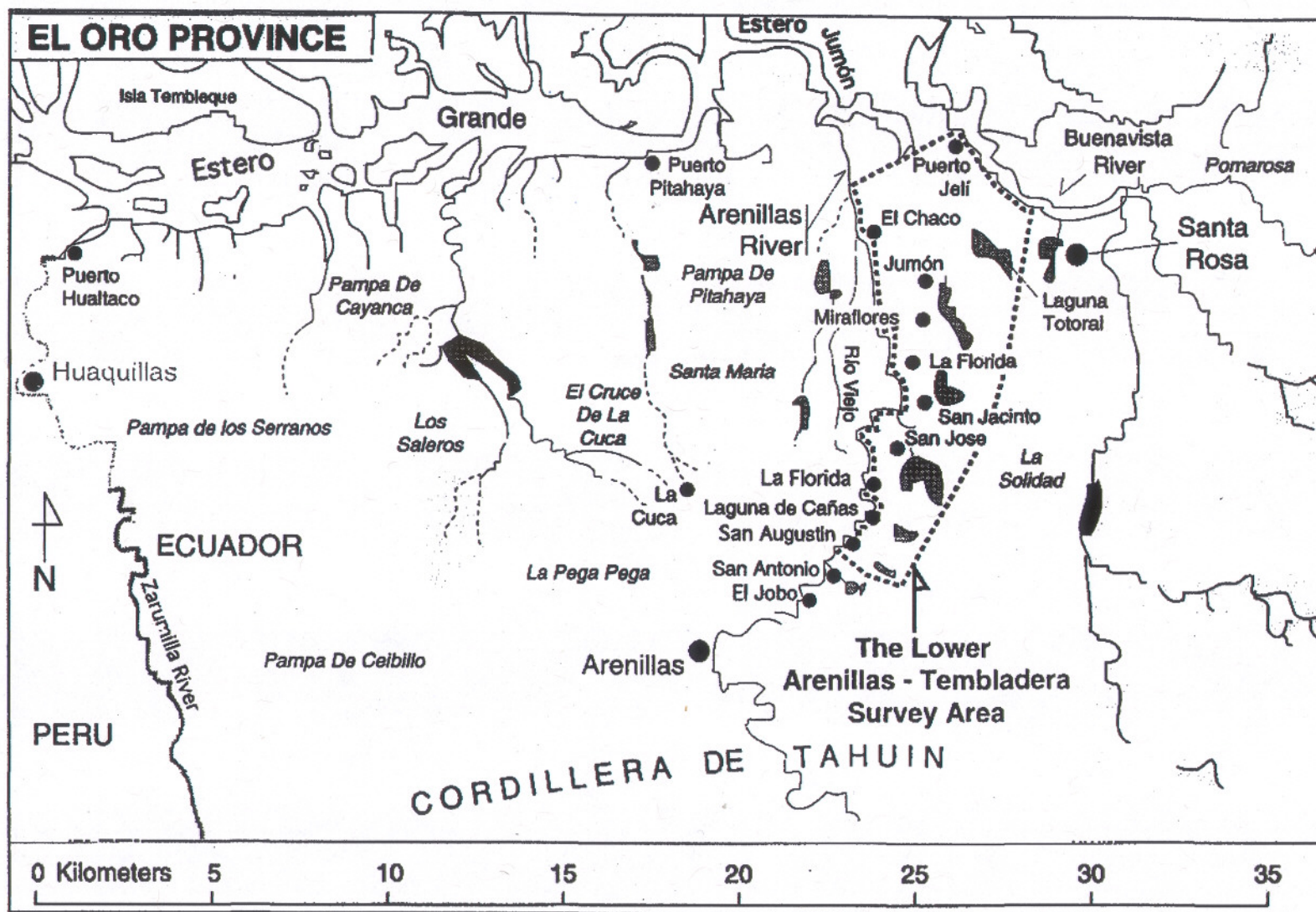


Figure 4. Southern El Oro showing survey zone (dotted line) and modern place names.

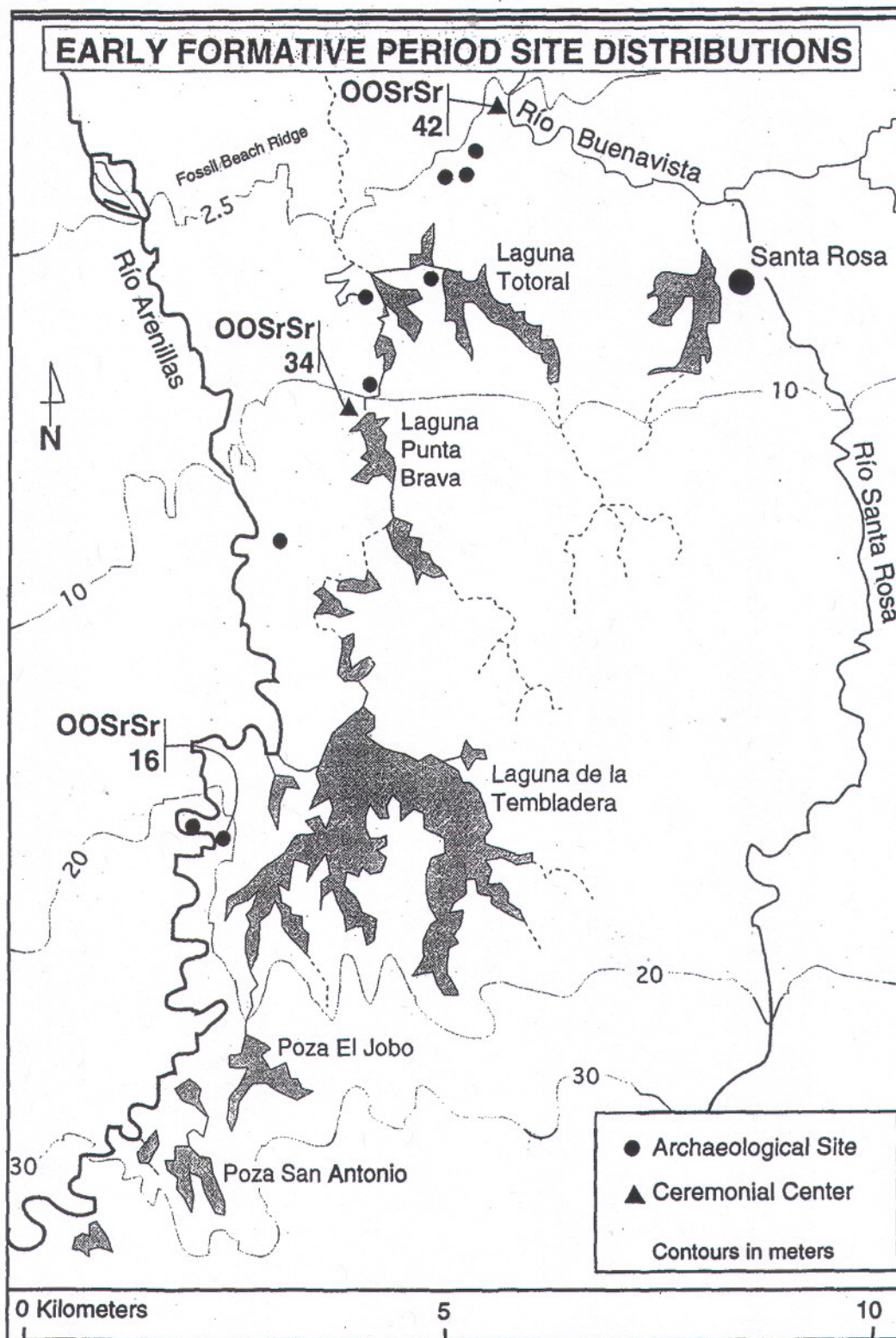


Figure 5. Early Formative Period Valdivia sites identified in settlement survey. Ceremonial centers are distinguished by the presence of artificial earthen mounds. *La Emerenciana* = OOSrSr42.

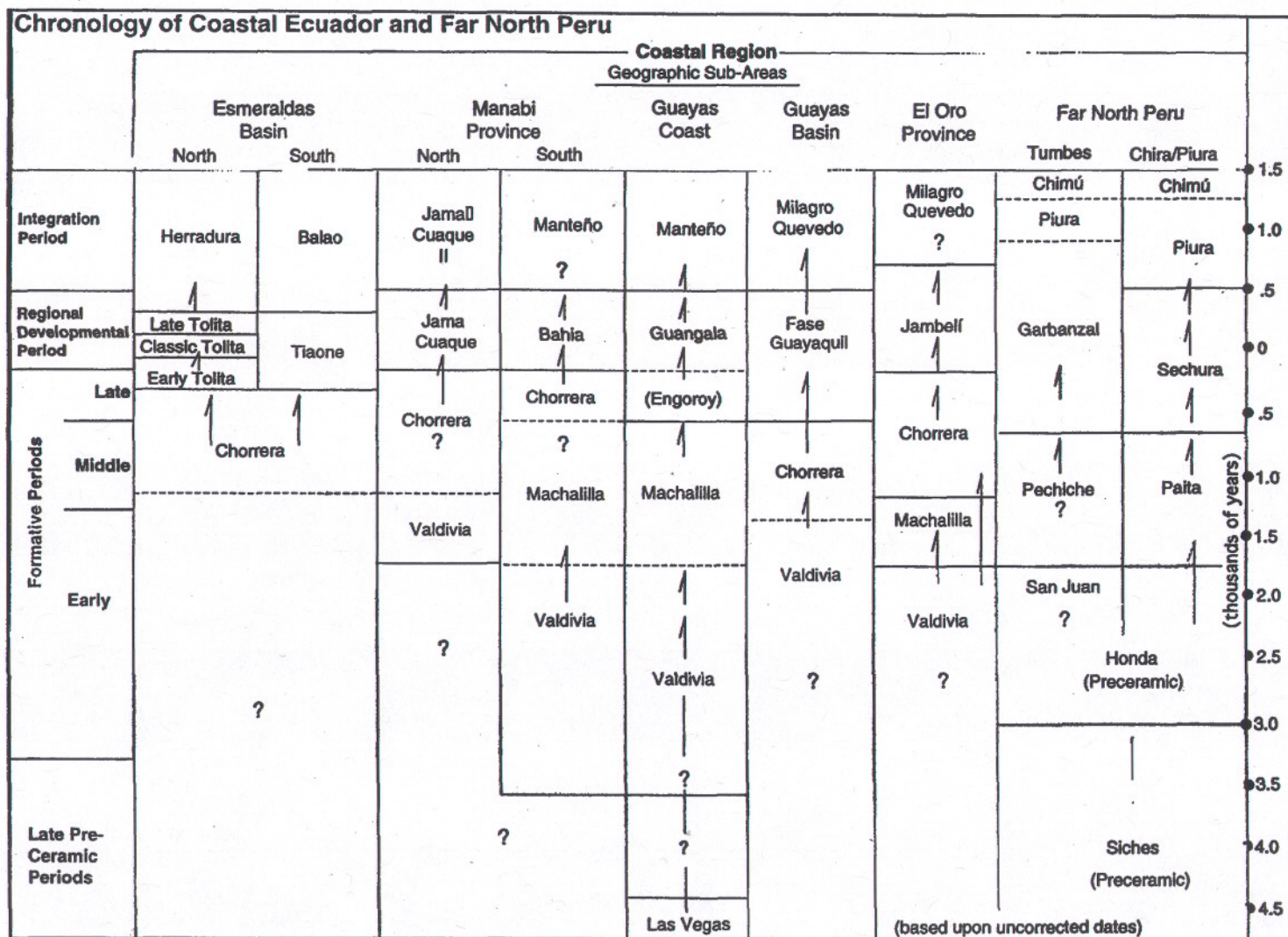


Figure 6. Chronological chart of coastal Ecuador and far northern Peru. For "uncorrected dates" read "uncalibrated dates". For "Damp 1984" read "Damp 1984b".

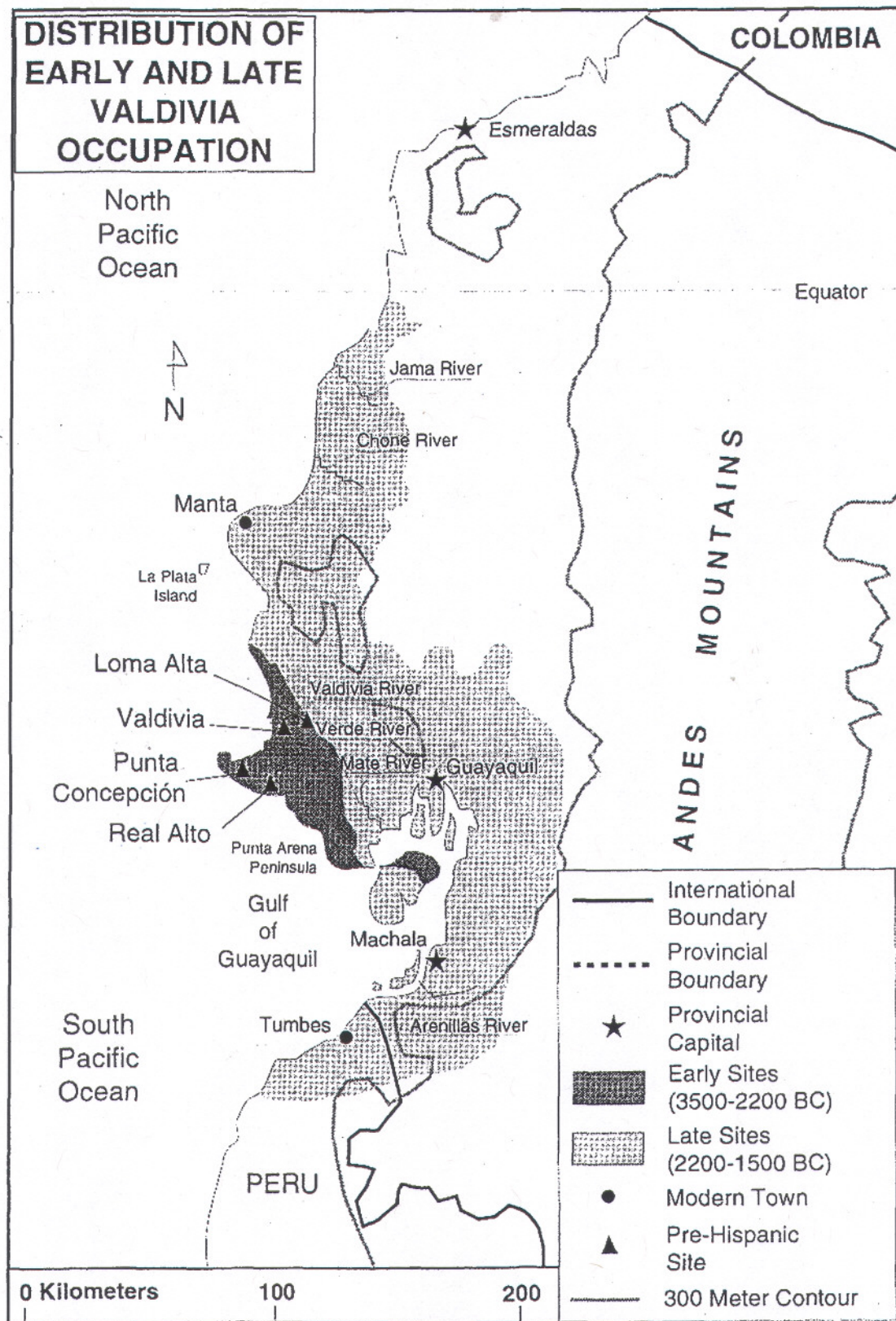


Figure 7. Proposed distributions of Early and Late Valdivia occupations.

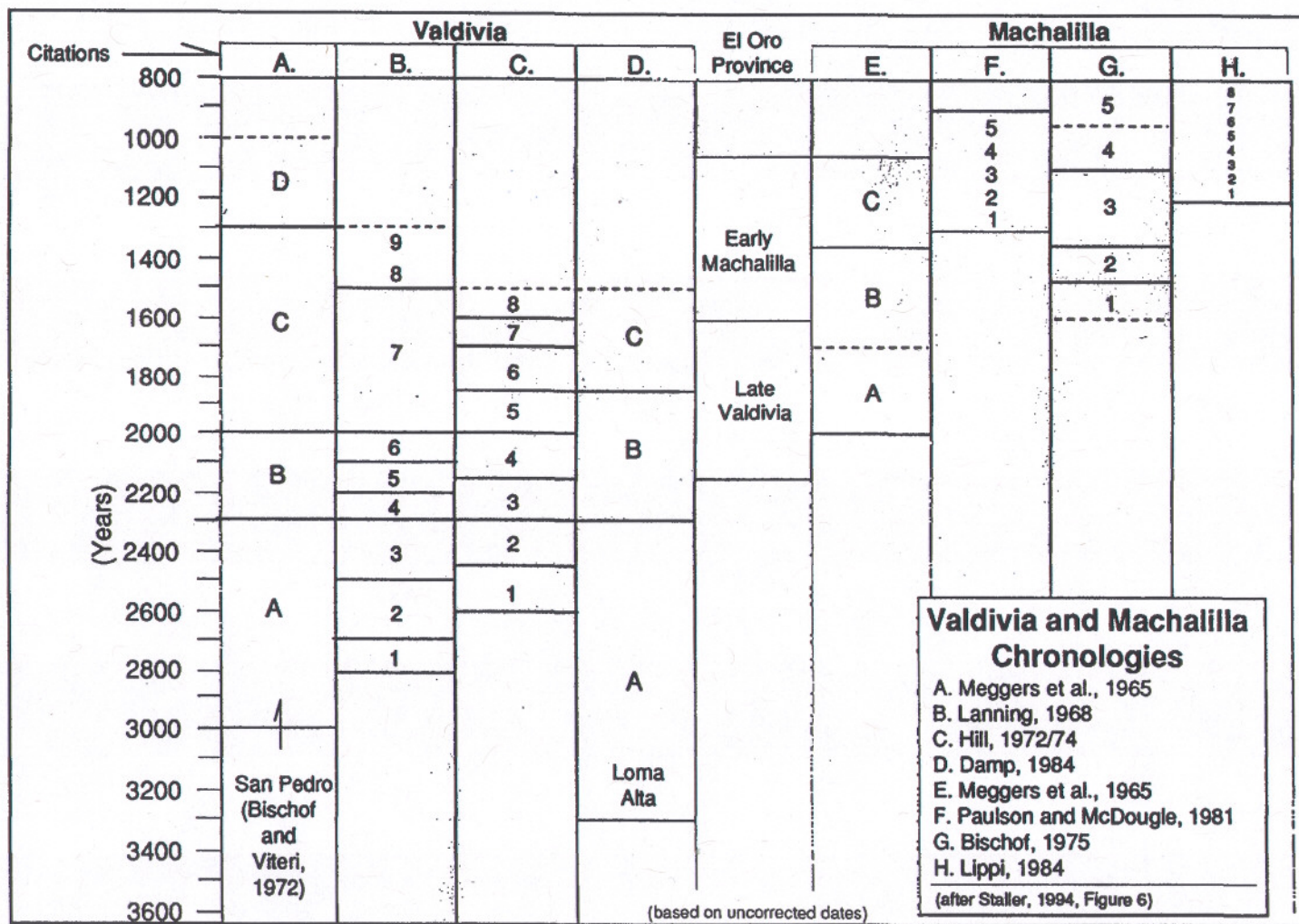


Figure 8. Ceramic chronologies for the Valdivia and Machalilla Phases. For "uncorrected dates" read "uncalibrated dates". For "Bischof 1975" read "Bischof 1975a".



Figure 9. Distribution of known Formative sites with Valdivia Phase VII-III occupations and stylistic affinities to Jelí Phase pottery.

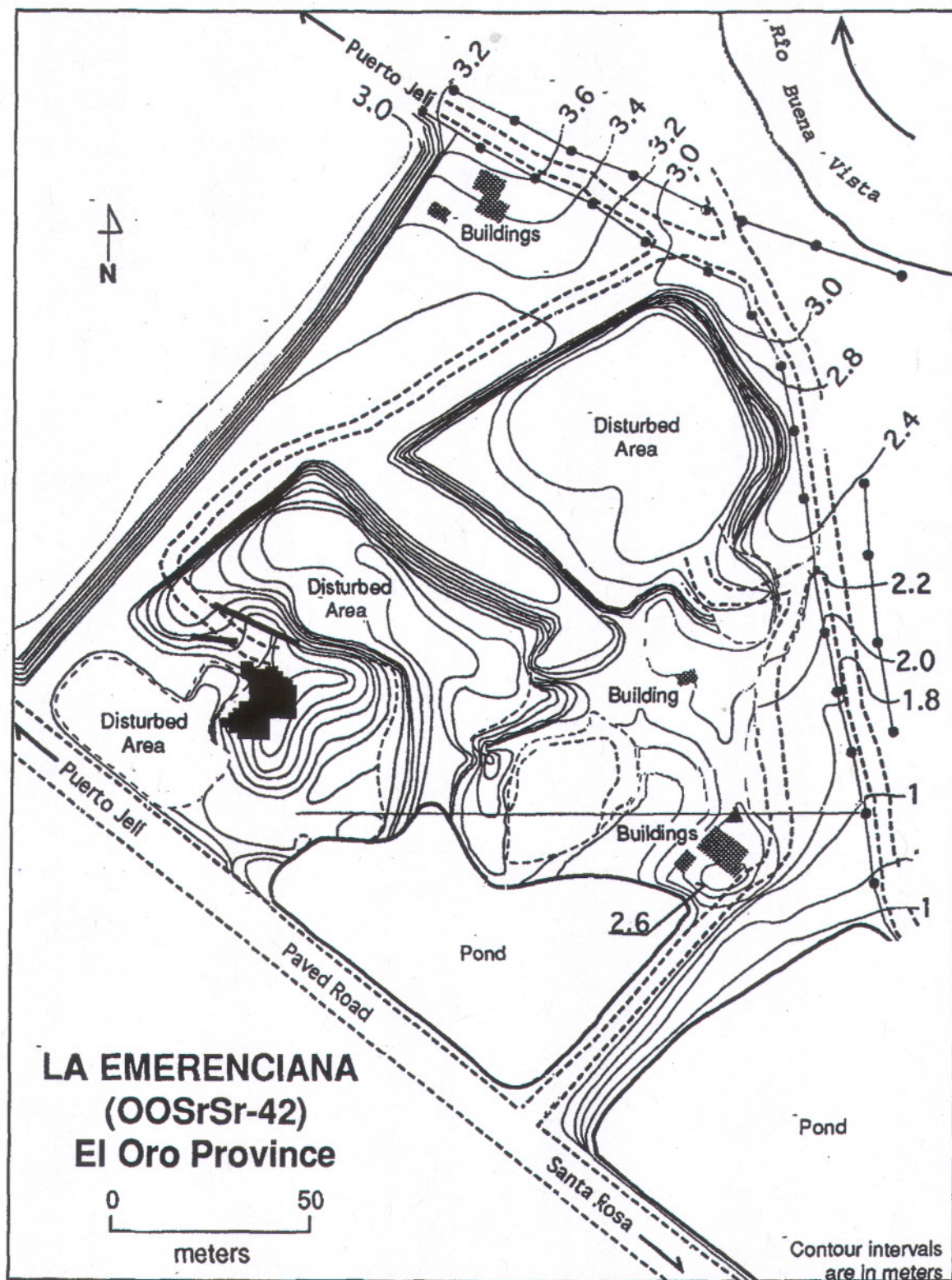


Figure 10. Topographic map of La Emerenciana (OOSrSr-42). Note triangular datum point.

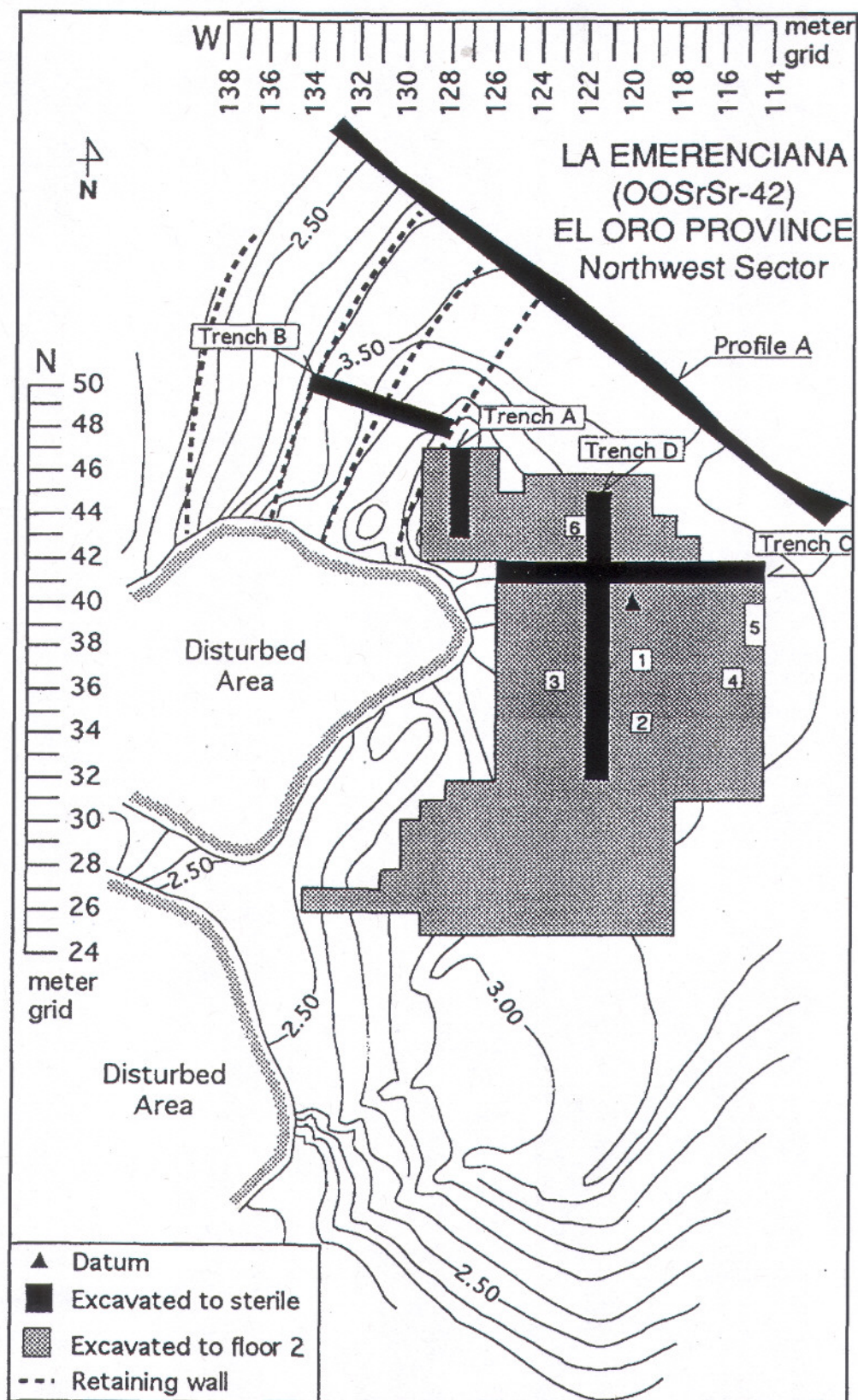


Figure 11. Northwest sector showing Profile A, Trenches (A-D), and Cuts (1-6; numbered white boxes, also excavated to sterile).

IDEALIZED PROFILE OF STRATIGRAPHIC LAYERS AT LA EMERENCIANA (OOSrSr-42)

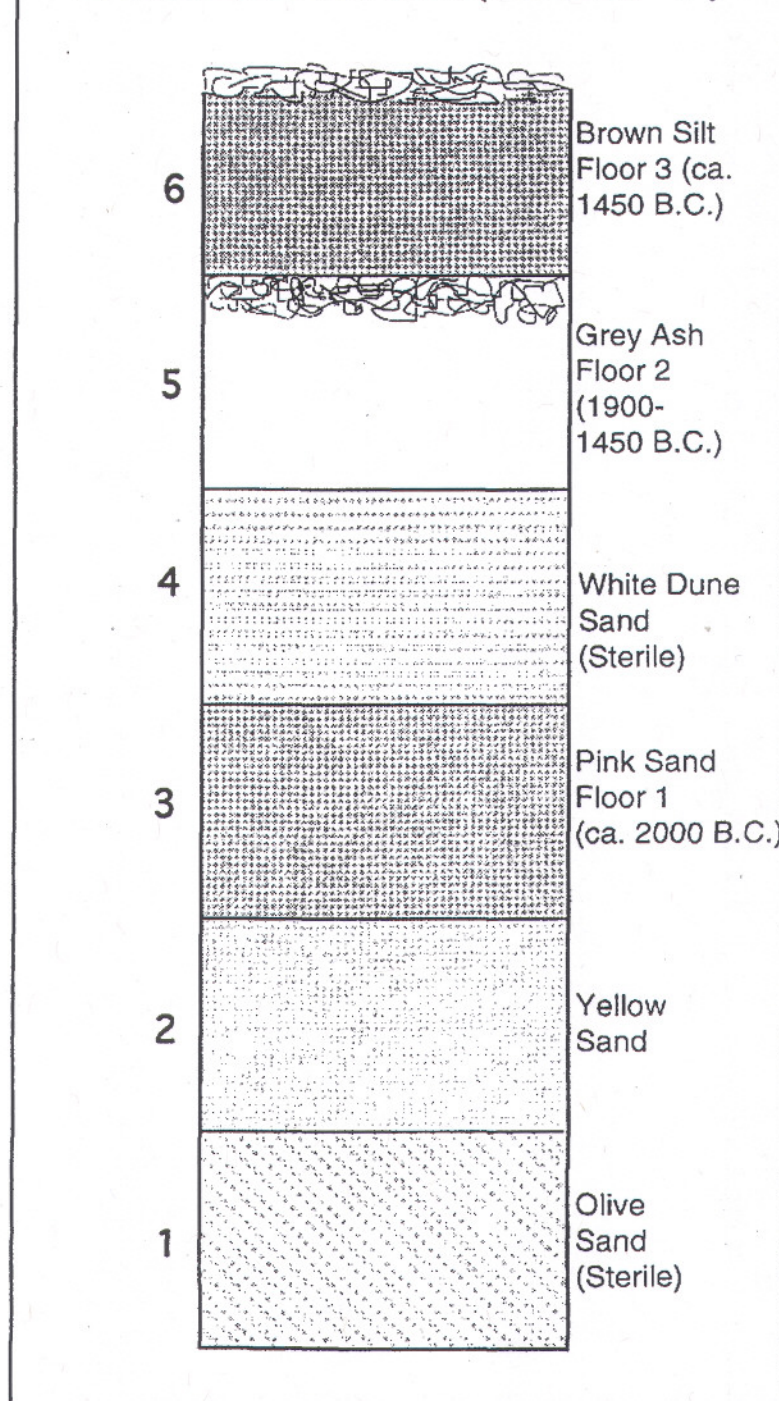


Figure 12. An idealized cross-section of the stratigraphic layers at La Emerenciana.

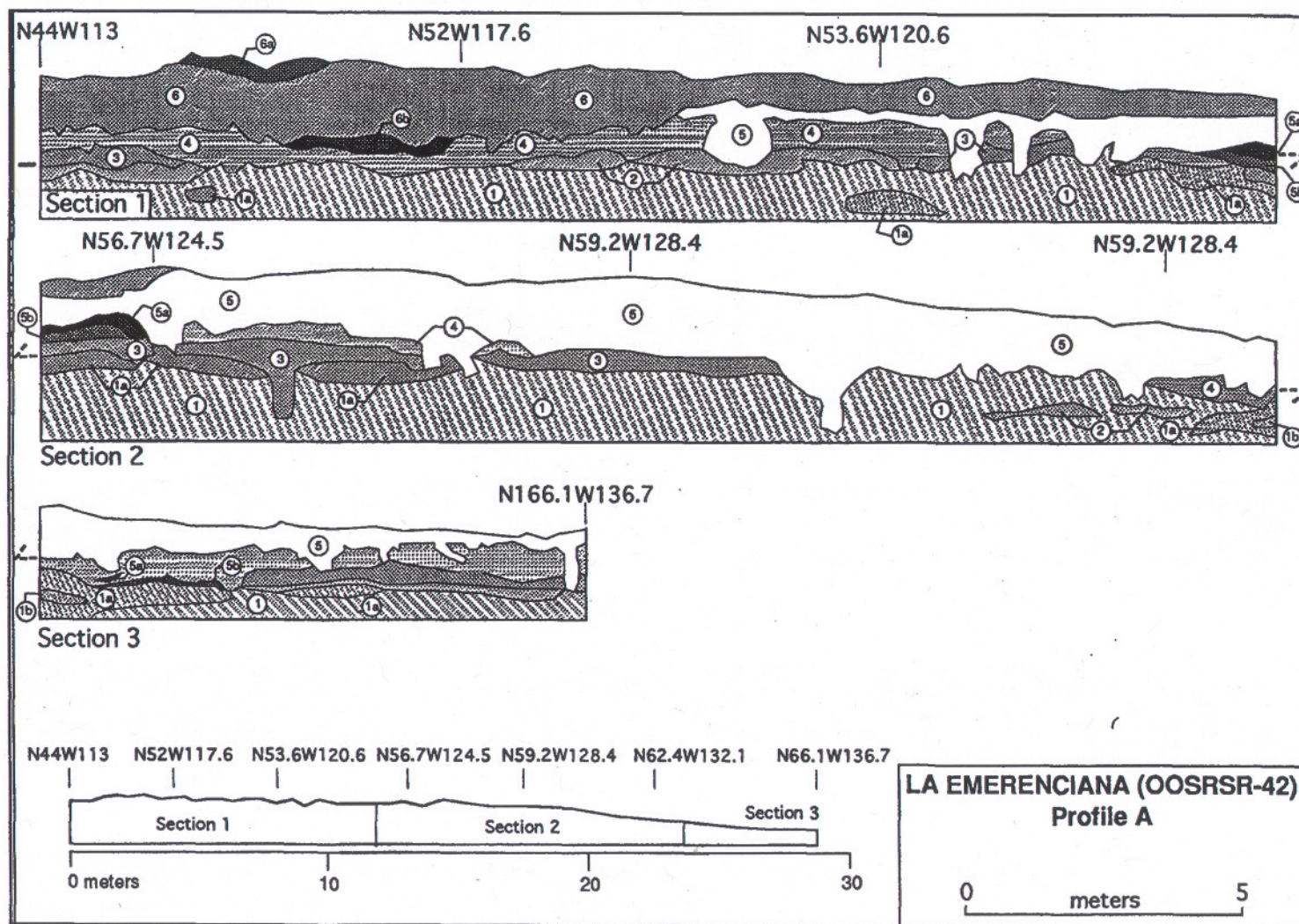


Figure 13. Vertical section of stratigraphic layers. Note shell, daub, and artifacts concentrated in uppermost levels of Stratum 5 and surface of Stratum 6. Shading and numbering are as in Figure 12.

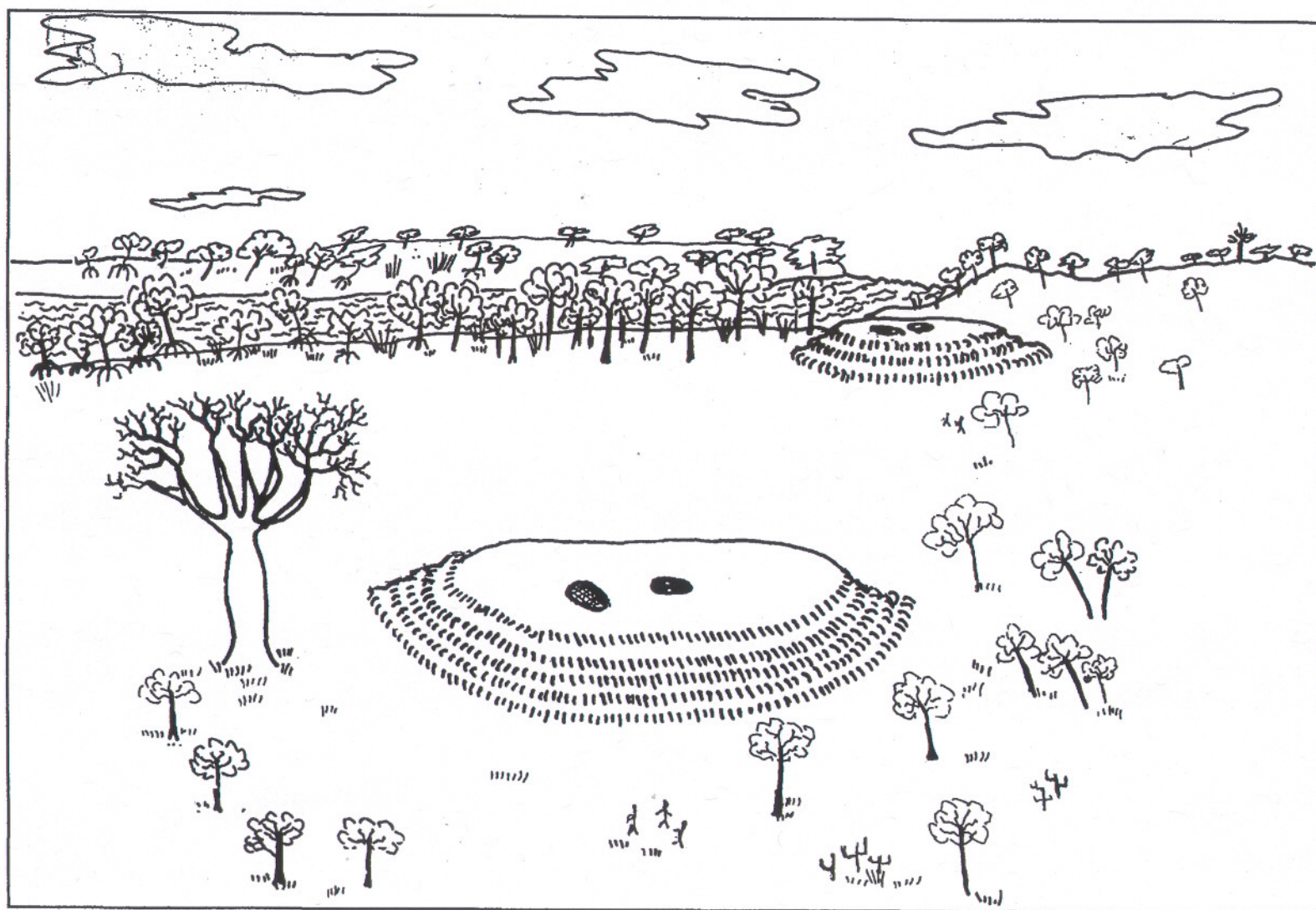


Figure 14. Idealized reconstruction of the platform mounds at La Emerenciana (OOSrSr-42) looking east.

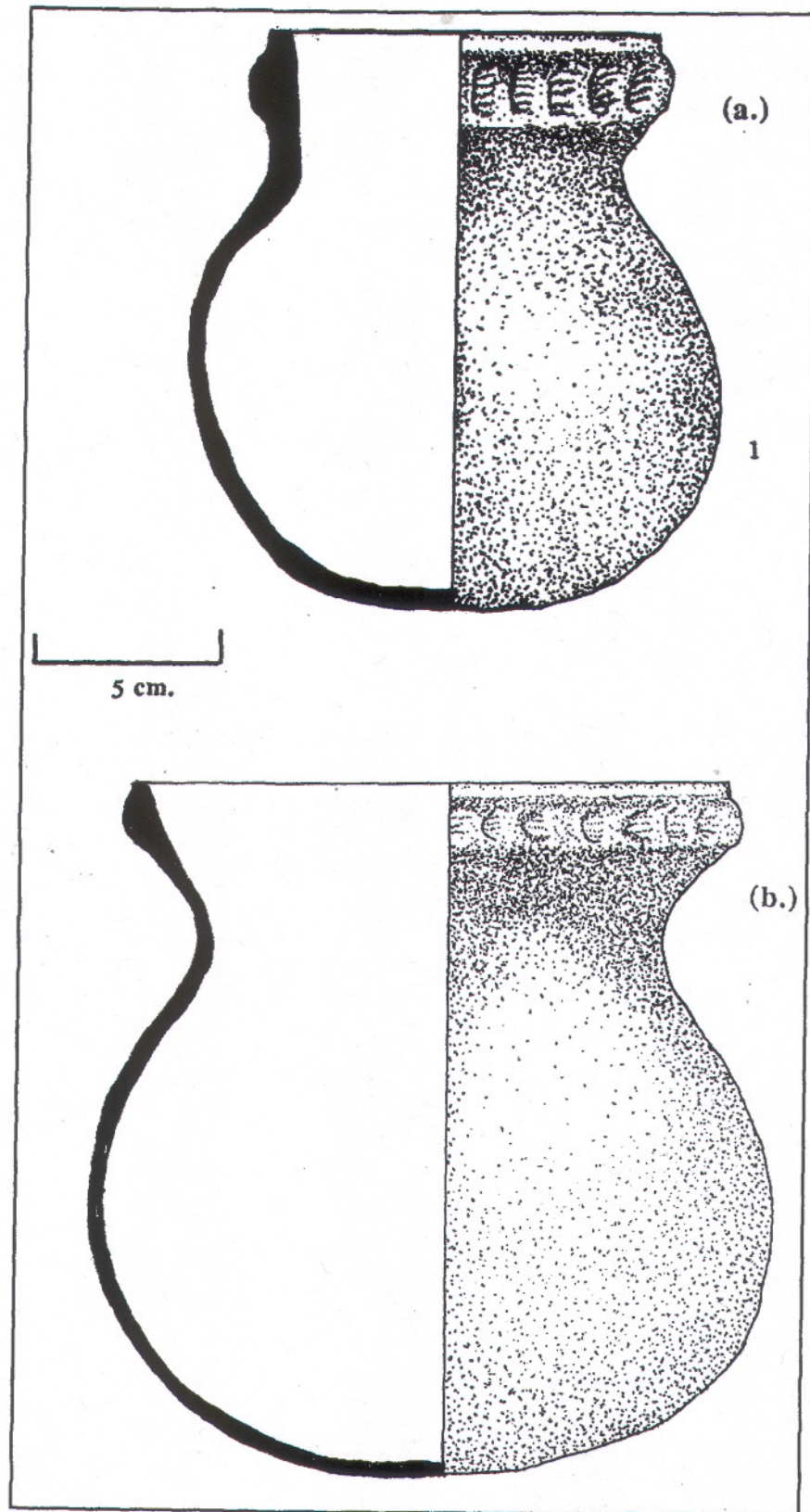


Figure 15. Jelf Phase Formal Class 1.

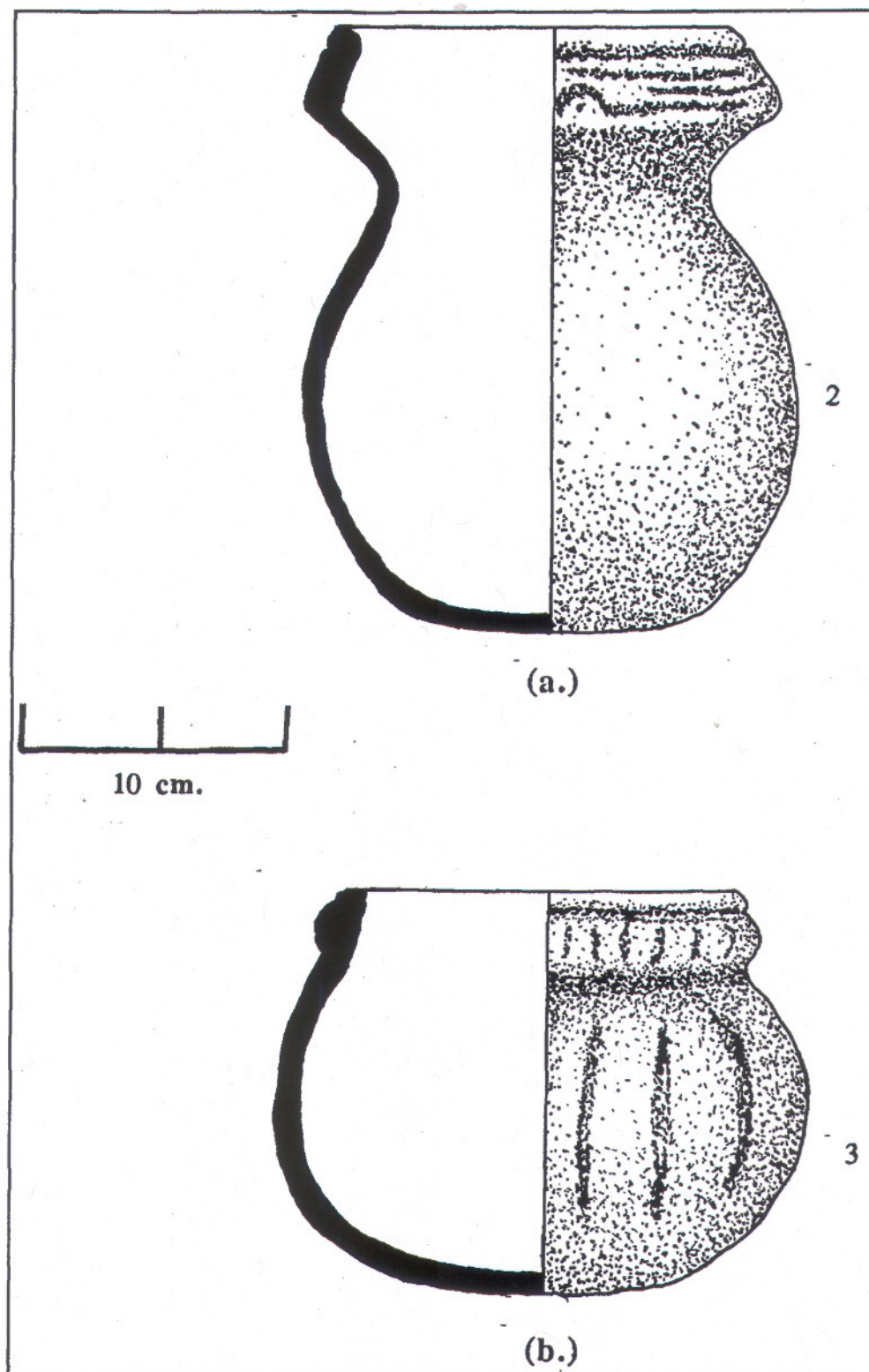


Figure 16. a. Jelf Phase Formal Class 2; b. Jelf Phase Formal Class 3.

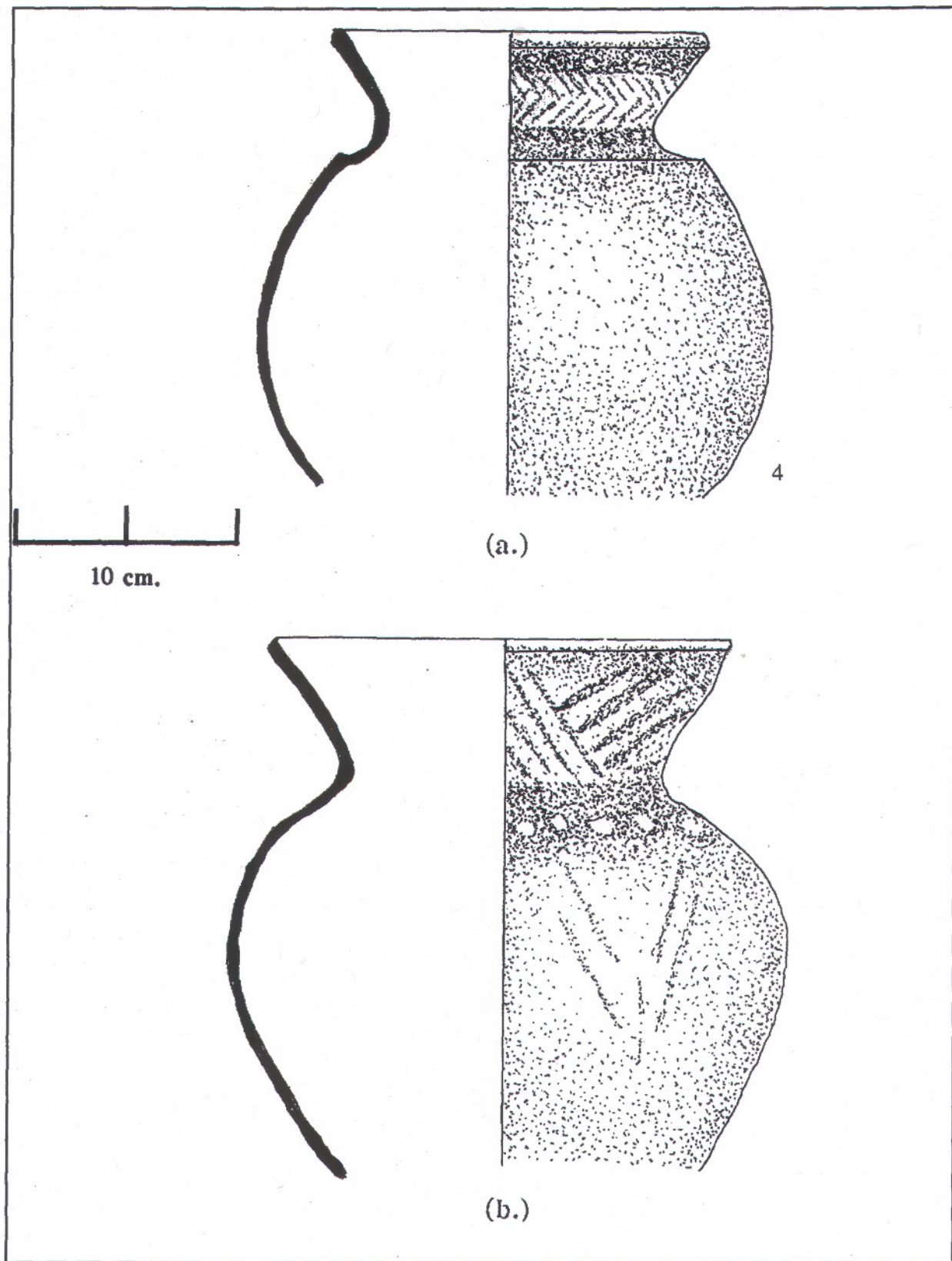


Figure 17. Jelí Phase Formal Class 4.

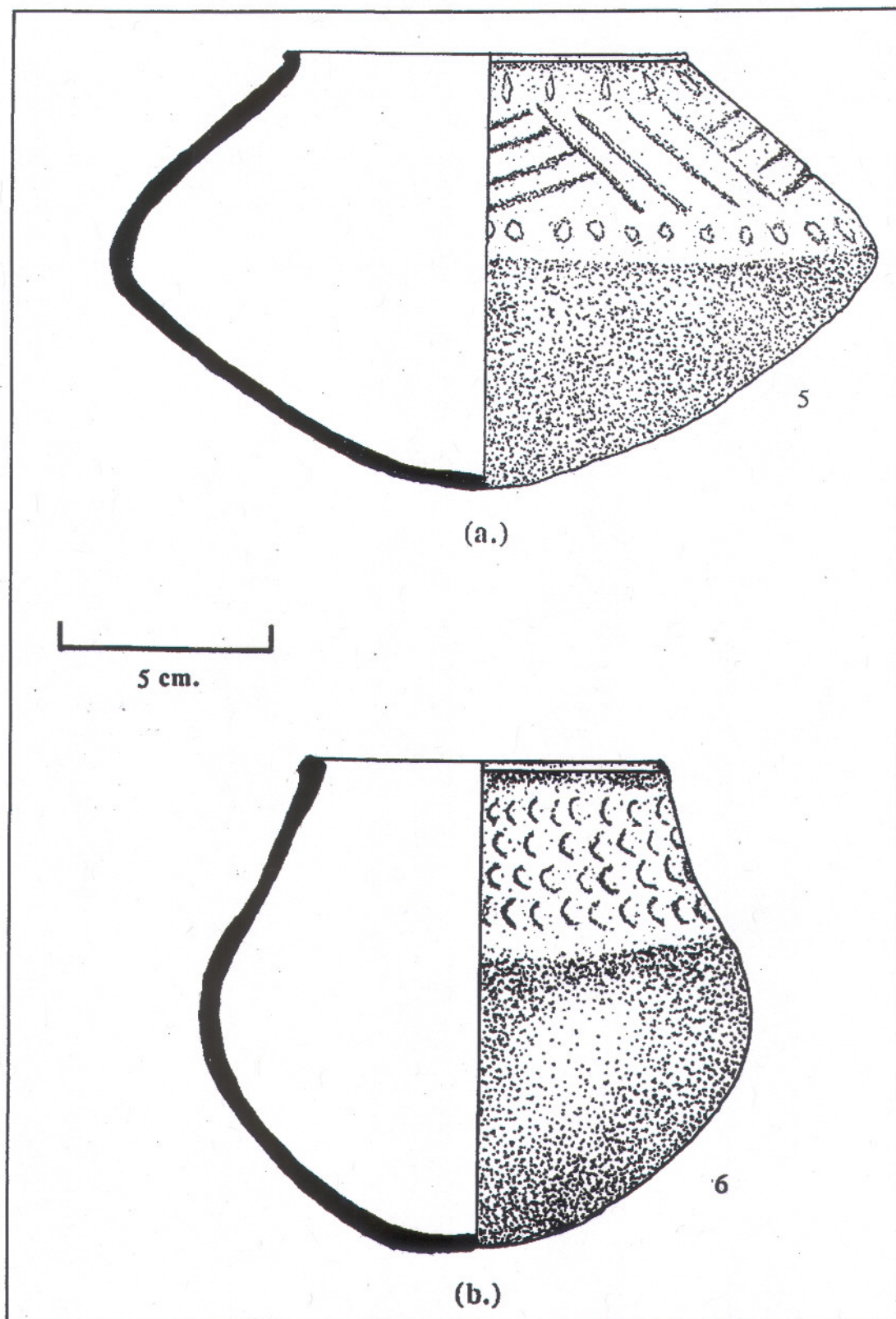


Figure 18. a. Jelí Phase Formal Class 5; b. Jelí Phase Formal Class 6.

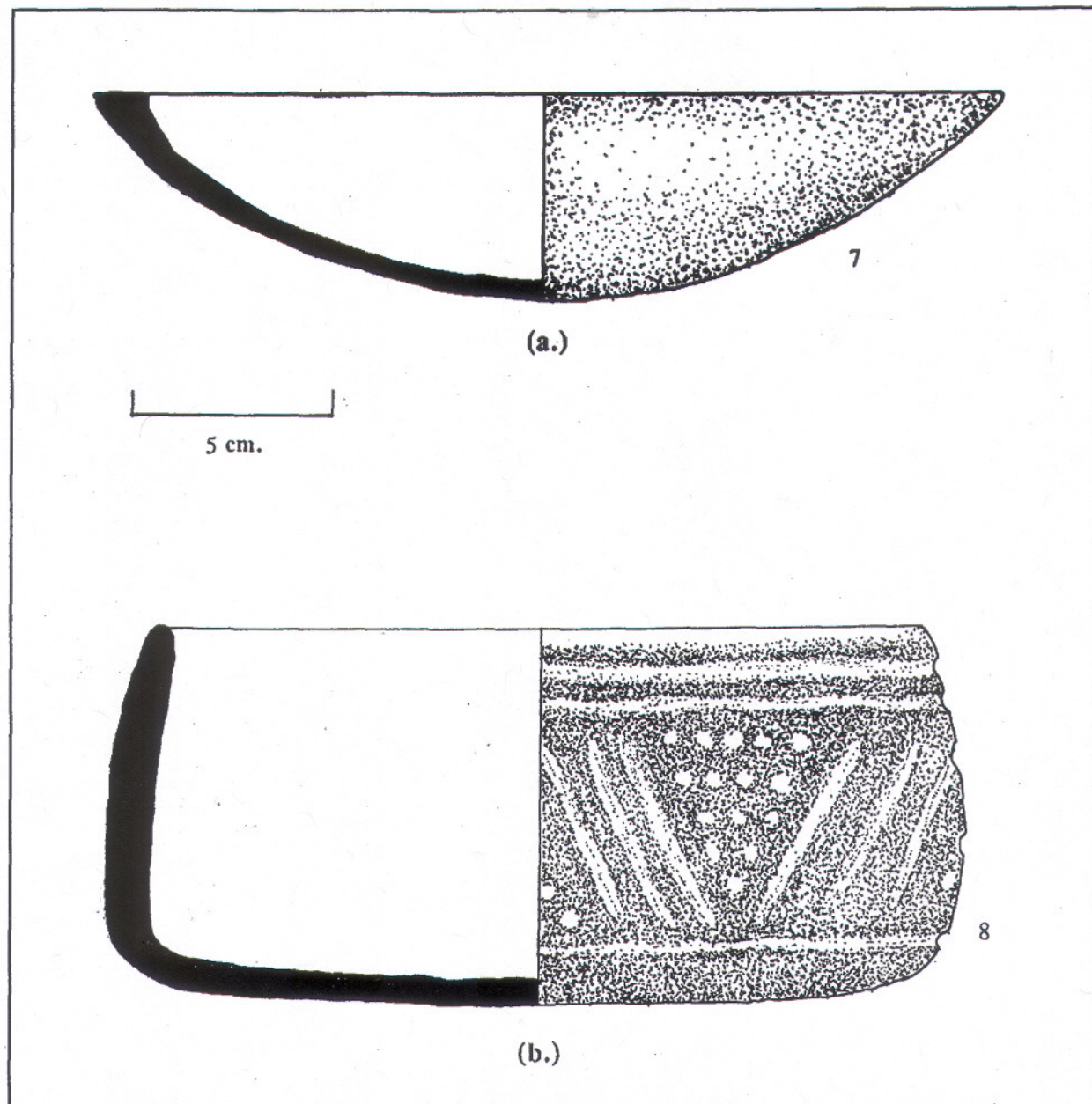


Figure 19: a. Jelf Phase Formal Class 7; b. Jelf Phase Formal Class 8.

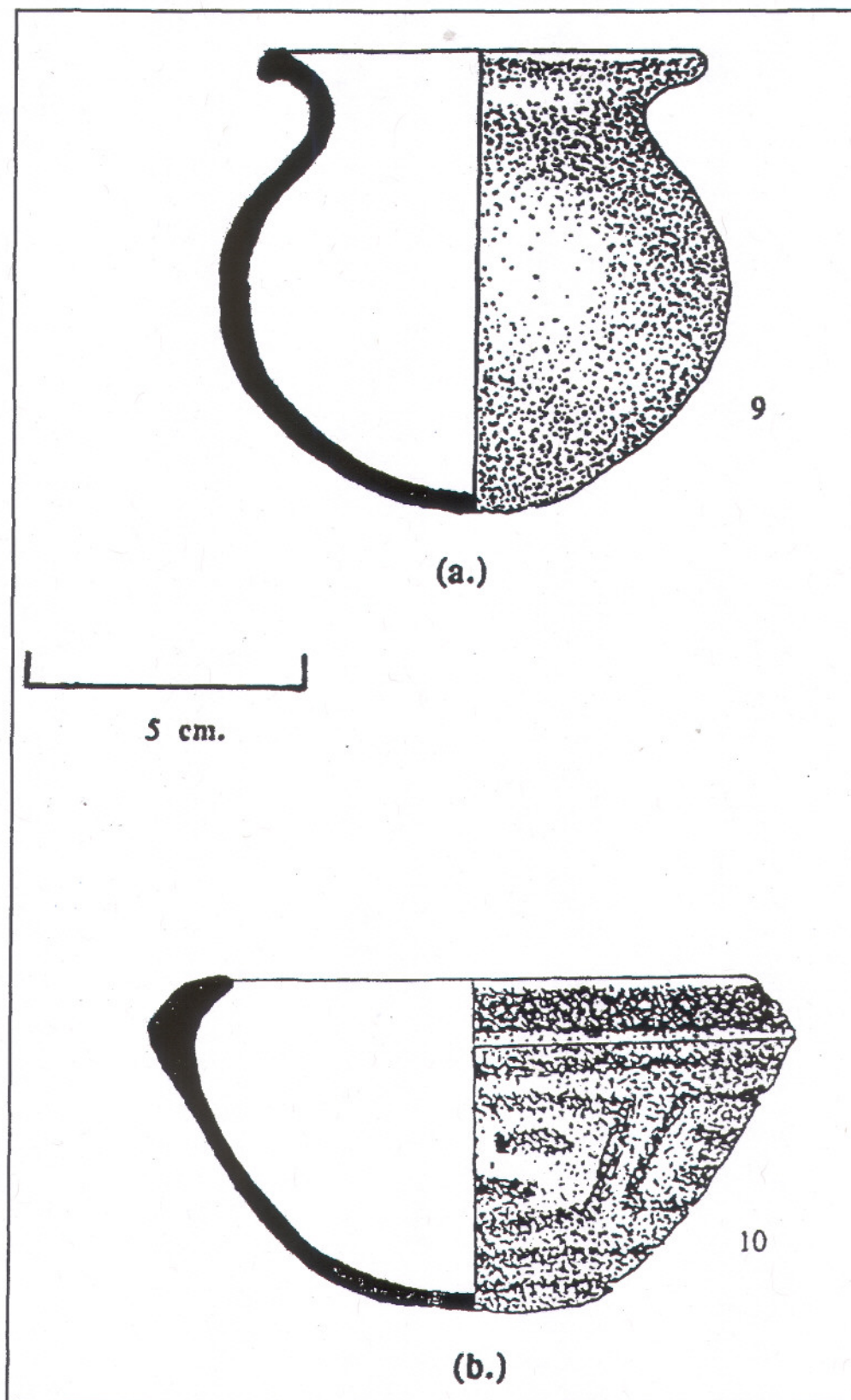


Figure 20. a. Jelí Phase Formal Class 9; b. Jelí Phase Formal Class 10.

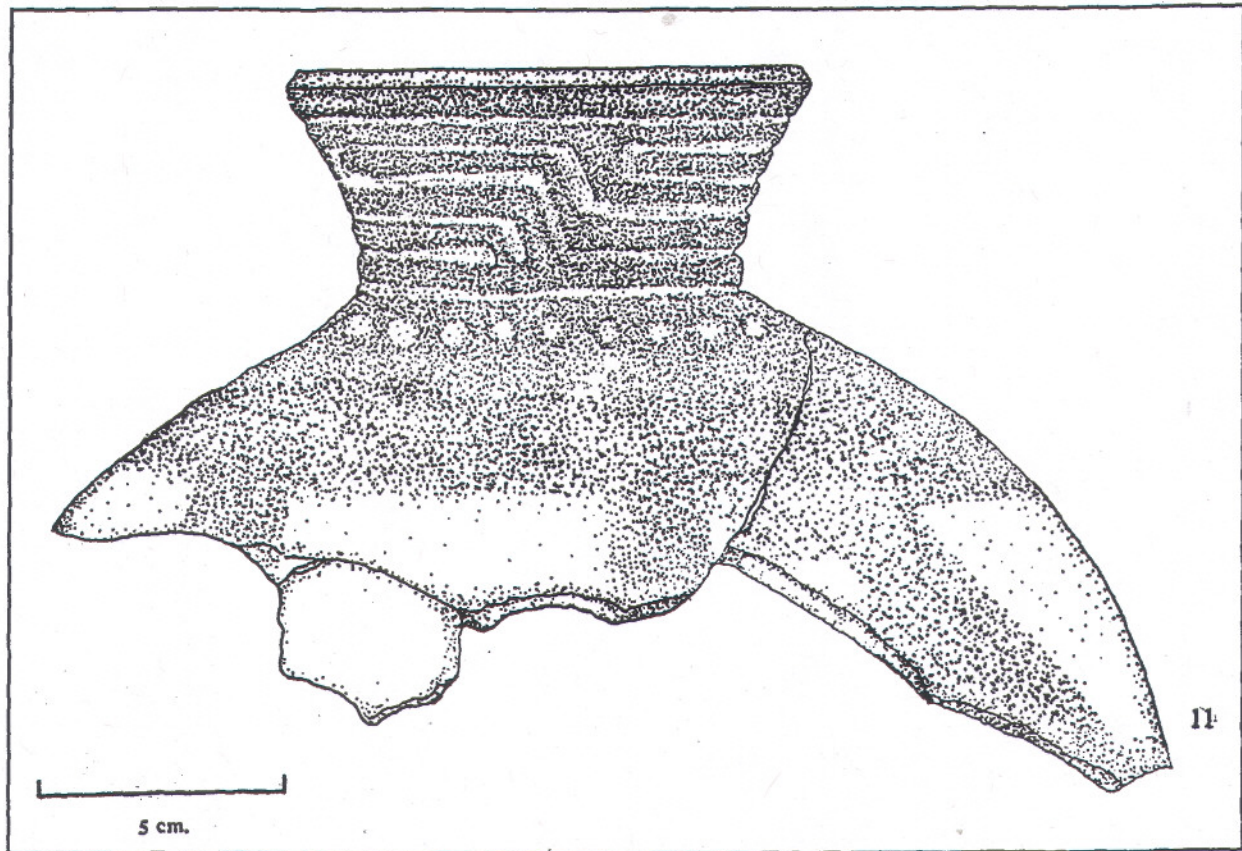


Figure 21. Jelf Phase Formal Class 11.

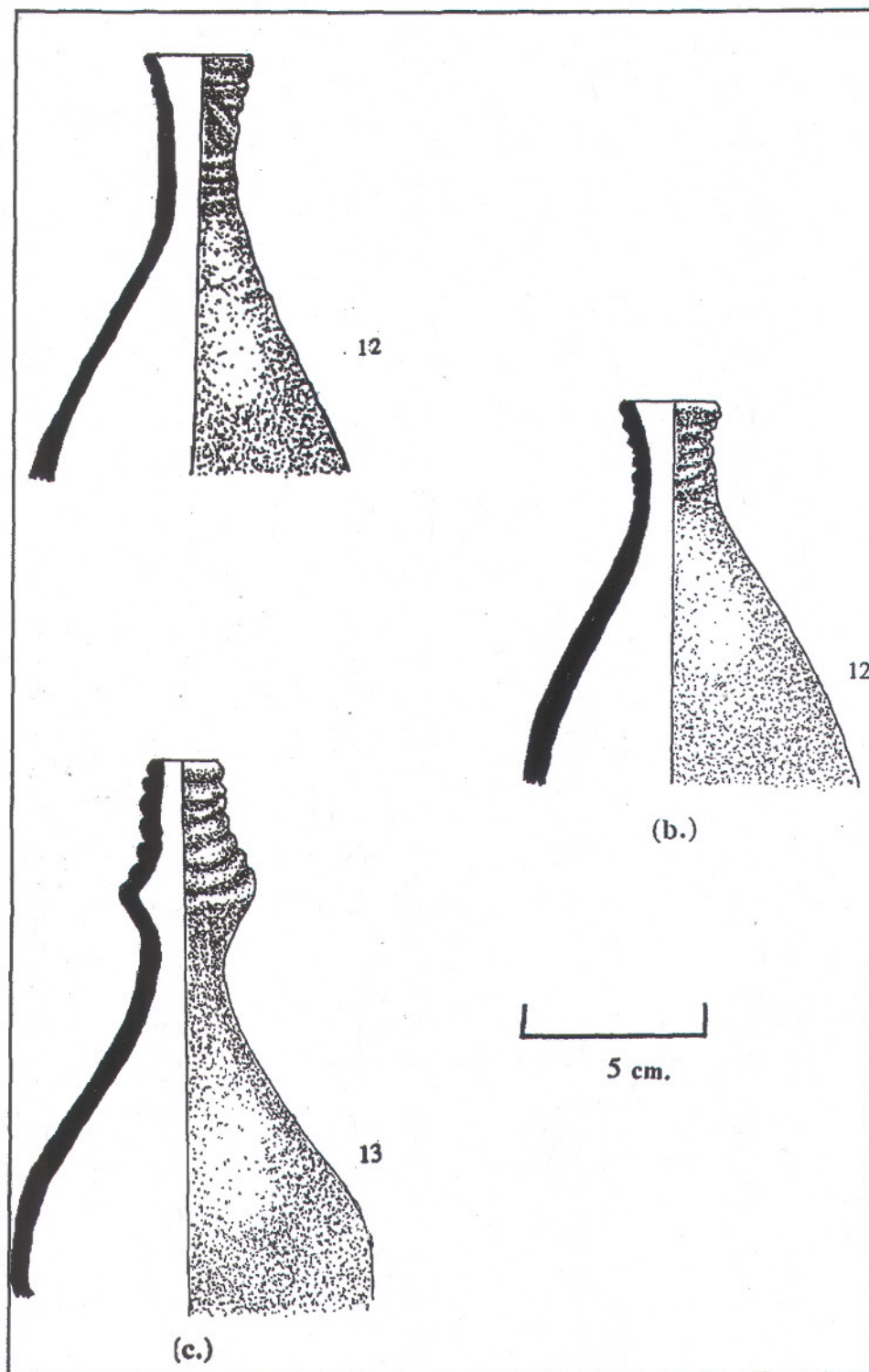


Figure 22. a-b. Jelí Phase Formal Class 12; c. Jelí Phase Formal Class 13.

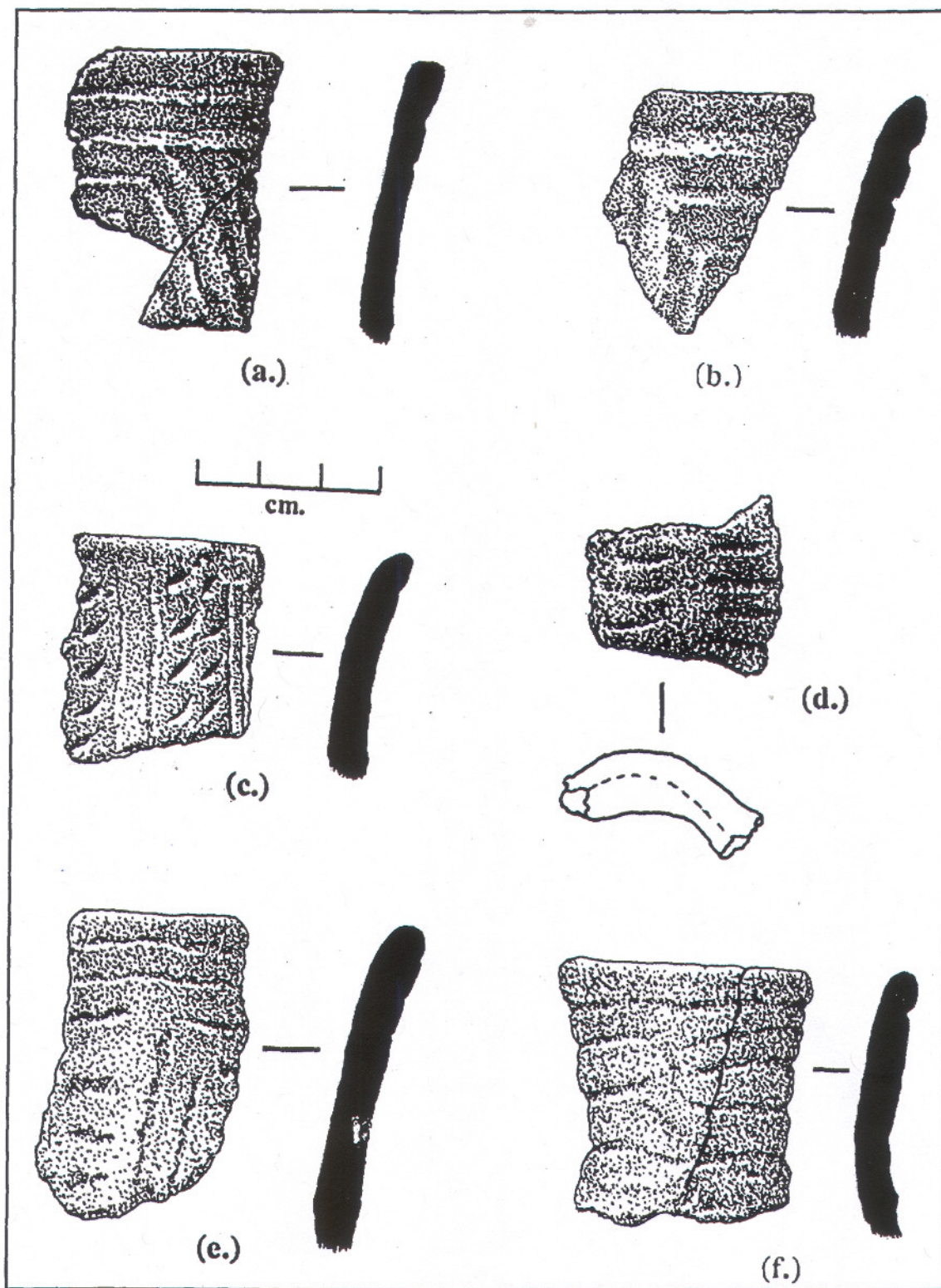


Figure 23. Jelf Phase everted long-neck bottles (Formal Class 12); a-c. everted bottle rims; b. strap handle with incisions; e-f. everted bottle rims.

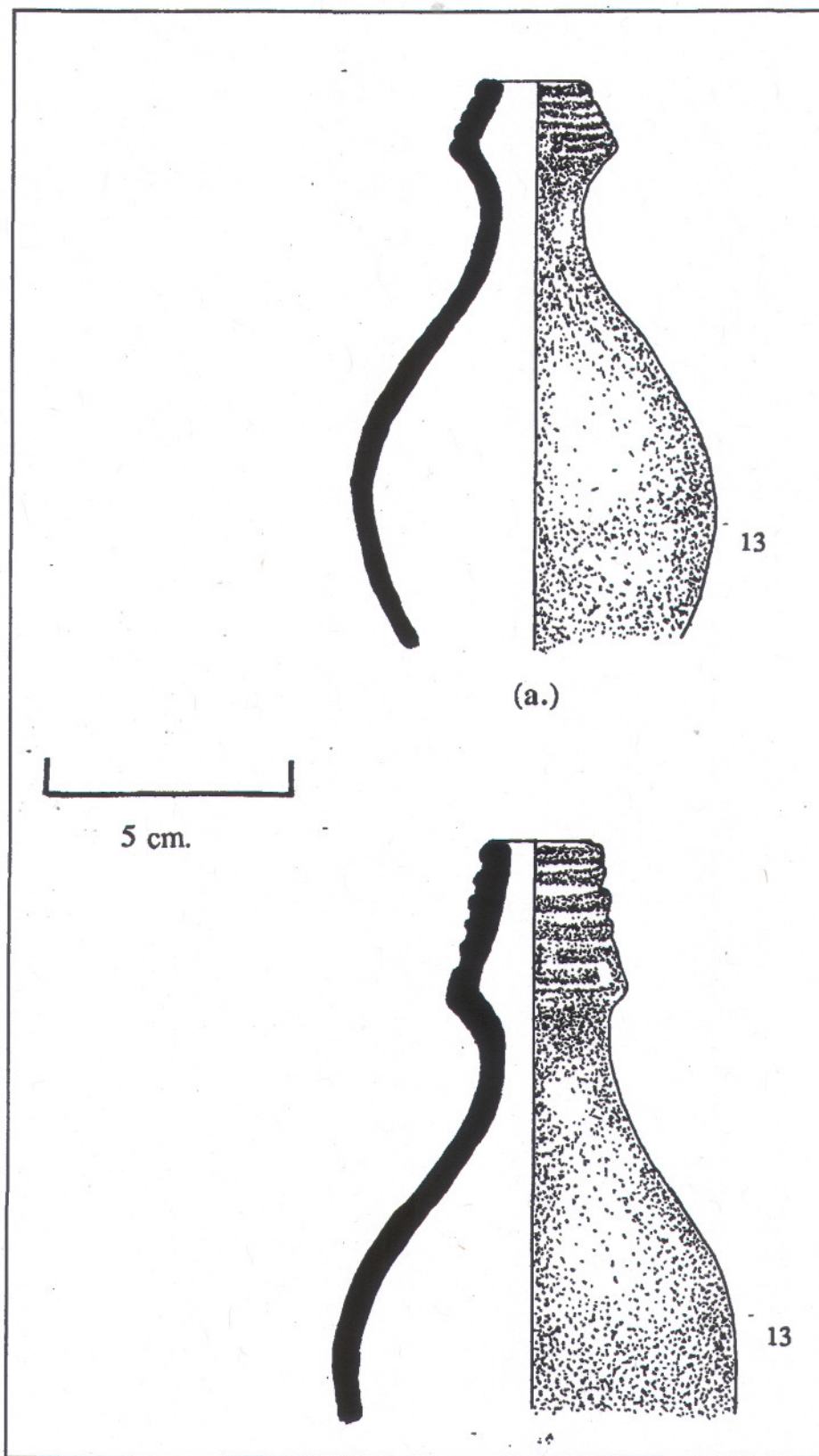


Figure 24. Jelí Phase Formal Class 13.

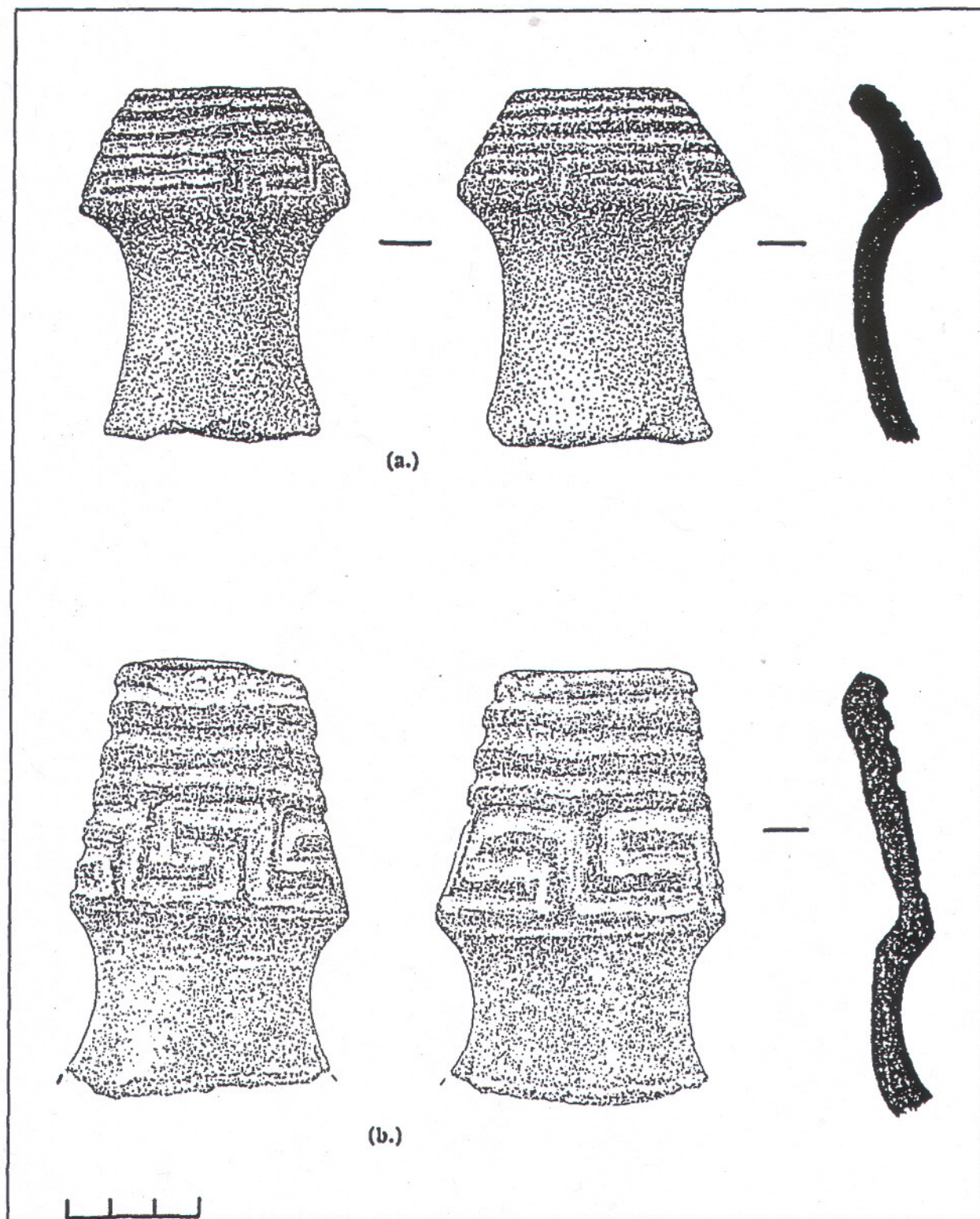


Figure 25. a-b. Jeli Phase carinated short-neck bottle (*pico fállico*) Formal Class 13 (scale in cm).

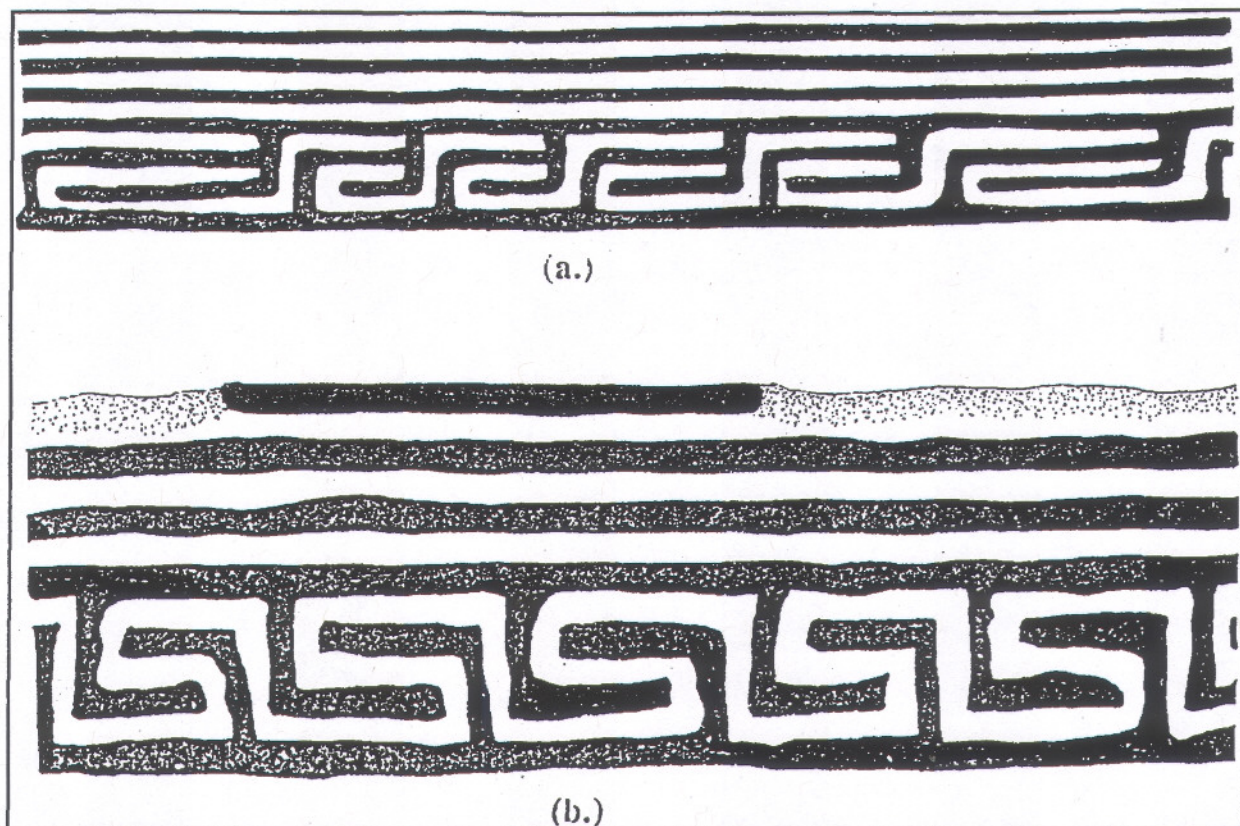


Figure 26. Jelí Phase Formal Class 13: a. design motif on Figure 25a; b. design motif on Figure 25b.

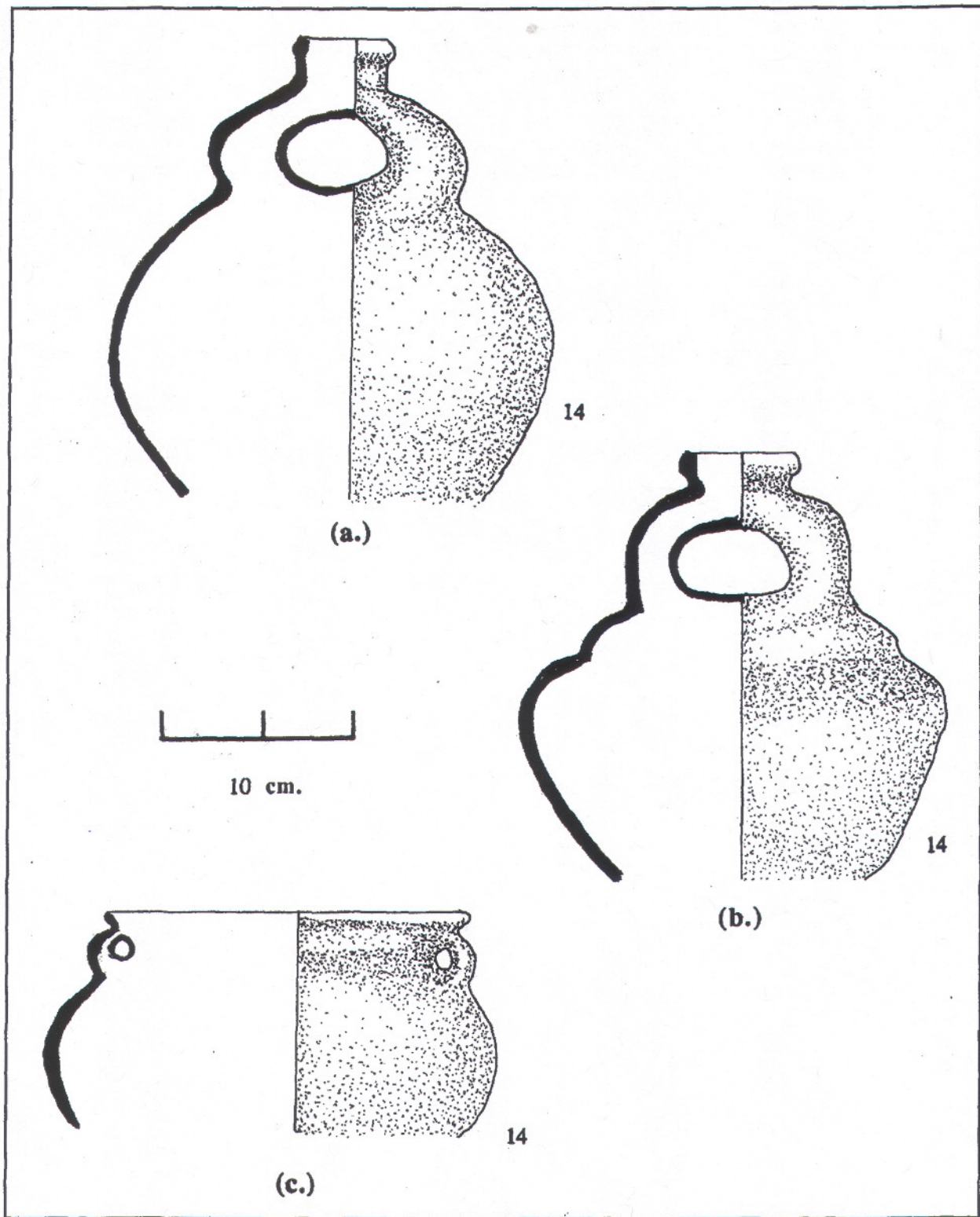


Figure 27. Jelf Phase Formal Class 14: a. stirrup-spout with bulbous stirrups; b. stirrup-spout with parallel stirrups and two tier upper body; c. bowl with hollow stirrup handles.

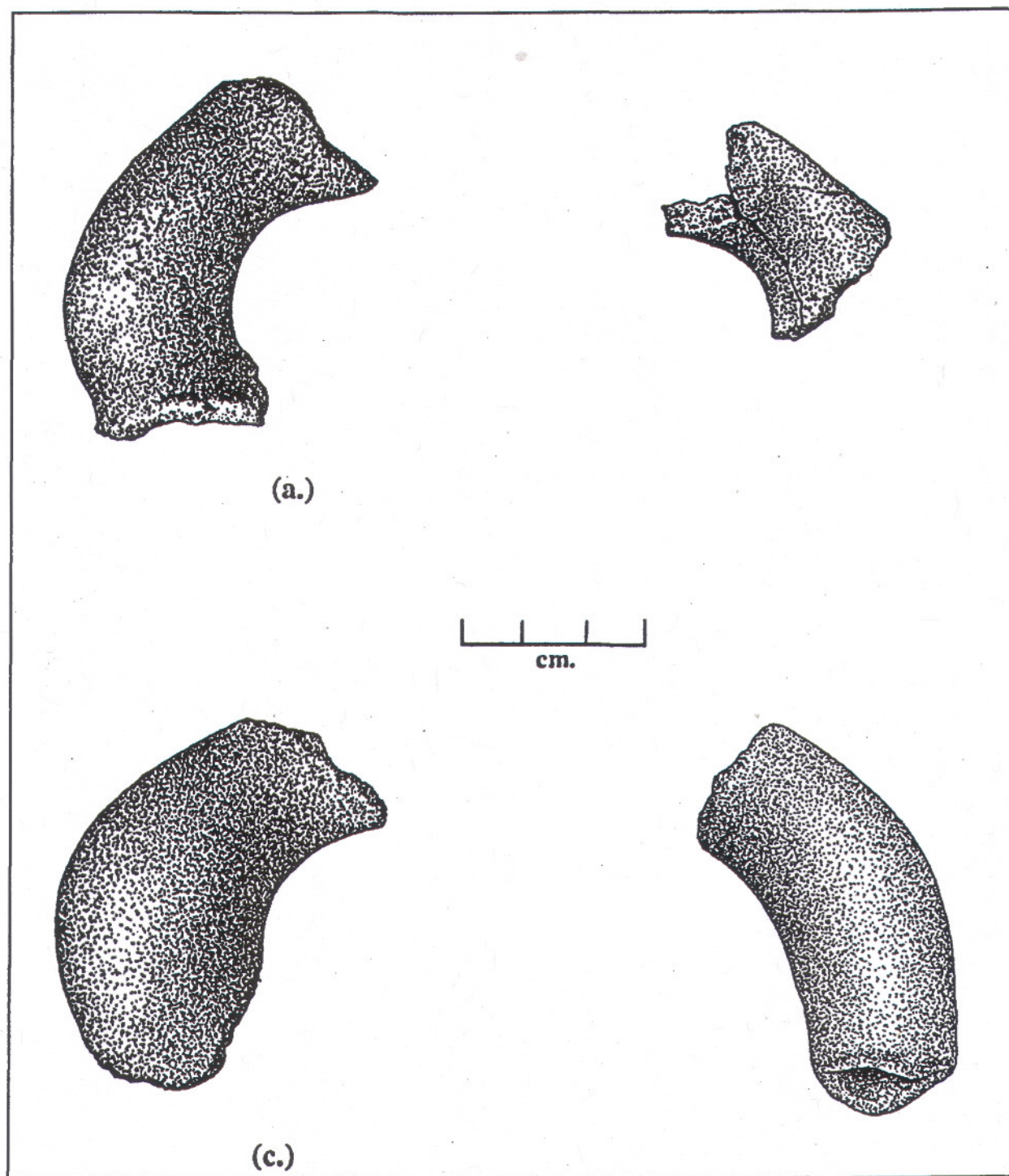


Figure 28. Jelí Phase stirrup-spout sherds (Formal Class 14): a. bulbous spout; b. (upper right) stirrup-spout from a jar; c. bulbous spout; d. (lower right) parallel spout.