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# EARLY ECONOMIES OF COASTAL ECUADOR AND THE FOUNDATIONS OF ANDEAN CIVILIZATION

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## Introduction

The Maritime Foundations Hypothesis, a model avowedly designed to account for cultural developments in a limited portion of the coast of Peru, is inappropriate to the Ecuadorian evidence. The foundations of social complexity in coastal Ecuador were laid by people who practiced diversified subsistence activities which included a major agricultural component. Predominantly maritime subsistence economies did not develop during the Preceramic or Early Ceramic periods on the coast of Ecuador, and complex society apparently did not have a maritime origin in prehistoric Ecuador. These cases from the coasts of Peru and Ecuador contrast, and together they illustrate Moseley's (1975, 1992 [this volume]) proposition that there were multiple foundations of and routes to civilization in the Andean region.

The preceramic foundations of culture on the coast of Ecuador are poorly known, but I have used one archaeological sequence as a basis for the following general description of the development of early sociocultural systems in the entire coast. I will interpret this development as the result of cultural responses to local conditions by people who entered on the process of cultural intensification early, but who did not achieve the high levels of organization that emerged in the Late Preceramic societies of the Peruvian coast.

Later, between 3000 and 2000 BC, which corresponds to the Cotton Preceramic Period in Peru, the ceramic-using Valdivia people of coastal Ecuador were on a developmental par with the contemporaneous cultures of the coast of Peru, but the two kinds of adaptation were very different and their subsequent trajectories were divergent. In the following paragraphs I will show how developments in Ecuador differed from those of neighboring Peru in the Preceramic and Early Ceramic Periods, and I will try to account for those differences.

## The land

Ecuador is a small country (270,000 km<sup>2</sup> or about the size of the state of Colorado), but embraces a very large number of compressed terrestrial zones (Figure 1). The differences between adjacent zones are so notable that they seem like different countries (Wolf 1975[1892]: 188). Three major geographical zones are recognized in Ecuador: the eastern jungle area; the central highlands; and the coast, including the moist western slopes of the Andes, and the coastal plain lying between the sea and the mountain massif (Figure 2). Distances are small, if compared to Peru, and communication among the three major zones is relatively easy. Going north to Colombia and south to Peru, there are no major geographical barriers; in effect, "all paths lead to Ecuador" (Meggers 1966: 16).

The coast is environmentally complex: it is some 700 km long and spans the remarkable transition between the wet Colombian coast and the desert of Peru. It has a maximum width of only 200 km but narrows to 30 km near Machala. In the north, the Esmeraldas coast is wet tropical rainforest, but further south there is an "abrupt physiographic and biotic break, which is also a famous climatic landmark" (Murphy 1939: 17), and the rest of Ecuador's coast has a pattern of seasonal rainfall, which means that the land is drier and the plant communities less exuberant than they are to the north. The "transition from rain forest to aridity is at first gradual and then fitful" (*ibid.*: 18), featuring a number of compressed terrestrial zones, and a pattern of variable agricultural potential. The poorest farming conditions are found on the arid Guayas coast, but adequate rainfall and good soils predominate in most of the region. The majority of the inhabitants consider themselves agriculturists, and they have been so for at least 5000 years (Pearsall 1979).

While most archaeological investigation has been carried out in the semi-arid regions of the outer coast, much less is known about the well-watered Guayas River Basin, an extensive area of riverine lowlands which has the greatest agricultural potential in the country, as well as abundant fresh water fish resources, and thousands of miles of navigable waterways which give easy access to adjacent highland zones. It seems likely that cultural evolution in this circumscribed, tropical riverine zone was the major dynamic in the prehistory of the coast of Ecuador.

We can go a long way in accounting for the differences in prehistoric cultural development between the coasts of Peru and Ecuador by referring to their contrasting natural terrestrial ecosystems and how the people chose to address these systems. In Ecuador, while agricultural potential is varied, terrestrial resources were, and are, everywhere more abundant and accessible than they were on the unmodified desert coast of Peru.<sup>1</sup>

### **The sea**

The marine waters off Ecuador are only slightly less rich than the Peruvian waters in terms of carbon, phytoplankton, and zooplankton (Rand McNally Corporation 1977: 86; United Nations 1972: maps 1.1, 1.2), and the shallow coastal waters are rich in pelagic fish, economic crustaceans, and mollusks. These are attractive resources because of their great diversity, high available biomass, and the absence of pronounced seasonality. In addition, from the point of view of the non-commercial fisherman, it is especially beneficial that the productivity of the marine biotopes is not drastically affected during the El Niño disturbances which occur periodically. These marine resources are irregularly distributed because of coastal morphology and the localized contribution of nutrients from river systems, but the same faunal species are available in differing proportions along the entire coast. The most attractive areas for prehistoric fishermen and modern artisanal fishermen are the mangrove swamps (particularly the large ones in Esmeraldas and in the Gulf of Guayaquil), and other small mangrove swamps, river estuaries, shallow bays, shoals, and lagoons found along the maritime coast. Most fishing communities are and were oriented to these resource areas. There is no evidence that the overall prehistoric settlement pattern was governed by the location of marine resources.

### **Preceramic marine exploitation**

Here I will summarize the evidence for early human use of the marine environment using the culture-historical framework shown in Figure 3. The only well-documented preceramic adaptation from the coast of Ecuador is Las Vegas, dated from 10,000 to 6,600 B.P. (Stoothert 1985a, 1988).

The Las Vegas people of the semi-arid Santa Elena Peninsula exploited a wide spectrum of animal species in terrestrial, estuarine and/or lagoonal, and shallow marine environments. Based on a calculation of the MNI (Minimum Number of Individuals) represented in excavated assemblages of faunal bone and shell, the live weights and amounts of edible meat were calculated. This interpretation of samples from Las Vegas middens indicated that 54% of the animal protein consumed was from land animals (primarily deer), 35% from marine fish, and a maximum of 11% from mangrove clams.

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<sup>1</sup> The issue of climate change has figured in the interpretation of culture history along the Guayas coast, but based on recent research, I will assume here that the prehistoric climates fell within the range of modern ones. Prehistoric conditions, however, were not necessarily like those seen today, due to tectonic movement along the coast and to deforestation, which have caused significant environmental changes such as closing bays and lagoons and reducing the agricultural potential of Guayas and southern Manabí provinces.

Botanical remains from the Vegas middens were few in number, but it is presumed that the Vegans harvested a wide variety of wild plants, and there is evidence that bottle gourd, squash, and primitive maize (Piperno 1988) were part of the Vegas subsistence by 7,000 B.P. Artifacts suitable for plant processing, such as grinding stones, were not common among the Vegas remains. The location of the largest Vegas site, about 3 km from the Bay of Santa Elena near the origins of a small river system, suggests that a variety of terrestrial plants were harvested in addition to the long list of small terrestrial animals for which there is direct evidence in the midden. In general, neither the artifact inventory nor the nature of the Vegas midden would suggest a specialized marine adaptation.

While mangrove, estuarine, and marine resources helped to maintain these people in the littoral zone, their subsistence strategy was mixed, and involved a major terrestrial component. I have argued that the Las Vegas people were sedentary because there is no evidence that their sites were repeatedly abandoned, because of the existence of a well-organized and large cemetery, and because of the year-round abundance of many of the resources they exploited.

By the end of the Vegas period, around 7,000 B.P. (5,000 B.C.), fish had become more important in comparison with deer in the procurement system, and plant husbandry was adopted. I have suggested (Stothert 1985b, 1988) that some of the Late Preceramic people were under some pressure to increase their productivity because of population growth and their needs for alliance, reciprocity, and exchange, created in a large part by their choice of relatively sedentary lifeway (Bender 1978). These pressures on the productive system resulted in intensification in at least two subsistence systems: the horticultural system and the fishing system. That this kind of change occurred is supported by evidence from subsequent periods which are characterized by more intensive fishing and agriculture.

In effect, these preceramic people were preadapted for the Formative way of life: they were armed with an expandable subsistence system, they participated in exchange, they had achieved sedentary communities, and they had experienced some social intensification as suggested by elaborate mortuary practices reconstructed from evidence at one large cemetery. I have claimed that they carried a cultural tradition that originated earlier in the tropical forest to the north.

Following the Las Vegas period, we are faced with a 1,500 year gap in the archaeological record from coastal Ecuador. Based on subsequent events, I have suggested that the Vegas system continued to evolve as it had during its earlier trajectory. Although preceramic sites have not been identified for most of the coast, I have hypothesized that Las Vegas was part of a wide-spread and locally variable preceramic culture, distributed throughout the maritime and fluvial zones of the coast. Based on present knowledge, I believe that these local Vegas-related groups experienced similar socio-economic intensification, as described above, and that some of these groups were the immediate ancestors of the Valdivia people of the Formative Period.

We can only speculate about the alternative scenario: that more specialized maritime adaptations did exist among these Vegas-related peoples, or that a marine/mangrove focused preceramic economy of a different tradition developed in the mangrove zones of Esmeraldas or the Gulf of Guayaquil.<sup>2</sup> No strictly maritime economies have been recognized in Esmeraldas (Alcina Franch 1979), but Spath

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<sup>2</sup> There is the possibility, in this context, that specialized marine-focused economies developed during the chronological gap, which corresponds roughly to the period of climatic optimum, and that we have not been able to locate the corresponding habitation sites. I do not believe that this is the case on the Santa Elena Peninsula where survey has been quite thorough in the littoral zone, and where sites were not subsequently submerged since tectonic uplift has been continuous since the late Pleistocene (Stothert 1984). The period of climatic optimum coincided with higher sea level, so one would expect to find coastal sites of that period isolated well above modern sea level, but such sites have not been identified.

(1980) has defined the El Encanto Focus, a marine/mangrove economic specialization which may have developed in the Preceramic Period and which may have characterized peoples of the Gulf of Guayaquil into the historic period. Marcos also argues that the rich habitats of the Gulf supported a perdurable prehistoric adaptation centered on marine and estuarine resources (Marcos and Norton 1981).

These interpretations of the early economies of the Gulf are based on limited excavations and no systematic site survey. Spath did a small excavation in a rock shelter on the Guayas coast, and a single Valdivia shell midden on Puná Island has been reported (Porras 1973). The pioneering reconnaissance of Estrada, Meggers, and Evans (Estrada *et al.* 1964: 541) resulted in the definition of the Jambeli Culture as an isolated adaptation to marine and mangrove resources in a habitat unsuitable for agriculture, but the adjacent terrestrial habitats were not surveyed. More recent survey and excavation in El Oro Province and in the Peruvian frontier region (Netherly 1986; Izumi and Terada 1966) have led us to believe that the tiny shell middens of the Gulf are part of the settlement pattern of a group of people whose major centers were inland, in agricultural contexts.

Netherly (1986) surveying the El Oro coast, and Aletto (1983) working on Puná Island have both recognized nonceramic sites which have not been excavated. It remains to determine through future research whether specialized mangrove/maritime adaptations ever developed, or whether the mangrove dwellers, throughout history, formed part of wider, diversified socioeconomic systems.

In summary, there is little evidence for a specialized mangrove/marine focus in coastal Ecuador, but the existence of such an adaptation seems irrelevant to the development of the precocious early Formative culture of Ecuador which has been interpreted as a Tropical Forest Culture with terrestrial origins (Lathrap *et al.* 1975). The later cultures of prehistoric Ecuador seem to have grown out of this early tropical forest-style adaptation.

### The Early Ceramic Period

It is evident that the elements necessary for the development of a more complex way of life were already present among the Las Vegas people in the Preceramic Period. Probably the preceramic people occupying the fluvial zones with most agricultural potential, and who had permanently occupied villages, bound in by other similar villages along the same river and along adjacent rivers, experienced the greatest needs for alliance, exchange, reciprocity--and for increased productivity. During the Late Preceramic chronological hiatus, the pre-Valdivians undoubtedly intensified their agricultural activities, taking advantage of the domesticated plants already cultivated by their preceramic predecessors for more than 1000 years. Also in this period innovations were made in the fishing system: for instance, shell fishhooks were introduced or invented at about the same time they appeared on the coast of Peru (see also Llagostera, 1992 [this volume]).

This hypothetical preceramic way of life gave rise to what we know as Valdivia culture, around 5,000 years ago. Originally Valdivia was interpreted as a fishing and shellfishing culture (Meggers *et al.* 1965), but it is now clear, with the discovery and excavation of more sites, that reliable terrestrial staples were being produced in Valdivia times, particularly at inland locations (Damp *et al.* 1981; Marcos *et al.* 1976; Meggers 1966; Norton 1982 [original 1971]; Pearsall 1979; Raymond *et al.* 1980; Zevallos 1971). The site called Real Alto, where the village-ceremonial complex was well developed, was located several kilometers from both beach and estuary, but adjacent to river bottom suitable for flood water farming. Marine fish were represented in the midden at these sites, but the principal subsistence focus was the terrestrial zone. The occurrence of many large Valdivia sites at inland locations leads us to believe that the foundations of Ecuadorian civilization were supported by a mixed subsistence system, including an efficient fishing technology (be it riverine or marine fishing), intensive flood water farming (Pearsall 1979), and swidden gardening in the more forested areas of the coast.

The Valdivia people of the maritime coast also developed considerable prowess in navigation: the faunal remains in littoral sites show an abundance of marine fish bone and relatively few terrestrial animal remains, and Valdivians made regular visits to the La Plata Island, which lies 25 km offshore. These fishermen probably practiced cultivation and were also part of a highly integrated cultural system with an agricultural focus, but it is no doubt also true, as Meggers *et al.* (1965: 13) pointed out, that the people who dwelled adjacent to the beach had fishing and seafaring as their principal activity.

In this maritime specialty we see the origins of the seafaring and maritime trading complex which had great importance in the later prehistory of Ecuador. Research at Salango has shown that the Middle Formative Machalilla people were involved in intensive long-distance trading, and that by Chorrera times *Spondylus* shells were being processed for export, foreshadowing the economic specialization which reached grand proportions in later prehistory (Norton *et al.* 1983; Norton 1986). We still do not understand the origin or importance of exchange in ancient Ecuadorian cultures, but its central role is not doubted. Spath (1980: 134) has claimed that the "true maritime foundations of Andean civilizations, and the long-distance exchange systems which sustained the level of communication necessary for such far-reaching cultural developments, are to be found in the maritime orientation of the El Encanto Focus," in the Gulf of Guayaquil. However, this intriguing idea has not yet been supported with evidence from the field.

#### **The enduring coastal adaptation of Ecuador**

I have argued elsewhere (Stohtert 1985a, 1985b) that the earliest known inhabitants of the coast carried a variant of the Tropical Forest Archaic Culture (*cf.* Ranere 1980: 35), which featured mixed subsistence strategies adapted to a partially forested environments. Similarly, the Early Formative Valdivia culture is widely interpreted as a manifestation of Tropical Forest Culture (Lathrap 1970; Lathrap *et al.* 1975). This is a way of saying that these cultures occupied a tropical environment, exploited it using tropical forest-style subsistence technology, had a village level of social organization, were involved in complex exchange networks, and were characterized by certain other features associated with ethnographic groups living in the tropical forests of South America.

This tropical forest adaptation, which developed very early in Central America and northern South America, was an efficient adjustment to the tropical environment, perhaps an optimal adjustment, which permitted people to manage population growth and experience considerable cultural elaboration over many millennia. The record shows that this basic adaptation endured throughout the prehistoric period: people in Ecuador did not innovate specialized subsistence strategies, even those occupying the productive littoral zone.

In the case of the coast of Peru, the achievement of the *climax* cultural ecological adjustment came late, while in Ecuador the marine and terrestrial focused sub-systems were integrated into a single balanced subsistence strategy beginning in very early times. We do not have data on the early subsistence systems of the Guayas Basin, but terrestrial resources probably were exploited in combination with riverine ones, while in the mangrove zones estuarine resources were taken in combination with terrestrial plants and animals. Population growth and sociocultural intensification were underwritten by productive fishing, hunting, gathering, and agricultural technologies, two of which (fishing and farming) apparently were expandable. This subsistence system featured both local and long-distance exchange. In the end, this cultural solution helped maintain the Ecuadorian sociocultural systems at a lower level of political integration than their neighbors to the south.

The key to understanding the differences between the cultural dynamics in early Peru and those of Ecuador is probably not the sea, but rather the land: the tropical forest zone, including the seasonally dry tropical areas, involves naturally complex, stable, and productive ecosystems very different from the those of the Peruvian coast. Mixed subsistence systems developed in Ecuador

because of the juxtaposition of various high-potential resource zones, such as extensive areas suitable for swidden and flood-water farming, riverine resources, and marine and estuarine environments. Large and complex exchange networks apparently emerged in the Early Formative Period (Lathrap 1973), and the energy level of those systems increased through time, culminating in the impressive and diverse exchange networks observed by the Spanish conquerors. In effect, the prehistoric Ecuadorians gained access to commodities without direct political control; later, by traveling across the sea, they achieved access to elite goods with relatively little competition or confrontation.

In summary, throughout the Ceramic Period fishermen or fisherman/farmers lived in villages along the littoral strip maintaining close social and cultural relations with the agriculturists, who formed the bulk of the population and who resided in settlements, even large ones, along rivers in the inland zone. Agricultural production was critical in the maintenance of that population, and was the limiting factor in its growth.

In some cases we find small, specialized sites in, for example, the mangrove swamps, or along the beach, representing the camping spots of agriculturists who visited these areas seasonally on fishing expeditions; or they represent the isolated houses of fishermen who were, nevertheless, closely connected culturally to non-fishermen. Only in the latter part of the cultural sequence did the high level of economic integration achieved by the coastal chiefdoms allow some littoral dwellers to specialize in fishing, trading, and crafts, and to abandon agriculture--but this occurred late in prehistory, and the organization of these systems, and the degree of specialization present has not yet been studied.

In the latest prehistoric period, the famous tattooed peoples of the coast of Ecuador, belonging to Jijón's League of Merchants, were maritime fishing and trading specialists (Holm 1953; Norton 1986), but they were also successful agriculturists, and their large settlements were located adjacent to the sea only in locations where good agricultural lands were also found nearby. This repeats the basic pattern established in preceramic times along the Ecuadorian coast: that even people who inhabited sites adjacent to the sea practiced a combined subsistence strategy, including fishing, shellfishing, and farming as well as cottage industries, some of which became economic specializations in the later prehistoric periods.

### **Summary and conclusion**

The foundations of the enduring cultural adaptation of coastal Ecuador were laid in the preceramic period, and despite the myth of the early fishermen, these foundations were not maritime; rather the preceramic pattern of broad-spectrum gathering, hunting, and fishing gave rise to a mixed agricultural and fishing adaptation which served to support the evolution and intensification of social systems.

Throughout history, maritime exploitation has been an economic specialty integrated into subsistence systems that primarily emphasized terrestrial resources. Thus, the foundations of Ecuadorian civilization were not supported by a diet centered on food from the sea, but maritime trading did play a very salient role in the evolution of their civilization, and the ancient Ecuadorians became preeminent maritime sailors late in prehistory.

Moseley has asked Andeanists to reexamine the maxim that only agriculture can support the sedentary way of life, population growth, settlement growth, and the emergence of social complexity (Moseley 1975), and his hypothesis that the preceramic maritime adaptations of the coast of Peru provided the basis for these developments continues to be provocative. It is plain, however, that the emergence of more complex societies on the coast of Ecuador was supported by another sort of subsistence strategy. Together these cases support the proposition that there were multiple routes to civilization in the Andean region.

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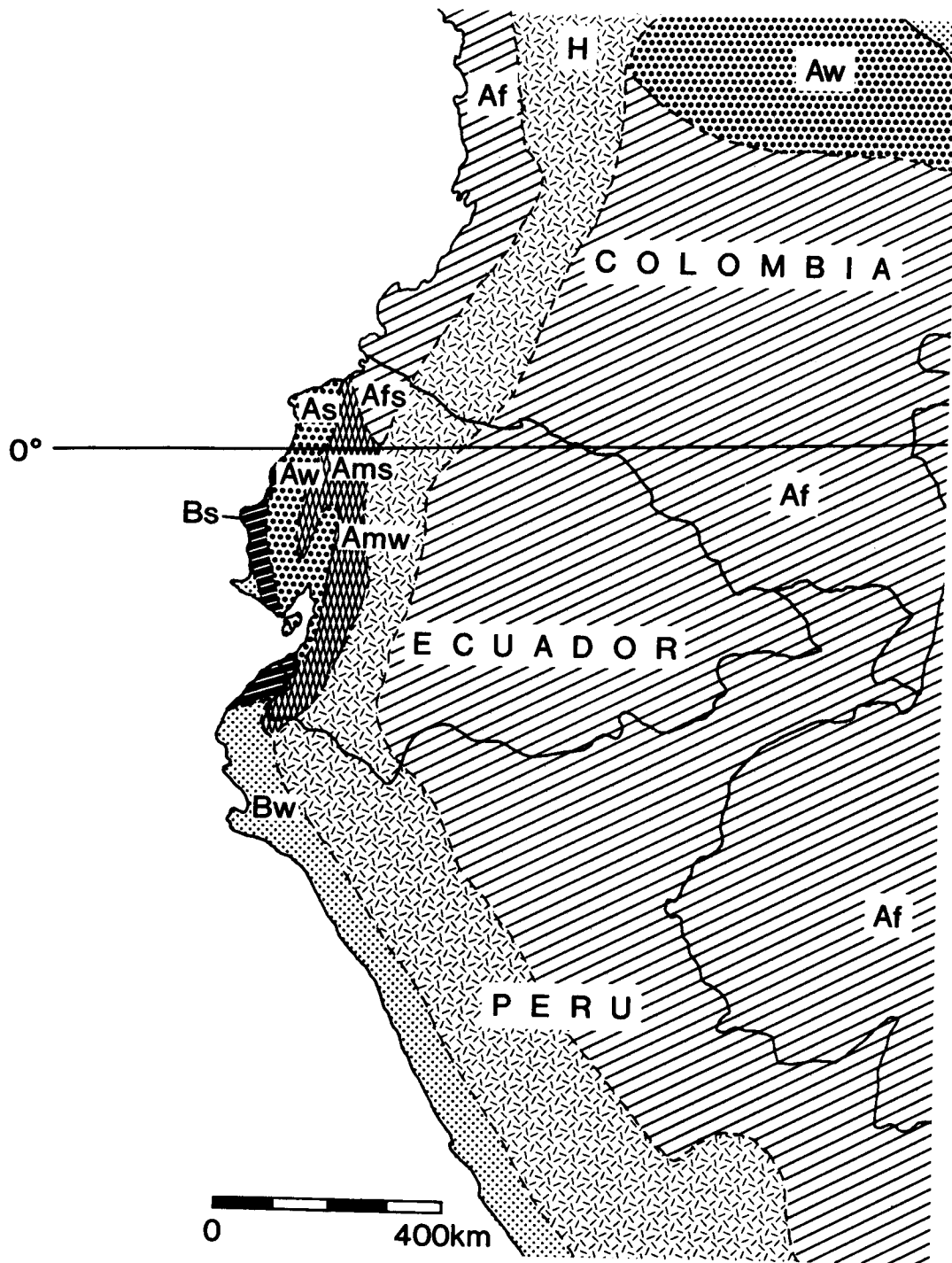
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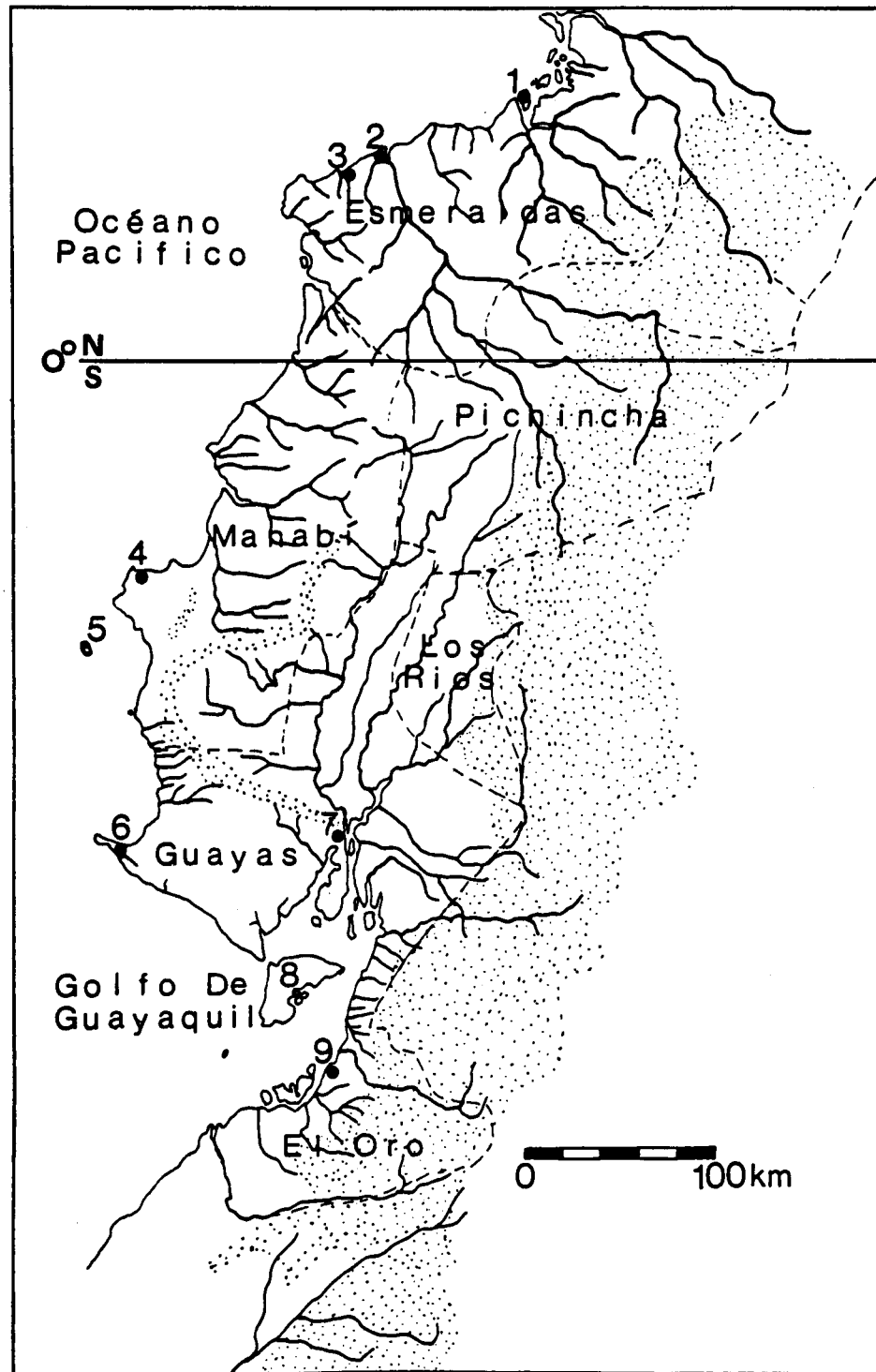
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**Figure 1.** Plan of northwestern South America showing the exceptional compression of distinct environmental zones in the coast of Ecuador (after Ferdon 1950; Lubensky n.d.; and Trewartha 1966: figure 1.4). *Af*, tropical wet; *Afs*, tropical wet with precipitation distributed seasonally; *As*, tropical wet-and-dry; *Aw*, tropical wet-and-dry with an emphatic dry season; *Ams*, tropical wet with two yearly precipitation maxima; *Amw*, tropical wet with a strong dry season; *Bs*, semiarid; *Bw*, arid or desert; *H*, undifferentiated highland.



**Figure 2.** Plan of Ecuador showing the maritime and riverine lowland provinces. Hills and highlands are shown by stippling. 1. Site of La Tolita at the mouth of the Santiago River; 2. City of Esmeraldas at the mouth of the Esmeraldas River; 3. Atacames; 4. Manta; 5. La Plata Island; 6. La Libertad on the Peninsula of Santa Elena; 7. City of Guayaquil on the Guayas River; 8. Puná Island; 9. Machala.

Figure 3. Chronological chart showing the prehistoric cultures of the coast of Ecuador by sub-regions.

Period/Epoch		Geographical/Cultural Sub-Region							
Central Andes	Coast of Ecuador	El Oro	Puná Island	Guayas Basin	Guayas Coast	Southern Manabí	Northern Manabí	Esmeraldas Atacames	Río Esmeraldas
Late Horizon	Integration	Milagro/ Manteño (?)	Manteño/ Milagro	Milagro/ Quevedo	Manteño	Manteño	Manteño	Late Atacames	Balao
Late Intermediate									
Middle Horizon	Regional Developmental	Jambelí	Jambelí	Tejar/ Daule	Guangala	Bahfa	Jama- Coaque	Early Atacames	Tiaone
Early Intermediate									
Early Horizon	Late Formative		Bellavista	Guayaquil/ Chorrera	Engoroy	Engoroy/ Chorrera	Chorrera	Chorrera	Tachina
	Middle Formative		Machalilla	Machalilla	Machalilla	Machalilla	Machalilla		
Initial Cotton Preceramic	Early Formative	Valdivia	Valdivia	Valdivia	Valdivia	Valdivia	Valdivia		
Lithic	Preceramic	unnamed	unnamed						
					Las Vegas				