

CALIFORNIA'S COASTAL PREHISTORY: A CIRCUM-PACIFIC PERSPECTIVE

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ABSTRACT

The archaeological record of the California coast offers unique opportunities to examine broader issues of Pacific Rim prehistory and the development of coastal societies. In this paper, I examine California coastal prehistory from a Pacific Rim perspective, focusing on two issues: the antiquity and development of coastal adaptations, and the possibility that a coastal migration route may have been used in the initial peopling of the Americas. By linking our research to broad issues of interest to the widest possible audience, we can increase support for archaeology.

INTRODUCTION

As California archaeologists, we often view our state as a politically, environmentally, and culturally circumscribed region. We all know tribal territories and environmental zones were not constrained by modern county, state, and national boundaries, but such borders encourage us to look inward and to view our own research areas somewhat provincially. Born and raised mostly in California, I spent many years researching Santa Barbara Channel prehistory, largely oblivious to much of what was happening outside my research area. In 1983, I went to southeast Alaska where I had the opportunity to participate in an interdisciplinary study of the Hidden Falls site (see Davis 1984), which contained a record of nearly 10,000 years of occupation along the northern Northwest Coast. Through survey work, background reading, and travel, I also had the chance to immerse myself in the geography and archaeology of a coastal landscape dramatically different from those I had encountered previously.

Since that time, while collaborating with my wife, Madonna Moss, and other colleagues, an important part of my research has been in northwestern North America (e.g., Moss et al. 1989, 1990; Moss and Erlandson 1992a, 1992b; Erlandson 1984; Erlandson, Moss et al. 1992; Erlandson et al. 1991; Erlandson, Crowell et al. 1992). My experiences in Alaska and the Pacific Northwest have exposed me to the tremendous diversity found among the complex maritime societies of the Pacific Rim. I have also gained firsthand an appreciation for many similarities in the patterns and tempo of cultural developments within various culture areas. Most of all, however, my work in northwestern North America has provided me with the invaluable opportunity to develop a broader perspective on my continuing research along the California coast.

From a circum-Pacific perspective, the California coast is just a small part of the vast Pacific Rim region. Economically, the modern societies of western North America are redirecting their energies to the west -- to the rapidly expanding markets of Asia's

Pacific Rim countries. This shift has led a number of major west coast universities to reorient their faculty and facilities to reflect a more explicit Pacific Rim emphasis. Given these developments, it is appropriate to ask if the vast Pacific Rim has any utility as an archaeological region. While teaching a class in Pacific Rim Prehistory at the University of Alaska-Fairbanks in 1989, I noted a number of unifying themes common to past Pacific Rim societies that make such a perspective useful. These include: (1) the common Asiatic origins of virtually all the indigenous societies of the region; (2) the occurrence of several epic migrations that peopled areas like Australia, Oceania, and the New World; (3) the relatively recent human settlement of these same areas, occurring over roughly the last 50,000 years or less; (4) cultural convergences based on adaptations oriented towards the exploitation of a common suite of marine resources (shellfish, fish, sea mammals, sea birds, etc.); and (5) the similar effects of European contacts on indigenous Pacific Rim societies.

In a paper of this scope, I cannot possibly address all these issues. Instead, I discuss two related issues that I believe are especially relevant to California's coastal prehistory: the antiquity and development of coastal adaptations, and the possibility that a coastal migration led to the initial peopling of the New World. In discussing these issues, I cite many sources that interested readers may refer to for more detailed information. My purpose in doing so is not to provide comprehensive lists of sources, but to give a sampling of the most provocative, comprehensive, or current papers for each topic. More detailed discussions of both issues may be found in Erlandson (1992).

THE EVOLUTION OF COASTAL SOCIETIES

As little as 15 years ago, there was no integrated body of theory to help place the diverse hunter-gatherers of the world's coastlines into a coherent theoretical context. In recent years, a fascinating debate has raged over the nature of coastal adaptations, much of it polarized into two camps I call "Garden of Eden" vs. "Gates of Hell" theories (Erland-

son 1992). The most effusive proponents of the Garden of Eden theory have implied that coastlines are extremely productive environments, ideal for the development of human cultures:

...the path of our evolution turned aside from the common primate course by going to the sea. No other setting is as attractive for the beginnings of humanity. The sea, in particular the tidal shore, presented the best opportunity to eat, settle, increase, and learn. It afforded diversity and abundance of provisions, continuous and inexhaustible. It gave the congenial ecologic niche in which animal ethology could become human culture. [Sauer 1962:45]

Advocates of the Gates of Hell theory have noted the relative dearth of evidence for Pleistocene coastal adaptations and suggested that aquatic environments are anything but ideal:

I suggest that marine resources are low-return subsistence resources due to a need for labor intensification, in the case of shellfish and small food package-sized marine organisms, and due to their low protein content. A number of factors combine to create an evolutionary threshold that is too costly for human populations to cross unless they are experiencing density-dependent selection. This subsistence-related threshold is so costly to cross, in fact, that, given the option, we should expect to see human groups shift away from the exploitation of the sea, at least in nonindustrial societies, whenever possible. [Osborn 1977:177]

Of course, coastlines are neither universally productive, nor universally unproductive. Furthermore, the existence of submerged terrestrial sites in many parts of the world strongly suggests that we are missing an important part of the coastal archaeological record due to post-glacial sea level rise. As is often the case in such polarized scientific debates, our best estimation of the "truth" may lie somewhere in the

middle.

Ironically, although California archaeologists have been at the forefront of shell midden analyses since the early 1900s (Uhle 1907; Nelson 1909; Gifford 1916; Rogers 1929; Cook 1946; Cook and Treganza 1950; Meighan 1959; Warren 1968; Koloseike 1968; Glassow 1972; Botkin 1980; Koerper 1981; and many others), until recently they have had little to say in this continuing debate. With publications by Erlandson (1988a, 1992), Glassow and Wilcoxon (1988), Glassow et al. (1988), Jones (1991), Arnold (1992), and Raab (1992), however, California archaeologists have reentered the dialog. These contributions complement or expand upon some of the issues defined by Sauer, Osborn, and other provocative papers by Parmalee and Klippel (1974), Bailey (1975, 1978), Cohen (1977, 1981), Perlman (1980), Yesner (1980, 1987), Parkington (1981), Hayden (1981), Meehan (1977, 1982), Quilter and Stocker (1983), Waselkov (1987), Noli and Avery (1988); Claassen (1991), Moss (1993); and others.

There are literally thousands of shell middens in California, where preservation of artifacts and faunal remains is generally good, and where detailed studies of site formation processes, subsistence strategies, settlement patterns, and paleogeography are possible. By at least 9000 to 10,000 radiocarbon years ago (RYBP), much of the California coast was occupied by maritime peoples with diversified collecting, fishing, and hunting economies (see Erlandson 1988b; Erlandson and Colten 1991; Jones 1991). By about 10,000 years ago, people appear to have settled both the northern and southern Channel Islands (Orr 1962, 1968; Erlandson 1991; Salls 1991), occupations that would appear to have required seaworthy boats and relatively intensive coastal subsistence. If a 10,700 year-old date on shell from the basal strata at Daisy Cave on San Miguel Island (Snethkamp 1987) is verified, occupations of the islands may be extended by another 500 years or more. Collectively these early sites represent some of the oldest evidence for a relatively well-defined coastal tradition anywhere in the Americas, equaled only by early sites of the Andean littoral in Peru and Chile (e.g., Llagostera

1979; Chauchat 1988).

Why does California appear to have been the home of maritime societies considerably earlier than most other parts of North and South America? The answer to that question is complex, and may include factors like the sheer volume of research conducted on the California coast, the presence of a relatively narrow continental shelf that limited marine transgression after the last glacial, the large number of estuaries formed by rapidly rising sea levels, the unusually high productivity of California's marine waters, the presence of a diverse array of terrestrial plant and animal resources along much of the mainland coast, and the lack of significant post-glacial isostatic adjustments that confound the identification of early sites in many coastal areas. In fact, the spatial juxtaposition of rich marine and terrestrial habitats along much of the California coast may have provided one of the most diverse and secure subsistence bases ever encountered by hunter-gatherers. Given the number of productive subsistence options available along many parts of the California coast, it should be no surprise that the record of coastal occupation goes back so far. Yesner (1987:301) predicted, however, that the Channel Islands (and similar small islands elsewhere) would not have been occupied until relatively late in the local prehistoric sequence. How do we explain the very early occupation of the Channel Islands, given the impoverished nature of their terrestrial resources and the high productivity and diversity of resources found along the mainland coast?

At the time of European contact, parts of the California coast supported some of the highest population densities recorded for hunter-gatherer societies anywhere in the world. Not coincidentally, highly populous coastal tribes like the Chumash and others also exhibited levels of social, economic, and political complexity rarely surpassed in hunter-gatherer societies. Over the past 10,000 or more years, we know California's coastal environments changed dramatically (e.g., Bickel 1978; Moratto et al. 1978; Erlandson 1988c). A variety of data also suggest that populations were growing exponentially (see Glassow et al. 1988; Lambert

and Walker 1991:965). With more people to feed, the types of resources exploited and the technologies used to exploit them diversified. In fact, California's coastal residents appear to have adapted almost continuously to ever new geographic, technological, and demographic conditions. With the limited resolution available in the archaeological record, these changes often appear to have been more or less continuous.

In general, however, culture change appears to have gradually accelerated on the California coast. While early Holocene (10,000 to 6650 RYBP) societies seem to have changed relatively slowly, middle Holocene (6650 to 3350 RYBP) groups evolved more rapidly, and late Holocene (3350 to 0 RYBP) societies changed quite quickly. Cultural evolution on the California coast may have been driven by a combination of population growth, environmental change, technological innovation, and increasing social and economic interaction. Due to the interplay of various stimuli, and the ambiguous nature of the archaeological record, it is hard to differentiate the effects of each factor on the prehistoric cultures of the area. A crucial point, related to both population growth and environmental changes, may have been reached when people had filled virtually all spatial niches in a landscape, reaching what Carneiro (1970) called "territorial circumscription." Subsequently, populations could no longer move into unoccupied or underused areas in times of social or economic stress, leading to greater social, economic, and political interaction. In some cases, greater interaction may have led to increased cooperation and economic exchange, in others to more competition, exploitation, and warfare. Ultimately, however, territorial circumscription insured that inter-group contact and interaction could no longer be avoided, causing greater cultural complexity to develop. It may have been a precondition to the rise of coercive chiefly elites like the socio-economic system Arnold (1992) believes developed among the Chumash on the northern Channel Islands about 600 to 800 years ago.

These types of developments are not unique to the California coast. They are paralleled by Holocene cultural

developments among many coastal and interior societies around the Pacific Rim and beyond. As broad patterns in the course of human cultural evolution, questions about when, how, and why such cultural changes occurred are of intense interest to anthropologists today. Answering such questions may require a synthesis of method and theory, but our reconstructions ultimately rely on the interpretation of data from individual archaeological sites. California's coastal sites are an excellent source of comparative data for examining the contexts of human cultural evolution on the local, regional, and global levels. If carefully planned and executed, even small surveys or test excavations on the California coast can contribute to the definition and interpretation of broad evolutionary patterns among maritime societies. This is only true, however, if they provide radiocarbon dates or other chronological information that anchors the accompanying data in time, and those data are made available to the broader scientific community.

THE COASTAL MIGRATION THEORY REVISITED

One of the most interesting questions that arises from the presence of early sites on the California coast is: Where did these early peoples come from? Along with early middens and burials, we now have fluted points that appear to place Paleoindians on the California coast about 11,000 to 11,500 years ago (Simons et al. 1985; Erlandson et al. 1987). We do not know that Paleoindians were exploiting marine resources, but we know frustratingly little about what Paleoindians were doing in the interior either. Fluted points are more abundant in interior areas, but this may be due largely to environmental biases. On the coast, post-glacial flooding of the continental shelves, sea cliff retreat, and sedimentation in coastal valleys has buried, destroyed, or obscured most landforms dating to the terminal Pleistocene. In contrast, many fluted points found in the interior are from desert areas where vegetation cover is minimal, sedimentation has been limited, and large expanses of desert pavement facilitate the location of sites. The apparent lack of temporal priority for either interior or coastal occupations (see

Jones 1991) raises questions about where California's earliest coastal groups came from.

A land-based interior migration through the fabled "Ice-Free Corridor" remains the dominant paradigm used to explain the initial peopling of the New World (Fagan 1991:73). In California, the view that the coast was settled by interior groups displaced by increasing aridity in the early Holocene is probably most widely cited (i.e., Warren et al. 1961:28; Warren and Pavesic 1963:420; Harrison 1964:366; Kowta 1969:36; Greenwood 1972:93; Wallace 1978; Gallegos 1991). In part, this idea is based on similarities between interior and coastal tool assemblages and the assumption that the earliest interior assemblages are older than those on the coast. Some of the best evidence for the common origin of early coastal and interior groups is the wide distribution of San Dieguito-like assemblages in both interior and coastal California. Similarities in early lithic assemblages found around pluvial lake basins of eastern California and Oregon led Bedwell (1970) to define the Western Pluvial Lakes Tradition (WPLT). Moratto (1984:91) proposed that these early groups were descended from Paleoindians of the Fluted Point Tradition, and adapted to marsh, lake, or other wetland habitats. Unfortunately, faunal remains are rare in WPLT sites, making dating and dietary inferences difficult.

The similarities between early tool assemblages of California's coast and interior suggest that the 2 traditions are related. But with Clovis-like fluted points now known for the Pacific Coast, there is little evidence that the generally poorly-dated interior sites are older than those of the coast. Moreover, the earliest sites of the California coast now appear to predate the onset of arid conditions in California's desert interior (Glassow et al. 1988). Finally, Meighan (1989) suggested that the antiquity of sites like Eel Point on San Clemente Island and Daisy Cave on San Miguel Island indicate that enough time no longer exists to account for the readaptation of California's earliest maritime groups from interior subsistence strategies.

Over the years, a number of scholars have suggested that humans may have entered the Americas via a coastal migration route near the end of the Pleistocene (e.g., Heusser 1960; Fladmark 1979; Easton 1992). Recently, however, a scholar as prominent and thoughtful as Mel Aikens (1990:12) described the possibility of a North Pacific coastal migration route as "imponderable". At present, there is no compelling evidence that either supports or refutes a coastal migration theory. There may never be, unfortunately, since much of the late Pleistocene coastline of the North Pacific was either glaciated or has been submerged by post-glacial sea level rise.

In 1988, I argued that the coastal migration theory suffered from a lack of suitable North Pacific maritime precursors that predated the earliest sites of coastal California (Erlandson 1988b:394-395). Other than the presence of leaf-shaped bifaces at some sites, early microblade-bearing assemblages of the Northwest Coast (see Ackerman 1968; Ackerman et al. 1979; Davis 1984; Fladmark 1986) bear little resemblance to contemporary assemblages of the California coast. If, as now seems likely, however, this hypothetical coastal migration took place prior to 10,000 years ago, it may have predated the spread of a microblade technology around the North Pacific.

From Japan (Aikens and Higuchi 1982:326), to northeast Siberia (Dikov and Titov 1979), to central Alaska (Powers and Hoffecker 1989), bifacial industries containing leaf-shaped points and knives appear to predate the earliest microblade industries by 1000 years or more (see also Aikens 1990; Aikens and Dumond 1986; Erlandson et al. 1991). The spatial and temporal distributions of these assemblages may indicate 2 waves of migration into the New World, but it is also conceivable that it was ideas and not people that were moving from west to east. Whatever the mechanism for their movement, with a bit of a time lag we can trace these technological traditions as they move around the North Pacific. Many of the later microblade assemblages also contain leaf-shaped bifaces, but are dominated by distinctive wedge-shaped microblade cores and microblades. Similar assemblages are

found on the Northwest Coast dating between about 9000 and 7000 years ago. Current evidence suggests that this distinctive microblade technology never reached California, but coastal assemblages of the appropriate antiquity are almost unheard of in northern California.

For the most part, the earlier bifacial industries of the North Pacific Rim lack fluted points, though the Nenana Complex tool assemblages of central Alaska are very similar to Clovis assemblages dating to the same time period (Goebel et al. 1991). As these bifacial traditions spread around the North Pacific, it is conceivable that they gave rise to separate early bifacial traditions of the interior and coastal regions. Some evidence suggests that pre-microblade bifacial assemblages may be present at Ground Hog Bay in coastal southeast Alaska ca. 10,000 years ago (see Ackerman 1968) and at Namu in coastal British Columbia nearly as early (Carlson 1991). At the Circum-Pacific Prehistory Conference, in fact, Meighan (1989) noted similarities between the earliest artifacts from Namu and tools found at Eel Point on San Clemente Island.

Circumstantial evidence also has accumulated that an early coastal migration into the New World may have been possible. If Dillehay's (1984, 1986; Dillehay and Collins 1988) proposed 13,000 year old peri-coastal occupation at Monte Verde in Chile withstands careful scrutiny (see Lynch 1990; Dillehay and Collins 1991), it might strengthen arguments for a "pre-Clovis" coastal migration down the Pacific Coast. Located about 50 km from the coast, Monte Verde reportedly contains asphaltum, salt, and other evidence for coastal exploitation (Dillehay 1987) that may indicate seasonal movements to the coast or trade with coastal peoples. If people reached the Chilean littoral via inland routes, convincing evidence for such an interior migration is sparse (Fagan 1987; Haynes 1988; Lynch 1990; Jelinek 1992). Could it be that coastal peoples moved into the Americas sometime about 15,000 years ago, but that much of the evidence for their journey has been submerged by rising post-glacial sea levels? Is it possible that the Clovis peoples of about 11,500 years ago descended from these early coastal migrants?

The evidence for such an early coastal migration is not yet substantial enough to seriously challenge the orthodox view of the Ice-free Corridor and an interior route for the peopling of the Americas. A major objection to the coastal migration theory is the lack of evidence for the advanced seafaring capabilities required to travel the treacherous coastlines of Pleistocene Berin-gia and the North Pacific (e.g., Aikens 1990:12). We know, however, that maritime peoples were living in California, British Columbia, and southeast Alaska between 9000 and 10,000 years ago, and it may not be such a huge leap of faith to project similar capabilities back another 3000 to 5000 years. If they ever existed, finding such early coastal sites in California would be difficult since most are likely to be found only as erosional remnants along now submerged Pleistocene coastlines.

Lacking direct evidence, the coastal migration theory seems unlikely to gain widespread support without clear maritime precursors from the other side of the Pacific. Here again, however, circumstantial evidence offers some intriguing possibilities. Recent discoveries suggest that Australia and New Guinea (united during the last glacial as parts of a larger continent called Sahul) were colonized at least 40,000 to 50,000 years ago (Groube et al. 1986; Bowdler 1990; Roberts et al. 1990; Clark 1991). The migration from Sunda (mainland southeast Asia) to Sahul required several substantial sea crossings through island southeast Asia (Flood 1990). There has been some debate about whether this migration was the result of intentional sea voyaging or a series of accidental voyages (see White and O'Connell 1982), but the recent discovery of several coastal sites on the Melanesian islands of New Britain, New Ireland, and the Solomons dating between 20,000 and 32,000 years ago (Allen et al. 1989; Wickler and Spriggs 1988) seems to leave little doubt that maritime voyaging was involved (see Fagan 1992:272-280). Several of these voyages required oceanic crossings of up to 80 kilometers, and imply the existence of relatively sophisticated and seaworthy watercraft at a surprisingly early date.

The coastal waters of the South Pacific

would have posed very different challenges than the much colder waters of the North Pacific, but evidence from Japan suggests that Upper Paleolithic peoples were making substantial sea voyages to procure obsidian from Kozushima Island by at least 30,000 years ago (Oda 1990:64). At the height of the last glaciation, the Kurile Islands, which arc north and eastwards towards the coast of Beringia, could have provided a series of staging points for a maritime migration from the Japanese Archipelago to the coastline of southern Beringia. The Japanese data suggest that late Pleistocene peoples may have had the ability to move around the North Pacific coast and colonize the New World by sea.

Despite these new developments on the coastal front, there is also new evidence from interior California that suggests that the adaptive shifts required for Paleoindians to reorient their economies from interior to coastal resources may not have been as dramatic as previously thought. Recent research by Beaton (1991) in a small rock-shelter (CA-SIS-218) on the west shore of Tule Lake in northern California identified cultural deposits dated to the terminal Pleistocene. A small hearth at a depth of 2.1 m produced wood charcoal dated to $11,450 \pm 340$ RYBP (Beta-39545). Along with ash and charcoal, the hearth contained the "heavily degraded bones of fish" (Beaton 1991). At the same level, obsidian and other stone debitage, undiagnostic bifacial point or knife midsections, and a unifacial tool were recovered. Cultural deposits in the shelter continue to a depth of 2.4 m. The basal sediments reportedly contain bone tools, bifacial tools, chipped stone debitage, and the bones of fish, birds, and mammals. In its preliminary stages, Beaton's research suggests that Paleoindians of California's interior practiced economies not unlike coastal peoples of later time periods, including the exploitation of aquatic resources.

CONCLUSIONS

Resolving questions about when, how, and why people first settled the California coast will require more data from both California and elsewhere around the Pacific

Rim. At this point, I don't know if the peopling of the New World was by land, by sea, or both. Intuitively, the idea that the first settlers of the California coast may have traveled by boat from the north Pacific appeals to me. After spending a long winter in Fairbanks, I know the so-called "Ice-Free Corridor" is anything but ice-free most of the year. After an entire month when the temperature never rose above 30 degrees below zero, I reached two personal insights about the peopling of the Americas. The first was why the New World appears to have been settled so rapidly -- it seemed to me that these people must have been heading for California, fast. The second was that anyone in their right mind who spent a winter in the freezing, dark, and forbidding landscape of Beringia's interior would surely have made a beeline to the coast as soon as the first thaw arrived. Admittedly, these were the visceral responses of an ex-surfer from California and Hawaii, but they may contain a kernel of truth.

To end on a more serious note, let me reiterate that archaeological data from California's coastal sites can be used to address many issues that are crucial to the understanding of our human past. Knowing the broader context and implications of our research takes time, but it is also extremely rewarding. Understanding the evolution of California's coastal peoples also requires comparative knowledge of contemporary developments in adjacent regions, both up and down the coast, as well as in the adjacent interior. The societies we study did not develop in isolation; trade and other types of interaction appear to have been well established even during the early Holocene.

Above all, we must keep our minds open and never lose sight of the fact that our research in California, if done deliberately and carefully, can contribute to these larger issues. Moreover, when our interpretations are written clearly and without jargon they are of interest to a wide audience of archaeologists, other scholars, resource managers, and the general public. Since these are the people who ultimately support archaeology, non-technical interpretation of our work can contribute to our larger goals for California archaeology.

It seems that many California archaeologists hit a kind of intellectual doldrums during the late 1970s and early 1980s. By and large, we dropped out of the major journals, many of us overwhelmed by the opportunities and distractions of cultural resource management (CRM). It took time to establish CRM as a legitimate need that the public should support, and to get standards to a point where CRM data can consistently contribute to broader research problems. I believe California archaeology is entering a new and vital phase and I am generally optimistic about our future. We must continue to generate good survey and excavation data, however, while synthesizing the mounds of information that have accumulated over the last two decades. We must publish our results, and our syntheses need to be tethered to broader issues of interest to the public.

Development, erosion, and looting are destroying the sites that are our lifeblood. There is a critical need for more regional studies and syntheses of data. In particular, we need to pay more attention to small and low density sites, some of which may be among the most important sites in our region. Many of our earliest coastal sites contain relatively few diagnostic artifacts, and they are relatively easy to miss or dismiss if not dated and carefully evaluated. Agencies and academic institutions must take the lead in developing more effective programs. There are some sterling examples -- Andy Yatsko's San Clemente Island work with Clem Meighan and now Mark Raab, Don Morris' program on Channel Islands National Park, Jeanne Arnold's work on Santa Cruz Island, and Kent Lightfoot's north coast research, to name just a few. We need to do even more, however, in designing cooperative research that combines the talents and resources of academic, agency, and contract archaeologists. Most of all, we must keep sight of the broader contexts of our research and integrate the big picture into our thinking.

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