

WILL THE TRUE AGE OF THE BORAX LAKE PATTERN
PLEASE STAND UP?
THE ARCHAEOLOGY OF CA-HUM-573, AN EARLY HOLOCENE
SITE ON THE SOUTH END OF PILOT RIDGE, HUMBOLDT
COUNTY, CALIFORNIA

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Nearly 20 years have passed since site CA-HUM-573 was excavated as part of the benchmark Pilot Ridge Project conducted for the Six Rivers National Forest. The site contained a remarkably well-preserved house floor associated with numerous Early Borax Lake Pattern tools. Although relatively dated through obsidian hydration, no absolute date had been attained from this highly discrete feature. Recently an AMS radiocarbon date was attained from the house floor, providing one of the few reliable Early Borax Lake Pattern dates in existence. This paper revisits HUM-573 and its implications for the chronology of this early pattern in northern California.

In August of 1982 a collection of mostly young archaeologists began an ambitious data-recovery program for a timber sale on the Six Rivers National Forest. This endeavor was named the Pilot Ridge Archaeological Project. Led by Bill Hildebrandt, the project entailed the excavation of 10 sites along a ridge system that included Pilot, Whiting, and Last Chance ridges, and South Fork Mountain. The sites ranged in elevation from 1,370 to 1,830 meters, and most were located in rather dense montane forest habitats. Under often grueling field conditions, an excellent crew of 17 managed to excavate more than 325 cubic meters of soil in 11 weeks.

Of the 10 sites excavated that year, none was more important than HUM-573. Located within one kilometer of Pilot Rock at an elevation of about 1,370 meters, Hum-573 offered spectacular views to the east, south, and west. Situated within a mixed prairie scrub/Brewer's oak environment, the site covered approximately 120,000 square meters of the south end of Pilot Ridge. Just over 30 cubic meters of deposit were

excavated using the then-innovative surface transect unit and more traditional types of excavation; the deposit contained one of the finest Borax Lake features ever found in the North Coast Ranges.

THE FEATURE

One of the four transects laid across the site revealed the edge of the feature, which was first represented by two large, thin river cobbles stacked one on top of the other. They were located in a dense forest of Brewer's oak, and a chainsaw had to be used to clear the area for excavation. The river cobbles turned out to be a milling slab and a manuport -- the first hints of what the feature represented.

As the excavation continued, a number of unmodified rocks were exposed, but soon a handstone and a large chert biface were revealed. It was at this point that we realized there was an intact feature of some kind, a first for the project. We eventually recovered an extensive assemblage of tools including 11 milling slabs, four handstones, three

hammerstones, one anvil, 11 edge-flaked spalls, 11 flake tools, 11 cores, three cobble tools, nine projectile points, and 32 bifaces, all within a roughly 5-by-5-meter area. The projectile points were all Borax Lake wide-stems, or bifaces that were probably on their way to being wide-stem points (Figure 1).

More important than the sheer number of tools found was that all these artifacts were

in clear association with structural remains of a house. Structural indicators included three discrete rock clusters interpreted as post supports that were arrayed around a small remnant of a house floor. The remnant section of floor was defined by its compactness relative to the surrounding soil – it was extremely packed, giving off a distinctive ring when tapped by a trowel. In sum, this was an intact Borax Lake Pattern



Figure 1. Bifaces and wide stem projectile point fragments from house feature at CA-HUM-573, (scale 1:1).

residence complete with a large assemblage of tools, one the rarest of finds in the forested mountains of the North Coast Ranges.

THE AGE

Determining the exact age of the house was a difficult problem indeed. Forty-eight specimens of Medicine Lake Highland obsidian produced a mean of 4.2 μ and a standard deviation of 0.50 (Hildebrandt and Hayes 1993). Unfortunately, however, no materials suitable for radiocarbon dating were recovered from the feature, making it difficult to evaluate how the hydration data actually corresponded to calendric dates proposed for the Borax Lake Pattern occupation at the site. Nevertheless, Hildebrandt and Hayes (1983) proposed a time range of 3000-6000 years B.P. for the Borax Lake Pattern assemblages, based on the hydration data and hypothesized correlations between upland settlement and reconstructed paleoenvironments.

Several years later, Basgall and Hildebrandt (1989) developed a calendric rate for Medicine Lake obsidian based on seven hydration/radiocarbon pairs derived from sites excavated during the Sacramento River Canyon I-5 Project. By adjusting for the cooler mean average temperature of Humboldt County, Hildebrandt and Hayes (1993) applied the Sacramento River Canyon hydration rate to the Pilot Ridge data, producing results they believed were "reasonably consistent" with their original time estimates of 3000 to 6000 B.P.

THE HISTORY

This time frame was considerably more recent than that assigned by Mark Harrington, the first archaeologist to excavate at LAK-36 (the Borax Lake type-site) back in the 1940s. Harrington had recovered what he called "Folsom points," crescents, wide-stems, handstones, and milling slabs, among other artifact types, and had lumped everything into a generic "Borax Lake Complex." Without the benefit of radiocarbon dating, Harrington assigned a date of 10,000 B.P., based mostly on what

he felt was the minimum age of "Folsom," and on the geological and climatic data of his era (Harrington 1948).

Clement Meighan, in his *Archaeology of the North Coast Ranges*, placed the Borax Lake Complex "somewhere in California's long and inadequately defined Middle Horizon" (Meighan 1955:27), or sometime before 2000 B.P., although he considered that the "Borax Lake Complex" was the basement culture of the northern North Coast Ranges.

C. Vance Haynes and Charles Rozaire returned to LAK-36 in the mid-1960s and conducted further excavations, finding that the site lacked stratigraphic integrity. Nevertheless, by generating 80 obsidian hydration readings on projectile points, they were able to establish discrete morphological types that tended to cluster and thus give some chronological order to the deposit. On the basis of these hydration measurements, Meighan and Haynes (1970) proposed a hypothetical sequence that began 12,000 years ago with the appearance of the fluted points and crescents. This, according to Meighan and Haynes, was followed by a period of site abandonment and then a major occupation characterized by the Borax Lake wide-stems that lasted from 6,000 to 3,000 years ago.

Shortly thereafter, Dave Fredrickson (1973, 1974) revised the taxonomic and chronological landscape of the North Coast Ranges by introducing his now-familiar construct of Periods, Patterns, Aspects, and Phases. Fredrickson folded the earliest materials from LAK-36 into the Post Pattern of the Paleo-Indian Period, which he originally placed between 12,000 and 8000 B.P. and later adjusted to approximately 11,500 to 10,000 B.P. The following interval he named the Borax Lake Aspect of the Borax Lake Pattern, which fell into the Lower Archaic Period. This he characterized by the presence of square-stemmed points and the mano and metate. Milling tools were initially an inferred part of the assemblage, but their association with wide-stems has since been proven at a variety of sites in the North Coast Ranges (Orlins 1971, 1972; Clewett 1977; Jackson

1977). The time frame for this aspect, which was spatially restricted to the Clear Lake Basin, was originally set by Fredrickson at 8000-3000 B.P., but which he has since adjusted to 10,000-7500 B.P. (White 2000).

Outside of the Clear Lake Basin, the Borax Lake Pattern was thought to be by-and-large much younger, with only a few scattered radiocarbon determinations to go on. Most notably on the older end was a ^{14}C charcoal date of 5300 radiocarbon years B.P. (RCYBP), from a site in Mendocino County (Fredrickson 1974), and three other dates of 6530, 6870, and 7580 RCYBP, all from Squaw Creek (SHA-475), located northeast of Redding in Shasta County (Sundhal and Henn 1993). The dates from SHA-475 however, were viewed with skepticism by many archaeologists, due to their lack of direct association with a feature. The 6,000-year-old-plus dates also seemed to be out of balance with the Pilot Ridge data that suggested an age as young as 3000 B.P. for the northern expression of the Borax Lake Pattern. These northern Borax Lake Pattern assemblages have since been divided into the Buck Rock Aspect for the northwestern mountains, and the Squaw Creek Aspect for the northeastern mountains (White 2000).

According to Greg White (2000), the Buck Rock Aspect is represented by the Pilot Ridge sites, other ridge sites in the Mendocino National Forest as reported by King (1974) and Jackson (1975, 1976, 1977), and a deposit located along the Trinity River known as the Cox Bar site (Sundhal 1988). The Squaw Creek Aspect is represented by just two sites, the Squaw Creek site (SHA-475) and SHA-499 (Sundhal and Henn 1993). Both of these aspects are characterized by wide-stemmed points with indented bases and, according to White, "occur much later in time than the Borax Lake Aspect in the Clear Lake Basin" (2000:49).

THE DATE

When the house at HUM-573 was excavated, soil samples from the floor were

collected as part of the field effort. The samples languished in storage for nearly two decades; fortunately, they were never discarded. Upon their rediscovery and with help from a variety of people (including a grant from Ken Wilson of the Six Rivers National Forest), a small amount of charcoal was floated out of this soil sample and submitted to Beta Analytic for a single AMS date (Figure 2).

Estimates on what date this sample might yield varied from 4000 to 6500 B.P. Surprisingly, it was much older: the conventional date turned out to be 7120 ± 50 radiocarbon years B.P., which calibrates to an age of 7945 cal BP, or nearly 8,000 years old. This date is one of the oldest ever obtained from a house structure in California.

In retrospect this date should not have been that surprising. The conventional radiocarbon date of 7580 ± 230 derived from the base of SHA-475, when calibrated, is circa 8350 B.P. The close agreement of the dates from HUM-573 and SHA-475 is significant, because it firmly places the Borax Lake Pattern in the far north into the Early Holocene.

In summary, it is now apparent that the Borax Lake Pattern in both the south and the north was present some 8,000 years ago. The wide geographical distribution of this pattern at circa 8000 B.P. implies that its roots extend even deeper into the Early Holocene and potentially back to the Pleistocene/Holocene transition. Consequently, the archaeological record of the North Coast Ranges appears to be just as ancient and complex as anywhere in California.

NOTES

The authors wish to acknowledge the Six Rivers National Forest and Ken Wilson for providing the funds to attain the radiocarbon date discussed in this paper. They also wish to thank Eric Wohlgemuth of Far Western Anthropological Research Group for his careful archaeobotanical

analysis of the soil samples of the house floor at HUM-573.

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PH: 305/667-5167 FAX: 305/663-0964
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Mr Richard T. Fitzgerald

Report Date: January 24, 2000

St. Martinez, CA

Material Received: December 13, 1999

Sample Data	Measured Radiocarbon Age	$^{13}\text{C}/^{12}\text{C}$ Ratio	Conventional Radiocarbon Age (*)
Beta-137571	7080 +/- 50 BP	-22.7 o/oo	7120 +/- 50 BP

SAMPLE # CA-HUM-573 Plot #1 30-40 cm
ANALYSIS Standard-AMS
MATERIAL/PRETREATMENT (charred material) acid/alkali/acid

NOTE: It is important to read the calendar calibration information and to use the calendar calibrated results (reported separately) when interpreting these results in AD/BC terms.

Dates are reported as RCYBP (radiocarbon years before present, "present" = 1950 A.D.) By international convention, the modern reference standard was 95% of the C14 content of the National Bureau of Standards' Oxalic Acid & calculated using the Libby C14 half life (5568 years). Quoted errors represent 1 standard deviation statistics (68% probability) & are based on combined measurements of the sample, background, and modern reference standards.

Measured C13/C12 ratios were calculated relative to the PDB-1 international standard and the RCYBP ages were normalized to -25 per mil. If the ratio and age are accompanied by an (*), then the C13/C12 value was estimated, based on values typical of the material type. The quoted results are NOT calibrated to calendar years. Calibration to calendar years should be calculated using the Conventional C14 age.

Figure 2a. Radiocarbon date from CA-HUM-573.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-22.7;lab. mult=1)

Laboratory number: Beta-137571

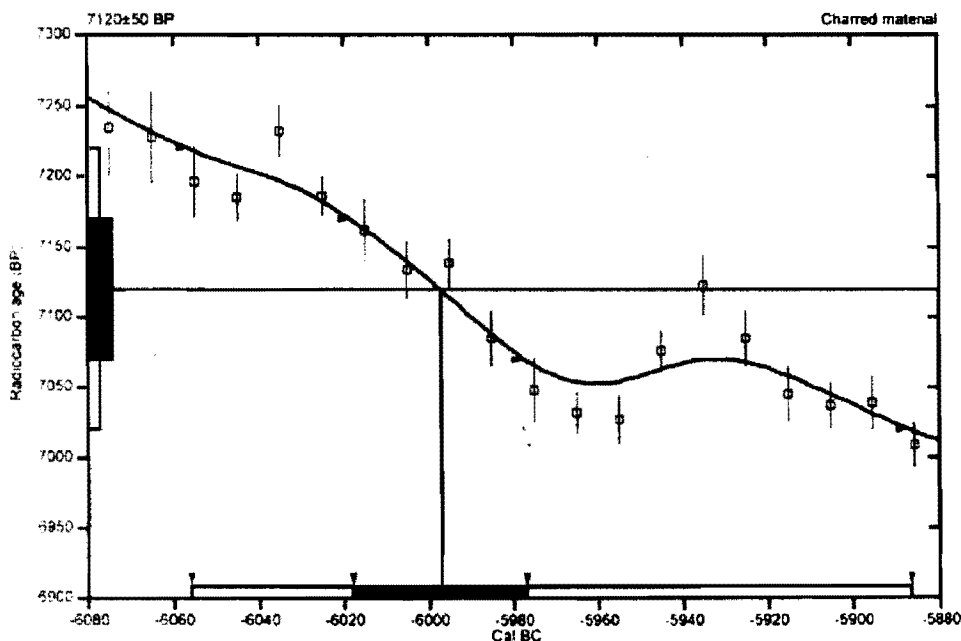
Conventional radiocarbon age: 7120±50 BP

2 Sigma calibrated result: Cal BC 6055 to 5885 (Cal BP 8005 to 7835)
(95% probability)

Intercept data

Intercept of radiocarbon age
with calibration curve: Cal BC 5995 (Cal BP 7945)

1 Sigma calibrated result: Cal BC 6020 to 5975 (Cal BP 7970 to 7925)
(68% probability)



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Database used

INTCAL98

Calibration Database

Editorial Comment

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INTCAL98 Radiocarbon Age Calibration

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Mathematics

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Figure 2b. Radiocarbon date from CA-HUM-573.