

# RADIOCARBON DATES FROM THE EARLY HOLOCENE COMPONENT OF A STRATIFIED SITE (SEL-009) AT AURORA LAGOON, KENAI PENINSULA, ALASKA

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**Abstract:** Tests at Aurora Lagoon on the Kenai Peninsula in 2000 and 2001 produced six new radiocarbon dates, five of which support the presence of human activity within the Cook Inlet basin during the Early Holocene. Calibrated dates ranging from 6220-5470 BC almost double the known span of human occupation in lower Cook Inlet. Stratification of the lower component of the Faulkner Site suggests a minimum of two occupations reflecting seasonal use of a maritime setting by a currently unidentified group of hunters. A less than diagnostic lithic assemblage obscures cultural identification and the absence of organic preservation precludes a definitive statement on subsistence.

**Keywords:** Southcentral Alaska, Kachemak Bay, early peopling

## INTRODUCTION

Cutting deeply into the southern end of the Kenai Peninsula, 64 km long, 38 km wide Kachemak Bay is the first major embayment on the eastern shore of Cook Inlet accessible to maritime travelers. Glaciers from the local Kenai Mountains and the distant Alaska and Aleutian Ranges to the north and west shaped the diverse landforms of Kachemak Bay (Reger and Pinney 1996:21). Deglaciation began prior to 15,000 <sup>14</sup>C yr BP (Reger and Pinney 1996:27). Glacial ice had retreated more than 10 km inland from the present shoreline of Kachemak Bay by 10,240 <sup>14</sup>C yr BP (Wiles and Calkin 1994:282). The pioneer herbaceous tundra was replaced by shrub willow, dwarf birch, and some deciduous species (*Populus*) by 9,500 years ago. The Early Holocene occupants existed on a landscape which lacked the extensive evergreen forests so characteristic of the contemporary environment, for it wasn't until about 3,500 to 4,000 years ago that white spruce invaded Kachemak Bay from the north and 1,650 years ago that Sitka spruce invaded the south shore from Prince William Sound (Ager 2000:147-149). Although no archaeological evidence supports this theory, a likely scenario would suggest that Early Holocene peoples were harvesting resources from a developing or fully developed marine food web such as Kachemak Bay supports today.

## PRESENT ENVIRONMENT

A variety of ecosystems characterizes the south and north shores of Kachemak Bay (Workman 1998:147-149).

The Kenai Mountains, which define the south shore, contain barren glaciated mountain peaks, alpine tundra, and forested mountains fronted by a convoluted coast line. The majority of archaeological sites in Kachemak Bay exist along the coastal fringe of the south shore. In contrast, the north shore is characterized by a relatively straight shoreline fronted by extensive mud flats and backed by bench lands and rolling hills.

Two low tides and two high tides occur every 24 hours and 50 minutes. At their extreme, tides range from about 2 m below sea level to 7 m above sea level, exposing almost nine vertical meters of intertidal habitat (Pioneer Publishing 2004:96-107).

## THE FAULKNER SITE (SEL-009)

Aurora Lagoon is situated deep within Kachemak Bay along the mountainous south shore (Figure 1). The shallow lagoon is backed by spruce and birch-covered slopes and fronted by low-lying Aurora Spit. The sand spit, which trends north to south, is about 1.2 km long and .2 km wide. The northern half is owned by the State of Alaska, the southern half, including the site, by the Faulkner families of Homer and Anchorage. Identified as SEL-009 on the Alaska Heritage Resource Survey, the site is located on the northernmost forested rock knob in a cluster of five knobs of varying sizes (Zollars and Klein 2002). Prior to the deposition of quaternary sediments, the knobs were islands, the lagoon non-existent (de Laguna 1975:24).

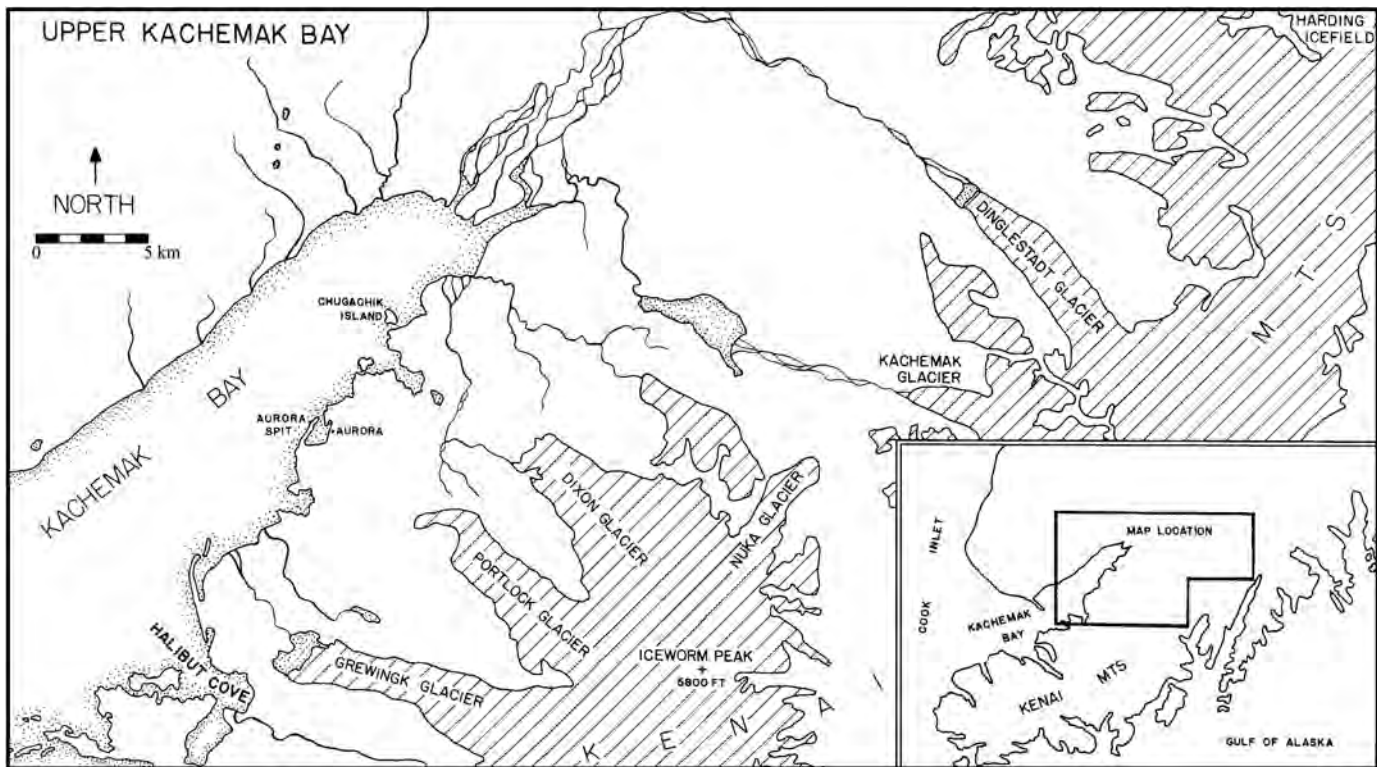


Figure 1. Map locating Aurora Spit in upper Kachemak Bay and the bay on the lower Kenai Peninsula.

The saltwater of Kachemak Bay enters Aurora Lagoon through a narrow, rock-choked channel on the north. The lagoon opening may change through time. William Healy Dall, “dean” of Alaskan scientists, illustrated Aurora Lagoon as opening on the south when he mapped Kachemak Bay in the late 19<sup>th</sup> Century (Dall 1895: Plate L1). The late Sewell Faulkner, who purchased property on Aurora Spit in 1978, told the authors that previously, a channel had opened at the south end of the lagoon. He also stated that the lagoon is filling slowly; more sediments are being deposited by the few freshwater creeklets than are being flushed out. Faulkner suggested that this began after the land subsided following the Good Friday Earthquake of 1964.

### PREVIOUS INVESTIGATIONS

Aurora Spit has been visited by numerous archaeologists. Frederica de Laguna, who conducted the pioneer field work throughout Kachemak Bay in the early 1930s, tested a 1.8–2.1 meter deep midden on the northernmost rock knob in 1931 (de Laguna 1975:24). De Laguna defined the artifact assemblage and fauna as the Kachemak Culture, later re-named the Kachemak tradition. At present, that Kachemak tradition site is recognized as the upper component of the stratified Faulkner Site. De Laguna did not locate the Early Holocene component; possibly, it was vegetated in the 1930s.

The coastline of Kachemak Bay subsided 0.5 to 2 m following the 1964 earthquake (Waller 1968:D1). To assess damage to archaeological sites, the Homer Society of Natural History organized a survey in 1973. Found eroded onto the beach at SEL-009 was a flake core with a prepared platform (Reger 1974:15). A decade later, Neil Campbell, James Stone, and Peter Zollars surveyed upper Kachemak Bay for the State of Alaska. Like de Laguna, they saw no indication of the Early Holocene component at SEL-009 (Zollars 1983:19).

In 1989, Janet Klein assessed a mainland site within Aurora Lagoon. During the next three years, over 200 artifacts were collected from the beach, identified as late Ocean Bay, and housed at the Pratt Museum (Klein 1996:53-54). In 1992, Professor William Workman, University of Alaska Anchorage, with a small field crew excavated the stratified Sylva Site (SEL-245). The assemblage and an uncalibrated radiocarbon date of  $4,440 \pm 90$  years BP confirmed a late Ocean Bay occupation which reflected an incursion of people probably from the Alaska Peninsula (Workman et al. 1993:12). An older undated occupation, which lacked diagnostic artifacts and carbon, was identified beneath the Ocean Bay occupation (1993:4). How it relates, if at all, to the Early Holocene component at SEL-009 is unknown.

## Field Methodology and Results

During site surveys of Aurora Spit in 1996 and 1998, we noted carbon flakes *in situ* below the Kachemak tradition component at SEL-009. Although not impacted by even the highest tides, the site was actively eroding due to wind, rain, and gravity. With permission from the landowners, we tested the exposed face August 4-7, 2000 and June 10-23, 2001 to salvage information and artifacts, particularly from the lower unidentified component. Testing occurred on the north-facing side near the western end of the rock knob. We trimmed the overhanging vegetation, established a temporary datum, then excavated the shell midden. A sample of charred material provided a measured radiocarbon age of  $1770 \pm 70$  BP or cal AD 110-430, solidly anchoring the midden within the late

Kachemak tradition (Beta-152921). Numerous post holes extended into the Early Holocene component. Below the midden, we cleaned and straightened the vertical wall to bedrock at 120 cm below the surface. A metric tape stretched 160 cm parallel to the erosion face and across bedrock, provided the control necessary for stratigraphically plotting artifacts and samples. Excavation proceeded southward (forward) until the Early Holocene component ended. Approximately 8-10 m<sup>3</sup> of sediments were excavated during the two seasons. At the close of the excavation, back dirt was shoveled onto the bedrock shelf.

### *One Feature, Two Occupations*

One feature and two occupations were identified in the Early Holocene component. The feature, a 30 cm wide by 20 cm deep hearth, was excavated at about 90-110 cm below the surface. Considerable spoil ash was displaced in several thin well-defined layers, indicating repeated use. All <sup>14</sup>C dates were derived from unspiciated charred wood collected from the hearth and associated spoil ash. Although the soil matrix remained relatively consistent throughout this component, the texture, color, artifact distribution and carbon content changed with depth, suggesting a younger and older occupation (Figure 2).

### SAMPLES, DATES, AND LITHICS

Six carbon samples were collected, one from the Kachemak tradition component (discussed in text) and five from the older occupation of the Early Holocene component. Dates reveal that the Early Holocene people either occupied the site for hundreds of years or returned, repeatedly, over the centuries (Table 1). As of this writing, SEL-009 is the oldest dated site in mainland Southcentral Alaska.

Other samples collected included one from the culturally stained, oily soil representing the bottom of the Kachemak tradition, two soil samples from the Early Holocene component, glacial till from the colluvium, and a sample of peat from a lens found about 100 cm below the surface. Sandwiched between the older occupation and the colluvium, the peat was exposed only on the eastern end of the excavation. The possibility exists that it and the Early Holocene

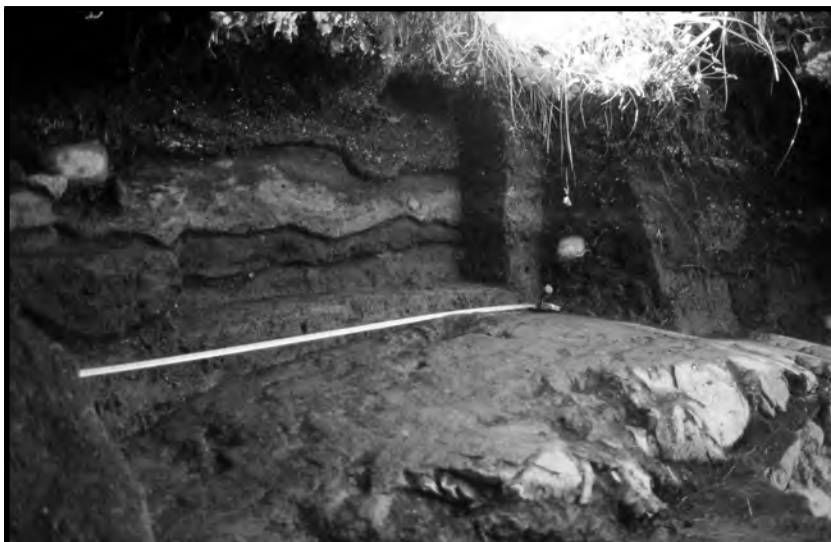


Figure 2. Stratigraphic Profile: A 1.38 m wide section showing the Kachemak tradition and Early Holocene components. August 2000. © Janet R. Klein.

#### Vegetation.

Kachemak Tradition Component: 60-70 cm thick; shell midden; post hole with two rocks, left, and hearth, right, cut into the Early Holocene component; Munsell Color Chart 10 YR-3/4, deep brown.

Early Holocene Component: younger occupation – 15-25 cm thick; silty soil; carbon smears; no fauna; Munsell Color Chart 10 YR-8/2, off-white.

Older occupation – 10-15 cm thick; silty soil; carbon ranging from flecks to 1 cm wide chunks, largest in hearth; unspiciated calcined bone fragment in hearth; Munsell Color Chart 2.5 YR/4, dark reddish brown.

Colluvium – 12-15 cm thick; sterile, gritty, granular, glacially deposited till; Munsell Color Chart 10 YR-4/6, dark yellowish brown.

Table 1. Radiocarbon dates from the older occupation of the Early Holocene component of the Faulkner Site.

Laboratory Number	<sup>14</sup> C yrs BP	<sup>13</sup> / <sub>12</sub> C Ratio	Sigma	Calibrated Years
Beta-152922	7160 ± 100	-25.9 ‰	2	6220 – 5810 BC
Beta-158403	7070 ± 90	-25.3 ‰	2	6080 – 5740 BC
Beta-152923	6840 ± 90	-25.6 ‰	2	5880 – 5610 BC
Beta-152924	6810 ± 70	-26.2 ‰	2	5790 – 5610 BC
Beta-158402	6690 ± 90	-26.0 ‰	2	5720 – 5470 BC

component continue eastward. If so, scattered spruce, alder, and other dense vegetation would need to be removed to access them.

One hundred and seventy-four lithic artifacts were excavated from the Early Holocene Component; 104 from the younger occupation, 70 from the older. Of those, 160 were flakes with seven exhibiting signs of retouch (Figure 3).



Figure 3. Flake, tuffaceous material, younger occupation, Early Holocene component. Actual size.

The minimal tool assemblage included a biface, three biface fragments, two cores of which one had a prepared platform, and three core flakes (Figures 4, 5, 6). Almost 54% of the lithics were chert, 35% indurated tuff, tuffaceous sedimentary rock or a variant thereof, and 11% recognizable local or foreign material. Tuffs, tuffaceous sedimentary rock, and variants are found in the Peninsula Terrane comprising the tip of the Kenai Peninsula from Seldovia Bay southwestward to Koyuktoik Bay (Bradley et al. 1999). Patrick Saltonstall, archaeologist at

the Alutiiq Museum and Archaeological Repository, Kodiak, states that tuff is known from Kodiak Island sites although the material remains unsourced. Whether lithics associated with the Early Holocene component at Aurora Spit are local or foreign is undetermined.



Figure 4. Core, tuffaceous material, younger occupation, Early Holocene component. Actual size.

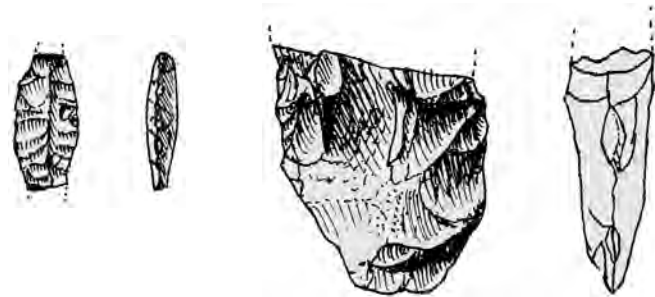


Figure 5. (above left). Bipoint, medial fragment, chert, younger occupation, Early Holocene component. Actual size. Figure 6. (above right). Biface, broken, chert, older occupation, hearth associated. Actual size.

## CONCLUSIONS

Radiocarbon dates from the Early Holocene component reveal that people utilized the site repeatedly between 6220-5470 cal BC. Although adept at flaking bifaces and cores from a variety of lithic materials, the lack of a diagnostic assemblage obscures cultural identification. It also prevents the authors from suggesting whether the people preferred maritime or terrestrial resources.

After receiving the radiocarbon dates firmly establishing a human presence in Kachemak Bay over eight millennia ago, the authors began reassessing sites and artifact collections in Halibut Cove, about seven miles south of Aurora Lagoon. Two collections contain lithic materials similar to those from the Faulkner Site, strongly suggesting the presence of an Early Holocene occupation there. Thus, the search for early sites in Kachemak Bay continues.

## ACKNOWLEDGEMENTS

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