

RESEARCH NOTE

RADIOCARBON DATING THE CABIN ISLAND VILLAGE SITE (KAR-121), BECHAROF NATIONAL REFUGE

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On March 24, 1989, the tanker *Exxon Valdez* grounded on Bligh Reef in Prince William Sound, Alaska, spilling an estimated 258,000 barrels of crude oil. Within days the oil had moved southwest through a series of islands, oiling shorelines in southwestern Prince William Sound and beyond (O'Donoghue 1989:14–15). Exxon Company, USA, was advised by the U.S. Forest Service that concern for cultural resources potentially affected by the operation was warranted (Mobley et al. 1990). By April 1989, plans for the Exxon Valdez Cultural Program had been developed, and by May archaeological surveys were under way.

Impact assessments to natural and archaeological resources were extensive, spanning at least 800 miles (1300 km) of coastline. This expansive distance was split into segments, most named after geographic features (e.g., Puale Bay, Kachemack Bay, etc.). Exxon archaeologists visited one segment, Puale Bay, in Becharof National Refuge, on July 10, 1989.

During their investigation, Exxon crews surveyed a small 13-acre island at the mouth of the bay (Fig. 1). While on the island they recorded KAR-121, a site on the southeastern seaward side of the island. Artifacts were observed eroding from an exposed dune overlying the island bedrock. The collected artifact assemblage consists of 16 lithic artifacts, a copper item, anthracite (jet), and charcoal

collected from a deflated hearth feature (Fig. 2). The investigators did not describe any evidence of oil at the site.

Material types for collected lithics include seven chert, five basalt, three slate, and one anthracite (Fig. 3). One of the slate artifacts is a projectile point base that was likely broken below the shoulder area (Mobley et al. 1990). It is parallel-sided and rectangular in cross section with both lateral edges and base ground flat (Fig. 3J). Rains (2014) geochemically characterized collected basalt artifacts from the site using nondestructive X-ray fluorescence. She concluded three of the five “basalt” artifacts are likely not basalt and might represent a metamorphosed material or another igneous material. One basalt artifact was assigned to her Group C and the other to her Group L. Age use of Group C material spans 8000 to 200 years ago, and age use for Group L material spans 4400 to 800 years ago (Rains 2014; dataset 2014).

The collected copper artifact from the site is ovate in cross section with two double-bevel spatulate ends (Fig. 3I). A seam on one end of the face indicates that the artifact was made by hammering and consolidating one or several copper sheets (Mobley et al. 1990). This is consistent with traditional Indigenous methods of working copper in Alaska (Cooper 2012; Harritt 1998, 2011). It is thought the artifact functioned as an awl or perforating tool. Kory Cooper

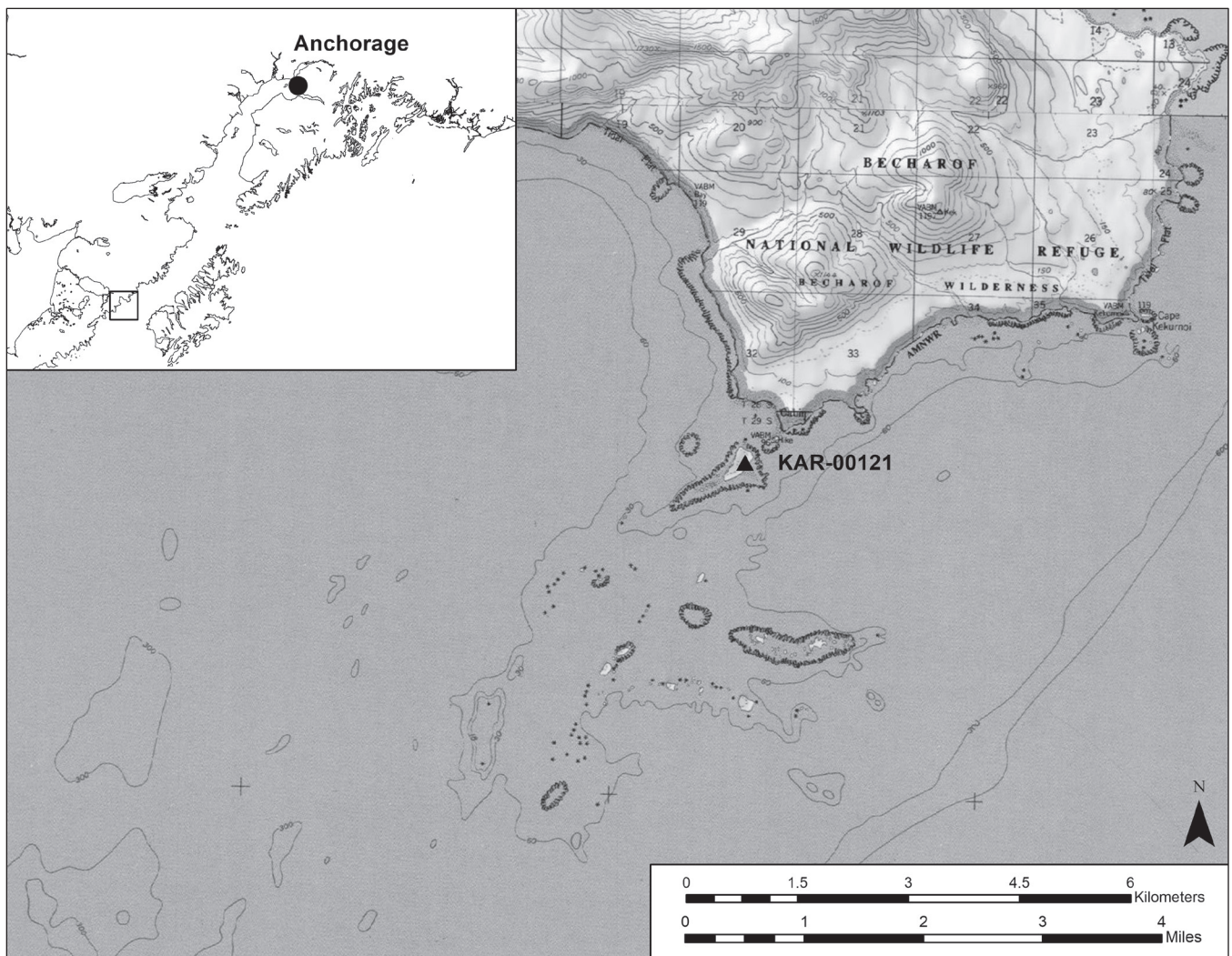
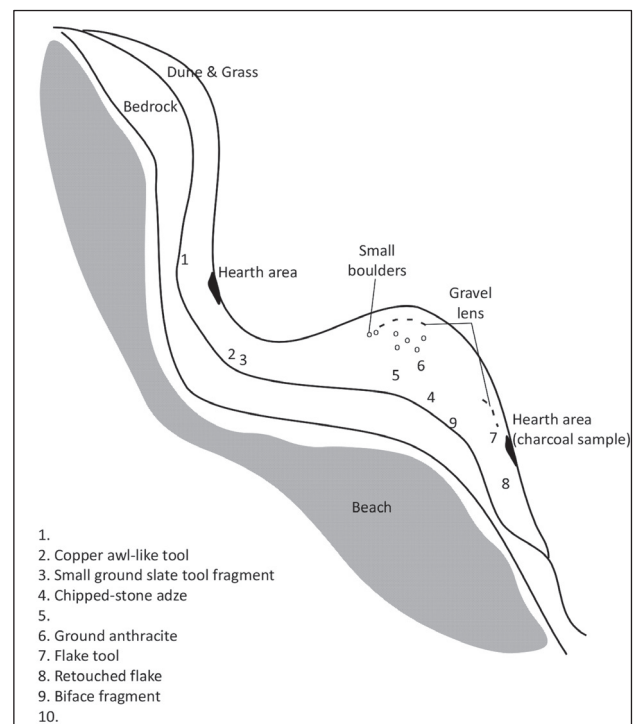


Figure 1. Location of KAR-121.

Figure 2. Site map of KAR-121 digitized after the original (Exxon Cultural Resource Program: Box 24 Folder 7, Alaska and Polar Regions Collections and Archives, Elmer E. Rasmuson Library, University of Alaska Fairbanks). The presumed artifacts designated by 1, 5, and 10 were not labeled on the original map. No map scale or north arrow was indicated.



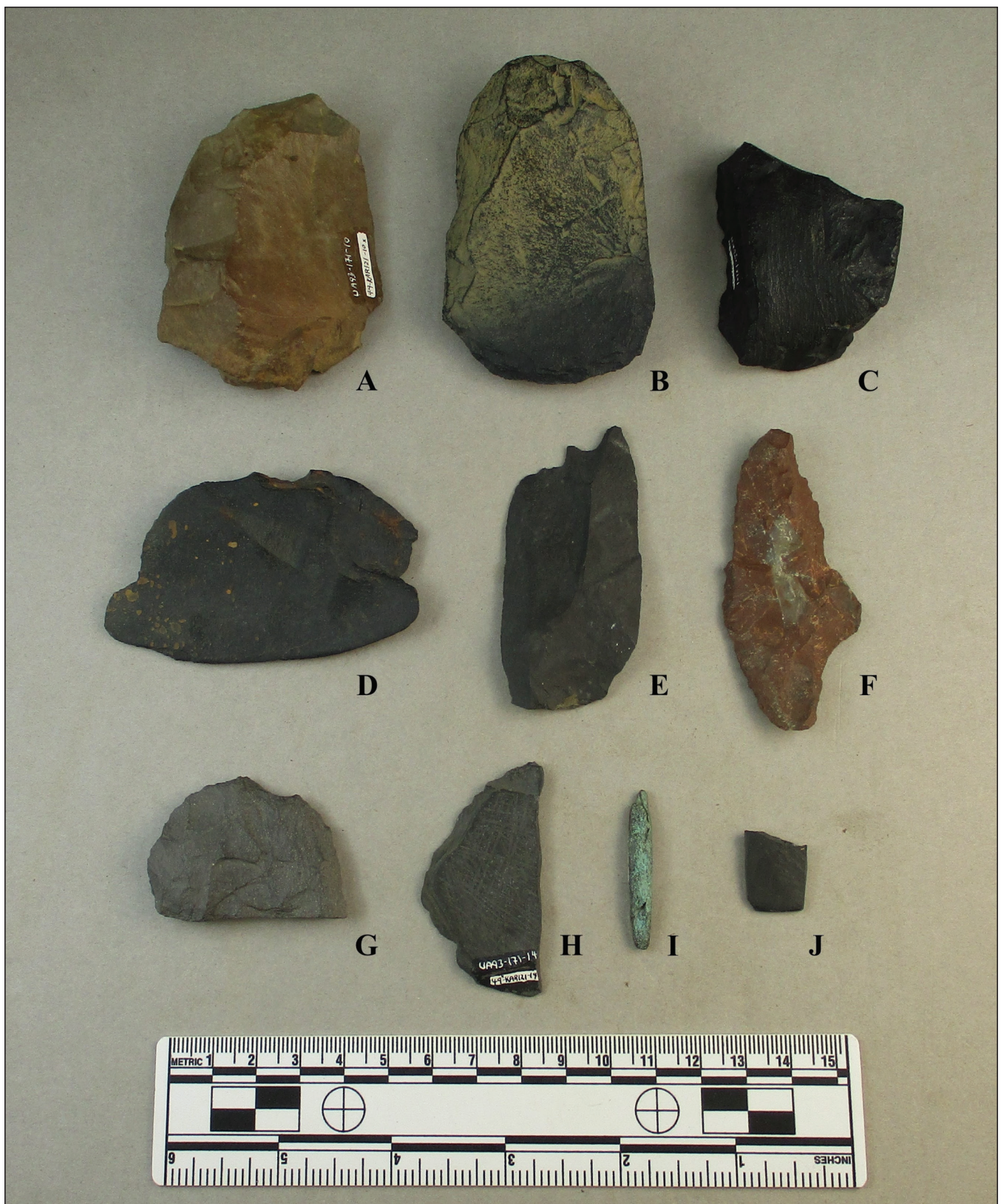


Figure 3. Several artifacts from KAR-121: (A) retouched flake chunk, (B) planing adze preform, (C) abraded piece of jet/cannel coal, (D) ulu, (E) rectangular basalt flake, (F) transverse retouched flake, (G) biface end fragment, (H) edge-flaked fragment with incised design (?), (I) copper item, (J) parallel-sided point base. Artifact descriptions are adapted from Mobley et al. (1990).

performed nondestructive X-ray fluorescence on the copper artifact in May 2021 using methods described in Cooper (2012). The analysis determined the artifact material to be natural, native copper and not of a copper alloy.

The site was not dated until 2021, when a single radiocarbon date was obtained from archived wood charcoal. The charcoal was collected from one of two deflated hearth features mapped at the site (Fig. 2). Sampled charcoal yielded a radiocarbon age of 880 ± 30 BP (Beta-610619). This date calibrates to 698–905 cal BP (1045–1252 cal AD) (Table 1). It is unclear why charcoal from the other hearth feature, nearest the copper artifact, was not sampled and/or how the two hearth features illustrated on the site map are related. A likely interpretation is that multiple occupations are represented at KAR-121 or, conversely, that the two hearth features represent a single contemporaneous occupation. This unresolved question might be answered by future research efforts at the site. Until additional testing and sampling occurs, we interpret the radiocarbon date as representing the age of the site and collected artifacts. The radiocarbon age corresponds to the Brooks River Camp Phase in the Naknek Lake Drainage or Kukak Mound Phase/Early Koniag on the Pacific Coast (Clark 1977; Dumond 2005; Haggarty et al. 1991:118).

There are many distinct sources of native copper in the Copper River Basin; several additional possible native copper source locales have been reported in traditional Dena'ina and Chugach territory in southcentral Alaska (upper and lower Cook Inlet and Prince William Sound) (see Cooper 2012:Fig. 2 and Table 1). Provenance research is unlikely to determine where the awl-like artifact from KAR-121 originated, but it may have been obtained through trade from an area inclusive of the Copper River Basin and intermediaries on Cook Inlet or Prince William Sound (Clark 1968, 1974; Cooper 2012; Harritt 2011). The occurrence and use of native copper on the Upper Alaska Peninsula and Kodiak Island is reported at seven sites ranging in age from AD 1450 to 1800 (Cooper 2012). Our radiocarbon date suggests an earlier movement of copper into the area, one that is supported by several sites of similar age on the Kenai Peninsula (Table 2; see also Cooper 2012). This study adds additional insight into precontact movement of native copper items along the Gulf of Alaska and Alaska Peninsula. The site's current condition is unknown. Due to the site's location on the island, it is likely vulnerable to coastal erosion and destruction from storm surges and waves.

Table 1. Radiocarbon date from KAR-121.

Lab Number	Catalog Number	Context	Material	$\delta^{13}\text{C}/\text{‰}$	RCYBP (1 σ)	Cal BP (2 σ)
Beta-610619	UA93-171-0018	Feature 1*	Charcoal	-25.5	880 ± 30	830–722 (76.5%); 905–865 (16.9%); 858–846 (1.6%); 702–698 (0.4%).

* The authors of this article designated the sampled feature as “Feature 1.”
Radiocarbon date calibrated with Calib Radiocarbon Calibration (Stuiver et al. 2022).

Table 2. Comparison of coeval-aged sites (adapted from Cooper 2012).

Site ID	Number of Copper Artifacts and Description	Calibrated Dates (Cal AD)	Reference(s)
KAR-121*	1: awl	1045–1252	this study
SEL-041	2: bracelet, fragment	773–1019 547–902 769–1053	Workman and Lobdell 1979:5; Workman et al. 1980:390
SEL-079**	1: needle	852–1189 1272–1314 1434–1518	Workman and Workman 1988:348
KEN-066	3: projectile point, bipoint, blade	1117–1213	Reger 1998:167; Reger and Boraas 1996:159
ANC-054*	1: fragment	1150–1298 1345–1393	Reger 1981:190; 1998:168

* Associated hearth(s) dated
** Artifact found in a level between the levels that produced the associated dates

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