THE KASILOF CACHE: A PREHISTORIC DENA′INA TOOL KIT

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ABSTRACT

In 2003 test excavations were conducted by Charles M. Mobley & Associates to evaluate the National Register eligibility of prehistoric sites jeopardized and ultimately damaged by construction of the Kenai–Kachemak Pipeline, on the west side of Alaska's Kenai Peninsula in upper Cook Inlet. A two-roomed semi-subterranean Dena'ina house forming part of a larger prehistoric village near Kasilof contained in its sod wall a well-preserved cache of stone, bone, antler, shell, and bark artifacts. Radiocarbon dates indicate successive occupation of the site (KEN-360), with the hearth in House 8—holding the tool cache—yielding a date of 270 ± 50 BP, calibrated to an age range of AD 1490 to 1680. The finished tools, unfinished tools, and raw materials form a tightly associated collection providing insight into prehistoric Dena'ina tool manufacture, use, and curation. That the feature type has not heretofore been reported may reflect sampling bias, since most investigations have focused on room interiors and exterior middens.

We collaborate here to describe a unique archaeological feature discovered in the sod wall of a prehistoric Dena'ina house: a bark-lined cavity containing deliberately stored artifacts. Such caches may be more common than would appear, since archaeological excavation of semi-subterranean house walls in the region has been lacking. This feature and its contents will help guide future excavation and interpretation of prehistoric Dena'ina house sites and activities.

In 2003 a cache of prehistoric Dena'ina artifacts was discovered at site KEN-360 north of the Kasilof River mouth (Fig. 1), on the western Kenai Peninsula overlooking Cook Inlet in central Alaska (Mobley et al. 2003:59–67). Cook Inlet's eastern margin is entirely within the Kenai Lowlands, characterized by Tertiary coal-bearing gravels and hilly Quaternary moraines and outwash plains dissected by meandering watercourses like the Kasilof River (Karlstrom 1964:12; Rieger et al. 1962; Wahrhaftig 1965:36). To the north and south the coastal bluff of consolidated sediments ranges up to 125 m above sea level, but in the site vicinity it is less than 30 m high. The site's soil profile is typical of the Kenai Lowlands—deep gravel overlain by up to two meters of loess with thin bands of tephra (Reger and Petrik 1993:2–6). Such fine-grained sediments restrict drainage, but slightly raised areas such as the KEN-360 vicinity typically show well-developed soils. There the forest soils have developed in a 35–40 cm thick loess stratum deposited over grayish-olive sands.

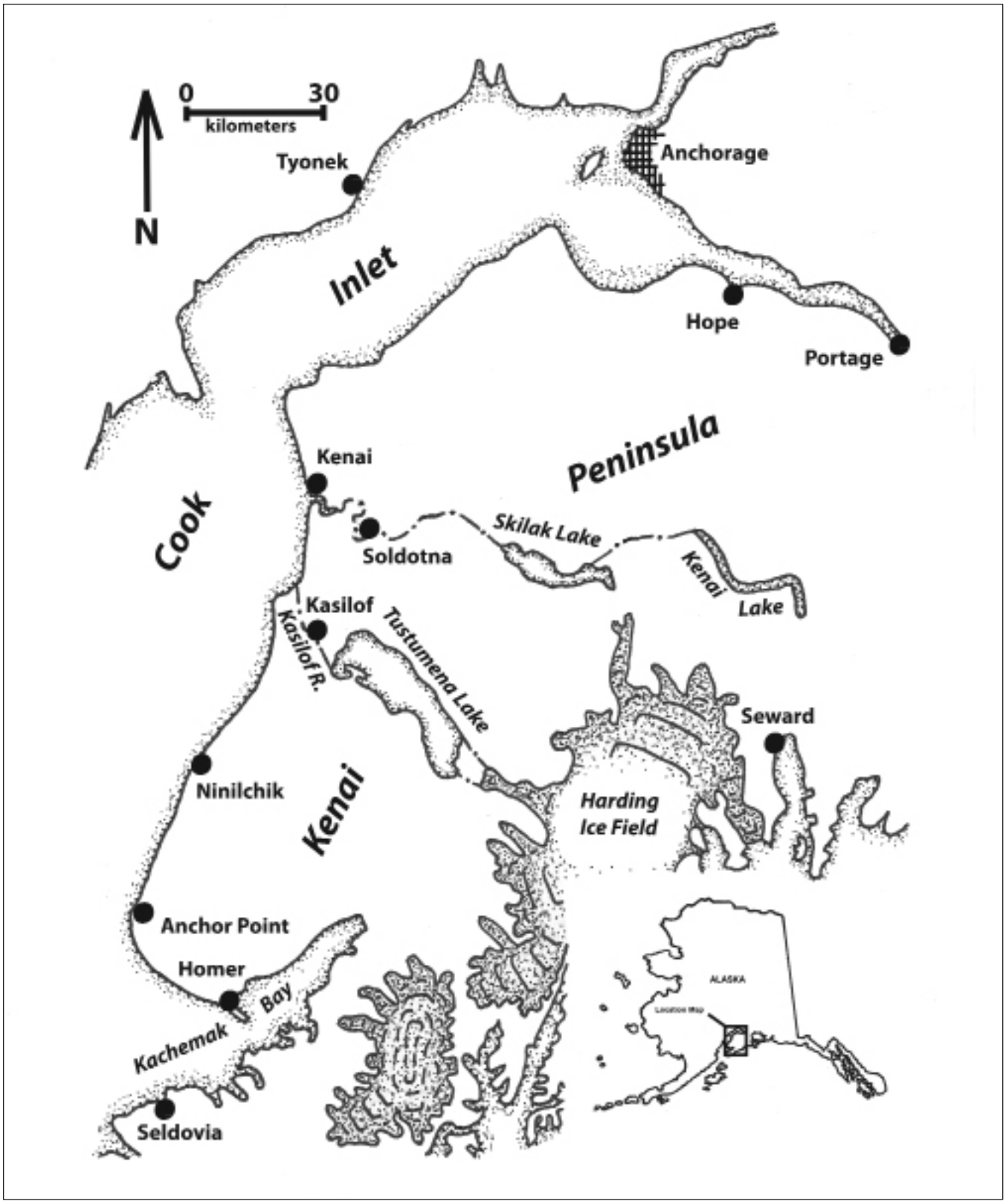

Figure 1. Kasilof is located on the west side of the Kenai Peninsula, on the Kasilof River draining Tustumena Lake into Cook Inlet.

This typical spodasol displays a light-colored leached or eluvial zone underlain by an orangish zone of mineral redeposition containing tephra lenses.

The Kenai Peninsula's vegetation suite of white spruce (*Picea glauca*), Lutz spruce (*Picea* x *lutzii*), black spruce (*Picea mariana*), birch (*Betula papyrifera*), cottonwood (*Populus trichocarpa*), aspen (*Populus tremuloides*), and willow (*Salix* sp.) forest interspersed with grass and sedge muskeg was largely in place by 4,000 years ago (Ager and Sims 1984:104; Ager 2000). Spruce and birch trees covered KEN-360 in 2003, but due to a drying environment over the last century the tree cover may have been less during prehistoric times (Klein et al. 2005:1940; Reger et al. 2007:76). The Kasilof River drains Tustumena Lake and thus sizable runs of salmon—silver (*Oncorhynchus kisutch*), king (*Oncorhynchus tshawytscha*), pink (*Oncorhynchus gorbuscha*), and red (*Oncorhynchus nerka*)—as well as Dolly Varden (*Salvelinus malma*), steelhead (*Oncorhynchus mykiss*), and Pacific lamprey (*Lampetra tridentata*), pass by KEN-360 (Johnson and Blanche 2010:304). Marine mammals such as belugas (*Delphinapterus leucas)* and harbor seals (*Phoca vitulina)* populate Cook Inlet waters.

Because the silty freshwater of upper Cook Inlet inhibits marine life, estuaries with seaweeds and shellfish are currently found no farther north than Kasilof (Reger and Mobley 2008:200–201). Land animals on the Kenai Peninsula include moose (*Alces alces*), gray wolf (*Canis lupus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), black and brown bears (*Ursus americanus*, *U. arctos*), porcupine (*Erethizon dorsatum),* mink (*Neovison vison*), marten (*Martes americana*), wolverine (*Gulo gulo*), muskrat (*Ondatra zibethicus)*, lynx (*Lynx canadensis*), land otter (*Lutra canadensis)*, weasel (*Mustela erminea)*, snowshoe hare (*Lepus americanus)*, and rodents such as red squirrel (*Tamiasciurus hudsonicus)* and beaver (*Castor canadensis)* (Henning 1977:127–134). Waterfowl of various species are seasonally common on rivers and major streams, tributaries, and inland lakes.

SITE KEN-360

KEN-360 is a suite of house and cache depressions (Fig. 2) north of the Kasilof River near its mouth. The features are 150 m from the river bluff and separated from it by Kalifornsky Beach Road, construction of which truncated House 12. Across the road from KEN-360 is another group of similar house and cache depressions (KEN-370) and the two likely formed one larger site in the past. The features comprising KEN-360 parallel the road for 90 m and extend east from the road into the forest for a distance of almost 60 m. Test excavations conducted in 2003 by Charles M. Mobley & Associates prior to construction of the Kenai–Kachemak pipeline (Mobley et al. 2003) uncovered a cache of artifacts in the wall of a prehistoric semi-subterranean house: House 8. The faunal assemblage from KEN-360—including bone and shell specimens from the House 8 wall cache—has been analyzed as it pertains to Dena'ina use of marine resources in prehistory (Reger and Mobley 2008:204–207). This report describes the feature's entire contents.

The site contains rectangular depressions representing seven houses, and fifteen smaller depressions—round and rectangular—identified as cache pits. House depressions consistently displayed dimensions of 3–4 m or more on a side, rectangular shape, and raised walls around most of their margins. The depressions ranged from one-half to over one meter deep. Each individual depression was numbered; multiroom houses are referred to by the number of the largest room. House 8 was connected to a smaller room numbered 7, House 12 had one smaller connecting room, and House 18 had two smaller connecting rooms (Fig. 2). A hearth was discovered in each of the large rectangular depressions tested at KEN-360 (Houses 8, 9, 12, 14, 15, and 18), supporting their identification as dwellings.

Radiocarbon dates (Table 1) indicate prehistoric occupation at KEN-360 during three different time intervals: between AD 750–1000, 1150–1400, and 1450–1700, using a two-sigma standard deviation (Fig. 3). Later 1750–1800 intercepts on the calibration curve for each of the five house dates (Fig. 3) are rejected because the testing revealed no European items or other indications of European influence, which in Cook Inlet began about 1750 (Reger 1998). Modern dates from charcoal in House 12 and an age of less than 150 years old from birch bark in House 12's attached Room 11 are attributed to disturbance from highway construction and maintenance (Fig. 2). The other five tested houses yielded dates indicating they were all last occupied between AD 1450 and 1650 (Fig. 3). Two cache pits (1 and 2) dated significantly earlier than the houses—about AD 1150–1400. A midden outside the entrance of House 8 was earlier yet, dating between AD 750 and 1000, or about the time the Dena'ina arrived in Cook Inlet (Reger and Boraas 1996). It's possible that the site was continuously occupied for 900 years or alternatively that there were decades or even centuries of abandonment between the three date clusters.

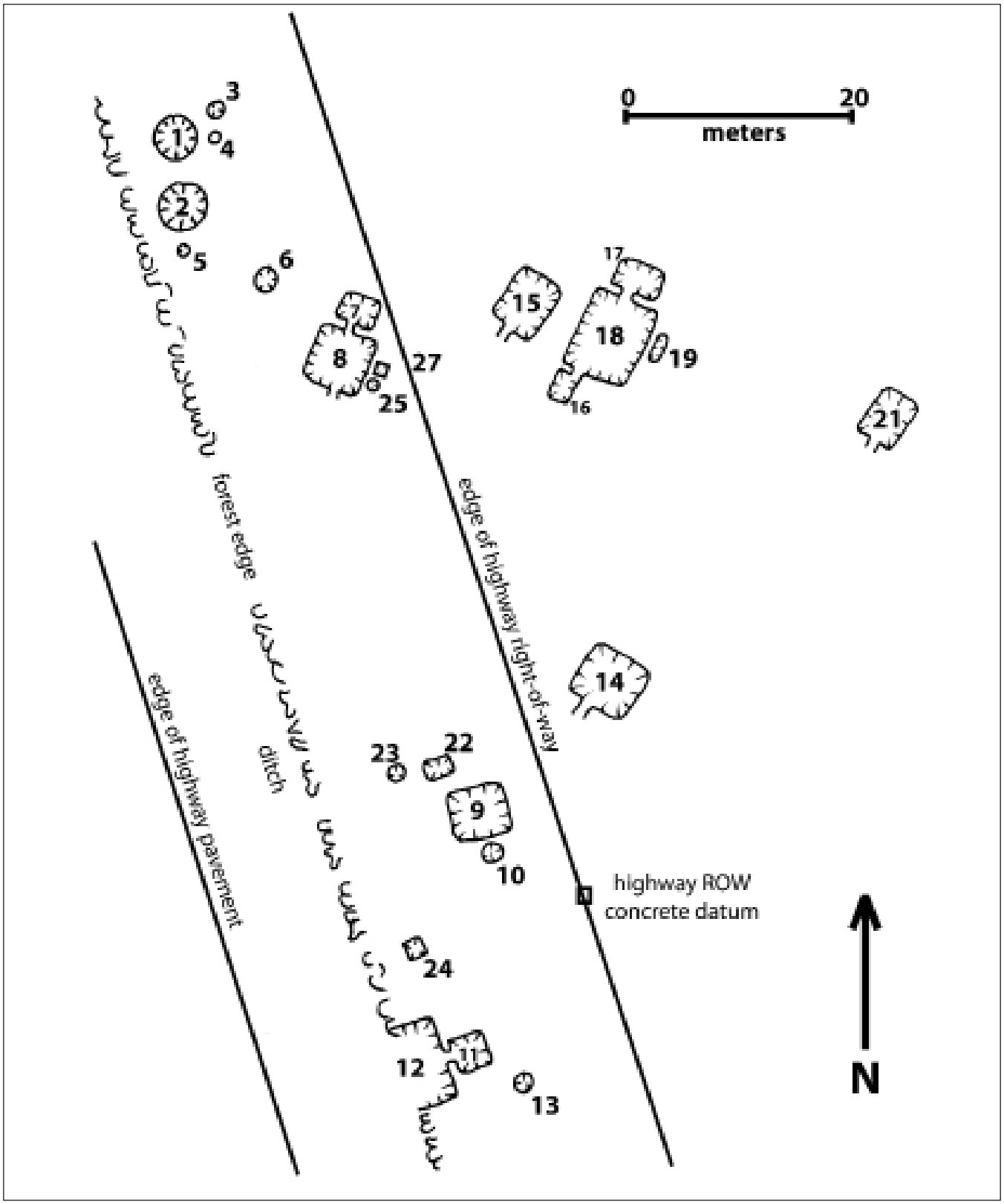

Figure 2. Each depression at KEN-360 was given a number, with connected depressions referred to as Houses and identified by the number assigned to their largest room. Features within the state right-of-way, including House 8, were destroyed by pipeline construction soon after the site was tested.

Table 1. Radiocarbon dates from KEN-360, ordered by house number (Mobley et al. 2003:46–82). Two-sigma dates for each sample were calibrated by Beta Analytic according to Stuiver et al. (1998); intercepts beginning later than AD 1920 are excluded. All samples (including two assayed as modern) yielded estimated $^{13}C/^{12}C$ ratios of –25.0.

Sample no.	Provenience	Uncalibrated Age	Calibrated Date (AD)	Material
Beta-173693	House 8 exterior midden	1140 ± 60	770–1010	charcoal
Beta-173689	House 8 hearth	270 ± 50	1490–1680 1770–1800	charcoal
Beta-173692	House 9 hearth	260 ± 70	1460–1690 1730–1810	charcoal
Beta-173686	House 14 hearth	280 ± 70	1450–1680 1730–1810	charcoal
Beta-173691	House 15 hearth	270 ± 50	1490–1680 1770–1800	charcoal
Beta-173683	House 18 hearth	300 ± 60	1450–1670 1770–1800	charcoal
Beta-173684	Cache Pit 1	660 ± 70	1250–1420	bark
Beta-173690	Cache Pit 2	750 ± 60	1180–1310 1370–1380	charcoal

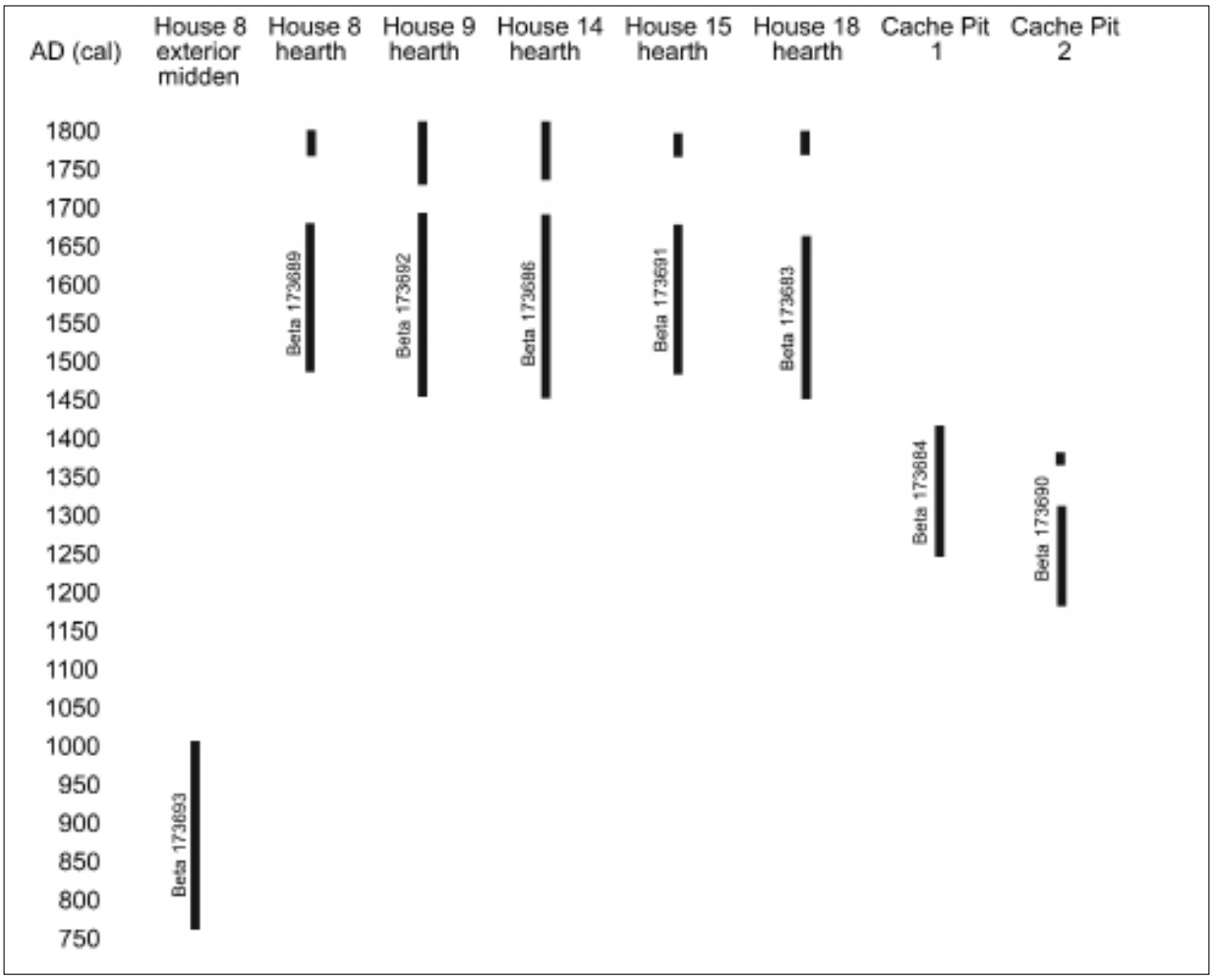

Figure 3. Excluding two recent dates from House 12, which had been disturbed by road construction and maintenance, the radiocarbon assays from KEN-360 at two sigma form three clusters over the last 1,200 years. Note double intercepts; intercepts beginning later than AD 1920 are excluded.

EXCAVATIONS IN HOUSE 8

House 8 consisted of two shallow rectangular depressions with low mounded walls (Fig. 4). The larger room measured 5.2 x 5.0 m, and the back room measured 3.0 x 2.7 m. The rooms were connected by a central break in their common wall, forming a passage 0.6 m wide and 0.75 m long. The house entrance consisted of a 0.5 meter-wide gap in the south wall of the larger room off-center from its mid-point, with two parallel berms continuing another meter outside the house.

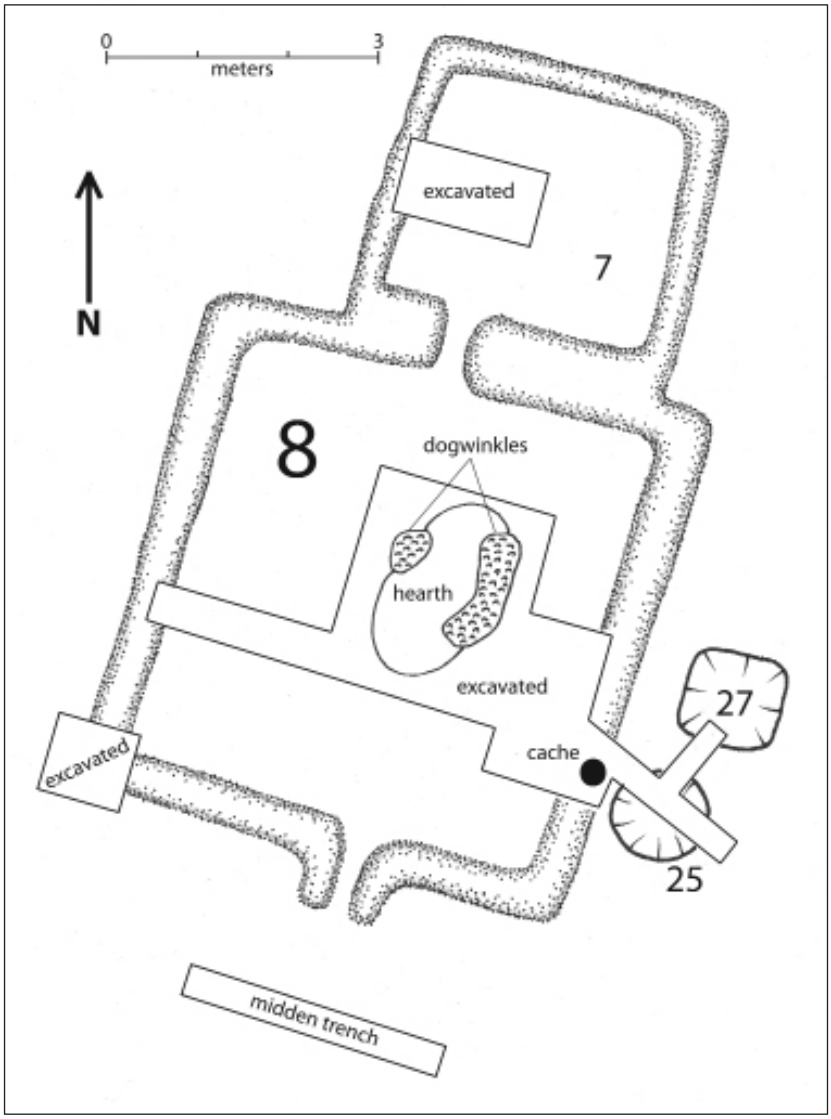

Figure 4. House 8 and adjacent Cache Pits 25 and 27 were tested at KEN-360, revealing a cache of artifacts in House 8's wall. A central hearth amid dogwinkle shells yielded a radiocarbon date (Beta-173689) 400 years younger than a date from a trench dug into a midden outside the house entrance (Beta-173693).

Testing began near the center of the main room and extended in several directions. Soil was removed by shovel-skimming and troweling, and screens were not used. Because a priority was to date the feature, excavation began near the center of the larger room where a hearth was anticipated and proceeded outward to the east and west walls, the southwest corner, and a portion of Room 7 (Fig. 4). A layer of sod, 5 to 10 cm thick, covered the entire floor area. Black mineral soil, rich with charcoal, fire-cracked rocks, bone, shells, and organic fibers, was found near the center of the main room overlying a hearth of ash and carbonaceous soil. The hearth formed an ellipse 3.0 m long and 2.0 m wide, and produced 31 cod (Gadidae) otoliths. More than 450 dogwinkle (*Nucella lima*) shells were scattered around the hearth's margin and in the hearth matrix (Fig. 4). Concentrated around the hearth were fragments of blue mussel (*Mytilis edulis*), cockles (*Clinocardium nutalli*), bone (including one moose [*Alces alces*] toe bone and a fox [*Vulpes* sp.] bone), and fire-cracked rocks. All specimens but for several Washington clam (*Saxidomus giganteus*) shells were found less than 25 cm from the hearth margin. A worn whetstone in two pieces was uncovered at the base of the hearth. Brightly oxidized baked silt lay under the west half of the hearth.

From House 8's central hearth solid pieces of charcoal with a dry aggregate weight of 12.7 grams were retrieved for radiocarbon assay. The sample produced a date of 270 ± 50 RCYBP (Beta-173689); when calibrated to account for fluctuating amounts of atmospheric carbon (Stuiver et al. 1998), the age range at two sigma is between AD 1490 and 1680 for the last occupation of the house.

Two cache pits (25 and 27) outside the east wall of House 8 were tested (Fig. 4). A 25-cm-wide trench was excavated through the house wall to stratigraphically relate Cache Pit 25 with House 8, extending southeast from House 8's hearth, through the raised wall berm, and continuing 1.0 m beyond the cache pit. Where the trench transected the wall of House 8 a semi-

circular dark organic stain containing bits of mussel shell appeared; subsequent excavation of the feature revealed a discrete collection of artifacts described here as the Kasilof cache.

The testing in House 8 revealed carbonaceous soil extending to the inner margin of the bermed wall. Walls were distinguishable by their mottled coloration resulting from collapse and compression of structural sod blocks, in contrast to the intact soil outside the wall. No artifacts, shell, bone or fire-cracked rocks were found in a 2.5-m^2 area excavated in the west portion of the back room (Depression 7), but a break in the sediment layers marked the floor.

Two meters outside the house entry was a low mound in which a 3.0-meter-long, 0.25-meter-wide trench was dug to expose a midden of fire-cracked rocks and charcoal (Fig. 4). A piece of shattered quartz was recovered, as was a 35.6 gram charcoal sample from a concentration at the west end of the midden, 20 cm below the ground surface. It assayed 1140 ± 60 RCYBP (Beta-173693), which converts to a calibrated calendar date at two sigma between AD 770 and 1010—significantly earlier than the date from the hearth in House 8 (Fig. 3). The House 8 midden is typical of prehistoric Dena'ina houses, where "trash piles of fire cracked rock and bone were placed outside the house, off to one or both sides of the entry" (Reger 2004:34). The lack of artifacts like stone lamps and notched stones attributable to the pre-Dena'ina Riverine Kachemak people (Workman and Workman 2010) and the site's location back from the coastal bluff edge (atypical of Riverine Kachemak sites but not uncommon for Dena'ina sites [Reger 2004:31–32, 45]) suggests that KEN-360 reflects a single cultural tradition, even if not continuously occupied. If so, it is one of the earliest Dena'ina settlements on the Kenai Peninsula.

THE CACHE

The cache found in House 8's east wall initially appeared to be a post mold with bits of mussel shell. Subsequent excavation revealed a 40 cm diameter pocket of artifacts and raw materials at what had been the end of a 75-cm-long tunnel excavated slightly below floor level under House 8's sod wall. The cache matrix was gray-brown silt containing charcoal flecks, contrasting with the surrounding mottled sand and silt. The chamber was shaped like a flattened bowl and partly surrounded by a crumbly organic material suggesting a spruce bark lining. The cache contents were packed tightly together (Fig. 5), with clam and mussel shells nestled one inside the other. Overnight security considerations prompted removal of the feature in just a few hours, with specimens collected and bagged in 25 separate lots.

Technological analysis of the cache contents was accompanied by faunal analysis (Bender 2003), microscopic characterization of selected organic items (McMahan 2003), and X-ray fluorescence of pigments (Reuther et al. 2017). Though radiocarbon dates were obtained from the central hearth in House 8 and the midden immediately outside the door, no attempt was made to directly date organic artifacts from the cache. The KEN-360 collection is housed at the Department of Archaeology, University of Alaska Museum of the North, Fairbanks.

Functional terms used to characterize the specimens are in part those of Osgood (1937). His monograph provides an incomplete and sometimes contradictory reconstruction of traditional Dena'ina culture due to his reliance on just nine Native individuals for information, and to their degree of enculturation (McKennan 1938). Nonetheless it is the primary ethnographic description of traditional Dena'ina culture and a natural model with which to compare the Kasilof cache. Mostly independent from Osgood's (1937) research (except for about 300 words) are extensive lists of Dena'ina terms for tools and technology in the Dena'ina topical dictionary, based upon linguistic data (Kari 2007). Dena'ina terms that could characterize the cache or its specimens—particularly those in the Outer Inlet dialect (one of four Dena'ina dialects) in which Kasilof falls—are identified for potential insights into the tool array and technology.

STONE

Of thirteen stone items in the cache (Table 2), four are unmodified cobbles that would not be considered artifacts if not for their cultural context (Fig. 6). A translucent yellowish pebble—perhaps chalcedony—displays a complete cortical surface (Fig. 5:105.2). Three elongate cobbles are of a dull gray rock, likely greywacke (Fig. 6: 104, 106.1, 108). The longer two display yellow and red oxide staining; none show indications of shaping or use.

The single fire-cracked rock (Fig. 6:113) would be recognized as such in an archaeological context, but they are very common in prehistoric Dena'ina sites (Mobley 2006:26; Reger 2004:34–35). Because of its inclusion in the House 8 cache this specimen received extra scrutiny—

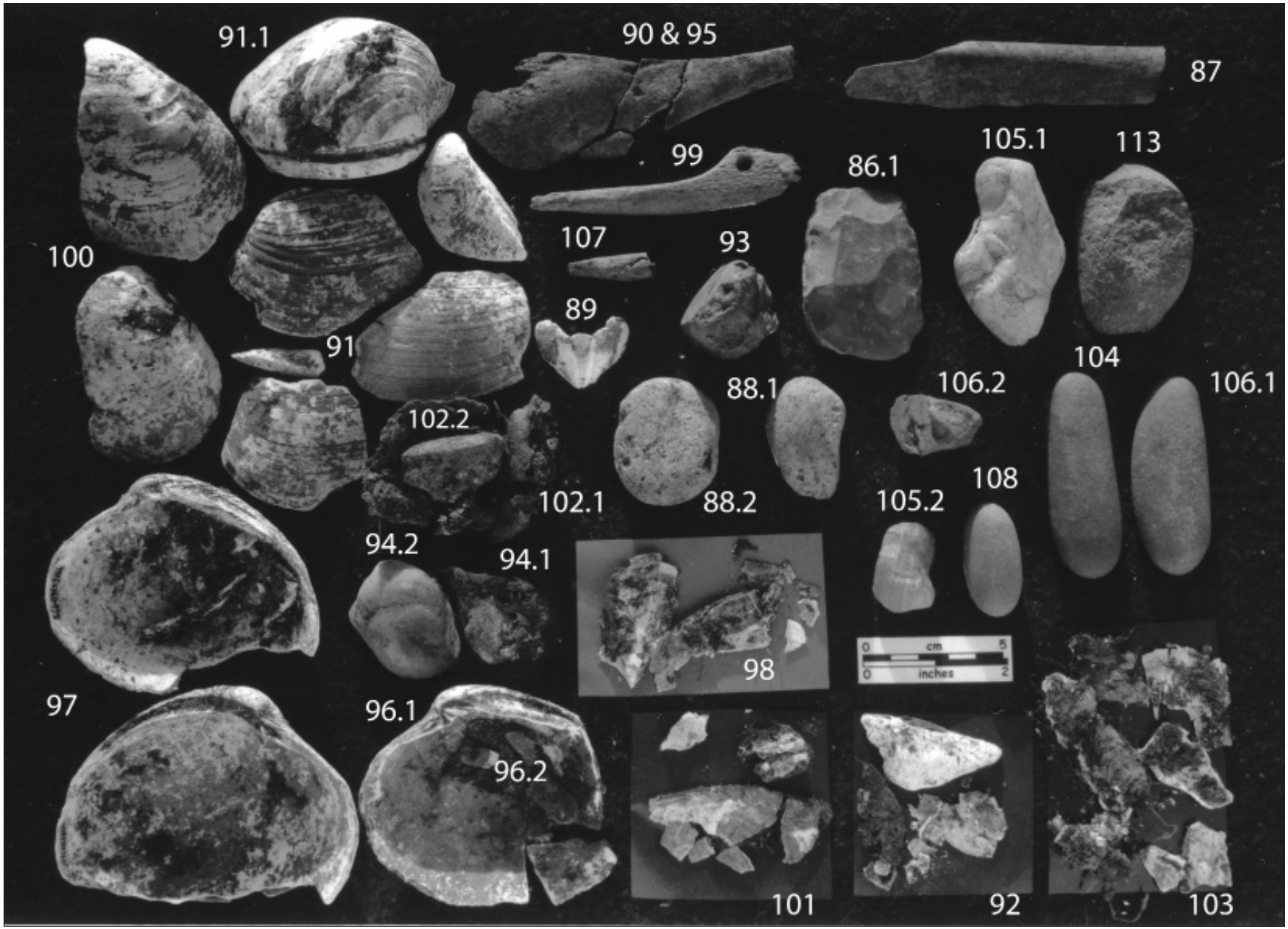

Figure 5. The contents of the cache included items of shell, bone, stone, and antler, here roughly arranged by raw material. See Table 2 for further information.

Table 2. List of items in House 8's wall cache.

Material	Count	Description	Comments	Catalog no.
stone	1	chipped and ground adze bit		86.1
stone (quartz)	1	quartz hammerstone		105.1
stone	1	fire-cracked rock with wear		113
stone (pumice)	3	pumice abraders	1 inside bark cup with pigment	88.1; 88.2; 102.2
stone	3	faceted grinding stones	1 inside bark cup with pigment	93; 94.2; 106.2
stone (chalcedony)	1	chalcedony pebble		105.2
stone	3	oval cobbles		104; 106.1; 108
bone	1	spoon		90; 95
bone	1	peg		107
bone	1	flat tool fragment	inside clam shell (96.1)	96.2
bone	1	long bone shard		87
antler	1	dart point/fore-shaft		99
shell	1	chiton		89
shell	3 (approx.)	mussel	deteriorated	92; 98; 101; 103
shell	7	large clam fragments		91; 100
shell	4	whole clam valves	2 contain oxides; 96.1 holds bone; 91.1 is partly sawn	91.1; 96.1; 97
bark	2	cupped containers	each holds a stone and pigment	94.1; 102.1

why was it saved? The large thick piece spalled from a cortical cobble of coarse crystalline rock and the scar show the typical uneven surface of a thermal fracture. About 50% of the dorsal surface is cortex. An acute-angled edge was formed, fortuitously oriented so that the stone fits well in one's (right) hand to facilitate use of that edge. Magnification at 16x revealed that 5.2 cm of the edge has been polished, though not quite to the degree of creating a facet. Individual crystals in the rock exhibit parallel striations perpendicular to the edge clearly indicating that the tool was used with a scraping motion, rather than a sawing motion (in which striations parallel to the edge would be expected). "Steambath rocks, [and] cooking stones," which are in the process transformed into fire-cracked rocks, are called *tsaghelnik'a* in Outer Inlet dialect; the word *chabash* means a "stone scraper, skin scraper" (Kari 2007:198, 253).

A chipped and ground adze bit measuring 6.1 cm long, 4.3 cm wide, and a mere 1.0 cm its thickest point was found in the cache (Fig. 6:86.1). The dull greenish-gray siltstone is homogenous except for a single bedding plane that parallels the plane of the artifact and breaks out along most of its edge, where it was used as a platform to remove flakes to shape the piece. The majority of the bit is formed not by the intersection of flake scars from the specimen's two sides but rather by the acutely angled intersection of the exposed bedding plane with one side's flaked and ground surface. About four cm^2 of the bit is ground and polished on one side, while only one cm^2 is ground and polished on the other. The less polished side is mostly formed by one shallow flake scar, while the more polished side shows a polished partial flake scar surrounded by shallow soft-hammer percussion scars in turn bordered by steeper flake scars at the sides and butt of the tool. The tool's four margins consist of the sharp bit, the opposite or butt end formed by one facet (possibly cortical) perpendicular to the plane of the piece adjacent to a short section of small crushed and abraded scars, and the two lateral edges displaying short steep flake scars—many of them hinged—that have been further crushed and abraded. The bit edge has three segments: a) the central portion formed by the intersection of the bedding plane with the large ground surface, showing a very sharp edge even under magnification; b) the protruding corner of the bit formed by the intersection of the bedding plane with several shallow flake scars, also very sharp; and c) the other corner of the bit formed by the intersection of a ground and polished surface on one side with—on the other side—a flake scar and a small adjoining ground and polished surface like the central part of the bit except slightly duller. The central edge of the bit would have looked like this lesser corner if it hadn't been freshly sharpened before being cached. Finally, the two lateral edges and especially the butt of the specimen

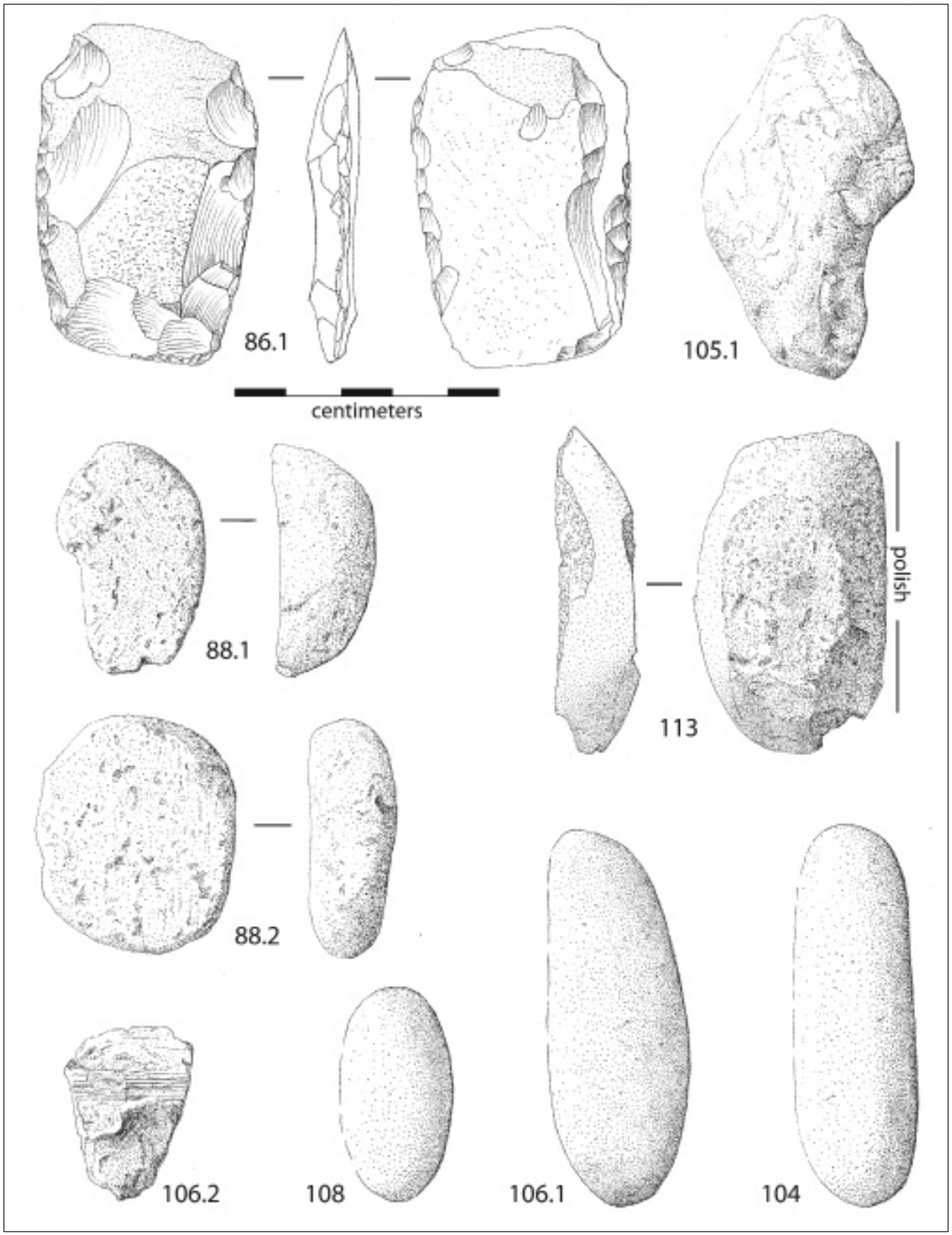

Figure 6. Stone items from the cache included a ground and chipped adze bit (cat. no. 86.1), quartz hammerstone (105.1), fire-cracked rock with use-polish (113), three unmodified cobbles (104, 106.1, 108), a soft red rock with ground facet (106.2), and two pumice abraders (88.1, 88.2). Illustration by Mark Luttrell.

show heavily polished arrises (ridges between flake scars), likely the result of the tool rubbing against the lashing of a wooden handle during use. The artifact would be called a *vel k'eltsali* in all four Dena'ina dialects (Kari 2007:194).

Three pumice abrading stones were recovered from the cache. Each is a half-round cobble showing one major worked facet on one side and lesser abrasion on the remainder. The largest (Fig. 6:88.2) has a shallow concave worked facet measuring 3.5 cm perpendicular to the axis of motion and 4.3 cm parallel to it. The middle-sized specimen (Fig. 6:88.1) has a similar concave worked facet measuring 4.3 cm perpendicular to the axis of motion and 2.9 parallel to it. One of that specimen's edges has been flattened into a 3.3 x 1.7 cm facet, though not enough to remove a small depression in the center. The smallest pumice abrader has a convex grinding facet; it was left in the birch bark cup in which it was found—imbedded in pigment—and not measured (Fig. 5:102.1, 102.2).

Two other stones from the cache showed evidence of abrasion, though not enough to term them abraders. One soft red rock containing negative impressions of plant fossils shows a small flat facet with parallel striations (Fig. 6:106.2), suggesting use as a piece of chalk. The second rock is harder, with a rough and angular cobble surface (Fig. 5:93). It has one large flat facet flanked by lesser facets all stained red, and shows fine aligned surface corrugations that are structural to the rock—perhaps plant fossils. The corrugated mineralization is harder than the rest of the rock and protrudes from the surface, and the corrugations show polish from abrasion. Other protrusions on the rock also show polish.

One quartz hammerstone was included in the cache. The cobble has a natural protrusion that fits well in one's hand. The opposing end (pointing up in Fig. 6:105.1) has a natural point with one large and several small impact fractures emanating from the point. The small scars contrast with the patina of the cobble, and reflect human use. The point now has a battered facet 0.7 cm long and 0.2 cm wide.

Another quartz cobble, found in the second of the two birch-bark cups, is oval except for one end, which displays several unidirectional flakes (Fig. 5:94.2). A third of the rock is stained a reddish-brown from contact with the contents of the cup, and a yellow powder still coats the center of the stain.

BONE

The cache contained four bone items, of which one—a simple but functional spoon—was found in four pieces (Figs. 7:90, 7:95). Of the three remaining bone specimens, two are worked and the third is a thick unworked splinter likely destined for tool manufacture.

The spoon was made from a Dall sheep-sized mammal and is 3.9 cm at its widest point and 12.0 cm long. The bowl is about 0.3 cm deep and holds less than a teaspoon of liquid. Striations from manufacture or use are not evident, but a blunt 90-degree facet along the edge of the spoon's bowl and handle attests to the abrasion that went into its manufacture. The specimen lacks at least two small pieces to be complete; the handle terminates with a break, but the original bone would not have allowed a much longer handle. While the spoon's handle is almost 0.3 cm thick, the bowl is just 0.1 cm thick. The Outer Inlet dialect word for a bone spoon is *ts'en dagh'i* (Kari 2007:272).

A small piece of worked bone protruding from the hardened matrix inside a *Saxidomus* shell (Fig. 5:96.1, 96.2) was not dislodged. The bone shows striated and beveled surfaces creating a rectangular cross-section and a dull point, measuring about 5 mm in diameter. A rusty red pigment coats the bone.

The cache contained a small cylindrical bone peg, 3.1 cm long and 0.9 cm in diameter at its butt, tapering to a rough chisel-like point (Fig. 7:107). Facets indicate shaping by scraping, but part of the bit also has stepped scars suggesting it was cut with a sharp tool. The butt of the peg has an abrupt facet around its perimeter indicating the piece was partly sawn all the way around and then snapped. A crack extends into the bone on one side of the piece, and cemented matrix—like that inside some of the *Saxidomus* shells, with rusty red pigment—adheres to the peg's butt.

The unworked piece of bone in the cache is a splinter 10.2 cm long and 2.2 cm wide from a long bone of a moose- or caribou-size mammal (Fig. 7:87). It shows no evidence of working, but the angle and undulation of the broken surfaces suggest the bone was shattered when fresh. Now the specimen is calcined and exhibits what may be carnivore gnawing and compression marks. Lacking tool marks, the specimen is considered a bone "blank" intended for eventual tool manufacture. The Inland Dena'ina

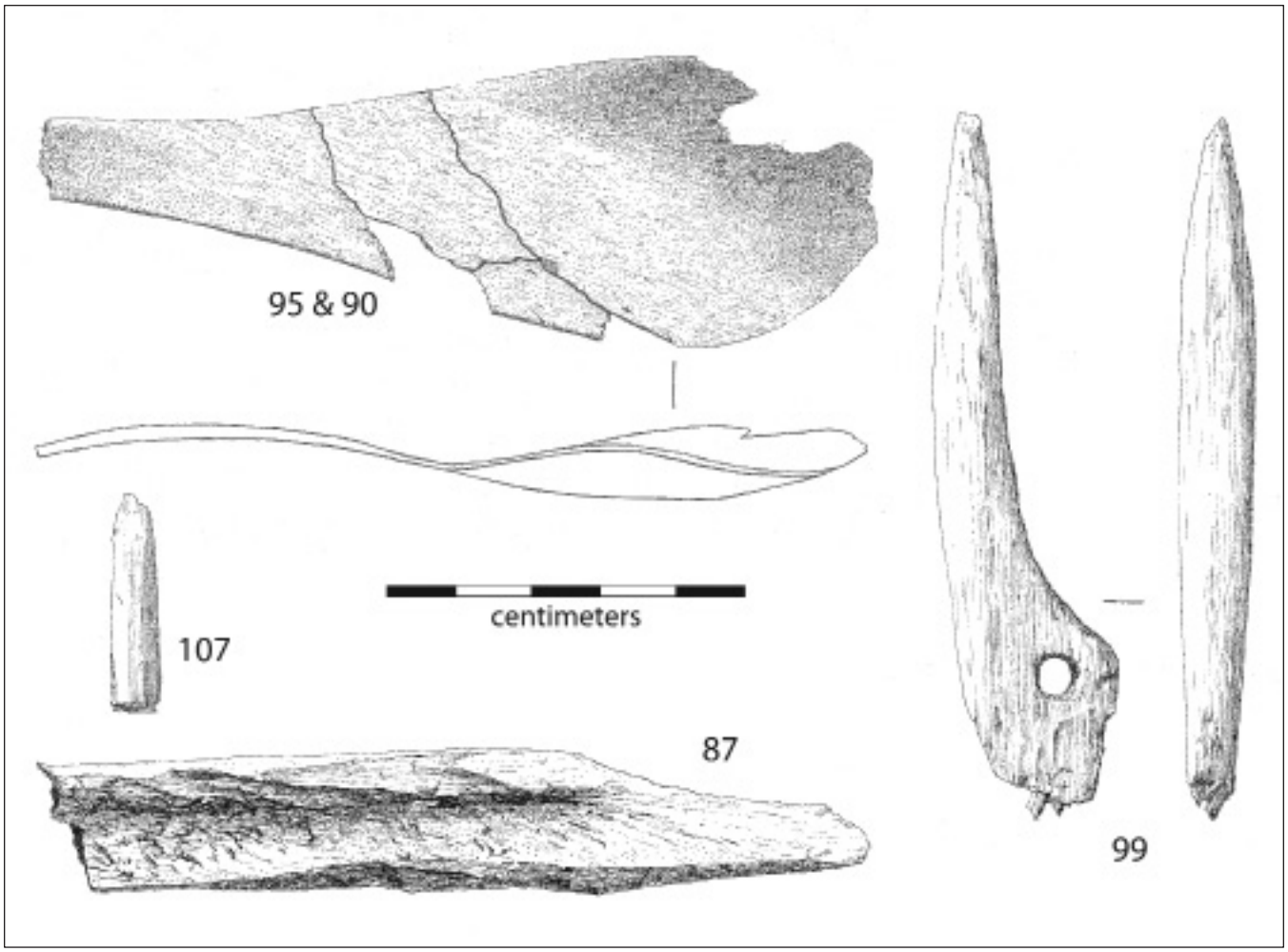

Figure 7. Bone and antler artifacts from the cache consist of a scapula spoon (cat. nos. 95 and 90), an antler dart point or fore-shaft (99), a large bone shard (87), a cut bone peg (107), and a worked piece of bone adhering to the inside of a clam shell (96.2; not shown). Illustration by Mark Luttrell.

dialect has a word specifically meaning "longish bone, bone used as raw material," but no comparable word in the Outer Inlet dialect has been recorded (Kari 2007:189).

ANTLER

The single antler artifact in the cache was a complete 9.6-cm-long dart point or fore-shaft (Fig. 7:99). From its tip the point expands to 1.1 cm in diameter before narrowing towards a wedge-like base. The biconical hole drilled through the flattened base would pass a 0.5 cm diameter line. The artifact's surface is pitted and particularly eroded at its base. Though a unilateral barb would be in keeping with the specimen's other features, there is no indication there ever was one, so the tool could have functioned as a fore-shaft on a complex toggle harpoon. Several Dena'ina words in the four dialects refer to bone or antler projectile points; *k' q' atnulqeyi* means "detachable spear, toggle spear" in the Outer Inlet dialect (Kari 2007:206).

SHELL

The House 8 cache contained whole shells and large broken pieces (Fig. 5). Some thin fragile shells did not survive excavation. Nine chalky pieces of clam, several identifiable as *Saxidomus giganteus*, were collected. Four were almost complete valves (Fig. 5:91.1, 96.1, 97), while three are hinge fragments. Most pieces measure between 2.5 mm and 3.0 mm thick. All have an outer surface of smooth concentric rings and a smooth inner surface.

One *Saxidomus giganteus* shell (Fig. 5:91.1) was in the process of being sawn when it was put into the cache. A 6-cm-long straight groove has been worn across the outside surface of the shell (Reger and Mobley 2008:fig. 4). The

groove does not display coarse scratches as if cut by a stone tool, but rather has a uniform U-shaped cross-section (3 mm wide) indicative of a cord bow-saw and abrasive sand. The edge of the shell immediately adjacent to the groove has a completely flat, parallel facet showing that it, too, had been sawn. The intent was evidently to produce shell slabs about 5 mm thick and 5 to 7 cm long as blanks for making shell tools or beads.

Three pieces of badly deteriorated blue mussel (*Mytilus edulis)* shell with periostracum still attached were found clustered together. Three more fragments may be blue mussel but their very flat curvature suggests they are burned razor clams (*Siliqua* sp.). A single complete end valve from a chiton (Amphineura) was also recovered (Fig. 5:89).

BARK AND LEAVES

The cache preserved three bark artifacts and two leaves, probably due to their contact with shell or pigment. Two cupped pieces of bark, each about 4 by 6 cm in size (Fig. 5:94.1, 102.1), are identified as birch based on the specimens' thinness, tendency to curl, and markings. Each contained a yellow lumpy powder and a stone (discussed above). A third piece of bark, pressed along with a piece of worked bone into the matrix inside a shell (Fig. 5:96.1), measures about 2 by 1 cm in size and is less than 0.1 cm thick. Microscopic examination of a cross-section (using a Nikon Optiphot microscope with reflected-transmitted light, epifluorescence, and magnification from 100 to 1000x) indicated a soft wood tentatively identified as spruce (*Picea* sp.).

From beneath the friable stone (Fig. 5:102.2) in one of the birch cups (Fig. 5:102.1), in contact with the underlying yellow powder, two small leaves were recovered during laboratory inspection. One is mostly complete; the other less so. Their size, shape, and macro-anatomy indicate a plant of the Ericaceae (heath) family, which includes several berry taxa. The specimens' micro-anatomy (analyzed) is similar to published diagrams of *Arctostaphylos uvaursi* or bearberry, which is locally available today (Kari 1987:71). The leaves were likely accidental inclusions in the cache.

PIGMENT

Both birch bark cups and at least three *Saxidomus* shells contained reddish-brown residue, a very fine yellow powder, and small yellow lumps. Several cubic centimeters of the material had been stored in the cache. Microscopic examination of the yellow powder in specimens 94 and 102 (Fig. 5) using the Nikon Optiphot system with and without polarization indicated the material to be mineral in origin, though limonite ocher could not be confirmed (McMahan 2003:3). Further analysis using X-ray fluorescence (XRF) determined that both the yellow powder and the red powder adhering to some specimens produce elevated iron readings (Reuther et al. 2017). Red iron oxide or "ocher paint" was known as *chix* in the Outer Inlet dialect (Kari 2007:178).

DISCUSSION

Artifact density in Dena'ina sites is generally low due to strict traditions regarding discard behavior (Boraas and Peter 2008), and thus the Kasilof cache is a welcome archaeological discovery reflecting late prehistoric Dena'ina tool manufacture and storage. Kari's (2007:224–227) list of words for parts of a house does not contain one referring specifically to an interior wall cache; the closest is *chaq'a*, meaning "concave enclosed area, small storage area, rear corner of house that faces door." Site KEN-360 and House 8 are well within the range of variability described for traditional Dena'ina winter villages and dwellings (Osgood 1937:55–62), but Osgood's informants made no mention of interior storage caches. The closest approximation comes from the story of a man who performed abdominal surgery on himself using a "very old double-edged knife….valued because of its antiquity and previous service" which he kept within the house in "a private place" (Osgood 1937:116–117). The Kasilof cache was made by tunneling into the base of the dwelling's sod wall from the inside and lining it with bark, and would have been a private place. Likely the owner expected to return to the life those items had served, but instead House 8 and its secret compartment were abandoned.

RAW MATERIAL COLLECTION

Most of the items in the Kasilof cache are of locally available materials. Because of the region's glacial and fluvial history, in which rocks from the Alaska, Talkeetna, Chugach, and Kenai Mountain ranges were naturally carried long distances, many different rock types can be found among the gravels and boulders of Cook Inlet (Reger et al. 2015:9–14; Rogers 2015:85–86). Glacial transport can be invoked for all of the rock materials in the collection except for the three pumice grinding stones, which could

have been produced by one of the four volcanoes flanking the west side of Cook inlet and subsequently floated to the Kasilof shore (pumice cobbles can be found in nearby beach gravels today).

None of the four bone specimens were identified to species, but all appear to be from land mammals. The spoon is made from the scapula of an animal the size of a Dall sheep (*Ovis dalli*), for which the Dena'ina historically traveled to the Chugach Mountains to hunt (Osgood 1937:35). Russell (1995:6) describes Dena'ina spoons made of black bear bone, but the Kasilof archaeological specimen appears too delicate for anything but a sheep or a young bear. The long-bone shard is of a size corresponding to moose or possibly caribou (*Rangifer tarandus*). Moose were not seen on the Kenai Peninsula until after the 1880s (Osgood 1937:192), but caribou were historically present until about 1912 (Palmer 1938), so all but the bone for the spoon could have been acquired locally. Similarly, the antler specimen was likely available from local caribou roaming the Kenai Peninsula in late prehistory.

Of the shells in the Kasilof cache sample, *Mytilus edulis* is locally available within 15 km south of the site and possibly *Siliqua* sp. is also. Today collectible quantities of chitons are not found until one reaches the saltier waters of lower Cook Inlet, about 100 km south, and trade has been invoked to explain the specimen at KEN-360 (Reger and Mobley 2008:223). *Saxidomus giganteus* is now found not much north of Anchor Point, about 75 km south.

In summary, except for the chiton and the scapula spoon (likely from Dall sheep), most of the raw materials in the Kasilof cache could now be acquired within 20 km of the site. The local emphasis also characterizes the fauna recovered from inside House 8 overall: *Vulpes* sp. (fox), *Alces alces* (moose, though the distance from the site to moose habitat 300 years ago is unknown), Aves (birds), Gadidae (cod otoliths), *Saxidomus giganteus*, *Siliqua* sp, *Mytilus edulis*, *Nucella* sp. (dogwinkles), *Clinocardium* sp., and chiton.

TOOL MANUFACTURE

Aspects of late prehistoric Dena'ina tool manufacture can be gleaned from the cached artifacts. The manufacturing sequence of the stone adze included chipping, crushing and pecking of protrusions, bit grinding, and resharpening after use. Otherwise, the only stone item showing evidence of a manufacturing process is the quartz cobble found in the bark cup (Fig. 5:94), which displays several unidirectional flake scars qualifying it as a core. The remaining stones are either unmodified or—as with the pumice abraders—modified only through use.

Bone- and antler-working processes can be deduced from the finished antler fore-shaft or dart point, the scapula spoon, two small shaped pieces, and the large bone shard. The spoon likely required steaming to acquire the proper form. One of the small specimens has been scraped to form a faceted peg; one end had been scored or sawn all around and then snapped, and the opposite end was cut. Striations are evident on the other small specimen, and abrasion must have been employed in crafting the antler point. The intended use of the large bone shard is unknown, but it is large and thick enough to make a point about the size of the antler specimen.

The shells needed no modification to serve as containers, and there are no indications whether the bark cups were steamed or naturally formed. The cut facet and groove on one shell indicates use of a bow-saw, combined with sand, to remove slabs intended for further manufacture into tools or ornaments. The Kasilof cache bivalves used as containers and ornaments were cited by Reger and Mobley (2008:204–207) to support consideration of prehistoric Dena'ina shellfish use beyond just that of subsistence (Yesner 1996).

The manufacture of pigment using small stones including pumice to grind the material in bark or shell containers can be inferred from the close association of those objects. However, as discussed below, other activity could also explain the stained stones in the Kasilof cache. The presence in the cache of the pigments, their containers, and grinding stones likely reflects both their fragility and importance.

ACTIVITIES REFLECTED BY THE CACHE CONTENTS

The specimens from the cache attest to several activities beyond tool manufacture. Acquisition of the materials reflects land hunting, shellfish collection, and collection of stones. Sea mammal hunting is not directly indicated, although the antler point is called to mind by Osgood's (1937:38) statement that sea otters were sometimes taken by a harpoon with a detachable point. According to Osgood (1937:103), hafted stone adzes were used primarily for cutting trees and secondarily for "digging in hard ground and chopping through ice"; the specimen he describes and illustrates in an accompanying line drawing (1937:fig. 28c) is like the Kasilof specimen. The protru-

sion on the quartz hammerstone shows evidence of heavy impact like that required to crush the sharp margins of the stone adze, but it could have been equally useful for food processing. The spoon is interpreted as a cooking or eating utensil. Scraping is indicated by the abraded fire-cracked rock, but what was scraped can only be surmised. Grinding is indicated by the pumice specimens and pigments were evidently one material that was ground. Painting was facilitated by the yellow and red powders; Osgood (1937:117) stated that the Dena'ina painted "everything." Sawing with a cord bow-saw was done on shell (Reger and Mobley 2008:fig. 4), and may have been performed on other materials as well.

Osgood (1966:175–176) provides one functional explanation, accepted here, for at least one of the four unmodified stones:

> Only one type of amulet was found among the Tanaina but this one is apparently widely used and highly valued. It has the form of a small stone.... The colors of the stones make some difference; red or blue ones are apt to bring bad fortune as well as good.... White and gold are good colors to find....Amulet-stones are described as being alive; as a rock with a rattle; a smooth stone with a flattened stomach and a rounded back which if put on a table would roll about. They have two little holes for eyes and another as an anus. They leave a track when they move.... The owner of an amulet-stone keeps it wrapped up in a bag or a piece of skin and once a year when ptarmigan have been caught, he puts in a few soft white feathers for the "stone" to eat. Red ochre is also used for amulet "food." If well fed a little one is born in from five to ten years and grows big in another sixty.

The translucent yellowish pebble (Fig. 5:105.2) fits the description of amulet stones, which were particularly an Outer Inlet concept employing the term *nudech'ghela* or "lucky agate" (Kalifornsky 1991:46–47; Kari 2007:308). The other three unmodified pebbles are gray and could be: a) raw material intended for tool manufacture; b) pigment processing tools, given the red and yellow powder on two of them; or c) pigment-anointed *nudech'ghela* like the yellow pebble.

SUMMARY

The Kasilof cache provides new insight into late prehistoric Dena'ina life. The cache contents show what was valued and saved; otherwise the House 8 collection—like those from many archaeological sites—mostly represents that which was discarded. The types of artifacts and range of activities represented in the Kasilof cache collection expand upon those described by Osgood (1937) for the Dena'ina. His work was admittedly an incomplete picture of traditional Native life, to such an extent that McKennan (1939:488) called it a "salvage job" on "a culture that is rapidly disappearing, a culture that indeed has already disappeared only to be recaptured by Osgood's patient interrogation and re-interrogation of a variety of informants." Use of the bow-saw was heretofore not postulated for the prehistoric Dena'ina, for example; although the bow-drill was known by Osgood's (1937:108) informants, it was thought to have been a recent introduction. He mentions wood spoons and utensils made of sheep horn, but no bone scapula spoon such as the cache example. Nor does he mention re-use of fire-cracked rocks for scraping. The linguistic information from Kari's (2007) Dena'ina topical dictionary does make reference specifically to a bone spoon (*ts'en dagh'i*). That and other words for items found in the cache form a welcome linguistic complement to Osgood's (1937) ethnographically derived typology, providing further insight into the range of traditional Dena'ina tool variability.

The cache, with its evidence for use of shell as containers, and tools or ornaments, is a reminder that fauna in archaeological sites can represent more than subsistence activity (Reger and Mobley 2008:204–207).

Finally, the Kasilof cache is important as a new house feature not previously suspected or sought in archaeological investigations. Excavations solely focused on room interiors or exterior middens at the expense of walls may not encounter all significant Dena'ina house features. The traditional discard protocols practiced by the Dena'ina mean that their archaeological sites are typically low in artifact density (Boraas and Peter 2008); more sampling of house walls in future excavations may lead to larger tool samples and more informed characterizations of prehistoric Dena'ina culture.

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