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The Kuparuk Pingo Site: a Northern Archaic Hunting Camp of the Arctic Coastal Plain, North Alaska

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ABSTRACT. A single-component caribou hunting camp, located on a subsiding pingo near the mid-Beaufort Sea coast of North Alaska, yielded a radiocarbon date of almost 6000 years. The Kuparuk Pingo site revealed evidence for use of the Arctic Coastal Plain by peoples of the Northern Archaic tradition and provides a cultural chronological marker for indicating the potential longevity of pingos. Trade lithic materials from interior Alaska and the presence of bone refuse and bone tools due to the excellent preservation conditions of a pingo environment expanded the knowledge of these intermediate age cultural times in the North.

Key words: Northern Archaic tradition, Arctic Coastal Plain, pingo, caribou, North Alaska

RÉSUMÉ. Un camp de chasse au caribou d'un seul élément constitutif, situé sur un pingo en voie d'affaissement près de la portion centrale de la côte de la mer de Beaufort au Nord de l'Alaska, a été daté au radiocarbone à presque 6,000 ans. Le site du pingo Kuparuk a donné la preuve que la plaine de la côte arctique a été utilisée par des hommes de la tradition archaïque du Nord et fournit un marqueur chronologique culturel permettant d'indiquer la longévité potentielle des pingos. La connaissance de cette période culturelle du Nord d'âge intermédiaire a été accrue par les matériaux lithiques d'échange en provenance de l'intérieur de l'Alaska et par la présence de résidus osseux et d'outils en os dûe aux excellentes conditions de préservation présentes dans l'environnement des pingos.

Mots cles: tradition archaïque du Nord, plaine de la côte arctique, pingo, caribou, Nord de l'Alaska

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INTRODUCTION

The Kuparuk Pingo site (49-XBP-033), located 13 km south and inland from Oliktok Point on the Beaufort Sea coast of North Alaska (Fig. 1), is situated in the center of a fissured and collapsing pingo rapidly being undercut by wave and thermokarst action from an adjacent unnamed lake (Fig. 2). The site was discovered during annual preconstruction reconnaissance of the Kuparuk River Field for ARCO Alaska, Inc., during late summer 1982. Although the site initially appeared to be of minor archaeological value, consisting of only a wind-scoured surface depression with 27 non-diagnostic lithic waste flakes, and was not endangered by any planned petroleum development, the accelerated natural erosion prompted investigation and total excavation of the site during July 1983. An excavation effort of 30 person days and 42 m^2 (Fig. 3) yielded the remains of a simple hunting camp of considerable antiquity.

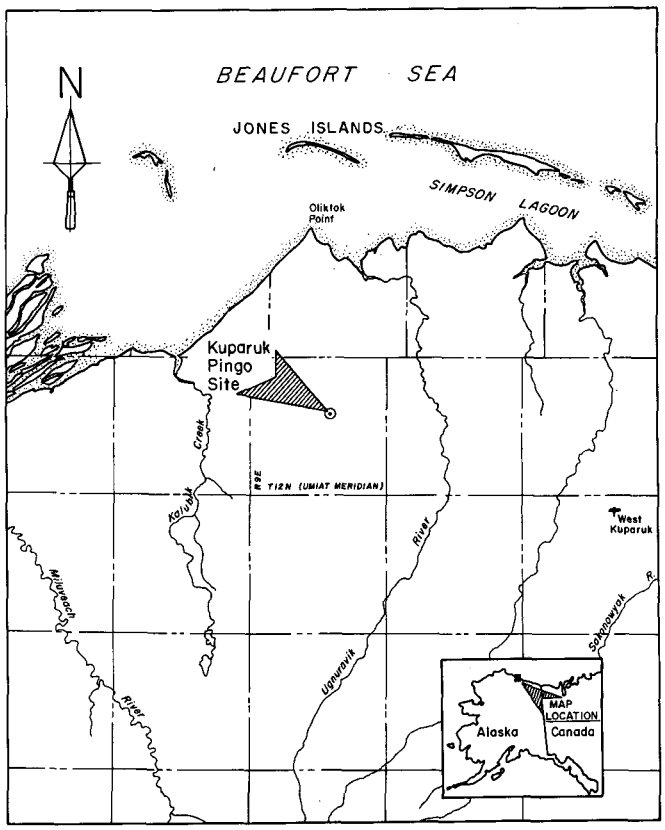

FIG. 1. Location of the Kuparuk Pingo site (49-XBP-033).

FIG. 2. Color aerial photograph of the collapsed and fissured pingo. The archaeological remains were excavated from the center of the pingo (see arrow). Note the thermokarst erosion from the adjacent lake.

REGIONAL AND SITE ENVIRONMENT

The Kuparuk River Field is typical of lands within the Arctic

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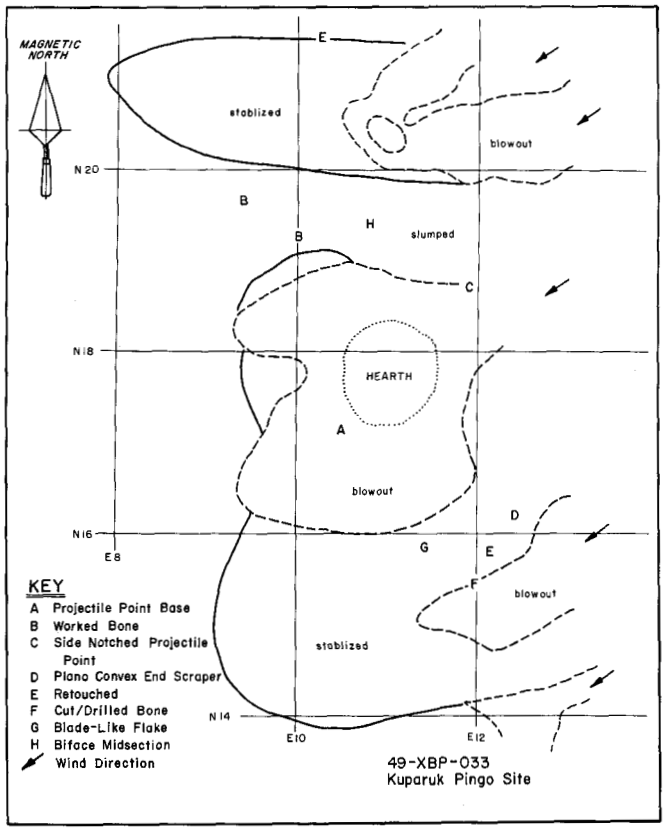

FIG. 3. Detailed plan view of the Kuparuk Pingo site (49-XBP-033). Artifacts were discovered in stabilized, slumped, and wind-scoured blowouts of the center of the pingo.

Coastal Plain ecogeographic province (Solecki, 1951). Low-lying lands of wet tundra with numerous expanding thaw lakes and beaded watercourses cover this region. Drained lake basins are poorly defined by this monotonous terrain. The only relief is the occasional pingo. At the probable time of site occupation prior to pingo degradation, the Kuparuk Pingo may have been the highest rise for some 30 km and marked the boundary of two major drained lake basins. The present height of the 260 m diameter pingo above the surrounding tundra is less than 4 m. Approximately 40% of the pingo has succumbed to lake erosion (Fig. 2). Thermokarst action is claiming the remainder at the annual rate of about 2 m. The site locality would have been completely destroyed in two years.

Local fauna consists mainly of migratory waterfowl and Central Arctic Herd caribou in summer, although some smaller fur bearers and rodents are year-round residents. The Kuparuk Pingo location, dividing the drained lake basins, coincides with a major path for caribou between forage areas in the Kuparuk Field (Robus and Curatolo, 1983).

Climate is typically harsh, with sub-freezing temperatures and snow possible in any season. Summer temperatures may be moderate, although strong northwesterly winds are common. These winds are the primary cause of thaw lake expansion in the region and the lateral erosion of the Kuparuk Pingo.

ARTIFACTS

The excavation revealed finished lithic and bone artifacts, numerous primary and secondary stone waste flakes, a hearth concentration of burned bone fragments, and identifiable faunal elements.

Lithic Tools and Debitage

One side-notched projectile point and one projectile point base of the same type (Fig. 4) are made of black chert. The former displays excellent oblique collateral flaking with basal and notch thinning and grinding. Little can be asserted for the latter except that the fragment shows similar basal thinning and grinding. Both bases are slightly concave.

One biface fragment of grey chert (Fig. 4) is similarly flaked, but the asymmetry of the blade suggests the probable function of a knife or possibly a side-blade rather than a projectile point.

One plano-convex end scraper of black chert (Fig. 4) has only been unifacially worked. The scraper edge angle approaches 90° and shows numerous episodes of retouching.

One midsection of a large bladelike flake (Fig. 4) and a primary flake with a notable bulb of percussion (Fig. 4), both of black chert, display edges with slight retouch.

Two small flakes, one each of black and grey chert, are bladelike. However, neither appears to be a purposeful microblade and both probably constitute secondary reduction flakes.

Waste material includes 159 primary reduction flakes, those of preparatory or initial stone knapping to a basic workable form, of black chert (n = 122), moss agate (n = 24), grey chert (n = 11), banded chert (n = 1), and brown-grey chert (n = 1). Secondary reduction flakes, those of final tool preparation, include 323 flakes of black chert (n = 193), moss agate (n = 71), grey chert (n = 36), banded chert (n = 16), brown chert (n = 6), and brown-grey chert (n = 1).

All of the aforementioned materials are locally available from cobbles in nearby watercourses except for moss agate. This hard, translucent chert, light green to clear in color, with blackish dendritic and linear inclusions, is known only from a large quarry source near Livengood, located about 580 km south and across the Brooks Range from the Kuparuk Pingo site. Such a distant quarry suggests either extremely nomadic behavior of these vanished hunters or, more likely, an operable trade network to the Alaskan interior for the high quality lithic source materials.

Standard measurements of length, width, and thickness were taken for primary and secondary flakes of each material type. From these measurements, tests for expected randomness were conducted. Most strikingly, tests for the coefficient of kurtosis, a statistical indication of how closely bunched or grouped the measurement values are about the arithmetic center of distribution, were positive in all 30 tests. These positive values strongly suggest that a well-defined cultural normative system of behavior was operating in the production of stone tools. Given the singular hearth indicating a small hunting party, however, an alternative and more plausible explanation might be that stone tools were produced by perhaps a very few craftsmen utilizing technologically similar lithic reduction techniques.

Bone Tools

A rectangular flat piece of dense compact bone has two drill holes (Fig. 4). The exterior surface is smooth and polished. The exact function of this artifact is unclear; however, the perforations suggest that it is a tool handle fragment.

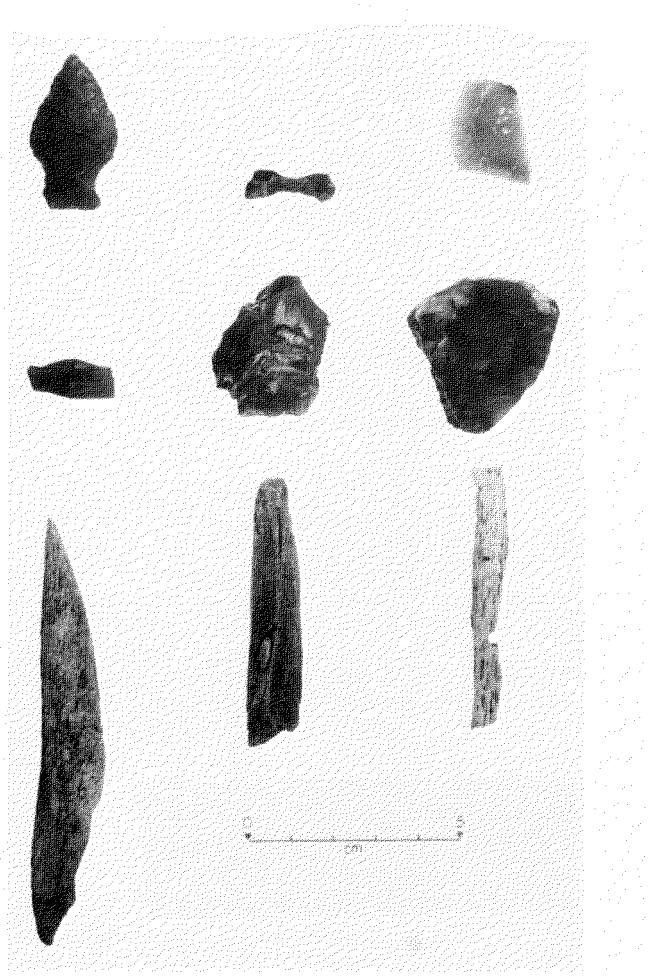

FIG. 4. Kuparuk Pingo site artifacts, from left to right. Top row: Side-notched Projectile Point; Side-notched Projectile Point Base Fragment; Knife or Sideblade Fragment. Middle row: Retouched Blade-like Flake Fragment; Retouched Flake; Plano-convex End Scraper. Bottom row: Bone Point; Bone Scraper or Beamer; Cut and Drilled Bone Fragment (Tool Handle?).

The distal portion of a caribou ulna has been modified into a bone point (Fig. 4). The tool displays heavy polish at the utilized end.

One other unidentifiable long bone fragment from a large mammal appears to have been used as a scraper or beamer tool (Fig. 4). Use wear is notable on the distal and lateral edges.

Other Bone

A total of 262 faunal elements were recovered. The majority were small fragments of the long bones of large mammals. So completely were bones broken that any attempt at determining a minimum number of individuals would be conjecture. Those fragments from the hearth feature displayed discoloration from burning.

Caribou (*Rangifer tarandus*) was the only large mammal species, as represented by fourteen tooth fragments, one left distal radius, one right distal humerus, and two ribs. Small mammal remains consist of parts of two skulls and three mandibles of arctic ground squirrel (*Citellus parryi*); however, the excellent preservation of these normally fragile elements suggests that the bones represent more recent intrusions of these rodents.

Bird remains were scarce and similarly fragmented. Identifications of one left distal tibiotarsus of an oldsquaw (*Clangula hyemalis*), one right medial humerus of a goose (family Anatidae), one right proximal tarsometatarsus of a small duck (family Anatidae), and one right proximal humerus of a small shorebird (family Charadriidae or Scolopacidae) could be determined. Based on the total faunal remains recovered from the site, avian utilization was incidental to the taking of caribou.

Season of Site Use

Caribou, waterfowl, and shorebird remains are instructive in terms of seasonality. A few solitary caribou may winter along the coast of the Arctic Coastal Plain. However, if present animal behavior can be used to explain past events, the main caribou herd arrival in the immediate area was between the middle of May and the first part of June. Notable herd travel north from the Brooks Range and Arctic Foothills occurs along the nearby Kuparuk River. By the first few days of August the herd reverses this migration pattern (Gavin, 1976). For hunters dependent on an adequate supply of caribou, remaining in the Arctic Coastal Plain without the presence of the main herds would be untenable. Avian elements better confirm a warmer season occupation. Waterfowl and shorebirds are present in the area only during the open water months of May-August.

CHRONOMETRIC SITE DATING

From the recovered bone, 165 fragments weighing a total of 43.3 g of burned bone from the hearth concentration were sacrificed to obtain a radiocarbon sample resulting in a date of 5915±295 radiocarbon years: 3965 B.C. (UGa-5083). Utilizing one standard deviation, the range is 6210-5620 years B.P. Widening the range through the consideration of two standard deviations, the result is 6505-5325 years B.P. The association of notched points and a radiocarbon date of almost 6000 years B.P. is consistent with the reported dating of similar points from elsewhere in the western Arctic.

EXTERNAL RELATIONSHIPS

Notched points have been noted as a hallmark of the Northern Archaic tradition from sites throughout the western Arctic and subarctic. Close in both space and time is the Tuktu site of Anaktuvik Pass in the Brooks Range (Campbell, 1961). Notched points associated with an early date of 6510±610 (SI-114) represent the "type" site for these projectile point stylistics. Later dates from the same site argue for a lengthy continuity of the Northern Archaic tradition (see Gal, 1982). Another Brooks Range site, Ribdon, has produced a similar notched point, but not in an unquestionable context. The point was taken in a test pit 10 m from a hearth dated at 1780±150 (GX-4085) with no diagnostic material (Cook, 1977; Gal, 1982). Notched points have been dated at the stratified site of Onion Portage on the Kobuk River to the mid 4th millenium B.C. (Anderson, 1968).

Many other North Alaskan sites have produced notched points that unfortunately remain chronometrically undated, such as NKR 1-2 located on the Kelly River in the Noatak drainage (Anderson, 1972). This material is seen by Anderson (1972) as comparable in age to similar materials dated from Band 6 at Onion Portage (Giddings, 1967). The Palisades II site at Cape Krusenstern is immediately above a beach ridge forma-

tion estimated to date about 5500 years (Giddings, 1962). A probable multicomponent inland site, NOA-80, located just inside the northern boundary of the Cape Krusenstern National Monument, has produced further evidence of Northern Archaic peoples (Hall, 1982). Many sites throughout the major ridges and drainages of the National Petroleum Reserve have recently yielded notched points in undatable contexts (Humphrey, 1970; Davis *et al.*, 1981; Gal and Hall, 1982). Walker Lake and Akmalik Creek sites in the central Brooks Range surveyed by Hall (1975) have also produced notched points.

However, the nearest finding of related materials comes from the mouth of the Putuligayuk River at Prudhoe Bay, only 50 km east of the Kuparuk Pingo. Unfortunately, the single broken side-notched point was recovered in a blowout. One nearby locality possessed tabular cores and microblades (Lobdell, 1981), also often associated with Northern Archaic times (Dumond, 1977), but many Alaskan sites may have questionable associations of notched points and microblades (Anderson, 1970; Hall, 1975). As aforementioned, the Kuparuk Pingo did not yield evidence of microblade technology. This lack of microblades in such a very small and behaviorally limited site should not be taken too seriously as a critical detriment to microblade-notched point association hypotheses.

More southerly Alaskan and Yukon sites have yielded notched points, sometimes but not always in association with microblades. Lake Minchumina, northwest of the Alaska Range (Holmes, 1984), Healy Lake, in the upper Tanana region (Cook, 1969), Ratekin, in the Alaska Range (Skarland and Keim, 1958), Security Cove and Kagati Lake, in Southwestern Alaska (Ackerman, 1964), the Ugashik drainage of the Alaska Peninsula (Henn, 1978), and Aishihik Valley, in the Southwestern Yukon Territory (Workman, 1978), have produced side-notched point components.

CONCLUSIONS: SITE SIGNIFICANCE

This tiny hunter's outpost serves as the first datable evidence of the wet tundra use by Northern Archaic peoples of the Arctic Coastal Plain. While originally thought to be an interior forest culture, later findings extended the range of these people into the treeless Brooks Range and beyond to the Arctic Foothills (see Davis *et al.*, 1981). While forested interior, mountain, tundra foothill, and wet coastal provinces are only artificial categories that may not be limiting factors in human adaptation (Hickey, 1974), it is clear from the discovery of moss agate chert available only much farther south that this Arctic Coastal Plain hunting band had ties to the forested interior of Alaska.

The limited bone tool assemblage, although the first such preservation in a site of this cultural tradition, can serve little additional discussion from such fragmentary and uncomplicated forms. Suffice it to say that the Northern Archaic tradition possessed a bone technology, albeit only limitedly represented at the Kuparuk Pingo Site.

The presence of hearth bone permitted recognition of the establishment of the Kuparuk Pingo site as early in Northern Archaic times. The almost 6000 year date confirms that the near coastal zone of the North Slope was inhabited early in the Holocene, if only ephemerally during the warmer season in conjunction with adequate biomass resources.

Finally, the pingo site setting may shed new light on the geomorphology of pingo dynamics. Pingo growth processes are well documented for pingos of the Arctic Coastal Plain (Mackay, 1979). While pingos may grow rapidly (Mackay, 1981) or display constant, annually decreasing, or erratic yearly growth patterns (Mackay, 1977, 1983), a total subsidence may indeed be prolonged. Unfortunately, this particular pingo was not noted or measured during early geologic studies, although many other nearby mounds were examined due to their visibility and accessibility from the Beaufort Sea coast (see Leffingwell, 1919). There is no way to reconstruct the morphology of the pingo at the time of ancient human habitation as a hunting camp. It is evident that this particular pingo may have general coevality but likely a greater antiquity than the Northern Archaic camp that occupied its citadel some 6000 years ago. Such longevity is considerably greater then expected for a pingo.

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