17. Chindadn in Canada?

Emergent Evidence of the Pleistocene Transition in Southeast Beringia as Revealed by the Little John Site, Yukon

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The Little John site (Borden KdVo-6) is located 12 km north of the village of Beaver Creek, Yukon, about 2 km from the international border with Alaska (figure 17.1). It occupies most of the higher surface of a knoll overlooking the upper reaches of Mirror Creek, known as Cheejil Niik (Grayling Creek) in the local Scottie Creek dialect of the Upper Tanana Athabaskan language (figure 17.2).[1] The site overlooks the basin of the creek from the north and lies within the easternmost extension of the Tanana River drainage. Snag Creek crosses the valley about 7 km east of the site, marking the watershed divide between the Tanana River and upper Yukon River drainage basins. In the Scottie Creek dialect this geographic location is known as Haah Tu Taiy (roughly, "Trail at the End of the Hill"). In 2006, after recognition of its significance and consultation with the White River First Nation, the site was named "Little John," after Klaa Dii Cheeg ("His Hand Drops"), who in English was called White River Johnny and known affectionately as Little John. Little John is a respected ancestor of many of the contemporary members of the White River First Nation; like his people before him, until his death in 1984, Little John often used this location as a hunting camp and lookout, a practice continued by his descendents today.

An examination of the physiographic location of the Little John site suggests why it was occupied early and continuously: the site lies at a natural constriction of the Mirror Creek valley and would have provided an overlook toward any fauna entering or returning from the large expanding plain that lies to the east of the site.

From 2002 to 2007, we excavated close to 100 m^2 of the Little John site (figure 17.3), uncovering a multicomponent archaeological deposit containing evidence of human use from the most recent past back to the terminal Pleistocene. A single date of 12,020 ± 70 ^{14}C BP (14,050–13,720 cal BP) marks the earliest occupation of the site, which consists of a small assemblage of lithic artifacts and faunal elements recovered from the basal loess stratum of the eastern area of the site (see Yesner et al., this volume).[2] An undated component recovered from a different sedimentary context in the western area of the site represents the first identification of a Chindadn/Nenana complex assemblage within a stratified context to be found in Canada. Also present at the site is an early Holocene component, which we currently believe represents a Denali complex (Paleoarctic tradition) occupation, dated to between roughly 10,000 and 8900 ^{14}C BP (ca. 11,500–10,000 cal BP). This component, found associated with deeply buried paleosols in the eastern area of the site, contains a rich assemblage of well-preserved faunal remains. Additional Holocene assemblages include microblade technology and artifacts diagnostic of the Northern Archaic tradition. Postdating the White River volcanic eruptions (ca. 1900 and 1200 ^{14}C BP), we have recorded occupations related to the Late Prehistoric, Transitional Contact, and Historic (twentieth century) periods, the latter which includes occupation of the site by nonnative builders of the Alaska Highway. A final component might be identified as Contemporary, since the site is still used today by the local aboriginal Dineh as a hunting lookout and campsite. The large horizontal extent of the site and stratified representation of several archaeological cultures of the interior western subarctic, combined with excellent faunal preservation in several levels, make the Little John site unique among archaeological sites in the Yukon Territory.

Focusing on the late Pleistocene/early Holocene archaeological deposits of the Little John Site, in this

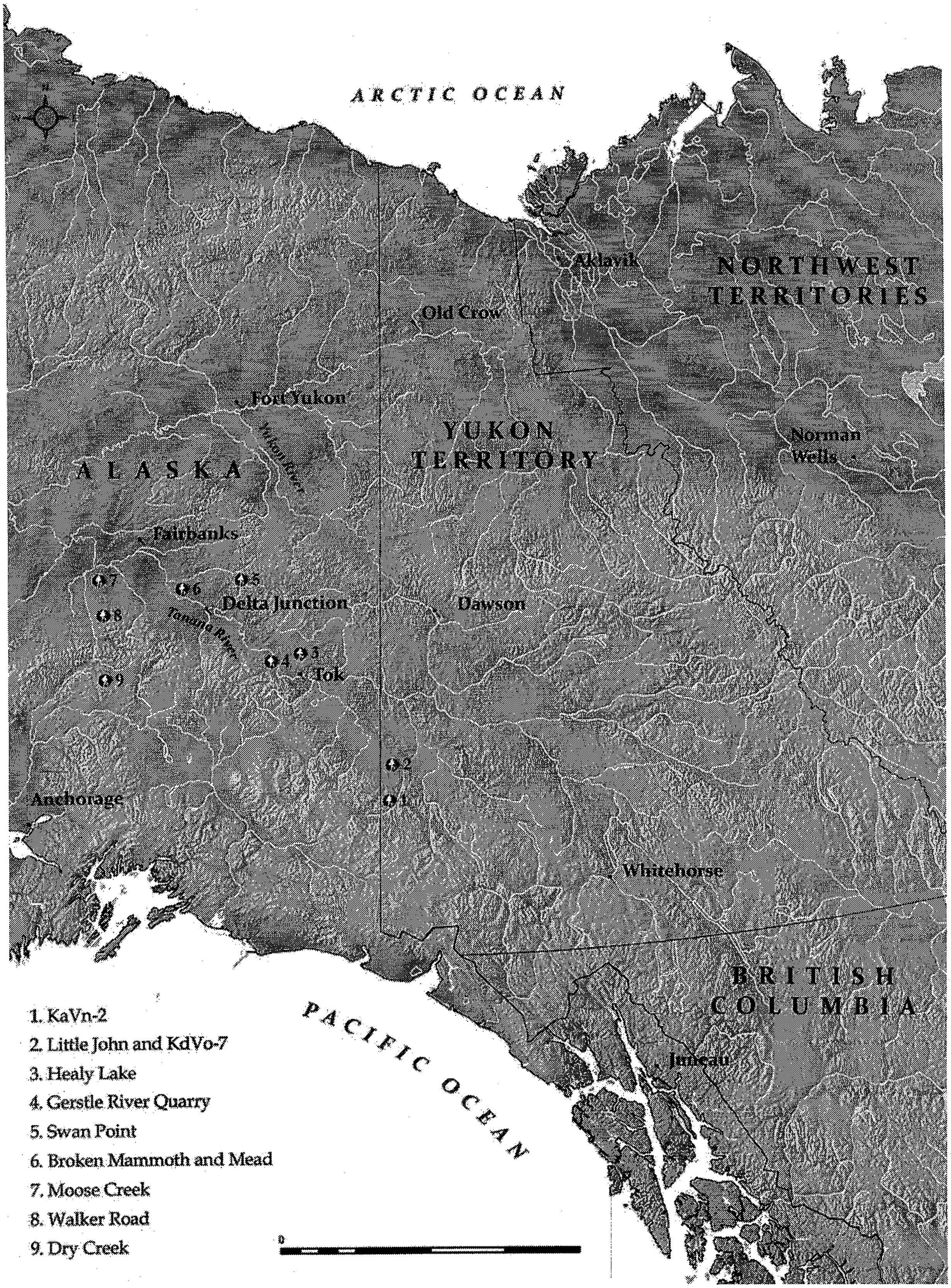

Figure 17.1. The Little John site and related archaeological sites discussed in the text.

Figure 17.2. The Little John site from the southwest.

chapter we outline the assemblage characteristics and stratigraphic contexts of these components and describe some of the interpretive difficulties we have faced thus far in establishing a culture-historical framework for the early strata. Although we note that detailed spatial, technological, faunal, and geomorphological analyses of the Little John site are still in progress, we conclude with an examination of how the preliminary data presented here articulate with the early archaeological record of eastern Beringia.

Stratigraphic Context

In general terms, the stratigraphy of the site consists of a chemically and ice-fractured basal regolith overlain with some sparse till from the thin piedmont glaciation of the local Mirror Creek glacial advance, variously dated to the late Illinoian (MIS 6), about 140,000 years ago (Bostock 1965; Krinsley 1965) or the early Wisconsin (MIS 4), about 70,000 years ago (Denton 1974; Hughes et al. 1989), and corresponding to the interior Yukon's Reid glacial event. The Late Wisconsin McCauley (interior Yukon's McConnell) glacial advance ended at McCauley Ridge, some 50 km to the southeast, and began a rapid recession at roughly 13,500 ^{14}C BP (ca. 16,800–16,000 cal BP). By 11,000 ^{14}C BP (ca. 13,000–12,800 cal BP) the region was ice free to at least the White River, some 150 km to the southeast (Rampton 1971) (see figure 17.4).

Above the basal regolith are found loess sediments varying in thickness from a few centimeters to over 4.5 m. Soil development within the sediments has led to the formation of B horizons designated B1 and B2, boreal brunisol horizons generally separated by several centimeters of tephra, which radiocarbon dates suggest is a deposit of the second White River volcanic eruption of around 1200 ^{14}C BP (Lerbekmo and Westgate 1975; West and Donaldson 2002). A thin (5 cm) O/A horizon caps the sequence.

The undulating topography of the site accounts for the discontinuous depth of the loess deposits (figure 17.3), ranging from an eroding cliff in the south to a deep swale in the north, with two knolls in between. The contemporary stratigraphy is also complicated by the action of both ancient and contemporary periglacial processes, including permafrost and solifluction, colluvial deposition of wind-striated pebbles (ventifacts), and what seems to be a mass-wasting event over a portion of the site. Because of this differentiation in depth and nature of strata, we currently divide the site into five zones: the West lobe, the Permafrost lobe, the Rockfall lobe, the East lobe, and the Swale lobe.

The West lobe, where the strata are shallowest, occupies the southwestern hillside on which deposits range

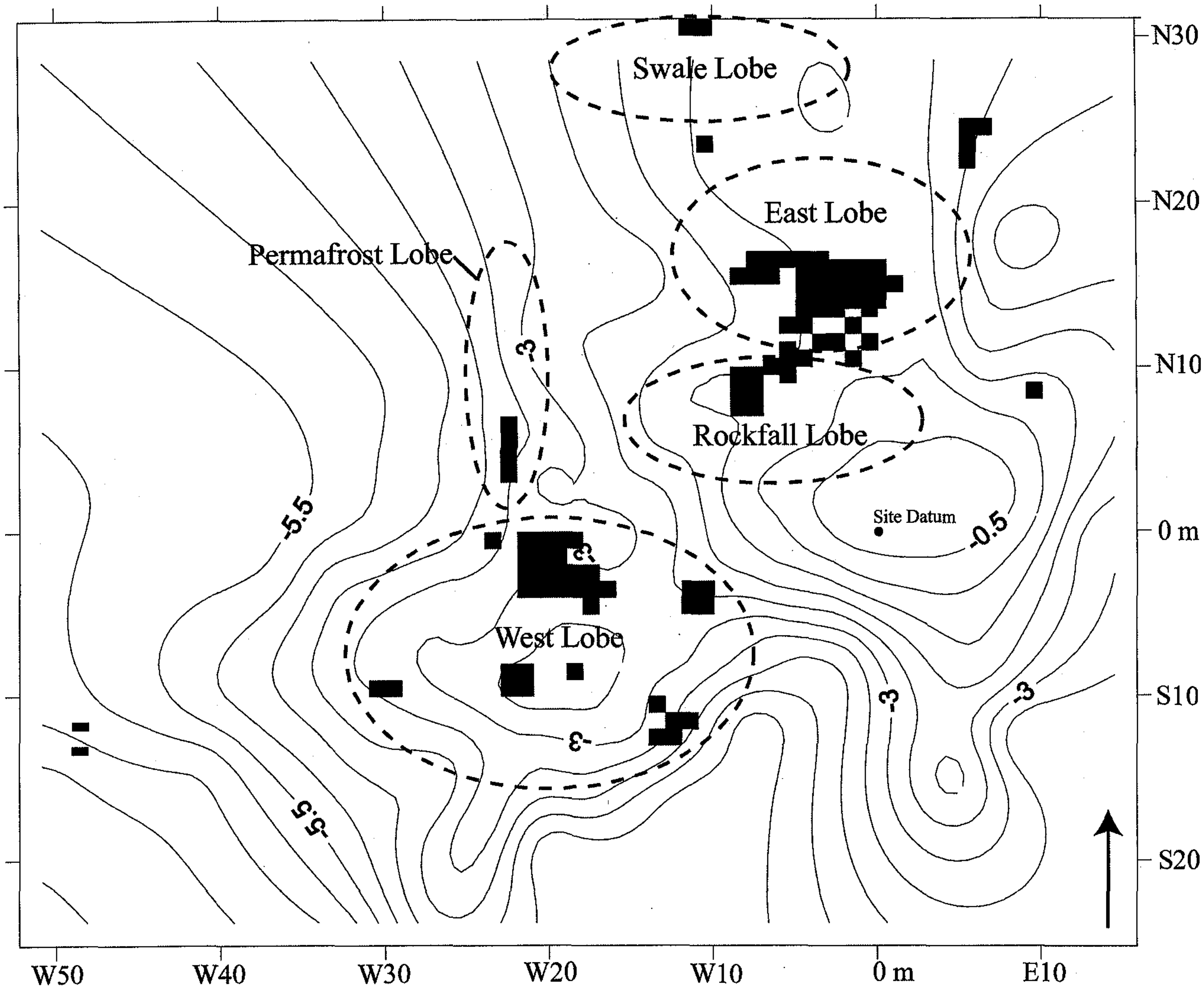

Figure 17.3. Plan of the Little John site, showing the five lobes of the site and the formal excavation units.

from 5 to 30 cm (figure 17.5). The Permafrost lobe, where frozen ground is encountered mere centimeters from the surface, occupies the slope of the site running northwest. The Rockfall lobe, where large cobbles and boulders lie through the B2 horizon and loess layers, is roughly in the center of the site on a north-south axis. The East lobe is a large basin that troughs east from the site and contains the deep sedimentary deposits of 100 cm and more and holds paleosol strata near the bottom of the sequence, below which is another loess level that grades into the fractured regolith (figure 17.6). Capped by 40–60 cm of loess below the B2 horizon, the paleosol complex contains a well-preserved, culturally deposited faunal assemblage in direct association with lithic artifacts (Easton 2007; Hutchinson et al. 2007; Yesner et al., this volume). The faunal preservation is a function of the deep and alkaline loess overburden (Dilley 1998; Easton 2007). The underlying loess contains a smaller faunal and lithic assemblage. The Swale lobe is a steeply angled extension from the East lobe loess deposits into which we have excavated a single 1 by 1m unit to a depth over 4.5 m through loess without encountering paleosols or regolith.

AMS Radiocarbon Dating of the Little John Site

Table 17.1 summarizes the results of ten AMS radiocarbon dates processed for the Little John site. Dates on five bones from the East lobe paleosol complex indicate an age range of 10,000–8890 ^{14}C BP (11,760–9780 cal BP) for this statigraphic unit (figure 17.6). Most of the bones from which these samples were extracted displayed cultural modification in the form of spiral fracture or cutmarks and were

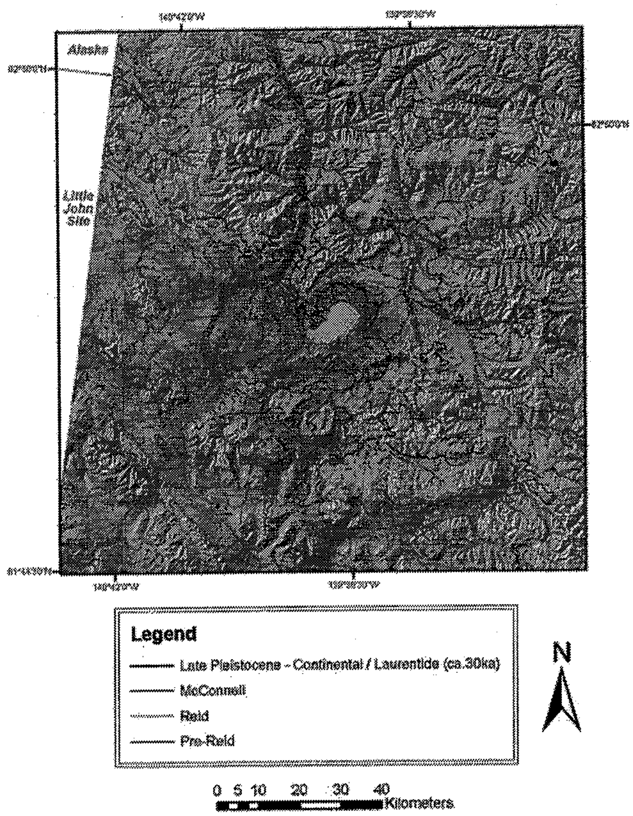

Figure 17.4. Relation of the Little John site to regional physiography and Pleistocene glacial margins.

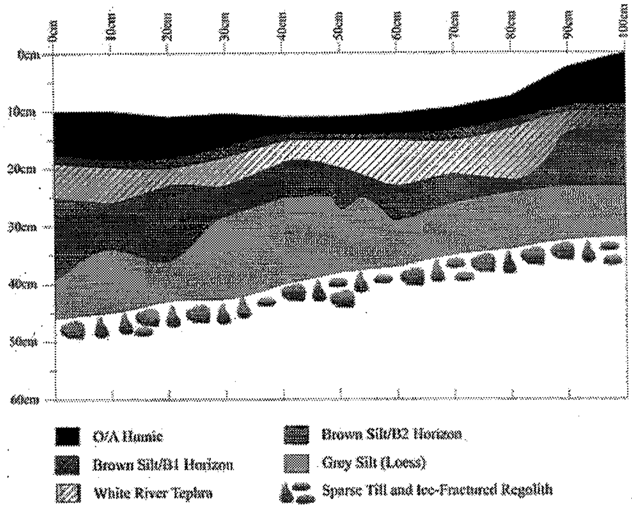

Figure 17.5. Representative stratigraphy of the West lobe sediments (EU 27 East Wall).

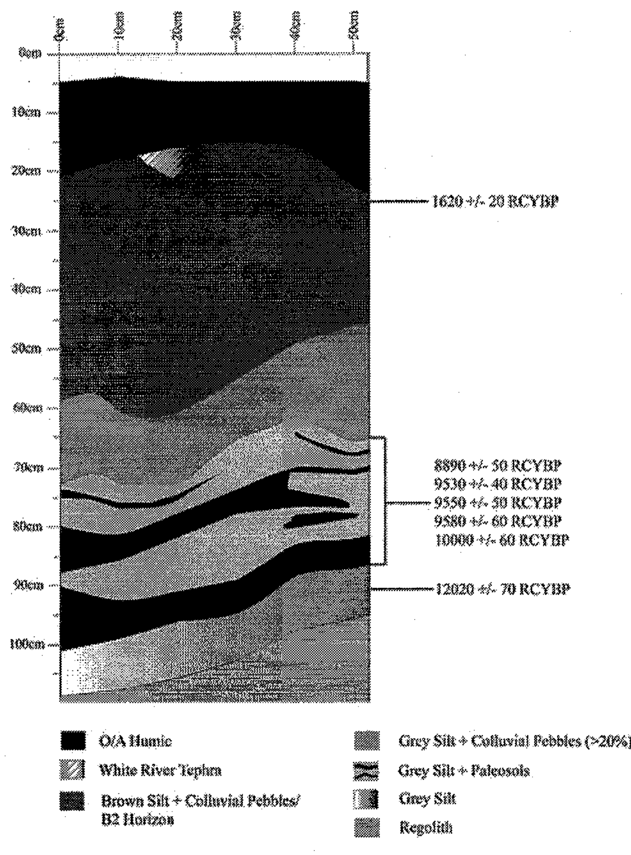

Figure 17.6. Representative stratigraphy of the East lobe sediments (EU 32 East Wall) and associated radiocarbon dates.

found in association with lithic debris. We have also processed two samples from the East lobe loess below the paleosols. A *Canis* humerus was found to be lacking any collagen suitable for dating, suggesting greater antiquity and a post-depositional taphonomy different from the overlying paleosol fauna. Dated portions of a *Bison* vertebra from the East lobe loess below the paleosol complex confirmed this suspicion, generating a date of 12,020 ± 70 ^{14}C BP (14,050–13,720 cal BP).

A sample of charred material from the West lobe B2 horizon generated a date of 1740 ± 40 ^{14}C BP (1725–1545 cal BP), and a charcoal sample from a hearth in the B2 horizon of the East lobe dated to 1620 ± 40 ^{14}C BP (1600–1410 cal BP). These two dates confirm that the tephra above the B2 horizon represents ash deposited from the second White River volcanic eruption around 1200 ^{14}C BP. A third sample from the West lobe B2 horizon provided a result consistent with material that was living in the past fifty years (post–AD 1950) and is interpreted as the buried remains of a post associated with the use of the site as campsite in the historic era. No material suitable for radiocarbon dating has been recovered in association with the Chindadn/Nenana complex component in the West lobe loess.

Table 17.1. AMS Radiocarbon Dates from the Little John Site

Lab #	*^{14}C age*	*Calibrated 2δ*	*Level*	*Lobe*	*DBS(cm)*[a]	*Material*	*$^{13}C/^{12}C$*	*Comments*
Beta-181485	130.44±0.86	N/A	B2 - L	West	15–30	Wood	N/A	Radiometric result indicates material was living in past fifty years
Beta-182798	8890±50	10,190–9865 and 9855–9780	Paleosol	East	67	Bone collagen, *Rangifer*?	−19.7‰	AMS
Beta-182799	1740±40	1725–1545	B2	West	11.5	Charred material	−25.6‰	AMS—below ash date 2nd (ca. 1200 BP) White River tephra on site
Beta-217279	9530±40	11,090–10,930 and 10,880–10,690	Paleosol	East	70	Bone collagen, *Rangifer*	−19.8‰	AMS
Beta-218235	9550±50	11,120–10,690	Paleosol	East	54.5	Bone collagen, *Cygnus* femur	−19.1‰	AMS
Beta-231794	38,160±310		Surface	Road	0	Bone collagen, ivory, *Mammuthus*?	−21.2‰	AMS; fragment eroded from hillside across road from KdVo6
Beta-231795	1620±40	1600–1410	B2	East		Charred material	−27.6‰	AMS
Beta-241522	9580±60	11,170–10,700	Paleosol	East	98	Bone collagen, *Bison* radius	−20.3‰	AMS
Beta-241523	12,020±70	14,050–13,720	Loess below Paleosol	East	85	Bone collagen, *Bison* vertebra	−19.1‰	AMS
Beta-241525	10,000±60	11,760–11,250	Paleosol	East	84	Bone collagen, *Cervus* phalanx	−20.4‰	AMS

[a]DBS = depth below surface.

Finally, we have also analyzed a fragment of ivory from a scatter of this material found eroding from the hillside across the highway from the Little John site, which produced a date of 38,160 ± 310 ^{14}C BP; we presume it is from *Mammuthus*. An *Equus lambei* specimen, recovered about 2 km from the site, has been dated to 20,660 ± 100 ^{14}C BP (Beta-70102; MacIntosh 1997:84). Combined with the recovery of additional Pleistocene fauna in the area representing specimens of *Bison, Equus, Mammuthus, Rangifer,* and possibly *Saiga,* these noncultural fauna suggest that the area about the Little John site supported a range of megafauna during the mid to late Wisconsin glacial period from at least 38,000 years ago.

Faunal Assemblage of the Little John Site

Identified faunal remains from the East lobe paleosol complex include *Bison, Rangifer, Cervus, Ovis, Canis, Lepus, Cygnus,* and other unidentified Aves and Rodentia. Hutchinson et al. (2007) provide an analysis of the fauna recovered from excavations through 2006. In this section we provide a brief overview of the results of this study and present preliminary data from the 2007 excavations. Further work is required to compile and quantify these data.

The fauna described here were recovered from the East lobe paleosol complex through 2006. We have already noted that the paleosol fauna is generally well preserved. Although at least two bird specimens are present, including a *Cygnus* and some rodent elements, most faunal remains derive from large ungulate species, most likely one or more species of *Rangifer.* The majority of the material is to some degree burned. In addition, there is a high level of abrasion on surfaces of some of the burned bone, possibly due to exposure during alternating periods of slow soil deposition and eolian loess deposition.

Skeletal elements represented in the collection are remarkably uniform, with over 80% of the specimens appearing to derive from ungulate long bones, mostly medial shaft fragments. Cranial material is conspicuously absent, as are any distal limb segments such as digits, hooves, or antler. Axial elements are present and dominated by rib fragments and several separate vertebral sections. The size gradient of specimens is skewed toward smaller fragments; nearly 80% of the fauna have maximum length dimensions of less than 5 cm. This may be related to a combination of multiple burnings within hearths and fracture for marrow extraction (which may also be the cause of so many pointed pieces, resulting from the spiral fracture of fresh bone during hammer-and-anvil crushing for marrow extraction).

Bison and wapiti dominate the fauna excavated from the East lobe paleosol complex in 2007. Bison elements include fragments of a scapula, radius, and metacarpal as well as a femoral head exhibiting cutmarks. Wapiti elements include two right first phalanges, one left first phalanx, and a metatarsal lacking its distal epiphysis (suggesting that it represents an immature wapiti).

Most specimens from the East lobe paleosol complex exhibit a highly polished, reflective and patinated surface, tan to dark brown in color. In contrast, fauna from the lower loess below the paleosol complex are characterized by a gray to white color, with a dull and eroded surface. Fauna from the two strata are also distinguished by their relative density, with paleosol fauna having a higher mass-to-volume ratio than similar-sized material from the loess below the paleosol. Clearly, these differences reflect different post-depositional environments in the strata, resulting in some degree of mineralization in the paleosol fauna and some degree of chemical leaching of mass in the fauna from the loess below the paleosol. Identifiable elements from the East lobe loess below the paleosol complex include a fragmentary bison lumbar vertebra (AMS dated to 12,020 ± 70 ^{14}C BP), a left pelvic fragment of a wapiti, a caribou astragalus, and a nearly complete *Canis* humerus.

Although further work is required to quantify and integrate these data into models of site function and economic adaptation, the descriptive data presented here indicate that occupants of the Little John site practiced a subsistence strategy focused on large-mammal hunting (bison, wapiti, caribou) during the period spanned by the East lobe paleosol complex (10,000–8890 ^{14}C BP). This diet was supplemented with lesser amounts of waterfowl and small mammals. Fauna collected from below this paleosol complex, though meager, also indicate large-mammal hunting activities.

Late Pleistocene/Early Holocene Lithics from the Little John Site

Figures 17.7–17.10 depict representative lithic artifacts recovered from the West lobe loess, West lobe B2 horizon, East lobe paleosol complex, and East lobe loess below paleosol strata, respectively.[3]

Lithic Artifacts

Figure 17.7 shows representative artifacts from the West lobe loess horizon, which includes teardrop-shaped Chindadn bifaces (types 1 and 3; see Holmes 2001), large bifacial tools, blades, and other edge-retouched implements.[4] In marked contrast to the overlying West lobe B2 horizon, the West lobe loess stratum produced only one microblade, found very near the interface with the overlying B2 horizon. It is thus considered intrusive into the lower

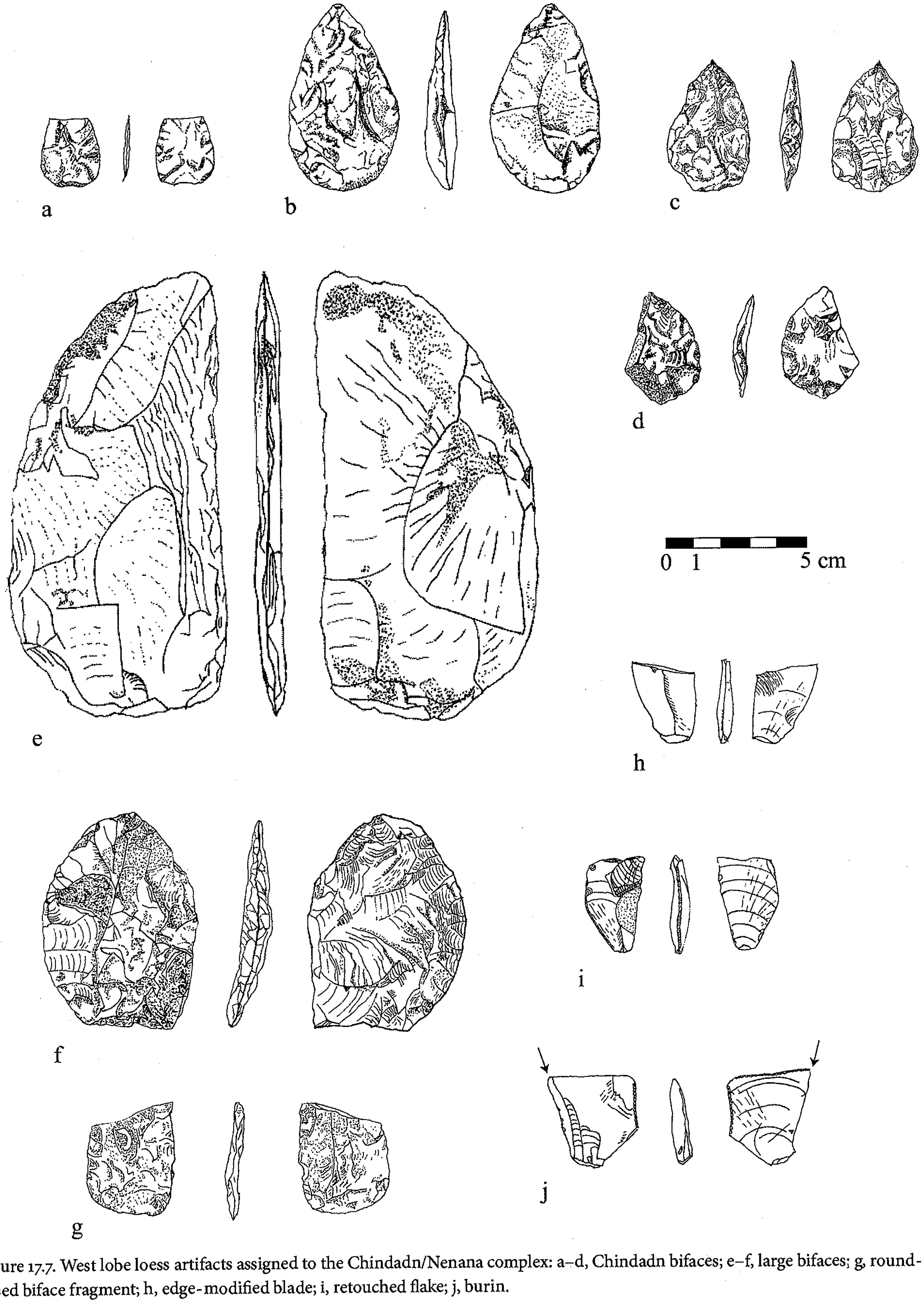

Figure 17.7. West lobe loess artifacts assigned to the Chindadn/Nenana complex: a–d, Chindadn bifaces; e–f, large bifaces; g, round-based biface fragment; h, edge-modified blade; i, retouched flake; j, burin.

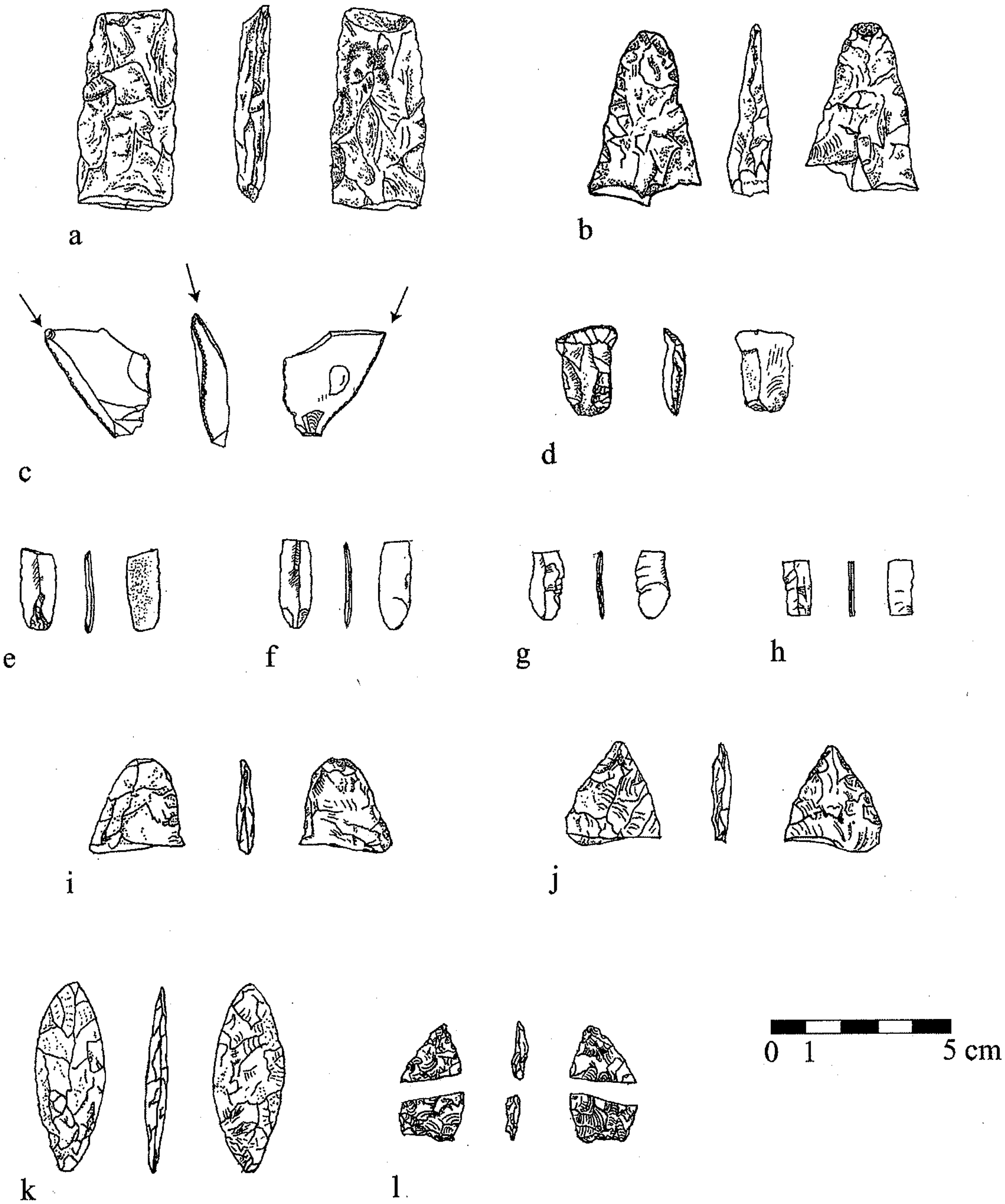

Figure 17.8. West lobe B2 horizon artifacts assigned to the Denali complex: a–b, i–j, biface fragments; c, burin; d, end scraper; e–h, microblades; k, foliate biface;1, basally thinned diminutive biface.

loess. This pattern holds over the entire area of the West lobe excavated (by natural layers) thus far, indicating that artifacts found in the West lobe B2 horizon and West lobe loess horizon represent distinct archaeological components defined by the covariant presence/absence of microblades and Chindadn points. We have not directly dated this Chindadn component found in the West lobe loess because of a lack of organic materials of clear cultural origin.

Figure 17.8 shows representative lithic artifacts recovered from the West lobe B2 horizon. Microblades dominate the artifact assemblage of this stratum. Several core tablets and irregular core fragments with microblade removal scars have been recovered, but thus far no wedge-shaped cores ubiquitous to the Denali complex have been found. Scrapers and burins are present, as well as several projectile point fragments and other bifaces. Although

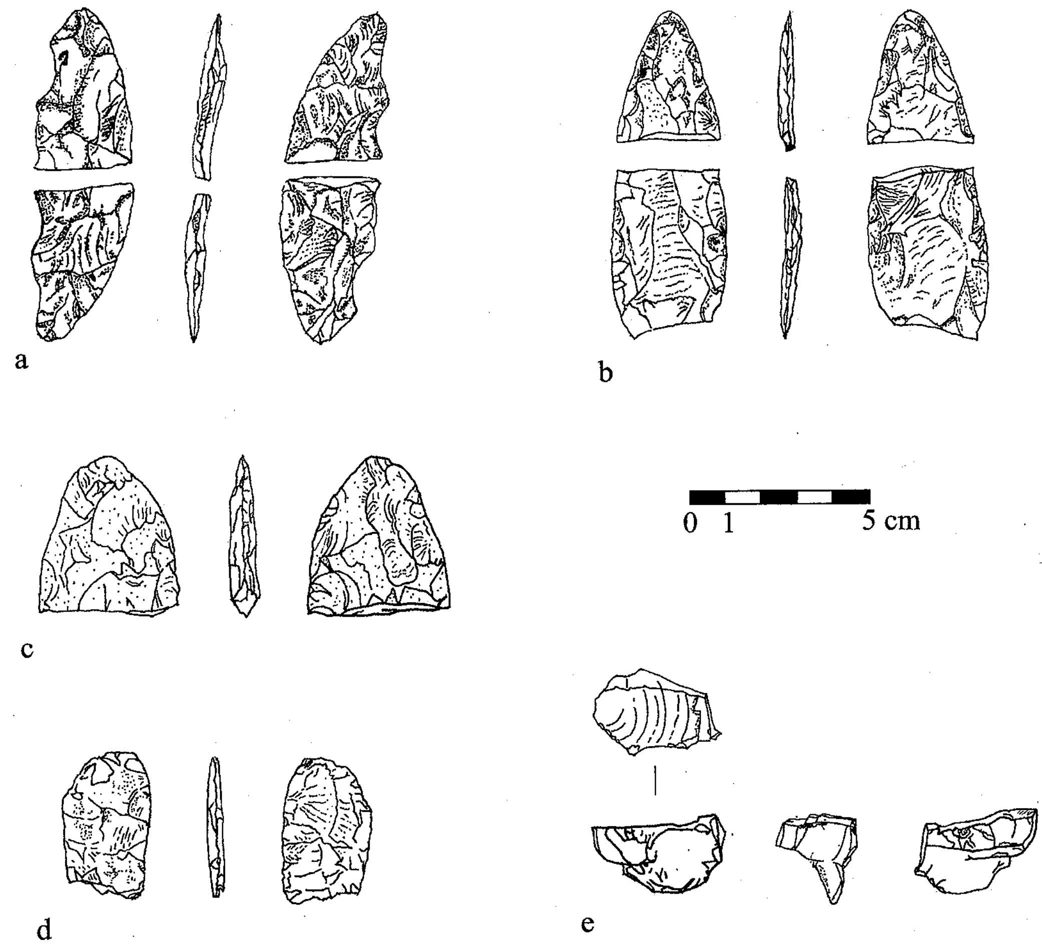

Figure 17.9. East lobe paleosol complex artifacts: a–d, biface fragments; e, microblade core fragment.

the B2 horizon presumably encompasses a long timespan—it is bracketed by White River tephra (ca. 1200 ^{14}C BP [1120 cal BP]) at the top and the Chindadn/Nenana component in the underlying loess deposit—this shallow soil horizon lacks the resolution required for us to discern clearly separate cultural components that likely constitute the West lobe B2 horizon. A lack of cultural features with clear artifact associations and datable organic material exacerbates this problem. The abundant microblades in this stratum may indicate the presence of a Denali complex component, but there is no certainty in this assertion, particularly because we still lack complete microblade cores and because microblade technology exists throughout the Holocene in the Yukon Territory (Hare and Hammer 1997) and is sometimes present in Northern Archaic components. Despite this lack of resolution, our illustrations in figure 17.8 focus on artifacts found near the bottom of the B2 horizon, which—in a coarse-grained manner at least—should represent the older artifacts from this stratum.

Figure 17.9 shows several artifacts recovered from the palesol complex in the East lobe of the Little John site. The artifact assemblage from the paleosol complex is less variable than those described above, consisting primarily of edge-modified (retouched/utilized) flakes and cobble hammerstones in direct association with a rich assemblage of culturally deposited fauna (Hutchinson et al. 2007, Yesner et al., this volume). Diagnostic artifacts include two nearly complete foliate bifaces and two biface fragments that may also represent a foliate form, a single microblade found in association with a swan bone AMS dated to about 9550 ± 50 ^{14}C BP (11,120–10,690 cal BP), and what appears to be a microblade core fragment. Combined with other radiometric dates, which consistently place this stratum between roughly 11,000 and 10,000 cal BP, we currently believe that this assemblage most closely fits the traits of the Denali complex as originally formulated by West (1967, 1981).

We have generally suspected that the loess deposits above the basal regolith and below the East lobe paleosols are a distinct geochronological stratum. This idea is based on changes in both the sediments (from paleosols interspersed with loess to loess alone) and the physical morphology of the faunal remains. Bones from the paleosols are brown and hard, whereas those from the underlying loess are white/gray and much more fragile, which we believe clearly reflects differences in both time of deposition and subsequent taphonomic processes. A previous attempt to date a *Canis* humerus recovered from the loess below the paleosols, however, failed due to lack of collagen. A second attempt on a *Bison* vertebra has, however, produced a date of 12,020 ± 70 ^{14}C BP (14,050–13,720 cal BP), which clearly indicates that there is a temporal difference between these two strata in the East lobe.

The faunal remains are much sparser in the underlying loess than in the paleosols above, as are the artifacts, consisting thus far of a single flake core, a hammerstone/anvil, some additional hammerstones, and lithic flakes (figure 17.10).

Lithic Raw Materials

Figure 17.11 summarizes the distribution of lithic raw materials of formed artifacts from the West lobe loess horizon, West lobe B2 horizon, and East lobe paleosol complex. The lithic raw materials present in these levels are basalt, rhyolite, obsidian, and a variety of cherts.

We have compiled some preliminary source data for the lithic materials found at the Little John site. In figure 17.11 we have combined the basalt and rhyolite categories, but for general descriptive purposes we distinguish dark to black material as "basalt" (i.e., less quartz or maphic) and light to tan material as "rhyolite" (i.e., more quartz or felsic), based on hand lens examination by members of the Yukon Geological Survey. In terms of their origin, however, we expect that both would be found at any one of the several identified volcanic outcrops in the nearby upper Tanana Valley between the Chisana and Nabesna rivers, Alaska. In addition, samples of the "gray chert"

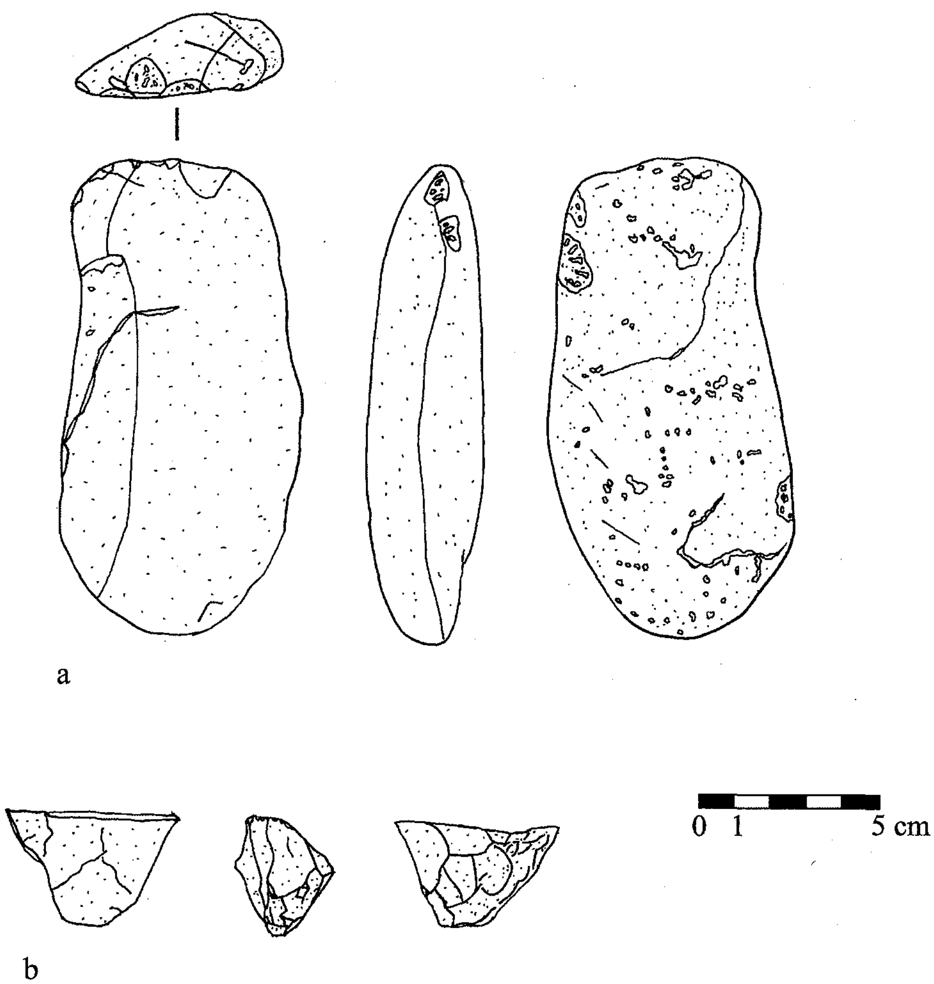

Figure 17.10. Artifacts from below the paleosols in the East lobe loess: a, cobble hammerstone/anvil; b, flake core.

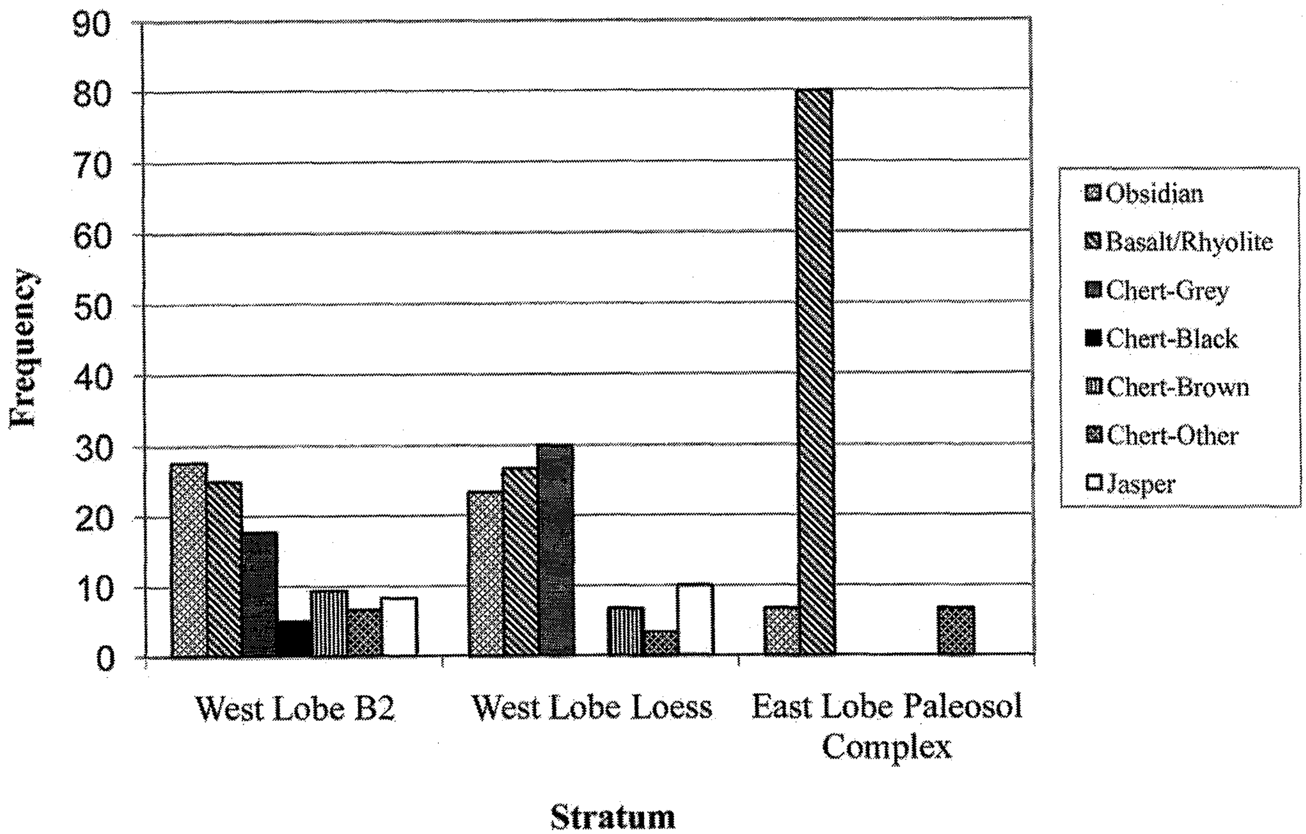

Figure 17.11. Raw material frequencies for the West lobe B2, West lobe loess, and East lobe paleosol complex artifact assemblages.

category examined by hand lens show a very close similarity to the Stanley Creek Chert formation of the Shakwak trench, a discontinuously exposed geological stratum found from the south end of Kluane Lake to the international border along the southwestern edge of the foot of the Kluane-Wrangell-St. Elias mountain range. Although not identified across the border in Alaska, it seems reasonable to assume that additional outcrops of this material are present there as well.

Source analysis of 105 obsidian samples by X-ray fluorescence (XRF) and laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) analyses by Natalia Slobodina and Jeff Speakman (Slobodina and Speakman 2008; see also Reuther et al., this volume) indicate that the majority (85%) of obsidian recovered at Little John can be associated with signatures from Wiki Peak, a source about 65 km south of Little John in the Nutzotin Mountains of Alaska.[5] Given that these mountains are the headwaters for much of the nearby Beaver and Snag Creek drainages, we can expect that nodules from this source are common in the area. Component distribution of these obsidian samples, based on stratum of recovery, is presented in table 17.2.

Most of the samples associated with the West lobe loess are from the Wiki Peak source, except for two flakes from a new unknown source, labeled Group AF by the analysts. The majority of samples from the West lobe B2 horizon are also from Wiki Peak; the remaining six come from Group P, Group M, and an unassigned source location. Group P represents a source with a known chemical signature but an unknown geological location. Until recently, this group was found mainly in the Noatak and Kobuk drainages and to a lesser extent in central Alaska. Based on ongoing sourcing studies, Group P is now found from Itkillik Lake (Gates of the Arctic National Park) in the north to the Ringling site in the south (near present-day Gulkana), and from Onion Portage in the west to the Little John site in the east (Slobodina and Speakman 2008). Group M is the Hoodoo Mountain source in southeast Yukon Territory. Finally, there is one sample from the Mount Edziza source in the Late Prehistoric component.

Although no stark contrasts are evident in the distribution of lithic raw materials between the lower stratigraphic levels, some interesting trends are apparent.[6] The West lobe loess and West lobe B2 horizon raw material profiles are roughly similar. Basalt/rhyolite, obsidian, and

Table 17.2. Source Distribution of Obsidian from the Little John Site

Sample Source/Stratum	Wiki Peak	Group M Hoodoo Mt.	Group AF Unknown	Edziza	Group P	Unassigned	Totals
West Lobe A/B1 Horizon	8			1			9 (8.6%)
West Lobe B2 Horizon	59	2			2	2	65 (62%)
West Lobe Loess	11		2				13 (12.4%)
East Lobe Paleosol	1						1 (0.96%)
Unassigned	10					7	17 (16%)
Totals (n = 105)	89 (84.7%)	2 (1.9%)	2 (1.9%)	1 (0.9%)	2 (1.9%)	9 (8.6%)	105 (100%)

gray chert are the most prevalent materials in these assemblages. The significance of the higher frequency of gray chert in the West lobe loess level is unclear. The addition of Group P and Group M obsidian in the West lobe B2 horizon is interesting and may indicate acquisition of obsidian from farther away via trade networks; although the geological source of Group P is not known, based on its distribution we expect that it originates in central Alaska. The strongest contrast in raw material distribution is between the East lobe paleosol complex and the West lobe assemblages: the West lobe holds a variety of raw material; the East lobe is clearly dominated by basalt and rhyolite.

Discussion

An examination of how the preliminary data presented here articulate with the broader archaeological record of eastern Beringia provides some useful insights into the adaptive context of hunter-gatherers occupying the extreme southeast edge of Beringia during the late Pleistocene/early Holocene. The Little John site provides evidence of human occupation of this area in the period spanning roughly 12,000–9000 ^{14}C BP (ca. 14,000–10,000 cal BP); yet, because of the different depositional contexts present at the Little John site and the lack of direct dating for the Chindadn/Nenana component in the West lobe, efforts to contextualize the site assemblage within the terminal Pleistocene culture-historical framework of interior Alaska and the southwest Yukon are currently problematic. The Chindadn/Nenana component, most clearly expressed in the shallowly buried West lobe, is devoid of features and, although containing many artifacts diagnostic of this complex, is so far equally devoid of datable material. In contrast, the East lobe paleosol complex contains a well-dated faunal assemblage but few diagnostic artifacts; those that are present—two complete and two fragments of foliate (bipointed) bifaces, one wedge-shaped microblade core fragment, and one microblade fragment—support assignation to the Denali complex. Finally, the basal loess below the paleosol complex in the East lobe contains faunal elements in association with a small artifact assemblage of flakes, a small flake core, and hammerstones. Below, we present a provisional culture-historical sequence for the Little John Site based on currently available evidence, but we note that emergent data may warrant refinement of this framework.

The culture-historical framework developed by Holmes (2001, and see Holmes, this volume) for central Alaska is a useful tool for organizing the late Pleistocene/early Holocene archaeological record of the southwest Yukon. Although the cultural affiliation of the artifact assemblage of the basal occupation of the East lobe of the Little John site is unclear, the date of 12,020 ^{14}C BP (ca. 14,000 cal BP) clearly falls within Holmes's Beringian period (earlier than 13,000 cal BP) and overlaps in age Phase I of the East Beringian tradition, which includes cultural zone 4 (CZ 4) of Swan Point, dating to 14,440–13,550 cal BP. Swan Point CZ 4 exhibits microblade and burin technologies with a strong cultural affinity to the Diuktai culture of western Beringia. The basal occupations of Broken Mammoth and Mead date somewhat later within Holmes's Beringian period, but like the earliest occupation of the Little John site they lack diagnostic artifacts (Holmes 2001).

The occupation of the Little John site associated with the East lobe paleosols, dated to around 11,700–9800 cal BP, falls within the Transitional period (13,000–9500 cal BP) and overlaps most closely the American Paleoarctic tradition/Denali complex, which Holmes places between 11,500 and 8500 cal BP for central Alaska. Although microblade technology is only weakly expressed in this area of the site (a single proximal microblade fragment found associated with a swan bone dated to 9550 ± 50 ^{14}C BP [ca. 10,900 cal BP] and a single microblade core fragment recovered within the paleosol), the presence of two foliate bifaces akin to "bifacial biconvex knives," one of the diagnostic traits of the Denali complex as originally formulated by West (1967, 1981), supports identifying the paleosol assemblage as a Denali complex component. In addition, recent perspectives on the Denali complex indicate that not all Denali components contain microblade technology (Mason et al. 2001; Potter et al. 2007). The full complement of Denali technology may be expressed differently based on site function and the technological organization of different subsistence activities. As Mason et al. (2001:526) state, "We classify as Denali some sites without microblades or core technology per se. For example, the Nenana valley sites of Carlo Creek and Houdini Creek report only bifaces and biface preforms. This definition as Denali of sites without microblades assumes contemporaneity with core and blade sites with bifacial technology. The best example is Component II at Dry Creek: if Dry Creek were sampled differently, microblades might have not been recovered and its Denali occupation interpreted only as a biface reduction locus."

Indeed, only five of fourteen artifact concentrations in component 2 of Dry Creek contain microblade technology (Hoffecker and Elias 2007; Powers and Hoffecker 1989; and see Hoffecker, this volume). Three concentrations comprise bifacial projectile points, point tips or point bases, and bifacial reduction debitage that some now identify with the Mesa complex (Hoffecker and Elias 2007; Hoffecker, this volume). Interestingly, the Gerstle River site, also located in the upper Tanana basin, has Denali complex components of similar age to the East lobe paleosol complex of the Little John site. Component 2 at Gerstle River contains microblade technology associated with a hearth dated to about 9510 ^{14}C BP (Potter 2001). Radiocarbon-dated hearth samples (n = 10) from component 3 of the Gerstle River site, dominated by microblade technology and a well-preserved faunal assemblage, average 8882 ± 17 ^{14}C BP (10,900 ± 90 cal BP) (Potter 2007). Component 1 of the Gerstle River site dates to about 9740 ^{14}C BP (11,200 cal BP) but lacks diagnostic artifacts (Potter 2001, 2005). Taken together, these three components align well with the timespan indicated for the East lobe paleosols.

Can the dated artifact assemblages from the two East lobe strata assist us in arriving at a relative date for the Chindadn/Nenana complex component in the West lobe of the Little John site? If we accept that the East lobe paleosol complex does indeed represent a Denali complex occupation, the dates on fauna recovered from the paleosol complex would indicate roughly 10,000 ^{14}C BP (ca. 11,400 cal BP) as the earliest date for the paleosol occupation of the Little John site. Evidence from the West lobe indicates that microblade technology is restricted to the B2 horizon overlying the Chindadn/Nenana component within the basal loess. To arrive at a relative age for the Chindadn/Nenana component, we might reasonably assume that at least some of the microblades in this overlying West lobe B2 horizon are associated with the dated Denali complex component in the East lobe. In this scenario, we see microblade manufacture and use occurring in the West lobe area, perhaps associated with the lookout function of the site, and faunal processing taking place in the East lobe area. This may assist in explaining the difference in lithic raw material distribution between these areas, with higher-quality materials dedicated to microblade manufacture and lower-quality materials used for tools related to butchering activities (this interpretation warrants caution because the West lobe deposits do not exhibit faunal preservation in the lower strata). Extending this argument to a relative age for the Chindadn/Nenana complex component, we suggest a date earlier than 10,000 ^{14}C BP (earlier than 11,500 cal BP) based on the stratigraphic position of Chindadn points relative to microblade technology in the West lobe.

This relative date fits well within Phase II of the East Beringian tradition, which spans 13,500–11,500 cal BP and overlaps in part the Younger Dryas portion of the Transitional period (Holmes 2001). Holmes (2001, and this volume) refers to Phase II as Chindadn/Nenana and cites Healy Lake Chindadn (Cook 1969, 1996), Swan Point CZ 3 (Holmes et al. 1996), and Broken Mammoth CZ 3 (Holmes 1996) as archaeological manifestations of this phase. Holmes's Chindadn complex appellation accommodates the copresence of microblades and Chindadn-type points in these assemblages (though microblades appear to be only a minor trait in Broken Mammoth CZ 3 and Swan Point CZ 3). Holmes also indicates that Nenana complex assemblages, which lack microblade technology by definition but contain Chindadn-type bifaces as a key diagnostic indicator, *may* fit within his Phase II construct.

The Transitional period, and especially during the Younger Dryas, marks a time of high archaeological diversity in eastern Beringia. Three technocomplexes—Chindadn/Nenana, Denali, and Mesa—were present in the region and, indeed, archaeological evidence from the Tanana and Nenana valleys presents the possibility that all three were present in the Tanana River watershed during the Younger Dryas (Bever 2006; Hoffecker and Elias 2007). Although microblade technology was present at Swan Point during the Beringian period (Holmes 2001, and this volume), and the Nenana complex was emerging in the Nenana Valley by the end of this period as well (Hoffecker 2001, Hoffecker et al. 1993; Goebel, this volume), bearers of the Mesa complex first occupied eastern Beringia during the Younger Dryas and are widely accepted to represent the northern migration of mid-latitude Paleoindian bison hunters taking advantage of the expansion of steppe tundra habitat during this period (Dixon 1999; Hoffecker and Elias 2007). Extending the geographic focus of the Mesa complex beyond the Mesa site, other Brooks Range Paleoindian manifestations, and Spein Mountain (Ackerman 2001), Hoffecker and Elias (2007; Hoffecker, this volume) suggest that three of the artifact concentrations comprising component 2 of the Dry Creek site, which contains bifacial projectile points, point tips, or point bases and bifacial reduction debitage but no microblades, represent occupation by the Mesa complex. They also suggest that lanceolate point fragments from Moose Creek and Broken Mammoth CZ 3 provide further evidence of Mesa complex occupation of the Tanana River watershed. In the same general timeframe, the Chindadn complex is present in the Tanana River valley, and several Denali complex occupations are present in the Nenana Valley. The latter include component 2 of Dry Creek—presumed to be contemporaneous with the possible Mesa complex material at this site—with a mean radiocarbon estimate of 10,079 ^{14}C BP (11,630 cal BP), based on dates ranging from 10,690 to 8915 ^{14}C BP (12,700–10,060 cal BP) (Hoffecker 2001; Hoffecker and Elias 2007; Powers and Hoffecker 1989), and the Denali component at Moose Creek, which dates to 10,500 ^{14}C BP (12,500 cal BP) (Pearson 1999). The relationship between this date and the possible Mesa complex artifacts from this site are problematic, since they were found in a test trench during a previous excavation of the site (Hoffecker and Elias 2007). In sum, the relationship between these archaeological technocomplexes during the Younger Dryas era remains unclear.

Four late Pleistocene/early Holocene archaeological components in southwest Yukon Territory present an emerging archaeological record of equal complexity: the Beringian period, Chindadn/Nenana, and Denali components at the Little John site discussed above, and a small assemblage from KaVn-2, located approximately 55 km southeast of the Little John site.

Recovered from a shallow loess deposit lying atop a bluff overlooking a small lake, the lower component of the KaVn-2 site contains a small artifact assemblage with bracketing dates of 10,670 ± 80 (12,645 ± 90 cal BP) and 10,130 ± 50 ^{14}C BP (11,750 ± 190 cal BP) (Hefner 2002). Concerning the dating of this component, Hefner (2002: 45) cautions: "It must be kept in mind, however, that no features were found at KaVn-2 so the charcoal samples recovered could not be confidently attributed to a cultural source. Therefore, the radiocarbon dates give accurate ages for the stratigraphy of the site but provide only a general chronological framework within which to view the archaeological remains."

The lithic assemblage of the lower component consists of scrapers, retouched/utilized flakes, one, and perhaps two, foliate bifaces, and an unfinished lanceolate point fragment. Hefner (2002) notes a similarity between the foliate bifaces and those of Dry Creek component 2, linking them to the Denali complex. He also draws a link between the lanceolate biface in the lower component at KaVn-2 with a similar biface base fragment recovered from the lower component (designated as belonging to the Nenana complex) at the Moose Creek site, leading him to classify the lower component at KaVn-2 within West's (1996) Eastern Beringian tradition, which combines Nenana and Denali complex sites as seasonal or functional variants of a single population.

However, Hefner's (2002) comparison between the lanceolate point from KaVn-2 and the one from Moose Creek was based on Hoffecker's (1996) initial consideration of Moose Creek, in which he lumped lanceolate point fragments with other artifacts into a probable Nenana complex component. Hoffecker, though, has recently revisited this interpretation and pointed out that the points were excavated from a test trench in 1979 and their relationship to the component 2 assemblage is unclear (Hoffecker and Elias 2007:198; Hoffecker, this volume).

A thread of an argument emerges here to relate the KaVn-2 assemblage to the Mesa complex, but we resist pulling this thread farther. The date range provided by Hefner (2002) is consistent with other *possible* Mesa occupations in the Tanana River watershed (i.e., Dry Creek component 2) and fits within the Younger Dryas timeframe of the Mesa complex; yet Hefner regards this point as unfinished, and, importantly, it lacks its base, a critical diagnostic indicator of lanceolate point form. Thus, we simply note the archaeological assemblage from KaVn-2 in the interest of outlining the full range of assemblage variability in the southeast corner of eastern Beringia within the Yukon Territory.

The data emerging from the late Pleistocene/early Holocene archaeological record of the southwest Yukon provides several clues into the adaptive strategies of the early occupants of this region. The earliest occupants of the Little John site (ca. 12,020 ^{14}C BP [14,000 cal BP]) appear to have predominantly hunted bison, wapiti, and caribou. In contrast, faunal evidence from the roughly contemporaneous CZ 4 of Swan Point indicates the use of grouse/ptarmigan, waterfowl, horse (based on teeth), and possibly mammoth (based on tusk fragments, though these may have been scavenged), though we note that both assemblages are very small (Holmes, this volume). The Chindadn/Nenana complex component of the West lobe at the Little John site lacks a faunal assemblage, but the East lobe paleosol complex provides evidence of the subsistence strategy practiced by bearers of the Denali complex in the southwest Yukon during the early Holocene. The faunal assemblage recovered from the East lobe paleosol complex indicates a heavy focus on large-mammal hunting, particularly bison, wapiti, and caribou, with contributions from small mammals and waterfowl. These data appear to be similar to the faunal records of other sites in the Tanana River watershed occupied during the Younger Dryas and the period immediately following this era. In CZ 3 of the Broken Mammoth site, bison are numerically dominant, followed by wapiti, with small contributions from small mammals and birds. In contrast, CZ 4 is dominated by bird bones, followed by large mammals and small mammals, a distinction possibly explained by the season of occupation (Yesner 2001). The rich faunal assemblage recovered from component 3 of the Gerstle River site, ascribed to the Denali complex, also indicates a focus on large-mammal hunting—dominated by wapiti and bison—in a timeframe similar to the dated faunal assemblage from the East lobe paleosols at the Little John site (Potter 2007).

Notwithstanding differences in faunal assemblages that may relate to seasonality, in broad terms both Chindadn/Nenana and Denali technologies appear to have been deployed in the pursuit of similar subsistence strategies in the Younger Dryas/early Holocene period in the Tanana River watershed. Although faunal evidence from Mesa complex occupations is scarce, these people were likely large-mammal hunting specialists as well (Hoffecker and Elias 2007). Seemingly, no clearcut connections between technology, time, and subsistence are forthcoming in the archaeological record of eastern Beringia in its current state of development. Finer-grained analyses of the technological organization of these technocomplexes and subsistence strategies—as demonstrated in this volume and elsewhere (for a good example, see Potter 2007)—will lead to new insights, and this is a model we will follow as we delve deeper into the emerging archaeological record of the southeast edge of eastern Beringia. Yet, in pursuing this interpretive path, we must also keep in mind cultural differences. As Dumond (2001:203) notes for the Denali and Mesa complexes, "Retrograde though it may seem, I conclude . . . that the difference between the two sets of peoples is much more one of cultural descent and affiliation—that is, of prior histories—than it is one of environment or gross features of economic adjustment, and that the two were doing essentially the same thing but with different tools derived through completely different backgrounds."

Conclusions

All told, the culture-historical patterns evident in the Nenana and Tanana valleys of interior Alaska, which provide the context for the interpretation of the early components at the Little John site, likely represent a complex suite of causes—perhaps relating to shifting economic adaptations, population movements, or technological diffusion and expressions of cultural identity—yet to be fully unraveled. In particular, separation or conflation of the regional archaeological complexes identified as Nenana, Chindadn, or Denali and their inclusion or not in an overarching archaeological tradition such as West's Beringian or Holmes's East Beringian remain vexing questions requiring more data to resolve.[7]

In an earlier publication two of us noted that the "evidence from the Little John site does not unequivocally resolve this debate, but the presence of a non-microblade assemblage bearing Chindadn points and other tools characteristic of the defined Nenana complex stratigraphically, and therefore temporally, separate from an overlying microblade bearing assemblage lends support to the notion that Nenana and Denali assemblages are separate techno-complexes, at least at this time in this place." We further stated that, in the absence of chronometric dating of this component at the Little John site, we would be remiss not "to at least entertain the possibility that the loess-level Chindadn-bearing assemblage from the West lobe of the Little John site *might* be the product of the same culture-bearers responsible for the deposition of the faunal remains and foliate bifaces found in the East lobe paleosols [i.e., at ca. 10,000–11,000 cal BP]; in such an event the Little John case takes on an additional importance" (Easton and MacKay 2008:278). Given the recent date on bison from the East lobe loess stratum below the paleosol complex at roughly 14,000 cal BP, essentially contemporaneous with the earliest stratum at Swan Point and associated with a small assemblage that includes a small flake core, flakes, and hammerstones/anvils, we would be equally remiss not to entertain the possibility that the Chindadn-bearing assemblage from the West lobe may be related to this earlier deposit. Finally, given the nature of the assemblage recovered by Holmes (this volume) from the earliest stratum at Swan Point (consisting of wedge-shaped microblade cores and blades of the Diuktai form), the assemblage from the East lobe loess stratum below the paleosols may prove to be more similar to this assemblage and unrelated to the West lobe assemblages. At this point, we simply cannot say which of these hypotheses, or an unimagined other, is the case; we look forward to further excavations in the years to come providing us with the data to resolve this question.

What we do know is that the Little John site does hold extensive cultural deposits that are related to a series of similar sites in the Tanana River watershed and quite likely represent the initial occupation of contemporary Canadian geography by late Pleistocene humanity. What we will call this culture remains to be seen; the only certainty is that Alaskan and Yukon prehistorians will spell it differently.

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Notes

1. Place and personal names transcribed in Athabaskan language follow the orthography for Upper Tanana established by the Yukon Native Language Centre, Whitehorse. They represent utterances within the Scottie Creek dialect of the Upper Tanana Athabaskan language. Both John Ritter and James Kari have assisted in the collection, transcription, and translation of these words, though any errors (and there may well be) are the responsibility of Easton.

2. In this chapter, radiocarbon dates are calibrated by INTCAL04. All samples were dated by the AMS method.

3. These data are based on preliminary artifact analysis conducted through the fall of 2007. We expect that our final published artifact distributions will change somewhat from the data presented here, taking into account subsequent field seasons.

4. See Easton and MacKay (2008) for a comparison of the Little John Chindadn and foliate bifaces with other regional manifestations of these artifact types.

5. In general, larger artifacts (n = 31) were analyzed by XRF and smaller flakes were analyzed by LA-ICP-MS (n = 74).

6. Note that these data do not include artifacts from the later Holocene components found in the B1 and O/A horizons. If we include these materials, several additional trends in material use do clearly appear (Easton 2007:79–85).

7. To say nothing, as we haven't, of Little John's relationship to the glaciated Yukon's Northern Cordilleran tradition (Clark 1983), Northwest Microblade tradition (Clark et al. 1999), or Annie Lake Complex (Hare 1995) or of the late manifestation of "teardrop-shaped" "Chimi" points found in glaciated southwest Yukon (MacNeish 1964, Workman 1978).

From the Yenisei to the Yukon

Interpreting Lithic Assemblage Variability in Late Pleistocene/Early Holocene Beringia

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