

2

THE PREHISTORY OF CHARLIE LAKE CAVE

Knut R. Fladmark

Surface finds of Paleoindian styles of projectile points, particularly Plano/Scottsbluff-like forms, have been made by farmers, amateur surface collectors, and archaeologists in several interior areas of British Columbia (e.g., Fladmark 1981). However, until 1983 none had been recovered from an excavated, dated context. Given the strategic location of this province, astride crucial portions of both proposed interior and coastal routes for early human populations moving south from Beringia (e.g., Fladmark 1983), the complete absence of any firmly dated Paleoindian occupations in British Columbia represented a troublesome gap in knowledge pertaining to the initial colonization of this continent. This situation began to change in 1983 with the excavation of the Charlie Lake Cave site in northeastern British Columbia, which yielded a small fluted point component at the base of a deep sedimentary and cultural sequence spanning about the last 10,500 years.

Charlie Lake Cave first came to my attention in the summer of 1974 in the course of directing initial heritage impact surveys of the Peace River Valley, and in 1983 I obtained Social Sciences and Humanities Research Council funding for a single short season of excavation at the site, assisted by Jon Driver and Diana Alexander as principle co-investigators. Further excavations took place at Charlie Lake Cave in 1990 and 1991. Analysis of this material is still in progress. Although more artifacts were recovered, the outline of the cultural sequence presented here has been modified in only one significant way. A microblade core was recovered from a context securely dated at about 9500 BP. The core is made on a roughly rectangular piece of tabular chert. It has a unifor-

mally flaked keel and a poorly prepared striking platform. At least six microblades had been detached from one end of the core, but none was associated with this isolated find. The core bears a superficial resemblance to some early Holocene cores from Alaska. More details and comparisons will be provided in a later paper. Charlie Lake Cave is located about 9 km northwest of the modern city of Fort St. John in the Peace River district of northeastern British Columbia. The site is barely visible today to travellers on the Alaska Highway as a small south-facing sandstone abutment near the crest of a low wooded ridge forming the southeastern margin of Charlie Lake, about 6 km north of the Peace River itself. The ridge area is currently developed as a low-density residential subdivision and the site is on private property (Figures 1 and 2).

Charlie Lake Cave itself technically meets the requirements of a true small endogenic cave, rather than rockshelter, consisting of a single main chamber penetrating about 6 m into the hill, by a maximum of about 4.5 m wide. The one entrance to the cave is so low and narrow that an adult must stoop almost to hands-and-knees to enter (Figure 3), although near the back of the inner room even a relatively tall adult can safely stand upright (Figure 4). Two bedrock-floored secondary chambers also open off the back of the main room, but are too small to have ever been appropriate for human use. The cave is developed in a vertical sandstone escarpment which outcrops discontinuously along the northeast shore of Charlie Lake, belonging to the "Dunvegan Sandstone Formation" of Cretaceous age. Because Dunvegan Sandstone is known to occasionally contain "coal

deposits," we were cautious about using unidentified carbonaceous materials from the excavations for radiocarbon dates. Consequently, all of the early dates on the site, as well as two of the later dates, were obtained on bison bone collagen.

Although the presence of the cave is a prominent local physical characteristic and the feature

which first attracted my attention to this location, the cave itself turned out to be relatively sterile of aboriginal cultural deposits. Instead, the site accumulated and preserved its long stratigraphic sequence because of a unique alignment of bedrock features located outside the cave mouth which has retained thousands of years of archaeosedimentary aggradation.

The "parapet" is the name that we applied to a large independent block of sandstone which parallels the main escarpment in front of the cave, and which has acted as a natural abutment to entrap and retain sedimentary accumulations derived from the mouth of the cave and the overlying hillside (Figure 5). The parapet and other similar sandstone outcrops seen along the hillside are large blocks detached and tilted slightly away from the main bedrock escarpment, possibly as a result of Pleistocene glacial plucking or large scale cryoclastism. The inclination of the sandstone bedding planes in the parapet generally parallel those of the main escarpment, which rules out any significant angular displacement of the parapet block, such as from the collapse of an originally much larger rockshelter-style roof overhang (Figure 6).

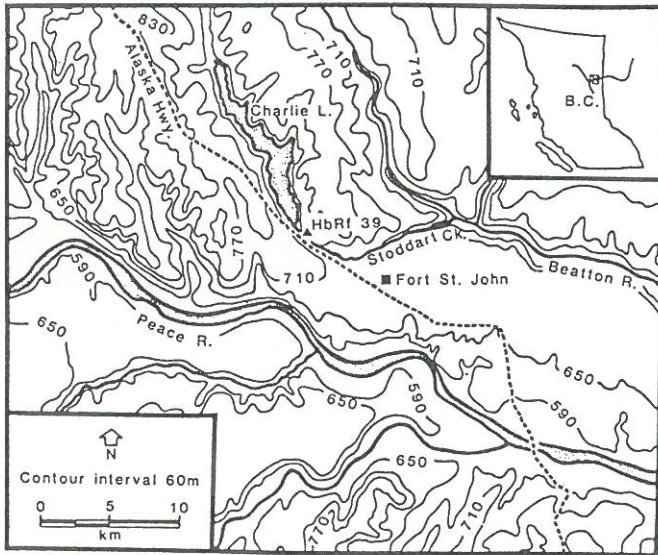


Figure 1. Location of HbRf 39.

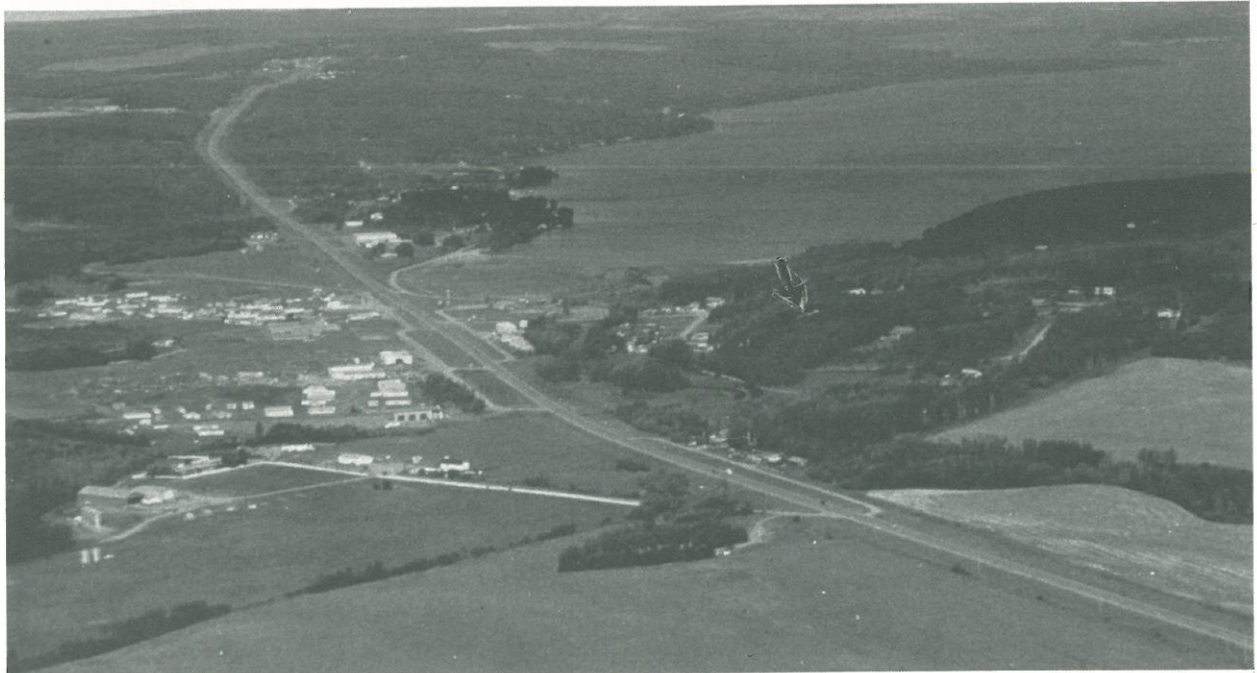


Figure 2. Aerial view of site location, indicated by the arrow, looking northwest over the Alaska Highway and Charlie Lake.

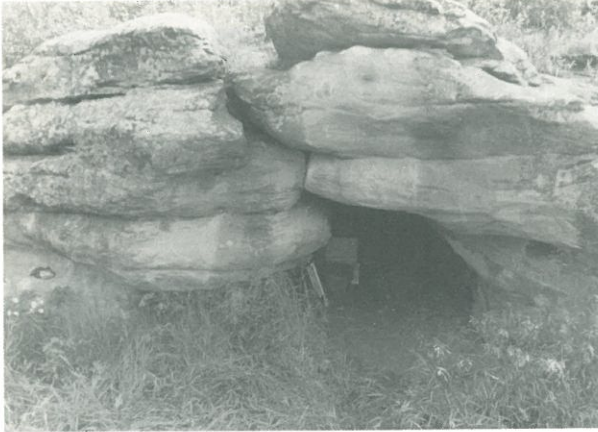


Figure 3. View of main escarpment and cave mouth before excavation.

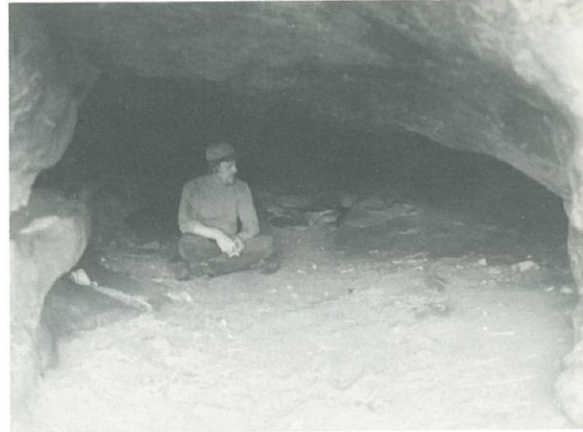


Figure 4. View into the main room of the cave. Small secondary chambers open to the right and left of Richard Gilbert.

Most of the deep bedrock crevice formed by the detachment of the parapet was probably rapidly infilled by mass-wastage and cryoclastic rubble, resulting in the coarse, resistant, and organically sterile sediments encountered in the lowest stratigraphic zone in our excavations. More than 10,000 years of gradual sedimentary accumulation in the crevice between the parapet block and the main bedrock escarpment containing the cave, created the important “platform” area, where our excavations were concentrated (Figures 5 and 6). In total, eight complete 1 by 1 m units and four partial units were excavated in the platform in 1983 to a maximum safely manageable depth, usually averaging 3 to 4 m below surface. We also placed two excavation units in the cave itself, but those proved shallow and unproductive, reaching consolidated bedrock within only 30 to 40 cm. Excavation was by trowelling, with all matrix dry-screened through 3 mm mesh.

The sedimentary sequence encountered in excavations in the platform area includes five main stratigraphic zones, labeled I to V from bottom to top, which were traceable across the entire excavation area with considerable confidence. Zone I, the basal stratigraphic unit, consists of a very resistant sandy sandstone rubble, ranging in particle-size from large boulders to clay, with a very low proportion of allochthonous or non-local rocks. It was penetrated to a maximum depth of only 40 cm in one unit in 1983 due to the difficulty of excavation, but appeared generally sterile of both faunal remains and any definite micro or macro cultural indicators. Zone I is currently interpreted as mainly coarse mass-wastage deposited during or shortly after the initial detachment

of the parapet from the main bedrock escarpment. The 1990 and 1991 project at this site penetrated through Zone I sediments reaching consolidated bedrock about 1 to 1.5 m below the bottom of the 1983 excavations, encountering no lower cultural materials. In Figure 8, which is a view of the west wall of excavation unit 5, Richard Gilbert is sitting on Zone I sediments, while pointing to the lowest cultural component in overlying Zone IIa.

Zone II lay deeper than about 2.5 m below the surface in all excavation units, and consisted of a silty-sand, with numerous sandstone bedrock fragments. Near its base was a stratigraphic sub-unit designated Zone IIa, primarily consisting of apparently reworked tills and glaciolacustrine sediments probably originally deposited on the hillside above the cave and washed into the crevice, beginning about 11,000 BP (Figure 9). A few hundred years later the first humans utilized the crevice area for butchering bison, and perhaps other short-term functions. At this time it is conceivable that a late stage of Glacial Lake Peace still occupied the adjacent plateau surface (Mathews 1978, 1980). If that was the case, then what is now the Stoddart Creek valley in front of the cave site might have been an arm of that large pondage, and speculatively a strategic animal and human crossing and meeting point.

The lowest cultural level at Charlie Lake Cave was located in stratigraphic Zone IIa, which relatively clay and rubble-rich, proved highly resistant to trowelling and had to be broken up by short-handled picks; consequently most of the early cultural materials were found in the screen. The 1983 Component 1 assemblage consists of only four stone tools and five flakes, all found near

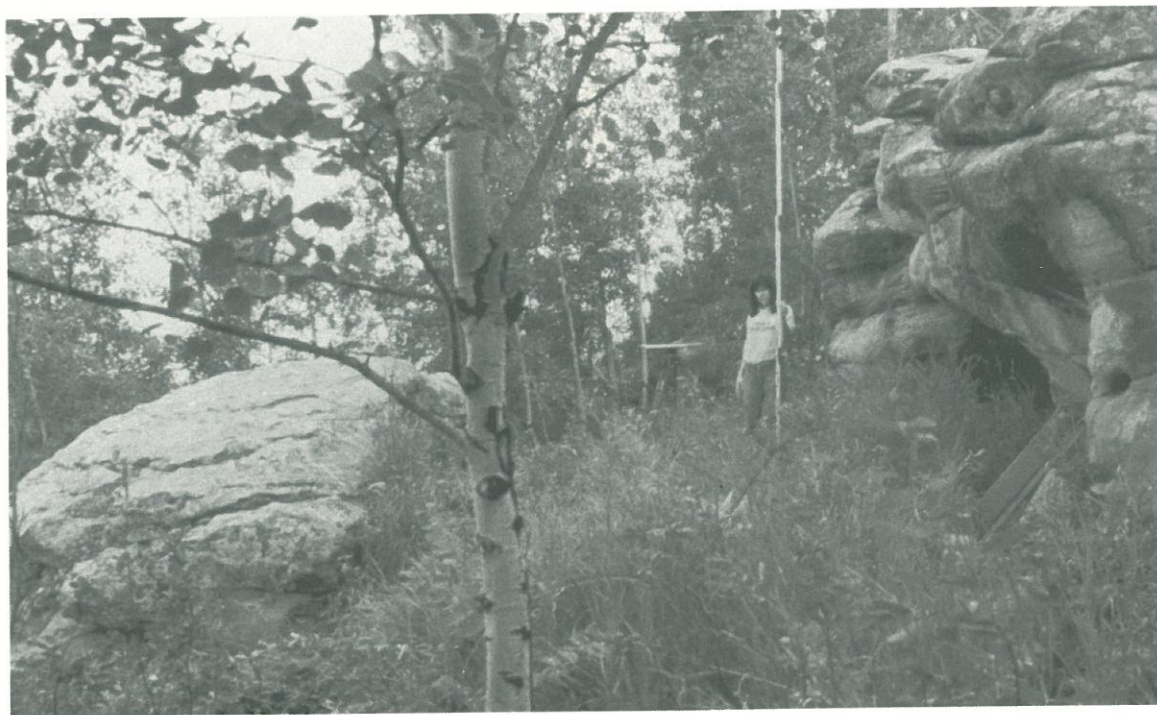


Figure 5. General view of platform area before excavation, looking northwest – the cave entrance is just to the right of Oslynn Benjamin holding the stadia rod, and the “parapet” is to the left.

the base of Zone IIa, close to the contact with Zone I. The most diagnostic artifact is a stubby, lanceolate, extensively resharpened point of black chert, weighing 6.67g and measuring 39.3 mm in length (Figure 10a). Its maximum width of 28.4 mm occurs approximately three-quarters of the distance back from the tip, while its maximum thickness of 5.6 mm is reached at the mid-point of the central axis. Hafting modification consists of a 6 mm deep V-shaped basal notch and multiple shallow basal thinning scars which terminate in hinge fractures 19 mm from the basal notch and 14 mm short of the tip on one face. Second and third generation thinning flakes overlap the first series, but carry only about 15 mm onto the point. Lateral edge-grinding of the point is slight, extending only about 13 mm up from the base on one side and 20 mm on the other, while the basal edge itself does not appear to have been ground. Overall, the point has a slightly asymmetrical form, caused by one relatively straight and one curved lateral edge, which suggests that it may have been ultimately

modified or reworked to function as a knife in its last phase of use. Preserved blood residues of an unidentified animal, were located on the point by T. Loy, then of the British Columbia Provincial Museum.

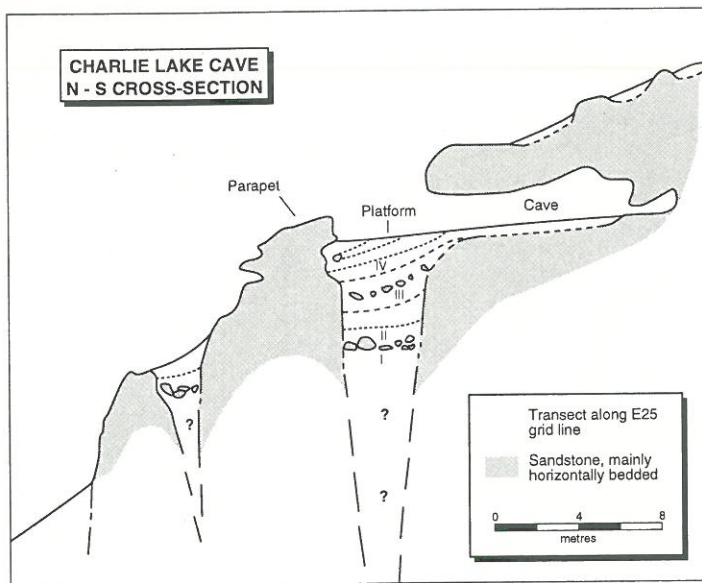


Figure 6. Generalized cross-section through Charlie Lake Cave and excavated “platform” sediments, Zones I to IV.

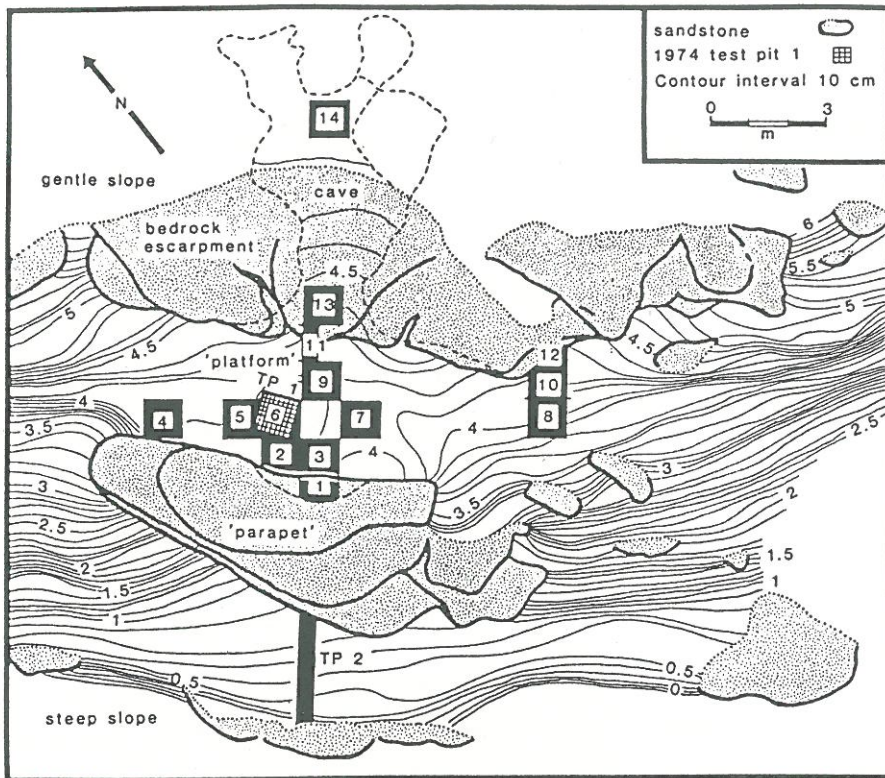


Figure 7. Local topography and location of 1983 excavation units at Charlie Lake Cave. Earlier test pit locations are indicated by "TP1."

The side-scraper or retouched flake was found in the same excavation unit and level as the point, and is a dark gray chert flake, roughly triangular in plan form, measuring 39.9 by 29.7 by 7.1 mm (Figure 10c). Both sides are formed by steep fracture edges, while the base of the triangle is retouched into a relatively straight unifacial bit with an edge-angle of about 50°. All secondary flake scars are fresh and unworn, although there is some microfracturing evident along one of the steep lateral edges.

The third flaked tool from Component 1, found approximately 2 m west of the point and scraper in the same stratigraphic zone, is a large "boat-shaped" core-tool of light yellow medium-grained quartzite, measuring 148.5 by 57.8 by 47.2 mm, and weighing 465.1 g (Figure 11). Its elongate ovate upper surface consists of a single unretouched flat flake scar, which served as the striking platform for the removal of a large series of secondary flakes around the entire rim, resulting in a streamlined, symmetrically rounded longitudinal plan and a sharply converging triangular "keeled" form in transverse cross-section.

One end of the core-tool is carefully unifacially retouched into an acute chisel-like bit, with a general edge-angle of 30° and a bit-angle of 50 to

60°, while the opposite extremity is blunted by a series of hinge fractures. This artifact has a well-worn feel, with most flake scar ridges and the ventral "keel" being smoothed and rounded, and it may have functioned as some kind of heavy duty adze-like chopping tool for butchering game or working bone and wood. No detritus or other specimens of yellow quartzite were found at the site and this piece must have been curated and brought in from some other place of origin. The core-tool is an unusual specimen, with few good parallels in other dated and published Paleoindian assemblages, to my knowledge. Four examples of similar quartzite core-tools were found in the later seasons of excavation.

The fourth artifact from Component 1 in 1983 was the most unexpected find. From the same excavation unit and level as the point and the scraper, came a single small, delicate, biconically perforated bead of soft, shiny gray-green schist (Figure 10b). Approximately pentagonal in shape, measuring 13.5 by 11.6 by 1.7 mm, the bead is basically just a thin unmodified schist pebble with a roughly conical hole drilled in each face, meeting more or less on centre. Although the faces of the bead are smooth, except for some tiny protuberant crystalline inclusions, they have not obvi-

ously been ground or polished, nor have the edges. However, the perforation is definitely artificial, and must have been drilled in from both sides and not punched or gouged. Such drilling need not have required any specialized technology in this relatively soft stone; indeed the fluted projectile point tip itself has proportions matching the taper of the bead's perforations. To my knowledge this is the first perforated stone bead positively associated with an excavated, dated, fluted point assemblage in North America, although bone beads have been reported from several Paleoindian sites. It is difficult to reconstruct the cultural activities which might readily account for an assemblage consisting of only one point, one scraper, five large core-tools, and one tiny bead, all unbroken, associated with butchered bison bones; particularly when two of those artifact types are rare or nonexistent in other published Paleoindian assemblages.

Besides the retouched stone tools and bead, the Zone IIa deposits also yielded several small black chert flakes, possibly reflecting small-scale bifacial thinning or retouching activities, in excavation units 1 to 3 m east of the fluted point and bead, plus a faunal assemblage dominated by bison bones.

Component 1 is directly associated with four radiocarbon dates on bone collagen, produced by both accelerator mass spectrometry and normal analytical methods, of $10,100 \pm 210$ (RIDDL 392); $10,380 \pm 160$ (SFU 378); $10,450 \pm 150$ (SFU 300), and $10,770 \pm 120$ BP (SFU 454), or an average age of about 10,425 BP. Two of the dated bison bones exhibit scratches which could be interpreted as deliberate cut-marks and were from the same excavation unit and level as the point, scraper, and bead, while another dated bone was in close association with the quartzite core-tool (Figure 12). Two additional radiocarbon dates of 9990 ± 150 (RIDDL 393) and 9760 ± 160 (SFU 355) were also obtained from just above the stratigraphic interface between Zones IIa and IIb.

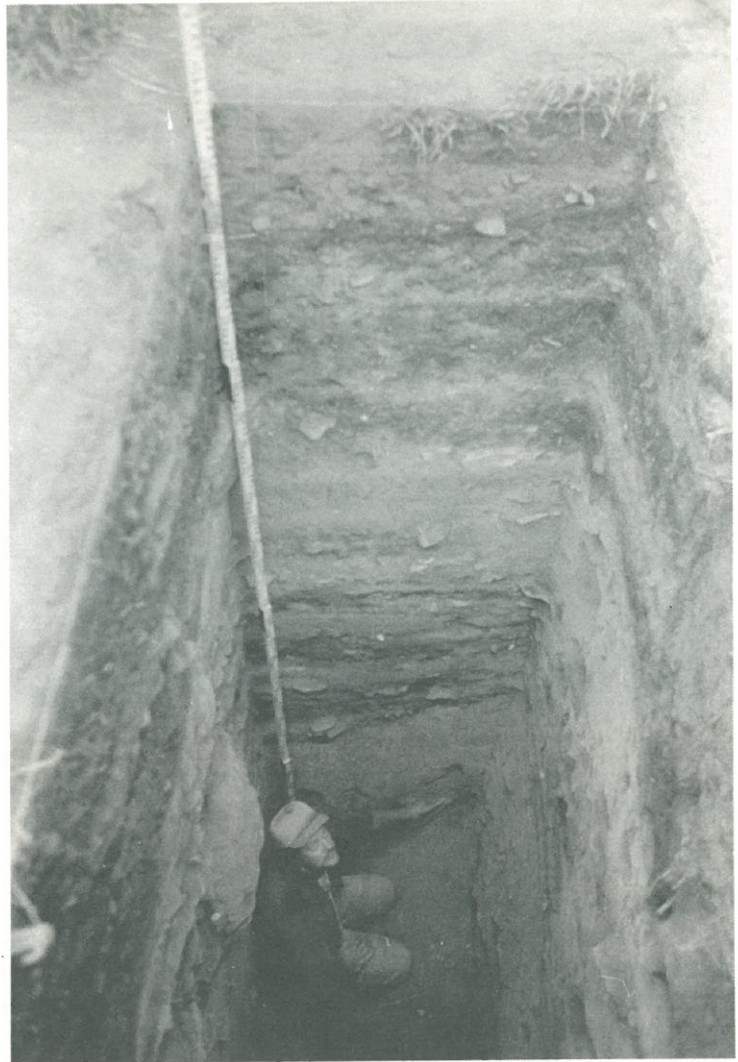


Figure 8. View into excavation Unit 5, complete. Gilbert points to the location of the lowest cultural component. The rod is 4 m long. This is also the same N.21-22, E.22 section drawn in Figure 13.

Zone IIb, overlying the earliest occupation, was characterized by continuous active weathering of the sandstone and deposition of its sedimentary products in the crevice. Unfortunately, Zone IIb itself yielded no modified artifacts and its associated Component 2 consists of only eighty-one black chert detrital flakes. Artifact descriptions for Components 2 to 11 are based on the 1983 excavations only.

In stratigraphic Zone III, which began deposition about 8500-9000 BP, organic matter began to become a visually significant component in the crevice fill, with thin richly humic beds interca-

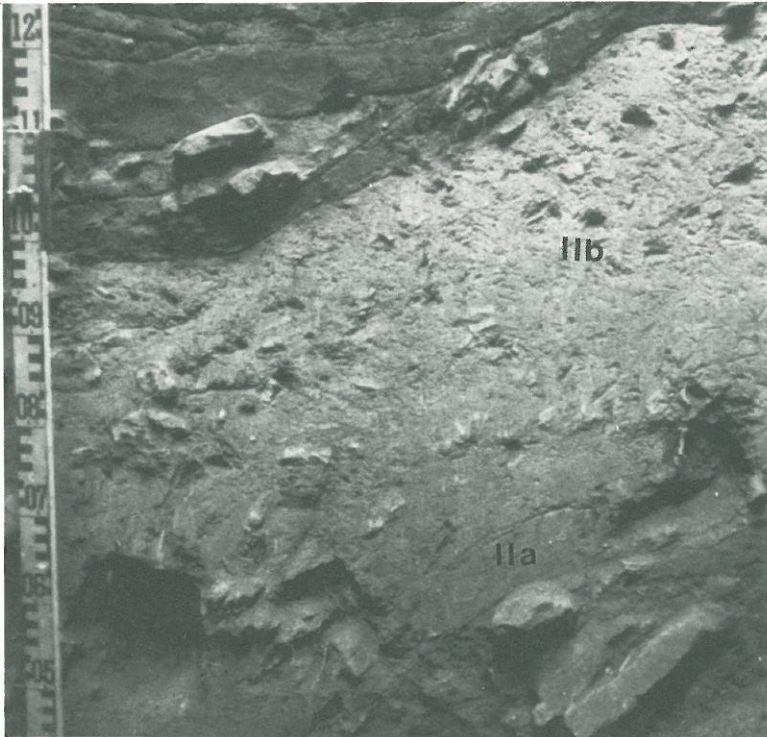


Figure 9. Close-up of Zone IIa and IIb sediments at the base of the N.21-22, E.22 section shown in Figures 8 and 13.

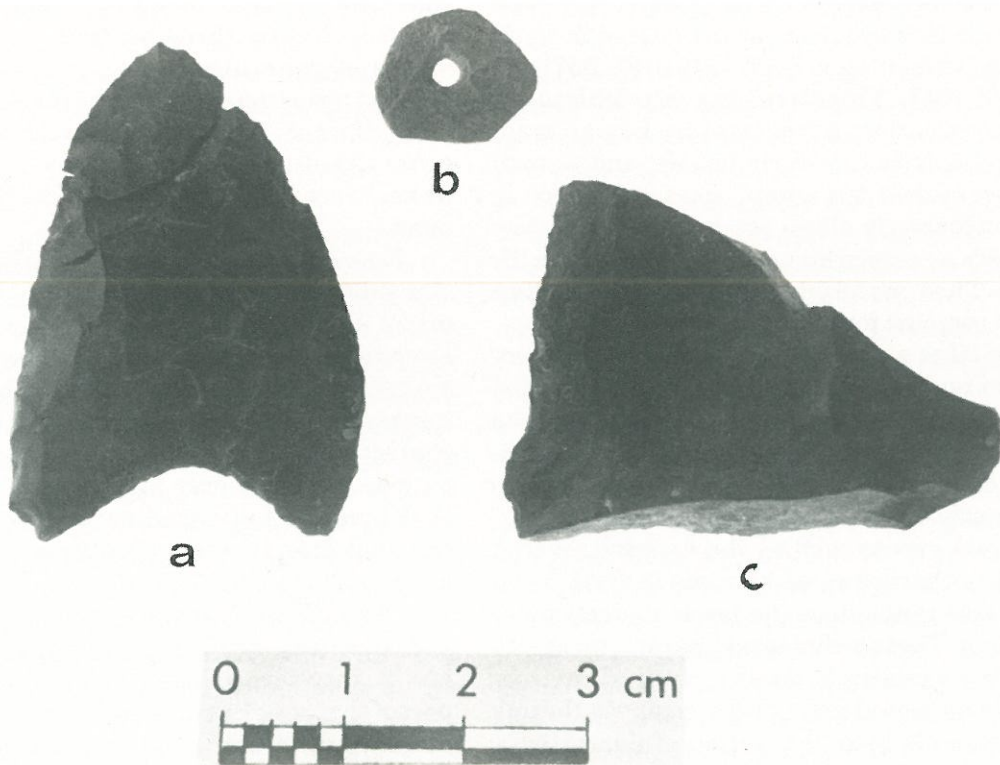


Figure 10. Photograph of three of the Component 1 artifacts: (a) fluted point, (b) bead, and (c) retouched flake.

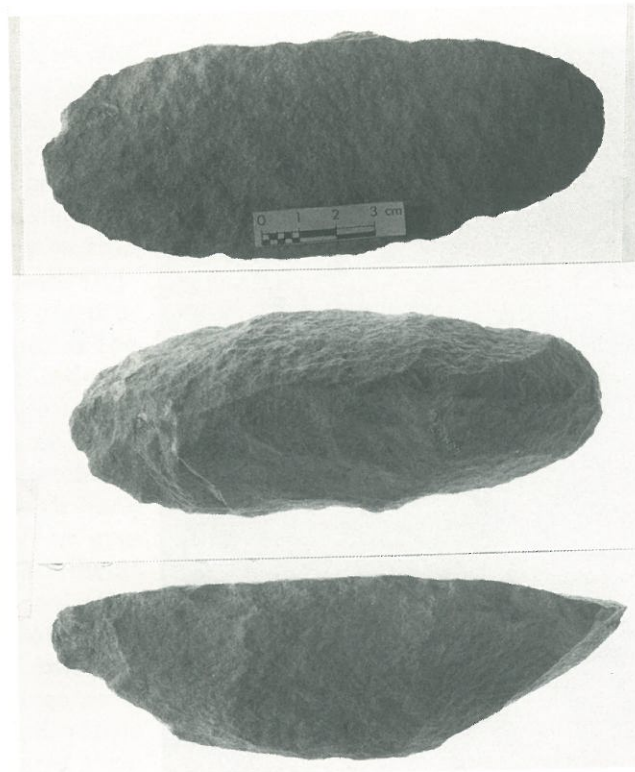


Figure 11. Photographs of three views of the large quartzite core-tool from Component 1.

lating with mineral strata at the toes of fans against the north side of the parapet. A major fall of large sandstone slabs near the base of Zone III associated with dates of 8400 ± 240 (SFU 357) and 7800 ± 800 (SFU 370) correlates with a hiatus in cultural occupation. A fragmentary human mandible, probably of an elderly female, and a small collection of detritus comprises Component 3, found immediately above the rock-fall and associated with an accelerator date of 7400 ± 300 (RID-DL 10). That mandible was the only human physical remains found at the site.

Zone III is a complex stratigraphic unit consisting of multiple, thin, intricately interbedded alternating mineral and organic bands, grouped into stratigraphic subzones labeled a to e from bottom to top (Figure 13). The upper levels of Zone III are marked by distinctive reddish silty sands, and despite events such as the rock-fall, overall Zone III is characterized by a much finer mean particle size range than the levels underlying or overlying it. These sedimentary parameters probably reflect a relatively passive physical environment and increased rates of chemical weathering at this time. Indeed, deposition of Zone III between about 8500 and 4500 BP (± 200 years), correlates well with the classic Hypsithermal climatic period.

In the upper parts of Zone III were found the small cultural assemblages of Components 3, 4, 5, and 6 including three medium-sized projectile points of generalized side-notched or corner-notched forms: one definite chert microblade fragment (the only microblade from the site), and two generalized leaf-shaped bifaces. A total of 159 flakes were also associated with these components.

Zone IV is a highly organic, dark pebbly sand, characteristic of the upper 1.0 to 1.3 m of sediments across the entire platform excavation area. Despite its obvious organic accumulation, which suggests that biotic factors had by this time overtaken rates of mineral sedimentation, Zone IV is characterized by a relatively coarse mean particle size, matched only by the much earlier Zone II sediments. Associated radiocarbon dates indicate that Zone IV was probably deposited between about 4200 and 1400 BP.

Component 7 in the lower part of Zone IV yielded two relatively large corner-notched points and twenty-seven flakes, followed in the middle part of that zone by two small stemmed points, one larger "Oxbow-like" point and 164 flakes in Component 8. Component 9 in the upper part of Zone IV yielded one relatively large expanding stem point and another 182 flakes.

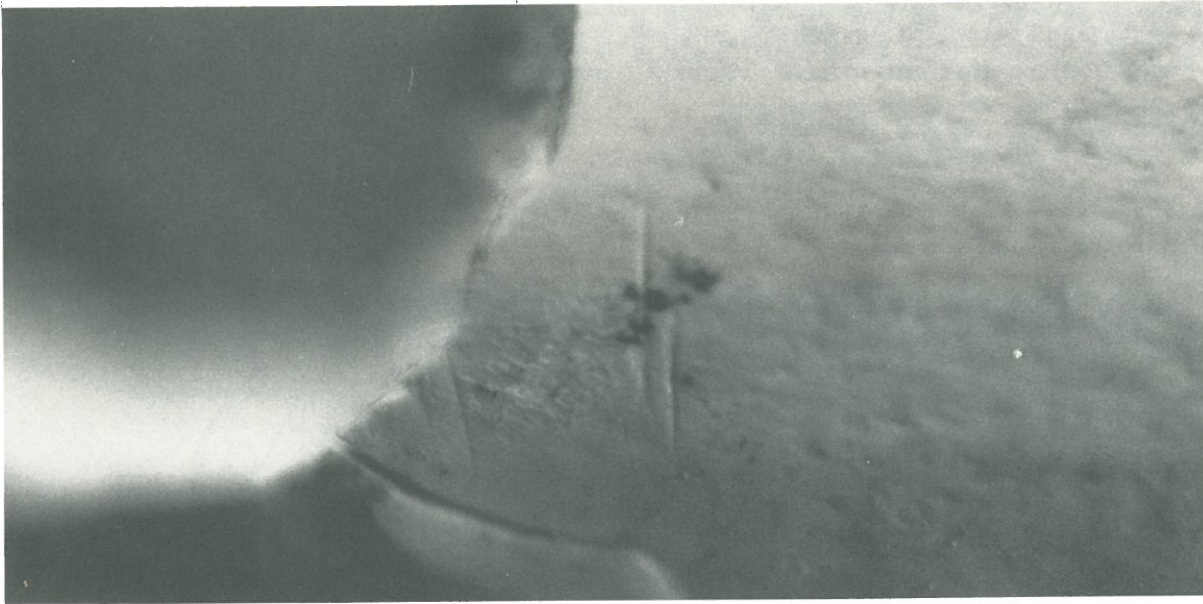


Figure 12. Close-up view of presumed butchering marks on a bison long-bone fragment from stratigraphic Zone IIa. The longest cut-mark is about 1.5 cm.

Zone V at the top of the stratigraphic section consists of a thin buried pedogenic Ah horizon traceable across most of the platform excavation area, capped by about 30 to 40 cm of dark organic silty sand, containing both prehistoric and historic cultural materials. Artifacts found in Components 10 and 11 in this zone include three small side-notched points, the base of another small expanding stem point, sixty-eight flakes, and assorted recent historic materials. No radiocarbon dates are associated with this zone.

In total, ten later cultural components were found stratigraphically in sequence above Zone IIa and the earliest occupation, supported by a further twelve radiocarbon dates (Figure 13). These components generally consist of small assemblages of flaked stone tools, including occasional projectile points and retouched flakes, all roughly similar in overall content and degree of diversity to the earliest occupation.

The repeated pattern through time of relatively meagre anthropogenic sedimentary inputs, despite a small, constricted and focused area for human occupation and cultural imprinting, suggests that this site was never seriously utilized as a general purpose habitation area. It is probable that throughout its entire ca. 10,500 years of use by aboriginal people it mainly periodically functioned as a short-term campsite and work area, associated with local resource exploitation activities such as bison hunting.

As noted previously (Fladmark, Driver, and Alexander 1988:383), direct cultural relationships for the small Paleoindian assemblage from Charlie Lake Cave are difficult to pin down with certainty. The few other excavated fluted-point sites so far known in Canada date to the same 10,000 – 10,500 BP time period (e.g., Gryba 1983, MacDonald 1969). Like Charlie Lake Cave, their points tend to be relatively small, multiple, basally-thinned forms, unlike the extensively fluted points of the contemporary Folsom complex, or the larger styles of the 11,000 – 11,500 BP “classic” Clovis complex, both best defined in the central and western United States. Given the well-established age of the American Clovis complex, the Charlie Lake Cave Paleoindian assemblage is clearly 500 to 1000 years too late to have been left by any early “proto-Clovis pioneers” penetrating southwards from Beringia via the ice-free corridor. Of course, this picture could quickly change with the future dating of new fluted point sites in this area. However, on the basis of present information, the early assemblage from Charlie Lake Cave seems best interpreted as a late variation in a “fluted point continuum” with its earliest manifestations located south of the Wisconsin glacial limits in what is now the United States. Thus, the oldest cultural component at Charlie Lake Cave site was probably left by Paleoindians filtering *northwards* into west-central Canada after the retreat of the Laurentide ice-front and the devel-

opment of a productive environmental regime about 10,000 to 11,000 years ago. After that earliest occupation, the site seems to have continued

to be used in much the same way, as a periodic hunting and processing camp for small groups of people, up until the historic period.

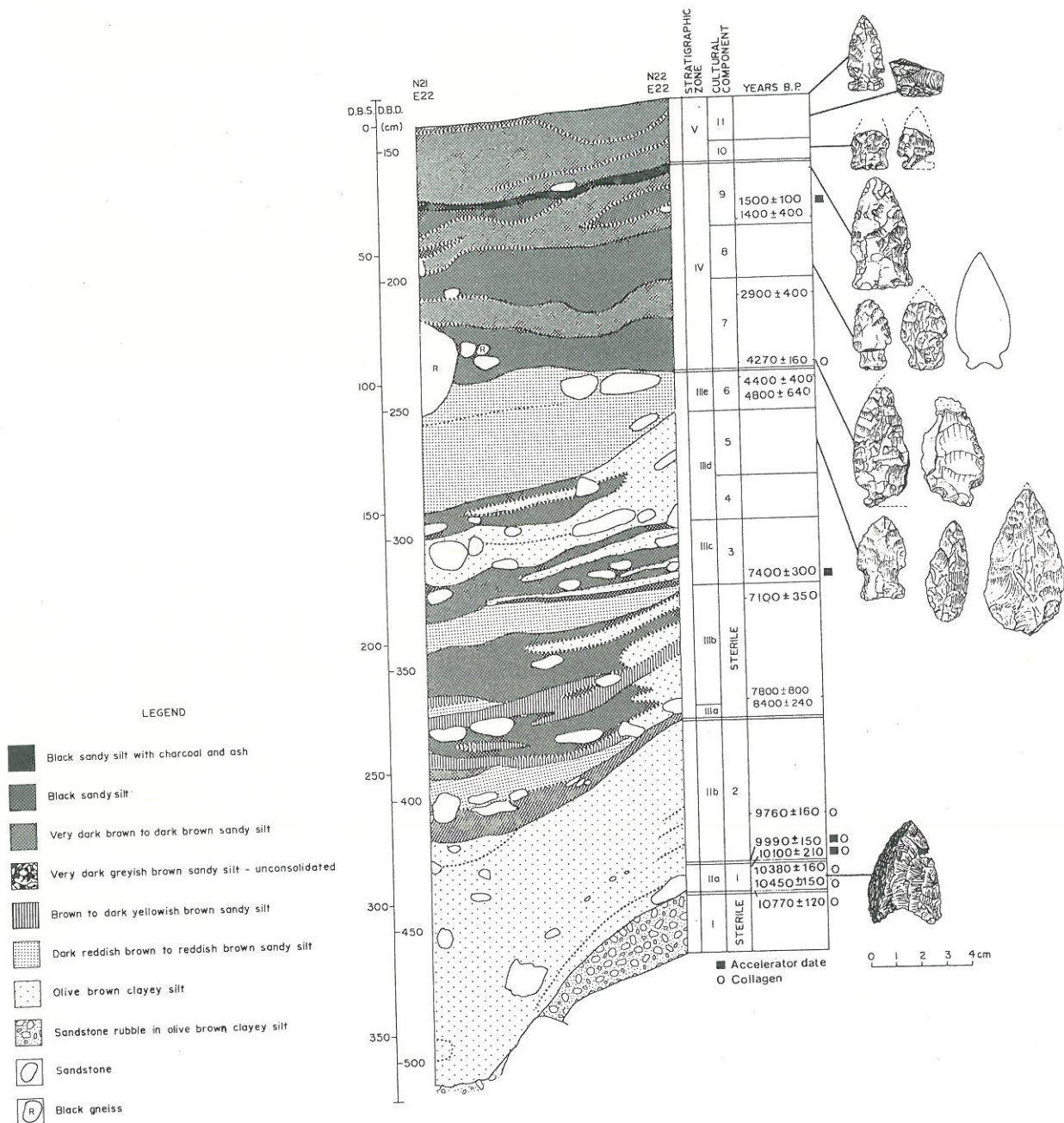


Figure 13. A typical vertical section north-south through the platform excavation area (N. 21-22, E. 22) showing the stratigraphic association of radiocarbon dates and projectile points from the 1983 excavations.