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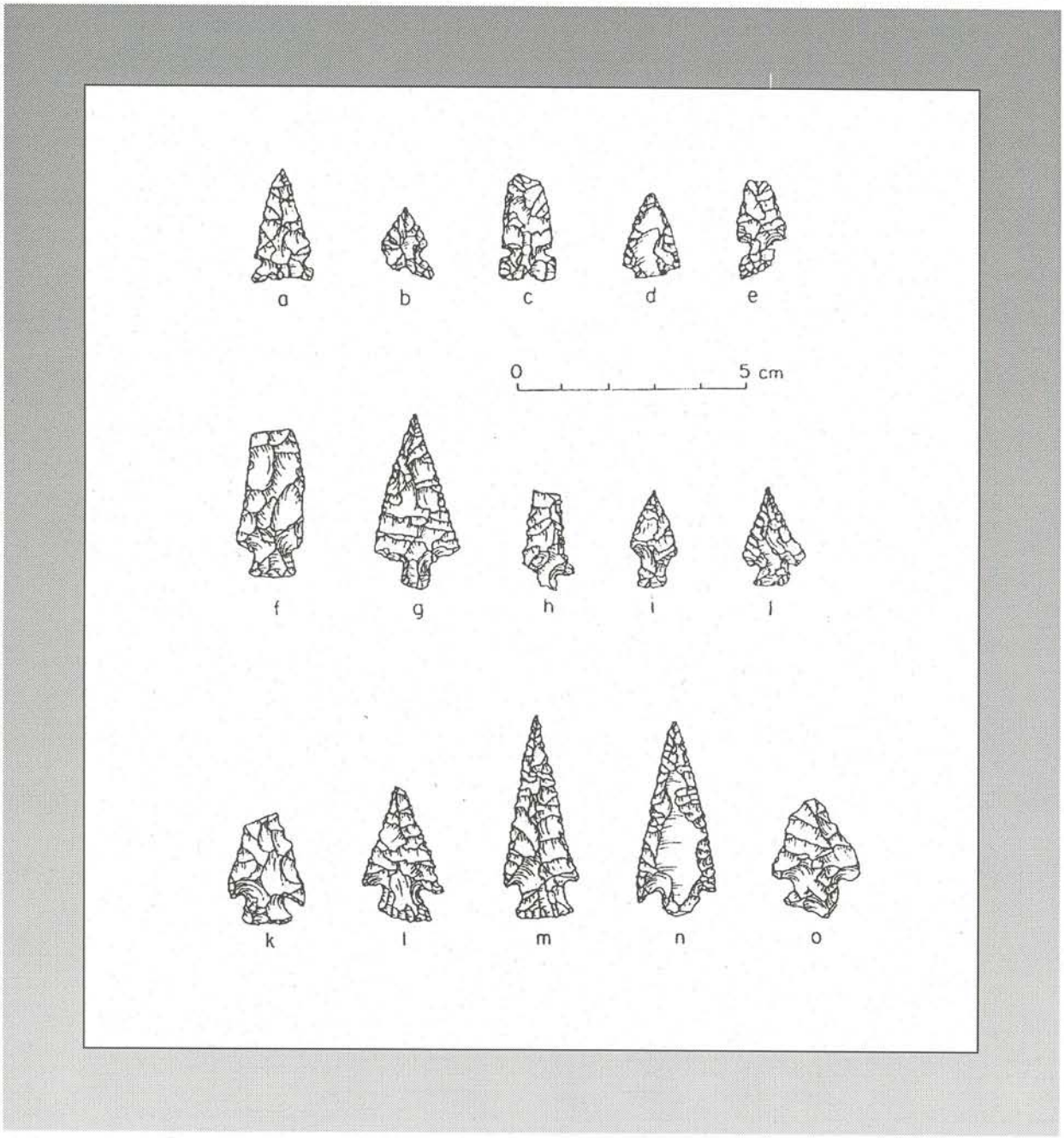

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Cover Photo: Projectile points from *Kam'-nak-ka*: a-e, Side-Notched Points; f-i, Stemmed Points; j-o, Corner-Notched Points.

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University of Idaho

INTRODUCTION

The Project

Kooskia National Fish Hatchery (KNFH) occupies approximately 120 acres of land at the confluence of Clear Creek with the Middle Fork of the Clearwater River just east of the town of Kooskia in north central Idaho (Figures 1, 2). The hatchery is well within the traditional territory of the Nez Perce Indians and is also within the boundaries of the present Nez Perce Indian Reservation. KNFH was constructed by the U. S. Fish & Wildlife Service (USFWS) in 1969 to help rebuild failing salmon populations. Although the Nez Perce site of Looking Glass' Village or *Kam'-nak-ka* was located in this vicinity and it had been so designated with a historic marker in 1928, no archaeological investigations were conducted prior to construction. Based on ethnographic information (Shawley 1977, 1984), the first site (10-IH-820) was recorded at KNFH in 1978; shortly afterwards, several historic sites were recorded in the area based on interviews with local informants (Stapp and others 1978). However, no professional on-the-ground investigations were conducted at KNFH until the emplacement of a 1600 ft. (488 m) effluent pipeline in late 1992 unearthed extensive cultural materials.

After a Nez Perce tribal member reported the disturbance in December 1992 all construction was halted and an archaeological crew of University of Idaho (UI) personnel and Nez Perce tribal members, led by the first author, undertook investigations in spring 1993 to determine the extent of the damage to the site. With funds provided by the USFWS, twelve 1 x 1 m test units and 128 auger holes were excavated in proximity to the pipeline route. For convenience, all excavation unit and auger hole designations were sequentially numbered; similarly, we divided the property into two parts so that Area 1 refers to the portion of the hatchery south of Clear Creek Road where most of the infrastructure is located, while Area 2 refers to the portion of the hatchery north of the road and in the vicinity of the former mill pond. Intensive survey of the remainder of KNFH property resulted in the recordation of two additional sites (10-IH-2213 and 10-IH-2214) on the surrounding uplands at some distance from the main facilities.

Due to the significance of the site as well as the need to complete the pipeline as soon as possible, plans were developed to conduct data recovery excavations. The USFWS grant to UI included four general research questions which can be summarized as:

1) What is the chronology of aboriginal land use at KNFH? The antiquity, intensity, and frequency of occupation can be addressed by documentation and analysis of cultural debris abundance and location, radiocarbon determinations, and typological cross-dating.

2) What is the archaeological "signature" of different chronological or functional components? How does the historic/ethnographic Nez Perce occupation compare and contrast with the previous prehistoric occupation?

3) What is the interplay between upland versus riverine food resources at the site? Does the relative importance of one or the other fluctuate over time? What factors of settlement organization might account for any variability?

4) What kind of settlement is represented at 10-IH-820? How does it fit with current reconstructions of prehistoric settlement archaeology and ethnographic Nez Perce information (Sappington with others 1997:1-5)?

Data recovery excavations were conducted from July to October 1993 and an additional eleven 2 x 2 m and three 1 x 2 m units were excavated to aid in future hatchery maintenance endeavors (Sappington with others 1997).

Despite the results of our investigations, cultural resources were disturbed on several subsequent occasions as various pipes and electrical lines were repaired. The ongoing disturbance created the need for a cultural resource management plan and efforts for such a plan were initiated in 1997 through the cooperation of the USFWS, the UI, the Nez Perce Tribe Cultural Resource Program, and the Idaho State Historic Preservation Office. To satisfy the present and future needs of the USFWS, auger

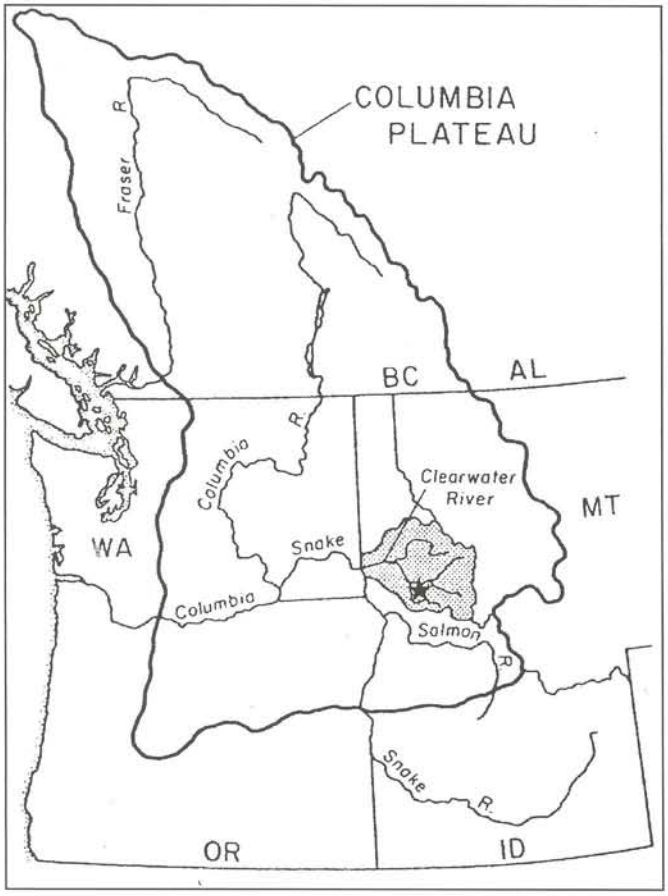

Figure 1. The Columbia Plateau Cultural Area with the Clearwater River Region indicated by the stippling. The location of the Kooskia National Fish Hatchery site (*Kam'-nak-ka*) is indicated by the star (adapted from Sappington 1994: Figure 2.1).

hole lines were to be placed in proximity to nearly every infrastructural element of the hatchery, i.e., sprinkler, well, and electrical lines and these elements were prioritized, assigned line numbers, and tested with auger probes. Nine 1 x 1 m units and 276 auger holes were excavated in 1997 under the direction of the second author. Field and lab methods generally followed those used in 1993 although some modifications occurred, as discussed below. Designations for test units (27-34), auger holes (AH 129-404), and features (11-15) were continued from 1993 to 1997. The funding was provided to address three research issues:

1) Where are the cultural deposits at KNFH? Acres of lawn, vegetation, buildings, and roads make it impossible to understand the subsurface deposits. Virtually any sort of disturbance exposes cultural resources. The project thus would systematically inventory the 120-acre property to determine the horizontal distribution of the cultural deposits.

2) What kinds of artifacts and cultural deposits are present at KNFH? The project was designed to recover and analyze materials from a larger area that should differ from materials encountered in the limited vicinity of the 1993 pipeline route.

3) Which cultural resources are significant? While cultural materials were frequent, some were from disturbed contexts. The project would determine which areas of the hatchery were intact and likely to contribute to national cultural heritage and which areas had been disturbed to the point of no longer being potentially significant (Evans-Janke 1998:7).

The following article summarizes the results of the 1993 and 1997 investigations.

The Natural Environment

The Clearwater River region has long supported a diverse population of fish, mammals, and birds and many of these resources were historically utilized by the Nez Perce people. Fish, most of which were anadromous species, provided up to 50% of their traditional diet with the remainder of the diet consisting of 30% to 40% plants and 10% to 20% game (Anastasio 1972:122, Marshall 1977; Walker 1967:9). Those fish used most often were chinook (*Oncorhynchus tshawytscha*), sturgeon (*Acipenser transmontanus*), Dolly Varden or bull trout (*Salvelinus confluentus*), lamprey "eel" (*Lampetra tridentata*), and steelhead trout (*Oncorhynchus mykiss*). Other species include sucker (*Catostomus* sp.), whitefish (*Prosopium williamsoni*), cutthroat (*Oncorhynchus clarki*), Northern pikeminnow or squawfish (*Ptychocheilus oregonensis*), and fresh water clams or mussels (Draper with Olson 1993:2-9; Landeen and Pinkham 1999; Marshall 1977:39-43; Sappington with others 1997:8; USDA Forest Service 1978:59; Walker 1978:72).

Medium to large game mammals in the region include elk (*Cervus elaphus*), mule deer (*Odocoileus hemionus*), white-tailed deer (*Odocoileus virginianus*), bighorn sheep (*Ovis canadensis*), mountain goat (*Oreamnos americanus*), grizzly bear (*Ursus arctos*), and black bear (*Ursus americanus*). Other fur-bearing mammals include the hoary marmot (*Marmota caligata*), bobcat (*Lynx rufus*), raccoon (*Procyon lotor*), mountain lion (*Felis concolor*), coyote (*Canis latrans*), badger (*Taxidea taxus*), marten (*Martes americana*), gray-tailed or yellow pine chipmunk (*Eutamias amoenus luteiventris*), common pika (*Ochotona princeps*), common meadow mouse (*Microtus agrestis* and *M. montanus*), northern pocket gopher (*Thomomys talpoides*), and Kootenai jumping mouse (*Zapus princeps kootenayensis*) (Davis 1939:206-379; Larrison and Johnson 1981:32-122; Sappington and Carley 1987:15; Sappington 1988:6).

Avian species include Grinnell mountain chickadee (*Parus gambeli grinnelli*), Merrill song sparrow (*Melodspiza semodia merrilli*), western winter wren (*Troglydytes troglydytes*), chestnut-backed chickadee (*Parus rufescens*), Vaux's swift (*Chaetura vauxi*), Bohemian waxwing (*Bombycilla garrula*), mountain quail (*Oreortyx picta*), ruffed grouse (*Bonasa umbellus*), blue grouse (*Dendragapus obscurus*), and sharp-tailed grouse (*Tympanuchus phasianellus*). Within the region, falconiformes are often seen and include golden eagles (*Aquila chrysaetos*), osprey (*Pandion haliaetus*), bald eagles (*Haliaeetus leucocephalus*), and numerous hawks and owls. Waterfowl in the region include ducks (*Anas* sp., *Aythya* sp., and *Oxyura* sp.) and Canadian geese (*Branta canadensis*) (Draper with Olson 1993:2.12;

Sappington with others 1991:7, 1997:8; Sappington and Carley 1989:6; USDA Forest Service 1978:19-21).

Vegetation is highly diverse in the Kooskia area due to the intermixing of coastal species with those of the Plains and the Rocky Mountains. Plants common to this region include white pine (*Pinus monticola*), ponderosa pine (*Pinus ponderosa*), western red cedar (*Thuja plicata*), grand fir (*Abies grandis*), western hemlock (*Tsuga heterophylla*), Engelmann spruce (*Picea englemanni*), western larch (*Larix occidentalis*), white alder (*Alnus rhombifolia*), black cottonwood (*Populus trichocarpa*), and alpine fir (*Abies lasiocarpa*). Berry-producing plants are abundant and include huckleberry (*Vaccinium globulare*), salmonberry (*Rubus spectabilis*), blueberry (*Vaccinium membranaceum*), serviceberry (*Amalanchier* sp.), black hawthorn (*Crataegus douglasii*), smooth sumac (*Rhus glabra*), woods rose (*Rosa woodsii*), and blue elderberry (*Sambucus cerulea*). Forbs include tumblemustard (*Sisymbrium altissimum*), black medic (*Medicago lupulina*), sheep sorrel (*Penstemon* sp., *Lomatium* sp., and *Plantago* sp.), and prickly lettuce (*Lactuca serriola*). Grasses vary but are dominated by the introduced species of cheatgrass (*Bromus tectorum*), Kentucky bluegrass (*Poa pratensis*), and bulbous wheatgrass (*Poa bulbosa*) (Davis 1952:63-391; Marshall 1977:28-32; Sappington 1991:6, 1996:7; Sappington and Carley 1987:14; Walker 1978:71).

The Cultural Environment

Traditional Nez Perce country extended across some 27,000 mi.^{2} (70,000 km^2) although the Nez Perce people regularly traveled over approximately 230,000 mi.^{2} (ca. 600,000 km^2). Nez Perce territory stretched from the Powder River and Blue Mountains in Oregon to the Tucannon River in Washington and to the Bitterroot Range in Idaho (Curtis 1911:3; Duke and Wilson 1994:63; Marshall 1977:12; Spinden 1908:171; Walker 1967:1). Nez Perce traditions place their settlements from the Clearwater Mountains of north central Idaho to just slightly beyond Hamilton, Montana, to the east, to the headwaters of the Salmon River to the south, and to the middle and lower Snake River regions to the south (Sappington and others 1995:208; Schlesier 1994:316).

The first archaeological research in the Clearwater River region was conducted by anthropologist Alice Fletcher as she implemented the Dawes Severalty Act for the Nez Perce in order to divide their communal land into allotments (Gay 1981). Beginning in 1889 and during the next three years she recorded many Nez Perce activities as well as the locations of old village sites and resource gathering centers. Among the villages she documented was *Kam'-nak-ka* which was located at the confluence of Clear Creek with the Middle Fork of the Clearwater River (Sappington and others 1995:208).

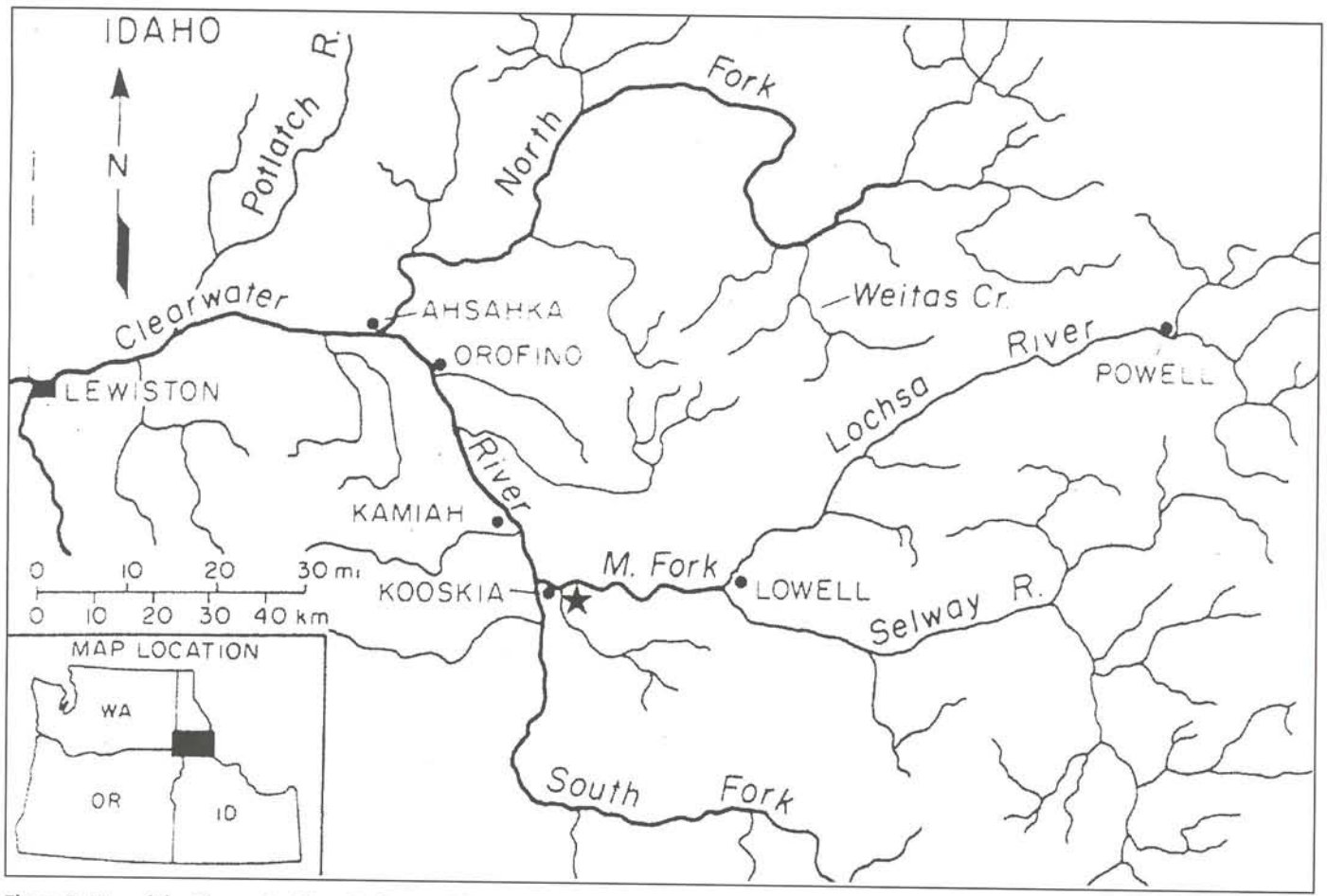

Figure 2. Map of the Clearwater River Drainage with contemporary landmarks. The location of the Kooskia National Fish Hatchery site (*Kam'-nak-ka*) is indicated by the star (adapted from Sappington 1994:Figure 2.2).

The first archaeological investigation at *Kam'-nak-ka* occurred nearly 90 years later. Based on an inventory of Nez Perce trails and associated sites (Shawley 1977, 1984), *Kam'-nak-ka* was recorded as 10-IH-820 although no actual field work was conducted. Following interviews and a survey of portions of the Clearwater River drainage in 1978, two additional sites were noted on KNFH property including potential site ID-349 and the historic Twin Feathers log mill (10-IH-987) (Stapp and others 1978:15, 20, 66). Based on our work, ID-349 was subsumed within the boundaries of 10-IH-820 (Evans-Janke 1998:95) while 10-IH-987 was determined to have been destroyed.

The Cultural Sequence

The date of the initial settlement of the Clearwater River region is unknown but there is limited evidence for a possible Clovis presence and early prehistoric Windust and Cascade phase (ca. 11,000-8000 B.P. and 8000-4500 B.P., respectively) occupations have been encountered at numerous sites (Sappington 1994). However, in the Kooskia area the earliest evidence of human occupation begins with the Hatwai phase.

The Hatwai Phase (ca. 6000 to 3000 B.P.)

A warming trend is often cited for an emphasis on hunting during this period. Economic fauna included deer, bison, bear, elk, pronghorn, mountain sheep, lynx, and coyote. Artifacts typical of the Hatwai phase include leister barbs, gorges, net sinkers, edge-ground cobbles, mortars and pestles, as well as a wide variety of projectile points. This phase is also noted for a concentration of the population into fewer sites. An important aspect of settlement during this phase was the gradual adoption of sedentism in housepit villages. The earliest known housepit in the region was located at the Hatwai site and dated ca. 5900 B.P. (Ames and others 1981; Sappington 1994:186-187).

The Ahsahka Phase (ca. 3000-500 B.P.)

Many aspects of the traditional Nez Perce lifestyle are thought to have developed during this period and sites are numerous. While economic fauna remained much the same as before, an intensification of riverine and plant resources developed into the ethnographic salmon, kouse, bitterroot, and camas subsistence cycle. Hunting technology shifted dramatically from atlatls to bow and arrows. These subsistence practices are reflected in artifact assemblages and they broadened during this phase to include net sinkers, hammerstones, hopper mortar bases, pestles, and spall tools. Projectile points include corner-notched, side-notched, basal-notched, and stemmed styles. Perishable artifacts include antler wedges and bone implements (Draper with Olson 1993:6.2; Leonhardy and Rice 1970:11; Sappington 1994:323-330; Sappington with others 1988:8, 1990:10; Waldbauer and others 1981:11).

The Kooskia Phase and the Historic Period (ca. 500 B.P. to Post - A. D. 1877)

Nez Perce culture flourished during the protohistoric Kooskia phase (ca. 500-200 B.P.) and major cultural changes accelerated with the acquisition of horses in the 1730s. The increased mobility expanded trade networks and social contacts but also led to the disastrous spread of introduced diseases that are believed to have decimated approximately 33-50% of the population. Utilitarian objects are very similar to those of previous periods with ornamental and decorative elements reaching their height of popularity. Beaded items and quill-ornamented clothing and horse accoutrements were common (Leonhardy and Rice 1970:20; Sappington and others 1988:8; 1990:10; 1994:333-336; Waldbauer and others 1981:12).

The historic period was initiated by the Lewis and Clark expedition in 1805 and it was soon followed by a succession of fur traders, missionaries, miners, and others. As more and more Euroamericans entered the Plateau, the Nez Perce were subjected to increasing pressure from the U. S. Government and they agreed to a reservation in 1855. This reservation covered most of their traditional territory across southeastern Washington, northeastern Oregon, and north central Idaho.

After 1855 there were two factions within the tribe, the treaty and the non-treaty members. The growing schism elevated tensions and the U. S. government exploited its influence over the leaders of the treaty faction to negotiate concessions in 1863 and again in 1868 that substantially reduced the reservation (Curtis 1911:1; Gay 1981:97; McBeth 1908:117; Wilfong 1990:360).

In a meeting held on 3 May 1877, U. S. Army General O. O. Howard gave the final order for all non-treaty Nez Perce to move onto the reservation at Lapwai. During the course of the meeting, Joseph, Looking Glass, White Bird, and the other non-treaty band leaders agreed to move away from their traditional territories and onto the reservation where the treaty bands were already located. By mid-May 1877 Joseph had chosen land near Lapwai while Looking Glass had selected an area at either *Kam'-nak-ka* or *Tukupe* and was preparing to bring his people there (Curtis 1911:24; Howard and McGrath 1946:120). Although the exact location has been variously reported (Hampton 1994:91-94; Howard and McGrath 1946:135; McDermott 1978:124-125; Spinden 1908:179-180; Tchakmakian 1976:66-67), *Kam'-nak-ka* along Clear Creek is most commonly recognized by the Nez Perce and the academic community as the place chosen by Looking Glass (Wilfong 1990:121). With a view toward impending hostilities, Looking Glass had selected this site in order to demonstrate his neutrality (Wilfong 1990:122). Peacefully settled at *Kam'-nak-ka*, Looking Glass and his band of 40 warriors plus 120 women and children sought to avoid the war. However, since he had not signed the 1863 Treaty, Looking Glass was distrusted by General Howard.

In a move that would have severe repercussions, Howard sent U.S. Army Captain Stephen Whipple and a company of cavalry plus approximately 20 civilian volunteers to arrest Looking Glass and move his band to Mt.

Idaho (Hampton 1994:91). On the morning of 1 July 1877, Whipple and his troops suddenly appeared at the village. In response, Looking Glass sent *Peopeo Tholekt* to tell Whipple that they were peaceful and to not bring violence to his band. While Whipple and *Peopeo Tholekt* were conversing, a volunteer fired shots into the village and chaos instantly erupted. The Nez Perce fled and their camp was quickly ransacked and partially burned before they counterattacked and forced the soldiers and volunteers to retreat, although they managed to take some 700 Nez Perce horses with them. Though reports vary, it is believed that at least three Nez Perce died in this confrontation. In reaction to the attack, the band regrouped and joined Joseph in the war where Looking Glass would be one of the most effective leaders until his death at the Bear Paw battle in Montana in October 1877 (Hampton 1994:91-94; McDermott 1978:124-125; Tchakmakian 1976:66-67; Wilfong 1990:122-125). It would be many years before the survivors of the Looking Glass band would be able to return to the Kamiah-Kooskia area.

THE HISTORIC COMPONENT

Discussion

Historic artifacts (n=1059) were recovered throughout our investigations. The majority were recovered from the upper 20 cm of the site with the exception of two test units where construction disturbance had been substantial. The material ranges in age from the time of Looking Glass' village to more recent activities associated with operation of the mill and hatchery. All historic material was classified into six functional groups following a system developed by Roderick Sprague (1981). In general, the collection was highly fragmented and few items retained makers' or other marks so analysis was limited.

Container items (n=576) were most frequent and included fragments of vessel glass, metal cans, and can closures. There were no intact bottles, jars, or ceramic containers. Within this group, amber glass was most common (n=252) and it is assumed that the majority were beer or beverage containers. Diagnostic fragments dated from ca. 1931 to the present. Clear glass fragments (n=188) were generally undiagnostic and undatable but several threaded rims indicate that these probably represent jars and/or beverage bottles. Other glass fragments were aqua (n=10), white (n=6), green (n=3), amethyst (n=1), and red (n=1). One of the green fragments represents a panel of a patent medicine bottle marked "GARGLIN..." over "LOCKPO..." which represents Merchant's Gargling Oil Company in Lockport, New York, patented in 1870 (Wilson 1981:139). Can fragments (n=80) included a Maxwell House coffee can dated after 1934 (Rock 1971:41) and a can key which could have been used for any of a variety of coffee, meat, or other products during most of the 20th century. Other container items included a crown cap, an aluminum pull tab, and white and earthenware sherds.

The second group included personal items (n=294) and these ranged from a bobby pin to ammunition. Some items were tools, such as a chain binder and a wrecking bar that were clearly tied to activities at the log mill. Other personal items, such as the glass beads (n=272), a copper bead, and a brass bead clearly represent an earlier Nez Perce occupation here. Most glass beads were drawn and were types commonly used for embroidery with the exception of a Cornaline d'Allepo necklace bead. Colors ranged from white to black with blue, pink, yellow, red, and other colors included. Most beads exhibit post-manufacture heat damage that often resulted in color variances, shape distortions, clumping or fusing together, and closing of some holes. The rolled copper bead reflects native manufacture and may date as early as AD 1785-1815 (Stapp 1984:55) although similar items were worn later in the nineteenth century, as well. The brass bead dates ca. 1860-1875, that is, to the period of the conflict at *Kam'-nak-ka* (Roderick Sprague 1997: personal communication). The ammunition was all .22 caliber and is not associated with the 1877 event.

Architectural and structural items (n=118) included nails or hardware associated with the recent past and include a piece of 2 x 4 in. milled lumber (burned), modern glass, barbed wire, wire, and bolts. The majority of these items were recovered in the lawn near the infrastructure and the current residences in Area 1.

Transportation items (n=7) included horse tack and a horseshoe, as well as automotive items and a machine part. Electrical items (n=7) included bulb fragments and an insulator. Finally, miscellaneous items (n=57) included fragments of oxidized iron, plastic, rubber, and other materials.

Summary

Among the most interesting items recovered in 1997 is the brass bead which dates ca. 1860-1875 or to the time of the battle and it was recovered from AH 213, which is near where the 272 glass beads were recovered in 1993. Those beads are also believed to have been associated with the conflict as many of them showed signs of "post-manufacture heat damage" which included "color variances, shape distortions, clumping or fusing together, and closing of some holes" (Sappington with others 1997:30-31). The alteration of the glass beads correlates to the reports of the village having been burned by the soldiers (Hampton 1994:91-94; McDermott 1978:124-125; Tchakmakian 1976:66-67). Most other historic items can be dated since the battle and these can readily be affiliated with the lumber mill, farming activities, and/or modern activities in the area.

THE PREHISTORIC COMPONENT

The majority of cultural materials recovered at *Kam'-nak-ka* are related to the prehistoric occupation of the site and they consist mostly of lithic tools and debitage.

Lithic Materials

Examination of the lithic materials suggest that the native occupants of *Kam'-nak-ka* acquired local, semi-local, and more distant materials as circumstances and opportunities permitted. This strategy is typical of components in the Clearwater River region (Sappington

1994; Sappington with others 1990). Knappable basalt is available on surrounding hillsides at KNFH while granitic, metamorphic, and quartzite materials are present in the gravels along Clear Creek and the Middle Fork. High-quality glassy basalt is available at a quarry site (10-IH-1771) on Tahoe Ridge ca. 10 mi. (16 km) from the site. Chert/jasper, chalcedony, and opal form in small pockets in basalt outcrops across the region (Sappington and Carley 1987:59-60) but no quarry sites are known in the Clearwater drainage. Argillite is available along the Middle Fork and lower portions of the Selway and Lochsa rivers (Sappington and Carley 1989:3). Vitrophyre outcrops on Fish Creek and several workshops have been investigated along the Lochsa River (Sappington and Carley 1987, 1989). Quartz crystal is also available along the Lochsa (Benson and others 1979:31) and the North Fork (Sappington with others 1991:39). The most distant lithic material recovered at 10-IH-820 is obsidian and previous analyses suggest that most obsidian in the Clearwater River region was obtained at Timber Butte in southwest Idaho (Herbel 2001; Sappington 1984). Finally, steatite or soapstone pipes were recovered; no regional sources are known but it is available in British Columbia and elsewhere.

Observable similarities between the chert, jasper, and chalcedony to a local material collected along Winona Grade south of Kooskia prompted a change in data recordation from chert, jasper, or chalcedony to the combined term "CCS" in 1997 (Evans-Janke 1998:66). To improve the quality of these silicate materials, heat-treatment was often required and this has been commonly observed at regional sites. Chert, jasper, and chalcedony from the 1993 projects were differentiated into heat-treated categories and as much as 86% of a sample of debitage from 1993 showed evidence of thermal alteration (Ozbun and others 1993:161). Further evidence of heat-treatment was provided when a number of non-archaeological fragments were treated by Matthew Root in February 1998 at 240° C (465° F) for five hours and the material gained the appearance of a low quality jasper, greatly resembling other fairly unidentifiable specimens from the archaeological collections. However, the 1997 sample was not differentiated into heat-treated and non-heat-treated categories.

Flaked Lithic Tools

Flaked lithic tools were extremely common (n=1214, Table 1). Bifacial tools were generally well-worked on both surfaces, somewhat stylized, and largely decorticated. In terms of technology, bifaces represent a considerable portion of the manufacturing continuum, ranging from cores, blanks, and preforms to end products, most of which are projectile points. Projectile points (n=183) are distinguished from other bifaces by the presence of distinctive hafting elements such as stems or notches. Projectile points in the Plateau are not as temporally sensitive as they are in other parts of western North America but these categories correspond to those from late prehistoric and protohistoric phases across the area. Within the Clearwater River region, multiple styles are commonly recovered within the same feature; this phenomenon has been observed at numerous sites including those in the Kooskia area (Sappington 1994; Sappington and Carley 1987:133). Use and resharpening can greatly alter the morphology of projectile points so that the following categories are for descriptive purposes only.

TABLE 1. FLAKED LITHIC TOOLS FROM KAM'NAK-KA, 1993 AND 1997

Category	Number
Corner-notched projectile point	80
Side-notched projectile point	56
Desert side-notched projectile point	8
Base-notched projectile point	11
Stemmed projectile point	17
Fragmentary projectile point	11
Projectile point/preform	72
Preform	100
Blank	70
Biface fragment	147
Seam knife	1
Perforator	6
Uniface/scrape	178
Modified flake	444
Utilized flake	12
Utilized blade	1
TOTAL	1214

Projectile point styles include corner-notched (n=80), side-notched (n=56), stemmed (n=17), and base-notched (n=11) items; some of the smaller side-notched points are comparable to those of the distinctive "Desert side-notched" type (n=8) (Figures 3, 4). Desert side-notched points have been discretely dated to the protohistoric period (Sappington 1994) and they are sometimes found in historic contexts in nearby areas (Reid 1991). One unique and temporally diagnostic item is a large side-notched point from one of the lowest levels in Stratum 4 (Figure 4t); it is comparable to points from the late Cascade subphase [ca. 6700-4500 B.P. (Leonhardy and Rice 1970) or ca. 7000-3500 B.P. (Lohse 1985:346)] or Hatwai phase (ca. 6000-3000 B.P.) and thus represents one of the oldest items recovered from the site. Additional fragments (n=11) have indications of hafting elements but their condition prevented more specific classification.

Preforms (n=100) are a common category of bifaces. Preforms were manufactured for modification into projectile points; based on their size, the majority were clearly intended for arrow points. Most preforms are fragmentary with the few complete items probably having been rejected due to their small size or to problems such as the presence of step fractures that would have made notching difficult. The frequent retention of original detachment scars indicates that most (and probably all) preforms were produced from flakes. The category of point/preform (n=72) refers to those fragments that are not classifiable as either points or preforms due to their condition.

Blanks (n=70) are an intermediate stage category and are therefore considerably less stylized than the projectile points and preforms. Blanks are generally distinguished by the presence of percussion flaking on both surfaces. Most blanks were probably brought to the site as bifacial cores that could later be modified into tools. Virtually all blanks are fragmentary which indicates onsite breakage; only one, which was manufactured from (probably local) basalt, is intact.

Bifacially worked perforators or drills were infrequent (n=6). One of these appears to have been recycled from a projectile point. A single seam knife was recovered; this is a fairly widespread category of tools (Ames and others 1981:79; Sappington with others 1991:52) that were manufactured from thin pieces of tabular chert so that cortex is retained on both surfaces and only the margins are retouched. The remaining bifaces and fragments (n=147) could not be classified due to minimal modification or fragmentary condition.

Unifaces are common flake tools (n=178) that were made for numerous scraping and processing tasks. Plateau archaeologists have long attributed various functions to unifaces based on their morphologies. Categories from *Kam'-nak-ka* include steep-ended convex edge scrapers, concave edge "spokeshaves" for wood or bone working, and pointed unifaces for perforating hide or leather.

Modified or utilized flakes were the most common category of tool (n=457) at *Kam'-nak-ka* and their frequency is typical for regional sites. These items were identified by the macroscopic presence of localized areas of edge damage that is assumed to have resulted from use-wear or battering tasks. Modified flakes are expedient tools for general cutting and scraping tasks; they were selected from a great variety of materials. While there appears to be an association between material type and function, in that relatively durable materials were apparently preferred for more demanding tasks, most modified flakes were probably selected for immediate use and then discarded.

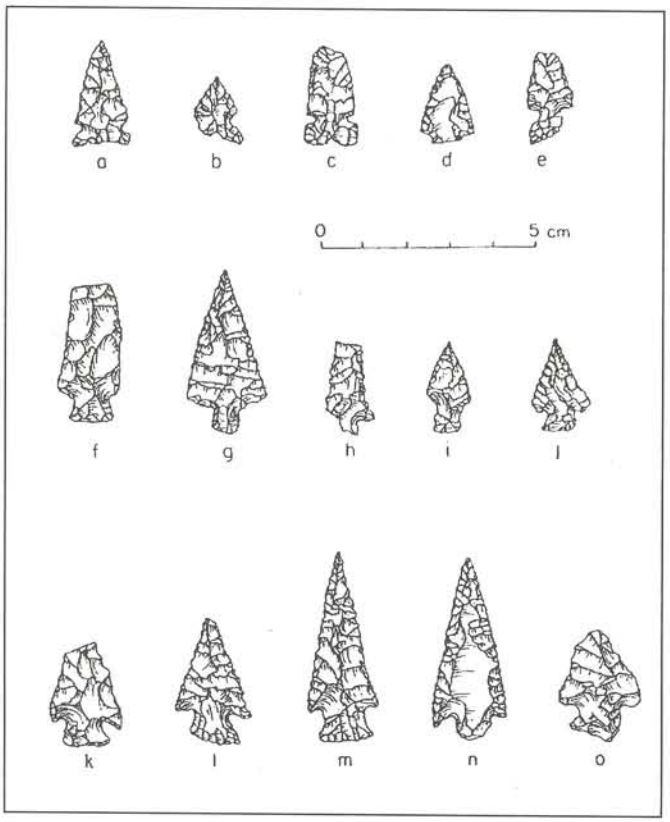

Figure 3. Projectile points from *Kam'-nak-ka*: a-e, Side-Notched Points; f-i, Stemmed Points; j-o, Corner-Notched Points.

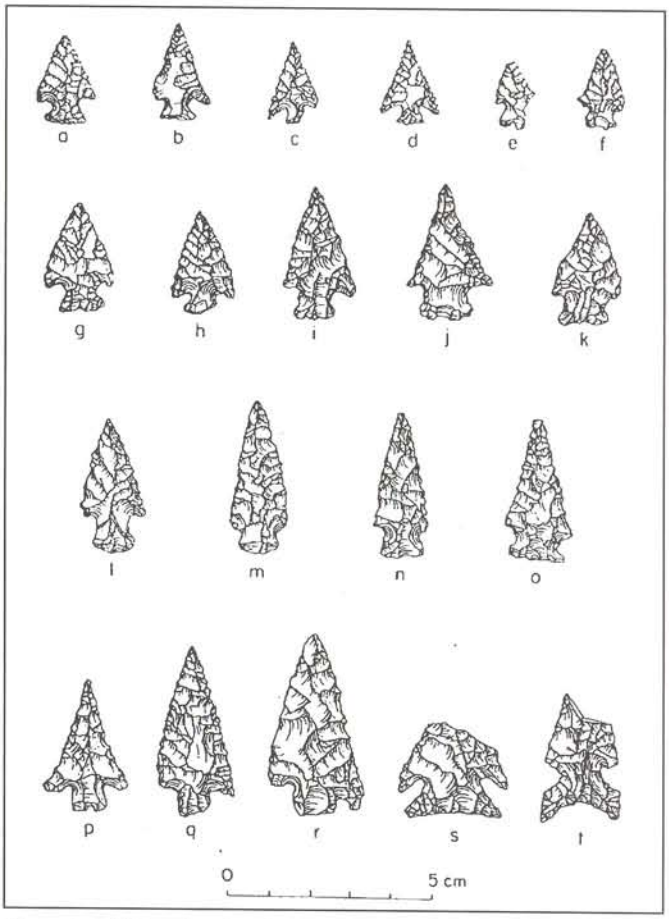

Figure 4. Additional projectile points from *Kam'-nak-ka*: a, b, d-n, p, q, s, Corner-Notched Points; c, Small Base-Notched Point; r, Large Base-Notched Point; o, t, Side-Notched Points.

Other Lithic Tools

This diverse group (n=106, Table 2) includes cobbles and other items that were deliberately flaked, ground, polished, or were modified incidentally by use. Manufactured tools include pestles (n=7), net sinkers (n=7), pipes (n=2), edge-ground cobbles (n=2), a shaft abrader, a shaft polisher (Figures 5, 6), and other ground stone tools (n=7). Edge-ground cobbles are temporally significant in that they are one of the two "hallmarks" of the Cascade phase (dated ca. 8000-4500 B.P.) (Leonhardy and Rice 1970). Edge-ground cobbles may have been employed for processing seeds and they are rare at sites in the upper Clearwater drainage (Sappington 1994:131). Onsite manufacture of cobble tools is indicated by the rejected net sinker (which was tested by the removal of a single unifacial notch) and by the unfinished pestle blank.

TABLE 2. NON-FLAKED LITHIC TOOLS, COBBLE TOOLS, AND CORES FROM KAM'-NAK-KA, 1993 AND 1997

Category	Number
Pestle	7
Net sinker/net sinker blank	7
Pipe	2
Edge-ground cobble	2
Shaft abrader	1
Shaft polisher	1
Ground stone tool	7
Mortar	6
Edge-battered cobble	9
Edge-abraded cobble	3
End-battered cobble	48
Hammerstone	4
Spall uniface/scraper	1
Polished pebble	4
Stained cobble	2
Core	162
Tested cobble	2
TOTAL	268

A variety of important activities can be inferred from these tools: the pipes suggest ritual or possibly recreational activities; the shaft abrader and the polisher imply the manufacture of wooden and/or bone tools; the pestles and edge-ground cobbles indicate processing of plant materials for food; and, the net sinkers indicate fishing. The lithic evidence for plant processing and fishing is especially important since the organic correlates for these ethnographically important subsistence activities are rarely preserved.

Most cobble tools were apparently selected from local materials. The most frequent type includes a variety of battered cobbles that exhibit damage from stressful use rather than from deliberate manufacture. Some are oval and battered on one or both ends while others are multifaceted from use on many surfaces. Many of these were probably used as hammerstones to drive flakes from cores while others may have functioned as expedient pestles. Functionally similar tools were recorded variously as end-battered cobbles (n=48) and hammerstones (n=4). Edge-battered (n=9) and edge-abraded (n=3) cobbles are distinguished by having a flaked edge or edges that were crushed or worn through use; one from 1997 was considered to be a scraper while some of these were apparently cores that became modified through subsequent use as "choppers." Four small pebbles exhibit polished surfaces that seem to have occurred through use; one cobble is fire-stained while another was stained by ochre.

Mortars (n=6) are large basalt river cobbles that exhibit circular areas of battering and/or polish. One was broken into two parts during use and one half was recycled along the broken edge into an anvil. Mortars are generally considered to be "site furniture" and are often indicative of the presence of house floors. The close

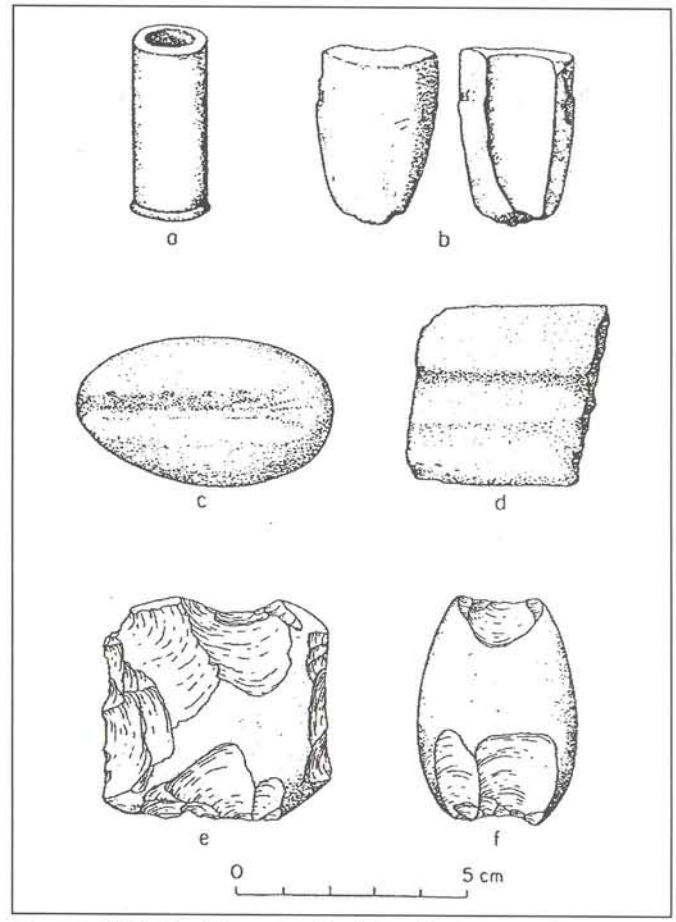

Figure 5. Lithic Tools from *Kam'-nak-ka*: a-b, Pipes; c, Shaft Polisher; d, Shaft Abrader; e-f, Net Sinkers.

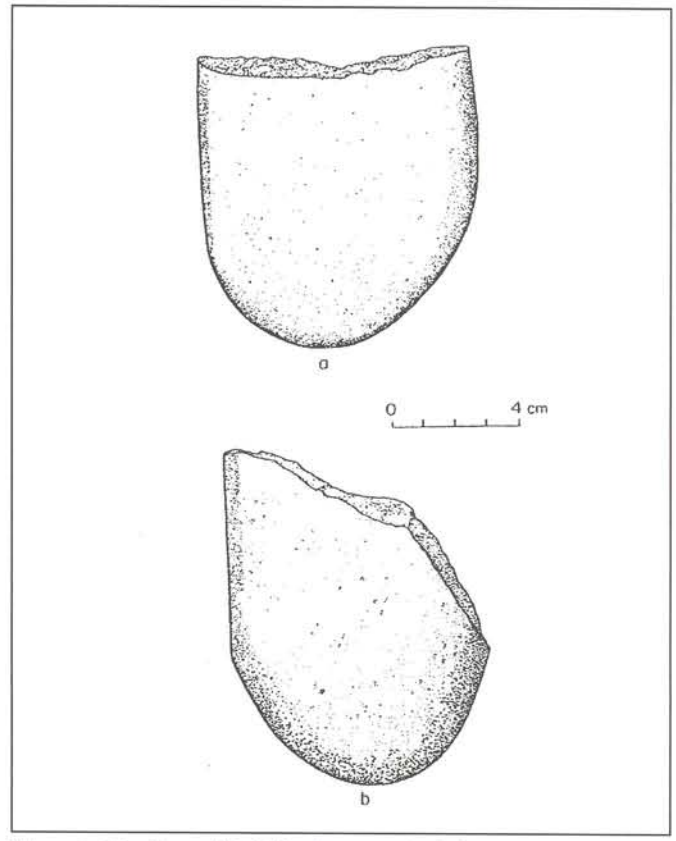

Figure 6. Edge-Ground Cobbles from *Kam'-nak-ka*.

association between this broken mortar and a pestle (Sappington with others 1997:Fig. 18b) in adjacent levels and units during testing suggested that a house feature was present in this vicinity.

Cores

Cores were common (n=164, Table 2). Some (n=2) were only tested by the removal of a flake or two but most were reduced opportunistically or in a multidirectional fashion and evidence of platform preparation was largely nonexistent. Extant cortex indicates that many cores were obtained from gravel sources that were probably in proximity to the site. A number of cobbles were tested and rejected which indicates that some raw materials were abundant. Very few cores appear to have been exhausted. Local materials predominated, including basalt (n=99 or 60.4%), metamorphic (n=23 or 14.0%), granitic (n=6 or 3.7%), and quartzite (n=4 or 2.4%). Cores of better quality materials introduced into the site from local or regional sources include opal (n=12 or 7.3%), heat-treated chert/jasper (n=11 or 6.7%), chert/jasper (n=3 or 1.8%), argillite (n=2 or 1.2%), vitrophyre (n=2 or 1.2%), heat-treated chalcedony (n=1 or 0.6%), and unspecified CCS (n=1 or 0.6%).

Debitage

Debitage was the most abundant type of cultural material at 10-IH-820 (n=30,339 in 1993 and 8328 in 1997 for a total of 38,667). Debitage was recovered from most auger holes and in all test and excavation units, with the exception of one culturally sterile unit near the mill pond. The diversity of debitage materials implies a well-rounded procurement strategy, that is, the 14 material groups reflect (1) high mobility and/or wide ranging contacts and (2) the ability to select various types of stone based on functional needs and characteristics of the raw material. Examination of the debitage show a relationship to the flaked tools and cores reduced onsite, as well as preferences for certain materials. A comparison of frequencies with weights shows differential use of raw material. The sheer volume prevented an in-depth examination of all debitage but a sample was submitted for detailed analysis (Ozbun and others 1993). Due to a number of factors, including the smaller number of units and their widely scattered provenience, the 1997 sample was not analyzed to the same degree.

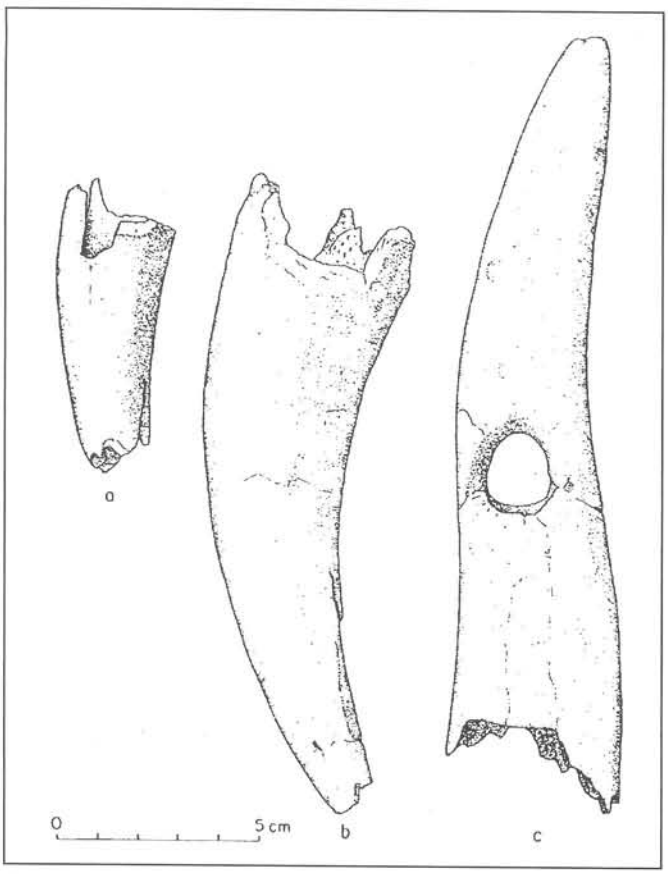

Figure 7. Elk Antler Digging Stick Handles From Feature 10, *Kam'-nak-ka.*

For the 1993 sample by count, basalt was most frequent (n=7643 or 25.2%) followed by heat-treated chert/jasper (n=6241 or 20.6% of the total), opal (n=5754 or 19.0%), and heat-treated chalcedony (n=4825 or 15.9%). Minor materials included chert/jasper (n=1424 or 4.7%), chalcedony (n=1293 or 4.2%), obsidian (n=1211 or 4.0%), vitrophyre (n=88 or 2.8%), argillite (n=465 or 1.5%), and metamorphic (n=324 or 1.1%). Taken together, granitic (n=91 or 0.3%), quartz crystal (n=69 or 0.2%), quartzite (n=35 or 0.1%), and glassy basalt (n=6 or 0.0%) represent only 0.6%.

By weight, basalt is also clearly predominant in the 1993 sample (30,650.4 g or 64.8%), followed by metamorphic (4950.0 g or 10.5%), heat treated chert/jasper (3507.6 g or 7.4%), and opal (2238.0 g or 4.7%) materials. Minor materials include granitic (1767.8 g or 3.7%), heat-treated chalcedony (1255.7 g or 2.7%), chert/jasper (1124.8 g or 2.4%), chalcedony (467.1 g or 1.0%), argillite 304.2 g or 0.6%), quartz crystal (302.9 g or 0.6%), quartzite (297.8 g or 0.6%), obsidian (228.6 g or 0.5%), vitrophyre (212.0 g or 0.5%), and glassy basalt (1.4 g or 0.0%).

In 1997 the most abundant debitage material by count was cryptocrystalline silica (chert, jasper, and chalcedony combined for n=5159 or 61.9%), followed by basalt (n=2819 or 33.8%), obsidian (n=168 or 2.1%), opal (n=93 or 1.1%), vitrophyre (n=46 or 0.6%), miscellaneous (n=31 or 0.4%), and quartz (n=12 or 0.1%). By weight cryptocrystalline was most frequent (1661.8 g or 54.6%) followed by basalt (1248.4 g or 41.0%), miscellaneous (62.0 g or 2.0%), opal (33.6 g or 1.1%), obsidian (19.5 g or 0.6%), vitrophyre (14.4 g or 0.5%), and quartz (6.9 g or 0.2%)

The diversity and varying frequencies of lithic materials reflects prehistoric decision-making. That is, different materials were selected based on availability as well as for various and specific purposes. Good quality basalt is locally available and it predominates by both count and weight although it was not used for all types of tools. In contrast, distantly available obsidian was introduced to the site as completed tools (there are no blanks or cores) which were curated, sharpened, and used repeatedly prior to deposition; while obsidian debitage is fairly frequent by count (3.6%) it consists of small pressure flakes

and thus it is barely measurable in terms of weight (0.6%). Vitrophyre is similar to obsidian but it is of lesser quality; because it is regionally available, flaked tools and two cores were recovered but it is not important in terms of frequency or volume. Locally available metamorphic and granitic materials are infrequent among debitage by count (1.1 and 0.3%, respectively in 1993) but both were common by weight (10.5 and 3.7%); large flakes were occasionally produced by percussion and these made suitable expedient tools.

Summary of the Lithic Artifacts

In terms of understanding past occupations at *Kam'-nak-ka*, those flaked lithic tools recovered during data recovery which could be correlated to the stratigraphy (n=939 or 86.8%) are the most informative. Although infrequent, projectile points (n=4) and other tools (n=8) were recovered in the basal Stratum 5. The volume of flaked tools increased in Stratum 4 (n=87), reached a peak in Stratum 3 (n=348), and declined slightly in Stratum 2 (n=281) and Stratum 1 (n=211). The slight drop in frequency in cultural material in the uppermost stratum is probably a reflection of its relative brevity. Based simply on the number of tools, there appears to have been a gradual increase in occupation at *Kam'-nak-ka* from the middle to late prehistoric and protohistoric periods.

Among all categories of flaked tools, there are seven represented in Stratum 5 and thirteen in strata 3 and 2. The infrequent or unique items all appear in the upper levels of the site. Thus, it also appears that a greater variety of activities occurred in the late prehistoric and protohistoric periods.

Within categories, most are so infrequent or fragmentary that statistically meaningful conclusions cannot be made but several observations can be suggested. For example, corner-notched points are the most common category of projectile points (n=57) and they are found in all strata but their frequency peaks in Stratum 3 (n=23) and they decline steadily in Stratum 2 (n=15) and Stratum 1 (n=7). Base-notched points are most common in Stratum 2 while Desert side-notched points are most common in strata 2 and 1 (n=3 in both cases), and stemmed points are most common in Stratum 1 (n=4). Thus, it appears that while a variety of styles were employed in all occupations, these styles gradually shifted from an early dependence on corner-notched points to a later preference for small base-notched, stemmed, and Desert side-notched types.

Another way to examine these data is to compare the various functional categories of tools within strata in terms of frequency although the scarcity of cultural material in the lower two strata should be kept in mind. When all projectile points are examined relative to the total flaked tool assemblage within each stratum, there appears to be a slight decline in emphasis on hunting: projectile points account for 33.3% of Stratum 5, 14.9% of Stratum 4, 12.4% of Stratum 3, and 12.8% of both strata 2 and 1; the upper three strata are virtually identical which suggests a comparable emphasis on hunting during those times. Within the most general category in terms of function, modified flakes range from approximately one-third of the assemblages for strata 5 and 2 to over one-half of Stratum 1; no clear pattern emerges other than a demonstration that this catch-all category was always important in terms of on-site activities.

Cobble tools can also be summarized since they were recovered from all strata with the exception of Stratum 5. Most are unmodified except through use and no categories contain enough items to provide statistically inarguable conclusions but several observations can be provided. All excavated net sinkers occur in the upper levels with two recovered from Stratum 3 and two from Stratum 1 which suggests a greater emphasis on fishing during the more recent occupations of the site. All five pestles were recovered from strata 3 and 2 which suggests more emphasis on plant resources during later occupations at the site. Taken together, the net sinkers and pestles appear to document a late prehistoric and protohistoric expansion of the subsistence base from hunting to include more emphases on procurement of fish and roots. If true, this particular combination of subsistence resources would provide direct antecedents to the ethnographic record.

STRATIGRAPHY, FEATURES, AND DATING

Discussion

Several distinct strata were delineated throughout the investigations, especially during data recovery. Similarly, numerous features were encountered in 1993 and 1997

TABLE 3. ALL RADIOCARBON DATES FROM *KAM'-NAK-KA*, 1993 AND 1997

Lab Number	Provenience	Radiocarbon Age BP	CAL BP Range	CAL AD/BC Range	Comments
Tx-8081	Area 1, Feature 2, Unit 16, Stratum 5	210 ± 210	530-0 BP	AD 1420-1955	Probably contaminated
Tx-8079	Area 2, Feature 3, Unit 24, Stratum 2	310 ± 40	470-300 BP	AD 1480-1650	Concentration of fire-cracked rock and tools
Tx-8078	Area 2, below Feature 3, Unit 11, Level 5 (no feature number or stratum assigned)	480 ± 80	570-420 BP	AD 1380-1530	From test unit
Tx-9313	Area 1, Feature 11, Unit 29, Level 4	860 ± 70	920-670 BP	AD 1030-1280	Probable house pit
Tx-9314	Area 2, Feature 15, Unit 31, Level 11	1160 ± 200	1410-690 BP	AD 540-1270	Probable house pit
Tx-9312	Area 1, below Feature 11, Unit 27, Level 7	1320 ± 100	1410-1050 BP	AD 540-900	Probable house pit
Tx-8080	Area 2, Unit 24, from east wall profile well below Feature 3 (not an excavation level), Stratum 4	3300 ± 50	3640-3440 BP	1690-1490 BC	Probable house pit

and these ranged from probable prehistoric housepits to a recent fence post. Most of the 15 features were clearly prehistoric and several provided samples for radiocarbon dating (Table 4).

TABLE 4. SUMMARY OF TAXA IDENTIFIED AT *KAM'-NAK-KA*, 1993

Taxon	NISP[1]	%	Wt (g)	MNI[2]
Homo sapiens	1	0.01	6.2	1
Leporidae	1	0.01	0.7	1
Sylvilagus	1	0.01	0.1	1
Rodent	16	0.22	0.2	-
Thomomys	15	0.20	3.0	6
Castor	1	0.01	1.1	1
Peromyscus	2	0.03	0	1
Microtus	1	0.01	0	1
Carnivore	1	0.01	0.5	1
Canis	13	0.18	29.3	3
Ursus	7	0.10	24.9	5
Mustelidae	1	0.01	0.6	1
Mephitis	4	0.05	5.0	1
Cervidae	202	2.70	116.5	9
Cervus	13	0.18	206.6	6
Odocoileus	111	1.50	379.0	16
Ovis	5	0.10	30.2	4
Small mammal	231	3.10	31.9	-
Medium mammal	3477	47.20	1947.9	-
Large mammal	194	2.63	386.9	-
Medium/large mammal	1954	26.50	343.4	-
Mammal undetermined	962	13.10	40.3	-
Bird undetermined	20	0.30	4.3	-
Cygninae	1	0.01	0.1	1
Tetraonidae	1	0.01	0.3	1
Sturnus vulgaris	2	0.03	0.2	1
Fish undetermined	24	0.30	3.6	-
Salmonidae	2	0.03	0.4	2
Catostomidae	1	0.01	0.1	1
Cyprinidae	3	0.04	0.1	2
River mussel	72	1.00	20.2	-
Margaretifera	3	0.04	3.8	2
Snail shell	26	0.40	2.3	-
Total	7368	100.00	3589.7	

[1] NISP refers to Number of Identified Specimens.
[2] MNI refers to Minimum Number of Individuals

Stratigraphy

During initial testing it was possible to determine that intact stratigraphy was present at the site. Because we kept all test units open during the data recovery phase, we were able to use the test units as controls in order to excavate stratigraphically. Placement of data recovery units in proximity to test units facilitated this approach and stratigraphic boundaries became more distinct as the sediment dried out during late summer, especially in Area 2. Although excavation was conducted in arbitrary 10 cm levels, changes in sediment were recorded and all associated cultural materials from each stratum were treated separately.

Based on the field descriptions, it is possible to present composite descriptions of the stratigraphy at 10-IH-820. Strata were comparable in the two areas but boundaries varied somewhat in depth and extent so these descriptions "smooth" the data slightly. Colors are based on Munsell Soil Color Charts. The radiocarbon dates are discussed in more detail in the next section.

Stratigraphy in Area 1 was fairly shallow with the deepest unit excavated to 105 cm below the surface (bs). Disturbance from plowing and construction was observed in some places. Five strata were encountered, as follows.

Stratum 1 (ca. 0-15 cm bs): Hard packed dark brown to dark yellowish brown (10YR 3/3-3/4) sod and grass root zone disturbed by plowing, construction, and constant wetting and drying. Distinct lower boundary.

Stratum 2 (ca. 15-30 cm bs): Dark brown to dark yellowish brown (10YR 3/3-3/4) fine alluvial silt with high organic content. Fairly subtle lower boundary.

Stratum 3 (ca. 30-45 cm bs): Very dark grayish brown (10YR 3/2) sandy silt. Subtle lower boundary darkened by slight color and texture differences. Fairly subtle lower boundary.

Stratum 4 (ca. 45-60 cm bs): Dark yellowish brown (10YR 4/4) silty sand. This stratum represents the initiation of the present depositional environment which is based on alluvial processes associated with Clear Creek and the Clearwater River. Abrupt and uneven lower boundary.

Stratum 5 (ca. 60 cm >): Dark yellowish brown (10YR 4/6) coarse sand and gravel; sterile with regard to organic and cultural material; distinct color and texture contact between Stratum 4 and Stratum 5. Stratum 5 represents a period of stronger alluvial action that apparently scoured the area and left the surface uneven and undulating.

The stratigraphy in Area 2 was similar but it was less affected by disturbing factors such as plowing. Excavation extended to 120 cm bs in several units.

Stratum 1 (ca. 0-10 cm bs): Very dark grayish brown to dark grayish brown (10YR 3/2-4/2) silt with a sod and grass root zone; disturbed in some places by historic mill and road construction. The lower boundary was marked by subtle differences in color and texture.

Stratum 2 (ca. 10-40 m bs): Very dark grayish brown to dark grayish brown silt (10YR 3/2-4/2) that had been disturbed in some places by historic activities. The lower boundary was marked by subtle differences in color and texture. Charcoal from a small pit at the base of Stratum 2 dated 310 ± 40 B.P. (Tx-8079) with a probable calibrated age of 310 B.P. or AD 1640 (Table 3). Undisturbed sections of Stratum 2 thus represent the protohistoric period.

Stratum 3 (ca. 40-60 cm bs): Black to brown (10YR 2/1-4/3) sandy silt. The lower boundary is marked by subtle differences in color and texture. Charcoal collected from a pit feature in Unit 11 dated 480 ± 80 B.P. (Tx-8078) with a probable cali-

brated age of 510 B.P. or AD 1310. Stratum 3 thus represents the protohistoric and late prehistoric periods.

Stratum 4 (ca. 60-80 cm bs): Dark brown to dark yellowish brown mottled (10YR 3/3-4/4) silty sand. Lower boundary marked by distinct differences in color and texture that marked the initiation of the present depositional environment. A sample of charcoal and associated sediment from a house pit was radiocarbon dated 3300 ± 50 B.P. (Tx-8080) with a probable calibrated age of 3480 B.P. or 1530 BC. Stratum 4 clearly represents the middle prehistoric period.

Stratum 5 (ca. 80 cm bs >): Dark brown to brownish yellow (10YR 3/3-6/6) silty to coarse sand that was nearly sterile in terms of cultural material. This stratum was encountered at slightly different depths in various units in Area 2. Stratum 5 marks a period of greater alluvial force than was found subsequently. Although Stratum 5 probably overlies river cobbles such as those exposed in Area 1, no units were taken to that depth in Area 2.

All 1993 excavation units were backfilled at the end of the second season. The 1997 excavations were placed over a much larger area in response to a much different set of management demands and were not near the earlier units. In addition, the largest of the 1997 units was 1 x 1 m. Consequently, the 1997 units could not be directly correlated with the strata exposed in 1993.

Features in Area 1

Initial testing indicated that only one location in Area 1 appeared to possess a feature. The discovery of a mortar base in units 3 and 5 strongly suggested the possibility of a house floor in this vicinity and the recovery of a pestle in adjacent Unit 12 strengthened this assumption. Mortars are commonly found as site furniture on house floors in the region (Ames and others 1981; Sappington 1994) including at 10-IH-1009 located just to the north and across the Middle Fork (Sappington with Olson 1994). Accordingly, considerable effort was expended during data recovery to expose areas adjacent to this 1 x 3 m trench. Eight 2 x 2 m units were excavated outward in such a way that an extant house floor would be encountered.

A group of fist-sized and smaller river cobbles encountered within a silty matrix across most of the floor of Unit 14 at 13-23 cm bs in Stratum 2 was designated Feature 1. There were no associated tools or faunal remains. It seems likely that this was a natural phenomenon but it may represent a cultural feature disturbed by subsequent activities such as plowing and construction of the hatchery.

Feature 2 was an oval concentration of cobbles at ca. 80-105 cm bs in Stratum 5. These rocks appeared to be in a shallow pit oriented ca. 150 cm northwest/southeast by 40 cm northeast/southwest. Charcoal from this feature was dated 210 ± 210 B.P. (Tx-8081) with a probable calibrated age of 280 B.P. or AD 1670 although the large standard deviation makes it possible for it to be either considerably older or more recent. Associated artifacts include a blank, a modified flake, and debitage (n=2). No faunal remains were associated with Feature 2.

Although it is difficult to document the presence of a house feature without either clear stratigraphy or discernible boundaries, a probable explanation for this phenomenon is that the concentration of the mortar, pestle, and other artifacts represent a shallow structure (such as a tipi) that was destroyed during the 1877 attack. The concentration of glass beads dating ca. AD 1870-1910 indicates that a potentially contemporaneous Nez Perce occupation once existed in this vicinity. The radiocarbon date is also "in the ballpark" and might represent an earlier occupation in a pit that was reoccupied in the 1870s. Subsequent transformations over the past century such as flooding, plowing, construction, and lawn maintenance could be responsible for obscuring the record.

Two features were found within three contiguous units in 1997. Feature 11 was detected in AH 323 and it extended vertically from ca. 55 to 75 cm bs. Further investigation was required and upon determining it to be a hearth, an adjacent 1 x 1 m unit (Unit 27) was opened. Upon reaching ca. 50 cm bs large orange stains were noted, and several fire-cracked rocks were encountered at ca. 56 cm. Units 28 and 29 were then opened to better determine the areal extent of this feature.

Two minor concentrations of fire-cracked rock were observed in Unit 27. Units 28 and 29 contained less fire-cracked rock but had more tools and faunal remains while oxidation of the soil was less apparent. All profiles revealed clear evidence of the outward expansion of the features. Two charcoal samples were collected from the vicinity of Feature 11. One dated 860 ± 70 B.P. (Tx-9313) while the other, from beneath the feature, dated 1320 ± 100 B.P. (Tx-9312) but no general shape or orientation to Feature 11 was noted. The scattering of material appears to have been the result of daily living activities. There is strong evidence that this feature is a house floor with a considerable period of occupation. Associated tools consisted of a pestle fragment, projectile points, bifacial, and expedient tools. Processed faunal materials were noted throughout the feature, and were identified as deer and elk.

Feature 12 was encountered in Level 9 in Unit 28 and it extended to ca. 95 to 110 cm bs. Owing to the limitations of excavation, this feature exhibited no discernible orientation and appeared to be a dispersed distribution of tools, debitage, and fire-cracked rock, with some soil staining. No faunal remains were associated and this feature apparently represents intermittent or temporary camp activities.

Features in Area 2

Eight features were encountered during testing and data recovery in Area 2 in 1993 and several of these were completely excavated. Feature 3 was encountered in Stratum 2 and consisted of a partially exposed oval concentration of fire-cracked rock and charcoal ca. 80 cm north/south by 140 cm east/west and extending into the east wall. The tops of the uppermost rocks were ca.

22 cm bs while the bottom of the lowermost rocks were ca. 45 cm bs. Associated artifacts include four corner-notched projectile points, a preform, a modified flake, an end-battered cobble, and debitage (n=376). Identified faunal remains include deer (n=4), bear (n=1), and Cyprinidae (n=1) as well as numerous medium, medium/large, small, and undetermined mammal fragments. Charcoal from the fill of Feature 3 dated 310 ± 40 B.P. (Tx-8079) with a calibrated date of 300 B.P. or AD 1640.

Feature 4 consisted of a concentration of fire-cracked rock in a circular pit ca. 90 cm in diameter in Stratum 2. Its boundaries were defined on the basis of the pit fill that was darker in color and softer in texture than the surrounding matrix. Associated artifacts included a corner-notched point, a Desert side-notched point, a blank, two preforms, a point/preform fragment, a uniface, four modified flakes, two cores, and debitage (n=258). Identified fauna include *Ovis* sp. (n=1) with a variety of medium, medium/large, small, large, and undetermined mammal fragments.

Feature 5 was a shallow cluster of fire-cracked rock in Stratum 3 that was ca. 60-70 cm in diameter at 34 cm bs, tapering to ca. 5-10 cm in diameter at 48 cm bs. The only associated artifacts were a core and debitage (n=9); no faunal remains were found.

Feature 6 was another concentration of fire-cracked and unmodified cobbles scattered ca. 145 cm north/south by ca. 185 cm east/west in Stratum 3. Associated artifacts included a corner-notched point, a preform, a biface fragment, a uniface, modified flakes (n=4), an edge-battered cobble, an end-battered cobble, cores (n=7), and debitage (n=253). Fauna could only be identified by size classes but these included medium, medium/large, small, and undetermined mammals.

Feature 7 was a concentration of fire-cracked rock and crushed faunal remains ca. 40-60 cm in diameter in Stratum 3. Associated lithic material was limited to debitage (n=17). Faunal remains were frequent although the only taxon identified was deer (n=20) with other categories including medium, medium/large, small, large, and undetermined mammals.

Feature 8 was a cache of lithic material defined by an oval shaped concentration ca. 50 cm northeast/southwest by 20 cm northwest/southeast in Stratum 2. Associated artifacts include a corner-notched point, modified flakes (n=2), end-battered cobbles (n=5), cores (n=24), and debitage (n=781). Identified taxa include Cervidae (n=1) with medium, medium/large, small, and undetermined mammal fragments.

Feature 9 was an historic wooden post in a pit ca. 20-40 cm in diameter that was encountered in the northern part of Unit 24 at ca. 20-30 cm bs. Associated artifacts in the pit fill were limited to fragments of a clear glass canning jar.

Feature 10 was a unique ca. 10 cm^3 cache of elk antler tools and unmodified antler fragments at 110-120 cm bs in Stratum 3 in the west wall of Unit 25. Tools categories included three digging stick handles and two wedges. Preservation was fairly good. Identified taxa include Cervidae (n=14), elk (n=2), and deer (n=2). No other materials were associated with this feature.

Three additional features were noted in Area 2 in 1997. Based on the results of auger holes and to better examine one part of this area, four contiguous 1 x 1 m test units were placed in a diagonal line. Feature 13 was encountered at ca. 25-35 cm bs in all four units and it extended to 55 cm bs. This feature is marked by heavily compacted dark soil. Artifacts in the first few centimeters consisted mostly of debitage and fire-cracked rock. Indications of a potential house floor were encountered when two mortars were uncovered in association with tools and processed faunal materials scattered throughout all four units. The highest density of materials was noted in Level 4, and strong evidence of a house floor remained. Although grinding stones were not present, the number of tools increased and several large fragments of long bone were noted in three units. Based on the size of the bone, they appear to be elk. Numerous other faunal remains were encountered and all were in a highly fractured condition.

Feature 13 exhibited no particular orientation but it extended well beyond the four units although deposits to the north and south are questionable due to historic impacts. This observation is augmented by the high concentration of materials and it is thought that intact deposits stretch to the east and west where there is evidence of fairly continuous and intensive occupations. There was no change in stratigraphy; the deposits are continuous with no clear evidence of a break in occupation.

There was a general decline in the frequency of material in the lower portions of levels 5 and 6 and Feature 14 was encountered at ca. 70-85 cm bs in these same four units. The decision to separate features 13 and 14 was based on the slight reduction in intensity of materials. Feature 14 lacked the density of cultural material but several stone tools and fire-cracked rocks were noted. The faunal remains were slightly more diagnostic and contained a single vertebra, most likely from a deer. Large fragments of processed long bone were considered to represent elk, based on their size.

Feature 15 was nearly isolated in Unit 31 where it was encountered at approximately 110 cm bs. It consisted of a large mortar, debitage, bone, and an elk jaw fragment with teeth intact. Separate incisors were also noted. After encountering the water table, all excavation was terminated. As subsequent units progressed southward toward the source of the seep, excavations ended at ca. 90 cm bs. Further work in the vicinity of Feature 15 might have revealed another house floor as suggested by the mortar and faunal remains. Charcoal collected near the mortar was dated 1160 ± 200 B.P. (Tx-9314).

FAUNAL REMAINS

Discussion

Faunal remains were recovered from auger holes, test units, and data recovery excavations throughout KNFH. The variables recorded during the identification stage consist of taxon, skeletal element, portion, side (if possible), burning, modifications (both natural and cultural), number, and weight in grams. A detailed study of faunal remains from the 1993 data recovery excavations was

conducted by Deborah L. Olson (Sappington with others 1997:59-79) and her study is summarized here. Based on the relatively small number and fragmented condition of the materials collected in 1997, as well as the obvious similarities to earlier samples, extensive analysis was not conducted (Evans-Janke 1998).

All faunal remains were identified to the most specific taxonomic level possible (genus and species). However, when this was not possible and identification was only possible to class level (i.e., mammal, fish, bird, and reptile), the mammal remains were categorized by size to maximize the identified portion of the remains. These generalized mammalian size classes are based on the weight and corresponding body sizes of living animals. There is some overlap in the weight ranges which delineate the size classes, since the weight ranges are purposefully broad and contain recorded extremes rather than averages. These size classes only apply to land mammals. Five classes of mammal were employed, as follows:

Large: ungulates that range in weight from 900 kg (a large male bison) to 225 kg (a small elk); taxa represented include bison, horse, cattle, moose, and elk.

Medium: small ungulates and large carnivores that range in weight from 270 kg (a large caribou) to 22.5 kg (a small white-tailed deer); taxa represented include caribou, deer, mountain sheep, mountain goat, domestic sheep and goats, bear, wolf, and mountain lion.

Small: most carnivores, large rodents, and rabbits that range in weight from 27 kg (a large beaver) to 0.7 kg (a small cottontail or marten); taxa represented include coyote or dog, bobcat, river otter, raccoon, marten, beaver, porcupine, marmot, muskrat, rabbit, and hare.

Very Small: all insectivores, bats, most rodents, and small carnivores (weasels) that weigh less than 0.7 kg. This class usually represents intrusive "non-cultural" faunal remains.

Medium/large: used for analysis when bone fragments that cannot be assigned with assurance to either the medium or large size categories. The undetermined remains consist of those which cannot be assigned to a size class but are most likely mammal.

Once taxon were identified, the skeletal element, as well as portion and side (if possible), was determined. These data were used in quantifying the remains and determining butchering patterns. Information on burning as well as natural and cultural modifications were recorded. Four degrees or intensity of burning were recognized including (1) unburned, (2) partially burned, (3) burned, and (4) calcined. Partially burned refers to bone that has sustained some exposure to heat which produces a color change (usually to red) or some charring. Burned bone specimens are completely charred. Calcined bone has been burned to such a degree that the organic portion has been destroyed leaving only the inorganic, or mineral, fraction. Calcined bone is white to gray in color, blocky in appearance, fairly regular in size, and it preserves better than unburned bone in certain environments, such as in forests with acidic soils.

Observed modifications include natural or nonhuman processes that are usually discussed under taphonomy (e.g., weathering and gnawing by carnivores or rodents), as well as cultural or direct modification caused by human agents (i.e., impact fractures, cut marks, tools, and sawing). All these modifications are self-explanatory with the exception of impact fractures which consist of flakes of bone produced when a bone, usually a long bone fragment, is struck by an object (a hammerstone, for example) to extract marrow. Bone flakes have the same attributes as stone flakes.

In any analysis the data must be quantified in a consistent manner in order to insure comparability. Much literature has been devoted to the problems of quantifying faunal data in a meaningful fashion and to the problems and underlying assumptions of the various methods. For this analysis, Olson quantified the data by using the number of identified specimens (NISP) and the minimum number of individuals (MNI). Briefly, NISP is the actual number of bones and bone fragments that have been identified to a particular taxon, and theoretically, NISP represents the maximum number of animals in a sample. This NISP value is a real number generated during identification and is represented by the number variable.

The minimum number of individuals (MNI) is a derived value and represents the number of individual animals which can account for all the skeletal elements of a taxon represented in a sample. However, this definition is simplistic. In reality, MNI is dependent on how the sample is defined. For archaeologists, the sample in question is defined or delimited by spatial boundaries (site or feature boundaries) and temporal boundaries (temporally relevant stratigraphic units). How these boundaries are chosen has a direct impact on the value of MNI.

The MNI were calculated using both temporal (stratum) and spatial (feature) boundaries. Each stratigraphic layer is considered to be a separate and distinct occupation or utilization of the site. Remains from test units without stratigraphic data were considered as a separate occupation, although this may artificially elevate the total MNI. Likewise, faunal remains from features were considered to be separate from non-feature material since different features within the same stratum may represent activities that occurred at differing times or seasons. MNI cannot be calculated for taxonomic categories below the level of family due to the degree of fragmentation.

Using stratigraphic determinations to calculate MNI is problematic for only one of the identified taxa, that of pocket gophers (*Thomomys*). Pocket gophers are burrowing animals whose burrows are present in many strata. However, when MNI calculated without using strata and MNI calculated using strata are compared, the results are very similar, 5 and 6 respectively.

Results of the Faunal Analysis

A total of 7368 (3589.7 g) faunal remains were examined and analyzed by Olson from the 1993 collection. Thirty-three different taxa were identified, including four

fish taxa, four bird taxa, and three invertebrate taxa (Table 4). However, only 5.3% of the remains are identifiable to at least the level of family (n=177 or 2.4% to genus and n=212 or 2.9% to family).

The vast majority of mammalian remains (79.5%) are undetermined beyond the five size classes. Even though most are unidentifiable, there is a great diversity of mammalian taxa represented in this faunal sample (22 taxa). The identified taxa that are of cultural origin includes rabbits (Leporidae and *Sylvilagus*), beaver (*Castor*), dogs (*Canis*), bear (*Ursus*), elk and deer (Cervidae, *Cervus*, and *Odocoileus*), and sheep (*Ovis*). The undetermined mustelid and identified skunk remains are difficult to categorize, since skunk are scavengers and would be drawn to garbage discarded at the site. Mustelids, including skunks, are also important as fur-bearing animals that may have been exploited by inhabitants of the site. Very few of these taxa are intrusive species: undetermined rodent (n=16), *Thomomys* or pocket gopher (n=15), *Peromyscus* or mice (n=2), *Microtus* or voles (n=1), and snail (n=26).

The cervids, that is, deer and elk, are the most numerous of the identified remains (4.4%). These species, along with an occasional sheep and bear, constitute the medium, large, and medium/large mammal remains that account for the majority of bones and bone fragments from the site (76.3%). All of the large mammal remains most likely belong to a single species, elk. The majority of the identified cervid remains consist of teeth and antler (all of the Cervidae remains, 77% of the elk remains, and 64% of the deer remains); 67 teeth were identified as deer. MNI for deer were calculated using these teeth and gross observable differences in tooth wear. The other cultural taxa are represented in the small mammal remains, 79 of which are probably dog and 14 are rabbit-sized.

Of the eleven non-mammalian taxa, all but two (the snail shell fragments and the starling, *Sturnus vulgaris*) were probably utilized by the inhabitants of the site. All identified fish taxa were utilized ethnographically by the Nez Perce, as were ducks (*Cygninae*) and grouse (*Tetraonidae*). The undetermined bird remains include a galliform gastrolith, as well as bone fragments. The river clam shells and fragments represent a potential food resource but these occur in such low frequency that they could also be a natural deposit.

Although all burning categories are represented, the majority (n=5316 or 72.2%) are unburned. Calcined remains constitute the next most numerous observed burning category (n=833 or 11.3%), followed closely by partially burned remains (n=792 or 10.7%). Completely burned remains account for only 5.8% (n=426) of the sample. The majority of the remains (n=4215 or 57.2%) do not exhibit natural or cultural modifications beyond breakage.

Seven different types of natural modifications were observed. The most commonly observed modification is gnawing (n=1445). This gnawing is by carnivores except for 12 specimens where the gnawing was by rodents. Four of the carnivore-gnawed fragments appear to have been ingested. Weathering is the next most frequent observed modification (n=1002). A total of 125 fragments exhibit weathering and carnivore gnawing. A small percentage (n=155 or 2.1%) of the sample consists of long bone shaft fragments that are exfoliating, a type of weathering. Very few of the remains (n=38) are mineralized. Seven bone fragments are polished by natural means and two fragments are coated with a very hard calcium carbonate deposit.

A total of 422 bone fragments exhibit cultural modifications. Most modifications are associated with subsistence activities (butchering and marrow extraction). The butchering activity is represented by cut marks observed on 187 of the fragments. Six fragments have cut marks associated with scraping the bone to remove the periosteum prior to breaking for marrow extraction. The periosteum is a slippery membrane on the surface of bones. Processing bones, especially long bones, for marrow is evidenced by a number of bone flakes or impact fractures (n=196). A single large mammal long bone shaft fragment (16.2/1.16) has been saw cut, which is a historic Euroamerican butchering technique.

Bone Tools

Forty-six specimens are bone tools, tool fragments, or possible tool-making detritus (Sappington with others 1997:Table 8). The majority (n=28) were recovered from three units: Unit 24 (n=11); Unit 25 (n=10, all from Feature 7 and Feature 10); and, Unit 26 (n=7). Most tools (n=25) are made from long bone shaft fragments from medium and undetermined medium/large mammal. Most of these tools and fragments have rounded and polished edges or have polished surfaces both with and without striae; the striae are oriented parallel to the long axis of the tool.

Eight fragments were identified as probable awls and five as probable scraping tools (Sappington with others 1997:Table 8). Three non-utilitarian items were observed in the sample: a gaming piece fragment (26.5/3.32), a probable bead fragment (24.8/3.29), and a possible bead or bone whistle fragment (23.5/3.16). Probable function was not assigned for eight tool fragments. These fragments have varied shapes, sizes, and types of deliberate modifications. Three fragments may represent expediency tools from butchering or tool-making detritus.

Nineteen tools were made from antler. Eight of these are pieces of cut antler that are most likely debris from tool-making activities. Most antler tools are probable wedges or wedge fragments. A single antler tine flaking tool (24.3/2.12) and three antler digging stick handles from Feature 10 were identified.

Summary

A total of 7368 faunal remains were recovered and analyzed from KNFH in 1993. The preservation conditions for organic remains at this site appeared to be good. The presence of "fragile" species such as fish and bird, albeit in very low frequencies, supports this observation. Also, the very low percentage of specimens identifiable to at least the family level (5.3%) is due to the fragmented nature of the material rather than poor preservation condi-

tions. This high degree of fragmentation indicates intensive processing of the skeletal material for marrow extraction. Very few of the observed fractures appear to be related to weathering. Weathering, in varying degrees including exfoliation, was identified in 17.5% of the collection; in most cases it did not affect the degree of identifiability.

The range of taxa identified demonstrates a broad resource base utilizing ungulates, small game, and riverine resources. Bear, which is not an ungulate and cannot be classified as small game, was also an important subsistence resource. Bear provided pelts and claws used for decoration as well as meat.

The ungulate resource base included deer, elk, and sheep. The ungulate resource provided raw materials for clothing, shelter, and tools (antler and bone) as well as essential nutrition (protein and fat). Deer and elk were the most important animal food resources available to the inhabitants of the site. Deer and elk were probably hunted by drives or ambush where large numbers of animals were harvested. On the other hand, sheep were probably hunted individually and could not be harvested in large numbers; unlike deer, sheep populations do not respond well to sustained hunting pressure.

By number of specimens (NISP and MNI), the most important ungulate resource is deer, followed by elk and then by sheep. However, when calculating relative economic importance, body size is very important because of the amount of actual pounds of usable meat. A bull elk averages between 700 and 1000 pounds with 350 pounds of usable meat, while a male mule deer averages between 200 and 400 pounds with 100 pounds of usable meat (White 1953). Therefore one elk is equivalent to three deer on the basis of available meat. This makes the elk resource equal in importance to the deer resource.

A wide range of small game (mammals and birds) was present. Eight small game taxa were identified including rabbits, beaver, skunk, undetermined mustelid, dog, and probable grouse. In terms of subsistence, this small game resource represents an adjunct to the basic diet provided by the ungulates. However, small game were important for providing other commodities, such as fur. Rabbits, beaver, and mustelids are important fur-bearing animals and in historic times were trapped extensively for their fur. Dogs are a very important non-food species for the aboriginal inhabitants of the site. Prior to the horse, dogs were an important pack animal, in addition to being used in the hunt to drive game.

Riverine resources utilized by the inhabitants of the site include fish, river clam, and waterfowl. Fish are the most important of these resources. The inhabitants used salmon, suckers, and various cyprinids such as squawfish. It is difficult to assess the importance of the fish resource since processing fish for long-term storage by drying or smoking necessitates the removal of most of the bones. The river clams are a very minor component of the diet and may have been used only during times of extreme dietary stress. The use of waterfowl is evidenced by a single duck bone fragment. This suggests that waterfowl may not have been an important food resource but rather an opportunistic kill.

These riverine taxa provide the best seasonal data available — data very scant for this site. Based on size, the salmonid remains are probably migratory salmon rather than non-migratory trout. Different salmon species migrate from the ocean to their upstream spawning grounds during various times from spring to late fall. Cyprinids, such as squawfish, move from shallow water in the summer to deep water in the winter. The presence of salmonid and cyprinid remains indicates a spring to late fall occupation, but care must be exercised since these remains could represent stored food used during the winter.

There are no immature remains among the ungulates or small game. However this lack may be selective hunting practiced by the inhabitants rather than related to season. Since the condition of the hide and large body fat reserves are important criteria for selecting ungulates, the optimal time to hunt these animals would be the late fall and early winter. By late winter and early spring the reserves of fat are severely reduced rendering the caloric gain minimal. Early winter is the time of the year when the ungulates are most accessible in large numbers. With the first snows ungulates move from higher elevations to lower elevation and gather together or "yard" in groups in areas of good solar exposure and adequate food.

The faunal material from the various strata can be compared to detect changes in subsistence through time. The basic suite of animals changes in only minor ways through time. The importance of the ungulate resource is constant and dominates the faunal samples from all periods.

During the historic (Stratum 1) to protohistoric (Stratum 2) periods the ungulate resources used were elk, deer, and sheep. These taxa plus medium, large, and medium/large mammal remains account for 80% of all the faunal remains. The small game resource includes dog, skunk, undetermined bird, and small mammals (4.5%). The riverine resources include salmonids, suckers, and cyprinids and constitute only 0.7% of the sample. Sucker remains occur only in this historic period. Bear was also present.

In the protohistoric to late prehistoric period (Stratum 3), the ungulate resource consisted of only deer and elk. Sheep remains are absent. The ungulate resource (i.e., deer, elk, medium, large, and medium/large mammals) constitutes 82.3% of the faunal material. The small game resource consists of rabbit, dog, and grouse; small mammals account for only 3.3%. The riverine resource is negligible with only 0.5% but it consists of fish, both salmonid and cyprinid. Bear was present in this sample also.

During the prehistoric period (strata 4 and 5), there are some very slight changes. The ungulate resource accounts for 76.6% of the remains and includes deer, elk, and sheep. Small game constitutes 3.3%, similar to Stratum 3, and consists of rabbit, mustelid, and small mammals. No dog remains were identified in this material. The largest change is in the riverine resources that account for 6.6% of the sample. The resources consist of waterfowl, fish, and river clam. In this period the appar-

ent importance of fish is down and the importance of river clam is up. This may be misleading, however, since this importance is based on the number of fragments which artificially elevates the percentage present. River clams are a more important resource in this prehistoric period than in later periods, since this is the only period with identifiable taxa.

From the 1997 assemblage, the majority of remains were found to be fairly stable and only a small portion highly exfoliated or unstable. Although in good condition, few were intact and heavy processing was noted among almost all fragments gathered. Based on size and weight it is thought that most of the remains from 1997 are also Cervidae. There were minimal numbers of intact diagnostic bone fragments. Noted among them were jaw fragments of both deer and elk, and what is believed to be a Cervidae vertebrae. A number (ca. 54) of the bones collected from features 11-14 were burned, while nearly every other bone from the test units exhibited evidence of butchering, i.e., incised marks on long bones, shattered fragments, and spiral fractures on bones found *in situ* in features.

Human Remains

Two human skull fragments were encountered in Area 2 in 1993. One (8.0.1) was exposed by construction and collected on the surface adjacent to the recently emplaced pipe near Unit 8. It was identified by UI physical anthropologist Don Tyler as a right frontal from a ca. 12 year old sub-adult. It was kept in a secure location and not included in the faunal analysis. The other fragment (23.3/2.18) was found among the faunal remains by Olson during her analysis (Table 4). Several historic artifacts were found in upper levels of this unit as well as in the next level in this stratum (23.4/2) and a nail (23.5/3.18) was recovered in Level 5 so it is possible that this element was disturbed by historic activities prior to our investigations. It was identified by Don Tyler as a right parietal from an adult aged ca. 18-35 years old and clearly represents another individual based on the age difference as well as differential weathering (Sappington with others 1997:79). These remains have been repatriated to the Nez Perce Tribe.

SUMMARY

The site of Looking Glass' 1877 village, also known as *Kam'-nak-ka*, was indicated by a historic marker in 1928. This marker was removed during construction or operation of Kooskia National Fish Hatchery during the late 1960s-early 1970s and cultural resources were ignored here for several decades. However, archaeological sites are common in the Kooskia area and four sites were recorded in or near KNFH in the late 1970s. Thus, the potential for encountering cultural resources was quite high when the USFWS requested in early 1993 that archaeologists from UI conduct investigations here in order to assess recent disturbance caused by the construction of a pipeline through a portion of this 120-acre property.

The initial reconnaissance and testing accomplished four goals. First, it confirmed that cultural resources were present in numerous locations across KNFH. Next, it led to the discovery and recording of two previously unknown prehistoric sites (10-IH-2213 and 10-IH-2214). Third, we determined that sites 10-IH-821 and 10-IH-987 had not been affected by the pipeline. Most importantly, our investigations correlated 10-IH-820 with *Kam'-nak-ka*. Auger holes and test units indicated that 10-IH-820 had considerable potential to provide information pertaining to regional prehistory and history. Stratigraphy and cultural material indicated that this was a multicomponent site with occupations dating to the prehistoric and ethnographic/historic periods.

Based on these results and in order to complete the pipeline, the USFWS provided UI with additional funds for data recovery excavations in two locations along the pipeline route where testing indicated that significant deposits and probable features were present. Data recovery was conducted in order to address four general research questions.

The first research question concerned the chronology of aboriginal land use at KNFH. Cultural material was recovered from all strata which indicates that human occupation was fairly continuous. The earliest artifacts were encountered near the mill pond where temporally sensitive lithic tools, such as two edge-ground cobbles and a large side-notched point, indicate that KNFH was initially occupied during the late Cascade subphase or early Hatwai phase. Charcoal was not recovered in all strata but four radiocarbon assays ranged from ca. 3500 to 200 B.P. The uppermost strata contained late protohistoric and historic items that were clearly used by Native Americans. Thus, it can reasonably be inferred that KNFH was used by the ancestors of the Nez Perce beginning some time prior to 3500 B.P. and continuing until the hatchery was constructed in the 1960s.

The second question concerned the archaeological "signature" of different chronological or functional components: how did the ethnographic/historic Nez Perce occupation compare and contrast with prehistoric occupations? This question is more difficult to address due to recent disturbance to the upper levels of 10-IH-820 plus the fact that the most recent stratum represents a relatively brief span of time for material to accumulate. The five strata can be examined in terms of prehistoric, protohistoric/ethnographic, and historic components although there are no distinct breaks between them. Overall, all components are similar in terms of cultural material and inferred activities. The data recovered indicate an emphasis on continuity rather than on change, but several apparent shifts over time can be noted.

For example, there appears to be a gradual transition in projectile point styles from a predominance of corner-notched points in the prehistoric component to a preference for small side-notched, base-notched, and stemmed points in the protohistoric and historic components. This shift is a matter of form rather than function since it is likely that all points were similarly employed for hunting medium and large mammals. Fishing tools are limited to net sinkers which were found in both pre-

historic and historic strata; although rare, fish remains suggest an increase in the variety of species procured in later times. Plant processing is represented by mortars, pestles, and elk antler digging stick handles which were recovered from prehistoric and protohistoric strata; the absence of these tools in the uppermost stratum is attributed to sampling since all were used historically.

The protohistoric/ethnographic occupation was identified strictly by radiocarbon dates and by historic personal items including copper and glass beads; all other cultural material from this period was similar to that recovered from earlier levels. There is no distinct contrast between prehistoric and later occupations at 10-IH-820 — although they expanded their material culture, the historic Nez Perce continued the general lifestyle and traditions established by their prehistoric ancestors.

The third research question involved the interplay between upland versus riverine food resources at the site: did the relative importance of one or the other fluctuate over time and if so, what factors of settlement organization might account for any variability? This question partially overlaps with the previous one and faunal remains are the best means of addressing it. Because of seasonal differences in climate and vegetation, medium and large mammals normally range widely throughout the year so that a species observed in upland meadows in summer could be encountered in the brush along the river in winter. Therefore, the question can also be considered in terms of terrestrial versus riparian resources.

Ethnographically, the most important plant foods are roots such as camas and kouse. Due to lack of preservation, the use of these resources would best be indicated by the excavation of processing tools rather than by the unlikely recovery of actual plant remains. Camas is best known at the upland "prairies" near Weippe and Grangeville where it could be collected in abundance but it also grew in other locations. For example, small amounts were observed in June 1993 adjacent to 10-IH-1009 which is just to the north and at approximately the same elevation as 10-IH-820. Thus, roots could be considered as both an upland as well as a riverine resource in the Kooskia area.

Identified taxa in the lowermost Stratum 5 include large mammal (elk), medium mammal (deer and sheep), duck and undetermined bird, plus unidentified fish and river clam. Identified taxa in Stratum 4 were similar except for the omission of elk and the addition of rabbit. Stratum 3 contained the largest variety and included most of the previous groups (except duck which was replaced by grouse) plus dog, bear, salmon, and squawfish. Stratum 2 was comparable with deer, elk, sheep, bear, dog, undetermined bird, squawfish, and the addition of sucker. Although it was a much smaller assemblage, Stratum 1 contained a variety of medium mammals (deer and bear), undetermined bird, and fish in the form of salmon.

There is no evidence that one type of subsistence resource was ever preferred over another. Terrestrial resources, especially deer and elk, predominated at all times but riverine resources were always present, albeit in a secondary role. As indicated above, the record suggests greater emphasis on fish in the later occupations. Settlement appears to have been based on a broad strategy that emphasized hunting ungulates supplemented by the procurement of other game, birds, and riverine resources. The selection of *Kam'-nak-ka* for repeated settlement was undoubtedly motivated by its ready access to multiple resources which specifically prevented subsistence fluctuations from occurring.

Finally, what kind of settlement is represented at 10-IH-820 and how does it fit with current reconstructions of prehistoric settlement archaeology and ethnographic Nez Perce information? This is a complex question that can only be partially addressed by artifacts and features encountered in widely scattered units but data recovery does provide a beginning.

It appears that 10-IH-820 was initially occupied as an intermittent camp ca. 4500 B.P. By ca. 3500 B.P. increasing amounts of cultural material and features suggest that settlement was shifting to use of the landform for a village that was the forerunner of *Kam'-nak-ka*. All cultural material is comparable to that from other ethnographic Nez Perce villages (such as the Hatwai, Ahsahka, Kooskia Bridge, and *Tuhkaytahs'peh* sites) that have been examined archaeologically. Thus, the available data indicates that the inhabitants of *Kam'-nak-ka* were clearly participating in the regional pattern focused on village-based sedentism which was complemented by the occupation of camps for particular resources. This question could be answered conclusively by more extensive excavations. Positive identification of a prehistoric village could be determined by the exposure of several contemporaneous houses and block excavations would provide the requisite data in terms of architecture, spatial patterning, and other criteria.

Research in 1997 was oriented toward management of the property and it was more extensive in terms of horizontal extent, covering portions of the entire 120-acre property. The excavation of 276 auger holes, supplemented by nine 1 x 1 m test units, fine-tuned site boundaries and showed that intact deposits were more widespread than we had anticipated. Cultural materials were recovered to a depth of 115 cm bs and faunal remains were relatively well preserved. Additional features indicate that house pits are present and the site clearly possesses integrity and has the ability to provide much information concerning the prehistoric and protohistoric periods in the Kooskia area.

CONCLUSIONS

Archaeological investigations at KNFH have resulted in the recovery of cultural material across much of the 120-acre property. Although restricted by the construction-mandated nature of the fieldwork, it is possible to provide insights in addition to the management questions addressed above. These conclusions are presented in terms of what can be determined from each of the five natural and cultural strata with regard to human activities at this important location.

The oldest occupation at *Kam'-nak-ka* correlates to Stratum 5; its base was not reached in Area 2 so it is possible that an earlier occupation may be present.

Typologically diagnostic tools suggest that the site was first occupied ca. 6700-4500 B.P. Cultural material was relatively infrequent compared with subsequent assemblages but analyses suggests an emphasis on hunting since projectile points account for one-third of the assemblage. No cores or cobble tools were recovered in this stratum.

Stratum 5 contained the least number of faunal remains by number and weight (n=238; 110.6 g) but seventeen taxa were identified. The diversity of taxa indicate exploitation of a well-rounded resource base involving large mammals (probably elk), deer, sheep, small mammals, fish, and clams. Five percent of the sample is identifiable to at least the level of family (n=5 or 2.1% to genus and n=7 or 2.9% to family). All mammalian size classes are present. Although no dog or rabbit remains were identified, three of the small mammal specimens are dog size, and one is rabbit size. The most numerous taxa by NISP are the medium mammals which are probably deer and a few sheep, since those two types of mammals were identified. A single mustelid fragment is most likely cultural. Mammal butchering activities are represented by cut marks and marrow extraction but no features were identified. Settlement appears to have been limited to a small intermittent camp in the extreme northeast corner of Area 2. All identified taxa are known historically which indicates that the local environment has remained fairly constant over the past 4500 years.

There is greater evidence of human occupation in Stratum 4. The probable house pit in Area 2 suggests that more significant settlement began ca. 3500 B.P. Cultural material consisting of lithic tools, cores, and debitage increases in this stratum and bone tools indicate greater diversity in the tool kit. The earliest mortar appears during this time; the presence of this type of site furniture supports the perception of growing sedentism and the development of root crops which are characteristics of the Hatwai phase across the Clearwater River region.

Faunal remains show a diverse resource base with a dependence on deer and elk, supplemented by small mammals (such as rabbits), unidentified fish, and birds. A total of 869 (401.4 g) faunal remains were recovered from this stratum and 17 taxa were identified including fish, bird, and river clams (*Margaretifera* sp.). This stratum has the largest percentage (7.8%) of faunal material identifiable to at least the level of family (n=25 or 2.9% to genus and n=43 or 4.9% to family). All mammalian size classes are present. Although no dog remains were identified, nine of the small mammal remains are dog size and two others are rabbit size. The most numerous taxa in this sample by NISP are the medium mammals, probably deer. Four intrusive taxa were identified including undetermined rodents, pocket gophers, mice, and snail. Fifty-six culturally modified bone fragments were identified in Stratum 4, the majority of which are related to butchering activities. A total of 26 fragments have cut marks related to butchering and 21 have impact fractures indicative of marrow extraction. One of the specimens with cut marks is indicative of marrow extraction also. This fragment exhibits scraping characteristic of removing the periosteum.

Nine bone tools and tool fragments were identified in Stratum 4. Four types of utilitarian tools are present: awl fragments (n=2), scraping tools (n=2), an antler wedge (n=1), and unknown (n=4). One of these unknown tool types exhibits extensive flaking.

Stratum 3 was the most substantial occupation and it was widespread across the site which indicates a relatively greater population. A single date of ca. 500 B.P. indicates that it corresponds to the late prehistoric (Ahsahka) to early protohistoric (Kooskia) phases. With the exception of a unique item, all categories of flaked lithic tools at the site are represented here. Corner-notched points are most frequent but styles are diverse. Cores are common and most categories of cobble tools were recovered; net sinkers, pestles, and pipes are introduced during this occupation. Abundant lithic tools make it possible to infer an emphasis on hunting. Other subsistence activities include fishing, as indicated by the net sinkers and fish remains, while plant processing is indicated by the mortars, pestles, and elk antler digging tools. Nearly half of the faunal remains recovered from the site originated in this stratum and they confirm a well-rounded resource base: identified taxa include deer, elk, bear, rabbit, salmon, and numerous others. Elaboration of social activities is indicated by the pipes. Four features indicate diverse onsite activities including the manufacture of lithic and antler tools. The ethnographic Nez Perce pattern was clearly in effect by this time.

Nearly half (43.4%) of the total sample of faunal remains (n=3198; 1659.7 g), were recovered from Stratum 3. Likewise, the greatest diversity and number of taxa (n=22) were identified in this stratum. However, only 4.8% of the remains were identifiable to at least the level of family (n=77 or 2.4% to level of genus and n=78 or 2.4% to the level of family). All mammalian size classes are present. Among the small mammal remains, 32 specimens are dog size and six fragments are rabbit size. The sample also contains dog (n=6) and rabbit family (n=1) remains. The most numerous taxa by NISP are the medium mammals which are probably deer.

A total of 192 (6.0%) culturally modified bone fragments were identified in Stratum 3. The majority of these are related to butchering activities. Unlike strata 1 and 2, there are a greater number of fragments (n=93) with cut marks related to butchering than there are impact fractures indicative of marrow extraction (n=78). Four fragments with cut marks are indicative of marrow extraction also. These fragments exhibit scraping characteristic of removing the periosteum. Another fragment has cut marks that may be indicative of tool-making detritus.

Half the bone tools and tool fragments from the site were recovered from this stratum and 19 tools and fragments were identified. The greatest diversity of tool types occurs in this stratum. Nine bone tool types were tentatively identified. Tools from this stratum include all of the non-utilitarian or decorative items identified in the entire sample: gaming piece (n=1), bead (n=1), and bead

or whistle (n=1). Utilitarian tools identified include digging stick handles (n=2), antler wedges (n=4), awls (n=2), scraping tools (n=3), and expediency tools from tool-making detritus (n=2). Three tools are of unknown function.

Stratum 2 represents the interface between the protohistoric and historic periods. Overall, cultural material is similar in all respects to that employed previously although base-notched and Desert side-notched projectile points appear to have become more popular. Relative to other strata, cores are more frequent; cobble tools are less common and diverse but two pestles and a unique shaft abrader were recovered. Faunal remains were not common but bear, deer, and sheep were identified as well as birds and fish, including elements of both Catostomidae and Cyprinidae. Features include two hearths, one of which was radiocarbon dated ca. 300 B.P., and a cache of lithic tools and cores. This stratum is important because it augments the little-known Kooskia phase.

A total of 1759 (702.0 g) faunal remains were recovered from Stratum 2. Eighteen taxa were identified including three categories of fish, birds, and river clams. Only 4.8% were identifiable to at least the level of family (n=42 or 2.4% to genus and n=43 or 2.4% to family). All mammalian size classes are present. Among the small mammal remains 19 specimens are dog size and a single fragment is rabbit size. Four fragments were identified as dog but only one other small mammal taxon was identified (*Mephitis* or skunk). The most numerous taxa by NISP are medium mammals of which the majority are probably deer with a few sheep. The only intrusive species in this sample are the pocket gophers (*Thomomys*).

Ninety-one culturally modified bone fragments were identified in Stratum 2 and the majority are related to butchering activities. A total of 39 fragments have cut marks related to butchering and 46 have impact fractures indicative of marrow extraction. One of the specimens with cut marks is indicative of marrow extraction also. This fragment exhibits scraping, characteristic of removing the periosteum. A second bone fragment has cut marks that may be indicative of tool-making detritus.

Six bone tools and tool fragments were identified from this stratum. Four fragments are probable awls, one is a probable antler tine flaking tool, and another is an expedient tool of unknown purpose from tool-making detritus. These six tools account for 18.4% of all the bone tools, but 50.0% of the identified awls.

Stratum 1 is the most recent occupation and it appears in the upper levels of units across the site. Virtually all historic artifacts were recovered from this stratum. The continuation of traditional Nez Perce technology is indicated by the lithic tools; five categories of projectile points were recovered and both Desert side-notched and small stemmed types are most common in this stratum. The ratio of projectile points to other tools is virtually unchanged from the two previous strata which indicates a comparable degree of hunting. Cores and cobble tools are infrequent. Identified taxa include bear, deer, bird, salmonid, and others based on size. While rare, the two net sinkers and salmon remains illustrate the ethnographic Nez Perce emphasis on fishing. The addition of copper and glass beads documents the introduction of Euroamerican material culture. Early farming was represented by the horseshoe, cut nails, and other items while operation of the mill was indicated by the chain binder and several other artifacts. The single historic feature was a post hole with canning jar fragments in its fill. The modern era is represented by aluminum pull tabs and plastic items.

A total of 422 (199.8 g) faunal remains were recovered from Stratum 1. No faunal remains were recovered from features in this stratum. Fourteen taxa were identified including fish, bird, and river clams. Five percent were identifiable to at least the level of family (11 or 2.6% to genus and 10 or 2.4% to family). All mammalian size classes are present but no family or genera were identified for the small mammal. Eight small mammal remains are of dog size, even though no *Canis* (dog) remains were identified. The most numerous taxa in this sample by NISP are the medium mammals which are probably deer. The bear is most likely an old individual because the lower second molar was worn nearly to the root line. The vole and snail shell are intrusive.

Twenty-six culturally modified bone fragments are present. All but one are related to butchering activities. Eleven fragments have cut marks related to butchering and 13 have impact fractures indicative of marrow extraction. The only fragment with historic saw cuts was recovered from this stratum.

In conclusion, important prehistoric activities at *Kam'-nak-ka* began ca. 4500 years ago and included a consistent dependence on the manufacture and maintenance of lithic and bone tools for hunting with a later emphasis on fishing and plant processing. Increasing social activities through time are suggested by the late prehistoric pipes which probably arrived at the site through economic exchange with distant partners. The collection is comparable to others from sites across the Clearwater River region and indicates a long-time relationship between the inhabitants of this site with the ancestors of the historic Nez Perce people. This general association is strengthened by the specific ethnographic and historic records which document that this site was associated with Looking Glass' band. A direct archaeological link with this band is suggested by the possible house feature and 19th century artifacts in Area 1. Despite the impacts of the 20th century, much of the *Kam'-nak-ka* remains intact and it is clearly important at the regional and national levels. Ongoing cultural resource management planning between the USFWS, UI, and the Nez Perce Tribe will ensure that in the 21st century this site will receive the long-overdue treatment that it deserves.

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