CULTURAL RESOURCE OVERVIEW FOR THE SALMON NATIONAL FOREST

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INTRODUCTION

This overview of cultural resources has been written to address both management and research needs on the Salmon National Forest. Throughout, the reader will find that the needs of the two are not separate; they often require similar data bases although the goals of management and research are somewhat different.

As a management tool, this overview identifies: aspects of prehistory and history that are known through ethnography, archeology, and historic accounts; gaps in our present knowledge of the area which might be filled with further archeological, historical, or environmental research; a very general framework for evaluating the significance of known and of yet unrecorded sites on the Forest; natural and cultural sources of site destruction; suggested means for protecting endangered resources; historic themes, events, and places that may have interpretive value; and areas of high and low potential resource conflict so that advance planning can include consideration of cultural resources and their required identification and protection. Also, the overview may serve as a handbook for archeologists conducting survey or excavation within Forest boundaries, whether they be seasonal or permanent Forest archeologists, paraprofessionals, academicians, or others.

The overview is also designed to summarize current research and suggest directions for future archeological and historical research independent of identified immediate management needs. Of interest to archeologists and historians is the development of models simulating past land use. The overview discusses the data base necessary to test the validity of such models, in terms of basic site inventory plus artifact assemblage characterization. It recognizes the need for excavation to verify or discount site function identification based on surface finds and the need to identify the earliest known occurrences of various cultural features such as pithouses, salmon procurement, pine nut gathering, and storage. Other research questions suggested and discussed concern:

cultural group boundaries and ethnicity

maintaining population size (prehistoric) and cultural continuity (prehistoric and historic) in areas with limited food resources and travel restrictions

arrival of prehistoric Uta-Aztecan and Athabaskan speakers to the study area

the social history of industries such as charcoal making and tie cutting

analysis of artifact frequency and their spatial distribution at some historic sites where site function is not readily apparent

The scientific significance of many sites can be evaluated based on their contributions to the answering of the above questions.

While addressing the above questions, this overview is not a comprehensive account of all events in the areas's prehistory and history. The overview is limited by a culture materialistic orientation due primarily to the nature of archeological data. Prehistoric themes addressed have centered on land use including subsistence and the distribution of settlements, while historic themes are the area's resources including minerals, timber, and grazing lands.

Herein, the study area consists of lands administered by the Salmon National Forest. In most cases, these are the lands within the Forest's Congressionally delegated boundaries. Differences between Salmon administered lands and Congressionally-designated lands are noted on the Forest's recreation map.

Identifying Site Locations

From either the management or research point of view, it is desirable to know, first, the distribution of sites and, second, the significance of those sites that occur within Forest boundaries. The distribution of sites depends on a wide range of factors including site preservation, prehistoric land use and historic land use. Those factors in turn depended on availability of food resources, travel routes, availability of other resources such as lithic materials, minerals, and forage for livestock. The availability of food resources for prehistoric populations was often a function of climate. As the Holocene progressed, there were periods of wet and dry, hot and cold both short term and long term fluctuations in climatic conditions. While the general trends of Holocene climatic changes have been documented for parts of central Idaho some of the localized and subtle changes have probably gone undetected. Yet these subtle changes and local variations also effected the distribution of settlements.

This leaves the archeologist/manager with a problem -- to where does he turn to predict the distribution of archeological sites? There are two alternatives present at this time. (1) General site distribution information can be estimated based on presently available resources or historically available resources. Known prehistoric climatic conditions and food availability can be used to modify that model where possible. More specific site locations can be predicted using both intuition and deductive logic. (2) Previous archeological research in mountainous environments plus studies of area geomorphology can be used in predictions of specific site locations. For historic sites, both general and specific site locations are often reported in historic and archival records. The locations of the remains of some "unsung activities" may better be predicted by consulting reports of previous historical archeological studies conducted in the Rockies.

The use of present and historic resource conditions to predict general prehistoric site locations is a step in the right direction, but obviously

is of limited utility during those times when the climate was significantly different than at present. Some of the possible changes are discussed in the section on past environments that follows. The use of presently known archeological sites to predict specific site locations is an even more undesirable proposition. As an example, while logically we would expect to find sites fairly close to water sources, few surveys have been conducted away from permanent water supplies to tell us if our intuition is accurate. Furthermore, most archeological reports summarize where sites were found but not the environmental information about where they were not found.

What all this means is that the predictions about site locations reported in this overview are best guesses with the very limited available information. Until a statistical sample of the Forest's environments, land types, etc., is analyzed, the distribution of archeological sites cannot be adequately predicted. We may unknowingly make reliable predictions using information about the distribution of known sites, but because we have no way to statistically evaluate our present knowledge of site distribution, it is not managerially wise to make predictions on that present knowledge (Blalock 1972:509-510). Because systematic survey has been limited to the Salmon River corridor below North Fork and to the Middle Fork corridor, it is unrealistic to look to the distribution of known Salmon National Forest sites for information with which to predict site density and site significance throughout the Forest. Some other strategy must be used to predict site occurrence. I will return to this point shortly.

Following the lead of Franzen (1978), Wright et al. (1980), and Hackenberger (n.d.), I believe it is most appropriate to discuss prehistoric land use and archeological site location in central Idaho by employing the ethnographic pattern of resource exploitation. Consideration of known information about hunters and gatherers, in general, and their possible decision-making processes should also be included.

Because Franzen deals only with model development and not implementation and Wright et al. and Hackenberger include implementation but in areas mostly outside the Salmon National Forest, I will only summarize their works and spend more time outlining the presently known distributions of aboriginally exploited resources. If site location was primarily dependent on resource distribution, then identification of that distribution should aid in predictions of site location. Recognition of site function is critical to evaluate the predictions made. Consequently, I have characterized site composition in both the systemic and archeological contexts as much as possible. I discuss the results of these characterizations and the implications for evaluating the models using archeological data.

Comparable models of historic land use have not been developed previously, nor are they constructed here. Elsewhere I have developed a model to predict late nineteenth century ranching activity site locations (Rossillon 1982), but no model addressing the distribution of all historic site

types has been created. In this overview, I have relied heavily on historic accounts of known site locations to discuss historic site density across the Forest. Historic sites in their systemic and archeological contexts are discussed in ways similar to those for prehistoric sites. Site types discussed are: exploration, surveying, and mapping camps; fur trapping and trading camps; mining; charcoal production; railroad construction; timber production; central communities and supply businesses; farming; ranching; and Forest Service.

Previous Archeological and Historical Research

Archeological research in the study area, both prehistoric and historic, has concentrated along the Salmon and Middle Fork Rivers. Appendix 1 contains summaries of previous archeological and historical work in and immediately surrounding the project area. Survey has been the most common form of investigation, with only full-scale excavations being conducted at the Alpha and Beta Rockshelters. Several sites have been tested for subsurface materials, providing needed management information but limited data helpful for scientific or historic research.

Most of the previous research reflects the Forest Service procedures concerning protection of cultural resources from adverse impacts. According to current procedures, the preferred alternative when sites are found in project areas is to avoid the site without making a determination of significance. Such action is expedient and protects the resource from destruction. However, the research potential and interpretive potential of the sites remain unknown.

Harrison's (1971) survey on the Salmon River, Swanson's (1958) and Knudson et al's. (1981) Middle Fork Surveys, and the River-of-No-Return Wilderness surveys (report in preparation) resulted in the location of about two-thirds of the total number of sites discovered to date. Another significant proportion of sites (5-10%) was identified by Dahlstrom (1972) in the Big Horn Crags. Forest Service project-specific surveys have recorded sites primarily along Panther Creek and North Fork and in the Beaverhead Mountains east of Leadore.

Test excavations were made at Waterfall Village (SL-267), Cunningham Bar (SL-207 [10-IH-885]), Corn Creek Village (SL-206 [10-LH-124]), Owl Creek (SL-18 [10-LH-280]), Cove Creek (no site number assigned), Gibbonsville (SL-130 [10-LH-366]), and near Bannock Pass (SL-15 [10-LH-309]). Most of the testing operations were with augers or shovels to determine the presence and extent of subsurface archeological deposits. Most of those tests were made when there was an apparently unavoidable conflict between protection of cultural resources and the development of some other resource, such as spring water for livestock use. Aside from defining the presence and horizontal and vertical extent of cultural materials, there has been little explicit treatment of the role these sites played in the area's prehistory.

One important exception has been the research at Waterfall Village where approximately one-fourth of a pithouse has been excavated. In that

case, the investigators were primarily interested in determining the research potential of the site for answering such research questions as character of the artifact assemblage, preservation and integrity, length of occupation, and the cultural sequence of occupation. They assumed that Waterfall Village is similar to other pithouse villages along the Middle Fork River and that its analysis would offer clues about the research potential and management needs at many of the area pithouse villages (Wylie et al. 1981).

Complete excavations at the Shoup Rockshelters (Alpha and Beta Rockshelters) indicate that at least the lower elevations in the study area were occupied before 8000 BP (years Before Present). The earliest remains of human occupation at the Beta Rockshelter were radiocarbon dated to 8175 ± 230 BP (Swanson and Sneed 1966:12). Both rockshelters appear to have been occupied throughout prehistory with the heaviest occupation occurring between 7200 and 3450 BP during what Swanson has defined as the Bitterroot phase (cited in Butler 1978a:63). Rockshelter use during later, post-Altithermal phases appears to be less than that of the Bitterroot phase. Based on the number of shell fragments, Swanson and Sneed (1966:25) documented an increase in the use of shell fish over time. A wide variety of artifact types were found in the shelters (Swanson and Sneed 1966:24-42); and, if morphology is any indication of artifact function, a wide variety of tasks were performed at the sites. Projectile points of various types, including Bitterroot, Salmon River, Elko-eared, and Pinto, indicate that hunting parties occupied the sites. The presence of cores, debitage, hammerstones, and bone pressure flakers indicate stone tool manufacture. Fleshers were apparently used during the process of butchering and processing big game. The presence of bone awls and needles suggests the on-site manufacturing of clothing. A single harpoon point may have been used for fishing near the site. Fishing, collecting, hunting, and stone tool and clothing manufacture activities apparently were conducted at or near the Shoup Rockshelters during occupation of the site.

Previous historic research in the Salmon area is fairly comprehensive although the histories of the Salmon River Mountains have slightly overshadowed those of the Lemhis and the Beaverheads. Short summaries of select local histories are included in Appendix 1. A Forest history was written in 1973 and it provides a good summary of Forest activities plus those local events prior to establishment of the Salmon and Lemhi National Forests (Smith 1973). Because the Euro-American populations tended to concentrate at lower elevations, especially along the Salmon and Lemhi River Valleys, local histories of historic populations often do not include stories of those events that happened on lands that later became the Salmon National Forest. The Carrey and Conley's Middle Fork and Salmon River travel-logs (1977 and 1978) provide information on a wide variety of sites along the two rivers, but most of the sites they describe are at the low elevations. Histories focus on ranching and mining with the result that only mining activities on Forest Service lands have received the widest coverage.

Collection of oral histories about historic occupations is very limited. The only systematic taped collection has been at Gibbonsville where Julia Randolph has contracted with the Idaho State Historical Society to conduct a project there.

Increasingly, historic sites have been recorded by archeologists and so the presence of physical remains is becoming better documented. Correlation of the historic documentation with the physical remains is generally weak because the written histories do not identify remains or specific site locations (but Carrey and Conley's works [1977, 1978] are a significant exception). Also, in the past, archeologists have made minimum efforts to research historic or archival documents or to collect oral histories to further document the resource and to verify their impressions of site function, age, etc. Instead, these impressions are based solely on architectural style and artifact type and frequency. In the case of Forest Service work at historic sites, the heavy emphasis on archeology has been due to program constraints.

Using the Ethnographic Record

Ethnographic information reported in the works of Lowie (1909), Steward (1938), Liljeblad (1957), Murphy and Murphy (1960), and Dominick (1964) is used in this overview to characterize the subsistence and settlement systems of historic and late prehistoric aboriginal occupants in and near the study area. Both Nez Perce and Northern Shoshone lifeways are discussed because both groups of Indians once occupied the area. It is a reasonable assumption that the historic non-horse broad-based economy was similar to that of the Archaic Period of prehistory (7200 BP to 1850 AD) because such features as area topography, group size, group goals, and decision making criteria were probably similar (Jochim 1976).

Of course, changing environmental conditions could well have changed the "mix" of exploited resources, i.e., the relative proportion of total diet that each resource contributed. For example, Chatters (n.d.) identifies changing aboriginal dependence on bison and antelope in the Pahsimeroi Valley at about 500 BP when the climate became slightly cooler, favoring grass production. I assume that, if it were possible to characterize resource distribution across the study area for the Archaic Period and possibly the entire period of human occupation, a modified ethnographic model might well serve as the best model of the subsistence and settlement systems.

In the following section, ethnographic data about Nez Perce and Northern Shoshone subsistence and settlement are summarized. Information on other aspects of the Indians' cultures is available in Lowie (1909, 1924), Steward (1938), Liljeblad (1957), and Murphy and Murphy (1960), and in many secondary sources (Marshall 1977; Butler 1978a:46-54; Walker 1978; Wildeson 1981:48, 52; McDonald 1982:V.18-V.20).

During the historic period, several different groups of Indians inhabited the study area. Shoshone and Bannock Indians, historically known as the Lemhi Indians, wintered in the Lemhi River Valley and along the Salmon River near there. Other Shoshone known as tukudeka or Sheepeater Indians wintered further to the west along the Middle Fork and elsewhere on the Salmon River. The Nez Perce occasionally stayed in the Lemhi Valley while traveling to the northwestern Plains to hunt bison; they and the Flathead came to the area to stay with the Shoshone and Bannock for some degree of protection against the Blackfoot and Crow Indians.

Before the Indians acquired the horse (and the tukudeka may never have used horses) the Nez Perce and Flathead Indians probably rarely stayed in the Lemhi Valley, if at all. Some Nez Perce families apparently did winter near the mouth of the Middle Fork River, however (Schwede 1966: Appendix B).

Before acquisition of the horse, the patterns of subsistence and settlement of the Indians living in the study area probably closely resembled those of the tukudeka as described by Steward (1938) and Murphy and Murphy (1960). Aspect of social organization, ideology and some of material culture, however, were different between the Shoshone and Nez Perce.

Essentially the ethnographic settlement and subsistence pattern summarized below is a Northern Shoshone pre-horse pattern which should apply equally as well to parts of the study area used by the Nez Perce. Changes in the pattern after acquisition of the horse are discussed elsewhere.

Shoshone camps varied with the season and the resource being exploited. During the winter, the Shoshone gathered together in villages at low elevations where the game was more plentiful, where they had stored foods procured during the summer and fall seasons, and where they could live with others. During the spring the nuclear and extended families at the villages went off in different directions (but sometimes traveled together [Steward 1938:240]) to exploit the big game that were dispersing and moving to higher elevations and to follow the ripening plant food resources that occurred widely in the mountains. Occasionally a family went to Camas Prairie at the north edge of the Snake River Plain to trade. There they were also able to procure camas from the large fields and possibly obsidian from the quarry there.

When the chinook salmon were running the tributaries of the Main and Middle Fork Salmon Rivers, the Shoshone moved to those tributaries to get the fish. In the fall beginning in September after the salmon had spawned, the Shoshone again hunted for large mammals, plant foods, and resident fish. Resource use was not restricted by exclusive ownership of particular areas (Steward 1938:194).

Food resources in the study area are diverse. Animal resources include anadromous and resident fish; mammals of all sizes including bison, deer, elk, mountain sheep, antelope, rabbits, and beaver; and water fowl. Plant resources include roots, seeds, pinenuts, berries, and greens with the first being of primary importance. Due to seasonal climatic variation, micro-climatic variation and animal behavior, the distribution and aggregation of food resources over the landscape varied seasonally. For example, bison aggregated just before the rutting season; after the rut, they split into a band of females and young animals and one of the adult males. Also plant foods ripen at different times of the year depending on their elevation and on the type of plant. To exploit those food resources aboriginal hunters and gatherers moved camp seasonally. None of the resources occurred in high enough density and were reliable enough (occurring in the same place year after year) to support a permanent population of several families in one location. Seasonal migration of small nuclear and extended families allowed procurement of adequate food and other resources plus an opportunity to meet potential spouses and exchange information about resource distribution.

Many of the plant and animal species mentioned below were exploited for their non-food value as well as their food value. Big game animals were hunted for their hides, sinew, and bone; bushes were harvested for the manufacture of shelters, baskets, and weirs. The various non-food uses to which the resources were put will be discussed in a later section.

If prehistoric occupants of the study area subsisted on food resources that provided the most calories and non-food products, that were highly aggregated, and that were not very mobile (Jochim 1976:25), and if their pattern of settlement reflected that subsistence strategy, then it should be possible to identify general areas of high site density on the Forest by identifying the seasonal distribution of preferred resources. As discussed later, the locations of preferred habitats of the different animals changed with climatic and concomittant environmental change in the past. Because past habitat configurations are poorly known at this time, however, the present distribution of plants and animals is the best information available and is used throughout this overview.

Unfortunately, the present distribution of many of the plant and animal resources is not recorded in the detail that archeologists prefer for predictive modeling of site locations. Specifically, information about the distribution of big game species is good, but that of plant species is virtually unknown. In the Middle Fork Salmon River drainage basin, however, Hackenberger and Rossillon (Knudson et al. 1981:32-49; Rossillon 1982) have used Forest Service timber type maps and habitat type information to tentatively map the relative density of certain plant species. For example, Hackenberger (1982: personal communication) uses the amount of bear grass in various habitat types as an indicator of available camas. For portions of the Salmon National Forest, there is some tentative plant species mapping.

Inadequate mapping and limited data collection about animal behavior and food resource caloric value limit the value of predictions about site location and density on the Salmon National Forest. Because present distributions of all important prehistoric food resources have not been mapped, the predictions about general site location made later in this overview may be improved or perhaps drastically changed with better vegetation mapping. Furthermore, Jochim (1976) has found that fairly specific caloric information, aggregated herd size, and animal mobility are needed to model prehistoric decisions about resource use. Such information has not been collected for this overview; so again, predictions here are only gross estimates of site location and density.

A review of pertinent animal and plant yearly cycles and population density sets the background for understanding the subsistence and settlement systems of prehistoric Indians living in lands currently administered by the Salmon National Forest. Where possible, modern seasonal distributions of those resources on the Forest are discussed and mapped.

Area Fauna and Flora

Anadromous Fish

Anadromous fish were of considerable importance to prehistoric occupants of the area. Salmon and steelhead trout were the two types of anadromous fish known to have run and spawn in area streams.

In the fall, the steelhead run in the Main and Middle Fork Salmon Rivers. They winter in deep pools in those rivers in a dormant stage until the spring runoff when they swim into small tributaries to spawn. After spawning, the fish gradually move downstream toward the Columbia River (Bruce May 1982: personal communication).

Chinook salmon historically is the most abundant species of salmon in the study area. No sockeye salmon are known to have spawned in the study area; they would have been confined to the Main Salmon during their run. The chinook salmon spring run in the area is in June, July, and August (Franzen 1978:20). The fish spawn in the tributaries of the Main Salmon in early August and then rapidly deteriorate before death. Streams in which steelhead and salmon spawn must have adequate water depth and velocity and gravels of proper size.

Resident Fish

Historically, resident fish occurred in virtually every stream and in some lakes in the study area. Those exploited by ethnographic groups include several species of trout, whitefish, chub, sturgeon, squawfish, suckers, sculpin (?), and lampry (Steward 1938:190; Wildeson 1981:38). Their preferred habitats and spawning seasons and grounds are too varied to discuss here.

Freshwater Mussel

Mussel was apparently eaten by Indians along the Salmon and Middle Fork Rivers because many prehistoric sites on those rivers have mussel shell middens. The meat is not particularly nutritious, however. The season when mussel was most plentiful and the preferred habitat were not investigated for this overview.

Bison

Bison occupied portions of central Idaho until the mid-1800's (Butler 1971:13). The reported historic patterns of herd aggregation and even species type are probably very imperfect reflections of prehistoric patterns. Historic and prehistoric bison behavior was similar in a few respects, however. First, the animals were generally widely dispersed except during the calving and rutting season. The rut occurred between June and September. Second, bison preferred a grass habitat.

According to Epperson (1977:52), bison moved to the Upper Snake River Plain to rut in the historic period. There is some evidence that some bison herds gathered during the rut in the Lemhi Valley. In September, 1842, Rev. Parker observed a large herd of bison in Lemhi Valley from which the Nez Perce killed 50 or 60 animals. Even after rutting season there were large numbers of bison in Lemhi Valley; during the early 1800's "hundreds" were reported in February and March there (Franzen 1978: Table 2). The herd's composition was not recorded, but, because of the herd size and time of year, it appears that the female and male groups were aggregated. Other places where herds came together have not been documented, although it is quite possible that the Pahsimeroi Valley and the Salmon River Valley below the Lemhi River were spots occupied during the rutting season during prehistory.

Another difference between historic and prehistoric bison populations may have been species. Both Bison bison, the modern bison species, and Bison athabascae, the mountain species of bison, could have occupied the study area at the same time. The seasonal habits of the two were apparently different. Based on the distribution of skeletons of animals found at very high elevations, Bison athabascae is believed to have inhabited forested areas (Wildeson 1981:29-30). In 1830 John Work reported that there was a small herd of bison (species unknown) in the "mountains" at Warm Spring Creek (Butler 1978a:51). Seasonal migration of the mountain bison probably was similar to that of elk and deer who graze at lower elevations in winter and higher elevations in summer. Bison bison is not known to have foraged in forested areas.

Antelope

Presently antelope range year long in the Lemhi River Valley below Leadore and in the Salmon River Valley north of the Lemhi River to the mouth of the North Fork of the Salmon River. Critical winter antelope range has been mapped as a series of islands in this same general area with the island furthest upstream during the winter being on Mill Creek

and the heaviest concentration of animals being on the east side of the Lemhi and Salmon River Valleys from Agency Creek to Tower Creek (Fig. 1). During periods of cooler climate, one would suspect that the animals' critical winter range would center near the Lemhi and Salmon River confluence, or in the Birch Creek Valley.

Bighorn Sheep

As with bison, adult male mountain sheep generally range away from the female and immature animal herd except during the lambing and rutting season. The males aggregate among themselves from September to November and from April to May, while the ewes and the young group in late winter and early spring (Epperson 1977:48-49).

On the Salmon National Forest, optimum sheep summer range, some of which is presently unoccupied, is along the west side of the Lemhi Range, on the west side of the Continental Divide from about Goldstone Pass north almost to Dahlonenga Creek, on the west side of the Salmon River from Peel Tree Basin to Williams Creek, in a strip about one mile north of the Salmon River from Deadwater on downstream, in the highlands between Papoose Creek and Cottonwood Creek southwest of the Middle Fork and Salmon River confluence, and north and south of the Big Horn Crags high above the Middle Fork from Camas Creek to the Salmon River.

Optimum sheep, elk, deer, and goat winter ranges are shown together in Fig. 2. In the Lemhi River Valley area, there is little big-game winter range on National Forest lands. In the Beaverhead Mountains east of the valley, the winter range extends into the Quaking Aspen and Big Bear Creek Valleys near the head of Hawley Creek and in Railroad Canyon. In the Salmon River Mountains, big game winter range extends from the Middle Fork up Camas Creek to Meyers Cove and up Yellowjacket Creek just past the former townsite; on either side of the Middle Fork 1-3 miles up from the river itself; up Panther Creek to Rooker Basin; and along the Salmon River. Big game has been sighted during recent winters north of the Salmon River along North Fork as far as Twin Creek and in the Indian and Squaw Creek drainages.

Elk

Elk are very gregarious animals; "...bands that live together on a specific range in summer move practically en masse to winter quarters" (Dalrymple 1978:65). Unlike other large and medium-sized game animals in the area, there is no definite, purposeful separation of the adult males and females during the summer. Several bulls stay together in a group and the females and immature animals also graze together in a group, but in the same general area as the bulls (Dalrymple 1978:57-69). Elk are highly mobile, more so than deer (Mackie 1970:23 cited in Franzen 1978:29).

Optimum elk summer range appears on a map as numerous small islands across the Forest. Some of the larger islands are between Hawley and Canyon Creeks, at the head of Big Timber Creek, at the head of Warm

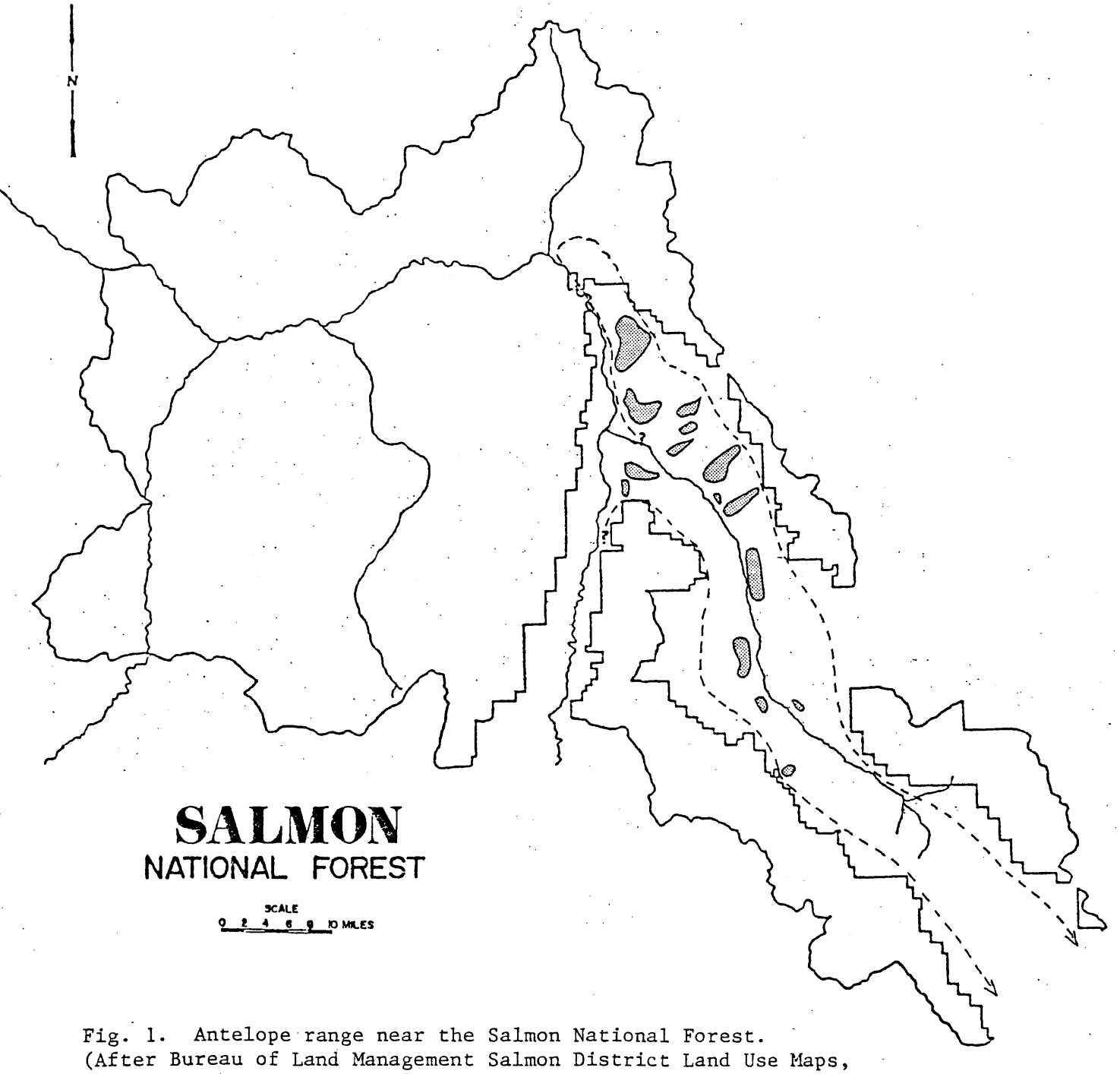


Fig. 1. Antelope range near the Salmon National Forest. (After Bureau of Land Management Salmon District Land Use Maps, draft 1982).

Critical winter range

Yearlong range

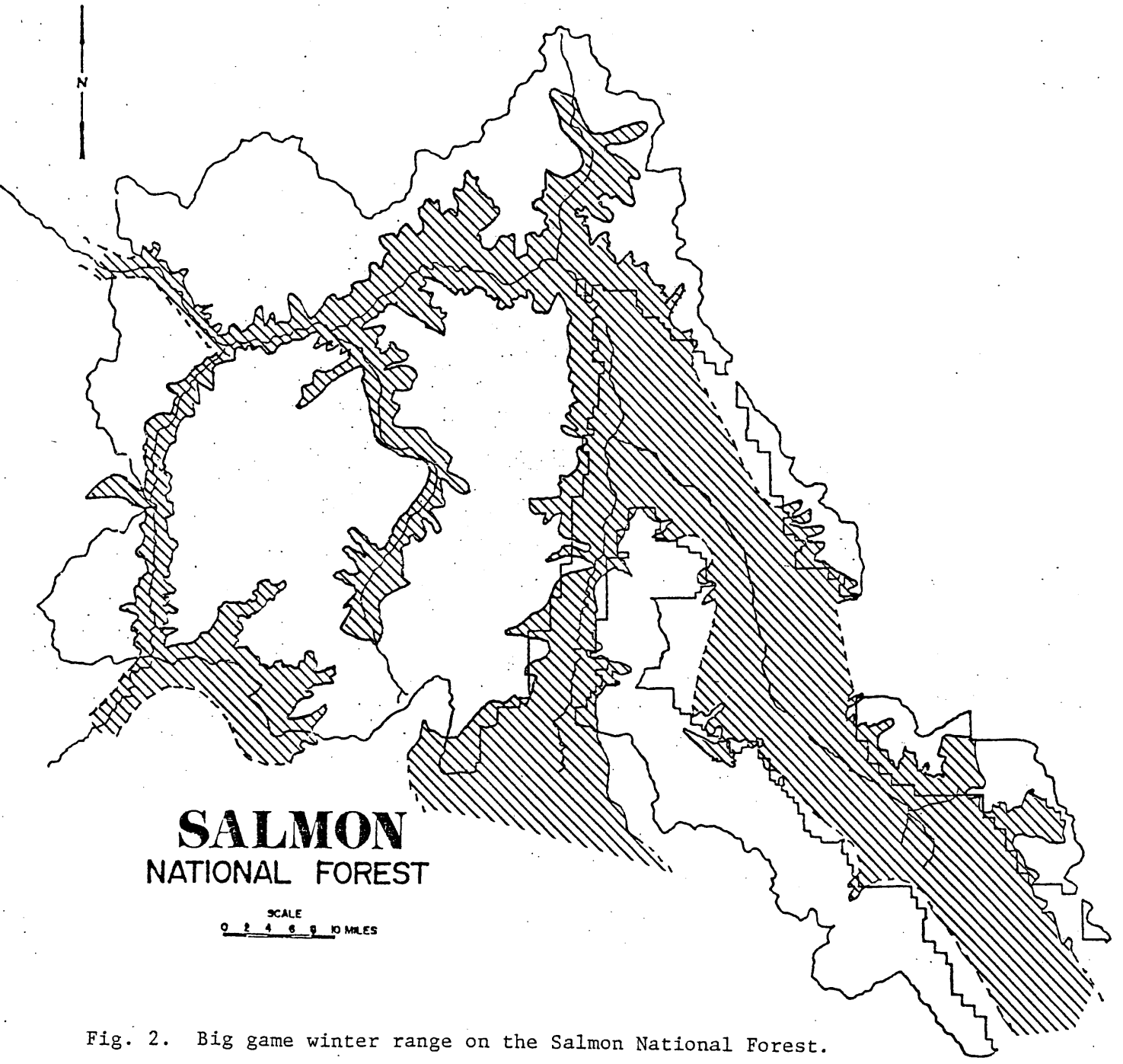


Fig. 2. Big game winter range on the Salmon National Forest.

Spring Creek, between Yellowjacket and Panther Creeks, around Blackbird Mountain, between Big Deer and Clear Creeks, along Pine Creek Ridge, and at the north boundary of the Forest from Lost Trail Pass to Squaw Creek. Refer to Fig. 2 for big game winter range including elk winter range.

Deer

Mule deer are also gregarious, but not to the extent that elk are. Adult males commonly band together during the summer and fall separate from the females and young. During the rut from October to December and throughout the winter, the adult males, females, and immature animals all stay together (Dalrymple 1978:29:46).

Optimum and acceptable deer summer range covers most of the Forest including stretches along the Main Salmon, Middle Fork, and North Fork Rivers and Panther Creek. Optimum sites include the area between Hawley and Canyon Creeks, south of Big Bear Creek, Big Timber Creek, Big Eightmile Creek, near the head of Hayden Creek, the headwaters of Lake Mountain Creek between McKim and Withington Creeks, a strip west of the Salmon River from Hat Creek to Perreau Creek, most of the uplands surrounding Panther Creek, a section west of the Middle Fork between Cub and Short Creeks, a strip high above the Salmon River from North Fork to Bear Basin Creek, and a thin strip between the Continental Divide and the Salmon River from Sheep Creek (off North Fork) to Freeman Creek. Refer to Fig. 2 for big game winter range including deer winter range.

Areas where elk, deer, and Bighorn sheep summer range overlap are mapped in Fig. 3. The Lemhi Range and Beaverhead Mountains contain several places where summer big game hunting would appear to be most productive.

Mountain Goat

The population of mountain goat on the Salmon National Forest is fairly small, there being perhaps 315 animals in all. Because of their isolated habitat (Dalrymple 1978:176), Indians probably hunted mountain goat as the opportunity arose instead of deliberately.

During the summer, bands of adult goat females and immature animals number between three and eight animals, while adult males do not stay together in a band at all. In November and December, a male moves in with a band of females and young animals for the rut (Dalrymple 1978:186-187).

Optimum mountain goat summer range is in the Lemhi Mountains in the vicinity of Bear Valley Lakes and at the headwaters between Middle Fork Little Timber and Big Eightmile Creeks. Acceptable summer range is mostly along the crest of the Lemhi Mountains and the Beaverhead Mountains between Goldstone Mountain and the North Fork of Sheep Creek. Other small islands of acceptable goat range are at Mt. Baldy, Mt. Peak, Goat Mountain, Poison Peak, K Mountain, Middle Fork Peak, Allan Mountain and Dutchmans Hump.

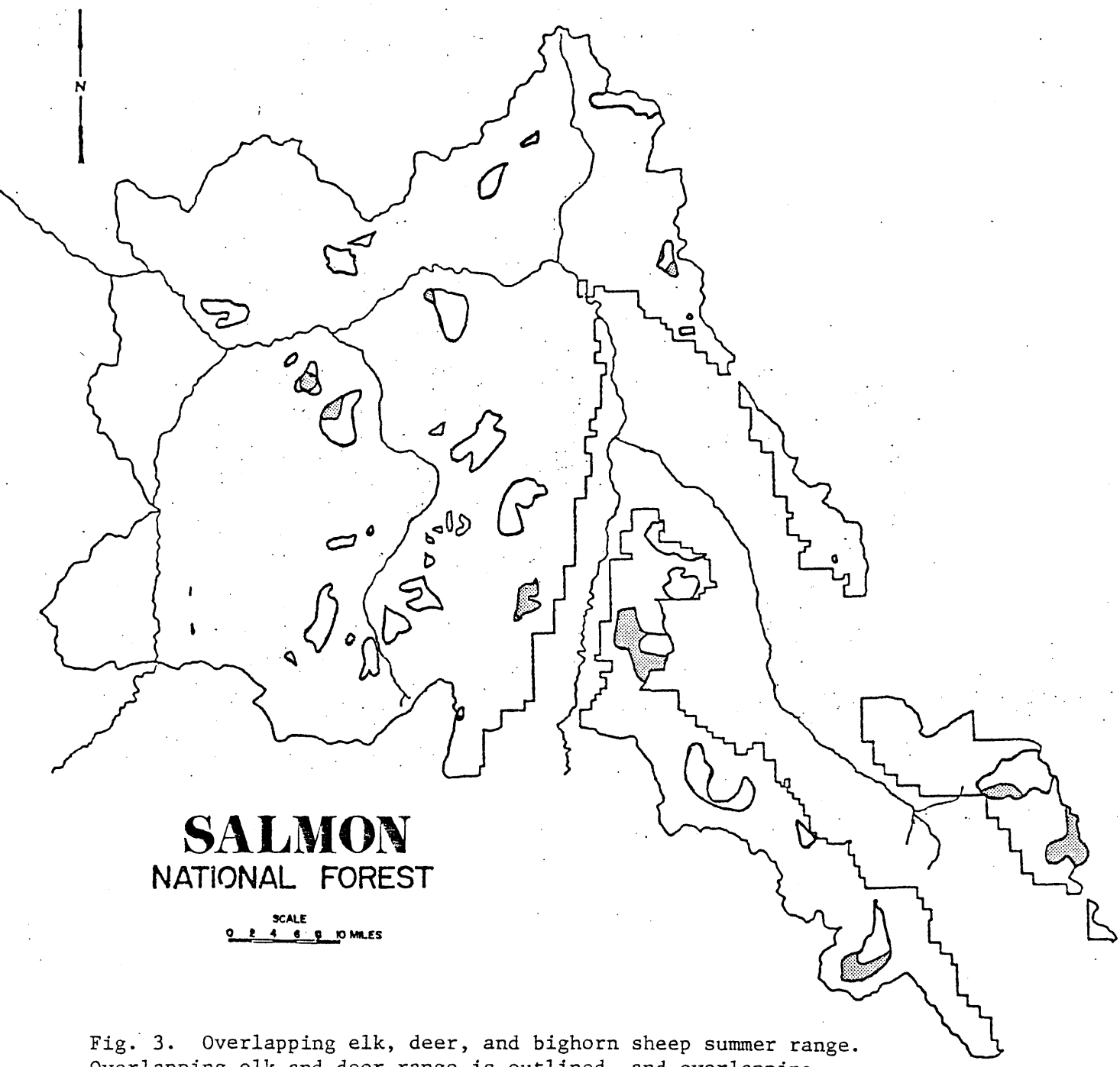


Fig. 3. Overlapping elk, deer, and bighorn sheep summer range. Overlapping elk and deer range is outlined, and overlapping ranges of all three animals are shaded.

Small Mammals and Water Fowl

While the Indians that inhabited the study area hunted small mammals for food, these animals were never of equal importance to big game. Supposedly because each animal provided so few calories and because they never occurred together in large enough numbers, they were a less desirable food resource. For example, Northern Shoshone informants explained that, until recently, those Shoshone who lived in the Lemhi Valley historically did not participate in communal rabbit drives as did the Fort Hall Shoshone because there were not enough rabbits (Steward 1938:190).

Small mammals that might have been hunted as the opportunity arose were rabbits, beaver, ground squirrel, porcupine, otter, marmot, and other small rodents (Steward 1938:38-40; Liljeblad 1957:27, 38). Water fowl, including ducks and geese, and sagehens and eagles were also taken opportunistically (Walker 1978:72 cited in Wildeson 1981:38). The distribution of these animal species is not summarized here. In general these animals occurred widely throughout the study area. During the fall, migratory water fowl, particularly mallards, fly through the Lemhi River Valley on their way south for the winter.

Plant Foods

Just as small animal species are fairly widely dispersed throughout the area, so are plant food resources. For this reason, apparently many of the berries and greens and several of the roots were exploited opportunistically. One plant resource that occurred in high density and also was of high caloric content was camas (Camassia quamash). Camas was of such importance that in the Jackson Hole, Wyoming, area it was perhaps the one food resource that determined the specific locations of summer base camps (Wright et al. 1980:185). This dependable, abundant food resource occurred throughout the central Idaho mountains ripening at progressively higher elevations as the summer continued. Camas generally grows between 5000 and 7000 feet in elevation and in mollisols (very dark colored, base-rich soils) in central Idaho (Statham 1982:55, 68). Statham recorded no camas within Salmon National Forest boundaries or even in the Salmon River Valley and Lemhi River Valley adjacent to the Forest, but her surveys covered little of the area (Statham 1982:20, 58). One would suspect that camas grew along Camas Creek at one time, but this suspicion has not been verified.

Other roots collected include bitterroot (Lewisia rediviva), yamp (Perideridia or Carum? gairdneri), balsamroot (Balsamorhiza sagittata), wild onion, kous or biscuitroot (Lomatium cous), and thistle (Cirsium scariosum). Many of the roots grew in similar topographic settings, i.e., deep soils with adequate moisture (Franzen 1978:Table 3). In fact, they often occur in the same meadow (Wright et al. 1980:186). Among the Nez Perce, kous may have been as important a root plant as camas (Marshall 1977:52, 57 cited in Wildeson 1981:38). It too may occur in high enough density so that it might have determined the locations of summer base camps. Because its distribution is not as well studied as that of camas, however, it only receives minor attention in this overview.

Some of the seeds that Indians collected were those of tansy mustard The greens first become available in the spring and could be harvested throughout the spring and summer at different elevations. Berries did not ripen until late summer and fall. Both chokecherry and serviceberry grow along streambanks and moist hillsides (Franzen 1978:Table 3). Inner bark could be harvested at most locations because pines grow so widely in the study area.

Pine nuts were collected by the Lemhi Indians in the Lemhi Mountains in the fall. The limber and/or whitebark pine were the two species of pine trees that apparently provided the nuts. Pine nut procurement may also have been important in the Salmon River Mountains although Steward (1938) made no mention of it. Using Forest Service timber type maps, Hackenberger (n.d.) has mapped areas that would produce pine nuts in highest frequency in and surrounding the Middle Fork Salmon River drainage basin, including portions of the Salmon National Forest. He shows very high pine nut frequency at the headwaters of Papoose Creek at the west edge of the Forest, and high frequency in the Big Horn Crags. While perhaps an important food resource, pine nuts are not a particularly reliable food resource. Limber pine nuts produce a good crop every 2-4 years, and whitebark pine nuts every 3-5 years (U.S. Department of Agriculture 1974:610). Consequently, Indians could not successfully return to one particular grove year after year.

Climate

Evidence of past climate comes from studies of sediments, fossil pollen, small mammal remains, and tree rings. Archeologists and palynologists have conducted research to discover the chronology of climatic change to better understand remains of human occupation. For example, changes in climate may account for the shift from the Early Big-Game Hunting Tradition (11,000-7200 BP) to the Archaic Tradition (7200-250BP) in central and eastern Idaho. By identifying the character of the environment over time, an archeologist can better understand the possible role climate played in human use of the land.

Some of the earliest attempts by an archeologist in Idaho to reconstruct paleoclimate and view archeological remains in light of that reconstruction were made by Earl Swanson Jr. During the Birch Creek project, Swanson (1972) used excavated sediments, rockfall, and faunal remains found primarily in rockshelters to posit a sequence of climatic conditions for eastern Idaho. He identified seven periods, the earliest being colder and wetter than at present (Fig. 4).

Butler (1978a) recognizes somewhat different sequences of warm and cold temperatures for the Upper Snake and Salmon River area, based primarily on the remains of small mammals from Owl Cave at the Wasden Site on the upper Snake River Plain. During the Holocene Butler sees a drying trend begun during the recession of the continental glaciers and continuing to the present. A period of Neoglaciation with colder conditions beginning between 5300 and 4000 BP was encompassed within that general trend. The

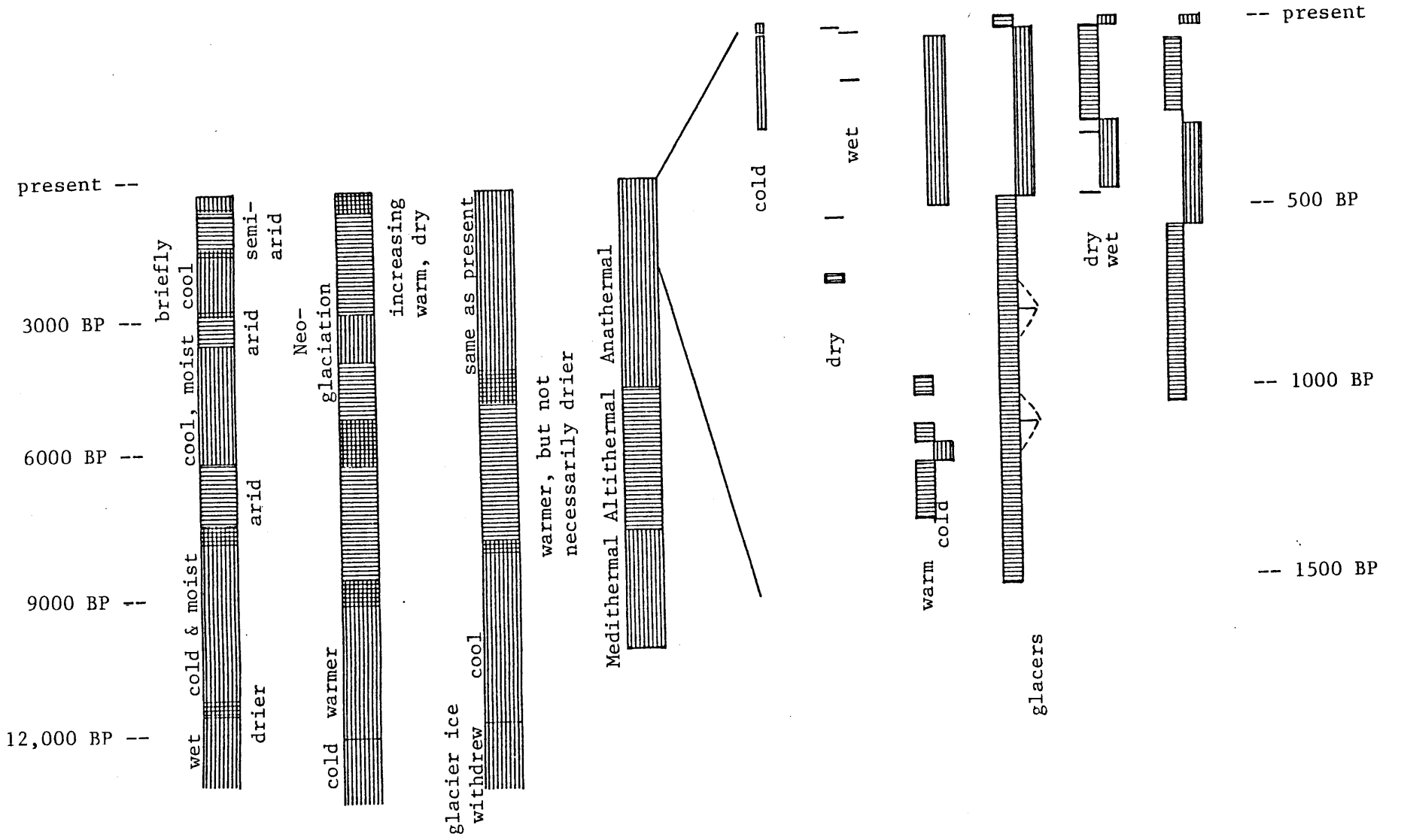


Fig. 4. Records of climatic change in the Northern Rocky Mountains from 13,000 BP.

biggest discrepancy between the Swanson and Butler sequences is that for the years between 6000 and 4000 BP. During that time, Swanson identified a comparatively cool and moist environment and Butler an arid environment.

Mehringer et al. (1977) report the fossil pollen sequence at Lost Trail Bog on the boundary between Idaho and Montana at the very north end of the Salmon National Forest. While the palynologists make no mention of a long-term drying trend during the Holocene as Butler did, they recognize "a warmer but not necessarily drier" period from about 7000 BP to about 4500 BP--at approximately the same time as a warm period reported by Butler. For the past 4000 years there have been no drastic climatic changes and the pollen at Lost Trail Bog has been fairly constant.

The medial warm period cited above corresponds with the Altithermal. Ernst Antevs identified the Altithermal in Europe, and attempted (with moderate success) to correlate the European sequence with one he recognized in western North America upon studying arroyo stratigraphy.

Other research has provided detailed climatic information for the last 2000 years. Butler (1978a) reports on some details of the Neoglaciation (after Knoll 1977), while continuing to maintain that the climate was, as throughout the Holocene, increasingly warm and dry. There were short cool and moist episodes between drier episodes from 650 BP (1300 AD) to the present (Butler 1978a:45). Chatters (1980) has examined fossil pollen and tree rings in the Pahsimeroi Valley, and has identified a cool period between 500 and 100 BP (1450-1850 AD). The beginning of that cool period was moist, while the last 200 years were comparatively dry. Pearson's tree ring sequence form the East Fork of the Salmon River begins at 1090 AD and illustrates the "onset of cooler, moister climate at 1300 AD [650 BP] lasting into the twentieth century" (1978:30).

Climate and Food Resources

Chatters (n.d.:Y-25) uses this information about recent climate to discuss specific environmental changes and the effect on resident plant and animal species. During the 500-100 BP cool period, grass had the competitive advantage over sagebrush. This advantage affected the density of two species of ungulates--bison and antelope--in the Pahsimeroi Valley and possibly elsewhere. Because antelope prefer to graze on brush instead of grass and bison vice versa, bison apparently more frequently grazed the area from 500 to 100 BP. The faunal assemblages of excavated sites in the Pahsimeroi support this environmental reconstruction. Similar comparatively short episodes of colder climate may have favored bison in the area before 2000 BP. One such cold climate episode might be between 3800 and 2800 BP, which Butler (1978a:44) characterizes as a "grassland maximum."

Long-term climatic changes, such as the gradual warming trend after deglaciation at about 12,000 BP, had dramatic effects on available plant

and animal resources. Pleistocene megafauna extinction can probably be attributed to that warming trend. Also, Butler has recorded small mammal population cycles to dry-wet climatic cycles within a long-term Holocene drying trend.

On the other hand, some climatic changes may not have radically changed the availability of plant and animal food species in the study area. For example, big horn sheep and mountain goats prefer rocky habitats, and the distribution of rock outcrops has remained virtually unchanged throughout the last 12,000 years. If the sheep and goats were anywhere in the study area after 12,000 BP, they ranged in those rocky habitats. Also Wright et al. (1980:190) have identified numerous archeological sites that were apparently base camps associated with camas grounds in northwestern Wyoming. These sites are of various ages, including one that is over 5000 years old. Recent climatic changes have apparently not greatly changed the distribution of one critical resource in northwestern Wyoming--camas.

Aside from these few isolated cases, evidence for the distribution of plant and animal resources over the last 8000 years is very slim. More work needs to be done on predicting the precise effects on resource distribution with documented climatic changes. Along these lines, Hackenberger (n.d.) is currently modeling changes in vegetation throughout the Middle Fork Salmon drainage basin using tree ring and fossil pollen data and available information about fluctuations in plant productivity during historically-documented, short periods of drought and heavy precipitation.

Aboriginal Use of Resources

For each resource, I have identified four features of associated sites as they might have appeared when the sites were in use. The four features are: (1) equipment and methods used to obtain the resource, to prepare it for consumption or use, and to store it; (2) location of each of the above activities; (3) number and type of occupants and length of occupation at each location; and (4) associated activities. In addition, I discuss (5) the probable archeological remains from activities of exploiting a resource and preparing it for use. This discussion is based on information about known archeological sites identified in central Idaho and elsewhere in the Rocky Mountain West.

Anadromous fish

(1) Weirs, harpoons and spears, gigs, hooks, baskets, dams, seines, scoop or dip nets, and arrows were all used by the Northern Shoshone and Nez Perce to capture anadromous fish (Liljeblad 1957:29; Steward 1938:190-191).

Captain Clark described and sketched a fishing weir on the Lemhi River (Thwaites 1904, Vol. 3:6-7). The sketch is reproduced in Fig. 5. The weirs were constructed across shallow or narrow channels of the Lemhi River or other tributaries of the Middle Fork and

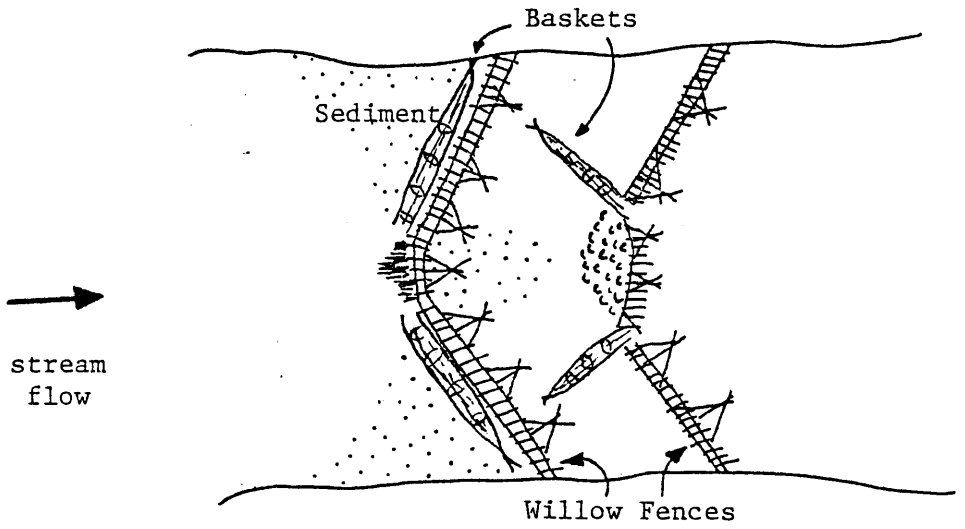


Fig. 5. Drawing of a Shoshone fish weir originally made by Capt. Clark of the Lewis and Clark expedition. Gravel and stone were piled along the fences and can still be seen at the sites of former weirs along the Snake River. (After Thwaites 1904, Vol. 3:7.)

Salmon Rivers. They were made of willows tied together. The fence-looking portion behind the conical baskets in Fig. 5 was strengthened by piling gravel along it to prevent any fish from escaping downstream.

Steward (1938:168) recounts the use of spears or harpoons at Salmon Falls on the Snake River. The Shoshone stood at the edge of or in the river and speared the fish.

The Northern Shoshone also fished with a gig, as Captain Clark documented in the North Fork area. Exactly what gigging involved is unclear from Clark's rather confusing description but apparently it was some form of spearing (Thwaites 1904, Vol. 3:9).

The forms of hooks, baskets, or dams are not reported. The hooks may have been similar to those used by the Indians of the Northwest Coast which were bent wood or composite. Baskets may have been used as dip nets, or perhaps the references to the use of baskets were merely to their use in weirs, as described above. Likewise dams may actually have been the lines of gravel piled along the weir.

Seines (large nets) were used to fish, but again no details are reported in the available references. They were weighted down with stone sinkers (Spinden 1908: 188 and Walker 1978:35 cited in Wildeson 1981:46). The Nez Perce used dip nets when catching salmon from a platform constructed over an eddy in the river or stream (Walker 1967:26, 73 cited in Wildeson 1981:41).

During weir fishing, men removed the fish from the weirs and strung them on willow twigs to carry them to shore (Steward 1938:191). To prepare the fish for consumption, women boiled, dried, or smoked the fish. Plateau Indians boiled food in coiled willow baskets (Liljeblad 1957:30). Fish were dried or smoked on wooden racks or scaffolds (Thwaites 1904, Vol. 3:15; Liljeblad 1957:29).

Both the Nez Perce and the Northern Shoshone dried fish to preserve them for later consumption (Steward 1938:205, 234; Liljeblad 1957:29). Plateau Indians mixed smoked pulverized salmon with salmon oil to make a kind of cake. The cake was stored in bags made of salmon-skin (Liljeblad 1957:29). Stored fish was cached near the streams from which they were taken--streams to which the Indians generally returned in the fall and winter (Steward 1938:234). The form or specific locations of those caches has apparently not been noted in the ethnographies.

(2) As mentioned previously, weirs were built where the streams were narrow or shallow; spearing frequently occurred at falls and gigging was reported on the North Fork of the Salmon River (Thwaites 1904, Vol. 3:9). Obviously, preferred fishing spots were those where fish occurred in high density and where there were convenient fishing places (Steward 1938). Fish cooking and probably pre-serving occurred at the campsite located near the weir (Steward

1938:191). Clark observed a camp of brush lodges for seven families about 200 yards from the weir the families were using.

If steelhead were procured throughout the winter as Steward says they were (but refer back to the section, Area Fauna and Flora), winter villages were also located near large fish concentrations. Weirs were probably not used, however, because the fish stayed in deep pools in the Middle Fork and Salmon Rivers. Fish were probably caught by spearing and maybe hooks. In the spring when caught the steelhead were running into the small tributaries to spawn, fishing may have been done by spearing and netting; weirs would have been washed away during the heavy spring runoff.

During historic times, Shoshone were reported fishing at the confluences of the Salmon and Lemhi Rivers and the Middle Fork and Salmon Rivers (Buckles 1963:84).

(3) Men were responsible for construction of the weirs and removing the fish; women cooked and preserved the fish. As mentioned above, campsites associated with weirs were occupied by families. During the summer salmon runs, families of three or four (and sometimes 20 on the Lemhi River [Steward 1938:191]) camped at the same place for the length of the run which Steward (1938:231) says was between two and eight weeks.

(4) During winter a village no matter how small could not rely entirely on fish for its livelihood. Hunting big game supplemented their food income. Winter villages consisting of up to 20 families were sites of fish cooking, but not necessarily actual fishing stations. Fishing stations may have been nearby although not necessarily within 200 yards as they were for the summer camp that Clark noted.

"Winter" villages may have been occupied quite early in the year, perhaps intermittently beginning in the fall and lasting well into spring. Several structures of different functions were erected at the villages. The Nez Perce had two types of residences. The first was a semi-subterranean building dug 2-3 ft. into the earth and covered with brush (Liljeblad 1957:29). Secondly,

> There were also large, gabled lodges...which functioned as meeting halls or as dwellings for several families under one roof. These communal buildings or 'long houses' had A-shaped roofs of cattail or tule mats, reaching to the ground, and floors more or less lowered by excavation. Such a house could be up to one hundred-fifty feet in length, contain twenty fireplaces...[Liljeblad 1957:29-39].

In addition, the Nez Perce built menstrual huts which were small, surface, conical huts that they situated apart from the main residential area. Finally, the Nez Perce had semi-subterranean lodges which they built for unmarried men. These lodges were both sweat-

houses and sleeping quarters (Liljeblad 1957:29-30). The menstrual huts and men's quarters are of the same form as the residential lodges but are smaller in size (Wildeson 1981:45).

The Shoshone semi-subterranean residences, called pithouses, were of the same form as those of the Nez Perce; the menstrual huts and sweathouses were probably also similar. The Shoshone Indians did not, however, make long houses.

Associated activities at summer fishing camp sites included dancing, hunting, and gathering (Thwaites 1904, Vol. 3:16; Steward 1938: 191-192).

Summer structures at base camps were generally made of brush. After the acquisition of the horse, bison hides covered many of the lodges. Captain William Clark described the Shoshone huts as a "Shade of Willows Stuck up in a Circle" (Thwaites 1904, Vol. 2:365), perhaps in the style shown in several popular publications (Carrey and Conley 1977: back cover) with the exception that the hide cover pictured was brush instead. The frame poles were covered with "bundled grass, bark, or tule mats" (Liljebald 1957:36). The brush-covered huts opened to the south (Steward 1938:166). Nez Perce summer shelters at base camps were apparently very similar in form to those of the Northern Shoshone (Liljebald 1957:29-30). The lodges covered with bison hides used during the eighteenth, nineteenth, and even early twentieth centuries are called tipis. The ground ends of the hides were held down with rocks, the rocks remaining after tipi removal known as tipi rings (Kehoe 1960:429 cited in Rominger 1979:51-52).

In Wyoming (Dominick 1964:163-164), Montana (Davis 1975), and northwestern Colorado, archeologists have found small brush structures called wickiups that apparently served as shelters at summer base camps. The wickiups were made of up to 100 aspen poles which are 3-8 in. in diameter and 10-18 ft. long. The poles were braced together at the top to form a conical structure 5-8 ft. high and 6-9 ft. in diameter.

(5) Archeological remains of anadromous fishing equipment and associated camp sites are such that the sites are usually not recognized. Positive identification of some archeological sites as fishing camps is virtually impossible because few of the surface artifacts and features that remain at the sites can convincingly demonstrate a fishing function. Weirs and dams have been destroyed by flooding, fish bones and bone artifacts have disintegrated in the acidic soils, baskets have disintegrated in the wet soils, brush lodges have deteriorated or burned, hearths have been scattered or buried, and caches have also been buried. What may remain at these sites are stone artifacts which mostly would have been used for hunting, processing plant resources, or manufacturing stone tools--activities that co-occurred with fishing. Occasionally, buried hearths and caches are exposed in cut banks. The fishing station

on the South Fork of the Salmon River at 10VY165 serves as a good example of the absence of artifacts diagnostic of fishing activity. There, no fishing equipment or fish bones were found, but based on the site's location and on ethnographic and historic accounts of fishing at various places along the South Fork, Boreson (1979:30) believes the site to be a former fishing (and hunting) camp.

The only artifact associated with fishing reported for the Salmon National Forest is a composite, bone harpoon point from the Shoup Rockshelters. Because the point was not found in situ (in place), its absolute age cannot be determined (Swanson and Sneed 1966:32).

Net sinkers or net weights have been found at Cache Bar on the Salmon River (SL-56 [10LH163], on the Middle Fork of the Salmon River (Knudson et al. 1981:386, Aaron Underwood 1981: personal communication), in the Clearwater drainage basin (Keeler 1973:55; Corliss 1974:3, 21), and immediately south of the study area near Ellis (Marion McDaniel 1982:personal communication). The sinker is a flat pebble perhaps 6cm in diameter with two or three equally spaced notches along the edge. It was used to weigh down seines.

There are few published references to archeological remains of man-made structures at special-activity sites such as summer fishing camps because such finds are rare. The sun shades, wickiups, and some of the lodges at special-activity sites, having been of brush, unsurprisingly have not survived. Tipi rings that remain where hide lodges once stood survive in many instances. They are found widely in the Northern Rocky Mountains and on the High Plains, although a few have been discovered on the Salmon National Forest. There were probably several tipi ring sites along the Salmon River between North Fork and Corn Creek at one time, but the rocks have been inadvertantly removed with historic Euro-American occupation. Tipi rings are rarely found in mountainous uplands on National Forest properties, probably because the hide covers and poles would have been difficult to transport over steep terrain. The Indians would probably instead have made use of local plant material for construction of temporary shelters, and cached the animal hides and poles at low elevations.

Those tipi rings found in areas adjacent to the Salmon National Forest include those along the middle and lower stretches of the Middle Fork (Swanson 1958), in Birch Creek Valley (Kingsbury 1977:17-18), and in the Beaverhead Mountains (Rominger 1978). The tipi rings at 10CL4 in the Birch Creek valley about 25 miles south-southeast of the Salmon National Forest average 4.7m in diameter (Kingsbury 1977:69). Kingsbury identified two forms of tipi rings -- one formed by a single course of stone and one by multiple courses. Their functional differences are unknown. The number of tipi rings found at one site may be as high as 38 in Idaho (Kingsbury 1977:17, Fig. 10).

Artifacts are rarely found in association with tipi rings and central firehearths are also absent (Kingsbury 1977:18). Wedel (1964:263-264 cited in Rominger 1979:53) supposes that the lack of artifacts at most of the tipi rings is evidence for short occupation.

Several pithouse villages have been identified in and near the lands administered by the Salmon National Forest. Sites SL-147 (10LH183), SL-206 (10LH124), SL-207 (10LH885), SL-212 (10LH168), and SL-215 (10LH210) are five sites on lands administered by the Salmon National Forest known to have pithouse features (Gaarder 1967; Harrison 1971:20). The number of pithouse depressions at each site varies between two and eight. At SL-212 they appear on the surface as depressions 4m in diameter and 25-50cm deep.

No professional full-scale excavations have been conducted at Salmon National Forest pithouse villages, although the pithouses at Cunningham Bar (SL-207) and Corn Creek (SL-206) have been tested. Only one 2x2m pit was excavated at Cunningham Bar to 80cm and flake scrapers, bird and small mammal bones including those of a porcupine, lithic debitage, pestle fragments, other ground stone, and two projectile points were found (Gaarder 1967). No report on the pithouse tests at Corn Creek Village is available. Wylie et al. (1981) have dug approximately one-fourth of a pithouse at Waterfall Village (SL-267) by the Middle Fork of the Salmon River. There were two periods of occupation--one Late Prehistoric (Archaic) and one Middle-to-Late Archaic. Originally the structure was 7-8m in diameter and dug into the ground greater than 1m deep. No roofing material was recognized during excavation.

Few long-house and no menstrual hut or men's sleeping quarters archeological remains have been identified in Idaho. Swisher (1973:17) believes he has found some along the Salmon River about 25 mi. from its mouth. Depressions 25-30 ft. long (one slightly smaller) with parallel sides and rounded corners were all that remained of the long-houses on the ground surface.

Resident Fish

(1) Resident fish were exploited with techniques similar to those used for anadromous fish. However, because the resident fish did not occur in a high density, it seems unlikely that weirs were constructed on any streams solely for the capture of resident fish. Dominick (1964:161) reports that trout and whitefish were captured with snares; "large snare hooks were carved from the shoulder blades of deer or mountain sheep and fastened to a long pole."

Because of their size and low density, resident fish may never have been dried for consumption at a later time, but were instead eaten soon after capture. Food preparation was probably identical to that for anadromous fish.

(2,3,4) Resident fish could not support human populations as large as those fed by anadromous fish. Capture of resident fish was probably one of many activities that happened from a single base camp. The resident fish may have been captured inadvertently in the same weirs as anadromous fish; also they may have been caught by young boys while the other males were out hunting and while the women were gathering plant resources. The location of sites associated with resident fishing may not have depended so much on stream topography and access to good fishing spots as on proximity to dense food resources or favorable hunting areas.

(5) As with anadromous fish, archeological remains that can definitely be assigned to resident fishing camps are virtually non-existent on the ground surface. And when fishing remains are found, especially hooks, harpoons, and net sinkers, there is no definite way to tell if resident or anadromous fish were being exploited, unless fish bones have been preserved.

Bison

(1) Techniques used to capture bison in the study area are unknown at this time because no bison kill sites have been found or recognized. Butler (1978a) has provided the best summary of the types of bison capture that might have been used based on his study of archeological bison kill sites in Idaho and ethnographic and historic accounts of bison kills in the Rocky Mountain states. At the Challis Bison Jump south of Challis during the mid-1800's, Indians stampeded a small herd of 20-30 bison over a cliff (Butler 1971). Liljeblad (cited in Butler 1971:10) has spoken with a Northern Shoshone informant who tells of such a practice for obtaining bison. The informant also recalls that the animals were chased in deep snows with their pursuers following on showshoes. Occasionally a bison was killed when ambushed along a trail or at a water hole. The Blackfoot used a method called the "surround" in which a large area was enclosed with a fence, and the herd was scared from behind and on the sides by shouting men and women and barking dogs. The bison ran into the fence and there the men killed them with arrows and spears. Butler sees evidence of a pound at the Wasden site in southeastern Idaho (Butler 1978a:67). A pound was a natural enclosure such as a cave or blind canyon into which the bison herd was stampeded. Aboriginal methods of killing bison are reviewed extensively in Plains Anthropologist Memoir 14 (Davis and Wilson 1978).

Spears, darts, and later bows and arrows were used to kill the bison when they were stampeded, chased, or surrounded. When the animals were jumped over cliffs or forced into pounds or surrounds, they were killed by the fall, by crushing, or by hunters who speared them. Spears were thrust by hand from nearby and darts were thrown

with an atlatl. An atlatl is a length of wood or possibly bone with a hook at one end. The spear lay across the top of the stick with the pointless end cradled in the hook. The atlatl served as an extension of the arm and the dart could be thrown with exceptional force. Spears were used throughout most of prehistory; the atlatl and darts were introduced sometime after 8000 BP (Butler 1978a:68). The bow and arrow was introduced in Idaho at approximately 2000 BP and quickly replaced the dart. The bows were sometimes made of mountain sheep horn (Liljeblad 1957:96). Nez Perce arrow shafts were made from branches of serviceberry and syringa (Spinden 1908:213 and Dahlstom 1972:10 cited in Wildeson 1981:40).

The points that were fit to spears, darts, and arrows were usually made of stone, although bone points were not uncommon (Gilbow 1981:17; Hannus 1982). Projectile points vary in size and shape over time, such that they are diagnostic of certain periods of human occupation. Some of the earliest points found in Idaho that might be associated with bison hunting are Folsom points that have been dated to 9500-7500 BP. Numerous other point styles have been identified and dated; refer to the works of Swanson et al. (1959:6-30, 74-78), Swanson and Sneed (1966:26-28, Fig. 18-20), Aikens (1970:33-57), Ranere (1971:24-29), and Butler (1978a) for descriptions and photographs of these. Fig. 6 shows some types of projectile points that might be found on the Salmon National Forest. The shift from the use of darts and spears to arrows is evident in the change in the size of the projectile points.

Butchered bison provided flesh, fat, and marrow for food; hides and sinew for clothing; brains for tanning hides; and bones for the manufacture of tools. Procurement of each of these materials began with butchering. Methods of butchering bison on the Great Plains have been described by Wheat (1966) and Frison (1978). After butchering, the meat can be boiled or dried for later use (Frison 1978:355). The marrow was eaten raw or skimmed from the top of a container of boiling meat (Butler 1978a:67). The hides were scraped clean of flesh using stone and bone tools, and then tanned with the brains of the slain animals. They were then sewn together with sinew using bone awls and needles. The hides also have been used to make pouches for carrying goods or for cooking, and during the Late Prehistoric and Historic Periods they were used in the construction of lodges for shelter. Liljeblad explains the Northern Shoshone may also have eaten the hide (perhaps as a starvation food) by cutting it in strips and boiling it in water (Butler 1971:10). The bones were shaped into tools of various types possibly including needles, pressure flakers, fishing hooks, and ornaments. Splinters or larger pieces of bone may also have been used fortuitously as butchering tools (Brumley 1973:26-29).

Meat was sometimes preserved and stored. Bison meat was dried over a small fire and then packed to camps until it was all eaten. Parker (1842:107) described the procedure of drying employed by Nez Perce Indians accompanying him through Lemhi Valley during the last century.

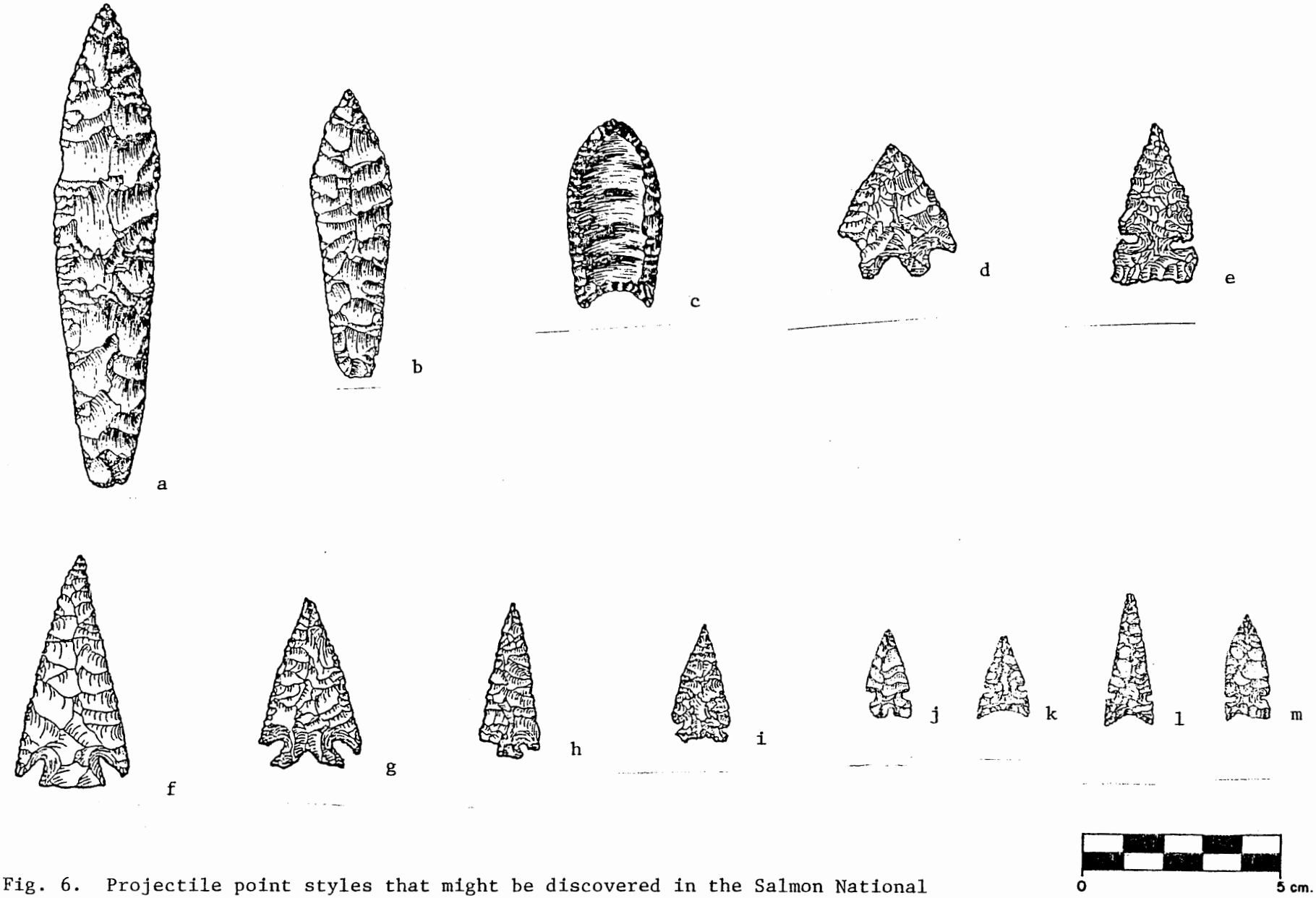


Fig. 6. Projectile point styles that might be discovered in the Salmon National Forest. a & b) Type 2 Haskett 10,000-8000 BP; c) Folsom 9500-7500 BP; d) Pinto Square Shoulder 7750-2500 BP; e) Bitterroot Side-Notched 7600-300 BP; f) Elko Corner-Notched 4900-900 BP; g) Elko Eared 4900-900 BP; h) Rose-Spring Corner-Notched 2600-250 BP; i) Blue Dome Side-Notched 1500-700 BP; j-m) Desert Side-Notched A.D.1300-1800. (After Butler 1978: Figs. 25e,f,h,i and 33a,d,f, 1981: Fig.8k; Hester and Heizer 1978: Figs. 2, 3d &j, 4d, 6k).

> The meat is cut into pieces, an inch thick, and spread out on a fixture made with stakes, upon which are laid poles, and upon these cross sticks; and then a moderate fire is placed beneath, which partly smokes, cooks, and dries it, until it is so well freed from moisture, that it can be packed...

During the historic period, sometimes camp was moved before the drying was complete so that the meat had to be set out to dry again at the next camp (Parker 1842:108). It does not seem likely that Indians without horses would have followed that pattern, though.

If the area of the kill site provided other resources, Indians may have prolonged their stay by preserving and eating the bison meat there. Wheat (1966) says that Historic Plains Indians might eat fresh game from one kill for up to one month. Meat may have been cached if the animal was captured near the winter village to which the Indians planned to return in the fall. There is no evidence that caching of bison meat occurred in the Northern Rockies, however. Clothing and hide pouches and bone tools made from bison were probably carried from place to place and were rarely cached.

(2) The location of sites of different types associated with bison capture and food processing has been documented throughout the Northern Plains and Northern Rocky Mountains. The location of the kill itself obviously varied with the capture technique. Bison jump sites may be characterized by: "(1) a grazing area where the bison collected in sufficient numbers to warrant organizing a drive, (2) a drive lane area leading to (3) a cliff with a talus slope [50 ft. high or higher] at the foot" (Butler 1978a:52).

The locations of surrounds and kill sites when bison were pursued in deep snow cannot be identified with available information. As mentioned before, pounds might be found in box canyons, caves (like at Wasden), and other natural empoundments.

Rough butchering occurred at or very near the kill site where the animals were gutted. The parts of the body with high meat and marrow content relative to bone mass were specially selected for transport to the base camp (Binford 1978).

(5) Pieces of bone used fortuitously as butchering tools have been recognized at Glenrock (Frison 1970:30) and Wahkpa Chu'gn (Brumley 1973:26-29), both in Wyoming.

Stone artifacts found at bison butchering and processing sites include end scrapers and teshoas, which are large, round flakes often made of quartzite that have secondary flakes chipped off the periphery. They are used to scrape tissue from hides during processing (Butler 1978a:52). None have been found on the Salmon National Forest; the closest known was near Ellis, Idaho, on the Salmon River (Marion McDaniel 1982:personal communication).

Firehearths may mark special-activity sites including sites where bison herds were monitored (prepatory to the kill) or butchered. Wright et al. (1980:186) maintain that "hearths should be absent from activity sites," and consequently any archeological sites found with fire hearths associated were believed to function as base camps. Binford (1978:170), however, has demonstrated in his study of modern Eskimo caribou hunters that hearths may be built at special-activity sites. This is especially true if the sites were occupied overnight because the hunting party had wandered far from the base camp.

Elk

(1) Elk were sometimes hunted with the same techniques as bison were. Liljeblad (1957:97) reports that the animals were chased in deep snows. Dominick (1964:151) says that they were sometimes driven into traps, i.e., pounds. In addition, they were ambushed at night (Liljeblad 1957:97) and dogs were often used in the chase (Dominick 1964:153). Ambushes occurred at springs and salt licks.

During the Late Prehistoric Period, bows often made of mountain sheep horn (Liljeblad 1957:96) and arrows were used to kill the elk. Before acquisition of the bow and arrow, darts and atlatls were probably used.

Because elk are large, some preliminary butchering probably took place at or very near the kill site. When the meat was taken to the base camp, it was "broiled on coals, some was baked in a hole which was dug and then covered with fire. Some was boiled in water heated by hot rocks and contained in a heavy hide receptacle" (Dominick 1964:161). As with the bison, the marrow was also eaten, the hides and sinew saved, and the bone made into tools of various types. According to Rominger (1979:115), the elk's hide was not used for clothing, but instead was cut into strips for thongs. Teeth may have been saved to be used as ornaments such as those found at Hogup Cave in Utah (Aikens 1970:88).

To preserve the meat for later use, it was dried on rocks in the sun (Dominick 1964:161).

(2) Elk kill sites probably occurred in highest frequency in elk winter range. They must also have occurred in high frequency along migration routes. Within either the winter range or migration routes, those areas that might have served as natural traps or pounds should have been preferred, according to ethnographic information. The base camps at which the meat, hides, and bone was processed were located within the same general area as the kill sites. The locations of the base camps probably depended on the local distribution of plant and fish resources--less mobile food resources than game.

(3) Elk were apparently hunted by small groups of hunters (Dominick 1964:151), although capture by driving them into natural traps

would have involved more people (Rominger 1979:114-115), probably women and children. The kill staging sites, kill sites, and butchering sites would have been occupied for very short periods of time--several hours at the most. On the other hand, the summer base camps were occupied by two or three nuclear or extended families (Liljeblad 1957:100) often for two to four weeks.

(4) Other activities besides elk processing that occurred at the base camps were hunting of medium and small sized mammals, fishing, plant food collection, and manufacture and repair of stone tools. Pictographs and petroglyphs were painted and etched apparently near kill sites, perhaps as part of ritual preparations for the kill.

(5) Archeological evidence for elk kill and processing sites undoubtedly occurs but often it is not recognized because elk bones have decayed and totally disappeared although the stone tools still remain. Elk bones are rarely found at archeological sites in Idaho; instead bison and mountain sheep remains occur in those sites where animal bones have been preserved--mostly in rockshelters. Rominger (1979:66, 72-75) identifies several sites in Montana just east of the Salmon National Forest which he believes were probably elk kill, butchering, and processing sites because they are situated within the elk calving area or winter range. No elk remains were found at the sites; Rominger's assumption about site function may or may not be valid. In Idaho, elk bone has been found in association with stone tools at the Bison and Veratic Rockshelters (Butler 1978a).

The discussion of stone tools used for bison hunting and hide preparation applies equally as well to stone tools used at elk kill and processing sites. Consequently, with what archeologists presently know about artifact assemblages, it is not generally possible to differentiate elk kill and processing sites from bison sites (except for jump sites) without the bones of the animals hunted.

Antelope

(1) Liljeblad (1957:38) reports that during the historic period antelope were driven into corrals and then clubbed to death. Undoubtedly they were also killed by ambush along trails and at watering places as were other species of game. Steward (1938:82) explains that the Shoshone of eastern California built a corral by erecting posts about 20 ft. apart and then filling the spaces between the posts with brush. Unlike for elk or bison, the Northern Shoshone apparently did not make use of natural barriers to capture antelope. In these surrounds or pounds, clubs were used to kill the antelope, while at ambush sites darts or bows and arrows were probably used.

There are no specific accounts of food preparation or hide and bone use, but it is probably safe to assume that the techniques used and the final products made were very similar to those for deer. Likewise, meat preservation would probably have been by drying, as it was for deer meat.

(2) Antelope herds are confined to the Lemhi and Salmon River Valleys above North Fork. Because the surround or pound appears to be the preferred means for capturing the animal, antelope kill and butchering sites may have been concentrated near natural empoundment areas. Note, however, that corrals could also be built out in the open. If the Shoshone preferred to hunt antelope in the winter, fall and early spring (Steward 1938:175) presumably because the animals aggregated during that season, then the base camps from where the hunters came were probably the large winter villages.

(3) At communal drives, several families probably participated in the hunt, so the kill and butchering sites were used by many Indians. The same areas may have been preferred and returned to over the years, but apparently in northern Utah, "a new antelope corral was built each year" (Steward 1938:175). The associated processing site in winter was the village; during other seasons, smaller base camps may have been used. The base camps may have been larger than "usual" because several families from several smaller base camps would have banned together for a communal hunt. Ethnographically, Northern Shoshone met in the vicinity of May in the Pahsimeroi Valley to hunt antelope from horses with bows and arrows (Steward 1938:190).

(4) Associated activities at winter sites where the antelope were processed (i.e., winter villages) include a whole range of tasks which have been mentioned previously. Fall antelope processing sites were probably the scene of ceremonies, maybe pinenut processing, fall berry gathering and waterfowl hunting.

(5) Antelope bones have been found in association with cultural materials at several sites in Idaho including Sheepeater Battleground (Gallagher 1975:67), possibly at Wilson Butte Cave (Butler 1978a:10), Bison and Veratic Rockshelters (Butler 1978a:63) and 10CR334 and 10CR526 in the Pahsimeroi Valley (Chatters 1977:33-37). No antelope remains were found on the surface of these sites, however. Antelope bones have been fashioned into awls, flakers, and other tools at Hogup Cave in northern Utah (Aikens 1970:85, 87, 90-91) and were probably made into tools in the Salmon area, too.

Deer

(1) Techniques of deer hunting were similar to those for elk. In addition, deer were sometimes run over cliffs

> ...hunters moving two or three together found high rocks or cliffs, then they took buckskins and spread them around above the cliff in V-shaped lines, apex toward the drop. The deer approached slowly, smelled the skins, frightening them back toward the lane. The Indians who hid along the lane also frightened the deer and caused them to run over the cliff [Malouf 1974:139 cited in Rominger 1979:115].

Also one of Dominick's (1964:160) informants described a technique whereby the Indians placed sharp sticks in the ground and then chased deer into the sticks, injuring and killing them. Another collective hunting technique practiced by the Nez Perce involved making a line of sticks covered with scorched hides. When the deer smelled the hides, they "bunched together, whereupon the line of hunters closed in on them" (Liljeblad 1957:27). Individual hunters also ambushed deer along trails and at water holes and salt licks.

Deer meat preparation and storage was the same as for elk meat. However, unlike elk hides, deer hides were tanned and sewed into clothing and bags for cooking and carrying.

(2&3) The location for deer hunting, butchering, and processing sites occurred generally within areas of deer summer and winter range and along migration routes. Specific locations were similar to those for elk because the techniques of capture and processing were mostly the same for the two big game species. Likewise the number and type of occupants at the activity sites and the length of occupation at each site was very similar to that of elk hunting and processing.

(4) Associated activities include other big and small game procurement, fishing, plant gathering, and lithic material collection and modification--just as at elk sites.

(5) If the number of deer bones found at various archeological sites in the northern Rockies is any indication, deer was hunted more often and with better success than elk. Perhaps this can be attributed to their higher density (Steven Hackenberger 1982: personal communication). However, it is generally not possible to identify that deer was the species of the animal hunted and butchered at a particular kill site.

Deer bones have been found at the Bison and Veratic Rockshelters, at Wilson Butte Cave (Butler 1978a:10, 63), and at hunting camps in the Pahsimeroi Valley (Chatters 1977:20). Two awls and another bone tool of unknown function found at the Willow Creek Rockshelter and at the Harris Site in southeastern Idaho appear to have been made from the bones of a deer or antelope (Powers 1969:50).

Small Mammals and Birds

(1) Small mammals and birds were hunted comparatively infrequently in the study area, being taken as the opportunity arose. Often the small mammals were hunted by boys before they were old enough to participate in big game hunts (Lowie 1909:185 cited in Wildeson 1981:49).

Rabbit drives were reportedly not conducted in the Lemhi area until well into the historic period because of the low rabbit density. Both the Shoshone and the Nez Perce used long nets supported by

sticks into which they "herded" the rabbits (Steward 1938:82; Liljeblad 1957:27). In western Montana and among the Nez Perce, birds were clubbed to death or ensnared (Rominger 1979:118; Marshall 1977:65 cited in Wilderson 1981:46). Both Liljeblad (1957:96) and Steward (1938:179) report that in southern Idaho sagehens and water fowl were hunted communally apparently by men, women and children. They do not describe the technique but the birds were probably flushed out and beaten with clubs.

Small mammals and fowl were probably prepared for consumption by skinning and then boiling or roasting. Some of the long bones may have been fashioned into tools or ornaments, such as whistles, beads, pendants, and gaming pieces (Aikens 1970:88-91). It is doubtful that the meat was ever preserved for later use because preservation would not be worth the effort with the amount of meat per animal. During the historic period, Shoshone Indians who lived south of the study area wove rabbit skins into blankets and robes (Steward 1938:98). Because comparatively few rabbits occurred in the study area, it is doubtful that rabbit skin blankets or robes were ever made. Porcupine quills were saved for ornamentation. Sometimes the bird skins were saved for use later as decoys in Montana (Rominger 1979:118).

(2) Because small mammals were taken opportunistically, their distribution probably never affected site location. Kill sites might have consisted of snares, but whatever the technique used to capture and kill the animals, they were probably taken whole to the base camp where they would be butchered and cooked.

(5) We would expect no archeological evidence of small mammal and bird kill sites. The one exception might be communal rabbit or waterfowl kill sites where butchering might have occurred at the kill site. We would also be unable to distinguish small mammal meat cooking from large mammal cooking at those sites with no faunal remains.

Evidence that area inhabitants exploited small mammals might be found in dry caves. Small game snare pegs have been found in caves in Idaho (Jerry Wylie 1982: personal communication). Aikens (1970:171, 174) found possible snare pegs and wooden throwing stocks at Hogup Cave in northern Utah that apparently were used to capture and kill small mammals. He also reports large rabbit nets woven from dog bane (Apocynum). He found tubular beads and bone bundles of unknown function made from rabbit and bird bones (Aikens 1970:88-91, 129-132).

Small mammal and bird bones found in association with cultural materials in the Pahsimeroi Valley are: rabbits, beaver, Spermophilus, Evithizon, one large bird of grouse family, marmots, voles, and a passarine or song bird (Chatters 1977:33,37).

(1) Roots, including camas, bitterroot, yamp, balsamroot, and wild onion, were dug up with digging sticks made of greasewood (Lowie 1924:203 cited in Gallagher 1975:84). Among the Nez Perce, the digging-end of the stick was sharpened and hardened by fire and sometimes the handle-end had a cross-piece of bone or elk antler (Liljeblad 1957: 27-28). After the roots were dug, the Nez Perce put them in cylindrical gathering baskets to be carried to the base camp (Liljeblad 1957:28).

The preparation of the roots for consumption varied with the species. Some were eaten raw, such as springbeauty; some were dried such as bitterroot and camas; some were dried, or boiled and dried, and then pounded into meal such as biscuitroot, camas, cattail, and yamp; and some were baked in earth ovens and then dried such as camas, thistle, and wild onion (Steward 1938:21, 23, 24, 30, 167; Liljeblad 1957:28, 38; Dominick 1964:162).

Among the Northern Shoshone during the Late Prehistoric and Historic Periods, clay pots were used when camas and probably other plants were boiled (Steward 1938:167). The roasting pits or earth ovens used in the Rocky Mountains west north and east of the study area have been described by Wright et al. (1980:190). According to ethnographic accounts, the pits were 30-35cm deep and covered as much as 2.35 square meters depending on the size of the harvest and the number of women using the oven. The bottoms of the pits were covered with stones on which a fire was built. After the coals were removed, the aborigines put in a layer of grass, then one of roots, and then one of bark. The roots were roasted for up to 70 hours.

When the roots were pounded, a mano and metate or mortar and pestle were used. These tools were often cached near a productive field for use in subsequent years (Dominick 1964:162).

Those roots that were dried were often pounded into meal which was then made into cakes, sundried, and preserved for later consumption (Liljeblad 1957:28). The stored roots may either have been cached in bark bags buried in pits in the ground (Steward 1938:32,167) or were carried from camp to camp in buckskin bags or woven sagebrush-bark blankets until eaten (Steward 1938:191-192; Liljeblad 1957:37).

(2) Roots were exploited where they occurred in highest density. Camas fields have received the widest coverage in the archeological literature but large fields of biscuitroot and bitterroot were not uncommon. Many of the roots grew in similar topographic areas and many ripened at the same time in one particular spot, thus increasing the likelihood that the area was visited by aborigines. Although the aborigines moved away from their winter villages in the spring to follow the ripening plant foods, Steward (1938:19) says they preferred to stay close to the villages "so that any cached seeds[and

presumably roots] would be within a convenient distance of it." The use of roots probably depended, not only on root plant density, but also on the availability of game in the area (Steward 1938:187). Favored root gathering places were returned to year after year. No such place has yet been found on the Salmon National Forest but close to the Forest are examples of such places. Camas Prairie at the north edge of the Snake River Plain 100 miles south of the Salmon National Forest was one such place of particular significance. There the Shoshone gathered to collect camas and to trade with other Indians who they may have not seen at any other time of the year. During the historic period, traded items included bison skins, seeds, roots, dried crickets, salmon, and horses (Steward 1938:203). Other traded items may have included Olivella shell, obsidian, and other precious and rare goods. Trading and root gathering were accompanied by dancing and other festivities (Steward 1938:203).

Base camps, i.e., short-term habitation sites, were probably situated very near the root gathering sites. Most if not all the root processing would have taken place at these base camps.

(3) Usually these camps were occupied by two or three nuclear or extended families (Steward 1938:187), although the camps at the larger camas/root fields, especially at Camas Prairie, may have been occupied by many more families. Women dug the roots, but the camps were occupied by entire families. The length of occupation, of course, varied with the amount of plant and animal resources available in the areas. Generally they were occupied for a few weeks.

(4) Hunting and perhaps some fishing occurred in the nearby area, and butchering and preserving of the meat would have occurred at the base camps where roots were processed. Dancing and trading were activites associated with root gathering in Camas Prairie, and perhaps occasionally at any large camas grounds in the study area.

(5) Archeological evidence of root collection and processing is limited. Along the East Fork of the Salmon River in Idaho, Caroline Carley (1982:personal communication) reports an earth oven radiocarbon dated to 2000 BP that may have been a root roasting pit. Butler (1978a:72) also reports that Swanson found an earth oven in Birch Creek Valley that dates to 4500±170 BP, again of unverified function. Wright et al. (1980:190) excavated a roasting pit in northwestern Wyoming that dates to 5195±85 BP and that occurred in an area where camas grows. Identification as root roasting pits is based primarily on size, the presence of stones at the bottoms of the pits, and their proximity to camas fields (Wright et al. 1980:190). Evidence of these features is rarely found on the ground surface; the features are instead discovered during subsurface testing at open lithic scatters.

Seeds

(1) Primarily due to availability, the Lemhi Indians and presumably other Northern Shoshone in the study area depended more heavily on roots than on seeds as a food resource (Steward 1938:19). They did collect and eat some seeds, however, including mustard, cattail, and sunflower seeds (Steward 1938:30; Liljeblad 1957:28).

To collect mustard and other grass seeds, the aborigines beat the seeds into carrying baskets with basketry seed beaters (Liljeblad 1957:37). They then winnowed the seeds from the chaff. The mustard seeds were eaten, perhaps raw; the cattail seeds were collected and burned to separate the seeds from the rest of the head; and sunflower seeds were eaten raw or cooked and then pounded into a meal which was baked in cakes (Liljeblad 1957:28). Sunflower seeds were sometimes mixed with lambsquarters (greens) and service-berries and then made into cakes (Gass 1811 cited in Steward 1938:189). The Shoshone who lived south of the study area roasted the seeds before grinding them with mano and metate or boiling them in pots of clay or hide. The seeds were roasted in basketry trays using live coals.

Seeds were stored in roasted form or as cakes in pits dug into the earth (Liljeblad 1957:37).

(2&3) Because seeds occurred in less density than roots in the study area during the historic period and probably in prehistoric times, it is doubtful that base camps were established expressly in the area of seed collection. Seeds were collected when available as the Indians hunted and gathered other plant foods. Therefore, the location of base camps associated with seed collection, the number and type of occupants, and the length of occupation all depended upon exploitation of other resources.

(4) Archeological evidence of plant food, including seed, collection and processing dates back 9000 years; apparently it is coincidental with big game hunting at Wilson Butte Cave on the Snake River Plain of Southern Idaho (Butler 1978a:65). Grinding stones, including manos, metates, mortars, and pestles, are found widely in Idaho (Swanson et al. 1959:59-67, 100-104). They are found less frequently in the study area than they are further to the south, possibly because they were used more often for seed processing than for root processing. Some mano and pestle fragments have been found during surface survey on the Salmon National Forest. (See for example the pestle found at Owl Creek [SL-18].) Swanson and Sneed (1966:30) excavated no ground stone, except a whetstone (arrow shaft straightener or awl abrader), from the Shoup Rockshelter. "Grinders" are found in considerably lower density from North Fork to Bargamin Creek, about 15 miles beyond Salmon Falls, than they were further downsteam. Grinding stone found so far in the uplands of the Salmon National Forest is confined to one site.

(1) The Lemhi Indians collected pine nuts in the Lemhi Mountains. The relative importance of pine nuts to Shoshone subsistence is unknown, although the nuts were collected in "some quantity " Steward (1938:190). Hackenberger (1982:personal communication) believes that their caloric value make pine nuts a very desirable resource, while other authors (Franzen 1978; Wildeson 1981) make little mention of them.

If the Northern Shoshone used the same techniques as the other Shoshones did to harvest pine nuts, they knocked or pulled the cones down with poles if the cones had not yet fallen by themselves. The Lemhi reportedly climbed the trees to get the nuts or even fell the trees (Steward 1938:28). The nuts were taken from the cones by either cracking the cone open or roasting the cone, nut and all. The poles used by the Southern Paiute were 15-20 feet long and were hooked on one end.

Cones were moved from the trees to the roasting fire in conical baskets (Steward 1938:132). The nuts were eaten either raw or cooked. They were cooked when the cones were roasted to release the nuts. If the family preferred some raw, the cones would have been broken to extract the nuts or the women would have waited for the cone to open naturally. Liljeblad (1957:96) explains that pine nuts were sometimes ground on a metate and then boiled to make a porridge.

Both green and cooked nuts were stored, probably in caches near the picking areas. The caches were visited during the winter from villages relatively closeby, pine nuts being taken to the villages as needed (Steward 1938:28). The Paiute pinenut cache pits were grass or brush-lined (Steward 1938:65, 182).

(2) The base camp from which the pinenuts were harvested was situated at the pine grove. Roasting and caching were probably conducted at the camp (Steward 1938:190). Because one grove did not consistently produce year after year, base camps changed from year to year.

(3) Depending on the size of the grove, the size of the base camp varied between 2 and 6 families (Steward 1938:27, 190). Women were in charge of the harvest, but men may also have lived at the base camps and gone on short hunting expeditions from there. Camps were occupied for 1 1/2-3 weeks in the early fall (Steward 1938:27). Although Steward mentions that winter villages were sometimes established in pinenut harvesting sites, such was probably not the case in the Lemhi area because limber pine occurs at elevations too high for winter occupation.

(5) There is no published information on archeological evidence of pinenut harvesting and processing in Idaho despite the fact that there is ethnographic documentation for its occurrence. We might

expect to find manos and metates near stands of limber or white bark pine. Subsurface caches in those same areas might be evident in road or stream cuts.

The distribution of grinding stones in Idaho and the study area has been discussed previously. None of the surveys in the Lemhi Mountain section of the study area to date have revealed grinding stones in association with large stands of limber or white bark pine.

Other Plant Foods

Greens, berries, and inner bark are three other types of plant foods exploited by the Indians of central Idaho. They were of lesser importance than the food resources discussed above; in fact, the inner bark was considered a starvation food (Malouf 1974 cited in Rominger 1979:105).

(1) Greens collected and eaten include lambsquarters (Chenopodium), wild onion (Allium acuminatum) and prickly pear (Opuntia) (Steward 1938:21,26,189). Serviceberry, chokecherry, and elderberry were harvested (Steward 1938:189). The inner bark of various pine trees was occasionally eaten (Rominger 1979:105).

Greens and berries were picked by hand. The berries were transported from the picking site to the processing site in conical baskets (Steward 1938:32). The bark was probably cut and stripped with the aid of stone axes.

Leafy greens were eaten raw, or, in the case of lambsquarters, mixed with sunflower seeds and serviceberries and stored in cakes (Gass 1811 cited in Steward 1938:189). They might also have been boiled (Steward 1938:19). Opuntia needles were "burned off, then [the fruit was] baked in hot ashes in a hole, covered with earth and ashes; handled with sticks" (Steward 1938:26). Steward's description of baking sounds very similar to that for baking roots in earth ovens. Berries could be eaten raw or cooked. If cooked, they were boiled into a soup to which was added root flour, making a thick pudding (Liljeblad 1957:38). Preparation of inner bark for consumption was not researched for this overview.

Greens and inner bark were never preserved for later consumption. Berries were preserved by being "ground, seeds and all then dried in cakes" (Liljeblad 1957:38).

(2,3,4) Harvested leafy greens grew along streams, prickly pear in drier environments, berries on moist hillsides. Harvesting sites probably occurred widely, but the associated base camps were more restricted in location. Because these plant foods were of minor importance, their distribution did not effect site location to much extent. Base camps locations instead depended more on the distribution and availability of root crops and big game. Likewise the number and type of occupants and the length of base camp occupation depended on which other resources were exploited in the vicinity of that camp.

(5) Archeological evidence for the use of greens as food has never been, and probably never will be, recognized, except perhaps through pollen analyses. Because berries were ground with manos and metates and mortars and pestles, some of the ground stone found may have been used in berry processing. Extraction of macrofossils from the surfaces of ground stone might indicate metate use for berry storage preparation. Use of pine inner bark is documented by the presence of scarred trees in areas of northern and central Idaho and southwestern Montana. Peterson (1966:17) has found scars on ponderosa pine trees on Hughes Creek in the northern part of the Salmon National Forest. He believes they serve as evidence of inner bark harvesting, but because they are along the Southern Nez Perce Trail, it is possible that instead they marked the trail (Smith 1973:48). Another site where scars on pine trees may remain from Indians peeling the bark for food are at Peel Tree Basin between Sheephorn Mountain and Iron Creek. The bark on the peeled trees on the Southern Nez Perce Trail near Muleshoe Springs on the Forest was cut low on the trees with a stone axe and then peeled up 4 or 5 feet. The cuts are about 1 1/2 feet wide (Peterson 1966:19).

Rock and Mineral Sources

To date, only three prehistoric chipped stone quarry areas have been identified within Salmon National Forest boundaries--two in the Beaverhead Mountains east of Leadore and one on upper Panther Creek. Four additional sites have been found on Bureau of Land Management property in the vicinity of the Forest (Fig. 7). Of these seven sites, the materials represented include chert, chalcedony, rhyolite, and quartzite. No obsidian or ignimbrite is known for the area. If any exists, the source is apparently unimportant because most of the obsidian found throughout the state of Idaho has been identified with known quarries.

There are probably many more prehistoric rock quarries on the Forest not yet discovered. The possible distribution of lithic material sources can only be discussed in very general terms. Quarries probably occur in higher frequency in areas where the Challis volcanics are exposed (Fig. 7). Obsidian, ignimbrite, rhyolite, chalcedony, and chert should originate from those volcanics.

In addition to those materials, quartzite was also an important material; it occurs widely in the study area both as outcrops and as cobbles in stream beds. Outcrops have been observed in the foothills along the east side of the Lemhi Range, the Parker Mountain area, Indian Creek, and the Gibbonsville area (Umpleby 1913:31-32). The Salmon and Middle Fork Rivers were probably frequently used sources of quartzite cobbles for stone tool manufacturing. One source of quartzite that Umpleby reported may be of unusually high quality and so may have been heavily quarried by prehistoric area occupants; the clear-white, fine-grained quartzite occurs at Meadow Lake near the southern end of the Forest. At the Shoup Rockshelters about 25% of the debitage, 16% of the projectile points, 86% of the cobble fleshers, 93% of the choppers, and all of the hammerstones were of quartzite (Swanson and Sneed 1966:25-32). I suspect

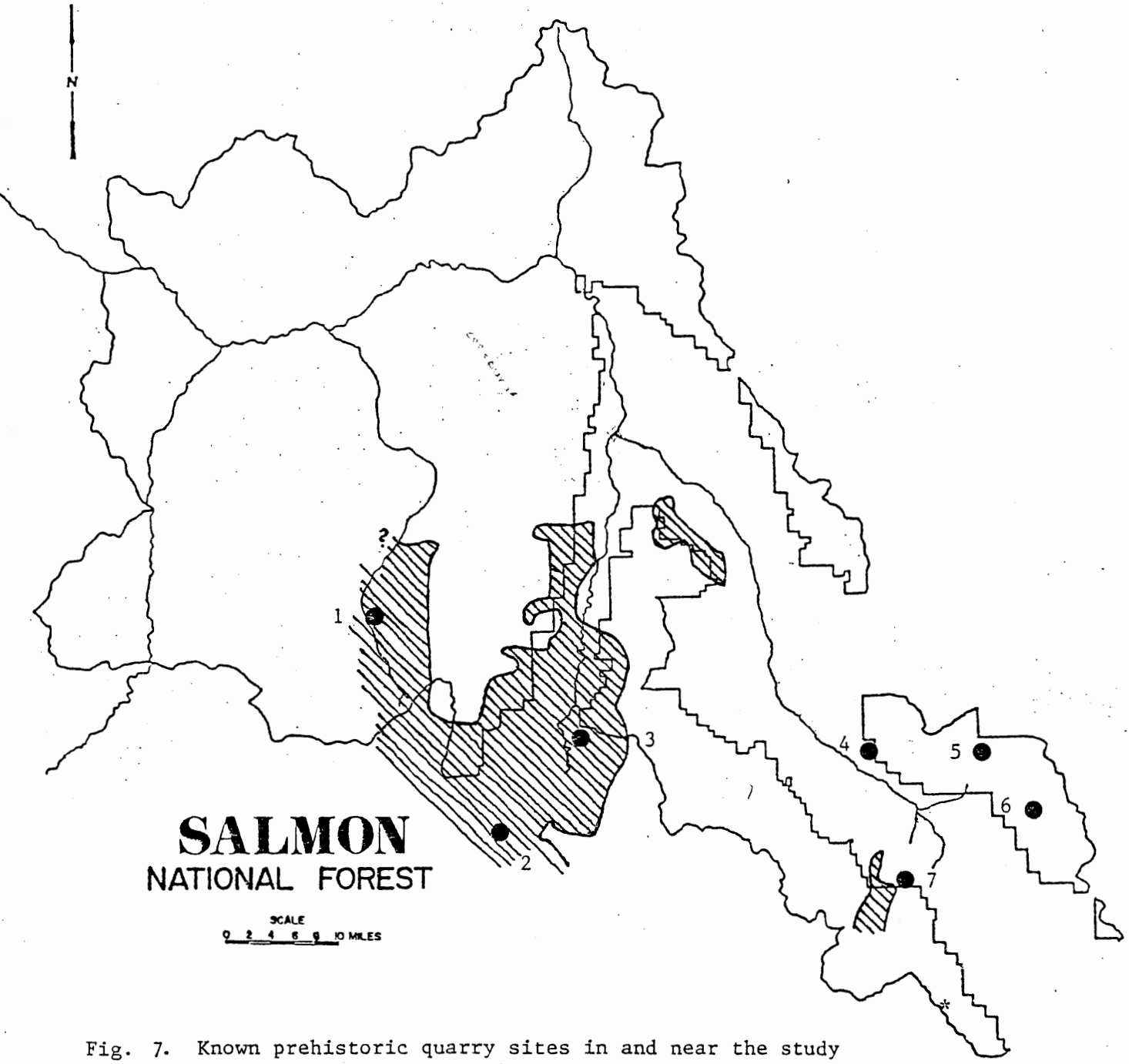


Fig. 7. Known prehistoric quarry sites in and near the study area. Also, some limited, uncomplete mapping of exposed Challis volcanics.

* Possible source of clear-white fine-grained quartzite (Umpleby 1913).

Known quarry sites.

1	10LH329 (SL-25)	cryptocrystalline
2	BLM-ID-040-036	cherts and chalcedonies
3	BLM-ID-040-042	green siliceous mudstone
4	10LH113	rhyolite and chalcedony
5	10LH342 (SL-32)	jasper
6	10LH365 (SL-40)	white quartzite and orange chert
7	10LH100	jasper

that most of the quartzite at the sites was procured locally from the banks of the Salmon River.

Source identification may lead to recognition of trade networks and changing area and resource use over time. There has been some trace element analysis for obsidian and ignimbrite artifacts found on the Middle Fork of the Salmon River to determine the source of the rock from which the artifacts were made. Timber Butte, Centennial Mountains, and Big Southern Butte were the identified obsidian sources (Sappington 1982:417-419). Trace elements in cherts and chalcedonies are only beginning to be examined in the United States.

Lowie (1924:225 cited in Wildeson 1981:51) reports that cryptocrystalline rock, such as cherts and chalcedony, was heat-treated to make the stone easier to knap.

The distribution of prehistoric lithic quarries does not depend on a nearby water supply as many sites apparently do, but instead on the distribution of the desired rock. On the Salmon National Forest, the three identified quarries are situated adjacent to running streams. However, two of the quarries in the Bureau of Land Management Challis Planning Unit reported by Epperson (1977:60) just south of the Salmon National Forest are more than one mile from the nearest perennial water source. Also, for the four quarries on the Targhee National Forest south and east of the Salmon for which information was recorded, the average (mean) distance to water is 1000 ft. or 300m (McDonald 1982:Appendix 1).

Limonite and red ochre are two materials that were used by prehistoric occupants in the study area. They were used both for body decoration and rock art. No sources of the material have been identified by archeologists, but geologist Shannon (1926:210) notes that limonite occurs in Patterson Creek, on the north side of Liberty Gulch at the Oriole Mine, and at the Copper Queen mine.

During the late Prehistoric and Historic Periods, the Indians of Idaho used some pottery for cooking and carrying. No attempts have been made to identify clay sources, primarily because few pots or pottery fragments have been recovered. Procurement was probably opportunistic, i.e., clay was dug when the group was collecting food in the general area. Butler (1979) has examined Idaho pottery in much greater detail than anyone else recently. In his paper entitled, "The native pottery of the Upper Snake and Salmon River Country", he describes pottery syles, composition, and manufacturing techniques. Pots were generally not carried from camp to camp because they were fragile, but were cached (usually filled with preserved foods) at places visited later in the season - probably near winter encampments.

Vision Quests

(1,2,3,4) Vision quests were rituals during which Indian male adolescents met their guardian spirits by staying in an isolated spot, meditating and fasting. The quests were actually part of more

complicated rituals that marked the transition from the life of a child to adulthood. Vision quest sites were supposedly located in places with awe-inspiring views (Rominger 1979:44). At the sites, a shelter of stones may have been built. The Crow Indians of the Plains sometimes had sweatbaths at or near the sites (Rominger 1979:50) and sometimes Nez Perce. The small, dome-shaped Nez Perce structures were covered with sod (Liljeblad 1957:29-30) and a fire over a pile of stones was built in the center of the feature. Because the experience was a religious one, no other activities such as food procurement and processing or stone tool manufacture occurred. Only one person occupied a vision quest site at any one time; he may have stayed for days, according to ethnographic accounts. Although it is possible that sites were reoccupied (i.e., occupied by someone else during a later vision quest), the preferred way to have a quest was for a boy to build his own shelter.

(5) Rominger (1979:36, 37, 44) describes two vision quest sites in southwestern Montana just east of the Salmon National Forest. Both are U-shaped rock structures. The Kunselman Site measures 1.91 x .96m and the Long John Site 1.18 x .74m. The first site is on a high sagebrush-covered ridge that overlooks a broad stream valley and the latter is in a clearing of grass and sagebrush. In his review of pertinent literature on vision quest sites, Rominger found that they are elliptical, oblong, or U-shaped, and, if the latter, generally faced to the east (Wedel 1961:266 and Fox 1976:13 cited Rominger 1979:49-50). Spinden (1908 cited in Wildeson 1981:45) says that Nez Perce vision quest sites were marked by piles of rocks.

There is no known available reference to the remains of a sweathouse at a vision quest site, however. What may be the remains of such a feature, but not at a vision quest site, have been noted at the Dancing Cat site (10CR233) on the upper Salmon River just north and east of the Redfish Overhang (O'Connor 1974). The depression, 2.9m in diameter and 1.4m deep, was dated by associated diagnostic artifacts to about 3500 BP.

Very few vision quest sites have been identified in Idaho, strangely enough. One possible vision quest site was found about 25 mi. south of Twin Falls; the site merely consisted of a pendant fashioned from a piece of antler on a high ridge with a long, picturesque view. At the top of a mountain with an inspiring view of the Big Horn Crags, Dahlstrom and Alden recorded a rock ring 1.2m in diameter that they suspected might mark a vision quest site. Because vision quest sites are found throughout Montana including the southwestern portion of the state, it is reasonable to assume that they also occur in Idaho. It is quite possible that archeologists in Idaho assume that the rock structures they find are all hunting blinds or perhaps tipi rings, while the Montana archeologists might label some of the same rings "vision quest sites."

However, the virtual lack of vision quest sites in central and southern Idaho may be attributed to the fact that the Shoshone did not have

a boy's puberty rite (Steward 1938:45). The Nez Perce did (Wildeson 1981:45), however, and it is also quite possible that prehistoric area occupants before the Shoshone and Nez Perce engaged in vision quests.

Other Resources

Several other important resources were used by area prehistoric inhabitants. Those discussed briefly here are wood for fuel; water for drinking, cleaning, and cooking; shelter; burial sites; and plant materials for baskets, clothing, and lodges.

Identification of the prehistoric distribution of two of these resources--wood for fuel and plant materials for baskets, clothing, and lodges--is virtually impossible. Both materials occurred widely and concentrations of preferred materials probably varied from year to year. For example, driftwood may have been a preferred fuel source (Wildeson 1981:52), but previous area use and character of spring runoff would have changed site preference with each new year. Windfall wood was also used (Wildeson 1981:52). Also, materials used to make baskets, clothing, and lodges, including tule, cattail, willows, beargrass, Indian hemp, and birch roots (Spinden 1908:191 cited in Wildeson 1981:38), occurred widely along stream banks and lakes. Because they occurred so widely, they were not critical determinants of site location.

Probably no manufactured tools were used to collect firewood. One author describes and illustrates modern Paiute plant material procurement, preparation, and tool use to construct baskets, decoys, and mats. The Nez Perce made coiled and twined baskets (Gunther 1950:177 cited in Wildeson 1981:46). These methods are probably very similar to those used by the Shoshone in central Idaho.

Water for drinking, cleaning, and cooking was another resource that affected site location to some degree. In many portions of the Great Basin that are drier than the study area, woven baskets covered with pine pitch were used to carry water when water sources were far between and scarce. Hot spring water may have been used for cleaning (Walker 1978:79 cited in Wildeson 1981:45), cooking, medicinal, and spiritual purposes (David Holt 1982:personal communication).

On the Salmon National Forest, the distance to water from prehistoric sites has been recorded for only 35 sites (excluding the Salmon River survey for which all sites were located near the river and Dahlstom's Big Horn Crags survey whose data were unavailable at the time this site characteristic was analyzed). For those sites, the average distance to any source of water is about 130m and the standard deviation is about 150m.

Archeologists generally report the average (mean) distance between recorded sites and water sources. They rarely mention the standard deviation or the range of distances, however. On the Targhee National

Forest, Forest Archeologist James McDonald (1982:IV.2) found that the average distance between recorded prehistoric sites and any source of water was 160m. For 18 sites that Rominger (1979:76) reports in southwestern Montana near the Salmon National Forest, the average distance to a water source is only 45m. Of 66 prehistoric sites reported in south-central Wyoming survey on the Medicine Bow National Forest, the average distance to a permanent water source was about 240m (Fawcett and Francis 1981:167-171). Chatters (1977) found in the Pahsimeroi Valley all lithic scatters were within 150m of a water source. Epperson (1977:45-46) has provided some of the most detailed information about recorded site location in relationship to different types of water sources for central Idaho. In the Bureau of Land Management Challis Planning Unit, he found the average distance to any water source from any type of site was about 760m with a standard deviation of 1214.2m! This standard deviation indicates that 68% of the sites lay between 0 and 2000m from the nearest water source.

Most studies of site location in relation to water do not address the overall character of water supply in the project area. In other words, the researchers find that the average distance between sites and water sources is 200m, for example, but make no effort to document the average distance from any point on the landscape to a water source. One exception to this trend is a preliminary unpublished report by Rossillon et al. (1979) for Stanley Basin 50 mi. south of the Salmon National Forest. These archeologists found that 93% of the recorded sites were within 250m of the nearest intermittent or permanent water source, but only 57% of non-site locations (point locations systematically selected without regard to archeological site locations) were within 250m. Prehistoric sites were also found to be significantly closer to fifth-order streams (the Salmon River and Valley Creek) than non-sites. In contrast, sites and non-sites were not significantly different with regards to distance to a confluence or lake inlet or outlet. Also whether the nearest water source was intermittent or perennial made no significant difference in site location.

Considering the Salmon Forest average and those cited above, it appears that the average distance on the Salmon National Forest in the uplands off the Salmon River would be less than 250m and that the majority of sites are less than 500m from any intermittent or permanent water source or within a 5 minute walk of camp.

Natural shelters and burial spots are places which with some stretch of the imagination may also be considered "resources". Consequently they are discussed in this section. Some of the natural shelters that the Indians sought when choosing a camp were caves or rockshelters (Lowie 1909:184 cited in Wildeson 1981:50; Dominick 1964:137) or valleys protected from the wind (Dominick 1964:152). Sheltered areas other than caves or rockshelters will be difficult to identify without familiarity with the countryside. Caves and rockshelters are more readily identified. Of all site settings in central and eastern Idaho, the rockshelter has been the most examined. Rockshelter excavations include Bison and Veratic Rockshelters, Owl Cave, Shoup Rockshelters, Big Creek Cave, and Jacknife

Cave (Swanson and Sneed 1966, 1971; Butler 1978a; Wylie et al. 1981). Rockshelters were not only used as residences but were also the sites of rock art and burials.

Almost 50 rockshelters with prehistoric components have been recorded in the Salmon National Forest. Sixty percent of those are in the North Fork District along the Salmon River. The others found are along the Middle Fork River and Panther Creek in the Cobalt District and along Hawley and Canyon Creeks in the Leadore District.

Finally, places where Indians buried their dead might also be called "resources." The Shoshone and Nez Perce typically placed burials in talus slopes, such as at SL-89, reportedly the site of a large "Indian cemetery" from which the Smithsonian removed numerous skeletons shortly after the turn of the century (Shoup 1969:12). However,

> Osborne (1957) suggests that talus burials are late introductions from the Plains, and were preceded by a sequence of burial types, consisting of inhumation, cremation, and use of cists or vaults, in that order [Wildeson 1981:45].

Caves were also used, such as at 10LH8 which is located on Bureau of Land Management property in the Lemhi Valley. Walker (1978:150 cited in Wildeson 1981:51) reports that Shoshone burials were extended or cremated. Nez Perce cemetaries were situated close to their winter villages either "on the first major terrace above the river, or in pits hollowed out of talus slopes adjacent to the river" (Spinden 1908:181 cited in Wildeson 1981:45). The Lemhi Shoshone buried a man's few personal possessions including "his clothes, blankets, and cherished articles" with him (Steward 1938:194).

The only burials reported on lands administered by the Salmon National Forest are those from SL-89 and one at the Rabbitfoot Placers. No attempt has been made to verify local stories that employees of the Smithsonian actually removed skeletons from SL-86. The Rabbitfoot Placer Indian burial was found "in the gravel" in the early twentieth century (Berne 1926).

Discovery of burials in talus slopes is very difficult; slope movement would tend to crush and scatter the bones. Talus pit burials, like hunting blinds, were probably confined to the lower portions of the talus slopes.

Limitations of the Ethnographic Model

Early Big-Game Hunting Tradition

If the modified ethnographic model which I have begun to develop here is an appropriate representation of Late Prehistoric Period settlement and subsistence, for which time in the past is it not appropriate? Certainly, it does not seem appropriate during the Early Big-Game Hunting Tradition in Idaho which Butler (1978a:58-67) identified as occurring from the

recession of the continental glaciers to about 7200 BP. People living during that time apparently relied heavily on hunting what is now extinct megafauna, including mammoth, extinct bison, camel, horse, and sloth (Butler 1978a:10,59). While archeologists have often thought that the Paleo-Indians depended almost entirely on big game for food, there is increasingly more evidence that plant food gathering was of considerable importance also (Hackenberger and Howes 1981), but probably not to the extent as during the Archaic Period.

Just as the relative importance of plant foods changed over time, so the use and significance of anadromous fish as a food resource in the upper Salmon River drainage basin at various times in the past was different from that of the ethnographic present. Down on the Columbia River, Cressman has found evidence of anadromous fish procurement dating to 8000 BP. Schalk (1977:229-230) hypothesizes that the systematic exploitation of anadromous fish would have occurred earliest on the lowest portion of the Columbia and later on the upper reaches of the river's numerous tributaries. If the 8000 year old fish remains on the Columbia River are those from some of the earliest systematic anadromous fishing, then systematic fishing of anadromous fish on the upper Salmon tributaries began after 8000 BP.

How can we archeologically identify the point in the past when Indian subsistence and settlement was significantly different from that modeled in this overview? Fish and plant food storage would appear to indicate reliance upon fish and plant that is consistent with a modified ethnographic model (Schalk 1977:230). Identification and dating of anadromous fishing sites with evidence of storage, and of extensive plant food collection sites again with storage, should help to push back the suspected date when the modified ethnographic model became appropriate.

Changes in the settlement pattern over time might be recognized if a statistically valid sample of complete inventory of Forest (and adjacent Bureau of Land Management) lands was made. Because dating of sites found during survey depends almost totally on the presence of projectile points and because diagnostic points are found at only about 2% of the sites recorded on the Forest at present, any changes in settlement pattern (which would suggest changes in subsistence) may not be easy to document.

Acquisition of the Horse

The above summaries of food procurement are appropriate for historic occupations without horses, for the Late Prehistoric Period, and possibly for earlier periods. After acquisition of the horse, however, there were substantial changes in those patterns of subsistence and settlement and in material culture. There were also changes in social organization and inter-group contact and relations.

By 1700 the Shoshone Indians had acquired horses, thereafter apparently expanding the territory in which they hunted. Shoshone ranged as far east as Saskatchewan and the Missouri River and possibly as far south as

the Arkansas River (Buckles 1963:95). The Nez Perce Indians had horses by about 1730, and with them were able to travel to Wyoming to hunt bison (Anastasio 1975:127).

As Plains tribes, especially the Blackfoot and Crow, obtained horses the Shoshone were forced back from their easternmost hunting territory, and the Nez Perce and Flathead were also forced to defend themselves against raids. Nevertheless, the Shoshone, Nez Perce, and Flathead continued to hunt bison east of the Continental Divide, but confined their activities to southern Montana and western Wyoming.

With Indian acquisition of the horse, bison hunting became one of the most important food procurement activities where before it was of considerably less importance. When the Lemhi Indians crossed the Divide to hunt bison, they were gone from May to October and so missed the chinook salmon run (Liljeblad 1957:105) which traditionally provided food for the summer and was stored for consumption into the fall and winter. Franzen (1978:31) says that big game species other than bison were reduced to the status of buffer resources used only when bison was not available as necessary. The Nez Perce became important traders, occupying as they did a position between the bison herds to the east and most other Plateau groups to the west. They often traded hides for diverse foods.

The Shoshone and the Nez Perce did not, however, desert all traditional food sources for the bison (Liljeblad 1957:40). Root plants and salmon continued to be significant contributions to the total subsistence. In fact, the Shoshone apparently alternated between spending one summer hunting bison and spending the next obtaining the anadromous fish. Also some summers or parts of summers were spent at Camas Prairie, not only trading goods such as bison hides, but also collecting camas (Steward 1938:191).

Means of collecting food resources certainly changed when the Indians of the study area acquired the horse. Horses allowed more effective and productive predation on big game (Anastasio 1975:128). Undoubtedly antelope surrounds on horse were more effective than those on foot (Steward 1938:128; Franzen 1978:30-31).

Where previously, settlement location depended heavily on the distribution of the various food plants and animals, the horse allowed the Indians to carry stored foods to base camps that need not necessarily be made near cached foods (Steward 1938:232). The size and arrangement of winter villages and other base camps also changed. Large circles of tipis that opened to the east replaced smaller and often linear arrangements (Liljeblad 1957:43).

Changes in material culture of horse-mounted Shoshone Indians were substantial. Bison hides were used for a wide variety of purposes including bags to carry foods, saddles, clothing, and lodge covers. Previously, plants were woven into bags and clothing, and lodges were covered with willows and other brush. The hide-covered lodges were apparently larger than those of brush (Liljeblad 1957:42-44).

The Shoshone nuclear and extended families were autonomous before acquisition of the horse. While retaining their autonomy to some degree afterwards (families could leave one group of bison hunters if they disagreed with the headman in charge of the hunt), they depended on a headman for organization of the trek to the bison herds--a trek that may have lasted for six months. Such control by one man over several months, even though only for one specific task, was unprecedented (Steward 1938:186, 193). The Nez Perce had apparently a band form of social organization during the Late Prehistoric Period, but after acquisition of the horse and concommittant changes in subsistence and contact with other Indians and with Euro-Americans a Nez Perce tribe was formed.

Nez Perce-Flathead-Northern Shoshone contact before acquistion of the horse was very limited. Because their territories abutted each other, there was some contact. For example, the Nez Perce and Northern Shoshone occupied adjacent portions of the Salmon and Middle Fork Rivers (Rossillon 1981:4-9). Afterwards, the three groups often made combined treks to bison hunting grounds across the Continental Divide (Steward 1938:189; Anastasio 1975:131-132). They depended on each other for mutual protection against raids by the Blackfoot and Crow. The Nez Perce and Flathead occasionally wintered in the Lemhi Valley--the winter home of the Lemhi Indians (Steward 1938:187). The Northern Shoshone occasionally stayed in the Flathead's territory in western Montana, but apparently never visited the Nez Perce homeland of northern Idaho and eastern Washington. The Northern Shoshone also met with other Shoshone groups both at Camas Prairie and in Lemhi Valley when those others occasionally wandered north of their usual territory (Steward 1938:189; Liljeblad 1957:104).

Nez Perce/Shoshone Boundary

Archeologists have recently become interested in Nez Perce/Shoshone mutual use of the study area during the Late Prehistoric Period (Butler 1978b; Wildeson 1981:53, 58). Some of the questions they ask are: did the Shoshone enter the Salmon River above Salmon Falls and the lower reaches of the Middle Fork after the Nez Perce had abandoned the area (Butler 1978b:3); was there in fact a boundary which neither group penetrated; did such a boundary shift over time?

At present, none of these questions can be answered, primarily because the Nez Perce and tukudeka cultures were very similar (Liljeblad 1957:95), so much so that they have not yet been distinguished in the archeological record in the Salmon River Mountains. This indistinguishability is manifest in several archeological features. Pithouses, were rarely used by the Shoshone in the ethnographic present, but were a standard house form among the Nez Perce (Steward 1938:199; Liljeblad 1957: 29-30,36). The tukudeka, unlike many other Shoshone but like the Nez Perce, lived in pithouses during the winter (Pavesic 1978:7). Also, both the Nez Perce and the Northern Shoshone had fairly broad susistence bases, hunting various species of big game, fishing for anadromous fish, and gathering several types of roots and berries. The tool kits used to capture and process these food resources for both the Nez Perce and Northern Shoshone are consequently similar.

Certainly, there may be differences in the cultural remains of the Nez Perce and of the Northern Shoshone that have gone undetected. Until the work of Knudson et al. (1981:89, 197-199), no systematic, moderately detailed analysis of lithic artifacts in the study area had been made. The 1978 Middle Fork survey provided some information about the character of lithic assemblages, but the report did not address the identification of cultural associations for the assemblages. Hackenberger (n.d.) has subsequently conducted multivariate analyses of several features at the recorded sites, including the number of pithouses, the relative percentages of recent corner-notched and side-notched projectile points, and the ratio of obsidian to cryptocrystalline artifacts. He found that the incidence of corner-notched projectile points along the Middle Fork is very low, and that those few that do occur are generally found at sites with few pithouses and cryptocrystalline artifacts. He suspects that those sites with corner-notched projectile points and few pithouses are Nez Perce and the others Shoshonean. Certainly this suggestion deserves further consideration and evaluation.

Butler (1978a:4) has suggested that the neck widths of similar projectile point forms could be used to differentiate Nez Perce and Shoshone sites in the area of mutual use. Corliss (1972) has written that there appear to be statistically significant differences between the projectile point neck widths for sites clearly within the Plateau area and the Great Basin cultural area of Idaho. Archeological research since Corliss' thesis was published, however, reveals that there are several sites in southern Idaho that have projectile points with neck widths Corliss found were apparently associated with Plateau cultures who did not inhabit the area (Epperson 1977:43). At this point, the utility of projectile point neck widths for differentiating Nez Perce and Shoshone sites is questionable.

Other artifacts that might differentiate the two occupations are ground stone and possible pottery. The Nez Perce used hopper mortars instead of the slab mortars that Great Basin peoples typically used. Unfortunately, ground stone is rarely found in the study area, perhaps due to its comparatively high visibility on the ground surface which makes it susceptible to casual collection. The Northern Shoshone had some pottery (Steward 1938:167), although it was not a necessary part of their toolkit. The Nez Perce did not have pottery (Liljeblad 1957:30), but they may have obtained isolated pieces in trade with the Shoshone.

Shoshonean Migration

In part tied with the question of the Nez Perce/Shoshone boundary in the lower Middle Fork River and middle Salmon River Valley area is the question of initial occupations of the entire study area by Nez Perce and by Northern Shoshone. Archeologists and linguists agree that the Nez Perce probably have lived in the Plateau area for 6000 years or more. There is considerable question about the antiquity of Shoshone occupation, however. Linguistic information indicates that the Shoshone arrived in Idaho between 1200 and 1400 AD, while some archeologists including Butler and Swanson maintain that the Shoshone have lived here

for at least 8000 years. Butler and Swanson believe that the fairly recent introductions of pottery and Desert side-notched projectile points support a case of diffusion, not migration.

Resolution of the differences of opinion about Shoshone antiquity does not seem likely in the near future; in fact, recent theses on this topic have merely added fuel to the fire (Madsen 1975; Wright 1978; Butler 1979). For example, I quote from Butler (1979:71).

> Thus, for the southwestern Great Basin homeland hypothesis to be true, the Numic speaking peoples would have had to spread throughout most of the Basin area and into its northeastern periphery, displacing everyone in their path in less than 250 years, a remarkable feat, indeed, for non-warlike peoples. One can only ask what happened to those peoples who were there prior to these latecomers. Perhaps they never left and simply acquired a new language and some new material culture traits. I think that this is what happened in the Upper Snake and Salmon River Country.

If it is difficult to believe that a non-warlike people (the Shoshone) displaced resident Indians throughout the Great Basin within a matter of perhaps 200 years, it is equally difficult to believe that one culture would abandon its own language for that of another group, as Butler would have us believe.

The morass of conflicting data both linguistic (Lamb 1958, Goss 1978) and archeological (Wright 1978, Butler 1979) will not be discussed or evaluated here, but it is certainly possible that archeological sites with pottery on the Salmon National Forest could yield valuable information on this issue.

We might expect to see evidence of Shoshone migration or diffusion of Shoshonean material culture traits in central Idaho in the early-to-middle 1200's (Butler 1978a:71). The evidence itself includes the presence of Shoshone or Intermountain ware pottery and Desert side-notched projectile points. Wright (1978: 124, after Keyser 1975) says that the shield bearing warrior motif in rock art is also evidence of Shoshone expansion into the northern Great Basin.

Predicted Prehistoric Archeological Site Density

This short section summarizes the previous discussion about archeological sites location on the Salmon National Forest. The significance of discovered sites is addressed in the section entitled "Managing the Resource."

Figure 2 probably shows where prehistoric sites were occupied during the winter. Because ethnographically the main structures built for winter occupation were pithouses, the majority of pithouse village sites would be on wide stream terraces that would accommodate two or more pithouses.

During the winter, temporary camps at which game was killed and butchered were also occupied. There should be some archeological sites representing those activities. These sites are generally more difficult to find on the ground and their location is not limited to wide stream terraces, as the pithouse villages were. However, all temporary sites should occur in places with a ground slope less than 20°. An exception would be hunting blinds excavated into the toes of talus slopes.

On the Salmon National Forest, summer sites logically should be more dense where the big game species ranged and where there were large camas fields or other herb/root meadows. They also would have concentrated along streams where the chinook salmon ran. Unfortunately, this overview does not contain information on the possible distribution of camas and of spawning streams. Until that information is mapped, we must rely solely on the distribution of big game. Figure 3 shows areas that would appear to have higher concentrations of summer sites than other areas.

Sites occupied in the fall may have been concentrated along streams where big game migrated from their high summer to lower winter range. While the men hunted, the women may have gathered pine nuts.

Specific prehistoric site locations within a generally-preferred area may have been influenced by the distance to water or the presence of cryptocrystalline rock, rockshelters, or talus slopes. As mentioned in the previous discussion, available studies of the distance between archeological sites and sources of water are limited because they report the mean distance but not the standard deviation and they do not report the relationship of non-site locations and water sources. Given this very limited available information about distances between sites and water sources, a conservative estimate of the distance between 68% of the sites (one standard deviation) and a water source might be 0-400m, and of 95% of the sites (two standard deviations) and water 0-1000m. Anywhere an outcropping of cryptocrystalline rock occurs there is likely to be a lithic workshop. Rockshelters were often preferred site locations throughout Idaho, and should always be considered likely places for archeological sites. Solid rock cliffs might also be the sites of prehistoric rock art that is also found widely in Idaho. Hunting blinds and burials sometimes occur in talus slopes. Occasionally lithic scatters can be found on flat benches or terraces below the hunting blinds. These may have been the sites of butchering activities. Finally, archeological sites are also often associated with such geographical features as springs and meadows.

The reader is reminded again that these predictions are based primarily on the modern distribution of plant and animal species, and less importantly on presently known site locations. Climatic changes, especially between 10,000 and 4,000 BP may have been such that the very general site location predictions are invalid for sites dating older than 4,000 years. Also, a prehistoric system of subsistence and settlement based strongly on big game hunting, such as may have been the case before 7,500 BP, would leave a different mark in the archeological record than that one predicted. Until archeologists learn more about the area's

paleoenvironment and earliest prehistory, the predictions summarized in this subsection are at most best guesses.

While it is desirable to determine how the actual Salmon National Forest site data fits the predictions summarized above, it is difficult to do so. Not all of the archeological sites and Forest Service project areas are marked conveniently on the Forest's archeological site atlas. Only about 30% of the recorded sites and about 75% of the project areas are marked. Nevertheless, it appears that about one-third of the archeological surveys have been conducted in big game winter range and one-third in optimum deer summer range. In constrast, as many as 75% of the prehistoric sites are in the winter range and only about 10% of the sites in optimum deer summer range. Although readily available information is incomplete, the atlas indicates that those surveys in areas of big game winter range are more likely to find prehistoric sites than those in other places.

Archeological Site Types on the Salmon National Forest

There are basically five prehistoric archeological site types found in the Salmon National Forest. Rockshelters with or without pictographs, lithic scatters occasionally with mussel shell or bone, pithouse villages or tipi rings, hunting blinds, and lithic quarries are the five types.

About 12% of the Forest's sites are rockshelters found primarily along the Salmon and Middle Fork Rivers. A small number occur in the Leadore District in the Canyon and Hawley Creek areas.

Lithic sites are by far the most common sites on the Forest. Generally these consist of chert and chalcedony debitage (tool manufacturing waste). Occasionally tools, including projectile points, scrapers, and other bifaces, are found amoung the debitage. Along the Salmon and Middle Fork Rivers, mussel shell and small pieces of bone are not infrequently associated with the lithic material. Only rarely are fire cracked rock, firepits, groundstone, or net sinkers also discovered. The lithic scatters range in size from less than $100m^2$ to over $20,000m^2$, but most are less than $2000m^2$.

The remains of pithouse villages and sites with tipi rings have so far been found only along the Middle Fork and Salmon Rivers. There are 12 such sites, with the number of house features ranging between 1 and 8. Associated lithic artifacts are not always found on the ground surface at the features.

There are six sites that consist of one to three hunting blinds. The blinds are pits dug into the toes of talus slopes. Hunters hid in the pits, waiting for game animals to cross in front of the blinds so they could kill them with bows and arrows.

Archeologists have only recorded three lithic quarries on the Salmon National Forest. Numerous others have been noted by Forest Service personnel, however. These sites seem to be concentrated in the Cobalt District and near Leadore.

These archeological types are obviously not as diverse as the major ethnographic site types detailed in the previous section. The following table correlates types.

Table 1. Correlation of Archeological and Ethnographic Site Types

Major Ethnographic Site Types	Salmon National Forest Archeological Site Types				
	rockshelter	lithic scatter	pithouse village	hunting blind	lithic quarry
winter fishing and hunting village		X	X		
summer fishing base camp	X	X			
big game hunt staging site	X	X			
big game kill site		X		X	
big game butchering site		X			
small animal kill and butchering site		X			
hunting and gathering base camp	X	X			
fall pine nut collection site		X			
lithic quarry		(X)			X
vision quest site					

Table 1 indicates that most ethnographic sites are represented by lithic scatters in the archeological record. Only vision quest sites might not appear now as lithic scatters. Given no other way to differentiate site type using surface evidence, one might assume that the size of lithic scatters could be used to distinguish ethnographic sites of different types. Villages and base camps could be characterized as comparatively long occupation sites with heavy lithic tool and debris accumulation. Also villages would cover greater areas than base camps, the latter occupied for the average of a few weeks.

Pertinent site information is limited because the earliest records of sites contain little information about site size, lithic material types and density, distance to water, and site topography. But site reports of 35 lithic scatters on the Salmon National Forest have information about size. All lithic scatters greater than $3000m^2$ (25% of total) are situated in big game winter range where prehistoric villages were apparently concentrated. Three of the four lithic sites that are located outside of both big game winter range and optimum big game summer range were $250m^2$ or less.

Rockshelters on the Forest occupied during prehistory are all situated within big game winter range, but they were not necessarily big game hunting camps used in the winter. Anadromous fish may have been caught in pools in the Salmon and Middle Fork Rivers and the rockshelters would have served as temporary camps. Also the rockshelters might have been occupied during late summer and fall when berries ripened and big game began to descend from their summer range. During the winter, they may

have been used as temporary hunt staging camps or overnight hunters' camps. The seasons of use and the range of functions at the rockshelters generally are not reflected in the artifacts on the surface of the features, especially because distinctive artifacts have been collected by Forest visitors as curiosities.

The three remaining archeological site types can probably be correlated one-to-one with major ethnographic site types. Sites with pithouse depressions were probably used exclusively in the winter as villages. Hunting blinds were features at big game kill sites. Archeological sites with naturally-occurring chalcedony and chert nodules and lithic debris were the sites where prehistoric men quarried lithic materials and began initial stages of tool manufacture.

Because Smith (1973) has written a basic history of the Forest, I will only repeat the highlights of her research. This section of the overview will identify known or suspected locations, content, integrity, and possible significance of sites occupied during the historic period.

Historic sites found in and around the Salmon National Forest vary considerably in function and archeological content. They range from entire communities with numerous standing structures and dumps to small camps that consist of a few tin cans and broken bottles that functioned as sheepherders, hunters, or small timber-cutting camps.

Generally, some clue to a site's function and age can be found in the types and frequencies of artifacts at the site. Artifact types that are often temporally diagnostic include tin cans, bottles, dinnerware, Indian trade goods, and nails (Buckles 1981; Wegars and Carley 1981; Karklins and Sprague 1980). Artifacts that are often catalogued under the artifact group called "activities" may be diagnostic of site function. Some activities artifacts are pieces of haying equipment, crucibles (mining), blacksmithing scrap and clinkers, and animal traps (Bealer 1969; Bateman 1971; Buckles and Buckles 1982).

Historic records both primary and secondary can be invaluable sources of information also, showing such things as the historic locations of structures, density of occupation, and types of historic land use. These records are much better for the early and middle twentieth century than for the nineteenth century. Other sources of information are local informants who have lived or worked at or near the sites. They can answer questions about feature functions that may not necessarily be apparent from what remains at the sites (Haecker et al. 1981:12-184). They also often have photographs which are not available elsewhere.

As in the discussion of prehistoric resources and activities, historic activity descriptions are in five parts. First there is a section on the equipment and methods used in a specified activity, second on location, third on the number and type of site occupations and how long they stayed, fourth on associated activities, and fifth on archaeological (physical) remains of those activities.

Explorers, Trappers, and Other Early Area Visitors

The first Euro-Americans known to have passed through the study area were Lewis and Clark during their expedition to find a water route across the North American continent (Thwaites 1904, Vol. 2:361-386; Vol. 3:3-44). As a result of that early trek in 1805, the men made available crude maps and some knowledge of the types and numbers of game and the nature of resident Indians for those who would later travel near Lewis and Clark's route. Between 1805 and 1850 several trappers, traders, explorers, and one missionary visited portions of the Salmon area. Their interests and the dates of their travels are well-summarized in the Salmon National Forest History (Smith 1973:17-25); that information is not repeated here.

1. Structures used by the early travelers probably consisted of the windbreaks or sunshades and residences not unlike Indian wickiups. Rarely were more traditional Euro-American structures built, although "Bonneville built a pen for the horses, and log cabins" near Carmen Creek (Smith 1973:21).

   Fiori and Sommers (1981:201 cited in McDonald 1982: V. 26) have identified the following as standard equipment for early trappers- -"a flint lock rifle, powder, lead, a bullet mold, seven to ten traps, an axe, a hatchet, a knife, an awl, a kettle, blankets, and perhaps flour."

   Supplies and furs were occasionally stored when the trapping expedition moved to a new area. The cache was returned to before the company moved to the east (Smith 1973:18-21). The forms of these storage structures are not recorded in the literature, but again one suspects they would be similar to those of the Indians (see the section on Aboriginal Use of Resources).

2. The Lewis and Clark diaries provide some of the best information about the route a group of early explorers or trappers actually followed while in the Salmon area. The company camped at several places during their nine day reconnaissance through the area, but generally those exact locations cannot be determined by the descriptions in the men's diaries. However, two sites have been identified as the locations of Lewis and Clark camps, one just south of the mouth of Twin Creek and the other on the Continental Divide between the headwaters of North Fork and what is now called Shields Creek (Anonymous 1930). In addition, Lemhi Pass, the place where Lewis and Clark crossed the Continental Divide, is recognized for its great historic significance and is presently listed on the National Register of Historic Places.

   Records of other explorers, trappers, and traders are generally inadequate for determination of exact locations on the ground. Main trappers' camps appear to have been confined to the Lemhi and Salmon River Valleys, but undoubtedly small groups or individuals went off from the main camps to trap on small creeks.

   Supposedly, Captain Bonneville, his trapping crew, and numerous Indians camped near the mouth of Carmen Creek in 1832. Velma Ravndal (1982: personal communication) believes that a rock ring near the mouth of Hughes Creek marks Bonneville's Christmas camping spot. Ogden, Bridger, Sublette, Ferris, Work, Fraeb, and Larison all camped at the mouth of the Lemhi River at some time in the 1820's and 1830's (Smith 1973:19). One groups from New Mexico camped near what is now the city of Salmon during the 1831-1832 winter (Smith 1973:19).

3. There were no known large festive rendevous in the Salmon area such as the ones held in Bear Valley in southeastern Idaho or on the Green River in Wyoming. However, large numbers of Indians trapped and camped with the Euro-American visitors; groups of trappers often met and wintered together. For example, when Peter Skene Ogden and the Hudson's Bay Company Snake Country Expedition came to Lemhi valley in 1825, about 125 people were in his group (Smith 1973:18).

5. No archeological remains of campsites used by early nineteenth century visitors (except possibly at Hughes Creek) have been discovered. In fact, such physical remains might not exist. This is especially true of the smaller camps on stream tributaries due to short periods of occupation and to the fact that individual trappers carried few materials with them.

Mining

Documentation of the booms and busts of the various mining districts can be used to determine the place each archeological site has in telling the mining history of the study area. Detailed chronologies, population estimates, known construction dates and references to specific work areas would aid in site evaluation. In this overview, however, only a few important events and dates are reported for the mining districts organized within Salmon National Forest boundaries.

During the nineteenth century, mines in Lemhi County were among the highest producers in the State. The peak of production was between 1886 and 1888 when the Gibbonsville, Yellowjacket, and Mineral Hill (Shoup) areas boomed (Ross 1963: Fig. 2). Shortly after the turn of the century, Lemhi County lead mineral production in the state, peaking between 1910 and 1913. This twentieth century peak in production was due to extensive silver and lead mining in the Lemhi Range near Gilmore (Ross 1963: Fig. 3, 10).

1-2. The first community of any size in the study area, excluding Fort Lemhi, was Leesburg (Fig. 8). Leesburg was established in 1866 when five prospectors discovered gold on Napias Creek, a tributary of Panther Creek. Within months of the discovery, a reported 3000 people lived in Leesburg and soon 7000 people were in Leesburg Basin. Miners, freighters, grocers, butchers, equipment suppliers, blacksmiths, hotel keepers, and bartenders were all attracted to what was even then a very isolated place. During the two years that the Napias Creek boom lasted, the gold was extracted from placer deposits with sluices and other fairly simple equipment. Hydraulic mining which would later mean a revival of interest in the area had not been perfected by the time Leesburg residents deserted the town to go to Oro Grande, Yellowjacket, or other nearby promising gold fields.

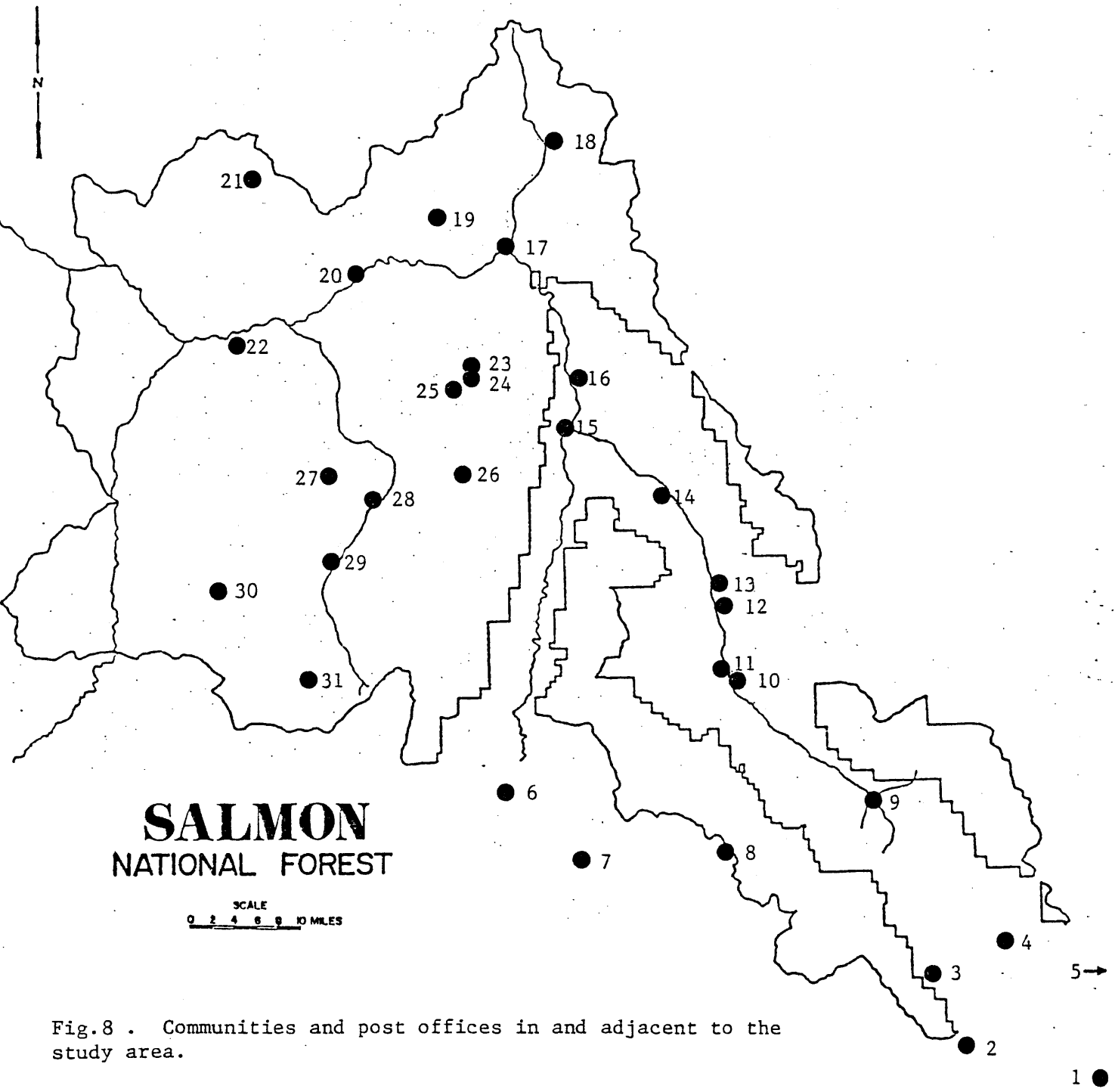


Fig.8 . Communities and post offices in and adjacent to the study area.

1 Nicholia
2 Spring Mountain, Hahn
3 Gilmore, Texas Creek Horseshoe Gulch
4 Bannister
5 Woodland
6 Ellis
7 May
8 Ima
9 Junction, Leadore
10 Lemhi
11 Lemhi Agency
12 Tendoy
13 Fort Lemhi, Hover, Sunfield
14 Baker
15 Salmon
16 Carmen
17 Noble, North Fork
18 Gibbonsville
19 Ulysses
20 Shoup
21 Boyle
22 Bohannon
23 Summit City
24 Smithville
25 Leesburg, Grantsville, Hunt
26 Powanna
27 Blackbird
28 Cobalt
29 Forney
30 Yellowjacket, Columbia
31 Singheiser

By 1870, Chinese miners, farmers, and businessmen outnumbered the Euro-Americans, indicating that most of the easily accessible gold at Leesburg had been extracted. Area residents witnessed numerous revivals in Leesburg Basin including one that came with the discovery and working of lode mines in the area, one with the use of hydraulic equipment, one with the 1930's depression when families and individuals came to the area hoping to find gold to make ends meet, one with dredging on Napias Creek in 1940 and 1941, and a recent one with the organization of the Napias Mining Company and the intention to patent acreage in the vicinity of the Leesburg townsite (Idaho Falls Post Register 1955; Shockey 1957:36-37; Bryant 1965; Kimball 1971:56).

In addition to Leesburg, several other small communities were built in Leesburg Basin during the late 1860's. Grantsville was east of and adjacent to Leesburg; Smithville was about 1 1/2 miles up Napias Creek from Leesburg; Summit City was established in Sierra Gulch (exact location unknown) (Kimball 1971:54; Anonymous n.d.).

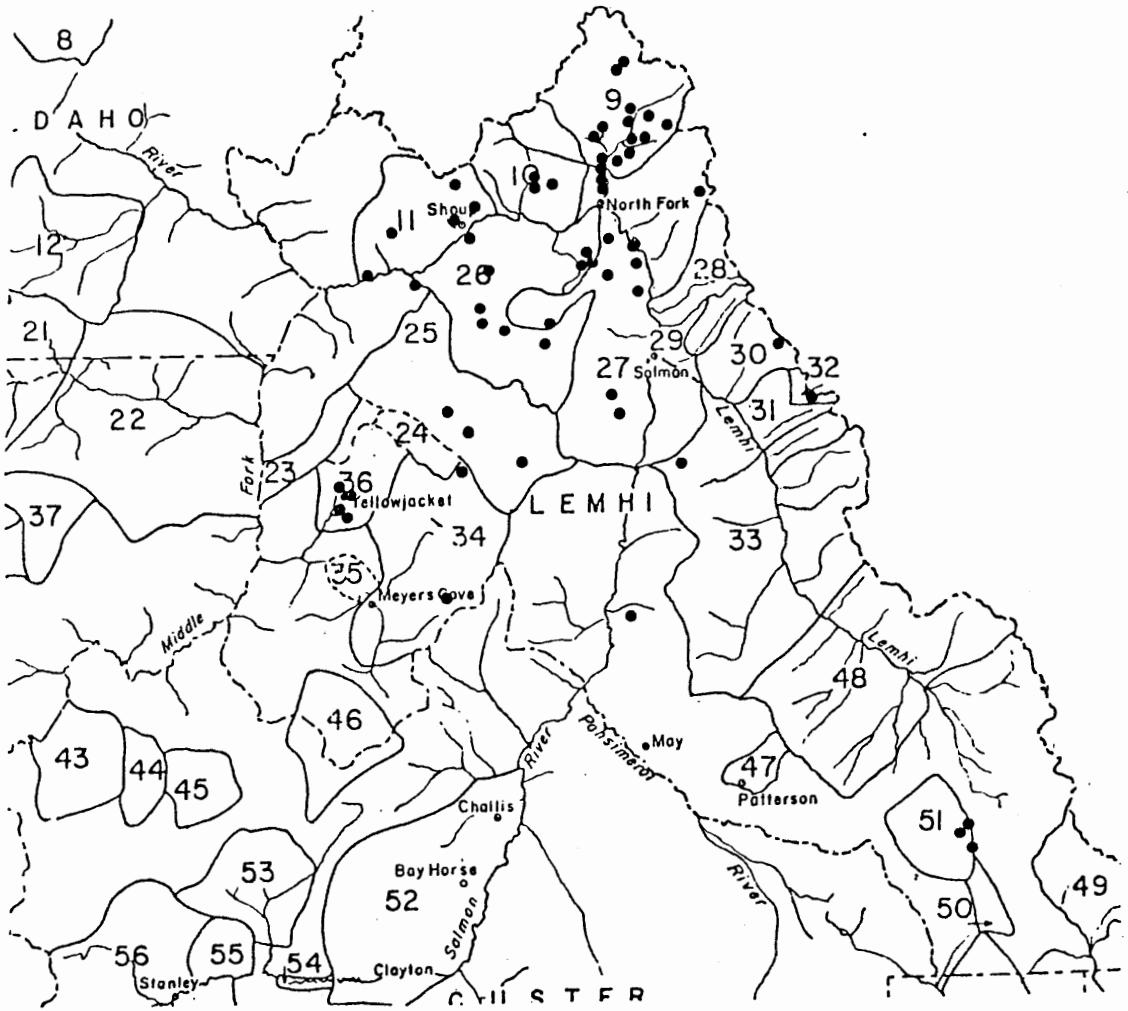
Salmon City developed soon after the Leesburg boom began, at the end of a major trail up Jesse Creek.

> The original discoverers had taken a meandering trek from the Lemhi Valley to Napias Creek, but a new shortcut trail, almost due west from the Lemhi-Salmon River confluence, now teemed with travelers. Those who arrived too late in the season to cross the snowbound mountains, camped either near the beginning of this trail or along the Lemhi River. The city of Salmon was in the making, and Lemhi County's birth was destined (Kimball 1971:20-21).

Salmon is located at a place where traditionally the Shoshone, Nez Perce, and Flathead gathered before going to the Montana or Wyoming bison hunts. It also is where almost every early nineteenth century trapper who came through the area camped. Salmon offered the advantage of being in an ideal position as a distribution point for agricultural products raised in the Salmon and Lemhi River Valleys (Shoup 1969:6-7). For a detailed account of the early history of Salmon, refer to the History of Lemhi County by George E. Shoup (1969).

Other discoveries in the Mackinaw mining district, besides that at Leesburg, were made soon after the gold boom at Leesburg (Fig. 9). Miners attracted to the general area because of the Leesburg gold prospected in adjacent drainages in hopes of finding similar riches (Umpleby 1913:21). Several of the finds were concentrated in the Moose Creek drainage basin. In 1907, a dredge operated along Moose Creek near the mouth of Diamond Gulch (Smith 1973:34). Excluding Leesburg, production in the Mackinaw district was limited.

Placer and lode gold was first discovered at Yellowjacket in 1868, but the deposits never attracted the number of miners that the



9 Gibbonsville
10 Indian Creek
11 Mineral Hill
22 Big Creek
23 Wilson Creek
24 Musgrove
25 Blackbird
26 Mackinaw
27 Eureka
28 Carmen Creek
29 Kirtley Creek
30 El Dorado
31 Pratt Creek
32 Sandy Creek
33 McDevitt
34 Gravel Range
35 Camas
36 Yellowjacket
47 Blue Wing
48 Junction
49 Nicholia
50 Spring Mountain
51 Texas

Fig.9 . Map showing historic mining districts in and around the Salmon National Forest (after Ross 1963: Fig. 1). Legend contains the names of those districts on the Forest. The approximate locations of patented mineral claims are marked with dots.

Napias Creek placers did. By the early 1880's, lode deposits were systematically worked and a fairly small but persistent population lived in the area. After that time, the district saw a number of small booms and busts. In the 1880's and 1890's, equipment was continually added or improved and between 1893 and 1897, the area residents witnessed Yellowjacket's highest production (Ross 1963:8). At the turn of the century, however, the two largest mines had closed (Anderson 1953:15). Shortly thereafter, the placer deposits were hydraulically mined for a short time (Ross 1934). The area was one of limited activity from 1910 to 1940, was idle during the Second World War, and was worked again in the late 1940's (Anderson 1953:16-27). Production was no doubt affected by the district's isolation, Yellowjacket being 60 miles from Salmon over a road part of which was not passable during the winter.

Important mines in the district, including Yellowjacket, Columbia, and Black Eagle, were outside of the mining community itself. In 1910, when Umpleby conducted a mineral and mining operation reconnaissance of Lemhi County, there were about 100 structures standing at the town of Yellowjacket (Umpleby 1910-1911:41).

Prospectors starting out from Yellowjacket in the 1880's made the initial claims in the Blackbird area between Blackbird and Little Deer Creeks (Smith 1973:35). Copper, cobalt, and nickel are the three most prevalent metals mined, extensive development not beginning at the claims until after 1900. Cobalt production peaked from 1952 to 1959 when over 400 men were employed at the Blackbird Mine (Smith 1973:35; Ross 1963:23). The town of Cobalt was the residential center and miner supply point for Blackbird miners (Smith 1973:35).

Placers at Hughes Creek were worked in 1876 and one year later finds were made at Gibbonsville (Shoup 1969:18-19). By 1880, there was a fairly stable population of 175 (Anonymous n.d.) and, in the 1890's, perhaps 500 men worked claims in the district (Smith 1973:30). Equipment imported included three arrastras (1877-1878), a 10-stamp mill (1879), a 30 stamp mill (1895), and a 20-stamp mill (1908). In the 1890's there were 75-100 buildings at the town of Gibbonsville. This was the peak of mining and Gibbonsville activity; although operations continued into the twentieth century, production declined considerably (Anonymous n.d.). Lode mining was of primary importance, but hydraulic placer mining also occurred in the nineteenth century and there was also some placer mining in the late 1930's (Peters 1981:2).

Hardrock mines in the Mineral Hill mining district in the vicinity of Shoup were located in the 1880's and the town of Shoup was established in part to supply resident miners. Several stamp mills were brought to the area to process the gold ores. Although over 300 claims were located in the district, production was limited (Carrey and Conley 1978:91).

Shoup continued to exist long after the claims were deserted, however. For example, when the Gold Hill Mine went into production during the 1930's, Shoup boomed again (Carrey and Conley 1978:92). Shoup also served as a supply post for ranchers and later for packers, outfitters, and tourists.

The Indian Creek mining district had moderate gold production compared with the mineral production of other area districts. Claims were first located in 1895, although development accelerated after the turn of the century. The community of Ulysses grew in the vicinity of the mining and milling operation. Two properties, the Ulysses and the Kitty Burton, were patented in the district.

Just south of the study area, silver was found in the Nicholia district in 1879 and for about ten years the area saw some of the most intensive mining activity ever in the Lemhi River-Birch Creek area. The town of Nicholia was established and a smelter treated the excavated ore between 1885 and 1889. By 1890, the Viola Mine, the main one in the district, was abandoned (Umpleby 1913:83-84).

The following description of mining in the Texas Creek district in the Gilmore area is a modified version of that published by the Idaho State Historical Society. Six years after the organization of the Texas district in 1880, lead-silver ore was mined and sent to the Viola smelter at Nicholia for reduction. When the Viola closed after a fire in 1889, the Texas Creek mines ceased operation. In 1902, purchase of the mines by a Pittsburg company led to attempts to ship ore by wagon to the railroad at Dubois, but the mines later closed from 1907 until the completion of the Gilmore and Pittsburg Railroad made shipping practical in 1910. A limited amount of activity continued into the 1930's depression after the major property, the Pittsburg-Idaho Mine, closed.

The town of Gilmore was the residential center of the Texas mining district. Although it began in the 1880's, when lead and silver claims were first located, Gilmore did not really boom until the railroad was built up to the town.

The Spring Mountain district, located immediately south of the Texas district, was first prospected in the early 1880's. A smelter may have been built at Spring Mountain in 1882 (Oberg 1970:61), although Umpleby (1913:87) says that the Spring Mountain ores were smeltered in the Nicholia smelter until that smelter was closed. In 1909, a smelter was erected at Hahn where "a settlement of perhaps 100 individuals" stood. The operation did not last long because the smelter ran only 38 days before it permanently closed (Umpleby 1913:87).

Although the community of Junction was begun as early as the 1870's, it served more as a center for ranching operations than as a miner's supply stop. Active development of mining properties in the Junction mining district did not begin until after the turn of the century.

Development was low to moderate throughout the lead-silver mining boom of the upper Lemhi valley area. The town of Junction was replaced by Leadore as the major supply post when the Gilmore and Pittsburg Railroad bypassed Junction in 1910.

Reported production in the Gravel Range mining district is comparatively small, the Rabbitfoot Mine being perhaps the largest producer. During the 1870's, lode properties were mined, and the gold ore was milled with an arrastra near what was once known as the Monument Mine. There was also limited placer mining in the area, especially along Silver Creek. The most intensive mining in that district was apparently between 1905 and 1914 when the Rabbitfoot Mine was actively developed (Ross 1927:4-5). Thirty structures stood on the property at one time (Smith 1973:30).

Fluorspar was first mined in the district below Meyers Cove in 1942, having been discovered 15 years earlier (Anderson 1943; Cox 1954). A concentrator was built at Meyers Cove to reduce the stibnite-barite ore in the early 1950's, but after it burned mining and milling operations ceased (Ross 1963:23). Interest on mining fluorspar at the claim was revived in 1970 (Smith 1973:36).

Most of the McDevitt mining district that centers around Tendoy was within the Lemhi Indian Reservation until 1909 when the reservation was cancelled. The majority of the claims were made in 1909 and afterward. However, perhaps the largest producer in the district, the Copper Queen Mine, was located in the early 1880's. Copper was extracted from the claim intermittently between 1905 and at least 1913 (Umpleby 1913:119). The Harmony Mine at Sal Mountain was another important patented copper claim in the district. Its peak of production was during the 1920's (Smith 1973:34).

The Eureka mining district lies on the east side of the Salmon River Mountains west of Salmon. Mostly gold has been mined there and total production was relatively low. Coal is also found in the district along Jesse Creek (Umpleby 1913:157). Although mined commercially, the coal was only sold locally, probably for home heating (Smith 1973:34).

The Oro Cache Mine in the Carmen Creek district was opened in 1897. Production was low and few other claims were worked in that district (Umpleby 1913:125).

Most of the work done on the Kirtley Creek and El Dorado mining districts were in sections outside of Salmon National Forest boundaries. This is also true for the Pratt Creek district, except at the Goldstone Mine which was located in the early 1890's (Umpleby 1913:122-124).

The Blue Wing district lies outside of the Salmon National Forest, but is mentioned here because it borders the Forest and because there was extensive prospecting in and around the district. There

was no development of discovered mineral properties in the district until after 1900. Then in 1903, tungsten was found there. The tungsten deposits were first actively mined in 1911. The community of Ima was established as the result of mineral production in that district (Umpleby 1913:109). Production continued through World War II (Smith 1973:36).

Many streams in the Salmon River Mountains were placered in both the nineteenth and twentieth centuries, but have no reported output. Cater et al. (1973:41, Fig. 88, Fig. 100) identify several such placer deposits in the northwest corner of the Forest. They are Camas Creek, the Middle Fork Placer at the mouth of the Middle Fork of the Salmon River, Kitchen Creek Bar Placer, Procter Bar Placer, Cunningham Bar Placer, Cottonwood Butte Prospects, Disappointment Bar Placer, Smothers Fluorspar Prospect, and the Langley Bar Placer about six miles up Wilson Creek.

The density and locations of patented mineral claims on the Salmon National Forest logically should give some indication of the intensity of occupation concurrent with mineral activity. For example, the North Fork River has a very high concentration of patented claims, so one might expect to see a higher site density there than along most of the Lemhi Range within the Salmon National Forest boundaries. Likewise on a much smaller scale, within what was formerly the Texas mining district, sites should logically occur in higher frequency in the vicinity of the Hilltop, Portland, and Latest Out patented mines.

3. Miners of all ethnic backgrounds were struck with gold fever and worked mineral deposits in the study area. Cornish miners were well-known for their work at lode mines, but from the various accounts consulted, it would appear that they did not dominate the labor force in the Salmon area. Some ethnic groups are noted in local histories for their work at specific mines here. For example, three Italian brothers worked the Italian Mine in Leesburg Basin. References to the presence of mines operated solely by members of one ethnic group may indicate some degree of minority isolation or banishment. Or, instead they might merely be linguistic tools to identify the miners.

   On the other hand, the Chinese were definitely and consistently a mistreated minority. Chinese miners were almost always affiliated with placer mining operations. They were rarely allowed to work a placer deposit unless Euro-American miners abandoned the mine due to the inferior quality of the deposit. As mentioned previously, Chinese miners working the placers at Leesburg signaled the end of the gold boom there.

4. As a rule, the mining season lasted about six months at this high altitude [Texas and Nicholia districts], where winter comes early. When the men could no longer work in the mines, they turned to trapping and built themselves cabins in the canyons and out-of-the-way places (Oberg 1970:72).

This statement could be made for most of the mining districts in the study area. The miners often headed down to lower elevations, often to Salmon, to winter over and would return with spring runoff.

5. To date, the historic site type most often recorded on the Salmon National Forest has been mining sites. Twenty sites have tentatively been identified as mining sites, based on archival records, on the presence of associated mine shafts or placer gravels, or on the lack of contradictory evidence. It is possible that some of the "miner's" cabins were in fact used for a different purpose, but the absence of functionally diagnostic artifacts make identification very difficult.

   Most of the 20 identified sites dating from the late 1800's to the 1950's have one or more partially or totally collapsed log structures present. Collapse is usually due to natural deterioration. Occasionally trash dumps and small pits of unknown function are identified in the vicinity of these cabins.

Sites tentatively or positively identified as mining sites include:

SL- 19	(10-LH-336)	SL- 57	(10-LH-357)
SL- 20	(10-LH-335)	SL- 58	(10-LH-358)
SL- 23	(10-LH-339)	SL- 59	(10-LH-359)
SL- 24	(10-LH-338)	SL- 60	(10-LH-352)
		SL- 86	
SL- 33	(10-LH-334)	SL-220	(10-LH-367)
SL- 35	(10-LH-333)	SL-229	(10-LH-369)
SL- 36	(10-LH-340)	SL-230	(10-LH-370)
SL- 49	(10-LH-353)	SL-268	
SL- 50	(10-LH-354)	SL-351	
SL- 51	(10-LH-355)		

If both total production and the number of patented properties are used as indicators of the relative amount of historic mining activity, the Gibonsville, Mackinaw, and Eureka mining districts probably had the largest mining populations. Mineral Hill, Texas, and Nicholia had the next largest populations. Seventy five percent of the identified mining sites on the Salmon National Forest were found in the mining districts mentioned above.

Charcoal Production

During the nineteenth and early twentieth centuries, charcoal production was an important industry. First it was important as an industry ancillary to silver mining and milling activities. Charcoal was used as fuel in blast furnaces at smelters such as the one at Nicholia just south of the Salmon National Forest. It was used either as the sole fuel or with coking coal generally until the turn of the century when oil became the preferred fuel (Buckles 1978:786-794). Second, charcoal making was an important part of blacksmithing operations. Because little coal is available locally, blacksmiths made charcoal to fire their forges.

1. Charcoal for silver ore smelting was made in kilns and in pits; blacksmiths made charcoal exclusively in pits unless there was a nearby kiln already standing. Production in pits within one particular locale often preceded that in kilns (Buckles 1978:879).

   Kilns are usually large domes 6-8m in diameter that are made of brick and/or stone. There are two doorways in each, one near the top used to fill the kiln with wood to be burned and a larger one at the base to remove the charcoal.

   At pits, cordwood was piled on the ground; dirt was thrown over the wood and the wood was lit (Sloane 1965:56-60). The pits somethimes had a trench dug around the peripheries that may have been "borrow" areas. They were made in a variety of shapes and sizes. They were rectangular, triangular, and circular; they ranged in size from $150m^2$ to $570m^2$. The number of pits at each site also varied, between 1 and 12 being reported in central Colorado (Buckles 1978:848-881).

2. Buckles (1978:847) found that charcoal kilns in central Colorado near Leadville were built along major drainages and roads. The kilns were often backed up against a steep slope. While charcoal pits are also found along roads, they are not necessarily in major stream valleys. They are generally situated at higher elevations than are kilns. Pits were dug on sloping terraces, on hill tops, and on the sides of hills (Buckles 1978:845-883; Rossillon et al. 1981:13-72).

   The kilns and pits discovered near Leadville are relatively close to a supply of water, generally less than 100m away (Buckles 1978). In western Colorado, in the Uncompahgre Basin, recorded pits are about 700m from an intermittent water supply (Rossillon et al. 1981:13-67).

3. Charcoal production was generally a low-status occupation and, as might be expected, charcoal workers in the nineteenth century were frequently members of various ethnic groups. Buckles (1978:886-892) has found evidence that differences in the shapes of charcoal pits might be attributed to the ethnic identities of the charcoal workers. He was not able to identify with certainty the ethnic affiliations of charcoal pit site occupants for sites that he discovered during archeological field survey in central Colorado. Further archeological and historical research on this subject, however, may enable historical archeologists to determine the ethnicity of charcoal pit site occupants.

4. Habitations were sometimes built in association with pit and kiln sites. They were generally situated close to the charcoal production areas at 5LK129 in central Colorado; one habitation was found only 12m from the nearest kiln (Miller 1978:660-669). The known habitations were often log structures, although

tents (that left no archeological remains) may have provided shelter at those sites with few pits. Charcoal pit sites found in western Colorado did not have the remains of associated habitations; it is possible that the charcoal workers lived in the town of Dallas about 2/3 mile away (Rossillon et al. 1981: 13-72).

5. No charcoal kilns have been discovered on the Forest. There are kilns near the Forest about 10 miles south of Gilmore Summit on the Targhee National Forest and at Bayhorse within Challis National Forest boundaries, however. If there are any remains of charcoal kilns on the Salmon National Forest, they would be at the very southern end of the Forest between Hahn and Gilmore.

   In the Leesburg Historic District, two groups of charcoal pits, totalling 12 pits, have been found. The nearest pit was situated more than 40m from the townsite. Isolated residences stand closer to the pits than the town residences do, but the habitations and pits were not necessarily occupied contemporaneously. Each of the pits was dug within 25m of a stream or placer ditch and 25m of a road. The pits are either circular or sub-rectangular and range in size from 55 to 215m^2, somewhat smaller that those Buckles reports for central Colorado (1978:848-881).

   Because blacksmithing was an essential service at all mining, ranching, logging, and sawmill sites and because little coal is available locally, one would expect to find charcoal pits in the vicinty of most types of historic sites. Despite their probable wide distribution across the Salmon National Forest, pits go unrecognized in the field because they often appear as very wide, very short mounds on the landscape that are covered with small pieces of charcoal. Few or no artifacts or structures are closely associated.

Timber Production

The character of timber production and use on the Salmon National Forest varied with changes in local and national demand for lumber and changes in available transportation. During the nineteenth and early twentieth centuries, the local population required lumber for their homes and community businesses, and for mining operations. Timber was also cut for firewood and charcoal. (Charcoal production was discussed in the previous section.) During the twentieth century, building with lumber became increasingly preferred over building with logs. During and after World War II, national demand for wood products encouraged increased timber production and the establishment of large saw mills. The advent of heavy trucks and improved highways facilitated timber and lumber transport to outside markets.

1. In the nineteenth century, timber was cut with axes or saws, although axes are comparatively inefficient implements for cutting wood. Stumps or logs with cuts probably represent either early cuts or cuts by individuals cutting wood for construction of a few buildings. Saw cut stumps or logs were sawed by an individual or group who cut wood to sell on the market or to be used as timbering in a mine shaft.

   Logs were skidded by horse or perhaps with the use of a steam donkey to the construction site or saw mill or to a wagon road or stream. In the Salmon area, oxen were used to haul the cut logs to town (Shoup 1969:6). In portions of Washington, Oregon, and northern Idaho, streams were used as flumes to carry logs closer to saw mills. That technique was probably rarely used on the Salmon National Forest because the streams are generally too rough and shallow for efficient transportation.

   Cordwood for home and business heating was cut and transported in ways similar to those for logs for construction. Driftwood provided a very limited supply of firewood. Cordwood was also used to fuel some ore mills in central Idaho (Carrie Williams 1979: personal communication).

   The earliest historic structures in the area were often built with logs; specific preparations for various types of log structure construction are available in the works of Fickes and Groben (1945) and Beard (1914), and are not detailed here. Lumber sawed at local saw mills were also used in construction and was increasingly more popular over time.

2. The sites of nineteenth century saw mills are generally not identified in the literature, but we can surmise many of their locations. Saw mills were established in one of two general locations: (1) either in the immediate vicinity of the use area, or (2) in the immediate vicinity of the cut area.

   Examples of the first instance are the two saw mills built at Gibbonsville during the 1890's to provide lumber for the construction boom in town as mining peaked in that area (Anonymous n.d.). There were other local mills at Yellowjacket, Shoup, Ulysses, Singheiser, and Salmon (Gutzman 1961; Shoup 1969:6). Examples of saw mills built near the cutting sites are at Wagonhammer Creek and on Alder Creek about 9 miles south of Lemhi (Fig. 10).

   Cordwood, too, was probably collected from timber stands very near the communities and residences. During the 1920's, Salmon residents cut wood near the headwaters of Jesse Creek for home heating. In the Lemhi and Salmon River Valleys (Salmon Valley above North Fork), residents would have had to range further and further into the mountains for firewood as

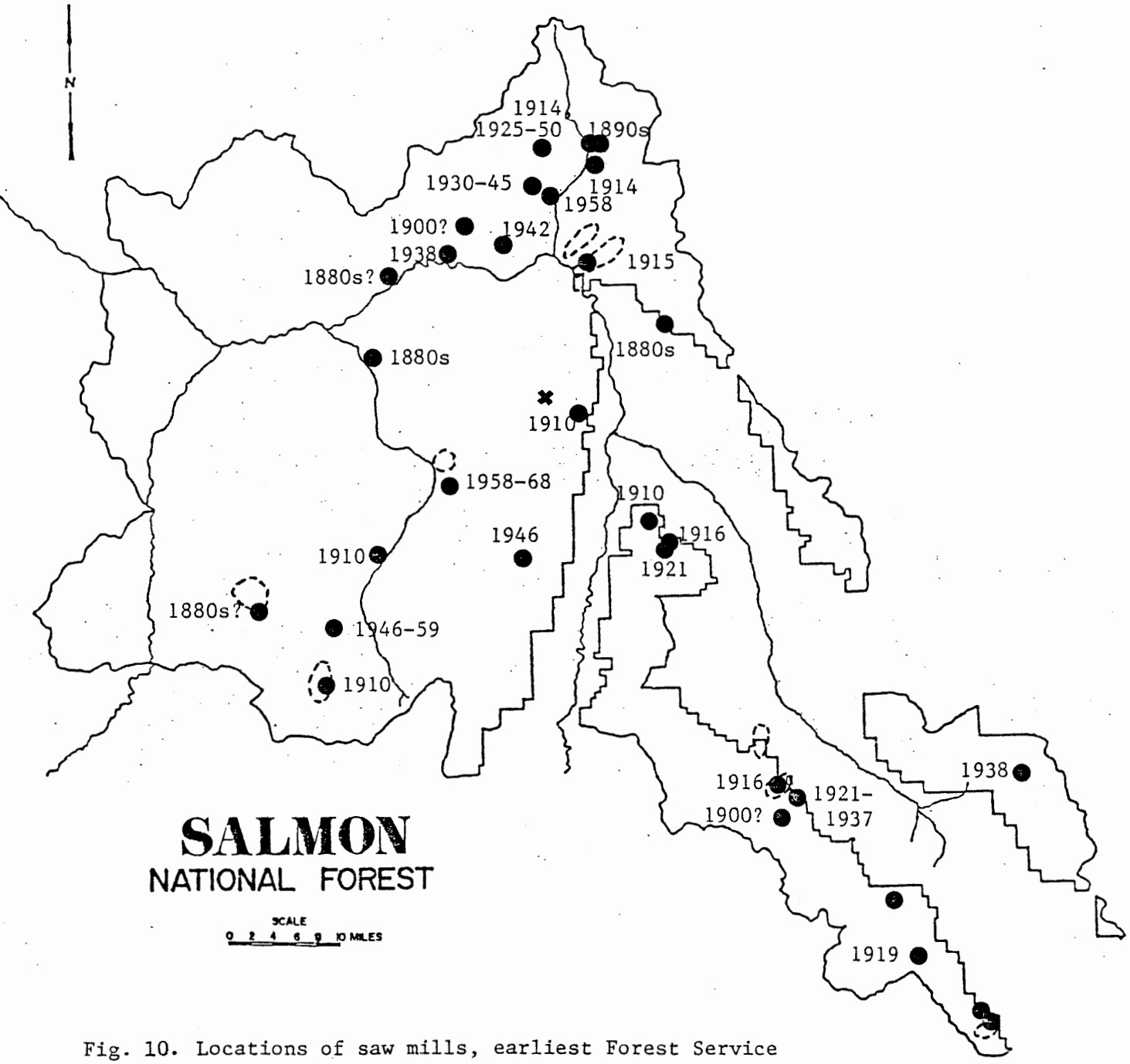


Fig. 10. Locations of saw mills, earliest Forest Service timber sales, and a cordwood source on the Salmon National Forest. (Consult Tobias 1907-1911, Gutzman 1961, Smith 1973, Carrey and Conley 1978, Anonymous n.d., and Salmon National Forest special use cards for specific site locations.)

● saw mills

◌ earliest Forest Service timber sales

✖ 1920s cordwood source for Salmon residents

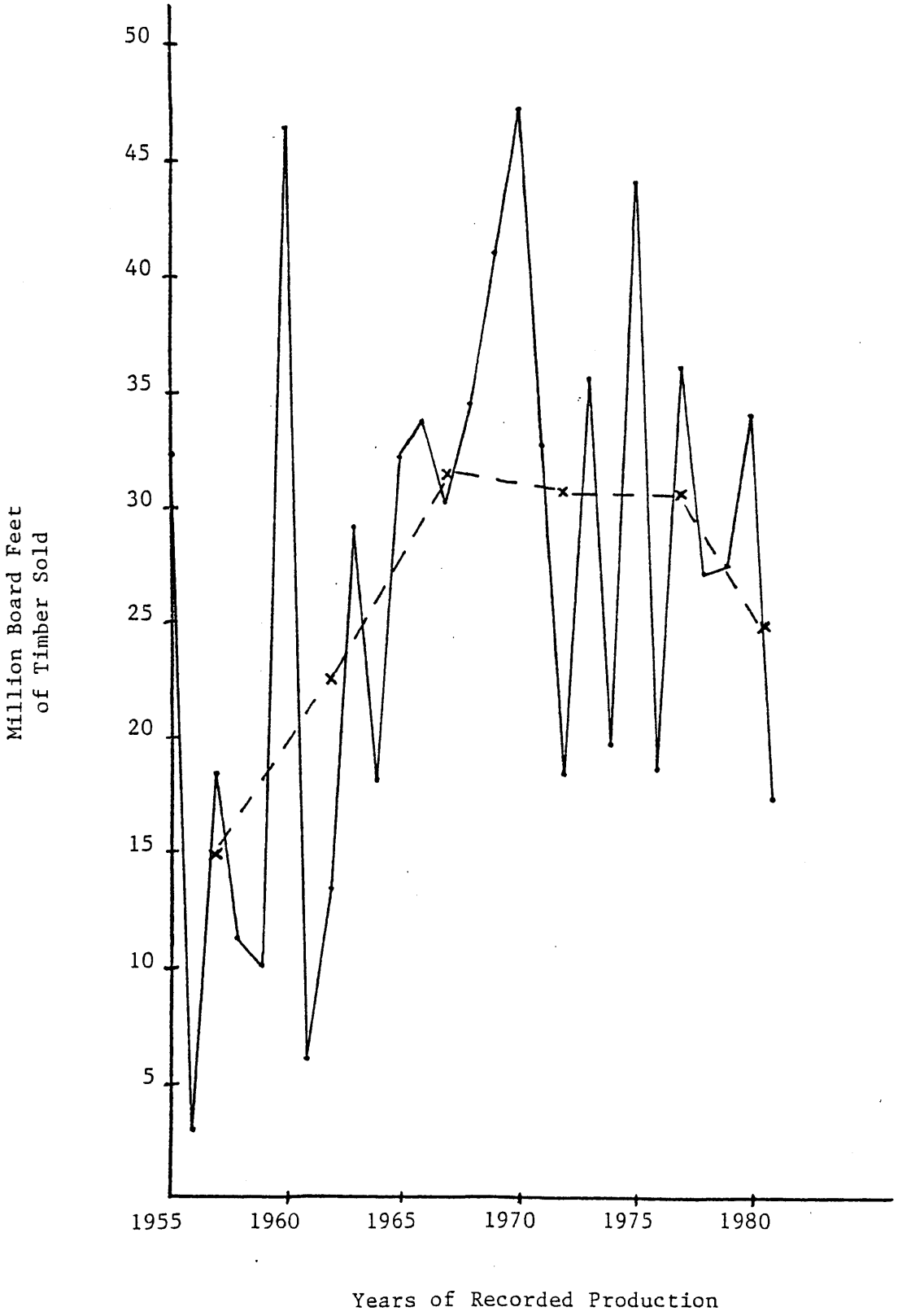


Fig. 11. Million board feet of timber sold on the Salmon National Forest between 1955 and 1980. The dotted line represents 5 year averages.

the timber supply was depleted. Pictures of early-day Gibbonsville illustrate how much timber was cut in the vicinity of a mining community and how the residents would have had to travel increasingly further distances to obtain wood for whatever purpose.

There is better documentation for twentieth century activities, primarily because of Forest Service involvement in timber production during this century. The Salmon National Forest has two important sources of information about early timber sales and saw mill sites. The diary of Ranger Ross Tobias (1907-1911) contains references to several timber sales on the Salmon National Forest that were cut between 1909 and 1912. The descriptions of cutting site locations are very vague but some of the sites could probably be identified in the field. The other source of information is special-use cards in a closed file that has been retained at the Supervisor's Office in Salmon. Several of these cards record special-use permits granted to saw mill operators on the Forest between 1914 and 1968. The only other information on timber sales is for those sales that are comparatively recent - beginning in 1955. These records tell of volume sold, occasionally volume cut, the buyer, and the name of the sale (Fig. 11). Gutzman (1961) explains that the first commercial saw mills in the area were operated between 1900 and 1910. Smith (1973:95-96) in her Forest history claims that commercial production for markets outside of the local area did not begin until after World War II.

> Almost all of the products and lumber are now sold outside of the local area. Horses and mules have left the woods, replaced by tractors and heel boom loaders. The timber industry has changed from the family-owned mill with part time labor to a steady industry employing year-round loggers and mill hands, with large highway truckers moving the products to market.

The volume sold on the Salmon National Forest rose from the mid-1950's and averaged at slightly over 30 million board feet from the late 1960's to 1980 (Fig. 11).

Twentieth century saw mills for both commercial and private use were not uncommon. They were powered by water, gasoline, steam, or electricity (Pelton wheel). South of the project area on the Challis National Forest, there is documentation for private use at ranches and mines. On Loon Creek during the early 1900's, one homestead claimant had a small water-powered saw mill, and on the Middle Fork in the 1940's, Tom McCall floated logs apparently down Thomas Creek to a water-powered saw mill. He built a hunting and fishing lodge at his place with the sawn lumber. The Seafoam and Greyhound Mines, both operated during the early twentieth century, had saw mills at their respective mill sites.

Commercial saw mills were operated in or near the mountains until quite recently. During the 1940's and later, several of the "mountain" mills were moved near the town of Salmon and enlarged. The moves facilitated transportation to markets outside of the local area.

> In 1939, there were 14 active saw mills, all quite small, with nearly all of the lumber used locally. Chain saws and "cats" began to appear. The volume of timber cut in the Salmon country was stepped up during World War II to meet war-time needs, with new mills and new management of some of the earlier mills. This was the beginning of a market beyond the local needs. Henry Benson bought the Creek Mill, moved it to Salmon; Henderson moved a mill into Silver Creek. This mill was later purchased by B.E. Robinson who now has a mill just north of Salmon. Intermountain Lumber purchased the Benson mill, and Idaho Forest Products set up a mill and factory near Robinson's mill. Livingston and Lynch purchased a timber sale and set up a mill on the North Fork [Smith 1973].

Logging camps established in the vicinity of the cutting units may have been occupied for several weeks. Workers consisted of the cutting crew, haulers, and perhaps a camp cook. The cook may have been a woman, but the other crew members were almost always men and older boys.

Saw mills were more permanent sites than logging camps. There were both portable and stationary saw mills. The portable mills may have been operated for an entire season - at one location. Length of use at permanent mills of course varied with the value and demand for lumber in that area. Essentially the mill could be operated year-round, although I would suspect that winter use was limited to prevent warping and because transportation was poor.

3. Cordwood cutting and collecting was a low status, low paying job during the late nineteenth and early twentieth centuries often performed by members of ethnic minorities. Austrians cut cordwood for use as fuel at the Custer Mill in Custer, Idaho, at the turn of the century (Carrie Williams 1979: personal communication). Chinese laborers also earned a meager living by hauling firewood at mining camps (Smith 1967:34). There is no available data to suggest that these or other minorities monopolized logging and saw mill operations, however.

5. No historic logging camps have been identified on the Salmon National Forest although several probably exist. One found on the Sawtooth National Forest (SW-427[10-BN-69]) that apparently dates after 1950 consists of four or five collapsed wooden structures and artifacts deposited in segregated dumps and

also as sheet trash across the site. SW-427 is located at the junction of a main feeder road and a smaller dirt road probably specially constructed to facilitate logging. A steam donkey has been recorded on upper Big Creek about 25 mi. west of the Salmon National Forest which may have been used during a logging operation. However, because no buildings or artifacts were found in association, its function remains unknown (Hartung 1978:117).

The remains of one saw mill (SL-22 [10-LH-337]) on the Salmon National Forest have been recorded at Moose Creek. The age of the collapsed structure was not determined in the field but its present condition suggests that the site was established in the early-to-middle twentieth century. Today the site appears as a pile of lumber from a collapsed building and an adjacent 10 X 3 X 1m pile of bark and trimming debris. No associated artifacts were reported.

The remains of a saw mill up Sage Creek that operated during the 1940's, can still be seen (Frank Elder 1982: personal communication). This site has not yet been recorded by an archeologist.

Elsewhere in central Idaho, there are the remains of small saw mills on ranches and mine sites. The mills are in various stages of disrepair ranging from a pile of sawdust (at Cabin Creek on the Payette National Forest), to a partially complete mill (at Copper Camp on the Payette National Forest), to a saw mill that is completely intact and was used until quite recently (at the Falconberry Ranch on the Challis National Forest). The complete mills consist of some complicated machinery which will not be described here. (Photographs are available at the River-of-No-Return Wilderness Planning Team Office, Salmon.)

A former saw mill site (SW-37) in the Sawtooth National Recreation Area about 50 mi. south of the Salmon National Forest dates to the 1930's or later. It has several features not found or identified at SL-22. Fig. 12 shows those features at SW-37 that might be used to identify places where sawmills once stood.

In most cases, associated artifacts have not been recorded. One exception is a collapsed saw mill at the Cabin Creek Ranch that was built in about 1957. The associated artifacts include "heavy metal parts, large bolts and spikes, sheet metal, thin blue rubber sheets, black plastic sheet, 5 gallon gas can, 1 1/2 in. pipe, and 1/4 in. mesh screen" (Rossillon and Sprague 1978).

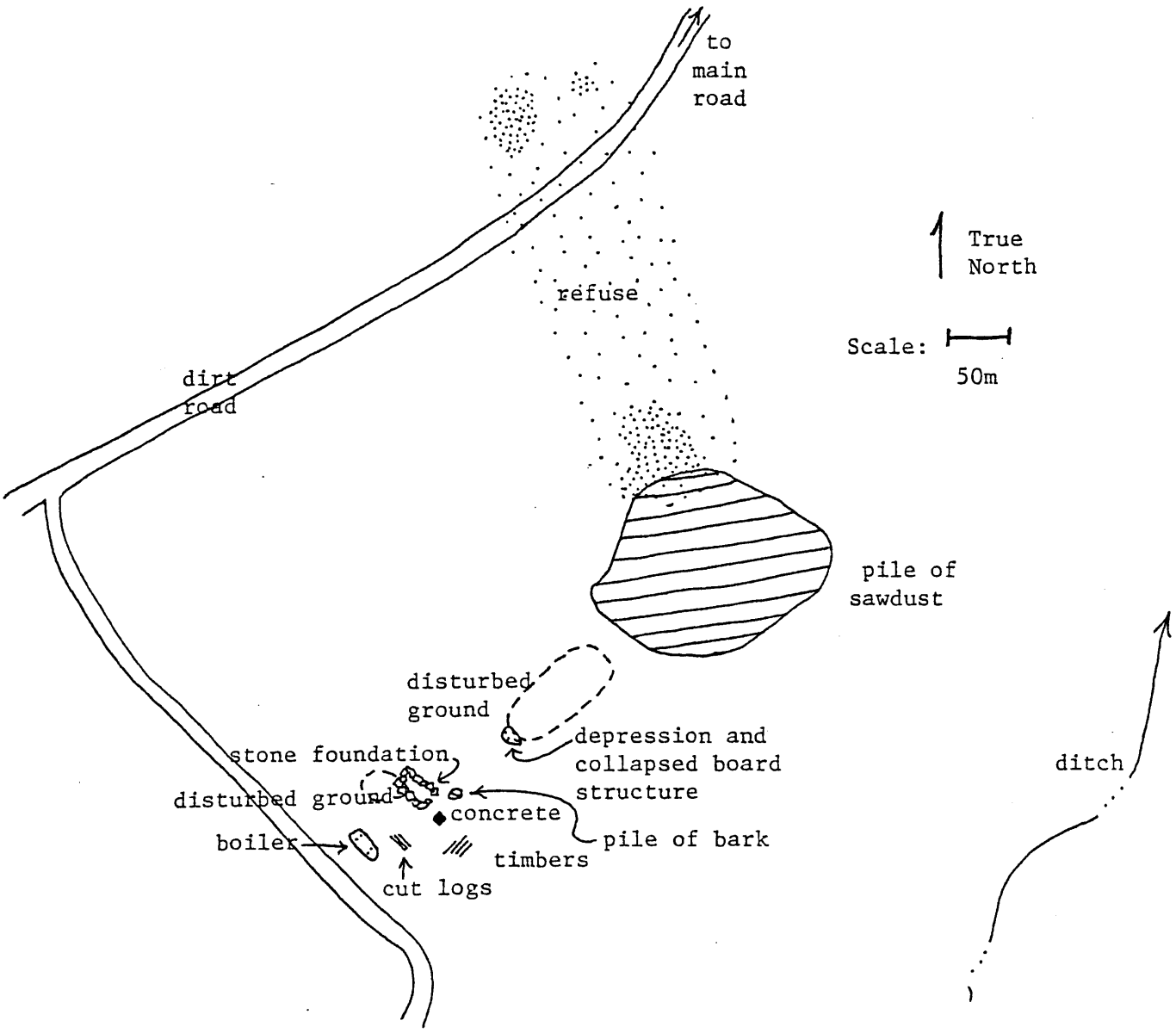


Fig. 12. Site of a former saw mill on the Sawtooth National Forest. Saw mill sites similar in appearance probably occur on the Salmon National Forest.

Railroad Construction

One railroad, the Gilmore and Pittsburg, passed through the study area down Railroad Canyon on the east side of the Lemhi Valley (Fig. 13). Construction began in 1909 and the railroad operated between 1910 and 1939. The line was built primarily to haul lead ore out of the area, although shipment of livestock was also facilitated by the railroad. Railroad use declined in the 1930's to the point that it became unfeasible to repair the deteriorating line, and so the railroad was closed and dismantled (Smith 1973:55).

There may be physical remains of railroad construction and maintenance activities both in Railroad Canyon and in the Lemhi and Beaverhead Mountains on either side of the railroad line from Gilmore to Salmon. Sites might include tie hack (tie cutting), grading, rock cutting, bridge building, general construction, and snow shoveling camps (Buckles 1976:79-83). These camps may have had both habitation and work center components. Logs were hewn or sawed into ties at tie hack camps. Grading crews lay and fashioned the actual grade on which the railroad line ran. Rock cutters used drills to break the exposed bedrock in areas where the local topography did not allow an easy grade.

1. Material culture at [tie hack] camps probably would be related to maintaining teams, repair and maintenance of logging and transportation equipment, and the remains of habitations which were dominated by males. Sawmills might have been present at many of these camps [Buckles 1976:58].

   Habitations may not have been present at tie hack camps in the Lemhi area, housing possibly being available at Lemhi, Junction, and Gilmore. This would especially be true if local labor was used; the laborers would then have stayed at their own homes.

   Tools used by grading crews would include drags pulled by horses and other earth-moving equipment (Gutzman 1961). More specific details about the character of a Gilmore and Pittsburg Railroad grading crew may be difficult to postulate because, according to Buckles (1976:59), "The natures of grading crews and their camps differed greatly according to the railroads and the contractors."

   Automatic compressed air or mechanical drills were patented by the time the Gilmore and Pittsburg was built (Buckles 1976:61), so those up-to-date tools were probably preferred and used by the rock cutting crews.

2. "Tie cutters usually worked ... close to the future locations of grades for efficiency in placing the ties in easy access to the grade when it was completed" (Buckles 1976:57). Local historians tell us that ties were cut and shaped for the railroad in those areas so marked in Fig. 13 (Tobias 1907-1911; Gutzman 1961; Smith 1973:93). Other areas not mentioned but possibly used are also marked in that illustration.

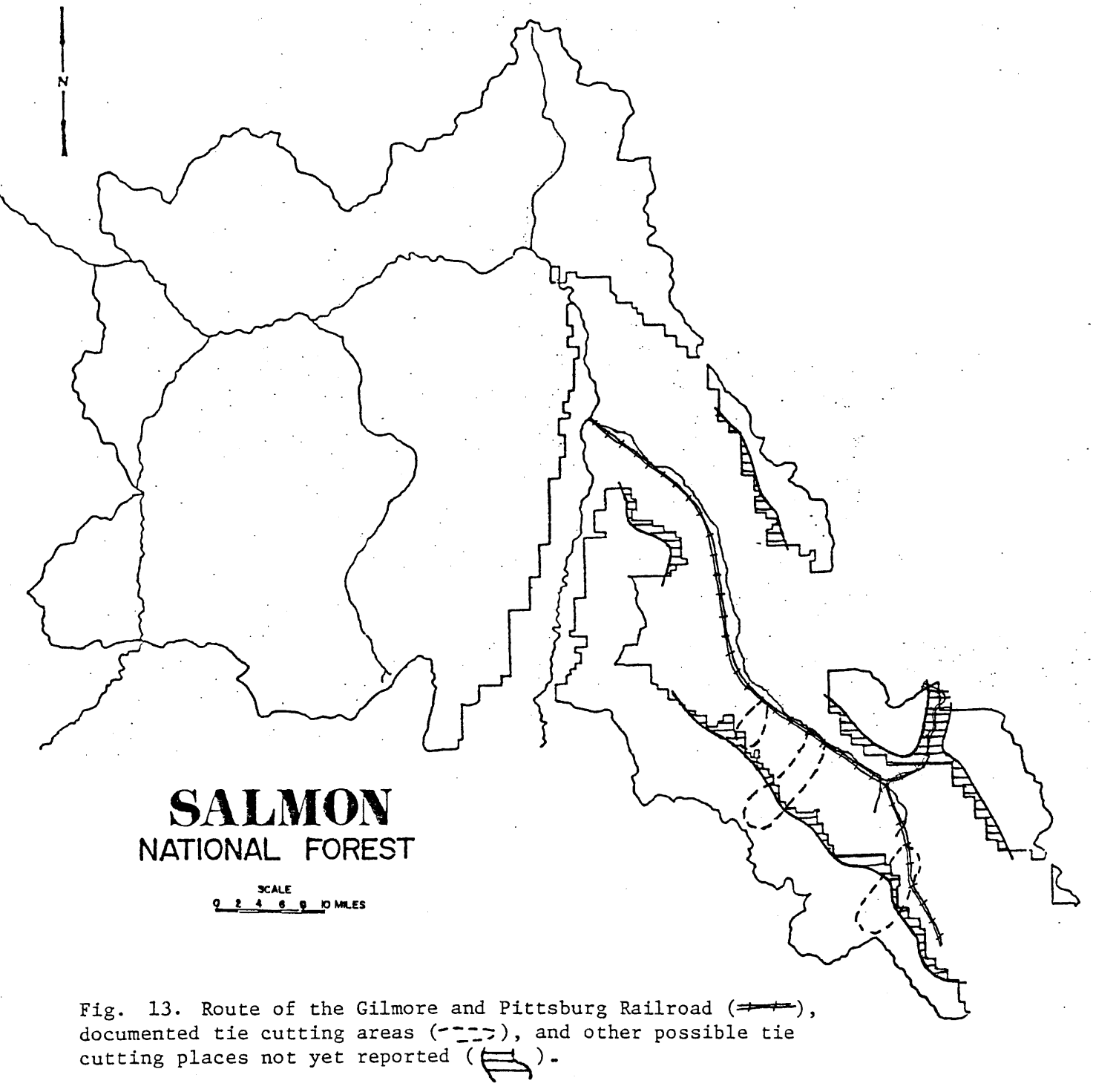


Fig. 13. Route of the Gilmore and Pittsburg Railroad (═══), documented tie cutting areas (- - - -), and other possible tie cutting places not yet reported ( ).

Grading crew camps were of necessity located along the railroad grade, so we would expect few if any on the Salmon National Forest. Those few would be in Railroad Canyon.

Along the Gilmore and Pittsburg Railroad line through the Salmon National Forest, a rock cutting crew would have cut the tunnel at the Continental Divide. The crew's camp would have been located near the tunnel, although perhaps on the Montana instead of the Idaho side of the divide.

3. The various construction camps had different characters during occupation, primarily due to the different tasks performed by each crew. Buckles (1976:79-83) has identified several features of different railroad construction camps as they might have appeared in their systemic contexts. His work is especially useful in providing data on the type of camp occupants and the length of camp occupation. The following lists are abstracts of Buckles' identifications.

Surveying Camps

a. Short durations with portable equipment and dwellings;
b. little modifications to environments;
c. all male population;
d. care and maintenance of livestock with riding and pack animals dominant.

Tie Cutters

a. Long term occupations in most types of weather;
b. care and maintenances of draft animals, logging equipment, personal property;
c. possible saw mill sites;
d. males predominant with probable dormitory for unmarried men, houses for families, possibly female cooks;
e. road networks leading to timber areas and railroad grade.

Grading, Rock Cut and Tunnel Camps (in difficult mountainous areas)

a. Camps where barriers exist were long term but otherwise transitory;
b. variable living arrangements but predominantly of large groups of laborers organized by a contractor and reflected in centralization and regimentation of life;
c. room and board provided and perhaps indicated by centralized kitchen and dining hall and similarities in domiciles;
d. ethnic group specific housing possible, often of materials occurring in natural states at the camp locales;

e. poor living and working conditions;
f. alcohol usage very high;
g. all adult male working populations with exceptions of very limited females with families possibly as cooks, unemployed wives, or in exploitative roles as prostitutes;
h. unskilled labor roles predominant and fulfilled by transitory laborers, many of whom were of indigenous minority groups or were emigrants from non-English speaking countries;
i. blacksmithing vital to repair, resharpening of tools, horse shoeing;
j. road systems related to railroad construction and supply and probably giving access to the grade of the railroads.

Bridge and Trestle Construction

a. Presumption of involvements of higher frequencies of skilled laborers than in grading camps and presences of appropriate symbols of status;
b. animal power less important than mechanical advantage power.

Section Gangs, Repair Crews

a. Probably permanent sites on railroad sidings;
b. employees of railroads with possibilities of permanent positions and familial groups;
c. probably Anglo-Americans or Irish predominated.

Snow Shovelers

a. Temporary employees;
b. low status work and pay;
c. probably drawn from laborers seasonally or otherwise out of work;
d. winter camps and occupations in or near snowslide areas.

As Buckles (1976:74) wrote, railroad construction crews were often composed of ethnic minorities, especially on the low-status, low paying jobs such as tie cutting and grading. Members of the ethnic minorities who worked on railroad construction in the west were Chinese, black American, Italian, Swedish, Mexican, and Irish. There is no available documentation that the Gilmore and Pittsburg Railroad workers belonged to any particular ethnic group although we should not be surprised to discover that such was the case.

5. Several railroad construction camps in the west have been identified during archeological survey, and some of those

found have been extensively mapped and excavated. Buckles (1976) conducted an ambitious mapping project and limited test excavations at a large railroad construction camp in central Colorado. Wegars and Sprague (1981) conducted limited investigations on the Joso Trestle Bridge construction camp in south central Washington. Several railroad construction camps have been excavated in California (references are not available at this time). None have been reported for Idaho.

The Tenmile Canyon railroad construction camp that Buckles (1976) recorded was occupied in the early 1880's, but it is quite possible that the features he identified are similar to those that might still remain from construction of the Gilmore and Pittsburg Railroad. At 5ST2 in Colorado, dugouts were the most common feature type; the logs used for structure supports were barely modified during the expedient feature construction. Stone walls were sometimes used in place of log supports. All roofs were collapsed or missing. Buckles also found stone domes that he believes were Italian baking ovens. Similar domes have been found elsewhere in Colorado at railroad camps (Sharon Kyle 1981: personal communication; Bruce Jones 1982: personal communication). Building foundations made of stone were also present at 5ST2. Other features of railroad construction camps include "occupied surfaces", roads, bridges, and dumps (Buckles 1976:215-253).

Ranching and Farming

Continous permanent ranching and farming in the Salmon area began with the discovery of valuable minerals in the Salmon River Mountains in the late 1860's. However, as early as 1855, a group of Mormon colonists had established a fortified farming settlement at Fort Lemhi near present-day Tendoy. The settlers were forced to leave the area three years later when local Indian groups grew hostile (Madsen 1980:239). By 1866, cattle herds ranged in the Lemhi River Valley (Fiori 1981:144 cited in McDonald 1982:V.27). Apparently there were no permanent ranches in the valley, but only seasonal camps (Oberg 1970:57). Permanent ranching and farming had yet to occur.

Then placer gold was discovered at Leesburg. To feed the newcomers there (as at other isolated mining communities), men hunted wild game. At Leesburg it quickly became apparent that game hunters could not meet the demand for meat; those animals that escaped the hunters ranged further and further away from the camps.

Enterprising individuals trailed cattle from established ranches in Montana and southern Idaho to the mining communities to be slaughtered at the end of the trail. Some found that the Salmon and Lemhi River Valleys produced grasses that would support large herds of livestock - livestock that could be sold at high prices in the mining camps. Although the valleys were seasonally occupied by Indians who grazed large herds of horses there, ranches were established in the valleys with no serious conflicts as a result.

In addition to cattle for beef, newly-arrived Salmon area farmers and ranchers raised dairy cattle to provide milk and butter at mining communities. They raised and sold truck gardens. Hay was grown to feed thousands of draft and pack animals and riding stock. Finally, as the turn of the century approached, more and more hay was grown to feed to range livestock during the winter.

Mining districts boomed and busted throughout the rest of the nineteenth and into the twentieth centuries, but the ranching and farming industries gradually grew independent of mining activities. Cattle were transported to markets outside of the immediate area - to other mining communities, to supply centers with more stable populations, and to national markets via railroads. Small outfits continued to depend on local markets, however.

A large number of the small outfits might best be called subsistence ranching and farming operations because the families or individuals were fairly self-sufficient, by today's standards. Subsistence ranchers and farmers were rural people with comparatively few capital investments who depended heavily on small-scale livestock, hay, and vegetable production for their livelihood. They raised what livestock they needed for themselves, plus a few head for sale to keep them supplied with necessities from town such as farm equipment, material with which to make clothing, and some hardware used in building construction. They raised most of their own food, repaired their own equipment at their blacksmith shops, and practiced extensive recycling and use of local, low-cost materials for most of their construction and household needs (Buckles and Rossillon 1981:17-12 to 17-87).

Ranchers, whether they had large or small outfits, competed with freighters for pasture and hay which was generally in short supply, especially in the isolated mountainous areas away from the Salmon and Lemhi River Valleys. Some ranchers and farmers undoubtedly took advantage of the high demand for pasture and hay by occupying land along well-frequented trails that lead to various mining communities. Prospectors and freighters paid the high prices charged at these isolated spots because there it was the only hay or pasture available for stock.

Ranching and farming operations involved a number of different activities that often were conducted at different locations at different times of the year. Rossillon (1982:69-85) discusses the ranching "seasonal round" or set of tasks performed at each season each year, possible site locations, and site characteristics for several ranching activity site types. Because ranching operations involve so many distinct but interrelated tasks, her review will not be summarized in this cultural overview. Historic farming operations may also have been systematically summarized by historians or archeologists, but specific references are not available at this time. In any case, farming operations geographically are less complicated than ranching operations; farming activities were confined to the farmstead and surrounding landholding.

The full range of historic ranching activity site types was not distributed evenly across the landscape, not only because of seasonal variation in forage availability and marketing practices, but also because of the nature of populations at the mining districts. This point is best illustrated with a few examples. At Leesburg, it would appear from the few eye witness accounts that survive in archival and historical records, that Leesburg Basin was a market during the gold boom of the late 1860's with little if any livestock production. When the demand for meat rose, cattle that had been grazing perhaps in the Lemhi or Salmon River Valleys were trailed to Leesburg and shortly thereafter were slaughtered for immediate use. The animals' range was not in the immediate vicinity of the community. The situation at Yellowjacket a little later in the last century was slightly different. Early in the small boom there, livestock were trailed to the camp from the Lemhi or Salmon Valleys or perhaps even from Boise Basin and Boise Valley. As Yellowjacket matured with the development of the lode properties and the population stabilizing to some degree, ranchers and farmers established their places in the mountains close to Yellowjacket. By 1900, the population schedule for the Singheiser District, that probably included Yellowjacket, Singheiser, and Forney, noted that 3% of the area residents were ranchers or farmers. These local ranchers and miners generally had small operations providing agricultural products for the local population and perhaps for Salmon residents. No doubt these small operations expanded when new gold discoveries were made in the Salmon River Mountains. The full range of site types, excluding shipping stations, were probably used in the Yellowjacket area.

Construction of the Utah and Northern Railroad through eastern Idaho in 1879 and of the Gilmore and Pittsburg Railroad to Salmon and Gilmore in 1910 were important to area ranchers in gaining access to outside livestock markets. Unfortunately the nearest Utah and Northern railroad stop to the area was at Red Rock, Montana, across Lemhi Pass. Construction of the Gilmore and Pittsburg Railroad saved area ranchers considerable effort in transporting their livestock to market. However, as the mid-twentieth century approached, low prices for agricultural products, high railroad costs, and the design of heavy trucks that might be used to transport livestock, meat, or wool to national markets all contributed to the closure of the Gilmore and Pittsburg Railroad. Livestock were then trailed to other railroad stations or shipped by truck to meat packing plants.

When National Forest Reserves and National Forests were first established, there were no provisions for occupation of agricultural properties within the Reserves or Forests, even though some people had been ranching and farming in those areas for several years previously. In 1906, the Forest Reserves Homestead Act (34 Stat. 233) was passed and those lands within National Forests that the Forest Service listed as agricultural could be patented. As the result of that piece of legislation, and laws allowing mining patents, there are over 100 small parcels of private property within the boundaries of the Salmon National Forest. Within the last few years the Forest has had the opportunity to acquire these inholdings and have done so through purchase or exchange (Fig. 14).

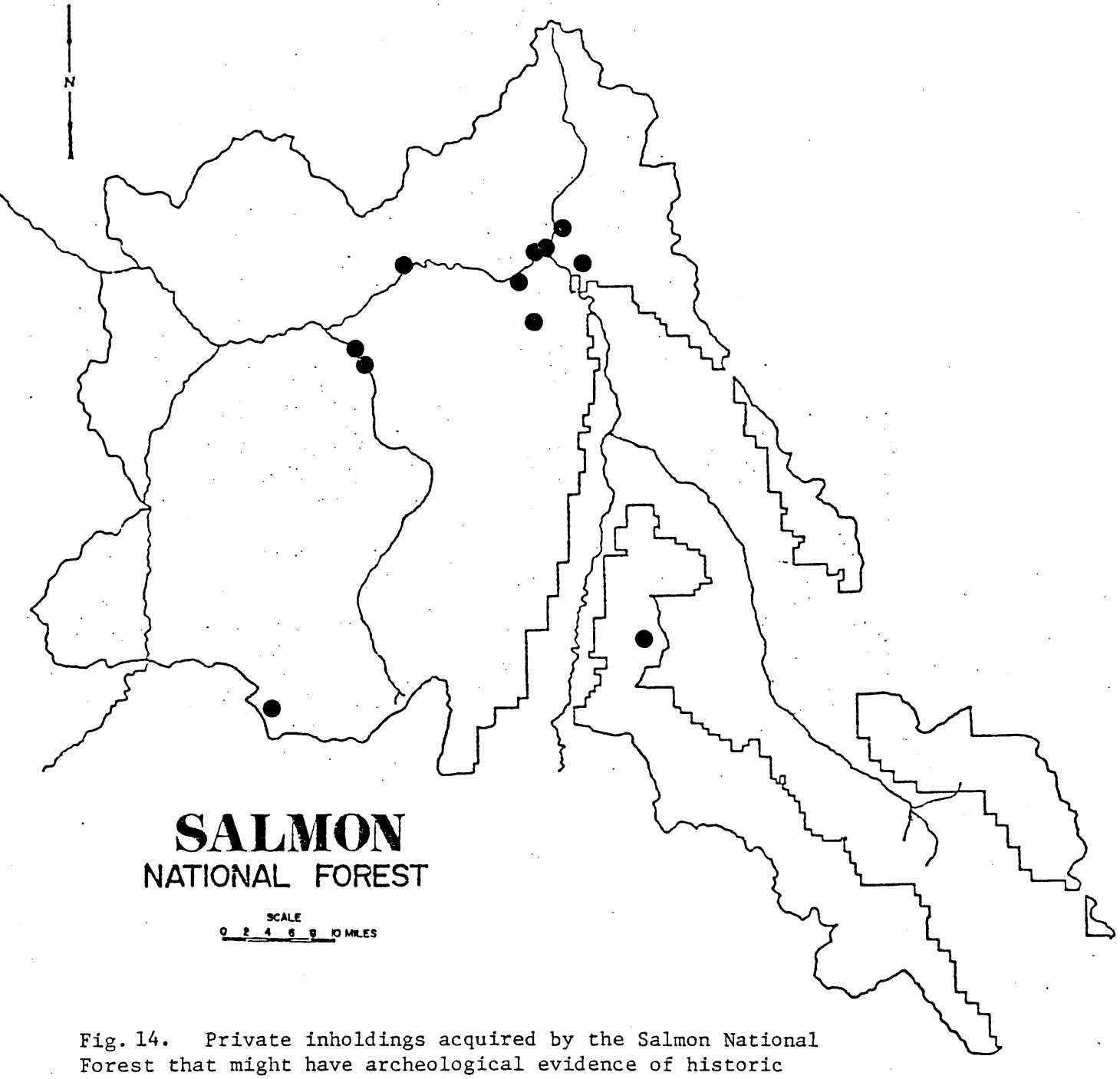


Fig. 14. Private inholdings acquired by the Salmon National Forest that might have archeological evidence of historic ranching or farming.

After the Salmon National Forest was established, livestock grazing was allowed only with a permit. The Forest Service administered numerous livestock allotments on all parts of the Forest which were used primarily during the summer. Livestock allotments may generally be thought of as rental properties to which the renter has exclusive rights in perpetuity with proper stocking. The stockman in some instances was required by the Forest Service to reduce the number of animals grazing on the property to guarantee range regeneration. Although a rancher did not sell an allotment when he sold his base land, the buyer of his base land was almost always able to rent the Forest Service allotment as the result of the title change.

All current allotments files have short descriptions of historic use and management. In those few allotment records consulted, there is no information on structures within the allotments. Present use is not necessarily a good indicator of past use both in terms of the number of livestock and the class. For example, on the Middle Fork Cattle and Horse Allotment, during World War I, tens of thousands of sheep were trailed to the Thunder Mountain area and surrounding drainages because of the high demand for meat then. Five thousand sheep grazed the Middle Fork allotment in one year at that time. However, after that aberrant boom in sheep grazing, the area was used as cattle range until 1946. Presently the allotment is grazed by horses only.

During the late 1800's, up into the 1890's, cattle were the preferred range livestock class throughout the west. Cattle were probably also preferred in the study area also. Sheep production increased after that time and into the twentieth century as large cattle operations broke up and range became available for sheep ranchers. Recently, the range sheep industry has declined as more sheep are farm raised and fed. This situation is partially due to a loss of competent sheep herders. In 1911, almost 28,000 sheep grazed on the Forest under permit; presently less than 2,500 sheep graze there. Presently there are only two sheep and goat allotments on the Salmon National Forest (Jim Guest 1982: personal communication).

1. Logically, some ranchers and farmers must have specifically located their places along trails through the study area where there would have been a high demand for agricultural products and roadside services such as over-night lodging and food. Miners heading to or from mining districts along those trails rented pasture, bought hay, exchanged travel-weary pack animals or peoples' horses for fresh animals. Also, the trails being generally the shortest distances between two points might have been used as driving lanes for livestock being taken to market. Cattle, sheep, chickens, or pigs raised locally might be slaughtered on the spot, prepared, and served at the roadside inns. Local truck gardens might also be served at the enterprising lodgekeeper/rancher's inn.

   There are two Thunder Mountain trails through the area that were used intensively between 1904 and 1908 during the Thunder Mountain boom. These two trails were probably used in the

late nineteenth century also. Other trails through what is now the Salmon National Forest were along the North Fork River, along the Salmon River from North Fork to Shoup, along Agency Creek in the Beaverhead Mountains and up Moose Creek. The Salmon National Forest recreation map shows numerous trails throughout the Forest. The ages of many of these are documented in the work of Smith (1973:82-85), and numerous historic sources (Shoup 1969).

Identification of the routes and dates of these trails on work maps might yield a better idea of the distribution of trailside ranches and inns. These places are some of the few on the Forest that might have physical evidence of ranching and farming headquarters. Other places are in the vicinity of property still held in private hands. Trespasses of individual structures or parts of structures there were quite frequent.

Finally, there are presently 30-35 special use permits on the Forest for seasonal and permanent residences on small tracts of land that were originally mineral claims but the claims have been found invalid. Some of these special use sites have been occupied by subsistence farmers for decades. The Butschke place on the Salmon River between Cove and Owl Creeks was occupied by a non-miner since the early 1930's and possibly earlier (Carrey and Conley 1978:97).

There were other special use permits issued to ranchers and farmers between 1910 and 1950 for which the Forest has records. Often the purposes to which the special use structures were put is not mentioned in the special use case file, but several were probably for herders cabins on livestock summer range.

2. Information about ranchers and farmers who worked in the study area during the nineteenth century is limited, but we can make some guesses about the age and sex of people who ranched and farmed, their ethnic affiliation, and the length of occupation at different sites and different site types.

Most residents in mining communities, whether they were miners, merchants, freighters, or farmers, were found to be early middle-aged men. (The average age of men in the three Loon Creek mining districts south of the Salmon National Forest in 1870 was about 35 years.) Men with wives were few in number and those couples with children even fewer.

Farmers and ranchers came from a variety of ethnic backgrounds. One group worthy of note was the Chinese who specialized in farming at several camps throughout the west (Smith 1967:34). Chinese farmers had a garden at Warm Spring Creek south of the study area when the mining town of Oro Grande existed (Rossillon 1981:17).

Established ranch headquarters were rarely abandoned and many such sites continue to be occupied up into the present, although most of the sites now function as dude ranches, or they have been subdivided. Some individual site occupants stayed on one piece of property for only a few years and others for a lifetime. The long-term residents are the best remembered and their lives are best documented in local histories. Other seasonally occupied ranching activity sites may have been returned to yearly, even with changes in owners. This would be because those sites were probably situated at good locations with respect to the livestock range.

During the twentieth century more families (instead of individual men) were involved with farming and ranching than they apparently were in the nineteenth century. In the Middle Fork drainage basin, 40% of the homesteaders applying for claim patent were married and about 60% of those had children (Rossillon 1981:41). In the 1940's, residents of the Salmon River Mountains witnessed a gradual switch from market and subsistence ranching to dude ranching and outfitting. Examples are at the Hughes Creek place, the Flying B Ranch, Mormon Ranch, Meyers Cove (SL-61) and Pine Creek (Girl Scout Camp).

The Land Status Atlas and folders on Forest Service homestead reports on file at the Salmon National Forest Supervisor's Office record basic information on the locations of all listed, claimed, and patented agricultural lands within the Forest boundaries. The folders contain information on the names of applicants, improvements standing on the property at the time of inspection, the capabilities or the agricultural property for producing livestock and fruit and vegetables, and sometimes the equipment the applicant possessed to help him work the land.

3. The subsistence ranchers and farmers in the study area supplemented their incomes by performing a wide variety of tasks. They trapped predators such as cougar and coyote for the bounty, they placer mined, they served as guides to visitors, and they worked for the Forest Service fighting fires, clearing trails, or standing lookout (Rossillon 1981:28-29).

5. Architectural and archeological remains of historic ranching and farming on the Salmon N.F. are not uncommon. Their integrity, however, has often not been maintained over the years. The following paragraphs taken from the site form for S1-61, a former homestead at Meyers Cove illustrate the condition of some of the ranch sites presently on land administered by the Salmon National Forest.

> The original homestead application (1909) indicates that a 3-room log house, a log barn, a storehouse, a cellar and a blacksmith shop were present and in good condition.

An HES plat surveyed in 1918 indicates that the blacksmith shop and barn were no longer present and that three additional structures including a house had been constructed. Development by Hidden Valley Ranches, Inc., involved recreational facilities for tourists. Valuation of all improvements at the time of purchase was $5000. All but one of the standing buildings were burned and the surface bulldozed when the Forest Service acquired the land in 1971.

The one standing structure does not appear to be one of the originals (1909 or 1918) judging from its location and condition. It is a one room log building with a plank (?) floor and split-log roof covered with mud or sod. The logs are large with steeple notching and still retain much of their bark. The door faces NW and a single small window faces NE. Chinking is split-log in the interior and mud on the exterior. All nails are wire.

Nothing remains of the original structures and their exact location cannot be determined from surface indications or the HES plats. Bone fragments, broken glass, crockery and miscellaneous metal are scattered along the north edge of the bench at former locations of the most recent building (probably over-lapping previous localities). This entire area has been greatly disturbed by bulldozers and none of the debris is intact and is probably not in situ. In the vicinity of the standing structure some historic artifacts might remain buried in situ, as evidenced by broken debris around the foundation, but there is no surface indications of actual dumps anywhere on the bench. It seems likely that before sanitary removal of garbage was initiated (if ever) trash was dumped over the bank onto the flat adjacent to the creek.

Ranch or farm sites that have been reported by archeologists include SL-31 (south Newland cabin), -61 (Meyers Cove), -115 (Spring Creek), -307 (Cove Creek permit), -320 (Butschke place), and -334 (Newland Ranch). SL-44 and -45 at the upper end of Panther Creek were also reported as ranch sites, but no documentation was provided with the site reports to verify or dispute this site function identification.

Identification of site function for ranching or farm sites depend heavily on archival and historical documentation. Archeological evidence is often ambiguous so that seasonally occupied ranching activity sites such as line cabins and associated trash dumps might appear very similar to cabins and dumps occupied by trappers or miners (Rossillon 1982:87). The presence of a corral at a site no more indicates that the site's primary function was ranching than does the presence of

animal traps indicate that the occupant's main occupation was trapping.

In her summary of ranching activity site types and their characteristics, Rossillon (1982) provides some information on the archeological appearance of various historic ranching activity areas. Primary references for archeological investigations of some different types of ranching activity sites include Bente (1980) on a line cabin; Rusco and Hart (1979) Heitzmann (1980), and Buckles (1978, 1981) on ranch headquarters; and Todd (1980), Hofman (1980), and Fawcett (1981) on sheepherders camps.

Table 2 on site visibility is taken from Rossillon (1982:90). As noted, ranch headquarters have good visibility, but identification of their earliest period of occupation and former site functions is often an impossible task because of extensive modifications over time (Rossillon 1982:86-87).

Table 2. Ranch Site Types and Archeological Visibility.

Season	Site Types	Site Visibility
Winter	Ranch headquarters	good
	Sheepherder camps	fair
	Central camps (shearing)	good
	Cow or line camps	good
Summer	Sheepherder camps	fair
	Central camps (cutting marketable lambs)	good
	Cow or line camps	good
	Round-up and branding camps	good

Forest Service Administrative Sites and Fire Lookouts

The Salmon River Forest Reserve was established in 1906; in 1908 the reserve was modified and became known as the Salmon National Forest (Smith 1973:63). The Forest immediately began a program of resource conservation and timber production (Tobias 1907-1911). Smith's history of the Forest (1973) contains a lengthy summary of Forest administration and resource management (pp. 63-124). She includes information on various improvements built, although the present condition of those improvements is not systematically treated. This section of the culture resource overview includes some very basic information on the history, composition, and present condition of fire lookouts, ranger stations, and other administrative sites (Table 3).

The earliest lookout stations in central Idaho were established on high mountain tops that afforded a good view of the surrounding area (Fig. 15). The person who manned the lookout often built his camp downhill from the mountain top where there was a supply of water and perhaps a pasture for his horse. At the lookout itself, the person stood on the ground or climbed a tree to obtain a better view. Sometimes platforms were built in the "lookout trees", such as at Haystack Mountain on the Salmon National Forest.

During the 1930's, with the help of the Civilian Conservation Corps (CCC), the Forest Service established numerous permanent lookouts, building lookout towers and sometimes cabins, sheds, barns, and/or toilets. Many of the lookouts that are still standing were constructed during the CCC era. On the Salmon National Forest, these include Butts Creek Point, Oreana, Short Creek Point, and Stoddard Lookouts. Of 17 lookouts at which some buildings still stand, the River-of-No-Return Wilderness Planning Team has evaluated seven, including those four mentioned above plus the Horse Heaven Lookout barn, Bear Creek Point, and Sagebrush Lookout. Sagebrush (SL-277) and Oreana (SL-335) Lookouts were determined to be significant and the others insignificant. All others remain unevaluated.

Immediately after the Salmon National Forest was established, rangers surveyed and withdrew numerous administrative sites from any development by the private sector. Several of these sites were used as ranger stations, but in addition, a large number were apparently used as pasture and hay fields to support Forest Service livestock (horses and mules). As with lookouts, documentation of the type of structures built at the sites and their dates of construction is poor.

Table 3. Salmon National Forest Lookout Sites

Site Name	Date of First Use	Date Structures Built	Types of Structures	Present Condition	Comments
Allan Mountain	by 1924			Nothing there	
Anderson Mountain	by 1940	by 1940	Lookout? Cabin Garage Toilet	Removed " " "	
Baldy Mtn.	1911	by 1924	Lookout	Standing	
Bear Creek Point	by 1940	by 1940	Lookout Flyshed Toilet	Standing	
Bear Trap	by 1940	by 1940	Lookout Garage Flyshed Toilet	Standing	
Blackbird Mountain	1922	by 1924	Lookout Flyshed Toilet	Removed " "	
Blue Nose	by 1924	by 1940	Lookout Shed Garage Toilet	Standing	Also known as Sheepeater LO
Butte Point ?	by 1940		Flyshed Toilet		
Butts Creek Point	1935	1935	Lookout Barn	In use "	

Table 3. Salmon National Forest Lookout Sites Continued

Site Name	Date of First Use	Date Structures Built	Types of Structures	Present Condition	Comments
Cottonwood	by 1940	by 1940	Lookout	Removed	
Duck Creek Point	by 1940		Flyshed Toilet		
Gant Mountain	1937	1937	Lookout Flyshed Toilet	Removed " "	
Granite Mountain	by 1924	by 1943	Lookout Shed Toilet	Standing	
Grizzly Springs	by 1924			Nothing there	
Haystack Mountain	by 1924		Platform in tree	Standing	
		by 1940	Lookout Cabin	Removed "	
Horsefly Gulch	by 1924			Nothing there	
Horse Heaven	by 1937	1937	Lookout Barn Toilet	Removed Standing	
Hot Springs	by 1940	1946	Lookout Toilet	Standing (in use?)	
Indian Peak		by 1940	Flyshed Toilet		

Table 3. Salmon National Forest Lookout Sites, Continued

Site Name	Date of First Use	Date Structures Built	Types of Structures	Present Condition	Comments
Jureano	by 1936	1936	Lookout Cabin . Flyshed Garage Guard Station Toilet	Standing Standing	Not at LO?
Lake Mountain	by 1924	after 1924	Lookout Flyshed Garage Toilet	Removed " " "	
Long Tom Mountain	by 1924	by 1924?	Lookout Flyshed Garage Toilet	In use	Replaced 1977
McEleny Mountain	by 1924			Nothing there	
Middle Fork Peak	by 1924		Lookout Flyshed Toilet	In use	Replaced 1962
Napolean	by 1930's	1930's		Removed	
Nolan Point	by 1943	by 1943	Lookout Toilet	Removed	
Oreana	by 1930's	1930's	Lookout Garage Barn Toilet	Standing	
Poison Peak		by 1944	Cabin?		Off side of mountain

Table 3. Salmon National Forest Lookout Sites, Continued

Site Name	Date of First Use	Date Structures Built	Types of Structures	Present Condition	Comments
Red Rock Mountain	by 1924	by 1948	Lookout Shed Toilet	Removed? Standing	
Sagebrush	by 1924	1929-1930	Lookout Flyshed Toilet	In use	
Sal Mountain	by 1940				
Sheephorn	by 1940	by 1944 1967	Cabin? Lookout	 Standing	Off side of mountain
Short Creek Point	1930	1930	Lookout Flyshed Shed	Standing " "	
Skunk Camp	by 1924	1930's	Flyshed Toilet		
Stein Mountain	by 1924	by 1924 by 1940	Lookout Flyshed Toilet	In use " "	Replaced late 1960's
Stoddard	by 1934	1934	Lookout Barn Shed Toilet	Standing " " "	
Stormy Peak	by 1940	by 1947	Lookout Shed Toilet	In use " "	

Table 3. Salmon National Forest Lookout Sites, Continued

Site Name	Date of First Use	Date Structures Built	Types of Structures	Present Condition	Comments
Sugar Loaf		by 1944	Cabin?		Off top of mountain
Taylor Mountain	by 1924	by 1924	Lookout	Standing	Rebuilt?
Two Point	by 1924				
Ulysses Mountain	by 1924	by 1940	Lookout Cabin Barn Toilet	Standing " Removed	
West Horse	by 1930's	1930's	Lookout Barn Toilet	Nothing there	

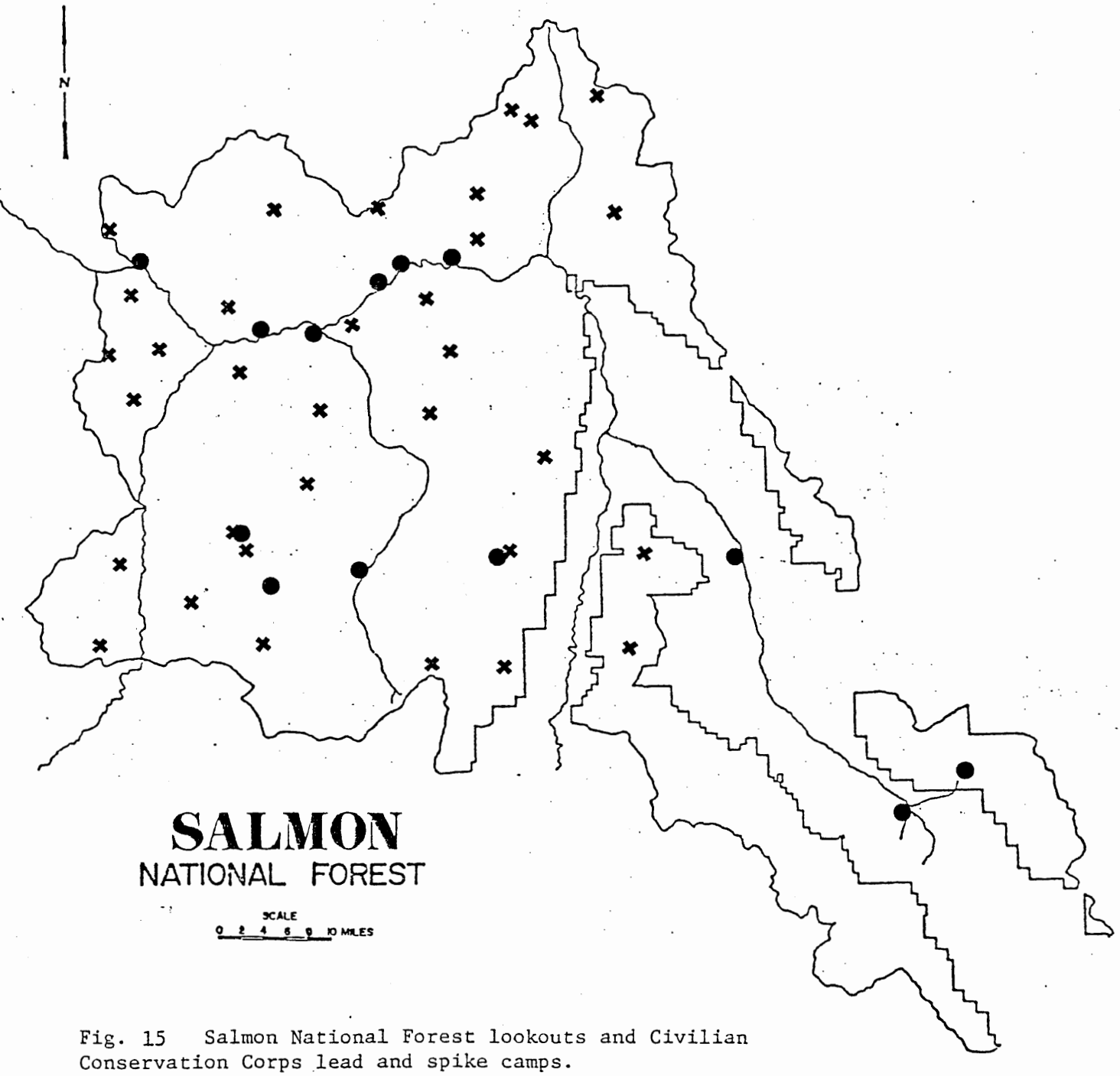


Fig. 15 Salmon National Forest lookouts and Civilian Conservation Corps lead and spike camps.

✖ fire lookouts

● Civilian Conservation Corps camps

Civilian Conservation Corps Camps

The Civilian Conservation Corps (CCC) constructed numerous improvements on the Salmon National Forest between 1933 and 1941 including structures at administrative sites, telephone lines, roads, and campgrounds. The young men were also involved in litter removal, landscaping, and fire fighting. Their activities are discussed in more detail elsewhere (Salmon National Forest 1936; Smith 1973:89-90).

Table 4 contains the names and types of CCC camps and the years they were occupied. (This information was taken from the "Civilian Conservation Corp" folder and other CCC folders in the 1680 file.) A lead camp was occupied by as many as 200 men at a time and served as a base of operations for that group. Semi-permanent structures were built at those camps. St. Clair (1936:3-4) describes the buildings at the Cove Creek camp.

> This new camp consists of the new type of knock-down construction, with four barracks 130 feet long, a mess hall 160 feet long, forestry barrack of 60 feet, educational hall, officer's quarters and the recreation hall 140 feet long. They also installed the water works, with 1200 feet of piped water line, two showers and a root cellar.

Spike or side camps were often established in the area of specific projects that required a small workforce. For example, 25 CCC men were sent to Hoodoo Meadows to build the landing field there. Some spike camps had semi-permanent structures and others consisted solely of tents; the camp near China Springs was one of the latter type.

When the CCC camps were abandoned in the late 1930's and early 1940's, the buildings were either torn down or sold and removed. Consequently, there are no standing CCC structures at the former camp sites. Other evidence of the CCC occupation sometimes remain, however. At Ebenezer Bar, the site of the Cove Creek camp (SL-309), there are several concrete platforms, man-made terraces, and stone walls. At Squaw Creek, all that remains of the spike camp is a stone chimney; the rest of the area has been bulldozed. A concrete foundation and oak water tank are present at the Forney lead camp. At Shoup, there is no recognizable evidence of CCC occupation. What remains of the CCC camps at the other locations is not documented.

Table 4. Civilian Conservation Corps Camps
On the
Salmon National Forest

Name Of Camp	Type Of Camp	Years Occupied 1/	Comments
Camp Salmon	?	1938-1942	Not on Forest
China Spring	Spike	1935	
Cove Creek - F-401 (Ebenezer Bar)	Lead	1935-1939	
Forney - F-167	Lead	?	
Hoodoo Meadows	Spike	1929,1935-1937	25-man
Horse Creek	Spike	1935	30-man
Leadore - G-95	Spike	1939-1941	50-man, not on Forest
Lick Creek	Spike	?	
McDonald?	Spike	1936	
Panther Creek - F-176	Lead	1935-1936	
Salt Creek	Spike	1939	
Shoup - F-103	Lead	?	
Spring Creek	Spike	1934	
Squaw Creek - F-92	Lead	1933	
Yellowjacket	Spike	1934	24-man

1/ Information on length of occupation is sketchy; camps were occupied in the years listed and possibly earlier and later.

Predicted Historic Archeological Site Density

Eight historic site types have been characterized in this overview. Extant archeological remains of those types vary from practically non-existent to common. Historic archeological sites are found throughout the Forest, but, from the previous discussion, seem to be concentrated in the northeast part of the Salmon National Forest.

Sites of explorers, trappers, and other early area visitors are probably very, very rare on the Salmon National Forest. None has been identified to date. If any occur, they are probably in the Salmon River Valley to North Fork and in the Lemhi River Valley at the lowest elevations on the Forest.

Evidence of historic mining on the Forest is common; a large percent of the identified historic residential sites appear to have functioned as miners' habitations. Mining sites should be concentrated in the Gibbonsville, Mackinaw, and Eureka mining districts. The Mineral Hill and Texas mining districts should have a slightly smaller concentration of mining sites. These sites will quite often be situated within 100m of roads.

Charcoal was apparently producted widely throughout the study area for use by blacksmiths. The distribution of charcoal production sites was a function of the distribution of sites of other types, such as mining, timber production, and ranching. Once the forms of the charcoal pits are recognized, they are easy to detect in the field.

Fig. 10 shows that historic sawmills were fairly widely distributed in the Salmon National Forest east of Panther Creek. It indicates that there was a minor concentration of mills in the North Fork District between Boulder Creek and the Continental Divide east of the North Fork River. However, the map is based on spotty information and so should not be interpreted as the "final word" on the general distribution of sawmill sites.

Railroad construction and maintenance sites on the Forest are probably confined primarily to Railroad Canyon (Canyon Creek). There are probably very few such sites, and those of only fair archeological visibility.

Historic ranching and farming sites are another fairly common site type on the Salmon National Forest. Ranch and farm headquarters were commonly established along major trails through the area and along the Salmon River and its largest tributaries including the Middle Fork, North Fork, and Panther Creek. The distribution of temporary cow and sheep camps was not examined in any detail in this overview; none have yet been positively identified on the Forest, although undoubtedly they exist.

Forest Service administrative sites are usually quite visible due to continuous occupation. They are widely distributed to allow personnel to travel with easy access to all parts of the Forest.

There are less than 15 known Civilian Conservation Corps lead and spike camps on the Salmon National Forest and their locations are identified in Fig. 15. While no structures remain at those sites, there is some archeological evidence such as concrete foundations or rock walls and walkways at most of them.

All of this historic site distribution and visibility information taken together indicates that archeological evidence for historic sites on the Salmon National Forest should occur in the greatest density in the northeast part of the Forest. Most of the sites should be located from Panther Creek to the east edge of the Forest, from as far north as the Continental Divide to as far south as Mocassin and Williams Creeks. Within that wide area, preferred specific locations are near roads and water sources.

NATIVE AMERICAN SITES

In addition to cultural resources of archeological, historical, and architectural significance, there are those that are valued by Native Americans because of their cultural and spiritual significance. The Forest Service must protect sites of Native American religious significance (American Indian Religious Freedom Act, P.L. 95-341) in much the same way that it must protect archeological sites.

Site protection obviously begins with identification of the resource. On the Salmon National Forest, no Native American religious sites have been positively identified, although only recently has the Forest made contact with the Shoshone-Bannock and Nez Perce tribes for this specific purpose.

The types of sites that might be identified by Native Americans as significant sites are burials; places where they visit as part of the process of spiritual cleansing, such as hot springs; and places where certain plants used for medicinal and religious purposes grow. These sites often represent a long tradition of religious practice and are integral to the present day religious systems of Native American groups.

These sites of special significance to Native Americans may not be recognized by non-Indian archeologists working on Salmon National Forest lands. For example, while there is no doubt a hot spring can be identified in the field, there would probably be no archeological (physical) evidence that a particular one was of Native American religious significance. Obviously, the Forest must depend heavily on the help of Shoshone-Bannock and Nez Perce tribal members for religious site identification to insure site protection.

Sites Listed on the National Register of Historic Places

Three sites on the Salmon National Forest are currently listed on the National Register of Historic Places. Lemhi Pass is the place where Lewis and Clark crossed the Continental Divide into what later became Idaho. The Shoup Rockshelters along the Salmon River are prehistoric sites at which the oldest levels date to 8000 BP. Leesburg is a historic mining town that marks the location of the first gold strike in Lemhi County.

A handful of other sites on the Forest have been evaluated for their significance. Those found significant are the prehistoric site at the Owl Creek boatramp (SL-40), Shoup schoolhouse (part of SL-105), Gibbonsville (SL-130), two historic miners' cabins near the Blackbird Mine (SL-229 and -230), Sagebrush Lookout (SL-277), Indianola Ranger Station/residence (part of SL-302), Long Tom outhouse (SL-310), and Oreana Lookout (SL-335).

The Advisory Council on Historic Preservation has identified criteria to be used in evaluation of sites possibly eligible for inclusion on the National Register. The sites must be associated with significant historic events or individuals, must be either unique or representative of a period or method of construction, or must yield or "be likely to yield information important in prehistory or history."

Based on the above criteria, prehistoric sites that might be judged eligible for nomination to the National Register would be pithouse villages; other sites that have remains of aboriginal structures such as wickiup frames; sites with camas roasting pits; sites with well-preserved fossil pollen, animal bones, datable tree parts, or sediments that might be used in detailed reconstructions of the area's paleoclimate; sites with preserved fish remains and aboriginal fishing equipment; bison kill and butchering sites; sites with well-preserved perishable materials that might include basketry, leatherwork, and twine; and those that contain materials that can be dated with absolute dating techniques such as charcoal for radiocarbon dating.

Historic sites possibly eligible for nomination to the National Register of Historic Places might include a charcoal production camp with charcoal pits and associated residences; parts of mountain communities that remain from the earliest occupations; structures that are distinctive architecturally, such as one which is double-walled; well-preserved, isolated mining cabins with associated trash dumps; any sites that could possibly be identified as the camps of the Lewis and Clark expedition or other early nineteenth century explorers or trappers; sites associated with ethnic minorities; the Gilmore and Pittsburg Railroad construction and maintenance camps; and Forest Service (especially Civilian Conservation Corps constructed) structures that are either unique or are well preserved examples of a certain type of Forest Service building.

These lists of prehistoric and historic sites are not meant to be comprehensive. The themes and research questions identified in previous portions of this overview give some idea of the breadth of site types

that might be protected as National Register properties because of the important roles the occupants played in the history of the area.

In addition to meeting the criteria mentioned above, significant sites should "possess integrity of location, design, setting, materials, workmanship, feeling, and association" (36CFR60). This means, for example, that a Forest Service ranger station, while perhaps one of the earliest on the Forest, would probably not be judged significant if it had been moved from its original location and remodeled extensively over the years to meet the changing needs of Forest personnel.

Current Management Situation and Effect on Resource

Several pieces of legislation and one executive order provide procedures for the protection of significant cultural resources on public lands or on lands that will be impacted as the result of federal actions of federally licensed projects. These include, but are not limited to, the 1906 Antiquities Act, National Historic Preservation Act of 1966, National Environmental Policy Act, E.O. 11593, Historical and Archaeological Data Preservation Act of 1974, American Indian Religious Freedom Act, and Archaeological Resources Protection Act of 1979, and Findings and Policy of National Historic Preservation Act. Summaries of these and other acts are available in the Forest Service Manual 2361 and so are not repeated here.

Realizing that site identification precedes both evaluation and protection, the Forest Service has instituted a policy of project-specific site survey. The project-by-project survey was also the Forest Service's response to the requirements of the National Environmental Policy Act.

The Forest Service practices custodial management of its cultural resources and avoids those sites encountered in project areas. In those cases where avoidance is not a viable alternative and the site in the impact area is found to be significant, site impact mitigation is planned and implemented under consultation with the State Historic Preservation Officer.

An estimated 5-10% of Salmon National Forest projects go unreported to the cultural resource coordinator each year. This percentage is decreasing as Forest personnel become more aware of their obligation to include a cultural resource assessment in their project evaluations to comply with legislation and Forest Service regulation. Unreported projects include small timber sales and short access roads.

As a result of this new awareness, the archeologist's workload has increased. The level of effort for archeological survey on the Salmon National Forest, however, has remained approximately the same for the past six years. Each summer one or two seasonal archeologists are hired for about four months each to conduct a complete or sample survey of all reported project areas. The Zone and Regional Archeologists have occasionally conducted surveys on the Salmon National Forest also. In 1982, five Forest employees received paraprofessional training and conducted surveys this 1982 field season.

A paraprofessional program can reduce the load on both seasonal and full-time professional archeologists. The peak archeological survey time, however, is also the peak of other workloads; then the paraprofessionals are often busy in their own professional work and can afford little time with archeological survey. Additional paraprofessionals may be required before the professional workload is significantly reduced.

Seasonal archeologists on the Salmon National Forest use the standard Intermountain Region site forms and project survey report forms to report their findings to pertinent project personnel, the Zone Archeologist, State Historic Preservation Officer, and the Regional Archeologist. This system has proved to be adequate for the needs of all concerned. Presently the Forest depends on the Zone Archeologist in Boise to review the archeological survey project reports before approving project continuance. If a project cannot be redesigned to avoid a site, the Zone Archeologist determines the significance of the site and prepares an impact mitigation plan for those significant sites that will be impacted with project construction. The seasonal archeologist offers opinions and suggestions about significance and mitigation at the request of the Zone Archeologist.

In addition to project surveys, the Forest has recently made some attempts to identify Native American religious sites. Coordination with the Nez Perce and Shoshone-Bannock Tribes should eventually result in the protection of those sites.

The Forest Service, in general, has focused on site identification rather than evaluation and protection. Sites found during project survey are avoided as conceivably they may be eligible for nomination to the National Register of Historic Places, but they remain unevaluated for at least two reasons. The seasonal archeologists who discover the sites and are the most familiar with them are not qualified to make determinations of eligibility. Second, they conduct project surveys throughout their period of employment and do not have the time to conduct archival, oral history, or archeological testing investigations that are often necessary to properly evaluate the significance of discovered sites.

Other than the measures of avoiding direct adverse impacts on Forest Service projects and maintaining site anonymity, the Forest has a limited program for protection of significant istes. The Forest's "benign neglect" may over time produce an adverse impact to cultural resources (36CFR800). It is an adverse impact that all Federal agencies must either mitigate through stabilization, excavation, patrolling, or other mitigative measures, or consult with the State Historic Preservation Officer and the Advisory Council on Historic Preservation if mitigation is not feasible.

Within Salmon National Forest boundaries Lemhi Pass, Leesburg, and the Shoup Rockshelter are currently listed on the National Register of Historic Places. In addition, the Lemhi Pass National Register district lies within a slightly larger Sacajewea Historic Area which has been

withdrawn from mineral location. One other area, the Chief Joseph Historical Trail Sites, is afforded limited protection, having been withdrawn from mineral location also.

Most (97%) of the recorded sites have not been evaluated for their significance. However, nine sites other than those presently on the National Register have been found significant. At this time, one (SL-130) is being nominated to the National Register; impacts at two (SL-229 and -230) will be mitigated by excavation prior to project construction; one (SL-40) is in the condition of benign neglect; and the other five (SL-105, -277, -302, -310, and -335) are within the River of No Return Wilderness and recommendations have been made to rehabilitate, maintain, or restore them.

Because site inventory and evaluation are not complete on the Salmon National Forest, vandalism is a more serious problem on the Forest than often thought. To be sure, the vandalism, including illegal collection of archeological artifacts, has not reached the proportion of that in the American Southwest. The occasional projectile point or grinding stone at Salmon National Forest prehistoric sites does not hold the romantic or monetary appeal that pottery or baskets do. However, rock art, standing historic structures, and rockshelters have been vandalized considerably, primarily due to their high visibility. In the past, Forest visitors have defaced rock art panels, stripped structures for decorative "barn wood", and excavated rockshelters for basketry fragments and stone tools. Because most of these sites have never been inventoried, evidence of prehistoric and historic occupations may be completely lost.

The Salmon National Forest has made few attempts to protect high visibility, endangered cultural resources. The map of the River-of-No-Return Wilderness includes a note reminding visitors that damaging or removing artifacts is a crime. Signs at the Shoup Rockshelters remind visitors that the pictographs are there for everyone to enjoy. On the other hand, there is neither identification nor Forest patrol of highly vandalized sites on the Salmon National Forest.

Project Survey Systems and Site Records

At present, there is short lead time between archeological survey and project construction. In many cases this is unavoidable. For example, timber cutting units are marked shortly before the sale date, leaving the archeologist only a short time between project layout and project commencement. Also, archeologists must wait for snow to melt off the ground surface before a survey can be done, while some project construction can begin before the snow has melted. Small projects do not require lengthy planning or can be and are easily modified at the last minute, giving the archeologist a short response time.

Currently, the methods used to discover archeological sites in project areas include looking at the historic General Land Office maps of the area and complete ground surface survey. It is possible that such methods are inadequate to locate archeological sites that may be impacted

by the proposed project. A review of reported ground visibility for project areas investigated in the past reveals that ground visibility averages 25%. Where there is thick grass or duff or heavy sedimentation, it is virtually impossible to locate prehistoric lithic scatters and some deteriorated, small historic sites.

The site record files are presently in poor condition either because of missing or duplicate data. Not all known sites on lands administered by the Salmon National Forest, have Salmon National Forest site numbers; pertinent site forms are not available on the Forest at this time. Consequently, the sites cannot be included in summaries of known cultural resources managed by the Forest. Duplicate site numbers is another inadequacy of the files.

Because of the present state of the files, the total number of recorded sites on the Forest can only be estimated. Less than 300 sites have been found and recorded on site forms. Present knowledge about those sites is also only fair. Site records have varied considerably with the project and over time, so that for only about 25% of the sites recorded on the Salmon National Forest do we have good information. For the other 75%, location and possible site function is the only information consistently available. Effective management of archeological sites with such limited data is extremely difficult.

Within the past few years, the Forest has begun to keep an atlas of all areas surveyed and all site locations. The seasonal archeologists can consult the atlas to determine if there have been previous archeological surveys in or near the project area; it allows him to check on the condition of sites in or near the project; it may eliminate the need for a new survey in that area if it has already been completely surveyed; it reduces the problem of duplicate site numbers for a single site (a problem which inflates estimates of site frequency and density); it gives an idea of the progress made toward a complete inventory of all cultural resources; and it might be used to identify areas that are in need of inventory for research needs. At this time, the Salmon National Forest site atlas is not up to date; sites not plotted include most of those recorded by Harrison (1972) and Dahlstrom (1972), about half of those recorded by the River-of-No-Return Wilderness Planning Team, and all those historic sites reported as part of a 1972 National Register site identification program initiated by the Regional Office. As it now stands, the archeologists cannot depend on the atlas to serve any of the functions listed above.

A cultural resources management library on each Forest should contain literature to aid seasonal archeologists and paraprofessionals in site function and age identification and significance evaluation. The library on the Salmon National Forest has some good reference material on central and eastern Idaho prehistory and local history; it is weak, however, in artifact identification, especially for historic artifacts.

Using archeological site location predictions included in this overview and other resource distribution data, one could identify high resource

conflict areas. Suspected high conflict areas require more effort by the archeologist in site recording, and by the project developers who will have to redesign projects to avoid sites or allow sufficient lead time to permit mitigation of unavoidable impacts.

Future Management With No Change In Current Effort

If the level of effort to manage cultural resources is maintained as it currently stands, the result will be increased deterioration of the non-renewable resource. This would be due to at least two factors: (1) increased resource conflict, and (2) increased vandalism and unintentional site destruction due to expected higher visitor use. In addition, current sources of significant resource loss such as natural deterioration will continue. Project surveys and impact avoidance on many projects, however, will continue to protect many sites.

Mineral and recreational development on the Salmon National Forest is expected to accelerate in the next twenty years. Considering that at the present time the one or two seasonal archeologists hired each summer cannot review all the reported ground-disturbing projects (not to mention those which still go unreported annually), it will be impossible to conduct the required additional surveys at the present level of effort. Even with the aid of qualified paraprofessionals, the surveys cannot be completed, because paraprofessional help is limited during the summer -- the peak of the archeological field season.

Also at the current level of effort, site vandalism and unintentional damage would probably destroy increasing numbers of both prehistoric and historic sites. As more Forest visitors are attracted to the area to boat, fish, hunt, and camp, preferred camps which were often preferred areas for prehistoric and historic occupation experience more use. This use can damage fragile cultural resources. Sites may be damaged by trampling, camper building campfires using rocks from tipi rings or historic structures foundations, or campers digging trenches around their tents. In addition, many surface artifacts are lost to casual collectors who happen to come across prehistoric stone tools or historic bottles. Finally, malicious destruction of archeological and historical sites of the type described previously usually occurs with increased visitor use.

Several recorded sites on the Salmon National Forest are rapidly deteriorating due primarily to the forces of nature. This situation is particularly noticeable at historic sites with standing architecture, but also is present at prehistoric sites on stream terraces. Historic sites are often damaged by heavy snowfall. This often slow, but constant, deterioration will continue to eliminate potentially significant sites from the Forest inventory. Along the Salmon River between North Fork and Horse Creek, some prehistoric sites continue to erode during each spring flood because they lie at the river's high water line.

Many sites will be protected from destruction during planned future Forest Service project development by project redesign and impact avoidance. The Forest has demonstrated a fairly strong commitment to this type of site protection both in the past and for the future.

Future Management With Increased Level of Effort

An increased level of effort in Salmon National Forest cultural resource management would accomplish a number of needed site protection and resource enhancement measures. Primarily, it would mean development of a program that would include active and aggressive management of the resource; the program would no longer serve only as a support service to other Forest activities. As always, high priority should be given to project-specific surveys. Site protection from vandalism and unintentional damage should also have high priority. Program enhancement by developing programs for 1) site interpretation, 2) public education, 3) site inventory, 4) oral history collection, 5) Native American religious site protection, 6) additonal National Register nominations, 7) stabilization of naturally deteriorating historic and prehistoric sites, 8) project monitoring, 9) "non-site" subsurface testing, and 10) scientific research would also be important goals with an increased level of effort. All of these goals would require personnel support and funding above the current level. In some instances, other financial support would also be necessary.

In the past, the Salmon National Forest has seriously attempted to provide for archeological survey of most proposed project areas. The hiring of at least two seasonal archeologists (or equivalent personnel) per year is necessary to continue complete project survey.

Several measures can be initiated in an attempt to reduce vandalism and unintentional site damage. Perhaps the most effective way to approach the problem is through public education (Hatoff 1981:36; Knudson et al. 1981:137; Pilles 1981). As more people become aware that vandalism and other deliberate site destruction is a crime because the vandal has deprived both scientists and the public access to the information about culturally significant past life-ways, the public becomes more interested in actively preserving cultural resources.

Interpretative programs can include brochures or even small books about Forest cultural resources and their local and regional significance, signs at highly visible sites summarizing the history or prehistory of the sites, and traveling displays of collected and excavated artifacts that might be exhibited at the Supervisor's Office, District offices, Lemhi County Historical Museum, Salmon Chamber of Commerce, Fort Hall Indian Reservation, and local businesses. Educational aids besides those mentioned above might include slide shows explaining both the character and the protection of the fragile resource, newspaper articles about ongoing projects (such as those recently written about archeology in the River-of-No-Return Wilderness), and short tours to interested groups such as school children, fraternal organizations, and the Lemhi County Historical Society. Interpretation might also be provided to the public indirectly through individuals such as commercial outfitter and float-boat operators. These private parties could assist in public interpretation, education, and cultural resource preservation with information provided by the Salmon National Forest (Price 1982).

Interpretative and educational programs may have to be supplemented by regular Forest patrol of high visibility sites that are susceptible to vandalism. McDonald (1982:VI.41) suggests awareness training for Forest patrol officers. Posting signs explaining the 1906 Antiquities Act and 1979 Archaeological Resources Protection Act at trailheads and boat launch sites will serve to remind Forest visitors that vandalism and pothunting (illegal excavation of archeological materials) destroy a public, non-renewable resource and are crimes punishable in criminal and civil courts.

To initiate most of the above measures, the Forest will have to provide personnel support beyond that currently provided. At the minimum a WAE employee (full-time for 6 months or more) would have to be hired to insure continuity in the program. The WAE archeologist might take the place of one of the seasonal archeologists required for project specific surveys during the summer months while working on interpretive and educational programs during the off-season. Other Forest Service employees could easily aid in the program, along the same lines that they currently do. For example, the public information officer at the Supervisor's Office would be invaluable in such a program. Having made a commitment to identification and preservation of cultural resources, paraprofessionals might also provide necessary help during the off-season to educate the public about archeology. Finally, as with all phases of cultural resources identification and protection, the interpretative and educational programs could make use of volunteers through the Student Conservation Association (SCA), Volunteers in Service to America (VISTA), and Forest Volunteers program. Applications for volunteer archeological work can be solicited from universities, colleges, high schools, historical and amateur archeological societies, and local residents.

Presently funds to support archeological survey on Forest Service projects come almost entirely from the Fire Control, Recreation, and Lands Branch's budget. An alternative funding scheme would require financial support from the branch or district that initiates the ground-disturbing project. For example, the Range Branch would finance archeological survey at spring development projects and the Timber Branch at timber sales. This system would provide support for an enhanced cultural resource management program without imposing excessive budget restrictions on Recreation (Price 1982).

By 1985 the Salmon National Forest cultural resource management program should be well on its way to strong management, interpretation, and scientific research. The program should include, in addition to the projects and personnel discussed above, active progress on a complete inventory of significant sites, a moderate oral history collection project developed in conjunction with Lemhi County and Idaho State Historical Society projects, continuous nomination of historically and scientifically significant sites to the National Register of Historic Places, periodic training sessions for paraprofessionals, limited maintenance of vandalized and naturally deteriorating sites, limited project monitoring, moderate "non-site" subsurface testing, and limited archeological excavation and past environment reconstruction.

Current Forest Service management direction calls for a complete site inventory by 1990. This target date is unreasonable and cannot possibly be met without at least a 50-fold increase in effort. Nevertheless, such a site inventory is a goal definitely worth pursuing. The more well-known the cultural resource data base, the better able the archeologist is to manage the resource. Site distribution and potential significance can better be assessed with a more complete inventory than is presently available. A more reasonable target for the Salmon National Forest is a survey of a statistically valid sample of Salmon National Forest administered lands completed by the year 2000. Such a sample can provide at least three types of information about Forest cultural resources: (1) distribution of sites in various topographic and environmental settings, (2) range of site and feature types, and (3) site, and presumably population, density over several prehistoric and historic periods. This data, in turn, can serve as background data for site significance evaluation. For example, by determining the range of site types in the Forest and frequency per type, rare site types can be identified as significant based on limited availability for research and interpretation. McDonald (1982:VI.6-12) has identified some factors he suggests the Targhee National Forest should consider in selection of a sample of Forest lands for archeological survey. The Salmon National Forest might also consider those suggestions.

As a less-desirable alternative to a statistical sample of Forest lands, site inventory in areas where few or no Forest Service or scientific archaeological projects have been conducted is worth considering. Surveyed project areas dot the Forest with a few major exceptions. Areas with little or no survey are the west slope of the Lemhi Mountains in the Salmon and Leadore Districts, the area between Waugh Ridge and Owl Creek north of Beartrap Spring in the North Fork District, and parts of the Cobalt District west of tributaries that drain east into Panther Creek (excluding the Middle Fork River corridor) and east of Panther Creek to the Salmon River Mountain Road between the Moccasin Creek Road on the north and the Challis National Forest on the south (Fig. 15). With the exception of parts of the Camas Creek Drainage, most of this little-surveyed area is in uplands above the Salmon and Middle Fork Rivers and Panther Creek.

Oral history collection on the Salmon National Forest would involve interviewing early Forest inhabitants, users, and employees to gain insightful information about historic events in the study area. The informants' accounts can be used to enhance interpretive and educational programs, and perhaps more importantly to identify function, age, and potential significance of historic sites, especially those with standing structures. Some researchers have already demonstrated its value in conjunction with historical archeological research (Adkins 1981; Buckles 1981).

Conceivably, the Salmon National Forest oral history project could involve a wide range of Forest Service personnel, especially at the district level. The program is best conducted during the winter months when Forest Service employees have lighter workloads and interviewees

are also less likely to be busy with ranching, shopkeeping, or other work. Paraprofessionals might be particularly interested in an oral history project, but others can also become involved. For example, minerals specialists might be the most appropriate people to conduct interviews with old miners, given the proper training. The Forest Service could become actively involved in community-organized oral history projects and develop research questions which are specifically of use to the Salmon National Forest. Project organized along these lines can be a cost effective means to determine the significance of historic sites and so better manage that portion of the resource.

The Forest Service is mandated by the National Historic Preservation Act of 1966 and its amendments passed in 1980 to nominate historically and scientifically significant sites to the National Register of Historic Places. As the site inventory continues, we can expect that several significant sites will be found. The Salmon National Forest should become actively involved in site or district nomination; at present the Idaho State Historic Preservation Office handles most nominations almost exclusively and has been very slow in completing those nominations.

Forest Service personnel receive one week of archeological training when they begin the paraprofessional archeology program. During that time they learn very basic information, such as what legislation and regulations protect archeological sites from damage on Forest Service property, how prehistoric sites appear on the ground surface, and how to fill out site and project survey report forms. The trainees learn little about the site types and archeological file organization on their own Districts or Forests. Unless they have an outside interest in prehistoric and historic artifacts, the paraprofessionals are not very knowledgeable about the functions or ages of a wide variety of artifacts. These limitations can make their reports less polished than they could be.

The Salmon National Forest could better prepare its paraprofessionals by instituting periodic in-Forest training sessions, perhaps with the assistance of the Zone and Regional Archeologists (Price 1982). These sessions might include ones on: recording historic architecture, identifying the ages of diagnostic projective points, recognizing the process of lithic tool manufacture and the resulting lithic debitage, and dating commonly-found historic artifacts.

Perhaps one of the more difficult required tasks - difficult due to limited funding - will be maintenance of significant sites that are being vandalized or are naturally deteriorating. It is not expected that the Salmon National Forest will ever be in a position to stabilize and reconstruct <u>all</u> damaged significant sites. However, by the year 2000 the Forest should be well on its way to limited, yet active, maintenance of significant sites. Actions might include new roofing and wall supports on historic structures, fencing around sites subject to livestock trampling, and rodent control at prehistoric sites (McDonald 1982:VI.31). Other maintenance suggestions are cited in McDonald (1982) and Knudson et al.(1981:137).

Project monitoring and "non-site" subsurface testing are two related activities that deserve some attention in the Salmon National Forest cultural resource management program within the next 20 years. Project monitoring involves the review of project areas after project completion to verify the use of site avoidance measures (McDonald 1982:VI.33) and to determine if there are sites in the project area that went unrecorded and unprotected due to poor ground visibility or adequate archeological survey techniques. What I call "non-site" subsurface testing is subsurface excavation in areas where there is no surface evidence of archaeological sites, but where intuitively the archeologist would expect to find a site. Lack of surface evidence may be due to heavy sedimentation or poor ground visibility. Subsurface testing, by discovering sites not normally found in archeological survey, could help protect sites that might be damaged by deep ground disturbance. Project monitoring could provide information about where "non-site" subsurface testing in various project areas is most likely to find buried sites.

Along these lines, it is important to remember that the Forest Service is required by law to follow established procedures concerning the protection of significant sites from project impacts. The fact that sites are buried does not make them exempt from that requirement. In fact, buried sites often have much greater significance than shallow, surficial sites; consequently, there should be a greater effort to identify and preserve those subsurface sites.

Archeological site excavation and past environment reconstruction for scientific purposes should be supported to a limited degree throughout the coming years. Support can be in the form of: contributing Forest Service personnel to participate in short-term excavations such as those presently being conducted on Waterfall Creek (Wylie et al. 1981); financial and logistical cooperation with state and federal agencies and granting agencies to develop projects (Pilles 1981); logistical support for archeological field schools, and perhaps support from the Intermountain Range and Experiment Station or the Regional Office for research on past environments (Mehringer et al. 1977).

In addition to these, the development of an interpretive and educational program can return to the public part of their investment by letting them observe and enjoy the knowledge and artifacts recovered.

These suggested cultural resource management and research development programs can be developed gradually over the coming years. One phase--increasing effort on project-specific archeological surveys--must be implemented immediately. Site protection against vandalism is another concern that definitely must be addressed within the next five years. The other programs will take longer to develop, but substantial improvement in these areas should be made within the next twenty years. To coordinate a total cultural resource management program of this scale, a permanent full-time archeologist would be required, and assistance by seasonal archeologists, paraprofessionals, and volunteers would be a necessity.

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1959 Archaeological explorations in central and south Idaho - 1958. I-Types and distributions of site features and stone tools. Occasional Papers of the Idaho State College Museum No. 2.

*Swanson, Earl H., Jr., and Paul G. Sneed
1966 Birch Creek Papers No. 3: the archaeology of the Shoup Rockshelters in east central Idaho. Occasional Papers of the Idaho State University Museum No. 17.

*Swanson, Earl H., Jr., and Paul G. Sneed
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*Wright, Gary A., Susan Bender, and Stuart Reeve
1980 High country adaptations. Plains Anthropologist 25(89):181-197.

*Wylie, Jerry, Tom Scott, and Joe Gallagher
1981 Test excavations in the River of No Return Wilderness: preliminary report on Waterfall Village and Big Creek Cave. Ms. on file, Salmon National Forest Supervisor's Office, Salmon.

Appendix I
Summary of Previous Investigations*

Name of Investigator: Keo Boreson

Date of Research: 1974

Objectives of Research: To locate rock art sites on the Middle Fork and Main Salmon Rivers.

Research Techniques: None specified. Presumably a boat-supported examination of "likely places" or previously recorded sites.

Research Results: Located 21 rock art sites: 10-VY-81, 87, 11, 89, 90, and 86; 10-LH-303, 304, 189, 40, 185, 223, and 224; and 10-LH-462 on the Middle Fork and 10-LH-21 plus six others on the Main Salmon. Nine other rock art sites on the Salmon National Forest that Boreson mentioned but did not visit or could not find are 10-LH-294, 295, 158, and 22(?), plus five sites apparently unnumbered.

Location and Nature of Collection and Reports: Site forms are filed at Idaho State Historical Society, Boise. No report as such was prepared; data are included in the following reports:

Boreson, Keo
1976 Rock art of the Pacific Northwest. Northwest Anthropological Research Notes 10(1):90-146.

1980 Draft "Overview of the petroglyphs and pictographs in Idaho."

Pavesic, Max
1978 Archaeological overview of the Middle Fork of the Salmon River Corridor, Idaho Primitive Area. Boise State University Archaeological Reports No. 3.

Name of Investigator: Max Dahlstrom

Date of Research: summer, 1972

Objectives of Research: To locate prehistoric archeological sites within the Idaho Primitive Area, and develop a baseline inventory for further planning. Conducted under a Memorandum of Understanding with Region 4, U.S.D.S. - Forest Service.

Research Techniques: Pedestrian survey along big Creek Drainage and selected trails north and east of Big Creek, incldung some areas along the Middle Fork and in Bighorn Crags. fifty-six artifacts and 1009 pieces of debitage were collected.

* Some of these summaries are taken directly from Wildeson (1981) or have only been slightly modified to detail information specifically about the Salmon National Forest. They are Boreson 1974, Dahlstrom 1972, Gaarder 1965 and 1967, Harrison 1971, Swanson and Rice 1958, Swanson and crew 1960's, and Wylie et al. 1981.

Research Results: Located 66 (or 70) previousl unrecorded archeological sites, including camps, pictographs, villages, rockshelters, caves hunting blinds, a kill site, and a possible vision quest site. Most site were found in the Big Creek and Middle Fork canyons. Twenty-five of the sites were recorded in the Salmon National Forest. Sites are inferred to be recent on the basis of a single Desert-side-notched projectile point found.

Location and Nature of Collections and Reports: Cultural materials collected are at Idaho State University Museum, catalogued under numbers 1637-1 through 1637-65. Site forms also are on file there and at the Salmon National Forest Supervisor's Office, Salmon. An unpublished report was prepared, and a copy is on file at the Forest Service Zone Office, Boise, and the Salmon National Forest Supervisor's Office, Salmon.

Dahlstrom, Max
1972 Results of Archaeological Reconnaissance of the Idaho Primitive Area, 1971.

Name of Investigator: Lorin Gaarder

Date of Research: 1965

Objectives of Research: To test excavate potential housepits at Corn Creek Campground, on the Main Salmon River, to determine whether they were really housepits. Source of project support unspecified, but presumably Forest Service funds or other assistance were received.

Research Techniques: Unspecified.

Research Results: Housepits were determined to be present.

Location and Nature of Collections and Reports: No data for the location of any collections, photographs, or field notes is given; such items may be stored at the Idaho State University Museum, Pocatello. No report as such was prepared; the work is mentioned in another (unpublished) report, on file at the Salmon National Forest Supervisor's Office, Salmon.

Gaarder, Lorin C.
1967 A Report of Test Excavations on Cunningham Bar (10-LH-125), Salmon National Forest, 1967.

Name of Investigator: Lorin Gaarder

Date of Research: 1967

Objectives of Research: To test excavate potential housepit site on Cunningham Bar, across from Corn Creek Campground on the Main Salmon River. Supported by Forest Service contract.

Resarch Techniques: Four test pits excavated; arbitrary levels used, rudimentary stratigraphic analysis conducted.

Research Results: Cultural materials were recovered from all four test pits; at least one housepit was determined to be present. No diagnostic artifacts were recovered.

Location and Nature of Collections and Reports: No location for collected materials, field notes or photographs is given; presumably these items are stored at the Idaho State University Museum, Pocatello. An unpublished report was prepared, and is on file at the Salmon National Forest Supervisor's Office, Salmon.

Gaarder, Lorin C.
1967 A Report of Test Excavation on Cunningham Bar (10-LH-125), Salmon National Forest, 1967.

Name of Investigator: Richard Harrison

Date of Research: 1970, 1971

Objectives of Research: To locate prehistoric archeological sites on both banks of the Main Salmon River from North Fork to Long Tom Bar, and to test various survey methods. Conducted as a Master's thesis project for Idaho State University.

Research Techniques: Pedestrian survey, collection of artifacts and lithic debitage. Aerial photographs were used along with river and topographic maps to locate sites. Artifact analysis attempted to distinguish "zones" of site density and use.

Research Results: About 300 archeological sites were recorded, including 27 recorded by Swanson in 1958. About 75 of those were on lands administered by the Salmon National Forest. Site types included villages, camps, caves/rockshelters, pictographs, burials, and other." Cultural materials collected included "as many artifacts as could be found" at each site. Some sites were mapped. Lithic material recovered included obsidian, chalcedony, and basalt. One potsherd was found across from California Creek, at Site 10-LH-339. Tool types noted or collected included projectile points, grinding stone, cores and drills.

Location and Nature of Collections and Reports: Collected materials, maps, site forms, and photographs are located at Idaho State University, Pocatello. Two unpublished reports resulted from this work:

Harrison, Richard
1927a The Final Report of the 1971 Salmon River Archaeological Survey. Copy of file at the Salmon National Forest Supervisor's Office, Salmon.

1927b The Inventory Survey in Modern Archaeology. Master's thesis, Idaho Stae University, Pocatello.

Name of Investigators: Chester King and James Chatters

Date of Research: 1966

Objectives of Research: To inventory archeological sites in the Salmon, Pahsimeroi, and Lemhi River valleys that were on Bureau of Land Management property in the Salmon District.

Research Techniques: To find as many sites as possible in a short time, the field crew confined most of their surveying to places along main roads and drainages and at springs.

Research Results: Although the stated objectives of the project were to locate and record sites on BLM lands, 1 site (lithic scatter) on the Salmon National Forest was also reported.

Location and Nature of Collections and Reports: The site form for the site on the Salmon Forest is on file at the Salmon National Forest Supervisor's Office, Salmon. Apparently no separate report on King's and Chatter's survey was completed, but the results of that survey and others in the BLM Salmon District were published:

Swanson, Earl H., Jr., Chester King, and James Chatters
1969 A settlement pattern in the foothills of east-central Idaho. Tebiwa 12(1):31-38

Name of Investigator: Mary P. Rossillon

Date of Research: 1978-1980

Objectives of Research: To compile an overview of the history of the Middle Fork Salmon River drainage basin.

Research Results: Particular attention was paid to the material remains and possible site locations of historic occupations. Rossillon included a simple model for predicting nineteenth century ranching site locations.

Location of Report: The overview is on file at the Salmon National Forest Supervisor's Office, Salmon:

Rossillon, Mary P.
1981 An overview of history in the drainage basin of the Middle Fork of the Salmon River. U.S.D.A Forest Service Intermountain Region Cultural Resource Report No. 6.

Names of Investigators: Seasonal Forest Service archeologists, Zone archeologist, and paraprofessionals.

Dates of Research: 1976 to present

Objectives of Research: In-house Forest Service survey of various project areas on the Salmon National Forest to locate cultural resources that might be impacted. Projects include timber sales, spring and other water development, campground development, roads, administrative site modifications, and mineral claim work.

Research Techniques: Pedestrian survey and, rarely, subsurface testing.

Research Results: Between 50 and 60 sites have been recorded.

Location and Nature of Collections and Reports: The few diagnostic artifacts that were collected are curated at the U.S. Forest Service Region 4 Office, Ogden, Utah. Site forms are on file at the Salmon National Forest Supervisor's Office, Salmon. No comprehensive report on the surveys has been written.

Name of Investigator: Elizabeth Smith

Date of Research: 1969

Objectives of Research: To record the history of the Salmon National Forest and those early historic events that transpired in the area which, in part, led to the creation of the National Forest.

Location of Report: The history is on file at the Salmon National Forest Supervisor's Office, Salmon:

Smith, Elizabeth
1973 A History of the Salmon National Forest. Salmon National Forest, Salmon.

Names of Investigators: Earl H. Swanson, Jr., Alan L. Bryan, and Donald R. Tuohy

Date of Research: 1958

Objectives of Research: To locate archeological sites along the Snake River and Salmon River where plans were being made to construct reservoirs. Adjacent areas were occasionally surveyed.

Research Techniques: Unspecified.

Research Results: Approximately 650 sites were found, four of which lie within the Salmon National Forest on the east side of Lemhi Valley. Three were rockshelters and one was a lithic scatter. (Three possible rockshelters were later found in close proximity to the lithic scatter.)

Locations and Nature of Collections and Reports: Site forms for those sites found on the Salmon National Forest are on file at the Salmon National Forest Supervisor's Office, Salmon. Results of the entire survey were published:

Swanson, Earl H., Jr., Donald R. Tuohy, and Alan L. Bryan
1959 Archeological exploration in central and south Idaho--1958. I--Types and distributions of site featurs and stone tools. Occasional Papers of the Idaho State College Museum No. 2.

Names of Investigators: Earl H. Swanson, Jr., and crew.

Date of Research: mid-1960's

Objectives of Research: To "test ideas about Northern Shoshoni prehistory" by investigating two rockshelters near Shoup, Idaho. Funded by Salmon National Forest as part of survey/salvage work related to construction of a road between Pine and Panther Creeks, on the south side of the Main Salmon River.

Research Techniques: Stratigraphic excavation, sediment analysis, and artifact analysis of recovered materials.

Research Results: Both a cultural and a natural chronological sequence were inferred from sediments and cultural materials in site A (10-LH-23) and B (10-LH-63); main use during Bitterroot Phase; diversified subsistence base; chalcedony main lithic material. Work at these sites formed the basis for Swanson's inference that the Shoshoni had a long time depth in eastern Idaho; human populations from Shoup are inferred to be similar to those in Birch Creek. Over 160 projectile points were recovered, 70% of which are of the Bitterroot side-notch type.

These sites now are listed on the National Register of Historic Places.

Location and Nature of Collection and Reports: Collections and field notes presumably are at the Idaho State University Museum, Pocatello. Published reports that include Shoup data are:

Swanson, Earl H. Jr.
1972 Birch Creek: Human Ecology in the Cool Desert of the Northern Rocky Mountains, 9000 B.C.-A.D. 1850. Idaho State University Press, Pocatello.

Swanson, Earl H. Jr. and Paul Sneed
1966 Birch Creek Papers No 3: The Archaeology of the Shoup Rockshelters in East Central Idaho. Occasional Papers of the Idaho State University Museum No. 17.

Name of Investigators: Various district offices personnel

Date of Research: 1972

Objectivs of Reserach: To identify historic sites that might be eligible for nomination to the National Register of Historic Places.

Research Techniques: District employees were asked to record historic sites that they might have encountered during their fieldwork.

Research Results: Forty-two sites were reported, several of which are situated on private parcels within National Forest boundaries. No attempt was made to verify the condition of the resource.

Location of Reports: No report was written, but individual site forms are on file at the Salmon National Forest Supervisor's Office, Salmon.

Names of Investigators: Jerry Wylie, Tom Scott, and others.

Dates of Research: 1979-1981

Objectives of Research: The Forest transferred 18 acres at Gibbonsville to private ownership. Wylie and crew evaluated the impact that action would have on historic resources there.

Research Results: A total of 54 features were defined, but none were found significant due to recent modifications, absence of structural features at depressions suspected of being cellars, and disturbance at trash deposits.

Locations and Nature of Collections and Reports: Artifacts, research and field notes are on file at the U.S. Forest Service Regional Office, Ogden, Utah. An unpublished final report is available at the Salmon National Forest Supervisor's Office, Salmon:

Wylie, Jerry, and Tom Scott
1981 Cultural resource evaluation of lower Gibbonsville Townsite, Idaho, final report.

Name of Investigators: Jerry Wylie, Tom Scott, Joe Gallagher and crew.

Dates of Research: September, 1981.

Objectives of Research: To test excavate two archeologial sites to obtain subsurface data needed for planning, ascertain the research values of the sites, generate further testable hypotheses, and collect information on logistical problems expected to affect future similar projects.

Research Techniques: Excavation by 10 cm arbitrary levels, screening through 1/4" mesh; pollen and charcoal samples were collected from one site, charcoal samples from the other.

Research Results: Site 10-VY-67, Big Creek Cave, was shown to have over a meter of dry deposits containing cultural materials (the bottom was not reached): about 50 dignostic projectile points, and faunal and vegetable materials were recovered. The open site at Waterfall Creek (Forest Service #SL-267) was shown to have at least one housepit (tested),

with at least two phases of occupation; the bottom was not reached here either. At least 13 diagonostic projectile points, along with other tools and faunal materials were recovered from the "village" site. No laboratory analysis of cultural or natural materials has yet been reported.

Location and Nature of Collections and Reports: Recovered cultural materials and sediment samples are curated at the U.S. Forest Service Regional Office, Ogden, Utah. An unpublished preliminary report is on file at the Salmon National Forest Supervisor's Office, Salmon.

Wylie, Jerry, Tom Scott, and Joe Gallagher
1981 Test Excavation in the River-of-No-Return Wilderness: Preliminary Report on Waterfall Village and Big Creek Cave.

Name of Investigator: Leslie E. Wildeson

Date of Research: 1981

Objectives of Research: To compile an overview of archeological and historical research in the area recently designated "River-of-No-Return Wilderness" to aid in developing a management plan for the wilderness.

Research Techniques: Wildeson reviewed "published and unpublished scholarly reports; Government documents; historic and contemporary maps", and she consulted with cultural resource specialists who have research and management expertise in central Idaho.

Research Results: The author found that there are over 1000 known archeological and historical sites in the Wilderness area, many of which can yield important information about settlement, resource exploitation, transportation, and inter-cultural contact. She made three major recommendations that the Forest Service 1) fill the gaps in present knowledge about time depth, cultural affiliation, and function of prehistoric sites and condition class and history of historic sites; 2) address such topics as prehistoric adaptions to high elevation environments, the location of ethnic boundaries in time and space, and the impact of historic external policies on the internal affairs of the area, and 3) protection of significant resources against vandalism and natural deterioration.

Locations and Natureof Collections and Reports: The final report is on file at the Salmon National Forest Supervisor's Office, Salmon:

Wildeson, Leslie E.
1981 The farthest frontier of all: a cultural resource overview of the River-of-No-Return Wilderness, the Salmon Wild and Scenic River, and the Wild and Scenic Middle Fork of the Salmon River. Wildeson Associates Professional Paper 81-10, Portland.

Selective annotated bibliography of Salmon area histories

*Brown, Col. W. C.
1926 The Sheepeater Campaign, Idaho - 1879. Reprinted in 1971 by Shorey Book Store.
This is an account of the 1879 military campaign to capture a small band of Sheepeater Indians in central Idaho. Most of the action took place south and west of what is now the Salmon National Forest.

Carrey, Johnny, and Cort Conley
1977 The Middle Fork and the Sheepeater War. Backeddy Books, Riggins, Idaho.
This is a popularized account of the history of occupation along the Middle Fork of the Salmon River, focusing on physical remains of early occupations. The authors depended heavily on the first author's personal knowledge and, apparently, some other oral history accounts.

1978 River of No Return. Backeddy books, Cambridge, Idaho.
This is the same type of book as Carrey and Conley's The Middle Fork and the Sheepeater War. The Salmon River from North Fork to the Snake River is covered in more detail than the upper Salmon River.

*Heidt, Lena Dellen
n.d. The Ghost Town That Will Not Die. Published by the author.
The book contains a short history of Gibbonsville by a twentieth century resident. Several photographs are included.

*Mulkey, Selway Lysle
1970 Place Names of Lemhi County, Idaho. Unpublished master's thesis, Department of English, University of Idaho.
The thesis discusses the locations and origins of the names of creeks, mountains, and other land features throught Lemhi County.

Oberg, Pearl M.
1970 Between These Mountains. Exposition Press, New York.
This hisory of the upper Lemhi and Birch Creek valleys is very informative about turn-of-the-century mining there. It also includes accounts of the Nez Perce War of 1877, early ranching and railroad construction.

*Proulx, Clara
n.d. Early History of the Upper Lemhi Valley. Published by the author.
This history concentrates on ranching in the vicinity of Junction (Leadore), although some mention is made of other area towns, the Gilmore and Pittsburg Railroad, the Lemhi Indians, and area mining. Numerous photographs are included.

* Available at the Salmon National Forest Supervisor's Office, Salmon.