

**Kootenay National Park
Archaeology Projects 1998
Final Report**

**prepared for
Kootenay National Park
Radium Hot Springs, B.C.**

**by
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Management Summary

Three archaeology projects were undertaken in Kootenay National Park in 1998. These consisted of 1) an impact assessment on cultural resources of the proposed Mount Daer prescribed burn area, 2) continuation of the Archaeological Component of the Kootenay National Park Ecohistory Project, and 3) a survey of the area peripheral to Vermilion Crossing Commercial Accommodation area. Each is briefly summarized below.

MOUNT DAER PRESCRIBED BURN AREA

The Mount Daer prescribed burn area is located along the eastern slope of the Kootenay Valley south of Daer Creek. This prescribed burn is intended to remove a stand of insect infested pine trees and to stimulate vegetation succession processes. The area includes the top and sides of a bedrock controlled ridge west of Mount Daer summit. The Mount Daer Fire Lookout tower and cabin were formerly located on the top of this ridge. In 1998 the cabin and the remainder of the site was recorded as site 1473T. The area was traversed following the road to the fire tower site and two other roughed out trails. No evidence of prehistoric activity was located.

The recording of the fire tower site is adequate mitigation of this project. No further concerns for cultural resources existed for this project.

KNP ECOHISTORY PROJECT – ARCHAEOLOGICAL COMPONENT

Several known archaeological sites were archaeologically tested in 1998. These were examined to determine the nature of the deposits, identify the presence of datable organic materials, and locate stone tools for blood residue analyses.

The sites tested were 359T, 385T, 465T, 488T, 491T, 495T, and 1437T. These are found at scattered locations throughout the park. Site 359T has the greatest potential to yield additional cultural information as the site extends over a fairly large area. One stone bifacially worked knife was recovered from this site. The remaining sites were found to have limited densities of materials and possess low potential to yield additional data. Testing of these sites has been useful in determining the potential of these sites to yield additional useful data.

The Crooks Meadow Prescribed Burn area was burned in the spring of 1998. The area was examined as a follow up in the fall of 1998. The grass in the area was thick and lush. The only evidence of the fire was charring on some adjacent tree trunks. A large 140 x 100 cm test unit was excavated to a depth of 130 cm near the centre of the meadow to recover carbon samples from burn/soil layers noted in 1997. Four carbon samples were obtained from four different layers.

These provide of record of soil accumulation and periodic surface stability. These date 1240 +/- 50 yrs B.P. (CAMS 54048) from 45 cm below surface (BS), 2020 +/- 50 yrs B.P. (CAMS 54049) from 75 cm BS, 2910 +/- 50 yrs B.P. (CAMS 54050) from 80 cm BS, and 3660 +/- 50 yrs B.P. (CAMS 54051) from 120 cm BS. While no artifacts have been recovered from this area, the carbon dates provide a series of dates on buried soils in the past. The basal date of 3660 +/- 50 yrs B.P. (calibrated mean date of 3936 yrs B.P.) indicates that this meadow began to trap sediments and soils shortly before that date. Sediments accumulated relatively quickly taking approximately 900 years to form 30 cm of soil at a rate of 1 cm/30 yrs until a surface soil developed about 2910 +/- 50 yrs (cal. mean date 3037 yrs B.P.) (Figure 23). It then took approximately 1070 yrs to form an additional 5 cm (a rate of 1 cm/ 214 yrs) until another soil developed about 2020 +/- 50 yrs BP (cal. mean date 1970 yrs B.P.). Soil accumulation rates again increased forming 30 cm in approximately 800 yrs (at a rate of 1 cm/ 27 yrs) until the next observable organic soil at 1240 yrs B.P. (cal. mean date 1174 yrs B.P.). Finally, the last 45 cm of soil accumulation formed over the last 1174 yrs at a rate of 1 cm/26 yrs. The accumulation are essentially steady at 1 cm for every 25 to 31 years except for the period from 2910 to 2020 (cal. 3037 to 1970 yrs B.P.) when accumulation rates slowed to 1 cm for every 214 years.

The biggest contributor to soil accumulation in this area is overbank deposits from Dolly Varden Creek which drains the east side of Mount Crook. This suggests that moisture and temperature levels have been relative stable except for the period 2910 to 2020 years ago (calibrated 3037 to 1970 yrs B.P.) when there was decreased soil accumulation.

Several possible causes exist to account for this slowing depositional rate. These include altered depositional patterns due to a shift in the creek bed, decreased annual precipitation, cooler temperatures, or increased vegetation levels. Examination of palaeoclimatic records provide indications that increased vegetation levels due to cooler and possibly moister conditions may have been a dominant factor.

The carbon rich layers sampled were the most obvious in the soil sequence. They are spaced 900, 1067, 796 and 1174 based on calibrated dates and average of 984 years. These layers are likely the result of stand replacing fires, but they do not represent all the significant fires that may have occurred in the past. In Kootenay National Park it generally takes 100 to 300 years to reach the mature (climax) stage by secondary succession after fire in forest communities (Achuff et al. 1984: 127). It may be that the combination of fires and periodic or seasonal flooding may have retarded forest development in Crooks Meadows so that longer than normal time spans were required to establish forest growth in the meadow.

VERMILION CROSSING COMMERCIAL ACCOMMODATION

A review of Outlying Commercial Accommodation in Mountain National Parks is being undertaken by Parks Canada. The areas peripheral to Kootenay Park Lodge at Vermilion Crossing were examined to identify cultural resources. The current main lodge of Kootenay Park Lodge is recorded as Site 383T. It was originally built in 1908 by the Canadian Pacific Railway when a railway was planned to connect Banff to Radium (Choquette 1988:160). Although the railway was never constructed, log bungalows were built in the 1920s to cater to the motoring public on the new Banff-Windermere Highway.

Examination of both the north and south side of the Vermilion River did not result in the identification of any additional historic or prehistoric sites.

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1.0 Introduction

Three archaeology projects were undertaken in Kootenay National Park in 1998 (Figure 1). In September, an impact assessment on cultural resources was undertaken of the proposed Mount Daer prescribed burn area. In August and September, six archaeological sites were test excavated as part of the fourth year of the Ecohistory Archaeology Project. A large test excavation at Crooks Meadow was also undertaken to record soil stratigraphy and obtain samples for radiocarbon dating. Finally, a brief reconnaissance around Vermilion Crossing and the Kootenay Park Lodge attempted to identify additional cultural resources.

The results of each of these is contained in this report.

2.0 Background

2.1 Study Area

The Central Rockies Ecosystem straddles 40 000 km² along the spine of mountains dividing Alberta from British Columbia (Komex 1995). This area extends from the Upper Columbia River Valley on the west to the eastern edge of the Alberta Foothills. On the north it is bounded by the valley of the North Saskatchewan River as far east as Rocky Mountain House. On the south it extends from Canal Flats on the west to the Upper Highwood River on the east. This vast area shares a complex assembly of ecoregions, vegetation and wildlife. It is however characterized by high mountains, rolling hills and narrow valleys. Close to half the area is covered by closed coniferous vegetation (35.4%) and open coniferous forest (13.1%). Bare rock and soil is exposed over 19.6% of the area. Alpine meadows are found over 9.0% of the area. The remaining area is covered with deciduous forest (5.3%), shrubland (3.2%), natural grassland (0.9%) snow/ice (2.3%), agricultural (4.6%), cutblocks (4.5%), burns (0.7%), urban development (0.3%) and water (2.1%) (Komex 1995).

Kootenay National Park is located in the south central portion of the Central Rockies Ecosystem. It is located within the Continental Divide Ranges east of the Southern Rocky Mountain Trench. The park borders the Bow, Ball, and Mitchell ranges to the north and east in Banff National Park; the Vermilion/Brisco ranges to the west; and Yoho National Park to the northwest. The park extends approximately 80.8 km from north to south and approximately 24 km from east to west at its widest point, encompassing an area of approximately 1,406 square kilometres.

Kootenay National Park is characterized by a continental macro-climate, predominantly post-glacially deposited soils, and a wide range of vegetation and

faunal resources. The reader is referred to Achuff et al. (1984) for a detailed study of the park's biophysical resources.

2.2 Previous Archaeological Studies

Previous archaeological studies in Kootenay National Park have been largely directed at locating and inventorying cultural resources. The first substantive study was conducted in 1971 (Mitchell and Choquette 1974). In 1987, a second major inventory project was conducted by Choquette (1988). This was conducted in advance of the preparation an Archaeological Resources Description and Analysis (Choquette and Pickard 1989). Other archaeological studies have been conducted in advance of park development projects (Perry 1987, Sumpter and Perry 1988, Sumpter et al. 1990, Sumpter and Perry 1992, Heitzmann 1996a). Existing archaeological collections from Kootenay National Park are extremely limited in both their lack of temporal indicators and in the quantity of materials recovered. In addition, forest soil conditions adversely affect bone preservation. The archaeological component of the Kootenay National Park Ecohistory Project has been addressing some of these data gaps. Several sites have been tested and have provided a series of radiocarbon dates, and cultural tool assemblages. In addition, blood protein analyses of stone tools indicates the hunting of bison, deer, bear, hare and canid at several different sites (Heitzmann 1997, 1998).

Existing archaeological collections from elsewhere in the Rocky Mountain Trench are also restricted in size and content. The closest significant excavations were conducted at the Salmon Beds Site near Invermere (Heitzmann 1999); at two sites on Windermere Lake: EdQa-8 (Bussey 1986), and EcPx-5 (McKenzie 1976); and at EbPw-1 on Columbia Lake (Mohs, 1981; Yip 1982). Further to the south, considerable research has been conducted at the Wild Horse River Site, DjPv 14, by Blake (1981) and Choquette (1985a, 1985b). Major archaeological surveys have been conducted along the Upper Columbia River by Sneed (1979).

On the east side of the Rocky Mountain Divide, numerous archaeological surveys have been undertaken in Banff National Park (Fedje 1989), in Kananaskis Provincial Park (Head 1977), as well as a variety of other impact study locations. Excavations have been limited to a few sites in Banff National Park including Vermilion Lake Site (Fedje and White 1987), the Second Lake Site (Fedje 1986), the Norquay and Eclipse Sites (Fedje 1987) and at several pithouse sites along the Upper Red Deer River (Langemann n.d.). Excavations on the Eastern Slopes in Alberta have occurred principally at Sibbald Creek Site (Gryba 1983), near Exshaw (Kooyman n.d.), at James Pass on the Upper Red Deer River (Ronaghan 1993) and at sites on the Sheep River (McCullough and Fedirchuk 1983). Most of these reflect an archaeological history that has ties to

the culture history of the Alberta Plains but with a reliance on mountain lithic materials particularly Banff chert/siltstone and Top-of-the-World Chert.

2.3 Ethnographic Use of the Central Rocky Mountains

The Ktunaxa (Kootenai or Kootenay) are the traditional Native inhabitants of the region centred along the Kootenay River. Ethnographic accounts of the Ktunaxa have been written by Turney-High (1941), Schaeffer (1940) and Smith (1984). This traditional territory extends from just north of Donald B.C. south to Lake Pend d'Oreille, Idaho and Flathead Lake, Montana. The area is bounded on the east by the Rocky Mountains and on the west their territory included Kootenay Lake and may have extended to the west side of Arrow Lake (Turney-High 1941: Map). At the time of first contact with the Ktunaxa people they had a considerable dependence upon hunting bison and possessed many Plains culture traits (Turney-High 1941). The area north from Canal Flats overlap with part of the Shuswap area as it was occupied by the Kinbasket band, which was derived from the North Thompson Division of the Shuswap (Teit 1909: 455).

Ktunaxa traditional territory formerly extended northward and onto the east slopes of the Rocky Mountains and included the area known as Kootenay Plains. Alexander Henry the Younger noted in 1811 :

...We encamped at the upper end of the Kootanes Plain..I observed near the foot of the Rocks in the rear on the Plain the remains of an Old Kootanoes Camp, where the wood of their tents were still standing. Some of them were constructed with Poles nearly in the same matter as our Indians of the Plains, and I presume covered them with Leather in the same manner. But by far the greater part were constructed in a manner to be covered with Pine branches and grass, and some were made of split Wood thatched over with grass &c...Formerly that nation used to frequent this place for the purpose of making dried provisions...as Buffalo are always numerous, and the Grey Sheep are in abundance...Moose and Red Deer are also plenty. (Gough 1992:508).

Smith (1984) reviewed the variously recorded subgroups or bands. These are “essentially discrete, politically independent population concentrations, occupying as their individual home-country particularly favorable segments of the upper Columbia and Kootenay Valleys” (1984:31). These have varied somewhat through time and their names vary with each recorder. That the various subgrouping fluctuated is partly a reflection of a subsistence base which was diverse and required considerable flexibility and movement. Smith identifies seven band locations for the Upper Kutenai and two locations for the Lower Kutenai (1984:48). Curtis records that based on tradition, at the beginning of the

historical period the Kutenai numbered seven hundred lodges, or about five thousand people (1911:118). Smith (1984:55), however, suggests that the Kootenai in all bands numbered about 1000 people at the beginning of the nineteenth century. In British Columbia in 1963, the population of Kootenay and the affiliated group of Kinbasket Shuswap was 554 (Duff 1964:65).

The Kootenai language is distinctive from other North American native languages. This suggests that Kootenai speakers have been a relatively isolated group for a long time. Sapir (1929) and others noted that there are some similarities of Kootenai to the Algonkian language family, especially Blackfoot. However, Haas (1965) could not provide compelling proof of a strong relationship. Morgan (1980) identified similarities between Kootenai and the Interior Salish language family. Evidence indicates that there was “an apparently long standing diffusional connection between Kootenay and Interior Salishan languages...[These]...seem to have gone beyond word borrowing into the realm of grammatical borrowings and interinfluences”. Morgan (1980:iii) concludes “The genetic relationship between Kootenay and Salishan is not close enough to warrant [sic] classifying Kootenay as a Salishan language. Kootenay is a single member language family which is coordinately related to the Salishan family in a language stock which can be called Kootenay-Salishan. Although Kootenay should no longer be considered a language isolate in the absolute sense it is still an isolate within the Kootenay-Salishan language stock”.

PATTERNS OF SEASONAL SUBSISTENCE

The Ktunaxa who lived along the Columbia Trench followed a traditional pattern of moving frequently to exploit seasonally available resources. Typically they crossed the Rocky Mountains to hunt bison on the eastern slopes, usually in spring/early summer and again in late fall or winter. They returned to the Columbia Trench in intervening periods to exploit the more varied resources of region. In particular, spawning salmon on the Upper Columbia were important in late summer. Throughout the remainder of the year, hunting of deer, mountain sheep, mountain goat, and bear was an important activity. Other species like elk, moose, and smaller game were also utilized. Hunting birds was also important during spring and fall migrations. Non-anadromous fish, like trout, ling, and suckers were also taken, with ice fishing taking place in the winter. A variety of plants were also utilized for food and medicinal purposes. In particular, roots and bulbs of bitterroot, camas, and glacier lily were collected in the spring and early summer, and berries were collected throughout the summer. The Ktunaxa subsistence base was complex and varied, but selection choices likely maximized available resources.

The subsistence pattern for the Ktunaxa varied considerable between the various bands as each group's traditional area possessed unique characteristics. The bands of the Upper Kootenay had a greater emphasis on

hunting, while the Lower Kootenay had a greater emphasis on fishing (Smith 1984).

Schaeffer (1982) identified the annual economic cycle for the Michel Prairie Kutenai prior to the introduction of the horse.

In winter they journeyed eastward well into the eastern foothills of southwestern Alberta to hunt bison. Mostly, they seemed to have ranged between Crowsnest Lake and Waterton Lakes, but a number of their campsites extended east to the junction of the Oldman and Bow Rivers.

This, and other hunts were carried out on foot, supplemented with snowshoes during most of the winter season. At times they penetrated for some distance into the grasslands to pursue free herds, to raid the Shoshoni Indians, or to visit friendly tribes, such as the Cree. According to Kutenai informants, the Blackfoot were not resident in the foothills of extreme southwestern Alberta at this time.

The Michel Prairie band were said to have used dog travois for transport in the level, tree-free country east of the Divide...There is a tradition among modern Kutenai of this group impounding buffalo east of the Rockies...The Michel Prairie people took advantage, as did all the Upper Kutenai, of the buffalo's habit of seeking shelter in the wooded country of the eastern foothills to escape the severe winter storms of the open plains. Thus winter hunting parties moving eastward from the mountains usually encountered scattered buffalo in the vicinity of Crowsnest Lake. There the animals were run into snow drifts in the broken country of Crowsnest Valley, killed with spear or bow and arrows, butchered and the meat cured nearby...In spring, the Michel Prairie band moved westward across the Divide, via Crowsnest Pass, to plant tobacco and to engage in fishing, gathering and upland game hunting...Between planting and harvesting seasons, they hunted elk and other game in Elk River valley. At other times they used to join the Tobacco Plains band in hunting moose and elk north of Columbia Lakes, occasionally going as far north as Golden, B.C.

The Michel Prairie people are believed to have taken fish in Whiteswan Lake during the summer excursion west of the Divide and occasionally in winter in the foothills streams east of the Divide...Apparently at times some of the Michel Prairie group moved north to the Columbia-Windermere Lakes for the fall migration of salmon. Others moved across the Rockies for the fall buffalo hunt, traveling south to Crowsnest Pass and across to the west side.

A Stony informant George McLean reported the following in 1926:

The Kootenays and the Stonies always lived in the Rocky Mountains. The only time they traveled on the prairie was early in the fall and in the spring. When they wanted to hunt the buffalo the Stonies and Kootenays were together...They came over the White-Man's pass, the Kootenay pass, the Kananaskis pass (Canmore), the Bow River (west of Banff) pass, the Saskatchewan, and the Crowsnest. When the Kootenays did not come over, the Stonies went over to their side. They kept on that way for years...(Barbeau 1965:135).

When European explorers and fur traders crossed the Rocky Mountains in the early nineteenth century, they encountered K'tunaxa speaking people whom they knew as Kutenai or Kootenay. Fur traders of the Hudson's Bay Company and the North West Company constructed Rocky Mountain House on the upper North Saskatchewan River with the intention of enticing the K'tunaxa to come there to trade. Several groups of K'tunaxa attempted to reach Rocky Mountain House but were harassed by groups of Piegan who did not want to lose their position of trade middlemen with the K'tunaxa nor the Flathead to gain increased access to guns (Nisbet 1994: 97).

In the spring of 1807, David Thompson crossed the Rocky Mountains by way to the Kootenay Plains, Howse Pass and the Blaeberry River. He noted several places the K'tunaxa traditionally used including the Kootenay Plains and a place called Kootenae Pound near the top of Howse Pass. Thompson then travelled southward along the Columbia and established a trading post near Windermere Lake name Kootenae House. On his various trips across the mountains around this time, Thompson also encountered several other Native groups on the eastern side of the Rockies: Cree, eastern Ojibway, Stoney Assiniboine, and Sarcee. In the Columbia Valley, the Kootenay were clearly the resident group, although several groups of Piegan also visited Thompson at Kootenae House demonstrating that they also knew routes through the mountain passes.

3.0 Impact Assessment, Mount Daer Prescribed Burn Area

3.1 Introduction

A prescribed burn is proposed for a forested area on the west side of Mount Daer, part of the Mitchell Range which forms the eastern boundary of the Kootenay Valley. Central to the area proposed for the prescribe burn is the Mount Daer Fire Lookout. The prescribed burn is proposed to restore ecological processes in the park.

3.2 Methodology

The area of the prescribed burn was subject to a foot traverse of the road leading to the fire tower site and two other roughed out trails. Terraces edges suitable for occupation were shovel tested with standard 50 x 50 cm shovel tests.

3.3 Results

The Mount Daer Prescribed Burn Area is located on an outlying ridge of Mount Daer west of the summit. Daer Creek borders the north side of the area and an unnamed creek the south side (Figure 1). The area is steeply sloping (between 15 and 30 %) and is vegetated with DR3 and DR4 ecosites. Vegetation communities are characterized as closed mixwood forests consisting of white spruce-Douglas fir and aspen dominated communities (Figure 2). These have developed on thin till veneers over bedrock.

A few high terraces had some potential to contain prehistoric archaeological sites. Shovel testing of these did not yield any cultural materials.

Site 1473T

On the top of the outlier ridge is the remains of the Mount Daer Fire lookout. This consists of an attendant's cabin and the remaining concrete footings of the tower. The cabin consists of a simple frame construction (Figure 3, 4). The outside dimension of the cabin are 6.8 by 4 metres. The exterior is covered with plywood sheeting. Decorative shutters flank the windows. The roof is made of corrugated iron. The interior consists of single rectangular room. On the east side is a kitchen area consisting of a sink and cupboards (Figure 5). Along the north wall is a built-in sleeping bunk bordered by two upright clothes closets (Figure 6). The building was formerly heated with propane as indicated by some remaining tubing. The cabin has an open porch that runs the full width of the building. The porch has upright posts and rails made of 4 X 4 inch posts. A trail to the north 47 metres leads to an outhouse. This is also frame construction. Twenty-five metres to the southeast are five rectangular concrete bases of the fire lookout tower (Figure 7). The fire lookout tower was removed sometime in the past. This cabin was constructed about 1960 and is no longer in use. The current cabin will be removed by the prescribed burn. Two curtains were salvaged from the building. These consist of plain white cotton with hand stitched seams. A single small flower is embroidered on the corner of one of these.

3.4 Recommendations

The prescribed burn area will not affect significant cultural resources with the exception of the Fire lookout cabin. The cabin is an efficient functional building but does not merit preservation (C.J. Taylor, pers. comm). The cabin is not of

sufficient age to be submitted for consideration under the Federal Heritage Buildings Regulations.

4.0 Ecohistory Archaeology Project

Kootenay National Park is conducting studies to develop long term ecosystem data to aid in assessing ecosystem continuity, processes and change. As part of this project they requested Archaeological Services, Western Canada Service Centre to conduct archaeological studies that might provide information on past human use of the Kootenay National Park area and the surrounding ecosystem.

Specific goals are to:

1. Determine the time depth, and extent of use by Native People in the past of the Central Canadian Rockies and Columbia Trench;
2. Identify the extent of environmental manipulation conducted by Native people in the past, particularly by fire;
3. Identify the range of animals and plants exploited in the study area to provide a record of these over time.

This year, 1998, marks the fourth year of the Archaeology Component of the Ecohistory Project. In 1995, the first year of the Archaeology Component, a comprehensive literature review of existing data about past environments, archaeology, and ethnography was begun. One particular focus of this examination was a consideration of the extent of aboriginally ignited fires in the area of Kootenay National Park. This was prepared as a paper "Identifying Human Ignited Fires in the Central Canadian Rockies over the last Millennium" (Heitzmann 1996b). In addition, exploratory surveys were conducted along portions of the lower Kootenay River Valley and at Wolverine Pass, both in Kootenay National Park. Two previously recorded sites were assessed and two additional sites were recorded near Kootenay Crossing.

In 1996, the second year of Archaeology Component, five previously recorded archaeological sites were tested to determine the extent and nature of the archaeological deposits (Heitzmann 1997). These provided some of the only verified evidence for animal utilization in the past from the park area. Blood protein residue on stone tools indicates that both bear and canids were hunted. These animals may have been utilized for food but were also prized for other reasons as well. For example, two lengths of black bear gut twined together made bowstrings of highest quality. Bears were also valued for their hides, teeth and claws (Turney-High 1941:87-88). Wolf and coyote skins were also

important for head bands (Chamberlain 1893:569). Faunal remains of mountain sheep were recovered from a site in Sinclair Col and from a site along Stoddart Creek. Mountain sheep and goats were valued for their meat, horns and hides (Turney-High 1941:79).

In addition this study provided Carbon 14 dates for some key events in the area. Two of the samples provided dates, one for a hunting camp at Sinclair Col of 1760 +/- 190 years B.P. (CAMS 34976). A second sample from Sinclair Col dates the onset of alpine grassland conditions to 8580 +/- 70 years B.P. This is significant because before that date there is evidence that a glacial outwash pond was present in the depression and then, follow the draining of the pond, the area became forest covered.

In 1997 several additional sites were test excavated and yielded significant additional data. At site 497T a projectile point was identified as related to the Early Middle Prehistoric Period (ca. 4000-5000 yrs B.P.). Blood trace analysis was positive to hare. At Site 494T a set of stone tools recovered included a Late Prehistoric Period projectile point, with a date of 380 +/- 50 yrs.B.P. Blood residue on a large cobble chopper tool was positive for bison. At Site 401T a large spall tool was tested for blood protein residue and was positive to the deer family indicative of deer, elk or moose (Heitzmann 1998).

4.1 Methodology

The results of the 1996 and 1997 investigations were encouraging and a similar methodology was followed at each site in 1998. Sites were mapped to scale, including distribution of existing vegetation and surface features, as well as location of excavated units. Archaeological testing consisted of 50 x 50 cm tests placed on a judgmental basis in order to define site size and to locate significant areas. Once cultural materials were located, additional 1 x 1 m excavation units were excavated. All materials located were piece plotted on specific plans. Excavations were conducted by 5 cm arbitrary levels or by natural stratigraphy if determinable. Vertical provenience and stratigraphic associations were identified where possible. All soils excavated were screened through a 6 mm mesh.

Stone tools recovered are identified and described. Lithic materials are identified by material types and stages of reduction. Only small bone fragments were recovered in 1998. These were of insufficient size to be radiocarbon dated. Insufficient stone tools were recovered to undertaken blood protein analysis.

4.2 Results

Site 385T

Site 385T is located on a low bedrock ridge overlooking the Vermilion River approximately 1.5 km southwest of the mouth of the Simpson River (Figure 1, 8). The site area is very small (36 square meters) and has a significant slope to the south east (Figure 9). Vegetation on the site consists of several large Douglas fir trees with a juniper understory. A small spring issues from a shallow cave immediately below the site.

Site 385T was located in 1987 by Choquette (1988). He recovered 16 pieces of fire broken rock, 9 small charred bone fragments, a limestone anvil, a primary decortication flake of tan argillite, and sharpening flakes of light grey siliceous argillite.

In 1997, Four 50 x 50 cm tests were excavated in 1998. From test 385T2A came 1 grey chert flake and 11 fire broken rock. One piece of fire broken rock was found in test 365T2D. These were derived from the top 10 cm of the deposit.

Discussion and Conclusion

Site 385T is located on a very small land form and is concentrated in a small area. It is uniquely located above the outflow of an underground spring. Native people in the past probably used this site because of its association with the spring, either as a water source or possibly because the spring may have attracted animals which could then be shot with arrows or spears from above. The amount of cultural material at the site is small. No additional excavation is recommended for this site unless it were impacted by highway widening.

Site 359T

Site 359T is located on a low terrace or ridge on the west side of Sora Pond, a small water body southwest of Hectors Gorge (Figure 1, 10). The southern half of the ridge is a grassy gravelly area (Figure 11). The northern half of the ridge is a closed mixed conifer forest. The ridge is approximately 1.5 to 2 m above the level of the pond.

Site 359T was originally recorded in 1972. Two small bone fragments, two unworked flakes and a partial worked biface were recovered (Mitchell and Choquette 1974). The site was revisited in 1987 when three 1.0 x 0.5 m units and four 0.5 m tests were excavated. Cultural materials recovered included a small side notched obsidian projectile point, a biface fragment, a slab biface, 14 flakes, 5 charred bone fragments, and 49 pieces of fire broken rock. These were derived from the upper 20 cm of deposits. Choquette (1988) encountered greater densities of materials in the treed area further north along the shore. Choquette (1988) suggested that several separate occupations were

represented. The small projectile point is characteristic of the Late Prehistoric Period and is likely less than 1200 years old.

In 1998 Site 359T was revisited to recover additional bone and to obtain lithic tools for blood residue analysis. The site was tested with five 50 x 50 cm tests. Four tests were placed in the grassy southern part of the knoll and one in the treed northern portion. From test 359T2A1 came 1 bone fragment and 1 possible flake at a depth of 4 cm. From test 359T2C1 came 1 bifacially worked stone knife and 3 fire broken rocks. In test 359T2B a rifle cartridge was recovered. This is base stamped WRA Co 25-35 WFC. This type of cartridge was first developed by Winchester in 1895 and was one of the first small bore, smokeless powder, sporting cartridges (Barnes 1989). It is appropriate for hunting smaller animals up to deer. Rifles of this calibre are still in use although they are considered by many to be obsolete. It is unusual to find a gun cartridge within a National Park but as Kootenay National Park was not established until 1920 it could date prior to that time.

The asymmetric biface is made on a large fine-grained pink quartzite flake (Figure 12). The distal edge has been bifacially reworked to make a curved edge. This tool likely functioned as a skinning or butchering knife. Maximum length 57.2 mm, maximum width 37.5 mm, maximum thickness 11.8 mm, length of the working edge 59.7 mm.

Conclusions: This site appears to contain significant deposits of cultural materials in the treed portion of the site. Additional excavation is recommended to recover additional lithic tools and organic materials for dating.

Site 488T

Site 488T is located on a low ridge at the southwest corner of Sora Pond (Figure 1, 13). The area is covered with a closed mixed coniferous forest. The surface of the ridge is approximately 3 m above the water level of the pond (Figure 14).

The site was first identified in 1987 (Choquette 1988). A single test yielded 4 unworked flakes, two pieces of fire broken rock, 8 charred bone fragments and a proximal scapula of a small sized mammal.

Four 50 x 50 cm tests were excavated in 1998. In one (488T2A) three reddish argillite flakes were recovered. The remaining tests were negative.

Conclusions: This site appears to contain low density of materials. An intensive shovel testing program may yield useful results. However, no further work is recommended at this time.

Site 465T

Site 465T is located on an intermediate terrace overlooking an oxbow channel of the Kootenay River on the east side of the river (Figure 1, 15). The terrace is sandy and vegetated with a lodgepole pine forest community (Figure 16). The site has a north west exposure.

This site was originally located in 1987 (Choquette 1988). A bifacially retouched cobble spall and several pieces of fire broken rock were observed eroding from the terrace margin. No test excavations were conducted at that time.

In 1998, seven 50 x 50 cm tests were excavated at this site. Test 465T2A yielded 1 fire broken rock, test 465T2E yielded 1 fire broken rock and test 465T2D yielded 2 fire broken rocks. All of these were within the top 10 cm of the sandy soil matrix.

Conclusions: The site was utilized in the past as a temporary campsite. However the testing suggests that there is low density of materials. No further work is recommended.

Site 1437T

Site 1437T is located on a high terrace on the east side of the Kootenay Valley (Figure 1, 17). The terrace is covered with a closed forest (Figure 18). The mature forests extend onto the lower terraces towards the west obscuring the view of the Kootenay Valley. The site would have been likely utilized in the past when better views of the valley may have been available.

The site was originally located in 1997 (Heitzmann 1998) when four shovel tests were excavated and yielded one bone fragment and 6 pieces of fire broken rock.

Nine 50 x 50 cm tests and one 1 m square test were excavated in 1998. These were excavated to obtain a better sample of the site materials. Only 2 of these yielded materials. In unit 2F (1 x 1 m) four small retouch flakes were recovered—one was Top of the World Chert, the others were grey chert. From unit 2G came 3 small pieces of fire broken rock.

Conclusions: Low amounts of materials were recovered. No further work is recommended at this site.

Site 495T

Site 495T is located on the highest terrace on the east side of the Kootenay River near the Swede Creek confluence (Figure 1, 20). The site has an excellent view of the a wide part of the valley (Figure 19). The area has a vegetation cover of grasses, juniper and kinnickinnick with occasional small lodgepole pine trees.

The site was originally located in 1987 (Choquette 1988) . He observed several fire broken rock sloughing from the terrace margin. From a shovel test came one fire broken rock, an worked flake and a unifacial stone tool.

In 1998, five 50 x 50 cm shovel tests were excavated along the terrace edge. No materials were located from any of these.

Conclusion: The site has low densities of materials. No further work is recommended.

Site 491T

Site 491T is located on the east side of the Kootenay River just north of the Kootenay River day use area and east a partial rock ledge in the river. At this locality narrow first and second terraces parallel the river. The area is vegetated with scattered lodgepole pine, Douglas fir and juniper with some open grassed areas. Just to the east of these terraces are the remains of a large gravel pit.

The site was recorded by Choquette (1988). He located fragments of fire broken rock from along the terrace edge.

In 1998 twenty (50 x 50 cm) shovel tests were excavated on a series of low terraces adjacent to the river. These were excavated to assess the site and better define its location. All of these were negative.

Conclusions: The site has very low density of materials. No further work is recommended at this site.

Crooks Meadow Prescribed Burn Area

The Crooks Meadow Prescribe Burn area is located west of the confluence of the Kootenay River and Dolly Varden Creek (Figure 1). The area was assessed for impacts to cultural resources in 1997 but no conflicts were identified (Heitzmann 1998). This area was burned in the spring of 1998 and the area examined as a follow up in the fall of 1998. The grass in the area was thick and lush (Figure 21). The only evidence of the fire was some charring on some adjacent tree trunks. A large 140 x 100 cm test unit was excavated to a depth of

130 cm near the centre of the meadow to recover carbon samples from buried soil horizons noted in 1997 (Figure 22). Four carbon samples were obtained from four different layers (Figure 23). These provide of record of weak soil development surfaces and may be associated with past burning events. These date as follows:

Sample Number *	Radio-carbon date	Depth (below surface)	Calibrate Date Before Present (B.P.) *
CAMS 54048	1240 +/- 50 yrs B.P	45 cm	1286 (1174) 1012 cal. years B.P.
CAMS 54049	2020 +/- 50 yrs B.P.	75 cm	2117 (1987, 1979, 1970, 1960, 1950) 1970 cal years BP
CAMS 54050	2910+/- 50 yrs B.P.	80 cm	3237 (3061, 3046, 3037, 3007, 3003) 2880 cal years BP
CAMS 54051	3660+/- 50 yrs B.P.	110 cm	4146 (3979, 3936, 3933) 3833 cal years BP

- Center for Accelerator Mass Spectrometry, Lawrence Livermore National Laboratory

* (Calib 4 1999, 0 is 1950 AD, 2 sigma age range, maximum age on left (actual intercepts in the brackets) and minimum age on the right)

This area is classified as a VL2 ecosite characterized by shrubby meadow vegetation and poorly drained soils of the Regosolic, Gleysolic and Organic Orders (Achuff et al. 1984: 262). The weakly developed soil horizons observable in the soil profile may result from periods of surface stability.

Conclusion: While no artifacts have been recovered from this area, the carbon dates provide a series of dates on buried soils in the past. The basal date of 3660 +/- 50 yrs B.P. (calibrated mean date of 3936 yrs B.P.) indicates that this meadow began to trap sediments and soils shortly before that date. Sediments accumulated relatively quickly taking approximately 900 years to form 30 cm of soil at a rate of 1 cm/30 yrs until a surface soil developed about 2910 +/- 50 yrs (cal. mean date 3037 yrs B.P.)(Figure 23). It then took approximately 1070 yrs to form an additional 5 cm (a rate of 1 cm/ 214 yrs) until another soil developed about 2020 +/- 50 yrs BP (cal. mean date 1970 yrs B.P). Soil accumulation rates again increased forming 30 cm in approximately 800 yrs (at a rate of 1 cm/ 27

yrs) until the next observable organic soil at 1240 yrs B.P. (cal. mean date 1174 yrs B.P.) . Finally, the last 45 cm of soil accumulation formed over the last 1174 yrs at a rate of 1 cm/26 yrs. The accumulation are essentially steady at 1 cm for every 25 to 31 years except for the period from 2910 to 2020 (cal. 3037 to 1970 yrs B.P.) when accumulation rates slowed to 1 cm for every 214 years.

The biggest contributor to soil accumulation in this area is overbank deposits from Dolly Varden Creek which drains the east side of Mount Crook. This suggests that moisture and temperature levels have been relative stable except for the period 2910 to 2020 years ago (calibrated 3037 to 1970 yrs B.P.) when there was decreased soil accumulation.

Decreased soil accumulations may be due to:

1. A shift in the creek bed such that decreased water flowed into the meadow,
2. Decreasing annual run off due to lower precipitation or cooler temperatures causing slower melting of snows and glaciers
3. Increased vegetation cover reducing run-off and slowing surface erosion,
4. A rise in timberline elevations, possibly related to a warming trend, or
5. A combination of some of the above factors.

Each of these alternatives is discussed below.

1. A shift in the creek bed such that decreased water flowed into the meadow.
The current bed of Dolly Varden Creek is situated just north of the meadow. It cuts through fine silt deposits. In the soil profile there is no evidence to suggest significant changes in the size of silt particles that may indicated altered creek flows.
2. Decreasing annual run off due to lower precipitation or cooler temperatures causing slower melting of snows and glaciers

In the Coast Range at Tiedemann Glacier Osborne and Luckman (1988:119) noted "A later, mid-Neoglacial advance is particularly well demonstrated at Tiedemann Glacier, which, anomalously, reached its maximum Neoglacial extent between 2940 +/- 130 (GSC 938) and 2250 +/- 130 BP (GSC 948)...There were similar expansions for Gilbert and Frank-mackie Glacier...The dates above suggest a general period of glacier expansion between ca. 3.3 and 1.9 ka BP, termed the 'Tiedemann Advance' by Ryder and Thomson (1986)" (Osborn and Luckman 1988) .

At Bugaboo Glacier "...a general expansion was in progress over the period 2.5 – 1.9 ka BP. The glacier came fairly close to its maximum Neoglacial extent shortly after 1.9 ka BP and then retreated." (Osborn and Luckman 1988: 119).

3. Increased vegetation cover reducing run-off and slowing surface erosion (cooler and moister)

Hallett (1996) analyzed pollen and charcoal samples from cores taken from nearby Dog Lake. He states "The increase in *Picea* and *Abies* pollen percentages and very small nonarboreal taxa percentages from ca. 4000-2600 BP are attributed to a cooler moister climate which is associated with Neoglacial advances of alpine glaciers (Porter and Denton 1967; Ryder and Thomson 1986; Osborn and Luckman 1988; Luckman et al. 1993)." (Hallett 1996:72).

In the period from 2600 to 1600 years B.P. he noted a sharp decrease in *Pinus* and *Spruce* pollen values and a marked increase in shrubs. "*Tsuga heterophylla* (Western Hemlock) pollen enters the record at about 45 cm (ca. 2300 BP) and indicates a cooler moister climate at higher elevations as trees characteristic of the IWH [Interior Western Hemlock] zone become established in the region" (Hallett 1996:53). An alternative explanation is that hemlock pollen may be a warm moist signal instead of a cool moist signal as Hemlock does well in heavy snowpack and moist forest floor with lots of deadfall (Hallett 2000, pers. comm.) Increases in *Alnus*, *Artemisia* and *Pteridium* pollen and spores from ca. 2500-1600 BP indicate a return to more open areas on the landscape. Increases in *Betula* pollen during this period correspond to similar changes in Hazell (1979) and Hebda (1995) that were interpreted as a slight warming in climate." (Hallett 1996:72).

This shift to increased ground cover plus establishment of Western Hemlock at higher elevations may have resulted in the decreased deposition rates. A shift to a moister period may have resulted in increased deposition rates after ca. 2020.

4. A rise in timberline elevations, possibly related to a warming trend

Also about this time at Wilcox Pass, Jasper National Park, there were gradual increases in *Picea*/*Pinus* ratio at an estimated age of 2290 yrs BP. "This implies a gradual rise in timberline elevation, possibly related to a warming trend". (Beaudoin 1986).

5. A combination of some of the above factors.

The paleoclimatic record is not very clear for this time period. Glaciers in the Coast Range and at Bugaboo were increasing in size. Hemlock appears to have been invading into the upper Kootenay Valley at higher elevations and there was gradual rise in timberline elevation at Wilcox Pass. If climate was influential at reducing sedimentation at Dolly Varden Meadow it seems likely to be related to increase vegetation cover especially at higher elevations suggesting that overall warmer conditions may have been occurring. This may also have been

accompanied with increased moisture conditions that encouraged glacier growth and overall denser forest conditions.

The carbon rich layers sampled were the most obvious in the soil sequence. They are spaced 900, 1067, 796 and 1174 based on calibrated dates and average of 984 years. These layers are likely the result of major fires, but they do not represent all the significant fires that may have occurred in the past. In Kootenay National Park it generally takes 100 to 300 years to reach the mature (climax) stage by secondary succession after fire in forest communities (Achuff et al. 1984: 127). It may be that the combination of fires and periodic or seasonal flooding may have retarded forest development in Crooks Meadows so that longer than normal time spans were required to establish forest growth in the meadow.

4.3 Summary and Conclusion

The archaeological component of the Kootenay National Park Ecohistory Project tested seven site localities. Only site 359T yielded a single stone tool that could be potentially used for dating or blood trace analysis. The remaining sites (385T, 465T, 488T, 491T, 495T, 1437T) had very limited materials and do not appear to have potential to contribute any other significant data. Testing sites that yield scant returns is part of the process of determining site significance. The low amount of cultural material is a reflection of transitory and sporadic use of these sites. Many of these locations may have been used for a few days during a hunting or gathering expedition. Site 359T may have been utilized more frequently because of its location adjacent to a pond and its position along a trail that follows a series of ponds between Kootenay Crossing and the Vermilion River.

The soil testing and radiocarbon dating at Crooks Meadows has more general significance because it indicates that deposition of this area began sometime before 3660 years ago (calibrated as 3936 yrs B.P.) and that considerable deposition has occurred since that time. The series of four dates are significant because they are broadly spaced and date the most obvious soil and burn levels. The broad spacing of the soils suggests that frequent burning may not have occurred at this meadow and that anthropogenic (human) originated fires were not a significant factor here or that anthropogenic fires were not obvious due to burning grasses and herbs rather than large stands of trees. Much more fine sampling of this profile is required to obtain a more detailed fire history.

5.0 VERMILION CROSSING COMMERCIAL ACCOMMODATION AREA

A study of Outlying Commercial Accommodation in Mountain National Parks is being undertaken by Parks Canada. The areas peripheral to Kootenay Park Lodge at Vermilion Crossing were examined to identify cultural resources in this area at the request of Rod Pickard, land use planner, Kootenay National Park. The current main lodge of Kootenay Park Lodge is recorded as Site 383T. It was originally built in 1908 by the Canadian Pacific Railway when a railway was planned to connect Banff to Radium (Choquette 1988:160). Although the railway was never constructed, the Banff-Windermere Highway was constructed in the 1920s. Log bungalows were also constructed at Kootenay Park Lodge in the 1920s to cater to the motoring public using the new route.

Vermilion Crossing is an excellent locality for crossing the Vermilion River. The channel of the Vermilion River cuts through a bedrock outcrop confining the river to a narrow gorge. Both the north and south banks of the river were examined for cultural resources downstream of the highway bridge to the end of the bedrock controlled channel. The north side is characterized by wet ground caused by soil seepage from the slope above the river bank. This area is not suitable for human habitation although it may have been used for plant resources (*Vaccinium* sp. blueberry was noted). The south side of the river is the location of Kootenay Park Lodge which has resulted in prior disturbances of much of the lease area. An informal trail extends along the river bank offering some surface exposures. An old road bed also extends along this side of the river. Along this side of the river the forest is an old closed forest with extensive moss covered understory.

Results: No additional historic or prehistoric sites were located.

Recommendations: The lodge is a historic structure and care needs to be exercised with alterations or modifications. No further historical resource concerns have been identified for this area and additional assessments should not be required except in relation to the lodge buildings.

6.0 SUMMARY

The archaeological projects conducted in Kootenay National Park in 1998 provide additional information on the significance of the cultural resources in the park. While not abundant, the cultural resources are important in this special Canadian park.

The assessment and recording of the Mount Daer Fire Lookout allowed for the recording of the site. Burning in this area will not result in additional affects on cultural resources.

The testing of seven additional archaeological sites allowed for a better assessment of their potential to provide significant cultural historical information. Only Site 359T appears to have high potential to yield additional data. The remaining sites appear to have been highly transitory and have low potential to provide additional information.

The soil test at Crooks Meadow suggests that soil deposition began to form this terrace before 3660 years ago (cal. 3936 yrs B.P.). Soil development then accumulated to a depth of 110 cm until modern times. The broad spacing of carbon rich soils suggests that large stand replacing fires were rare in the meadow area. Periodic flooding and a high water table is probably the most significant factor in maintaining meadow conditions.

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Figures

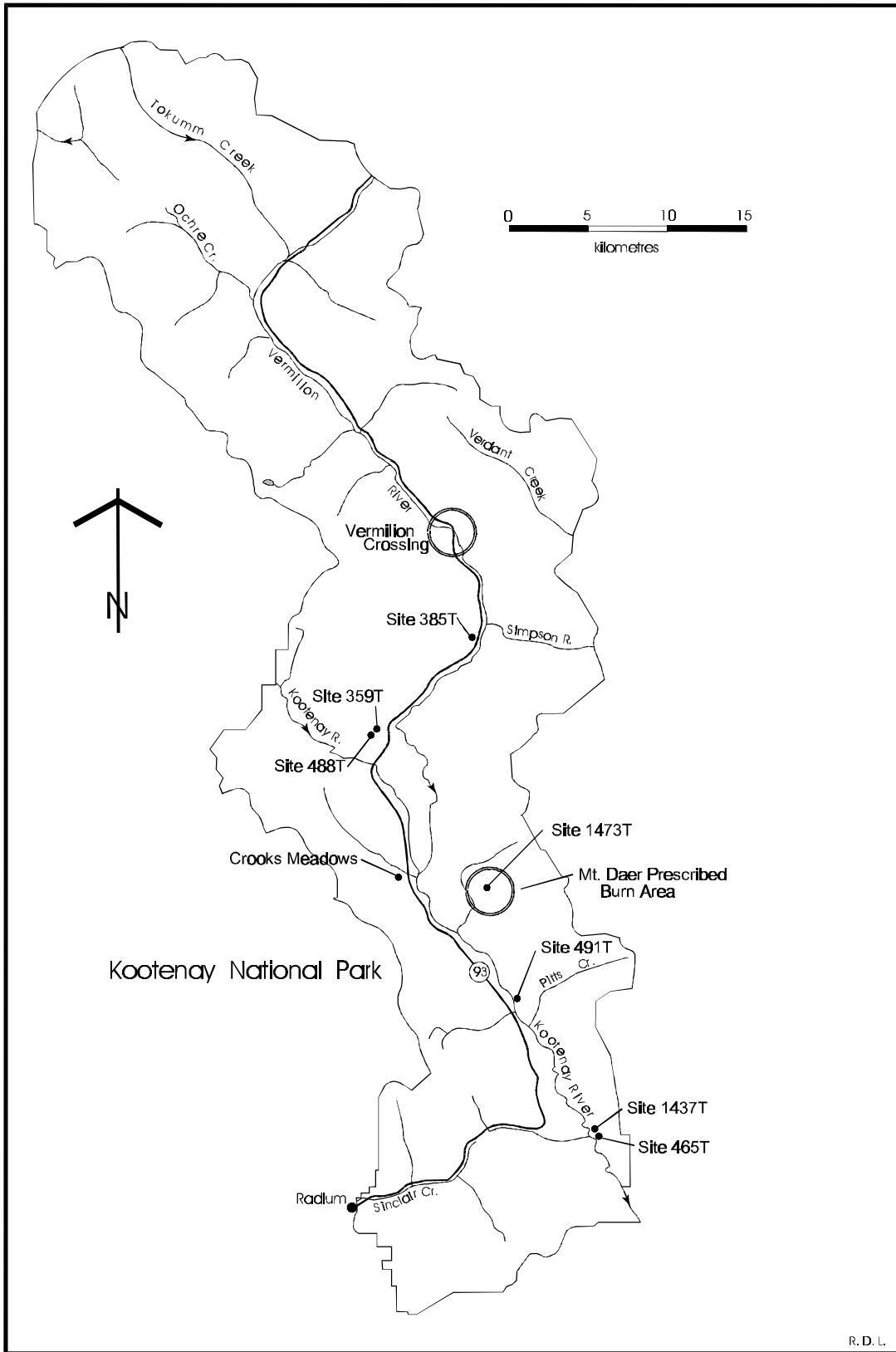


Figure 1 Location of 1998 Projects and Archaeological Sites, Kootenay National Park.

R. D. L.



Figure 2 View south of the Mount Daer Prescribed Burn area, Kootenay National Park (1473T-11t).



Figure 3 Cabin at Mount Daer Fire Lookout, Kootenay National Park (1473T-1t).

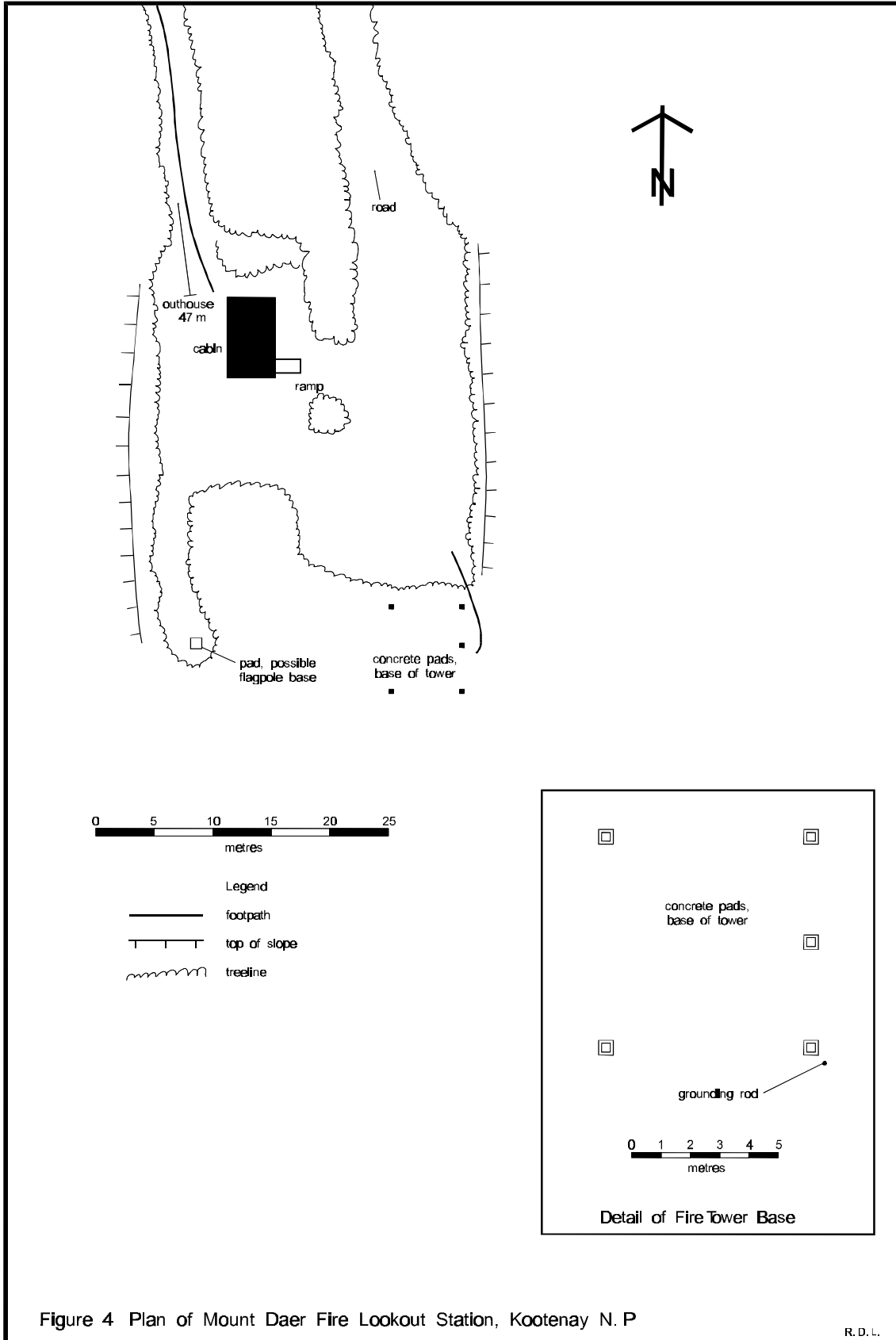


Figure 4 Plan of Mount Daer Fire Lookout Station, Kootenay N.P



Figure 5 Interior view of the kitchen area, Mount Daer Fire Lookout, Kootenay National Park (1473T-5t).



Figure 6 Interior view of the sleeping bunk, Mount Daer Fire Lookout, Kootenay National Park (1473T-2t).



Figure 7 Concrete base of the former fire lookout tower, Mount Daer, Kootenay National Park (1473T-10t).

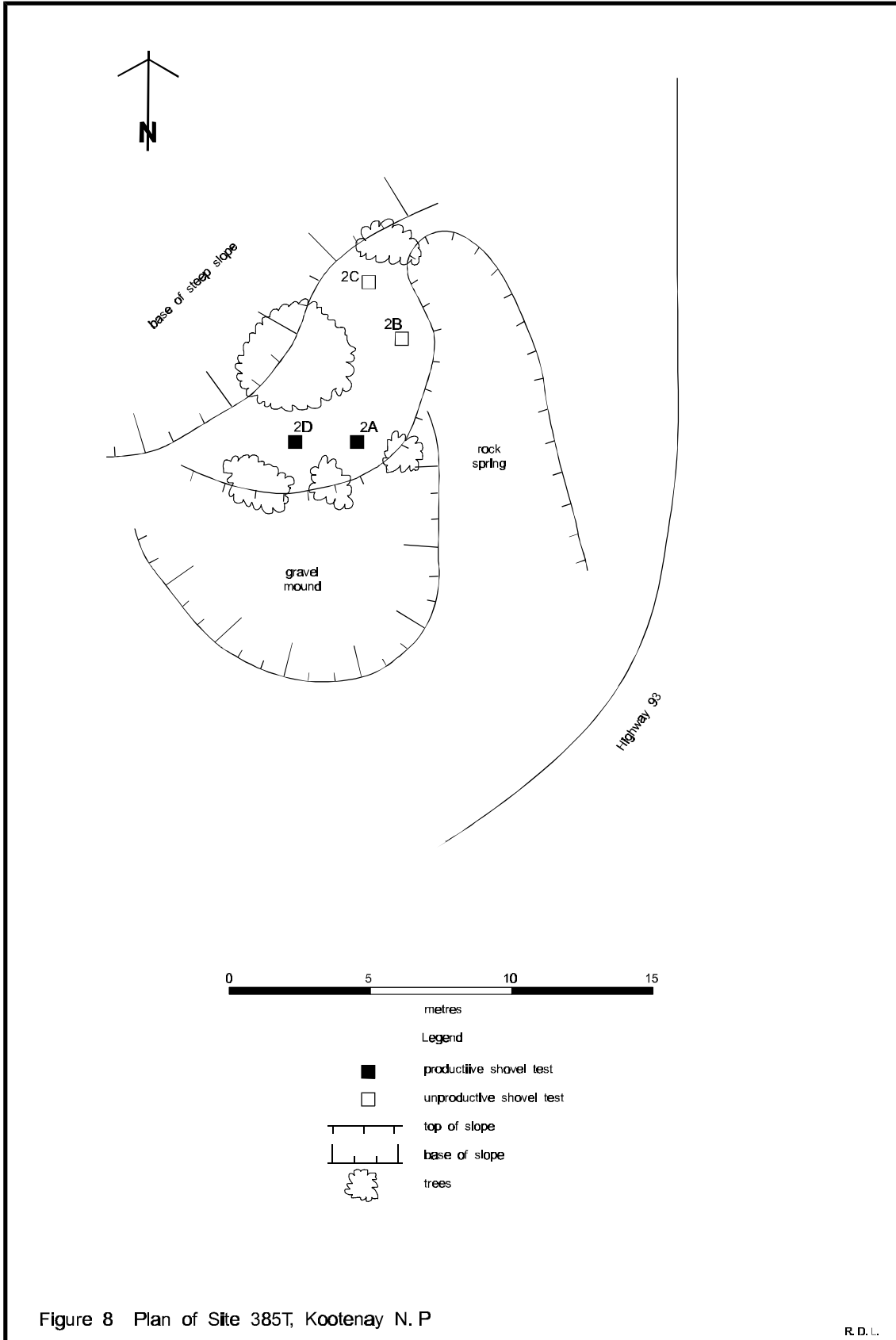




Figure 9 View of Site 385T, overlooking Highway 93, Kootenay National Park (385T-2t).



Figure 10 View of Site 359T, Kootenay National Park (359T-2t).

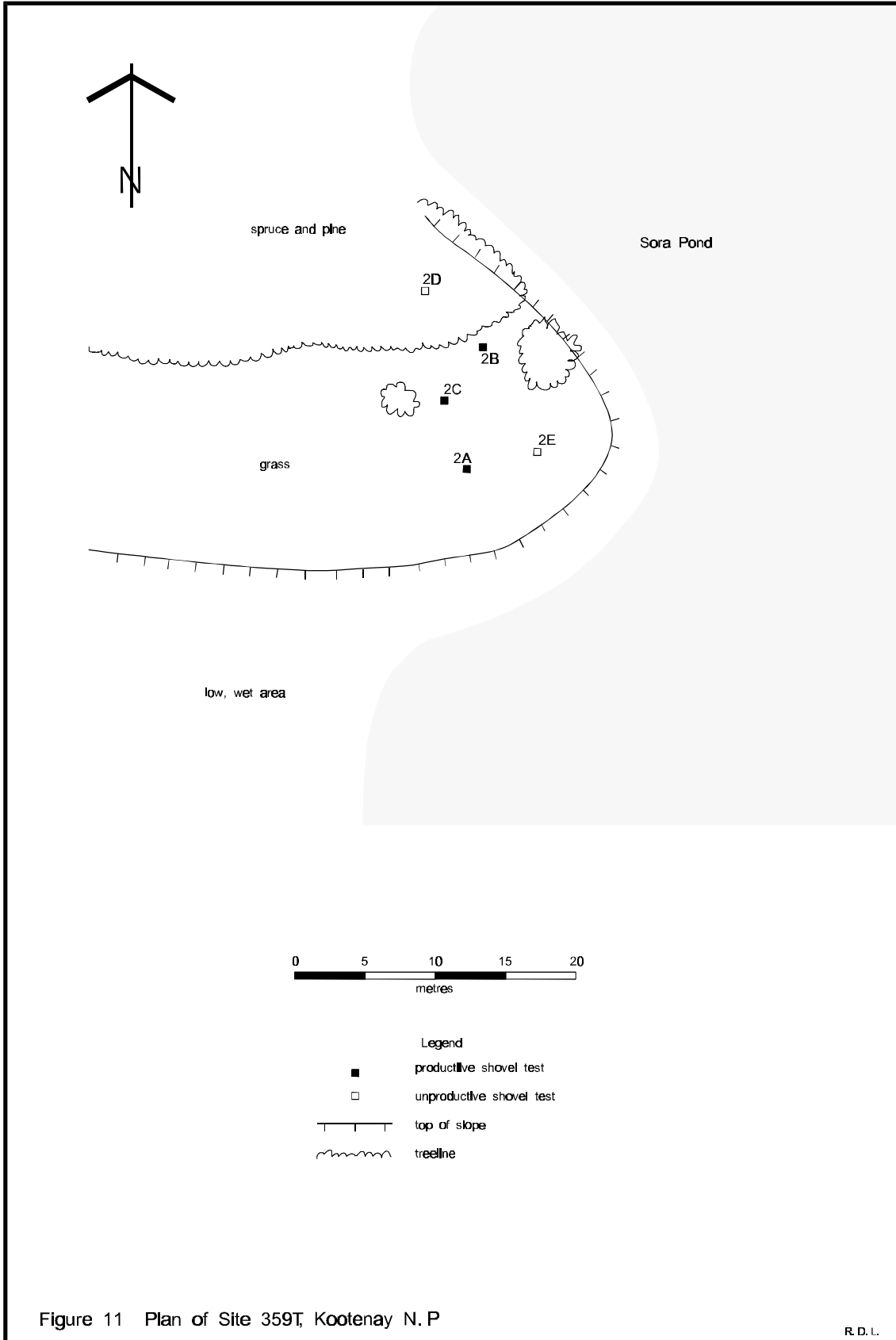




Figure 12 Stone knife from Site 359T.

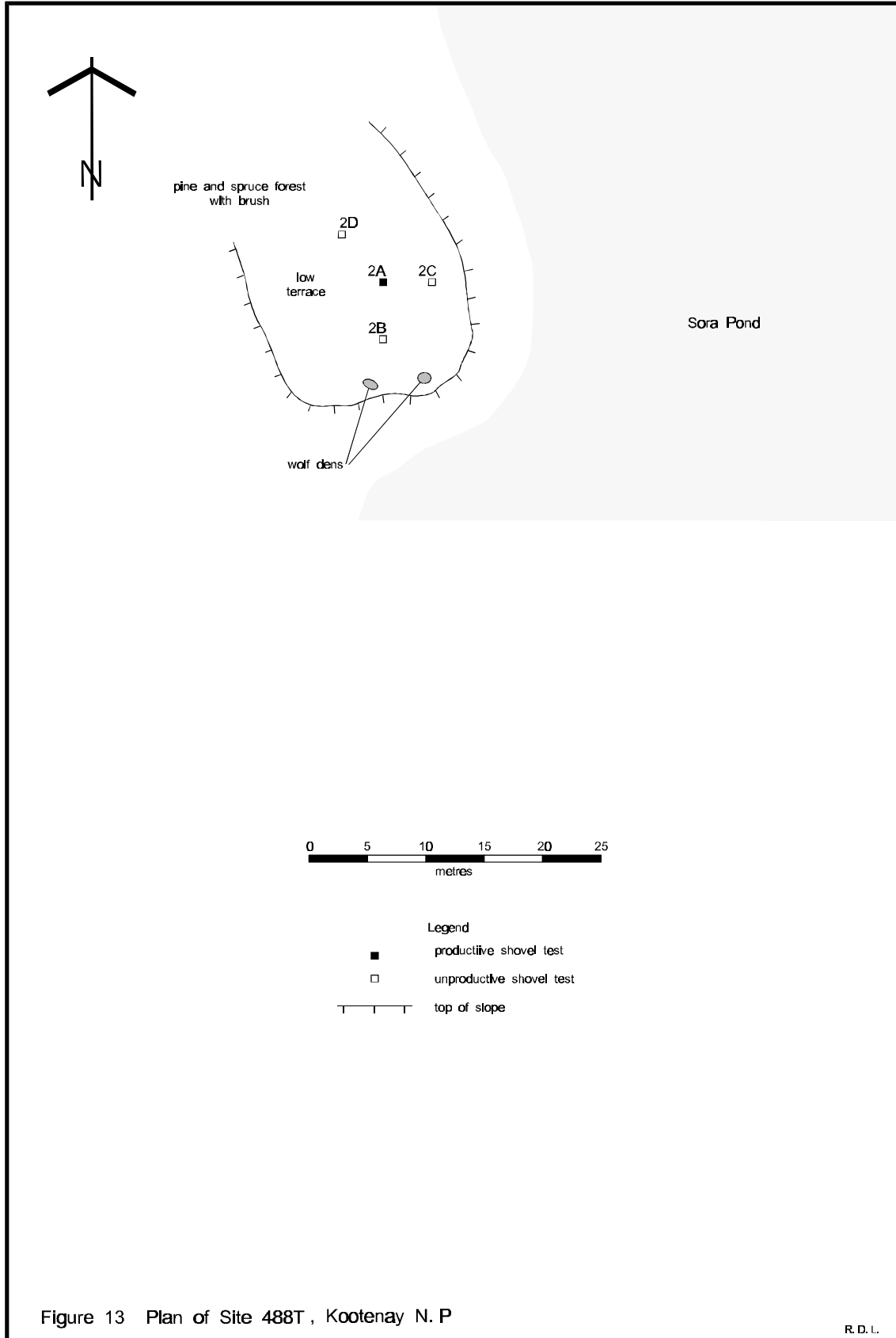
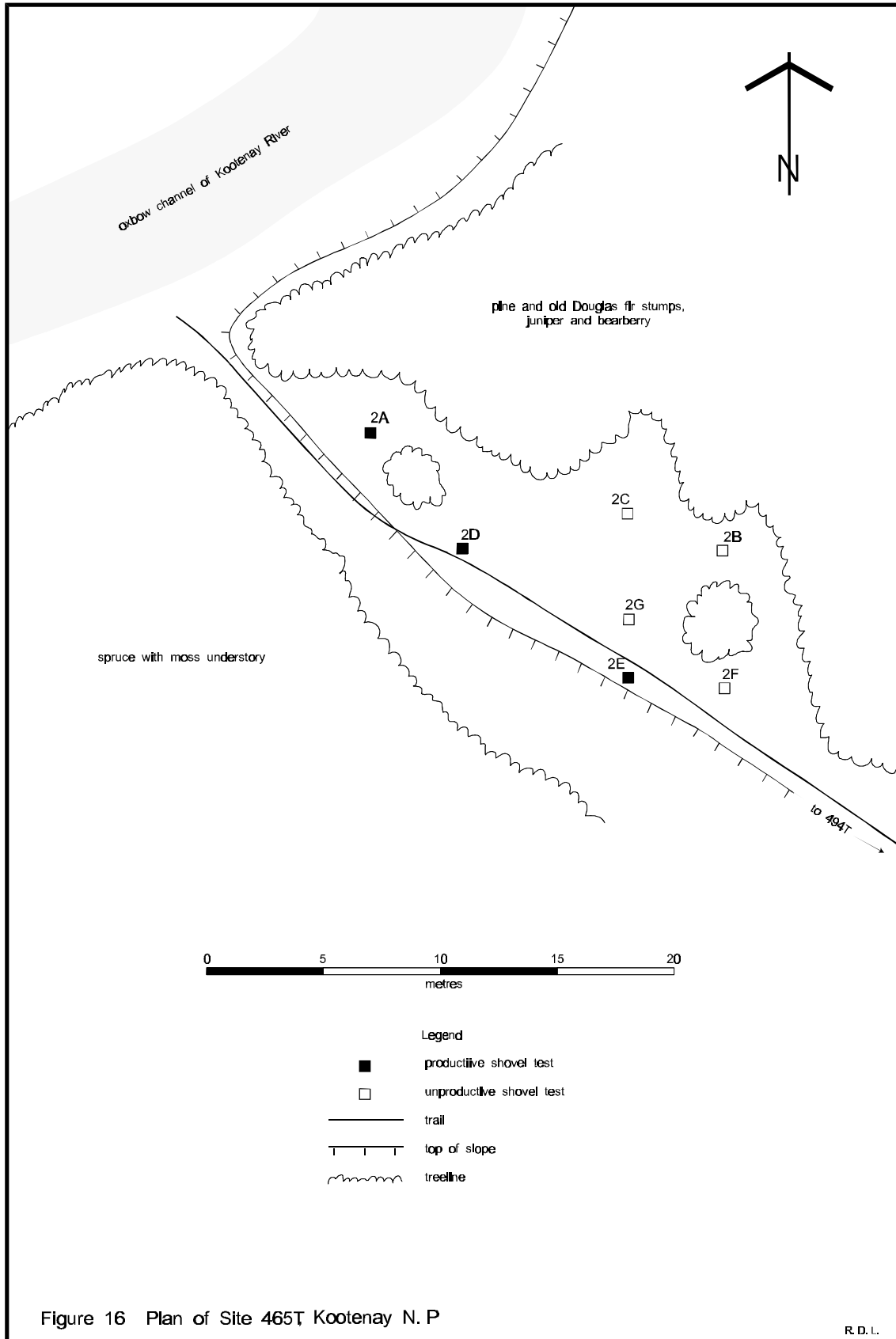




Figure 14 General view of Sora Pond, Site 359T is on the right, Site 488T is approximately in the centre of the far shore , Kootenay National Park (488T-2t).



Figure 15 General view north of Site 465T, Kootenay National Park (465T-1t).



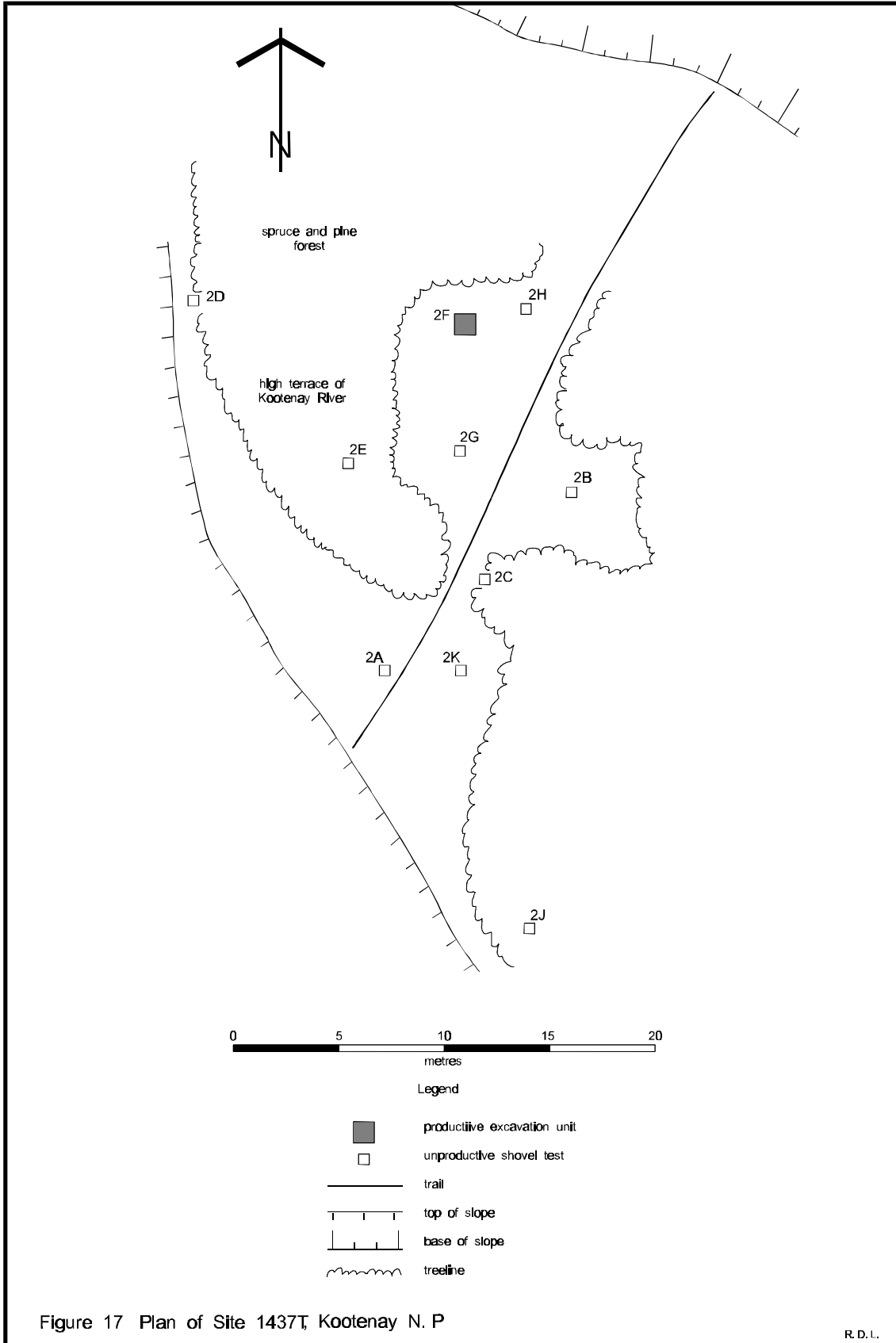




Figure 18 General view north of Site 1437T, Kootenay National Park (1437T-1t).

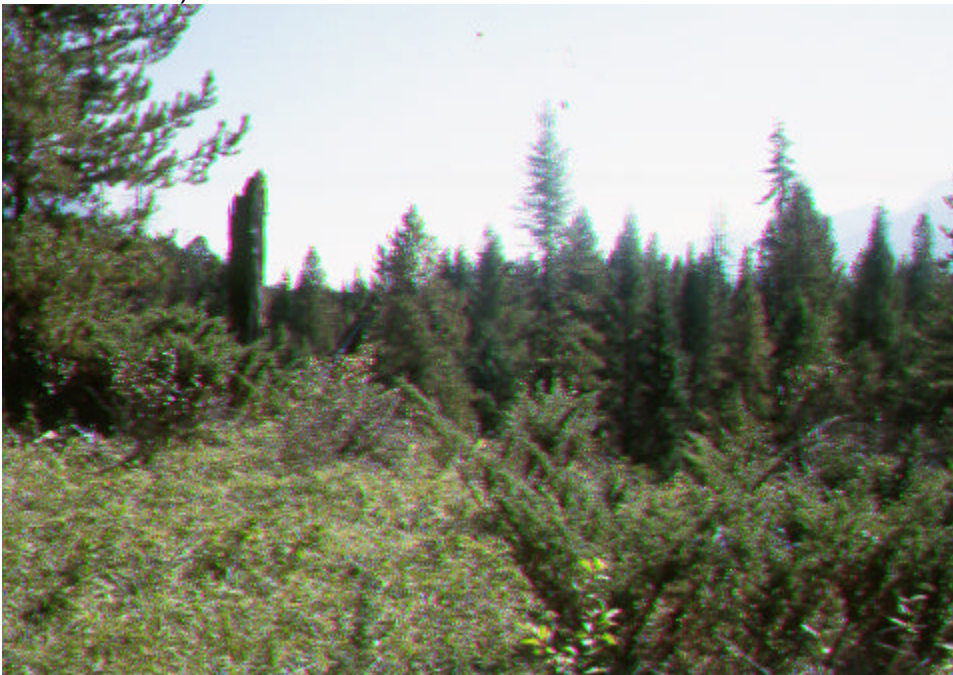


Figure 19 View of Site 495T, Kootenay National Park (495T-1t).

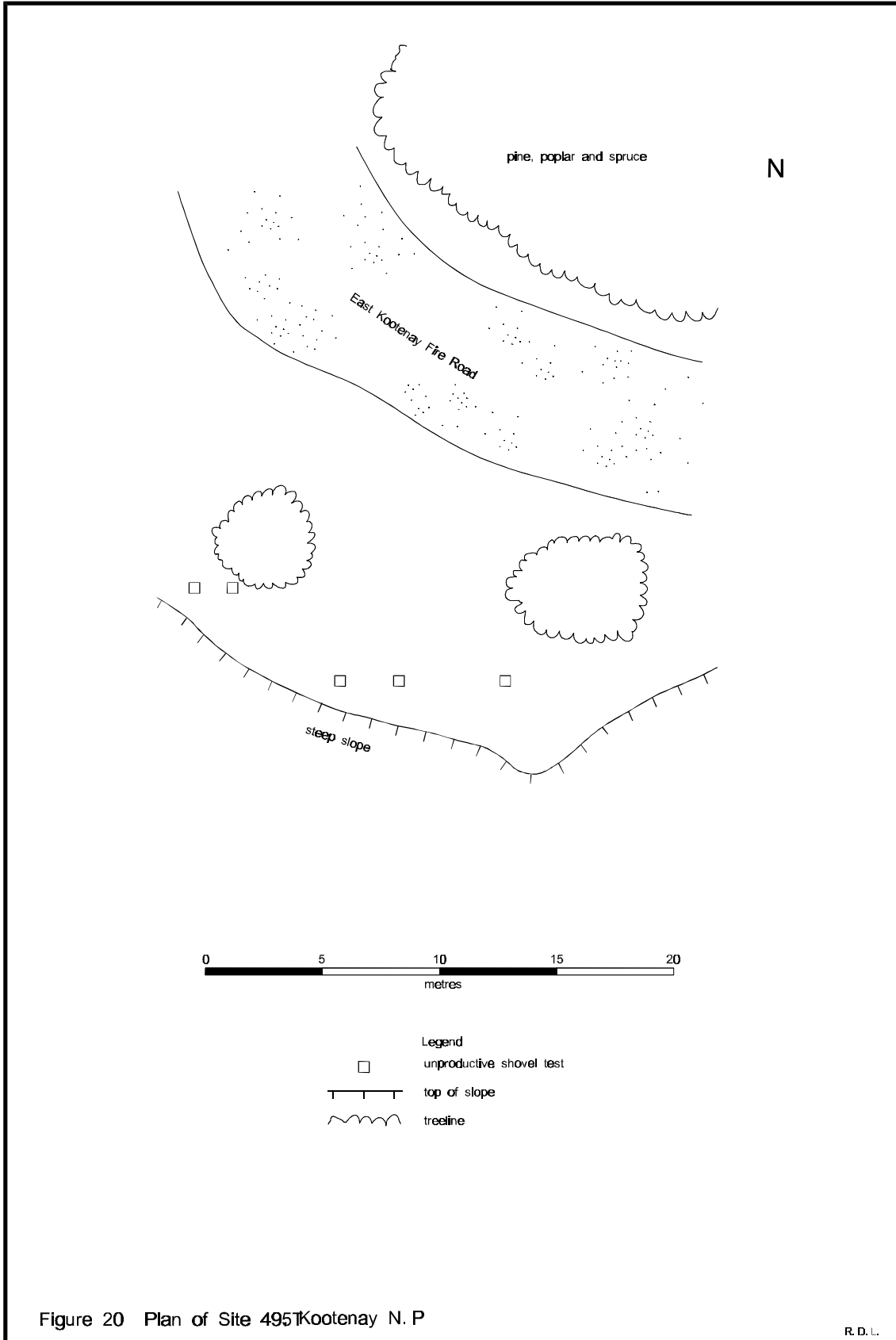


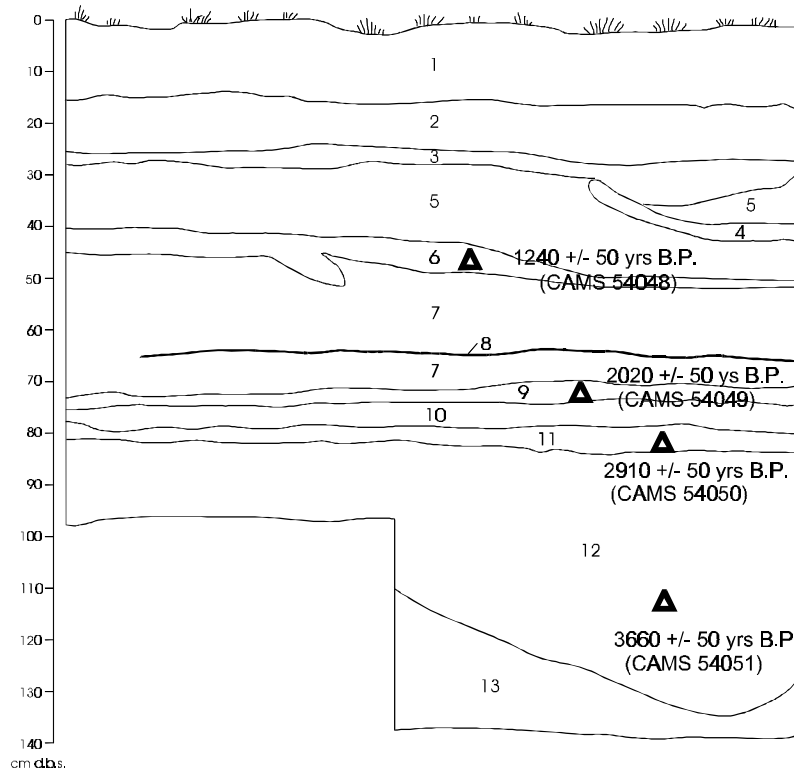
Figure 20 Plan of Site 495 Kootenay N. P



Figure 21 View of Crooks Meadow September 1998, Kootenay National Park.



Figure 22 Test A excavation, Crooks Meadows (9001T-115t).



Legend

- 1 7.5YR4/2 dark brown coarse, humic level, light grey silt
- 2 10YR5/3 brown silt
- 3 10YR4/2 dark greyish brown silt
- 4 10YR4/1 dark grey ash
- 5 10YR5/2 greyish brown silt
- 6 10YR5/2 very dark greyish brown silt
- 7 10YR4/2 dark greyish brown silt
- 8 10YR3/1 very dark grey silt
- 9 10YR3/1 very dark grey silty clay
- 10 10YR4/2 dark greyish brown silt
- 11 10YR3/2 very dark greyish brown silt
- 12 10YR3/3 dark brown silty clay
- 13 10YR3/4 dark yellowish brown sandy clay

▲ radiocarbon date

Figure 23 Profile of Crooks Meadow Prescribed Burr Area, Kootenay N. P

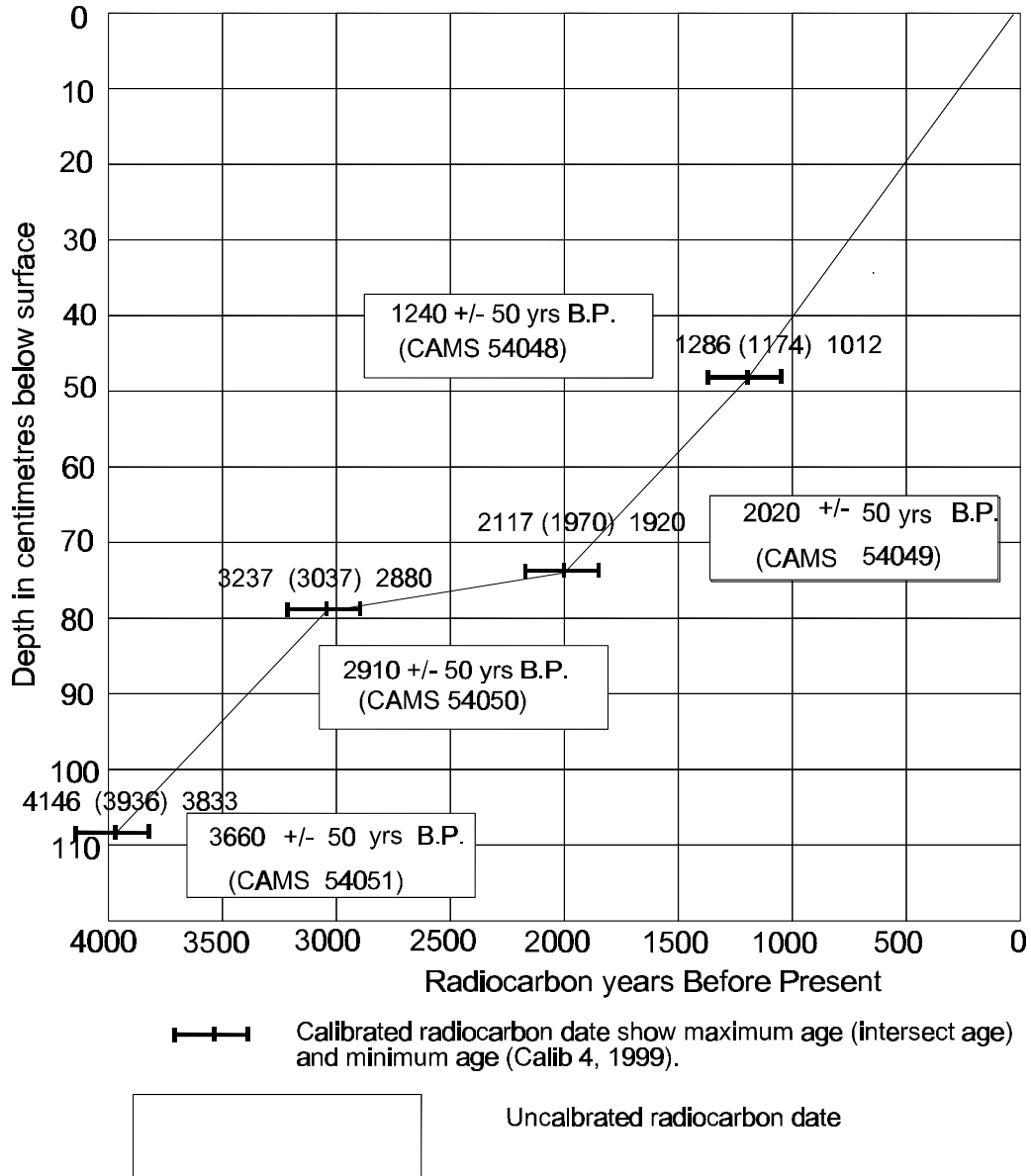


Figure 24 Graph of calibrated radiocarbon dates and sedimentation rates from Crooks Meadow Prescribed burn area.