# Appendix Three:

# Applied Ecosystem Management Ltd.
# Field Observations

April 19, 2002

**Quesnel Highlands Grizzly Bear Critical Habitat Mapping Project**

APPLIED ECOSYSTEM MANAGEMENT LTD.

**Observation 1**
Aerial photo number: 30BCC92129-035
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: HO3b(k); RD3b(k)
Aspect: NE
Description: Many recently deposited (mid-August) bear scats found on logging road through free growing cut block (harvested in 1988) within the Roaring River drainage. Scats likely deposited by subadult grizzly bear observed in vicinity. Scats predominately contain skunk currant (*Ribes glandulosum*) and black gooseberry (*Ribes lacustre*) with some oval-leaved blueberry (*Vaccinium ovalifolium*); cow's parsnip (*Heracleum lanatum*); horsetails (*Equisetum spp.*); grasses and sedges (*Carex spp.*). Berry species ripe in adjacent cut block (see plot 14).

**Observation 2**
Aerial photo number: 30BCC92129-035
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: HO3b(k); RD3b(k); AF3b
Aspect: NE
Description: Spring bear scat (late June) found on logging road through free growing cut block (harvested 1989) within the Roaring River drainage. Possibly deposited by grizzly bear (no species verification observed). Scat contains horsetails; grasses; sedges and cow's parsnip. The avalanche chutes on either north or south side of Roaring River are the likely source of these foods.

**Observation 3**
Aerial photo number: 30BCC92129-035
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RD(7)
Aspect: NE
Description: Black bear den found in cavity of mature western red cedar (*Thuja plicata*) in stand adjacent to an avalanche chute on the south side of the Roaring River. Some excavation of the cavity observed and some leaf litter used as nesting material. Black bear hair found within nesting material. (SS-01-04-2).

**Observation 4**
Aerial photo number: 30BCC92129-035
TRIM mapsheet number: 093a0067
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: AF3b
Aspect: NE
Description: Example of shrub dominated avalanche chute habitat (**Plot 1**) with low to very low value to grizzly bears for feeding but high cover values. Although this particular example of this unit appears insufficient to support grizzly bears, there are other examples of this habitat type which do have a greater abundance of grizzly bear forage and berry producing species. Black bear sign (mark tree with black bear hair on it and associated game trail) is observed in the adjacent forest (RD(7)) and there is likely sufficient abundance of forage and berry producing species over the unit as a whole to provide feeding potential for black bears throughout their active year. In particular, there are many small streams through this unit which

provide more feeding opportunities: grasses and black gooseberry plants are more abundant along stream sides.

**Observation 5**
Aerial photo number: 30BCC92049-198
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: HV2d (unmapped)
Aspect: NW
Description: Example of grizzly bear use of alpine meadow complex (see also observations 6 –11) during late spring/early summer in headwaters of Isaiah Creek (**Plot 2**). This unit offers an abundance of forage species: sitka valerian (*Valeriana sitchensis*); grasses and sedges (especially *Carex nigricans*), later in the year than favoured spring habitats at lower elevations (SS-01-04-4, 5 and 6). Grizzly bear feeding sign is observed on sitka valerian (early July). In addition to forage potential, this complex offers rodent feeding opportunities: Columbia ground squirrel (*Spermophilus columbianus*) in the HV2d and marmot (*Marmota caligata*) in the talus slopes (TA) above. Polygon originally mapped as 7HL2d; 2FA3b; 1SG2a but remapped (see final TEM coverage). Re-mapping applies to observations 5 – 10.

**Observation 6**
Aerial photo number: 30BCC92049-198
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: SG2b
Aspect: level
Description: Alpine meadow complex also contains a wet alpine meadow unit (SG) dominated by *Carex nigricans*, a favoured forage species of grizzly bears. SG units found here in patches on level seepage areas adjacent to the streambed.

**Observation 7**
Aerial photo number: 30BCC92049-198
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: FH7; SG2b; HV2d
Aspect: NW
Description: Complex of habitats provide a variety of foods during late spring and through summer: wet alpine meadow (SG) provides opportunities for grizzly bears to feed on *Carex nigricans*; alpine mesic meadow (HV) provides opportunities for grizzly bears to feed on sitka valerian, grasses and sedges and stands of subalpine fir, *Abies lasiocarpa*, (FH7) provide some cover nearby.

**Observation 8**
Aerial photo number: 30BCC92049-198
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: HV2d (unmapped)
Aspect: N
Description: Grizzly bear feeding sign on *Carex nigricans* observed (early July). *Carex nigricans* is locally abundant in patches within this meadow unit.

**Observation 9**
Aerial photo number: 30BCC92049-198
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: HV2d (unmapped)
Aspect: E
Description: Drier and rockier site than HV meadows on north and north west aspect; less abundant forage species. Game trail across this slope links valuable habitats described in observations 5 – 8, 10 & 11. Also evidence of wolverine use of this area: maternity den and scats containing the hair and bones of a hoary marmot.

**Observation 10**
Aerial photo number: 30BCC92049-198
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: VD2a (unmapped)
Aspect: SE
Description: Example of grizzly bear feeding on the bulbs of yellow glacier lily (*Erythronium grandiflorum*) in an alpine meadow (VD) in late August. **Plot 3.** There is much evidence of feeding on glacier lilies from last year and this year. Some intact lilies still present (therefore providing feeding opportunities into early September). This unit also provides opportunities to feed on sitka valerian and grasses during late spring/early summer as well as glacier lilies for the rest of the summer and early fall (SS-01-04-7 and 8).

**Observation 11**
Aerial photo number: 30BCC92049-198
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: VD2a (unmapped); VM2a; VG2a (unmapped)
Aspect: SE
Description: Complex of subalpine avalanche chute habitats (VG and VM) and meadows (VD) providing forage and glacier lily feeding potential for grizzly bears. Grizzly bear scats found containing grasses and forbs and feeding sign evident on white-marsh marigold (*Caltha leptosepala*). Sign aged to early July. Plant phenology on this south east aspect is likely slightly earlier than the forage species found on the nearby opposite slope. Polygon originally mapped as 8FB6; 2VM2a suggested to include 1VD2a; 1VG2a and 1VM2a.

**Observation 12**
Aerial photo number: 30BCC92049-198
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VG2a; AF3b
Aspect: SW
Description: Example of a forb dominated avalanche unit (VG2a) at the toe of a high elevation avalanche chute in the headwaters of Isaiah Creek. **Plot 4**. Grizzly bear spring forage species (grasses, sedges, sitka valerian and cow's parsnip) are abundant in this unit and there is much evidence of feeding on cow's parsnip (June). Notable grass species: *Elymus glaucus*; *Calamagrostis canadensis*; *Bromus sp.*. Shrub dominated avalanche unit (AF3b) offers little spring foraging opportunities but high cover values. Limited

elderberry (*Sambucus racemosa*) feeding potential during summer but no evidence of use on this occasion (berry abundance is low). SS-01-04-9 and 10.

**Observation 13**
Aerial photo number: 30BCC92049-072
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VD2a (unmapped)
Aspect: level
Description: Grizzly bear feeding sign on glacier lily bulbs evident (late July) in the subalpine meadows on the slopes above Wasko Lakes. Also recent (late July) evidence of grizzly bear digging for red-backed voles (*Clethrionomys gapperi*). Additional late spring/early summer forage potential includes sitka valerian and grasses. Recent (mid-August) caribou tracks observed. Polygon originally mapped as 5FR6; 4FW6; 1FA2a but remapped (see final TEM coverage).

**Observation 14**
Aerial photo number: 30BCC92049-072
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FA6 (unmapped)
Aspect: westerly
Description: Unmapped open canopy sub-alpine fir/mesic meadow complex (FA6). Grizzly bear scats (July) found containing forbs (notably sitka valerian) and grasses in this unit. There is evidence of feeding on glacier lily bulbs (July). Sitka valerian, grasses and glacier lilies are abundant in openings. Polygon originally mapped as 5FR6; 4FW6; 1FA2a but remapped (see final TEM coverage).

**Observation 15**
Aerial photo number: 30BCC92049-072
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: FV2a; FV6 (unmapped)
Aspect: SW
Description: **Plot 5** is representative of a habitat complex comprised of a forb dominated community (FV2a) and stands of mature subalpine fir (FV6). The habitats found over most of this slope lie along a continuum of this habitat complex. The forb community (FV2a) makes up 80% of the complex within this plot and the mature subalpine fir stands (FV6) make up the remainder. Grizzly bear forage species (cow's parsnip, sitka valerian, glacier lilies, grasses and sedges) are more abundant in the forb dominated communities than in the subalpine fir dominated stands but less abundant than in the VG unit found higher upslope (observation 16). There are fewer feeding opportunities on grizzly bear forage species farther down slope since the mature subalpine fir stands become more contiguous and the forb dominated communities become less common (80% FV6 and 20% FV2a). There is evidence of feeding (July) on sitka valerian, glacier lilies and cow's parsnip within the forb community found in plot 5. Polygon originally mapped as 6FD6; 3FW6; 2FQ6 but remapped (see final TEM coverage).

**Observation 16**
Aerial photo number: 30BCC92049-073
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VG2a (unmapped)
Aspect: southerly
Description: Very productive area for grizzly bear late spring forage (cow's parsnip, sitka valerian, grasses) as well as glacier lily feeding. Large grizzly bear scats found containing sitka valerian, cow's parsnip and grasses (early July). Characteristics of VG2a unit on this slope include: relatively gentle slope, deep soils, receiving slope, dominated by a forb/grass community with little or no canopy. There is abundant evidence of feeding on glacier lily bulbs (mid-July). Polygon originally mapped as 8FD3; 2FQ3 but remapped (see final TEM coverage).

**Observation 17**
Aerial photo number: 30BCC92047-081
TRIM mapsheet number: 093a076
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WW2b (unmapped)
Aspect: level
Description: Unmapped sedge flats on Goose Point. This sedge community is unlikely to provide high value spring forage for bears due to the low digestibility of the majority of species present (*Carex rostrata*). This unit will likely attract moose during spring (influenced also by adjacent WD3a community see observation 18) which could provide opportunities for grizzly bears to feed on winter weakened moose in early spring and potentially on calves during late spring. However, the present use of this whole area (observations 17 – 21) may be influenced by the proximity of the main logging road (< 715m) and the resulting isolation of this point from useable habitat on the east side of this road. Furthermore, grizzly bear activity on the peninsulas and the beaches along the lake is likely influenced by boat activity on Quesnel Lake. This effect will be most significant during fall when salmon are spawning on the beaches and in the spawning channels and grizzly bears are feeding on dead and dying salmon.

**Observation 18**
Aerial photo number: 30BCC92047-081
TRIM mapsheet number: 093a076
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WD3b; WD6i (unmapped)
Aspect: level
Description: **Plot 6** (SS-01-04-13). This floodplain community could provide early spring foraging opportunities for grizzly bears. Edible grasses (notably *Calamagrostis canadensis* (25% cover)) are abundant in this WD unit and horsetails (*Equisetum arvense*), kneeling Angelica (*Angelica genuflexa*) and Douglas's water-hemlock (*Cicuta douglassi*) are also present. The WD unit here attracts moose for most of the year (moose feeding sign is abundant) which could provide feeding opportunities for grizzly bears when moose are vulnerable to predation: during early spring (winter weakened moose) and late spring (calves). This WD unit also provides early summer berry feeding opportunities for bears, notably the berries of red-osier dogwood (*Cornus stolonifera*) but there is also some saskatoon (*Amelanchier alnifolia*) and false Solomon's-seal (*Smilacina racemosa*) present. Red-osier dogwood is abundant (30% cover) in this unit and berries appear to be most abundant on the plants along the habitat edge. Due to the presence of the adjacent spawning channel, this WD unit could also be of value during fall, providing access to salmon and areas in which to bed. However, as stated above (observation 17) the present use of this area may be influenced by the proximity of the neighbouring logging road (within 650m) and boating activity on the lake.

**Observation 19**
Aerial photo number: 30BCC92047-081
TRIM mapsheet number: 093a076
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RD7
Aspect: level
Description: This floodplain community (RD) provides early spring foraging opportunities for grizzly bears: notably horsetails, skunk cabbage (*Lysichiton americanum*) and Douglas's water hemlock and also provides berry feeding opportunities during summer: high-bush cranberry (*Viburnum edule*); thimbleberry *(Rubus parviflorus*); red-osier dogwood; oval-leaved blueberry and devil's club (*Oplopanax horridus*). The berries of these species are ripe in late August and of medium abundance on the plants in this unit. Due to the presence of the adjacent spawning channel, this RD unit could also be of value during fall, providing access to salmon and areas in which to bed. Logging road lies within 390m of this observation and crosses the eastern edge of this habitat unit.

**Observation 20**
Aerial photo number: 30BCC92047-081
TRIM mapsheet number: 093a076
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WW2b (unmapped)
Aspect: level
Description: Sockeye (*Oncorhynchus nerka*) spawning channel of Watt Creek provides salmon feeding opportunities for bears during fall: 2,300 sockeye spawned at the mouth of Watt Creek and 1,800 spawned in Watt Creek in 1997. The spawning channel extends approximately 1km up this tributary of Watt Creek (Watershed Atlas, DFO) until it's confluence with the main channel, at the bridge across Watt Creek: the channel is therefore always within 1km of the main logging road. SS-01-04-14 and 15.

**Observation 21**
Aerial photo number: 30BCC92047-081
TRIM mapsheet number: 093a076
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WD3b
Aspect: level
Description: The shores of Goose Point also offer salmon feeding opportunities for bears: 3,200 sockeye were estimated to have spawned there in 1997. There may be an additional channel on the north side of Goose Point which could serve as a spawning channel for sockeye and an area where bears may feed on spawned out fish. The cover values in this area are high and the channel could offer many opportunities for grizzly bears to scavenge carcasses: there are log jams present in the channel which can trap carcasses as well as deep pools in which spawned out carcasses can settle (SS-01-04-16). The channel may extend as much as 1 km up the tributary of Watt Creek until it's confluence with the main channel (at the bridge across Watt Creek) since no obstructions are identified until this point (Fish Wizard). However, there is concern that the proximity of the neighbouring logging road (the channel is always within 200m of the road and at times within only a few metres) and boating activity on the lake will significantly reduce the potential use of this area during fall. The berry feeding potential is also high in this unit: red-osier dogwood and high-bush cranberry are abundant here and the berries are ripe in August and abundant on the plants. Spring forage feeding potential will also be high, resembling those of Plot 6.

**Observation 22**
Aerial photo number: 30BCC92051-119
TRIM mapsheet number: 093a076
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WD3b
Aspect: level
Description: Sockeye salmon are known to spawn on the beaches of Bowling Point: 3,300 sockeye spawned there in 1997. The present use of this area may be influenced by the proximity of the neighbouring logging road and boat activity on the lake; the nearest minor logging road is ~430m from the WD unit and the main logging road is within 1.4km. This WD unit also provides grizzly bears with feeding opportunities throughout the active year (see observations 18 and 21 above).

**Observation 23**
Aerial photo number: 30BCC92047-151
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WD3b (unmapped); WD6i (unmapped)
Aspect: level
Description: Unmapped inclusion of WD3b and WD6i at the mouth of Roaring River (polygon mapped as 80% RD7 and 20% RD6) provides grizzly bears with valuable spring and summer foraging habitat as well as access to spawning salmon. The spawning channel passes through these habitats and extends approximately 1.5km up the Roaring River: 3,500 sockeye were enumerated at the mouth of Roaring River onshore and 1,800 in the river itself in 1997. This area offers grizzly bears with feeding opportunities during fall (salmon) and also throughout their active year (see observations 18, 21 and 22). The present use of this area is likely less influenced by the proximity of the neighbouring logging road (between 1.6km and 2.3km) but boating activity on the lake may influence grizzly bear use of the area, especially near the river mouth.

**Observation 24**
Aerial photo number: 30BCC92129-026
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RD7
Aspect: level
Description: Sockeye spawn in abundance on the shores of Deception Point: 32,000 sockeye in 1997. The channel extends approximately 1.3km up Isaiah Creek and 300 sockeye were known to spawn here in 1997. The present grizzly bear use of the point and the river is likely influenced by boat activity on the lake and by the proximity of the neighbouring logging road. The main spawning area on the shores of Deception Point lies within 800m of the main logging road; the road crosses the channel at this distance from the mouth of Isaiah Creek. The RD unit also provides foraging opportunities during spring and summer (see observation 19). This unit also contains patches of black cottonwood (*Populus balsamifera trichocarpa*) and paper birch (*Betula papyrifera*) and contains some features and values of the WD6i community described in observation 18.

**Observation 25**
Aerial photo number: 30BCC92047-215
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2

Site Series: WD3b (unmapped); WD6i (unmapped)
Aspect: level
Description: There is a small salmon spawning channel located at the mouth of a creek between Deception Point and Hunter's Camp (Watershed Atlas). The channel provides grizzly bears with access to spawning salmon during fall and also provides foraging opportunities during spring and summer (see observations 18, 21, 22 and 23). The present use of this area is likely influenced by the proximity of the neighbouring logging road (<500m) and boating activity on the lake. A similar site is found at mouth of Dams Creek on the south side of Hunters Camp point (at boat launch).

**Observation 26**
Aerial photo number: 30BCC92049-065
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WD3b; WW2b (unmapped)
Aspect: level
Description: Sockeye spawn in Wasko Creek (10,000 sockeye in 1997) and in Wasko Lake. The spawning channel lies <1km of a minor logging road and the lake shore lies as close as <100m of a minor road at points. The majority of the floodplain of Wasko Creek is comprised of the WD unit (80%) with patches of WW2b interspersed throughout the polygon. Spring foraging opportunities are high (digestible *Carex spp.* abundant) as well as potential access to winter weakened ungulates and spring calves during spring. Some berry feeding opportunities here (false Solomon's-seal and red-osier dogwood) and additional berry producing habitat nearby (see observations 27 and 28).

**Observation 27**
Aerial photo number: 30BCC92049-065
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RD5 (unmapped)
Aspect: level
Description: Unique forest on bench above floodplain dominated by birch with sub-dominant white spruce and western red cedar (SS-01-04-17). Some berry feeding potential: red raspberry (*Rubus idaeus*); black gooseberry; thimbleberry; high-bush cranberry; black twinberry (*Lonicera involucrata*) and red-osier dogwood. The area was burned during the early 1960's; the same time the slopes above Wasko Creek were burnt but it is unlikely that this area is representative of the burn as a whole as this area is uniquely placed on this moist bench while the majority of the burn is on the slope.

**Observation 28**
Aerial photo number: 30BCC92049-065
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WD3b; WW2b (unmapped)
Aspect: level
Description: The WD community stretches along a thin margin parallel to the lake shore and has an abundance of productive berry species: false Solomon's-seal; red-osier dogwood; high-bush cranberry; black gooseberry; thimbleberry; red raspberry and crab apple (*Malus fusca*). The vegetation in this area has been heavily browsed by moose and the area may also provide grizzly bears with access to winter weakened moose and moose calves during spring. This unit lies within 1km of minor logging roads.

**Observation 29**
Aerial photo number: 30BCC92049-072
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wcp3/wc3
Site Series: FV6 (unmapped); FV2a (unmapped); AF3b (unmapped)
Aspect: southerly
Description: Aerial investigation of slopes above Wasko Lakes (below observations 13 – 16, Plot 5). Polygon mapped as 10FD6 but remapped (see final TEM coverage). Group of mule deer (*Odocoileus hemionus*) observed.

**Observation 30**
Aerial photo number: 30BCC92049-072
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wk1/wc3
Site Series: AF3b; FR6 (unmapped)
Aspect: NE
Description: Aerial observation of slopes above Wasko Lakes. Open canopy fir with tall and low shrub understory (mostly alder and devil's club) at lower elevations. Open canopy fir with mostly rhododendron under story at higher elevations. There are few openings in the forest canopy, exceptions are small wetland communities found in depression sites (unmapped CS). Moose (*Alces alces*) observed in wetlands and crossing slope under canopy. Relatively low forage value for grizzly bears in the absence of forb units but potentially high cover value.

**Observation 31**
Aerial photo number: 30BCC92049-072
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wcp3/wc3
Site Series: VD2a (unmapped); HL2d (unmapped); FR6 (unmapped)
Aspect: NW
Description: Late spring foraging on sitka valerian and sedges observed (early July) in the VD unit. Patches of fir interspersed over slope. Ground squirrel burrows evident in HL unit. This pass offers a complex of useable habitat and a travel link between the two major drainages of Wasko and Roaring Rivers. Polygon originally mapped as ESSFwc3 5FH6; 3FG6; 2VM2a but remapped (see final TEM coverage).

**Observation 32**
Aerial photo number: 30BCC92049-129
TRIM mapsheet number: 093a057
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: HL2d (unmapped)
Aspect: NE
Description: Grizzly bear scat found containing ground squirrel hair and sitka valerian. Dig site of ground squirrel burrow situated just off game trail which leads over the pass (SS-01-04-18). Polygon originally mapped as ESSF wcp3 8CL; 2FL3b but remapped (see final TEM coverage).

**Observation 33**
Aerial photo number: 30BCC92049-129
TRIM mapsheet number: 093a057
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: HL2d (unmapped)
Aspect: NE
Description: Grizzly bears scats found on game trail on pass (SS-01-04-19, 20 and 22). Scats contain mostly cow's parsnip and some sedges (early July). Closest site containing cow's parsnip is on other side of pass in VG2a community (observation 34). Polygon originally mapped as ESSF wcp3 8CL; 2FL3b but remapped (see final TEM coverage).

**Observation 34**
Aerial photo number: 30BCC92049-129
TRIM mapsheet number: 093a057
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wcp3/wc3
Site Series: VG2a/VM2a (unmapped)
Aspect: SE
Description: Very productive area for late spring foraging in VG unit, similar values to those of observation 16 (SS-01-04-21). Feeding sign on cow's parsnip is abundant and also observed on the young shoots of arrow-leafed groundsel (*Senecio triangularis*). Grasses (notably *Elymus glaucus*) and sedges (notably *Carex spectabilis*) are abundant. Many glacier lily dig sites are evident. Aerial investigation of this slope shows that this habitat covers approximately 80% of the upper slope and 20% of the mid-slope. Polygon originally mapped as 8AF3b; 2AF3b but remapped (see final TEM coverage). There are many sub-alpine and alpine meadows on the south and east facing slopes that connect this pass (between Wasko and Roaring Rivers) and the productive slopes above Wasko Lakes of observations 13 - 16 and 29), e.g., ESSF wcp3 VD2a and FA2a and AT AD2a.

**Observation 35**
Aerial photo number: 30BCC92049-129
TRIM mapsheet number: 093a057
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wcp3/wc3
Site Series: VG2a (unmapped); SG2b (unmapped)
Aspect: southerly
Description: Aerial investigation of extent of VG community on slope: 45% of mid-slope VG, 80% of upper slope VG. Valuable SG units are found around tarn on mid-slope. Polygon originally mapped as ESSF wc310VD2a but remapped (see final TEM coverage).

**Observation 36**
Aerial photo number: 30BCC92049-071
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: FO3b
Aspect: southerly
Description: Aerial investigation of low elevation burn (estimated to have been burned in late 1980's). Some black huckleberry (*Vaccinium membranaceum)* observed in the understory may offer some berry feeding opportunities for bears. Female moose and calf observed in burn. Young male moose observed nearby. Polygon originally mapped as 8FF3; 2FF3 but remapped (see final TEM coverage).

**Observation 37**
Aerial photo number: 30BCC92047-208
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VD2a/VG2a (unmapped)
Aspect: level
Description: Four grizzly bears scats found in subalpine meadow above Isaiah Burn (SS-01-04-23). Scats fresh (mid-August) and contain 100% black huckleberry obtained from FR3a unit below in Isaiah Burn. Sub-alpine meadow extends along ridge above burn and likely acts as a travel route between areas in the burn. More grizzly bear scats containing black huckleberry and grizzly bear hair are found along ridge trail and also a mark tree with grizzly hair on it verifies use. Mule deer tracks also found on trail. Polygon originally mapped as 6FV6; 4FH6 but remapped (see final TEM coverage).

**Observation 38**
Aerial photo number: 30BCC92047-208
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VD2a; FH3b; FH6
Aspect: level
Description: **Plot 7**. Extensive grizzly bear diggings for ground squirrels on karst along ridge above Isaiah burn (late July). Evidence of grizzly bears digging for the bulbs of spring beauty (*Claytonia lanceolata*), foraging on sitka valerian and sedges (*C. nigricans* and *C. spectabilis*). This is an area of late snow melt and therefore late phenology; forage may not be emerging here until early July so bears could feed on herbaceous vegetation from late July into early August. Bulbs have also been recently excavated (late July). There is also evidence of ground squirrels recently harvesting the bulbs of spring beauty and evidence of mule deer feeding on vegetation (August). Polygon originally mapped as 6FV6; 4FH6 but remapped (see final TEM coverage). SS-01-04-24, 25 and 26. Karst creates small seepage site which is atypical of the ridge as a whole which is drier and dominated by grasses, which is more typical of a VD unit.

**Observation 39**
Aerial photo number: 30BCC92047-208
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR3b
Aspect: S
Description: **Plot 8** is centred on mid-slope position of Isaiah Burn although black huckleberries contained in the scats found on the ridge above likely came from the same unit farther down slope where phenology is advanced. This slope burned approximately 15 years ago and is on a steep (48%) southern aspect (SS-01-04-28). It offers abundant opportunities for feeding on black huckleberries: 50% and berry abundance is high on the plants. The density of black huckleberries and their high energy content make this habitat of particularly high value as a source of food during the bears' hyperphagic period (summer and fall). For some bears, berries will be their primary source of energy during the hyperphagic period and therefore their primary means of depositing sufficient fat to survive hibernation (and for females, foetal development, parturition and lactation) as well as supplementing their spring energy sources. For these reasons the value of significant summer and fall habitats cannot be under-estimated. Bears who rely upon sockeye salmon as a primary source of energy during the hyperphagic period may also rely on berries before and after salmon become available. The open burn is interspersed with fingers of mature fir stands which offer cover nearby. This habitat will also offer feeding opportunities during spring: sitka valerian cover 15% of this plot. Polygon originally mapped as 8VM2a; 2FR3b but remapped (see final TEM coverage).

**Observation 40**
Aerial photo number: 30BCC92047-208
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR3b; FH7 (unmapped)
Aspect: S
Description: There is variation in the abundance of black huckleberries within the same open burn habitat (FR3b). Upslope of Plot 8 huckleberries cover 15% of the slope as compared with 50% within Plot 8. Overall there are less shrubs and more forbs at this site compared with downslope. There is 2% black huckleberry cover within the mature fir stands which extend downslope. Polygon originally mapped as 8VM2a; 2FR3b but remapped (see final TEM coverage).

**Observation 41**
Aerial photo number: 30BCC92047-209
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3/wk1
Site Series: FR3b (unmapped); FO3b
Aspect: S
Description: Aerial investigation of remainder of Isaiah Burn to examine abundance of black huckleberries at elevations below Plot 8. In wc3 sub-zone of ESSF (as Plot 8) black huckleberry abundance is high (>50%) while in the lower elevation sub-zone (wk1) on the same slope black huckleberry abundance is <10%. Slope aspect, gradient and soil conditions remain similar across the same slope. High value sections of burn are restricted to wc3 sub-zone of ESSF. The ESSFwc3 polygon was originally mapped as 10FD5 but remapped (see final TEM coverage). The ESSFwk1 polygon was originally mapped as 8FO5; 2FD5 but remapped (see final TEM coverage).

**Observation 42**
Aerial photo number: 30BCC92049-194
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR3b (unmapped)
Aspect: N
Description: Aerial investigation of an open timbered burn (25% canopy closure, stand burned approximately 15 years ago) on steep slope (65%) northerly aspect (SS-01-04-28). Rhododendron dominated understory, black huckleberry abundance 2%, plants stunted and not very fertile. Polygon originally mapped as ESSF wc3 6FR6; 4FR6.

**Observation 43**
Aerial photo number: 30BCC92049-194
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR3b (unmapped)
Aspect: N
Description: Aerial investigation of same open timbered burn on north easterly aspect on steep slope (43%). Again Rhododendron dominates the understory and black huckleberry abundance is low (5%) and plants are stunted and not very fertile. Polygon originally mapped as ESSF wc3 10FR6.

**Observation 44**
Aerial photo number: 30BCC92049-194
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: CS2b (unmapped)
Aspect: level
Description: Isolated pocket of poorly drained fen (~100m diameter). Offers limited spring foraging opportunities: some *Calamagrostis canadensis* and *Carex nigricans*. Polygon originally mapped as ESSF wc3 AF3b.

**Observation 45**
Aerial photo number: 30BCC92062-216
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: VD2a; HL2d; FH2d (unmapped)
Aspect: S
Description: Complex of dry meadows on crest of slope above Penfold River. Steep slope, warm aspect and exposed crest position likely contributes to this complex offering less foraging opportunities to grizzly bears compared with the same units elsewhere (e.g., observations 10, 11, 13, 31 – 33, 37 and 38). Sitka valerian abundance is low (<1%). Polygon originally mapped as ESSF wcp3 5VD2a; 2HL2d; 3FH3b.

**Observation 46**
Aerial photo number: 30BCC92062-216
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: VD2a
Aspect: S
Description: Exception to this dry slope is small depressions where pockets of late lying snow persist where small numbers of spring beauty can grow.

**Observation 47**
Aerial photo number: 30BCC92062-216
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: VD2a (unmapped); FV3b (unmapped)
Aspect: S
Description: More mesic conditions at lower elevation on the slopes above Penfold River. Slope steep (62%) but deeper soils and more nutrient rich than VD unit above. This unit offers some spring foraging opportunities: feeding sign on sitka valerian and *Carex spectabilis* observed. Sitka valerian comprises approximately 10% cover in VD2a and FV3b units. Polygon originally mapped as ESSF wc3 8AF3b; VG2a.

**Observation 48**
Aerial photo number: 30BCC92062-216
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3

Site Series: VD2a
Aspect: SW
Description: Example of same unit as observation 47 but on south west aspect. Similar conditions as southerly slope, 60% slope, some feeding sign on sitka valerian and *Carex spectabilis*. Sitka valerian covers approximately 7% of this unit.

**Observation 49**
Aerial photo number: 30BCC92062-216
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: FV3b (FB3b) (unmapped)
Aspect: SW
Description: **Plot 9.** Game trail leads from VD unit of observation 48 into the cover of this shrub fir unit: a fir-valerian unit which grades into a fir-black huckleberry unit (SS-01-04-33). Some spring foraging potential: sitka valerian covers 15% of plot, and some summer berry feeding potential: black huckleberry covers 15% of plot, berries have medium abundance on plants. Grasses and sedges are not abundant at this site. Adjacent VD unit offers additional spring foraging opportunities. Polygon originally mapped as ESSF wc3 8AF3b; VG2a.

**Observation 50**
Aerial photo number: 30BCC92062-216
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: FV3b (unmapped); FH3b (unmapped)
Aspect: SW
Description: Shrub fir unit of observation 49 is adjacent to this shrub fir unit which grades between a fir-valerian unit and a fir heather unit. In FH3b unit heather dominates the low shrub community and black huckleberries are not common (<1%). Forb cover also low, e.g., sitka valerian 3% cover. The game trail which leads through observation 49 ends there and does not lead into this unit. Polygon originally mapped as ESSF wc3 8AF3b; VG2a.

**Observation 51**
Aerial photo number: 30BCC92062-216
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: HV2d
Aspect: SW
Description: Very steep (75%) slope and southerly aspect shows variation in distribution of HV units and also variation in value to bears: sitka valerian covers only 5% of unit.

**Observation 52**
Aerial photo number: 30BCC92062-216
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FH3a (unmapped); AF3b
Aspect: SW
Description: Polygon originally mapped as ESSF wc3 8AF3b; VG2a in the upper reaches of the avalanche chute actually comprised of a shrub fir-heather unit (FH3a).

**Observation 53**
Aerial photo number: 30BCC92062-216
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3/wc3
Site Series: FV3b (unmapped)/FR3b (unmapped)
Aspect: S
Description: Southerly aspect slope is steep (55%) and similar across both elevational bands. Forb cover is high in the FV3b unit (40%) but declines with decreasing elevation into the FR3b, where shrub cover increases, in particular rhododendron becomes more common and allows less light to penetrate to the forb layer. Polygons originally mapped as ESSF wcp3 5VD2a; 2HL2d; 3FH3b and 7FR6; 2FQ6; 1FR6.

**Observation 54**
Aerial photo number: 30BCC92062-215
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VD2a (unmapped)
Aspect: E
Description: VD unit on less steep slope (38%) with rocky shallow soils on an easterly aspect. Sitka valerian is locally abundant, 30% in patches within this unit, but overall covers 10% of this unit. Polygon originally mapped as 8AF3b; 1VG2a; 1BV3b.

**Observation 55**
Aerial photo number: 30BCC92062-215
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR3b (unmapped)
Aspect: SE
Description: Steep sloped (60%) shrub fir-rhododendron unit mapped as alder-fern avalanche tract (AF3b). SS-01-04-34. Some sitka valerian (5%), little black huckleberry (2%), and black gooseberry (2%). Soils are shallow. Polygon originally mapped as 8AF3b; 1VG2a; 1BV3b.

**Observation 56**
Aerial photo number: 30BCC92062-215
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VD2a (unmapped)
Aspect: S
Description: Gentle (30%) receiving slope. Some spring foraging opportunities: sitka valerian (10% cover), grasses (including *Elymus glaucus* and *Calamagrostis canadensis*) and sedges (*Carex spectabilis*) are locally abundant, covering up to 60% in patches (20% of unit overall). SS-01-04-35. Polygon originally mapped as 8AF3b; 1VG2a; 1BV3b.

**Observation 57**
Aerial photo number: 30BCC92062-212
TRIM mapsheet number: 093a087
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2

Site Series: AL3b (unmapped)
Aspect: southerly
Description: Mapped as forb unit typically found in the run out zones of avalanche tracts (cow's parsnip-fireweed) but found to be a tall shrub community with abundant berry producing species. Thimbleberry (40%) and red elderberry (*Sambucus racemosa*) (25%) are the most common but false Solomon's-seal, red raspberry and rosy twisted stalk (*Streptopus roseus*) are also abundant in patches and all species have a high or medium abundance of berries. Tall shrub community also contains abundant sitka alder (*Alnus crispa sinuata*) and hardhack (*Spiraea douglasii menziesii*). Site is thick with vegetation, especially tall shrubs and seems very productive in terms of growth of plants and berry production. Despite the abundance and productivity of berry producing species in this unit, these species are typically secondary grizzly bear foods, being exploited more in years of poor berry production of the primary berry producing species: black huckleberries and soopolallie (*Shepherdia canadensis*). This unit should therefore be ranked medium-high (2) instead of high (1) for summer value. Cow's parsnip is common (15%) in the AL unit and very productive, growing with thick stems up to 2 metres tall but with very few leaves. This species is the only abundant spring forage in this unit (there is a small amount of stinging nettle (*Urtica dioica*)) so over all the spring value of AL3b is likely lower than the summer food value, low (3). Cover values are high in all seasons. SS-01-04-36-38, SS-01-05-1 and 2. Polygon originally mapped as 9PF2a; 1AF2a but remapped (see final TEM coverage).

**Observation 58**
Aerial photo number: 30BCC92047-094
TRIM mapsheet number: 093a078
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: FH3a (unmapped)
Aspect: NE
Description: Grizzly bear den found by Geoff Price investigated from air (GPS zone 10 663520E 58477358N). Den situated just below ridge at crest position on steep talus slope on north slopes of Mount Woske. Den excavated into slope; structural support provided by integrity of soil and rocks (SS-01-05-3 and 4). Estimated time of use – winter 1999/2000. Polygon originally mapped as ESSF wcp3 6HV2d; 2FV6; 2VG2a.

**Observation 59**
Aerial photo number: 30BCC92129-123
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: SS2b
Aspect: level
Description: Poorly drained and nutrient poor sedge-sphagnum bog on a tributary of the Penfold River. Large water sedges (notably *Carex aquatalis*) are common but unlikely to provide high value spring forage values for grizzly bears. Moose sign common (beds, tracks and trails). This unit will provide valuable spring habitat for moose and therefore could provide opportunities for grizzly bears to feed on winter weakened moose in early spring and potentially on calves during late spring. Other bear foods are not common: kneeling angelica covers 2% at the forest-wetland margin but is <1% in the wetland proper; trailing raspberry (*Rubus pubescens*) covers <1% of this unit. This unit is located on the valley bottom and is therefore also has potential value as a travel route. Polygon mapped as 5SS2b; 3TS3b; 2WW3b.

**Observation 60**
Aerial photo number: 30BCC92129-123
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2

Site Series: RC7; WW3b
Aspect: westerly
Description: The red cedar-skunk cabbage (RC) unit is a mosaic of high and low ground with distinct plant communities on each (SS-01-05-5). Skunk cabbage (*Lysichiton americanum*) is common (10%) in the low seeps (2% over whole RC unit here) as are grasses locally abundant (60% in patches but 15% overall). Oval-leaved blueberry is abundant on the high ground (30% but 7% overall) and black twinberry also occurs here (2% on high ground but <1% overall). The RC unit therefore provides some early spring foraging opportunities for bears due to the occurrence of primary bear foods: skunk cabbage and grasses, but provides limited summer berry feeding opportunities due to the overall low density of the berry producing species and has low fall value as it offers no access to spawning sockeye (salmon are not distributed this far upstream). This unit is located on the valley bottom and therefore has additional value as a potential travel route. The willow-water sedge fen (WW) unit lies between the RC unit and the sedge-sphagnum bog (observation 59). This WW unit offers winter and spring foraging opportunities to moose and therefore could provide opportunities for grizzly bears to feed on winter weakened moose in early spring and potentially on calves during late spring. Polygon mapped as 8ST7; 1RC7; 1TS3b.

**Observation 61**
Aerial photo number: 30BCC92129-123
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: ST7
Aspect: level
Description: Between the river and the wetlands described in observations 59 and 60 is a strip mature white spruce (*Picea glauca*) situated on the drier bench above the river. A game trail follows the river within these trees. There is abundant moose sign (feeding, travel and bedding). This is a potential travel route for bears and also provides opportunities for grizzly bears to feed on winter weakened moose and calves. Polygon mapped as 8ST7; 1RC7; 1TS3b.

**Observation 62**
Aerial photo number: 30BCC92129-123
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: HO7
Aspect: westerly
Description: The red-cedar/western hemlock-oak fern (HO) unit lies on the lower slopes above the valley bottom. There is some berry feeding potential in this stand: black huckleberry is locally abundant (20% in patches, but 7% over unit as a whole); oval-leaved blueberry (2%); devil's club (3%) and trailing raspberry (30%) but these species, with the exception of black huckleberry, are secondary bear foods and also the overall density of berry producing species is low. Polygon mapped as 6HO7; 4HM7.

**Observation 63**
Aerial photo number: 30BCC92129-123
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RC7 (unmapped)
Aspect: easterly
Description: Skunk cabbage abundant and productive under an open white spruce canopy (5% canopy closure) on the transition between toe slope position and level on the valley bottom (SS-01-05-06). Skunk cabbage covers 25% of unit here. High value early spring foraging opportunities for grizzly bears. Appears that this unit has a restricted distribution immediately adjacent to the toe of the slope under an open canopy

and/or southerly aspect where more light can penetrate. Drainage on this site is better than observation 60; there is running water on this site which may also improve productivity. Polygon originally mapped as 6HO7; 3RD7; 1RD6 but remapped (see final TEM coverage).

**Observation 64**
Aerial photo number: 30BCC92129-123
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: AL3b (unmapped)
Aspect: easterly
Description: Another example of the alder-lady fern seepage slope (see also observation 57). Diversity and abundance of berry producing species is less on this site: red elderberry (35%) and thimbleberry (3%). There is also no cow's parsnip, less false Solomon's-seal, less red raspberry, less rosy twisted stalk. There is more lady fern on this site and similar amounts of stinging nettle (*Urtica dioica*). SS-01-05-06 Polygon originally mapped as 6HO7; 3RD7; 1RD6 but remapped (see final TEM coverage).

**Observation 65**
Aerial photo number: 30BCC92129.123
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WS2b (unmapped)
Aspect: level
Description: Wet meadow dominated by large water sedges (notably *Carex aquatalis*) is unlikely to provide high value spring forage for bears due to the low digestibility of these sedge species. This unit does offer winter and spring foraging opportunities to moose and therefore provides opportunities for grizzly bears to feed on winter weakened moose in early spring and potentially on calves during late spring and also serves as a potential travel route for bears throughout the year. Polygon mapped as 5SS2b; 3TS3b; 2WW3b.

**Observation 66**
Aerial photo number: 30BCC92047-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: WS2b (unmapped)
Aspect: easterly
Description: Wet meadow dominated by large water sedges (notably *Carex aquatalis*). Low spring forage value but opportunities for grizzly bears to feed on winter weakened moose and calves during spring. Polygon mapped as ESSF wk1 6PF2a; 4SM2a but remapped (see final TEM coverage).

**Observation 67**
Aerial photo number: 30BCC92047-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: PF2a
Aspect: E
Description: High value spring foraging opportunities for grizzly bears: feeding sign on abundant cow's parsnip (35% cover) evident and abundant grasses (notably *Calamagrostis canadensis*). Two main communities within this unit: i) cow's parsnip-fireweed on shallow slope (6%) with abundant grass (70%) cover and ii) cow's parsnip-fireweed on less shallow slope (10%) with less grass cover (25%) and more

Indian hellebore (*Veratrum viride*). Also high value winter and spring habitat for moose and therefore opportunities for grizzly bears to feed on winter weakened moose and calves during spring. Polygon mapped as ESSF wk1 6PF2a; 4SM2a but remapped (see final TEM coverage).

**Observation 68**
Aerial photo number: 30BCC92047-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: WC2a (unmapped)
Aspect: E
Description: Willow-Coltsfoot forb dominated swamp found along stream bank at headwaters of tributary of Penfold River. Common horsetail (*Equisetum arvense*) is very abundant in this unit (80%) and offers high value spring forage values to grizzly bears. This complex of habitats (PF2a and WC2a) offers high value and diverse spring feeding opportunities for grizzly bears: cow's parsnip, grasses, forbs and moose. Polygon mapped as 7AF3b; 3PF2a but remapped (see final TEM coverage) The polygon adjacent to the east is mapped as 6SM2a; 2PF2a; 2AF3b but remapped (see final TEM coverage).

**Observation 69**
Aerial photo number: 30BCC92047-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3/wcp3
Site Series: VG2a; HL2d (unmapped); VD2a (unmapped)
Aspect: easterly
Description: Aerial investigation of avalanche chute community at headwaters of tributary of Penfold River. Valerian-groundsel (VG) unit observed within wc3 sub-zone as mapped. Unit mapped as VG in wcp3 is rather a complex of drier habitats: heather-lichen dry meadow (HL); valerian-daisy meadow (VD) and some talus (TA). This complex lies on a steep, dry slope at the base of a moraine and as a result offers less feeding opportunities for bears than the VG unit and other examples of HL and VD on gentler, wetter slopes (observations 10, 11, 13, 31 – 33, 37 and 38). Polygon mapped as ESSF wc3 6AF3b; 2FR6; 2VG2a is as mapped. Polygon mapped as ESSF wcp3 7AF3b; 2VG2a; 1RO but remapped (see final TEM coverage). This polygon is more similar to observation 45. Four goats observed in this complex.

**Observation 70**
Aerial photo number: 30BCC92047-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR3b (unmapped); VG2a
Aspect: easterly
Description: Aerial investigation of fir-rhododendron shrub unit (FR3b) and valerian-groundsel forb unit (VG2a) on mid-slope position of avalanche chute. Cow's parsnip is locally abundant along the stream sides in the FR3b unit and is very abundant in the VG2a unit. Polygon mapped as 5AF3b; 5VG2a but remapped (see final TEM coverage).

**Observation 71**
Aerial photo number: 30BCC92047.090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: AF3b; VG2a

Aspect: easterly
Description: Aerial investigation of alder-fern shrub unit. Complex of AF3b and VG2a unit offers more spring foraging opportunities for bears than AF3b alone. Polygon mapped as 6AF3b; 2RU; 3VG2a.

**Observation 72**
Aerial photo number: 30BCC92047-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: AF3b; FR3b (unmapped); VG2a
Aspect: easterly
Description: Aerial investigation. Unit mapped as AF3b grading towards FR3b. Polygon mapped as 6AF3b; 3VG2a; 1RU but remapped (see final TEM coverage).

**Observation 73**
Aerial photo number: 30BCC92047-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VG2a (unmapped); AF3b
Aspect: easterly
Description: Aerial investigation. Unmapped inclusions of valerian-groundsel forb unit (VG2a) within mapped AF3b, distribution visible on aerial photographs. Mosaic of AF3b and VG2a offers more spring foraging opportunities than AF3b alone. Polygon mapped as 4FR6; 4AF3b; 2TA but remapped (see final TEM coverage).

**Observation 74**
Aerial photo number: 30BCC92047-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: SM2b; BV3a (unmapped)
Aspect: southerly
Description: Upper reaches of tributary of the Penfold River. Sedge-marsh marigold wet meadows (SM2a) lie on gentle (10%) seepage slope adjacent to river. *Carex nigricans* (20%), *Carex spp.* (40%) and white-marsh marigold, *Caltha leptosepala* (15%) are in notable abundance on this site. SM2a grades into Barratt's willow-valerian (BV3a) as slope increases with distance from the river and the abundance of these bear foods decline (as low shrub cover increases) but still noteworthy. This complex offers late spring foraging opportunities for grizzly bears on primary bear foods. Polygon mapped as 4SM2a; 3BV3b; 3FG6 but remapped (see final TEM coverage).

**Observation 75**
Aerial photo number: 30BCC92047-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: SM2a
Aspect: N
Description: **Plot 10.** Sedge-marsh marigold meadow (SM2a) offers late spring foraging opportunities for grizzly bears (SS-01-05-8). *Carex nigricans* is very abundant in this unit (70% cover) and there is also significant amounts of mountain hairgrass, *Vahlodea atropurpurea*, (5%) and white-marsh marigold (5%). Polygon mapped as 4SM2a; 3BV3b; 3FG6 but remapped (see final TEM coverage).

**Observation 76**
Aerial photo number: 30BCC92047-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FG7
Aspect: SW
Description: **Plot 11.** Mature, open canopy fir-globeflower-horsetail unit on gentle (10%), moisture receiving slope at toe slope position (SS-01-05-10 and 11). Unit is a complex of high and low ground. There is an abundance of common horsetail (25%) and *Carex spectabilis* (25%) in the low ground but overall is less, 5% and 15% respectively. Occurrence of sitka valerian (3%) and white-marsh marigold (7%) is also notable. Area offers some late spring foraging opportunities (3) which may be more significant given the proximity of the SM2a meadows and BV3a units. This unit may also be significant as part of a travel route given it's location on the valley bottom. Summer berry feeding opportunities on this site are limited (4) due to relatively low density and low productivity of black huckleberries. Polygon mapped as 4SM2a; 3BV3b; 3FG6 but remapped (see final TEM coverage).

**Observation 77**
Aerial photo number: 30BCC92047-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: WV3a (unmapped)
Aspect: southerly
Description: Barratt's willow-sedge-sitka valerian wet meadow (WV) has similar forage species (and therefore spring forage values) to the Barratt's willow-valerian (BV3a) unit of observation 74. Polygon mapped as 4SM2a; 3BV3b; 3FG6 but remapped (see final TEM coverage).

**Observation 78**
Aerial photo number: 30BCC92047-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: AF3b; FR3b (unmapped)
Aspect: westerly
Description: Aerial investigation of avalanche chute. Mapped alder-fern shrub unit (AF3b) actually fir-rhododendron shrub (FR3b) unit. Polygon originally mapped as 7AF3b; 3VG2a but remapped (see final TEM coverage).

**Observation 79**
Aerial photo number: 30BCC92047-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VG2a; FR3b (unmapped)
Aspect: southwesterly
Description: Aerial investigation of avalanche chute. Polygon originally mapped as 7AF3b; 3VG2a but remapped (see final TEM coverage).

**Observation 80**
Aerial photo number: 30BCC92047-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: AF3b; FR3b; VG2a
Aspect: westerly
Description: Aerial investigation. Polygon mapped as 6FR3b; 2AF3b; 2VG2a.

**Observation 81**
Aerial photo number: 30BCC92129-088
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3/wk1
Site Series: FR3b; FO/FB7
Aspect: south westerly
Description: Aerial investigation of small (lower elevation) open burn above Hilda Lake (burned in 1987). Burn lies on transition between wk1 and wc3 sub-zones in ESSF: burn within wc3 (8FR3; 2FR6 and 6FR6; 3BF; 1FR3) but mature fir forest below lies within wk1 (8FO7; 2FB7) marks extent of burn on slope. Black huckleberry abundance here is low compared with wc3 sub-zone at higher elevations in Isaiah Burn: 20% in this burn compared with 50% but higher than abundance of huckleberries in wk1 sub-zone in Isaiah burn: <10% (observation 41). Adult black bear observed feeding on huckleberries in burn.

**Observation 82**
Aerial photo number: 30BCC92129-085
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF/ICH
BEC Sub-zone: wc3/wk1/wk2
Site Series: FR3b; FB3b; HO3b
Aspect: north easterly
Description: Aerial investigation to determine abundance and distribution of black huckleberries within the 3 sub-zones found within the Penfold Burn. This area was burned in 1990 and was not severe. Percent cover of black huckleberry in ESSF wc3 FR3b (~1645m) is 5%; in ESSF wk1 FB3b (~1370m) is 2% and in ICH wk2 HO3b (~1250m) is 1%. In the ICH wk2 HO3b unit, thimbleberry appears (7% cover).

**Observation 83**
Aerial photo number: 30BCC92047-088
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wcp3
Site Series: VD2a
Aspect: N
Description: **Plot 12.** On pass (12% slope) above Old Penfold Burn. Unit mapped as heather-valerian low shrub unit (HV2d) actually valerian-daisy forb unit (VD2a). This unit offers abundant late spring/early summer foraging opportunities for grizzly bears. There is evidence that a grizzly bear has recently (mid-August) excavated this site for yellow glacier lily bulbs. There is also evidence of recent feeding (mid-August) on sitka valerian and the young shoots of arrow-leaved groundsel (*Senecio triangularis*). Sitka valerian is locally very abundant; up to 30% in patches but 15% cover overall. Arrow-leaved groundsel covers 10% of this unit. As with most dig sites, the percent cover of glacier lily is not high (<1%). This area may not be snow free until as late as mid-June and the late growth of bear foods at this site is reflected in the delayed phenology. There are some glacier lilies on this site that are yet to senesce and will therefore likely continue to be a food source into early September. This area will be a significant travel route

between the Penfold River and Watt Creek. There are also marmot feeding potential for grizzly bears in this area due to the presence of the marmot colony on the talus slopes above the pass. This site therefore offers high forage values in late spring, summer and into fall due to the late phenology of this area, rodent feeding opportunities during summer and fall and has value as a travel route in all three active seasons.

**Observation 84**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: TS3b
Aspect: level
Description: Labrador tea-water sedge poor fen (TS) unit lies beyond the influence of the floodplain. TS unit offers little to no forage value for grizzly bears: there are trace amounts of high-bush cranberry and black twinberry and only the less digestible large water sedges occur here. This unit may however provide grizzly bears opportunities for feeding on winter weakened moose and calves during spring as this unit appears to offer valuable spring habitat for moose. Polygon mapped as 4TS3b; 3SS2b and 3SR2b. Distance to nearest logging road: 1.5 km.

**Observation 85**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WD3b (unmapped); AS3b (unmapped)
Aspect: level
Description: The willow-dogwood shrub unit (WD3b) and alder-swamp shrub unit (AS3b) are found on the floodplain. AS3b unit offers little in terms of spring foraging and summer berry feeding potential despite the presence of primary bear foods: cow's parsnip and stinging nettle and secondary bear foods: red raspberry, black twinberry, red elderberry since these species are found only in trace abundance. This habitat will be significant in terms of cover values, bedding and travel, during the salmon spawning season in the fall due to the proximity of the spawning streams. Site also has some potential to provide opportunities for feeding on winter weakened moose and calves during spring. Polygon originally mapped as 8ST6; 1RC6 and 1WW3b but also includes some small amounts of WD3b and AS3b units. Distance to nearest logging road: 1.5 km.

**Observation 86**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RC7
Aspect: SE to level
Description: Example of red-cedar-skunk cabbage unit when swamp component is low. Overall skunk cabbage covers 1% of unit and is localised to the small pockets of low ground. Common horsetail is abundant in these pockets (15% over whole unit). Oval-leaved blueberry is abundant (35%) and productive (berry abundance is medium) and black twinberry is common (15%) but less productive (no berries on plants). This unit therefore offer some spring foraging opportunities (but less than the swamp dominated RC sites) and some summer berry feeding opportunities and has value during fall as an area in which to bed, travel and take cover when feeding on spawning salmon on the Penfold River nearby. This unit has value as a travel route along the valley bottom during all three of the bears' active seasons. Point lies on edge of two polygons: one originally mapped as 8ST6; 1RC6 and 1WW3b (but see observation 85, 90 and

88) on the floodplain and one mapped as 6RD7; 4HO7 on the slope. Distance to nearest logging road: 1.5 km.

**Observation 87**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RD7
Aspect: SE
Description: This unit is in proximity to the salmon spawning areas and will therefore be of value as a site in which to bed, travel and take cover during the fall. The site offers little berry feeding potential during summer (3): oval-leaved blueberry (5% and medium productivity); thimbleberry (10% and medium productivity) and devil's club (10% and medium productivity). This unit has value as a travel route along the valley bottom during all three of the bears' active seasons. Polygon mapped as 6RD7 and 4HO7. Distance to nearest logging road: 1.5 km.

**Observation 88**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RC7
Aspect: southerly
Description: Red-cedar-skunk cabbage unit runs along the base of the slope between the RD unit and the floodplain bench. Skunk cabbage is abundant in this site (20%) and all horsetail species together comprise 50% of the herb layer (common horsetail, meadow horsetail and wood horsetail, *Equisetum sylvaticum*). This unit therefore offers valuable early spring foraging opportunities to grizzly bears. There are little summer berry feeding opportunities. Again the proximity of this unit to the salmon spawning areas results in this area being valued as a site in which to bed, travel and take cover during fall. Also, this unit has value as a travel route along the valley bottom during all three of the bears' active seasons. Game trails found traversing these habitats (observations 85 – 88) and within this unit, recently deposited (mid-August) grizzly bear hair found along the trail. Polygon mapped as 8ST6; 1RC6 and 1WW3b but includes some WD3b and AS3b and more RC6 than is currently mapped, e.g., 7ST6; 2RC7 and 1WD3b. Distance to nearest logging road: 1.4 km.

**Observation 89**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RD7
Aspect: southerly
Description: Site aims to be representative of forest openings on slope above Penfold River. Understory of this site very reminiscent of AL3b communities seen elsewhere (observations 57 and 64) but no alder: red elderberry; thimbleberry; cow's parsnip, lady fern dominate. Under forest canopy devil's club dominates while in these openings a greater diversity of shrubs and forbs can flourish. Some berry feeding opportunities but species are not primary foods. Little spring foraging opportunities die to low abundance and diversity of spring foods. Farther from salmon streams and valley bottom so less value as travel corridor and travel/bedding site during fall. Polygon mapped as 4RD6; 3ST6 and 3WW3b. Distance to nearest logging road: 1.5 km.

**Observation 90**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WD3b (unmapped)
Aspect: level
Description: Heavy alluvial deposit covering herb layer of this site. Polygon originally mapped as 8ST6; 1RC6 and 1WW3b but should be mapped to include WD3b and AS3b units (see also observation 85 and 88). Distance to nearest logging road: 1.3 km.

**Observation 91**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: ST6 (unmapped)
Aspect: south westerly
Description: White spruce dominated stand with virtually no herb layer due to spring fluvial action and a thick alluvial deposit. Red cedar seedlings dominate the understory. This deposit is also seen upslope where a strip of cottonwoods occur along the stream side ST(f)6 (observation 98). This stand is more similar to polygon above slope (4RD6; 3ST6 and 3WW3b) than mapped polygon: 6RD7; 4HO7. Distance to nearest logging road: 1.5 km.

**Observation 92**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: HM5 (unmapped)
Aspect: S
Description: **Plot 13.** Evidence of recent (mid-August) grizzly bear use of game trail on bench along north side of Lower Penfold River (SS-01-05-11 and 12). Mark tree (sub-alpine fir) found with grizzly bear hair on it along game trail in narrow section of forest between Penfold River and rock slide. This game trail likely serves as an access route between salmon feeding areas during fall and as a travel route along the river corridor at all times during the bears' active year. Data from the Department of Fisheries and Oceans (DFO) show that sockeye enter the Penfold system by mid-August and salmon were observed on 27$^{th}$ August during field work. Although it is possible that bears may already be fishing for salmon there appears to be less areas suitable for fishing in this particular area (i.e., mostly deep running water) and more areas in this part of the river for scavenging carcasses (e.g., log jams and deep pools). The majority of salmon may therefore not become available to bears until some have spawned and died. The evidence of use observed on this trail may be related to bears checking on the availability of salmon and then returning to berry feeding areas as has been observed elsewhere or movement between berry feeding areas. Plot on edge of two polygons: one mapped as 6ST6; 4WW3b and other 8HM5; 2HO5. This stand is more similar to the latter (i.e., the polygon on the slope as opposed to on the floodplain). Distance to nearest logging road: 1.6 km.

**Observation 93**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2

Site Series: HO7 (ST7)
Aspect: northerly
Description: Mature red cedar-western hemlock-oak fern unit with influence of white spruce-twinberry unit due to cold air drainage along valley bottom. Game trail from north side of Penfold River crosses a log and continues to follow the river corridor in this unit on the south side. There is evidence of recent (mid-August) grizzly bear use; hair is found on overhanging branches along trail. There is little berry feeding potential: oval-leaved blueberry (10%) and black huckleberry (10%) but later in the year (early September); berries are still green although of medium abundance. Black bear spring scat (containing forbs and grasses) found along game trail. Trails also branches inland to wetlands (TS2b and SS2b units) and shrub units (WD3a). This game trail likely continues to serve as an access route between salmon feeding areas during fall and as a travel route along the river corridor at all times during the bears' active year. Polygon originally mapped as 8ST6; 2WW3b could include recognition of HO7 unit. Distance to nearest logging road: 1.5 km.

**Observation 94**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WD3a (unmapped)
Aspect: level
Description: Game trail passes through willow-red-osier dogwood shrub unit. High-bush cranberry and red-osier dogwood are abundant and productive (medium berry abundance), especially along the river margin where most light can penetrate. False Solomon's-seal is also common and productive (medium berry abundance) in patches. Unit therefore offers some berry feeding potential for grizzly bears (3). Area has value as an access route at all time of the bears' active year and specifically provides access to areas where bears can feed on spawning salmon (1). Polygon originally mapped as 5TS2b; 4SS2b and 1ST6 but should include small amount of WD3a along river bench and also RC7 unit (see observation 95). Distance to nearest logging road: 1.5 km.

**Observation 95**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RC7 (unmapped)
Aspect: level to northerly
Description: Game trail passes through small pocket of red cedar-skunk cabbage. There are little or no to foraging opportunities for grizzly bears in this example of RC. Again area has value as an access route at all time of the bears' active year and specifically provides access to areas where bears can feed on spawning salmon (1). Black bear spring scat containing forbs and grasses found on trail, forbs and grasses may have been obtained from WD unit (observation 94). Polygon originally mapped as 5TS2b; 4SS2b and 1ST6 but should include small amount of WD3a along river bench (observation 94) and small amount of RC7. Distance to nearest logging road: 1.6 km.

**Observation 96**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: ST7
Aspect: level to northerly

Description: Game trail passes though stand of white spruce-twinberry. Some berry feeding potential (3): high-bush cranberry (10%); thimbleberry (30%) and black twinberry (10%). Area has value as an access route at all time of the bears' active year and specifically provides access to areas where bears can feed on spawning salmon (1). Polygon originally mapped as 5TS2b; 4SS2b and 1ST6 but should include small amount of WD3a along river bench (observation 94) and small amount of RC7. Distance to nearest logging road: 1.6 km.

**Observation 97**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: TS2b; AS3b (unmapped)
Aspect: level
Description: Aerial investigation of wetland complexes along Penfold River to determine distribution of wetlands offering high value spring foraging opportunities. River corridor has value as an access route at all time of the bears' active year and specifically provides access to areas where bears can feed on spawning salmon (1). Labrador tea-water sedge poor fen (TS) unit offers little in terms of foraging opportunities but do provide grizzly bears with opportunities for feeding on winter weakened moose and calves during spring as this unit appears to offer valuable spring habitat for moose. Polygon containing AS3b lies on floodplain bench and was originally mapped as 8ST6; 1RC6 and 1WW3b and should be mapped to include AS3b unit as well as WD3b (see observation 85). Distance to nearest logging road: 1.5 km.

**Observation 98**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: ST(f)6
Aspect: SW
Description: Aerial investigation. Poplar dominated stand on alluvial fan. Fluvial action is annual; herb layer is almost absent. Polygon mapped as 4RD6; 3ST6 and 3WW3b. Distance to nearest logging road: 1.6 km.

**Observation 99**
Aerial photo number: 30BCC92129-090
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RD7
Aspect: SW
Description: Aerial investigation. Openings in canopy of RD7 similar to shrub cover of AL3b (see also observation 89): red elderberry (10%); thimbleberry (35%) and cow's parsnip (5%). Area was flooded many years ago. Polygon mapped as 4RD6; 3ST6 and 3WW3b. Distance to nearest logging road: 1.8 km.

**Observation 100**
Aerial photo number: 30BCC92129-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: WW(x)3a (unmapped)
Aspect: level

Description: Aerial investigation. Poorly drained organic fen but with absence of standing water, large water sedges do not dominate. Instead *Carex flava* is common and may offer more spring foraging potential than large water sedges. Polygon originally mapped as 5SS2b; 3TS3b and 2WG2b but habitat more similar to adjacent polygon on floodplain bench: 4ST6; 4RC6; 2WW3a.

**Observation 101**
Aerial photo number: 30BCC92129-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: SB2a
Aspect: level
Description: Aerial investigation. Sedge-buckbean fen unit contains abundant horsetails. Provides some spring feeding opportunities for grizzly bears. Polygon mapped as 6WG2b; 4SB2b.

**Observation 102**
Aerial photo number: 30BCC92129-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RC7
Aspect: southerly
Description: Aerial investigation. Skunk cabbage common (7%) in understory of RC7 in seepage spots offers spring feeding opportunities for grizzly bears. Polygon mapped as 5RC6; 3WG2b; 2OW.

**Observation 103**
Aerial photo number: 30BCC92129-092
TRIM mapsheet number: 093a077
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RC7
Aspect: level to southerly
Description: Aerial investigation. Skunk cabbage very abundant (40% cover) in this RC7 unit. The productive skunk cabbage sites are distributed across two polygons: one originally mapped as 5HO6; 3RD7 and 2RC6 (actually little to no HO6, mostly RD7 with 2RC7 instead of 2RC6) and the other mapped as 5RC6; 3WG2b and 2OW (again RC7 instead of RC6). Areas of most abundant skunk cabbage are found at the toe of the slopes (see also observations 86, 88 and 95).

**Observation 104**
Aerial photo number: 30BCC92047-144
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: ST7 (SO7)
Aspect: northerly
Description: Game trail found following river corridor in white spruce-twinberry unit (influenced by white spruce-oak fern unit) at toe slope position of Roaring River valley. Grizzly bear scat deposited (mid-August) on game trail and found to contain evidence of feeding on oval-leaved blueberry and rosy-twisted stalk. This scat may have been deposited by the sub-adult grizzly bear that has been observed in this area recently. There is a number of berry producing species in this unit: black gooseberry (15% cover, high berry abundance); black twinberry (7%, medium berry abundance); skunk currant (2%; high berry); oval-leaved blueberry (2%, medium berry); black huckleberry (2%, medium berry); rosy twisted stalk (2%, low

berry abundance) and trailing raspberry (20%, low). This site offers berry feeding opportunities for grizzly bears (2) to feed on secondary foods which prove significant to younger bears (as is likely the case here) and when the abundance and productivity of the primary berry species is low, i.e., in poor berry years or when primary berries are depleted. Grizzly bear scats containing black gooseberry and skunk currant that were found nearby on the logging roads in the Roaring River (observation 1) could also have been consumed in this unit. Both black gooseberry and skunk currant always associated with nursing logs. The site also has value as part of the access corridor along the valley bottom at all time of the bears' active year. However, this particular area is not expected to be used heavily by bears during the salmon spawning season; sockeye are not known to spawn this far up the Roaring River. Polygon mapped as 8ST6; 2SO6. Distance to nearest logging road: < 50m.

**Observation 105**
Aerial photo number: 30BCC92047-144
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: HO3b; RD3b
Aspect: NE
Description: **Plot 14.** Example of harvest block cut in 1988 (13 years old) in ICH on northerly aspect in Roaring River drainage. Cut block comprised of 80% red cedar-western hemlock-oak fern shrub unit and 20% red cedar-devil's club shrub unit. A number of recently (mid-August) deposited scats were found on the logging roads accessing the cut blocks of the Roaring River valley (observation 1). Scats predominately contain skunk currant (*Ribes glandulosum*) and black gooseberry (*Ribes lacustre*) with some oval-leaved blueberry (*Vaccinium ovalifolium*); cow's parsnip (*Heracleum lanatum*); horsetails (*Equisetum spp.*); grasses and sedges (*Carex spp.*). Black gooseberry and skunk currant are both locally abundant in this cut block, being restricted to fallen logs and stumps remaining after harvesting, but overall the abundance of these species is low (1% for each). Bear feeding sign (mid-August) observed on these species within the plot. There is a diversity of other berry producing species in this unit which provide feeding opportunities for grizzly bears: black huckleberry (10%); oval-leaved blueberry (10%); rosy twisted stalk (3%); false Solomon's-seal (1%); red raspberry (1%); thimbleberry (2%) and trailing raspberry (1%). This site offers berry feeding opportunities for grizzly bears (3) to feed on secondary foods which prove significant to younger bears (as is likely the case here) and when the abundance and productivity of the primary berry species is low, i.e., in poor berry years or when primary berries are depleted. Some early spring foraging potential, especially along stream sides where horsetails are more common (2% overall). However, this site may not be used by all sex-age classes of grizzly bears due to the proximity of the roads in combination with the lack of cover (3).

**Observation 106**
Aerial photo number: 30BCC92129-035
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: SO(k)7
Aspect: N
Description: **Plot 15.** White spruce-oak fern (SO7) unit is found on lower slope position on south side of Roaring River. Berry producing species in this unit include: black huckleberry (25%); rosy twisted stalk (2%); trailing raspberry (15%); black gooseberry (2%); black twinberry (1%) and oval-leaved blueberry (<1%). Black gooseberry is locally abundant but patchily distributed on fallen logs but overall abundance is low (2%). Some berry feeding potential in this unit (3) and little value for spring forage (4) but this site has value as part of the access corridor along the valley bottom at all time of the bears' active year (2-3).

**Observation 107**
Aerial photo number: 30BCC92129-030
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: FB(k)3b
Aspect: N
Description: **Plot 16.** Example of cut block harvested and burned in 1988 (13 years old) in ESSF on northerly aspect in Roaring River drainage. Recently (mid-August) deposited scats found on deactivated logging roads in this cut block. Scats contain only black gooseberry and skunk currant and are thought to have been deposited by a grizzly bear (large diameter scats). Also evidence of feeding on these species within the plot. Abundance of black gooseberry is higher in this cut block than the block investigated at lower elevation in the ICH (8% compared with 1%) as is the abundance of skunk currant (3% compared with 1%). Black gooseberry and skunk currant also restricted in distribution to fallen logs and stumps. The abundance of other berry producing species is generally low: red elderberry (<1%) and rosy twisted stalk (1%), with the exception of thimbleberry (20%), however, thimbleberry development on this site is arrested; before the berries were able to ripen, they dried out. This is also seen in the berries of devil's club and may indicate that this site received a short flush of moisture this year which quickly dried out. Some spring forage potential (3-4): sitka valerian (3%) and common horsetail (3%). This site offers berry feeding opportunities for grizzly bears (3) to feed on secondary foods which prove significant to younger bears and when the abundance and productivity of the primary berry species is low, i.e., in poor berry years or when primary berries are depleted. Again it may be that this site may not be used by all sex-age classes of grizzly bears due to the proximity of the roads in combination with the lack of cover, however, the fact that these roads are deactivated and used rarely will likely increase the use of the sites by grizzly bears. Polygon mapped as 8FB3; 2FO3.

**Observation 108**
Aerial photo number: 30BCC92129-030
TRIM mapsheet number: 093a066
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: FB(k)7
Aspect: N
Description: Mature forest of fir-brachythecium adjacent to cut block described above (observation 107). Some spring foraging opportunities for bears (3): sitka valerian (7%) and common horsetail (2%) and evidence of bear feeding on sitka valerian (species unknown). Little berry feeding opportunities at this site (4): trailing raspberry (25%); black gooseberry (<1%); rosy twisted stalk (2%) and oval-leaved blueberry (<1%). Offers cover value to bears feeding in adjacent cut block. Polygon mapped as 7FO(k)6; 3FB(k)6.

**Observation 109**
Aerial photo number: 30BCC92051-121
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR(k)3b (unmapped); FQ(k)3b (unmapped); FH(k)3b (unmapped)
Aspect: northerly
Description: Aerial investigation of First Watt Burn to determine abundance of black huckleberry in wc3 sub-zone. Area inferred to have burned in early 1960's (see observation 110a). Very little soil in this burn, rocky substrate, forb community is abundant (especially fireweed, *Epilobium angustifolium*) but little shrub cover, mostly rhododendron. At ~1524m the slope is comprised of FR3b, FQ3b and RO (all unmapped units) and lies just above the transition between wk1 and wc3 (polygon mapped as 9FR6; 1AF3b). Black huckleberry abundance here is low (<5%). At ~1700m, the slope is comprised of FQ3b and some FH3b (both unmapped; polygon mapped as 10FR5). Black huckleberry abundance remains <5%. At ~1860m,

huckleberry abundance remains low at <5% but sitka valerian is locally abundant, covering ~25% in places (polygon mapped as 6FR6; 2FQ6 but must include some valerian units in the moister areas and also the seral stage of the trees areas is lower.

**Observation 110**
Aerial photo number: 30BCC92051-122
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ICH/ESSF
BEC Sub-zone: wk2/wk1/wc3
Site Series: HO3b (unmapped); RD3b (unmapped); FR3b (unmapped); FL3b
Aspect: northerly
Description: Aerial investigation of Second Watt Burn (burned 1961) to determine abundance of black huckleberry across sub-zones. At ~1340m, slope comprised of ICH wk2 HO3b and RD3b (unmapped, polygon mapped as AF3b and ES) and black huckleberries cover ~5%. At ~1500m, the slope lies on the transition between ESSF wk1 and wc3 and is comprised of FR3b (unmapped). Black huckleberry abundance remains low at <5%; this unit is dominated by Rhododendron shrubs. Polygon mapped on north-west aspect as wk1 8FO6; 2FF3 and wc3 6FL3b; 33 and 1FQ6 and on north east aspect as wk1 6AF3b; 2AF3b and 2ES and wc3 10FL3b. At ~ 1675m, the slope is comprised of ESSF wc3 FL3b and black huckleberry abundance remains low at <5%. This part of the slope is drier than below, much rockier and there is overall less shrub abundance. Polygon mapped as wc3 6FL3b; 3FQ3 and 1FQ6 on north-west aspect and as wc3 10FL3b on the north east aspect.

**Observation 111**
Aerial photo number: 30BCC92051-125
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ICH/ESSF
BEC Sub-zone: wk2/wk1
Site Series: AF3b; FD6; PF2a
Aspect: southerly
Description: Aerial investigation of avalanche chute in Watt Creek. Upper slope above rocks comprised of 4AF3b and 6FD: fir-devil's club (polygon mapped as 7AF3b and 3FD6). There is an abundance of grasses (especially *Calamagrostis canadensis*) in cow's parsnip-fireweed forb unit: PF2a (polygon mapped as 6AF3b; 2PF2a; 2RD6).

**Observation 112**
Aerial photo number: 30BCC92051-125
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ICH/ESSF
BEC Sub-zone: wk2/wk1
Site Series: PF2a; AF3b; FB6
Aspect: southerly
Description: Aerial investigation of middle reaches of avalanche chute in Watt Creek: ESSF wk1 7AF3b and 3FB (fir-oak fern-brachythecium) and lower reaches: ICH wk2 8AF3b and 2PF2a.

**Observation 113**
Aerial photo number: 30BCC92051-125
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: AF3b; PF2a (unmapped)
Aspect: southerly

Description: Aerial investigation of three avalanche chutes in Watt Creek: small pockets of PF2a at edges of each of these three chutes although all three polygons mapped as 8AF3b and 2RD6. Polygons should be mapped to include PF2a units (see final TEM coverage). The complex of shrub (AF3b) and forb (PF2a) offer higher value to grizzly bears than AF3b alone: high forage values and high cover values occur together.

**Observation 114**
Aerial photo number: 30BCC92051-127
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ICH/ESSF
BEC Sub-zone: wk2/wk1
Site Series: AF3b; PF2a (unmapped)
Aspect: south westerly
Description: Aerial investigation of avalanche chute in Watt Creek: lower section of chute mapped as ICH wk2 10AF3b actually a complex of 9AF3b and 1PF2a. Upper part of chute mapped as ESSF wk1 8AF3b; 2FB6 comprised of a mosaic of very lush 2PF2a and 6AF3b and adjacent timber of 2FR6. Higher values of shrub and forb complex than AF3b alone: high forage values and high cover values occur together.

**Observation 115**
Aerial photo number: 30BCC92051-128
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: AF3b; PF2a (unmapped)
Aspect: westerly
Description: Aerial investigation of avalanche chute in Watt Creek: greater abundance of PF2a forb unit than mapped, especially on the lower slope position. Polygon mapped as ESSF wk1 6AF3b; 2FD6; 2AF3b but remapped (see final TEM coverage).

**Observation 116**
Aerial photo number: 30BCC92051-128
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: AF3b; VG2a (unmapped)
Aspect: westerly
Description: Aerial investigation of avalanche chute (~1675m) in Watt Creek: significant abundance of unmapped VG2a forb unit across slope interspersed with AF3b shrub unit. VG2a covers 35% of lower slope and 15% of upper slope in this chute. There is a high abundance of cow's parsnip in the VG2a unit. Polygon originally mapped as ESSF wc3 8AF3b and 2FR6 but remapped (see final TEM coverage). Polygon originally mapped as 8AF3b and 2 AF3b but remapped (see final TEM coverage).

**Observation 117**
Aerial photo number: 30BCC92051-045
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: PF2a; AF3b; BV3b (unmapped)
Aspect: W
Description: **Plot 17.** Avalanche chute in Watt Creek. High diversity and abundance of primary spring forage species (SS-01-05-14). All forbs cover 45% of this unit: cow's parsnip (35% overall and >50% cover in patches); stinging nettle (7%); edible thistle, *Cirsium edule* (3%). All grasses cover 65%:

*Calamagrostis canadensis* (30%); *Elymus glaucus* (15%); *Bromus vulgaris* (14%); *Cinna latifolia* (2%) and *Festuca sp*. (4%). This forb community offers grizzly bears with very high (1) spring feeding opportunities and the adjacent shrub communities provide a valuable source of cover to bears (BV3b and AF3b). There is little summer berry (4) feeding opportunities within the forb unit. There is some berry feeding potential within the BV3b unit: red raspberry grows (2%) along the edge between the BV3b and PF2a units and some other berry producing species (see observation 118). It appears that this chute is used heavily by moose at all times of the year (abundance of beds and feeding sign) which may provide grizzly bears with opportunities to feed on moose during spring and possible also fall. Given the location of this chute near the valley bottom, this unit will have additional value as part of the access corridor along the valley bottom at all time of the bears' active year. Polygon originally mapped as 6AF3b; 2PF2a and 2AF3b but remapped (see final TEM coverage).

**Observation 118**
Aerial photo number: 30BCC92051-045
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: FO6; PF2a; BV3b (unmapped)
Aspect: west
Description: Followed game trail which leads from chute (PF2a) into stand of mature stand of fir-oak fern-knight's plume (FO6). Abundance of black gooseberries (>50% cover), ripe and productive (high abundance of berries on plants), on forest/chute edge (FO6/PF2a/BV3b) as well as small pockets of dwarf blueberry (*Vaccinium caespitosum*), some skunk currant, thimbleberry, saskatoon, black twinberry and red elderberry. Polygons mapped as 6AF3b; 2PF2a and 2AF3b but remapped (see final TEM coverage) and 7FT6; 2FO6 and 1FB6.

**Observation 119**
Aerial photo number: 30BCC92051-045
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: FO6; FB6
Aspect: W
Description: Followed game trail into mature open canopy stand of fir-oak fern-knight's plume (FO6) which then grades into stand of fir-oak fern-Brachythecium (FB6). Medium slope (17%). Berry producing species: black gooseberry (20%, high berry abundance); black twinberry (3%, medium berry abundance); rosy twisted stalk (3%, low); false Solomon's-seal (1%, low); skunk currant (1%, medium); red elderberry (1%, medium). Spring forage species: sitka valerian (7%); stinging nettle (<1%); mountain sweet-cicely, *Osmorhiza chilensis*, (<1%). Polygon mapped as 7FT6; 2FO6 and 1FB6.

**Observation 120**
Aerial photo number: 30BCC92051-045
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: FT(a)6
Aspect: level to westerly
Description: Example of mature fir-twinberry-lady fern unit (FT6) on active floodplain (some invaders from floodplain community also present, notably alders and willows). Spring forage species: sitka valerian (7%); all grasses (15%): *Elymus glaucus* and *Calamagrostis canadensis*; cow's parsnip (1%); all horsetails (10%): common horsetail and meadow horsetail (*Equisetum pratense*). Berry producing species: rosy twisted stalk (7%, low); black twinberry (2%, medium); oval-leaved blueberry (3%, medium); black gooseberry (1%, low); trailing raspberry (4%, medium). Slope is level on floodplain. If this unit were on

lower slope position instead of the floodplain, oval-leaved blueberry and black twinberry predicted to be in high abundance. Polygon mapped as 7FT6; 2FO6 and 1FB6.

**Observation 121**
Aerial photo number: 30BCC92051-045
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: FD(w)7
Aspect: W
Description: Example of mature stand of fir-devil's club-lady fern unit (FD7) on warm aspect in Watt Creek (SS-01-05-15). Fairly open canopy (25% canopy closure), some berry abundance but little productivity: thimbleberry (15%, no berries); red elderberry (1%, medium); black gooseberry (3%, low); skunk currant (<1%, no berries); black huckleberry (<1%, low); false Solomon's seal (<1%, medium); rosy twisted stalk (1%, low). Spring forage value low (4), summer berry (4) and fall feeding low (4). Slope 47%. Unit may see more use as cover source if closer to feeding habitat in chute. Polygon mapped as 6FB6; 2FD6 and 2FO6.

**Observation 122**
Aerial photo number: 30BCC92051-044
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VG2a; AF3b
Aspect: westerly
Description: Aerial investigation of avalanche chute in Watt Creek. Mosaic of very productive forb (VG2a) and shrub (AF3b) communities throughout the chute provide valuable spring foraging habitats for grizzly bears with cover nearby. Polygon mapped as 6AF3b; 2BV3a and 2VG2a but remapped (see final TEM coverage).

**Observation 123**
Aerial photo number: 30BCC92051-044
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VM2a (unmapped); VG2a (unmapped); FA6 (unmapped); SM2b (unmapped)
Aspect: westerly
Description: Aerial investigation. Complex of these habitats at the back end of the bowl in the upper reaches of Watt Creek: forb avalanche units (VM2a and VG2a), sub-alpine seepage meadows (SM2b) and small pockets of sub-alpine krumholz fir mesic meadows (FA6). These habitats offer very high value foraging opportunities for grizzly bears from late spring into summer: sitka valerian; sedges; grasses; cow's parsnip and glacier lilies. Polygon mapped as 6FA2a; 2VD2a and FV3b but remapped (see final TEM coverage).

**Observation 124**
Aerial photo number: 30BCC92051-044
TRIM mapsheet number: 093a077
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FA2a
Aspect: southerly

Description: Aerial investigation of crest above avalanche chute of observation 122: krumholz fir-mesic meadow (FA2a). High value foraging opportunities for grizzly bears from late spring into summer: sitka valerian, cow's parsnip, grasses, sedges and glacier lilies. Glacier lily diggings are visible. Polygon mapped as 10FA2a.

**Observation 125**
Aerial photo number: 30BCC92047-136
TRIM mapsheet number: 093a067
Landscape Unit: Eastside
BEC Zone: ESSF
BEC Sub-zone: wc3/wcp3
Site Series: FA6 (unmapped); VG2a (unmapped); VD2a
Aspect: southerly
Description: Aerial investigation of Pass between Watt Creek and Roaring River. These gentle slopes are comprised of krumholz fir-mesic meadows (FA6), sub-alpine meadows (VD2a) and forb avalanche units (VG2a). High value foraging opportunities for grizzly bears from late spring into summer: sitka valerian, cow's parsnip, grasses, sedges and glacier lilies. Glacier lily diggings are visible Polygon mapped as ESSF wcp3 5VD2a; 3HL2d and 2SG2a but remapped (see final TEM coverage). The FA6 unit lies mostly within the polygon below, which was originally mapped as wcp3 6FA2a; 3 FV3b and 1SG2a but remapped (see final TEM coverage). This pass offers a link between two major drainages as well as a complex of very productive foraging habitat.

**Observation 126**
Aerial photo number: 30BCC92047-195
TRIM mapsheet number: 093a067
Landscape Unit: Eastside/Wasko Lynx
BEC Zone: ESSF/AT
BEC Sub-zone: wc3/wcp3
Site Series: FA6 (unmapped); VG2a; VD2a (unmapped); SL2a (unmapped); TA
Aspect: easterly
Description: Pass between Roaring River and Lynx Creek offers later spring/summer foraging potential for grizzly bears in the krumholz fir-mesic meadows (wc3 FA6, east aspect), sub-alpine meadows (wcp3 VD2a), forb avalanche units (wcp3 VG2a) and alpine seepage meadows (sedge-leafy liverwort meadows, AT SL2a). There is also marmot feeding opportunities in the talus upslope from the pass. The polygon on the slopes above the pass is mapped as AT 5MC2a; 3SL2d and 2TA but remapped (see final TEM coverage). The polygon mapped as wcp3 6HV2d; 2FA2a and 2FB3b also contains FA6; VD2a and VG2a and was remapped (see final TEM coverage). The pass is quite broad and game trails are found across its width. There is evidence of feeding on sitka valerian (early July) in the VD2a unit on the pass as well as other foraging opportunities: *Carex nigricans* found in the SL2a and cow's parsnip, sedges, grasses and glacier lilies expected in FA6; VD2a and VG2a. This pass is another example of a link between two major drainages which also provides valuable feeding habitat (observations 31-34 (Wasko/Roaring), 83 (Penfold/Watt) and 125 (Watt/Roaring)).

**Observation 127**
Aerial photo number: 30BCC92049-211
TRIM mapsheet number: 093a068
Landscape Unit: Wasko-Lynx
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: RD7; AL3b (unmapped)
Aspect: Level
Description: Aerial investigations of openings in red cedar-devil's club unit in Lynx River drainage. Openings are alder shrub dominated and reminiscent of AL3b community seen under a similar canopy above the Penfold River (observation 89 and 99). Devil's club found under both red cedar canopy and alder canopy. Polygon mapped as 4HO7; 4RD7 and 2HO7 also includes some AL3b.

**Observation 128**
Aerial photo number: 30BCC92049-211
TRIM mapsheet number: 093a068
Landscape Unit: Wasko-Lynx
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: ST7; RD7
Aspect: Level
Description: Polygon in Lynx River originally mapped to contain white spruce-oak fern unit (7SO6) and also 2ST6 and 1RD6. The white spruce-twinberry unit (ST) lies adjacent to the river and immediately beside it on the lower slope position is the red cedar-devil's club (RD) unit. SO unit should be located between these units if it were to occur here.

**Observation 129**
Aerial photo number: 30BCC92129-126
TRIM mapsheet number: 093a078
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VG2a; AF3b
Aspect: easterly
Description: Aerial investigation of avalanche chute in first tributary of Penfold River: complex of AF3b and VG2a creates mosaic of forb and shrub habitats therefore offers good foraging opportunities with cover nearby. Mapped as 8VG2a and 2AF3b.

**Observation 130**
Aerial photo number: 30BCC92129-128
TRIM mapsheet number: 093a078
Landscape Unit: Penfold
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: AF3b; PF2a (unmapped)
Aspect: north easterly
Description: Aerial investigation of avalanche chute in second tributary of Penfold River: small unmapped section of PF2a within AF3b at chute base. Higher values than when AF3b occurs alone: high forage values and high cover values occur together. Polygon mapped as 4AF3b; 4AF4b and 2AF3b but remapped (see final TEM coverage).

**Observation 131**
Aerial photo number: 30BCC92047-095
TRIM mapsheet number: 093a078
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: SM2a; VD2a (unmapped); FH6; FR6
Aspect: north easterly
Description: Aerial investigation in second tributary of Penfold River, on creek feeding small lake just east of grizzly bear den. One polygon comprised of 70% subalpine sedge meadow (SM2a) on seepage spots. Adjacent polygons include pockets of mature fir (sub-alpine-fir-heather (FH6) and sub-alpine-fir-rhododendron (FR6)). Unmapped units of valerian-daisy (VD2a) sub-alpine meadow on slopes above (10% of whole polygon) increases value of polygon as this unit offers late spring/summer foraging opportunities for grizzly bears. Polygon mapped as 6FH6 and 4FH2b but remapped (see final TEM coverage).

**Observation 132**
Aerial photo number: 30BCC92129-080
TRIM mapsheet number: 093a078
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR3b (unmapped)
Aspect: southerly
Description: Aerial investigation of avalanche chutes in second tributary of Penfold river: shrub units mapped as AF3b actually shrub fir-rhododendron units (FR3b) at ~1765m. Polygon mapped as 7AF3b; 2RO and 1AF3b but remapped (see final TEM coverage). Polygon mapped as 6AF3b; 2RO and 2AF3b but remapped (see final TEM coverage).

**Observation 133**
Aerial photo number: 30BCC92129-080
TRIM mapsheet number: 093a078
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR3b; VG2a (unmapped)
Aspect: southerly
Description: Aerial investigation of avalanche chutes in second tributary of Penfold River: unmapped forb units of valerian-groundsel (VG2a) in chute as well as AF3b and FR3b at higher elevation: increases value of polygon as this unit offers late spring/summer foraging opportunities for grizzly bears. Polygon mapped as 10AF3b but remapped (see final TEM coverage).

**Observation 134**
Aerial photo number: 30BCC92129-080
TRIM mapsheet number: 093a078
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: FR3b (unmapped); VG2a
Aspect: southerly
Description: Aerial investigation of avalanche chutes in second tributary of Penfold River: open shrub units (FR3b) interspersed with small pockets of forb units (10% of polygon is VG). Polygon mapped as 5AF3b; 4AF3b and 1VG2a also contains FR3b.

**Observation 135**
Aerial photo number: 30BCC92129-080
TRIM mapsheet number: 093a078
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: AF3b (unmapped); PF2a (unmapped)
Aspect: southerly
Description: Aerial investigation of avalanche chutes in third tributary of Penfold River: lower section (~200 m vertical) of avalanche chute is unmapped (AF3b and PF2a) and is instead included with surrounding forest. Forb avalanche unit (PF2a) is abundant in lower part of chute covering ~20% of this section. Polygon mapped as wk1 7FB7 and 3FO7 but remapped (see final TEM coverage).

**Observation 136**
Aerial photo number: 30BCC92062-205
TRIM mapsheet number: 093a088
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VG2a
Aspect: southerly
Description: Aerial investigation of avalanche chutes in fourth tributary of Penfold River: productive forb units (VG2a). Polygon mapped as 5FR3; 3VG2a and 2FR6.

**Observation 137**
Aerial photo number: 30BCC92062-205
TRIM mapsheet number: 093a088
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: AF3b; VG2a
Aspect: south easterly
Description: Aerial investigation of avalanche chutes in fourth tributary of Penfold River: unmapped forb unit (VG2a) within polygon of AF3b. Polygon mapped as 7AF3b; 2AF3b and 1FR6 but remapped (see final TEM coverage).

**Observation 138**
Aerial photo number: 30BCC92062-205
TRIM mapsheet number: 093a088
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wk1/wc3
Site Series: PF2a; VG2a (unmapped)
Aspect: north westerly
Description: Aerial investigation of avalanche chutes in fourth tributary of Penfold River. Polygon in wk1 include 2PF2a (cow's parsnip-fireweed avalanche tract forb unit) and wc3 includes 1VG2a (valerian-groundsel avalanche tract forb unit). This increases value of polygon as this unit offers late spring/summer foraging opportunities for grizzly bears. Polygon mapped as wk1 5AF3b; 4FB6 and 1PF2a but remapped (see final TEM coverage). Polygon mapped as wc3 7AF3b; 3FR6 but remapped (see final TEM coverage).

**Observation 139**
Aerial photo number: 30BCC92062-170
TRIM mapsheet number: 093a088
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VD2a (unmapped); FR3b (unmapped); BV3b; SM2a
Aspect: south easterly
Description: Aerial investigation of fourth tributary of Penfold River. Polygon mapped as wc3 6AF3b; 2SM2a and 2BV3b but remapped (see final TEM coverage).

**Observation 140**
Aerial photo number: 30BCC92062-205
TRIM mapsheet number: 093a088
Landscape Unit: Penfold
BEC Zone: ESSF
BEC Sub-zone: wc3
Site Series: VD2a (unmapped); FV3b (unmapped); BV3a (unmapped); SM2a
Aspect: level

Description: Aerial investigation of valley bottom of fourth tributary of Penfold River. Polygon mapped as 5SM2a; 4BV3b and 1VG2a but remapped (see final TEM coverage).

**Observation 141**
Aerial photo number: 30BCC92049-069
TRIM mapsheet number: 093a056
Landscape Unit: Wasko-Lynx
BEC Zone: ESSF
BEC Sub-zone: wk1
Site Series: FO(w)3b
Aspect: SE
Description: **Plot 18.** Example of cut block (10-15 years old) in ESSF wk1 on southerly aspect in Wasko River drainage. Little spring foraging potential (4): all grasses <5% (*Calamagrostis canadensis* (3%); *Cinna latifolia* (<1%) and *Bromus vulgaris* (<1%)). Little berry feeding potential (4): thimbleberry (15%, low berry abundance); red raspberry (1%, medium); rosy twisted stalk (<1%, low); false Solomon's-seal (1.5%, low); black huckleberry (<1%, low); black gooseberry (1%, low); skunk currant (<1%, low); black twinberry (<1%, low) and red elderberry (<1%, medium). Within the wk1 sub-zone in the cut block as a whole, red raspberry is locally abundant (covering up to 40%) but this year, at least, berry development is arrested so that although berry abundance is found to be medium to high in some places, few berries are edible. It appears that the plants in this cut block may have experienced a flush of moisture (which allowed berries to develop) which quickly dried up (thereby inhibiting further berry development. This has been seen else where in other cut blocks in the ESSF (observation 107, northerly aspect). There is also a small pocket of cow's parsnip growing within a seepage area at the crest position of the slope above. This is unusual; overall the slope is uniform and the dominant herb is fireweed. Low cover values in this block. Polygon mapped as 4FO6; 3FB6 and 3FO6.

**Observation 142**
Aerial photo number: 30BCC92049-069
TRIM mapsheet number: 093a076
Landscape Unit: Wasko-Lynx
BEC Zone: ICH
BEC Sub-zone: wk2
Site Series: HM(w)3b
Aspect: S
Description: **Plot 19.** Example of cut block (10-15 years old) in ICH wk2 on southerly aspect in Wasko River drainage. Virtually no spring foraging potential (5): *Calamagrostis canadensis* (<1%) and very little summer berry feeding potential (5): red raspberry (<1%, low); thimbleberry (<1%, no berries); black gooseberry (<1%, no berries) and black huckleberry (<1%, low). Site is rocky and dry with much exposed colluvium. Polygon mapped as 8HO7 and 2 RD7.