Vance Creek, Ecological Reserve No. 30

Biological Survey - 1983

Introduction

In early 1939 40 acres of what is now Vance Creek Ecological reserve was selected for research purposes by the Federal Department of Agriculture. Entomology and forest pathology studies were carried out from a laboratory in Vernon until the early 1970s when the office was removed to 506 W. Burnside Avenue, Victoria to form part of the Pacific Forestry Centre. Either before or after this move the property was placed under administration of the Federal Department of Environment which gave permission for its use for outdoor education by the local School District. As the Ecological Reserves Unit, newly established around this time, had creation of reserves for eductional purposes as an object under its formative Act, it was decided that the property should be enlarged to 120 acres and transferred to the new Agency. This was done and Vance Creek gazetted on 7th February 1972 as E.R. # 30.

Previous reports covering this area include -

Application for Ecological Reserve, Report #83, check sheet for survey completed by T.C. Brayshaw and J.Grant.

A List of Lepidoptera Collected with a Black Light Trap 1962 - 66, J.K. Harvey. (It is not clear whether this was carried out at the Vernon laboratory or at the Vance Creek property.)

A Summary of Some Phenological Observations at Trinity Valley, B.C. for the years 1939 - 45, J. Grant

It is possible that studies held in the Pacific Forestry Centre archives are based on work carried out in whole or in part at Vance Creek (or Trinity Valley as it was then called).

Location

The reserve is 7 km north of the village of Lumby. From the central crossroads, Mable Lake Road is followed north for 4½ km at which point a left turn is made on to Trinity Valley Road. Although the latter actually bisects the reserve, the location is best noted by a forest access on the left marked "Deafies Creek" at the time of writing. This forms the south boundary of the property.

On 1 : 50,000 topographical map 82 L/7W (Shuswap Falls) it can be found at 50°18' 10''N and 118°57'W.

Physiography

The Lumby area falls at the southern end of the Quesnel-Shuswap Highlands. Slopes here are fairly gentle and rounded compared with farther north and seldom exceed 1500 m except at Silver Star Mountain where the summit reaches 1890 m. A valley running north-south borders Silver Star on the east and the reserve is located near its southern end. Vance Creek itself drains much of the east side of the mountain and flows down to Trinity Valley before turning south, running through and roughly dividing the reserve. Where it enters on the north boundary the elevation is approximately 655 m (2,150 ft.), dropping to approximately 637 m (2,090 ft.) in the south where, just before leaving the subject area, it flows over a waterfall and becomes gorge-like.

A gradual rise of surface each side of the creek reaches its highest points near the north-east and the north-west corners. An approximation of metric contours is shown on Figure 1 with lines interpolated from the imperial scale. Also indicated (by hatching) are scarp slope lineations where these are a notable feature on the ground.

Apart from Vance Creek, the only other flowing water is a minor stream entering the seep area in the north-east quadrant. Two intermittent trickles are marked near the west boundary but these show water only during run-off and in years of little snow may remain completely dry. One originates in a small pool (about 1½ m x 2½ m) and a similar sized pool occurs closer to Vance Creek; neither has any inlet and they appear to be fed by seepage.

Topographical maps (compiled from air photos) indicate a flowing stream coming in from the north-west but there is no evidence of this being a phenomenon of recent years. One of the seepage areas extends in this direction so there could be sub-surface movement along this line. Another seepage area occurs on the other side of the creek farther north.

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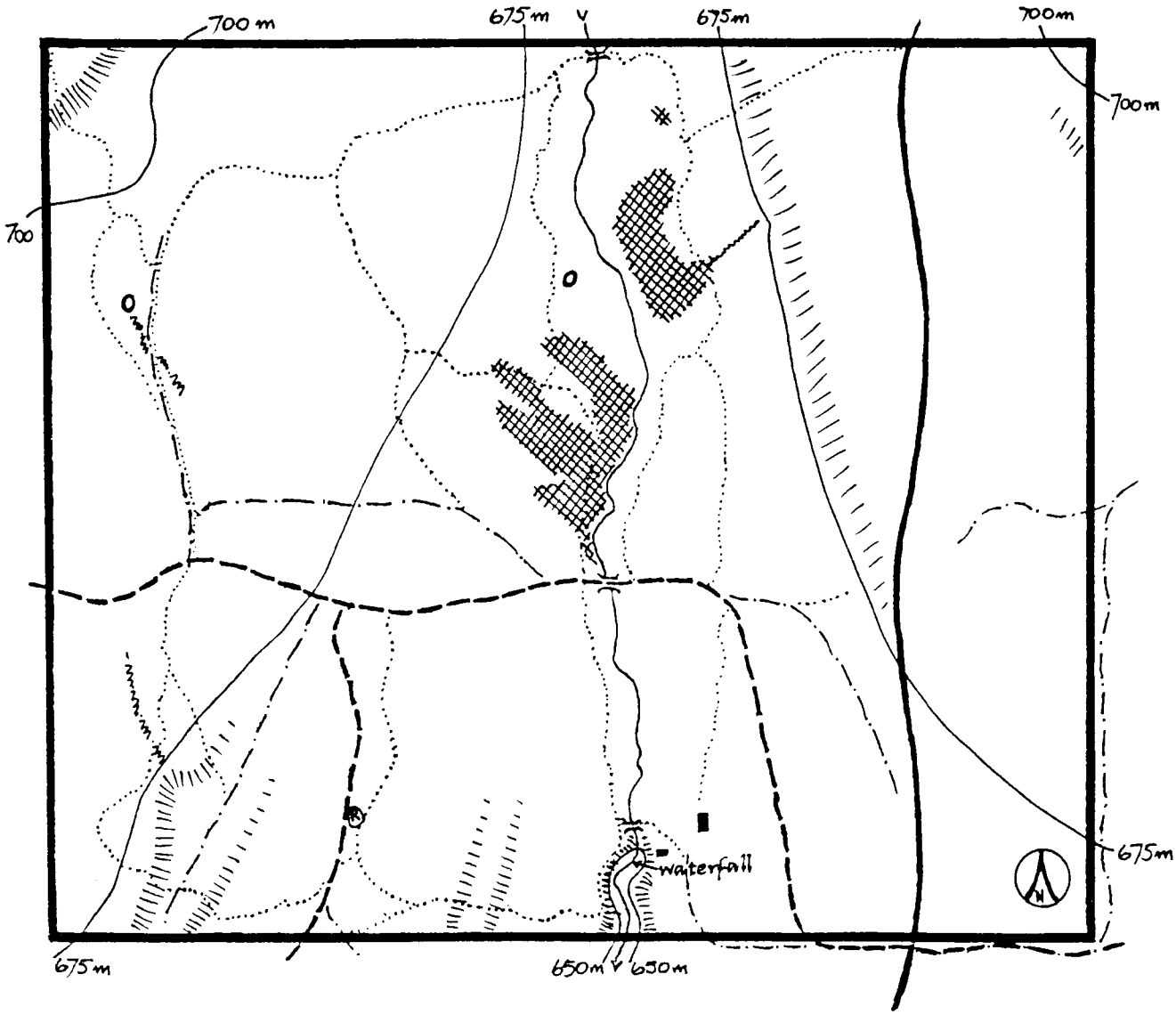
FIGURE 1 . . . PHYSICAL FEATURES



Scale 2cm = 100m

provincial road
graded forest access road
old logging trail
foot path

scarp slope
stream, intermittent stream
pool, rock
area of seepage

GEOLOGY

This part of the Shuswap Highlands has not had a priority for detailed fieldwork and is still shown on open file maps as "Undifferentiated; of Mesozoic or Palaeozoic (pre-Cretaceous) age.". Most seems to be a pale hard gneiss. Only in the far south where Vance Creek has created its gorge is there any rock outcropping within this reserve and here some softer darker beds adjacent to more indurated rock provide weakness for erosion to work upon and are probably responsible for formation of the waterfall. A large rock marked R in the south-west quadrant of Figure 1 would appear to be an erratic rather than bedrock.

North of the reserve lies a sliver mapped as orthogneiss or leucocratic granite, from which small light-coloured erratics present in places may have come, and depending where the line is drawn this formation may also underlie the north part of the reserve.

None of these rock types has high potential for economic minerals and no showings are known in the immediate area. Geochemical testing of silt was carried out several years ago on samples from Vance Creek near the south bridge revealing very low copper values. These and similarly low silver from farther upstream will have been derived from the area of an old prospect near the summit of Silver Star Mountain.

Structurally, a series of minor east-west folds have been indicated east of Silver Star within which the reserve straddles one of the synclines. The same investigation has shown an apparent fault starting north of the Shuswap River, running down and influencing the direction of Trinity Valley. None of these features has sufficient amplitude to be visually important.

Trinity Valley at its southern end has the appearance of a small hanging valley above what is known as White Valley. The latter is believed to have carried Shuswap River west through the site of Lumby into the Okanagan at one time before disorientation of drainage patterns during the glacial period (Nasmith 1962). The hinge line, where a hanging valley plunges to lower ground below is a point of dynamic erosion as water attempts to adjust to the difference in levels. It is this that will have provided energy for Vance Creek to cut the gorge which just nudges into the reserve, and is probably also responsible for the parallel linearments shown running in from the south boundary on Figure 1. Together, these features must lower the water table in the area south of the forestry road and are one of the factors creating drier conditions there.

SURFICIAL MATERIALS

As will be explained later in this report, the forested area can be broadly divided into two categories. Where soil profiles were examined within both areas they appeared closely similar thus tending to exclude soil as a controlling factor in differentiating between the forest types.

Under a 1 cm cover of slightly decomposed organic matter (F horizon) a thickness of from 4 cm to 7 cm (H horizon) of more altered material is general, classifying the humus element as "mor". Beneath this is a reddish sandy loam admixed with small stones and angular chips extending to an unknown depth. By colour a dystric brunisol or ferric podzol, this soil has developed from the mantle of ground moraine remaining from the last ice advance, although some on the higher slopes may be on fluvioglacial terracing of the same age. The long, shallow scarp slope shown on Figure 1 in the north-east quadrant may be one example of such terracing.

The only exception to this pattern is the area of seepage marked by cross-hatching on Figure 1. Here there is 1 cm of coarse new organic matter followed by 35 cm to 40 cm of dark, well decomposed "moder" humus on top of grey silty inorganic soil. Mostly this would be gleying of the same parent material as found elsewhere, though a qualification should be made that low lying flats bordering the creek could include silt layers from creek overflow. Vegetation growth in these areas does not indicate this as being a regular or recent occurance.

A provincial soil survey of the late 1940s (Kelley and Spilsbury, 1949) mapped the reserve area as "Glenemma gravelly sandy loam - terrace phase" comprising 14 inches to as much as 2 ft. of soil over a grey, open, stratified mixture of coarse sand, gravel and stones up to 8 inches in diameter. The sub-stratum they refer to can be seen in road cuts when coming up the hill from the Mabel Lake Road. These writers commented on excessive sub-drainage and an ability of the soil to dry quickly after rain, and a lack of surface standing water. Because of the difference between soil and sub-soil characteristics, they thought the two unrelated, inferring glacial deposit below covered by a thinner soil layer of finer sized material eroded from up-slope glacial till.

Fluvial deposits as gravel bars along the creek are of grey silt and black pebbles derived from more easily eroded dark coloured argillite and phyllite near the settlement of Trinity Valley. Except on the basis of grain size, this silt would not be easy to differentiate from the grey silty soil of the seepage areas mentioned above.

CLIMATE

One of the most abrupt changes in climate in British Columbia must be from the warm, dry Southern Interior under rain-shadow effect of the Cascade Mountains, to the cool, moist Interior Wet Belt induced by the Monashee Mountains to the east. If a line is drawn from Chase on the South Thompson River to Enderby at the north end of the Okanagan Valley and on to Lumby, it portrays the approximate start of transitional conditions to the truly wet zone beyond Sicamous-Mable Lake-Sugar Lake. On this scenario Vance Creek Reserve can be seen to fall into the transitional area - cooler and wetter than Buck Hills/Larch Stand reserves 18 km south (ignoring height difference) but not so cool and wet as Kingfisher Creek and Upper Shuswap River 52 and 57 km north-east.

At one time weather data were recorded daily at Vance Creek and these records may be in the Pacific Forestry Centre archives. Average precipitation was reported to be 55 cm annually. The best fit for precipitation using official records are from the old reporting station at Shuswap Falls, 10 km east, which ceased operating a number of years ago, however, 30 year averages are available for the period 1931 to 1960 and can be used with the proviso that, at 450 m, it was about 200 m lower in elevation than Vance Creek. It will be noted that the total figure is significantly below the total reported from the reserve itself.

	J	F	M	A	M	J	J	A	S	O	N	D	Total
mean rainfall (mm)	7.1	10.4	18.3	25.4	44.5	55.1	34.5	34.5	41.4	33.9	26.7	10.2	347mm
mean snowfall (cm)	46.2	30.2	9.1	0.5						1.8	19.3	41.7	148cm
mean total precipitation (mm)	53.3	40.6	27.4	25.9	44.5	55.1	34.5	34.5	41.4	40.6	46.0	51.8	495mm

For temperature it is necessary to use Lumby, Sigalet Road, reporting station. This is located 16 km north-east and 150 m lower compared with Vance Creek.

mean daily temperature (C^{o})												Average
-6.4	-2.3	1.8	7.4	12.1	15.6	18.3	17.1	12.4	6.4	0.6	-3.7	6.6

Local variations have quite a profound effect on a small scale. Trinity Valley, running north-south, makes a convenient conduit for cold north and east winds throughout the year; the presence of a high mountain not far to the north-west, often snow-capped, emphasises the cold air ponding effect of valley conditions, together making the area colder than it otherwise might be. On

the other hand, warm winds usually come from the south to west and would be helped by the orientation of Coldstream and White Valleys. Immediately across the south boundary of the reserve, land clearing on private property allows these winds greater play than in the north and the difference in vegetation is very apparent.

In 1988 a few remnant snow patches were still present under the trees despite a winter of below average accumulation. Creek water had not reached its peak on 20th April but by 5th May was declining noticeably.

VEGETATION

Transitional vegetation types are not considerate enough of report writers to fall conveniently into neat categories. In this case, should Vance Creek reserve be considered as being in the Interior Douglas-fir zone, with a heavy admixture of other conifers, or should it be placed in the Interior Cedar-Western Hemlock zone which does have a suitable Douglas-fir - Western Larch sub-zone? This latter choice is preferrable because by entering the moist transition to the Interior Wet Belt, strictly speaking the dry forest has been left behind.

Although nine units have been identified running from driest to wettist (plus three others grouped separately not falling into this succession), it is evident on walking through this reserve that it comprises two basic easily identified divisions - what might be referred to as the "dry" phase and the "wet" phase forest (see Figure 2). Indicator plants offer a useful means of differentiation, viz.

"dry" phase	"wet" phase
more Larix occidentalis	less Larix occidentalis
less Picea engelmannii	more Picea engelmannii
Shepherdia canadense	Athyrium filix-femina
Carex concinnoides	Equisetum arvense
Oryzopsis asperifolia	Lycopodium annotinum
Lycopodium complanatum	Ptilium crista-castrensis
Dicranum polysetum	Lobaria pulmonaria

As hemlock and spruce cast a more sombre shade than douglas-fir and larch there is a distinct contrast in atmosphere between these two types.

Reference has been made under the section on Geology to the creek ravine and several incised linearments running up from

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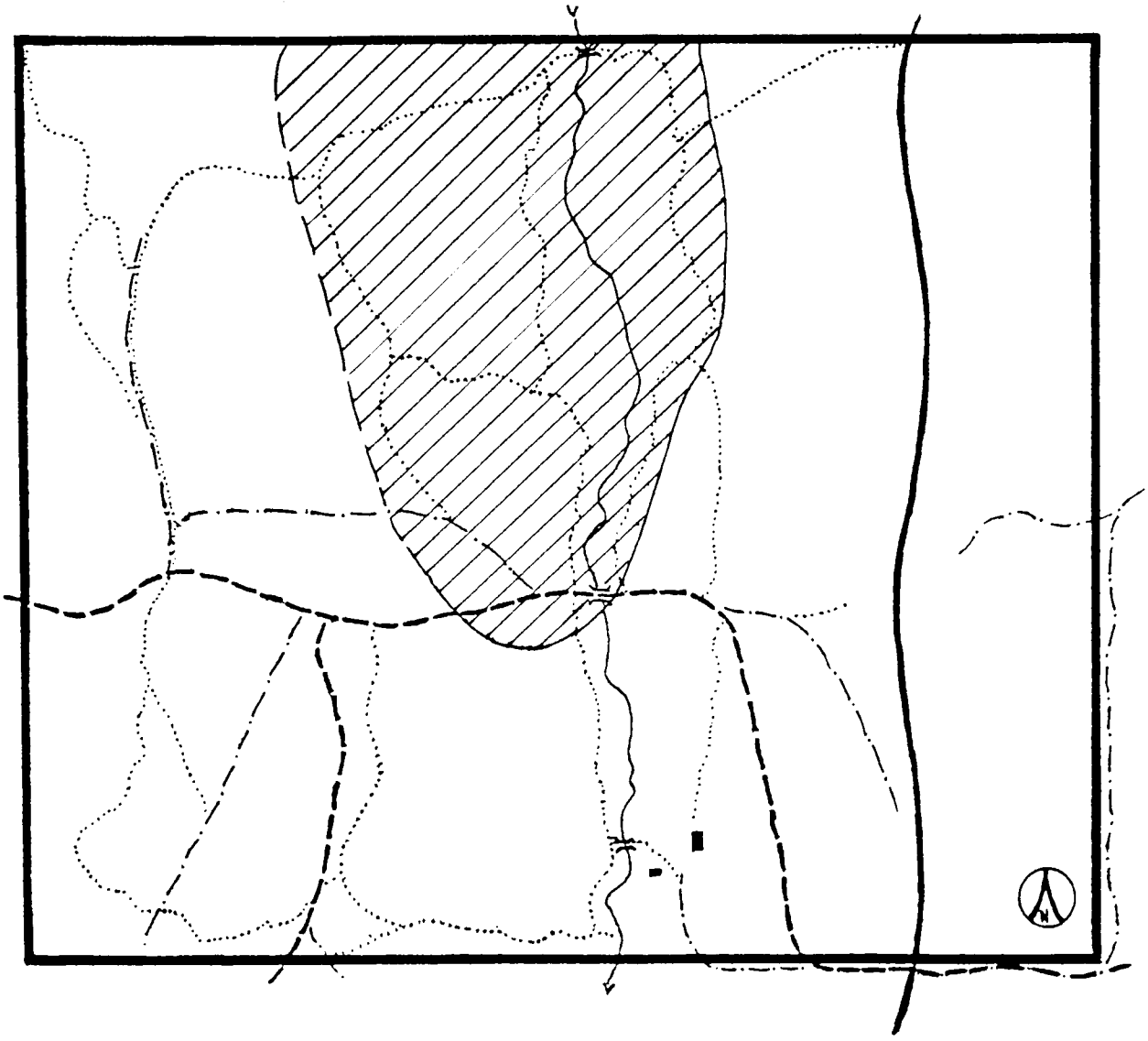
FIGURE 2 . . . FOREST TYPE



Scale 2cm = 100m

provincial road

graded forest access road

old logging trail

foot path

"wet" Forest

"dry" forest

the south boundary. These have probably lowered the water table helping to increase dryness in that section south of the forestry road. Working to the same end has been clearing beyond the reserve in this direction allowing more wind movement, particularly wind coming from warmer, drier areas thus introducing a factor not present farther north. Drying, due to better drainage, also takes place up-slope to the east and west.

Plant assemblages treated below are:-

increasing dryness			mesic			increasing wettness		
3	4	5	1	2	6	7	8	9
NW corner	Exposed edge	2nd growth (fire)	Dry phase A	Dry phase B	Valley type	Wet phase	Creek flat	Forested bog

10 Creek bank
11 Meadow and trail
12 forestry road edge

INTERIOR WESTERN HEMLOCK - WESTERN RED CEDAR ZONE,

ROCKY MOUNTAIN DOUGLAS - FIR - WESTERN LARCH SUB-ZONE

The first two units provide zonal plant assemblages for this area and cover the greater part of the reserve. Although differentiated when well developed, they tend to merge and separate with abandon and would be difficult to map individually. False-box has been eliminated as an indicator species (Brayshaw, undated) as it grows with equal facility in either, for example, it is plentiful at the entrance to the reserve which is amongst the driest of places, yet grows profusely where Route 1 (see Figure 5) goes north from the bridge in an area where water table must be quite high.

UNIT 1 Pseudotsuga - Chimaphila - Carex (Dry phase forest, A)

Douglas-fir - Pipsissewa - Northwest sedge association

Pseudotsuga menziesii	Vaccinium membranaceum	Linnaea borealis
Thuja plicata	Paxistema myrsinites	Chimaphila umbellata
	Shepherdia canadensis	Carex concinnoides
Pinus monticola		
Betula papyrifera	Mahonia aquifolium	Goodyera oblongifolia
Larix occidentalis	Lonicera utahensis	Oryzopsis asperifolia
Tsuga heterophylla	Corylus cornuta	Lycopodium complanatum

Pleurozium schreberi
Dicranum polysetum
Cladonia spp.

Terrain: morainal blanket (? and fluvioglacial terrace)
Slope: 0° - 15°
Drainage: rapid

Position: mid and lower slopes
Moisture: mesic to sub-mesic
Soil: humo-ferric podzol

Canopy ranges from 70% to 90% and where at its densest has a profound effect on underlying growth so that shrub cover at 10% is less than half what it is elsewhere. Similarly, the forest floor is restricted to mosses and very few herbs where most shaded. Tree seedlings of all except larch are present

UNIT 2 Pseudotsuga - Cornus - Clintonia (Dry phase forest, B)

Douglas-fir - Bunchberry - Queen cup association

Pseudotsuga menziesii	Vaccinium membranaceum	Linnaea borealis
Thuja plicata	Paxistema myrsinites	Cornus canadensis
	Shepherdia canadensis	Clintonia uniflora
Tsuga heterophylla		
Betula papyrifera	Mahonia nervosa	Pyrola chlorantha
Picea engelmannii		Goodyera oblongifolia
Pinus monticola		
Larix occidentalis		Pleurozium schreberi
		Peltigera aphthosa
		Cladonia spp.
		Dicranum polysetum

Terrain: morainal blanket (?fluvioglacial terrace)
Slope: 0° - 10°
Drainage: rapid

Position: mid to lower slopes
Moisture: mesic
Soil: humo-ferric podzol

Generally, average tree cover must be somewhat less than in the preceeding unit as bare forest floor patches seldom occur and shrub cover is increased. Although different species of Mahonia are shown under each heading, specimens can be found throughout with confusing intergrading characters so that the appearance is of a range from one extreme to the other.

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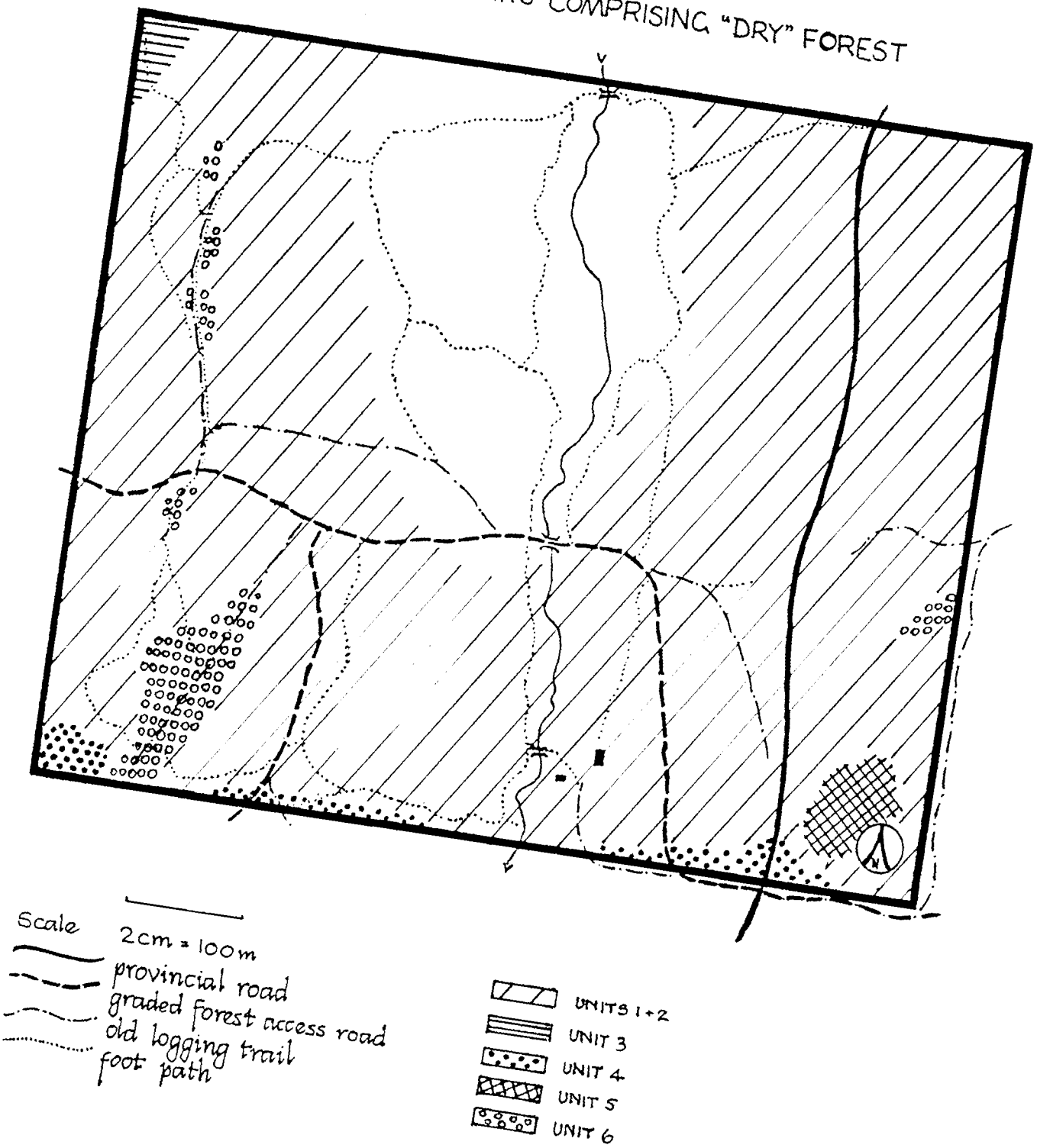
FIGURE 3 . . . UNITS COMPRISING "DRY" FOREST



UNIT 3 Pseudotsuga - Arctostaphylos (North-west corner)

Douglas-fir - Kinnikinnick association

Pseudotsuga menziesii	Shepherdia canadensis	Linnaea borealis
		Arctostaphylos uva-ursi
Betula papyrifera	Paxistema myrsinites	
Larix occidentalis	Mahonia aquifolia	
Thuja plicata		Cladonia spp.

Terrain: morainal blanket (?fluvioglacial terrace)
Slope: 10° - 20°
Drainage: rapid

Position: mid-slope
Moisture: sub-xeric to sub-mesic
Soil: humo-ferric podzol

This is a very small unit in the extreme north-west corner where the valley slope rises more steeply out of the reserve. In most respects like Unit 1, it given an unmistakable impression of greater dryness which justifies its inclusion despite limited extent.

UNIT 4 Pseudotsuga - Spiraea (Exposed edge)

Douglas-fir - Birch-leaved spiraea association

Pseudotsuga menziesii	Shepherdia canadensis	Linnaea borealis
		Carex concinnoides
Thuja plicata	Paxistema myrsinites	
Betula papyrifera	Mahonia aquifolia	Oryzopsis asperifolia
Larix occidentalis	Spiraea betulifolia	Vicia americana[1]
	Amelanchior alnifolia	Lathrys ochroleuca
	Salix sp. (?bebbiana)	Lupinus sericeus
	Sorbus scopulina	

Terrain: morainal blanket
Slope: 0° - 10°
Drainage: rapid

Position: mid to lower slope
Moisture: sub-mesic to mesic
Soil: humo-ferric podzol

Again, a unit of limited extent, but one unquestionably different from any other. As can be seen on Figure 3 it spreads irregularly along the southern boundary receiving more effect than any other part of the reserve from relatively dry southern winds and from partial clearing of adjoining properties. To what extent these conditions have allowed plants of more open and drier habitats to colonise naturally rather than by introduction due to disturbance is not too clear. Only in the south-west corner is there definite sign of disturbance where fire appears to have spread on to reserve property at one time.

Larch, birch and willow have taken advantage of the opportunity afforded and form a vigorous succession. Due to increased warmth, this area is noticeably earlier than elsewhere in plant phenology.

From the species list above it would appear that cover over this unit is particularly heavy in shrubs. Actually it is not much more so than previously mentioned units, the difference being in greater diversity and species found no where else. This is true of forbs also. Such taxa as Arnica cordifolia, Lonicera ciliata and Apocynum andraesifolia, only occuring in the extreme south-west corner, albeit in small numbers. A small patch on the north boundary where a track meets Trinity Valley Road may have been disturbed by activity on the property to the north and colonized by aspen.

UNIT 5 Pseudotsuga - Paxistema (Second growth)

Douglas-fir - False-box association

Pseudotsuga menziesii	Paxistema myrsinites	
Thuja plicata		
	Mahonia aquifolia	Aralia nudicaule
Betula papyrifera	Symphoricarpos albus	Clintonia uniflora
Larix occidentalis		Goodyera oblongifolia
Pinus monticola		Disporum hookeri

Terrain: morainal blanket
Slope: 5° - 15°
Drainage: good
Position: mid-slope
Moisture: mesic
Soil: humo-ferric podzol

Part of the block east of the Trinity Valley Road towards the south end is made up of densely packed young trees, presumably second growth following fire. Thick shade reduces undergrowth and presents a very impoverished appearance so that, at its extreme ground cover is practically absent. The exact extent was not investigated and may not be all that great. Beyond, it merges into Units 1 and 2 with some narrow strips of Unit 6 where sub-surface drainage from higher ground to the east provides moisture.

UNIT 6 Thuja - Sanicula (Valley type)

Western red-cedar - Black sanicle association

Thuja plicata	Alnus incana	Tiarella unifoliata
Tsuga heterophylla	var.tenuifolia	Asarum caudatum
		Senicio pseudaureus
Pseudotsuga menziesii	Cornus sericeus	Sanicula marilandica
Betula papyrifera	Corylus cornuta	Thalictrum occidentale
Picea engelmannii	Rubus parviflorus	Geum macrophyllum
Populus balsamifera	Ribes lacustris	Epilobium glandulosum
var.trichocarpa		
		Lobaria pulmonaria

Terrain: morainal blanket
Slope: 5° - 10°
Drainage: moderate to imperfect
Position: mid to lowest slopes
Moisture: sub-hygric to hygric
Soil: not examined

This unit comprises the dampest ecosystem within the "dry" forest formed over small patches of higher water table. No surface water is present although in years of extreme precipitation and high run-off it could be that sub-surface drainage erupts on to the surface.

The name "Valley type" was derived from where this unit was first identified in the long structure near the south-west corner. Other areas are more irregular and scattered and can be found below the steepening slope off the west and north-west side of the reserve, and also along lines of drainage down from higher land to the east. Only one is marked on Figure 3 in this area but others probably exist.

A definite preference for damper conditions is shown by plants of this unit, many of which occur in no other. Sanicula marilandica may not be the commonest but is well scattered and a good indicator of these conditions.

UNIT 7 Thuja - Aralia ("Wet" forest)

Western red-cedar - Wild sarsparilla association

Thuja plicata	Acer glabrum var.douglasii	Tiarella unifoliata
Tsuga heterophylla	Vaccinium ovalifolium	Aralia nudicaule
Picea engelmannii		Equisetum arvense
Betula papyrifera	Paxistema myrsinites	Cornus canadensis
Pseudotsuga menziesii	Taxus brevifolia	Linnaea borealis
Populus balsamifera var.trichocarpa	Rosa gymnocarpa	Adenocaulon bicolor
	Lonicera utahensis	Equisetum pratense
		Pleurozium schreberi
		Hylocomium splendens
		Ptilium crista-castrensis
		Peltigera aphthosa

Terrain: morainal blanket
Slope: 0° - 5°
Drainage: moderate
Position: lowest slope
Moisture: sub-hygric to hygric
Soil: humo-ferric podzol

Subtle microclimatic change from obstruction to drying winds and dissipation of cool air allows hemlock and spruce, scattered elsewhere, to increase in a major way and impart a completely different "feel" to this and succeeding units. Moss becomes more widespread on the ground and shade seems denser even though canopy coverage is similar to that of units 1 and 2.

In places with apparent random distribution large old poplars maintain an existence that must have started under different conditions as no replacement seedlings seem now able to establish themselves. These poplar stands, sometimes only two or four trees in each place, occasionally follow shallo. channels that once may have carried water.

Generally, the herb diversity is less than the drier unit on one side and the wetter unit on the other.

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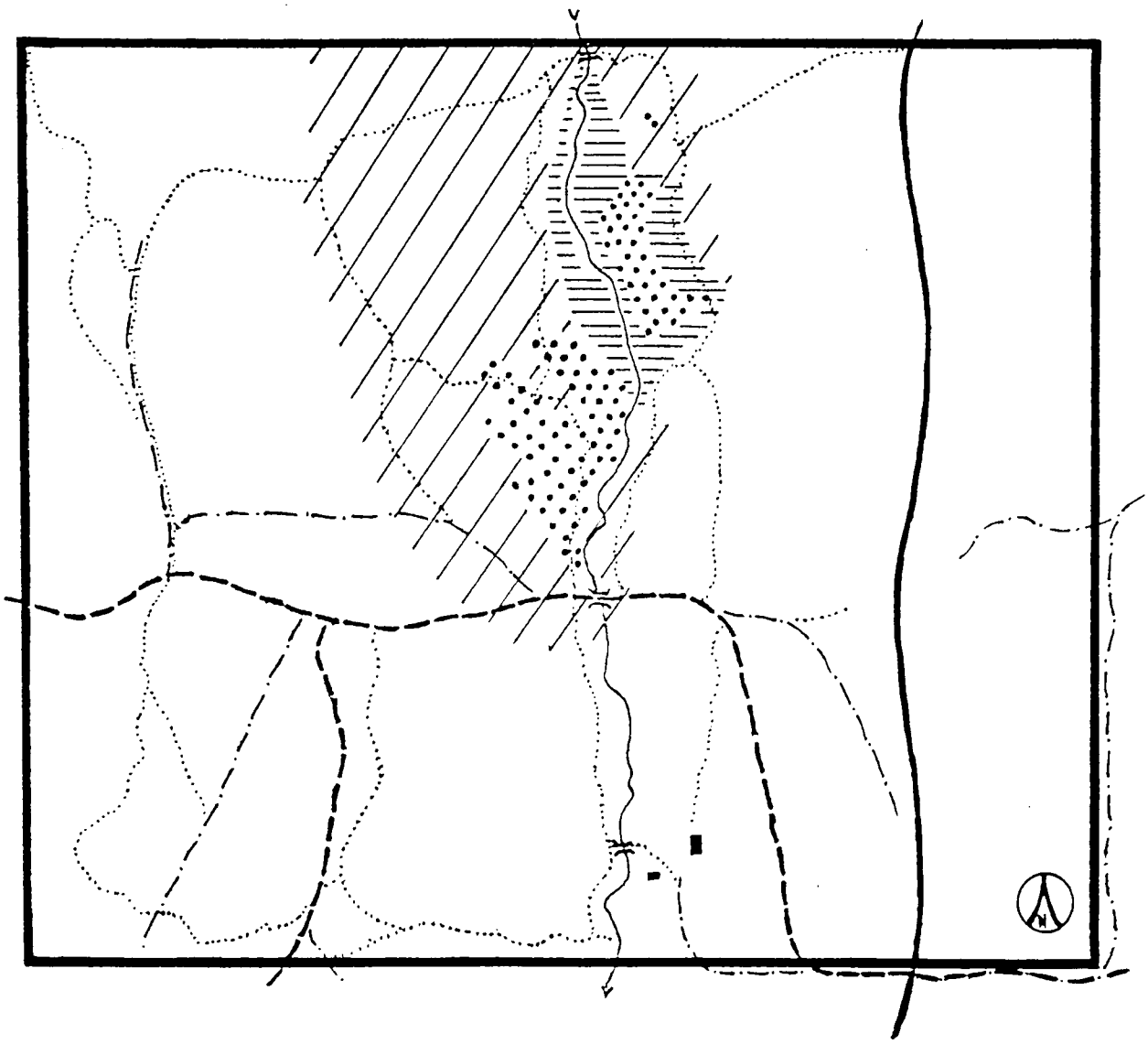
FIGURE 4 . . . UNITS COMPRISING "WET" FOREST



Scale 2cm = 100m

provincial road
graded forest access road
old logging trail
foot path

unit 7
unit 8
unit 9

UNIT 8 Thuja - Athyrium (Creek flat)

Western red-cedar - Lady fern association

Thuja plicata		Equisetum spp.
Tsuga heterophylla		Athyrium filix-femina
Picea engelmannii		Gymnospermum dryopteris
	Corylus cornuta	Tiarella unifoliata
	Ribes lacustre	
	Sambucus racemosa	Glyceria striata
	Vibernum edulis	Ranunculus uncinatus
		Aralia nudicaule
		Asarum caudatum
		Disporum hookeri
		Platanthera hyperborea
		Mnium spp.

Terrain: morainal blanket, colluvial blanket
Slope: 0° - 5°
Drainage: poor

Position: lowest slope, receiving
Moisture: sub-hygric to sub-hydric
Soil: gleyed podzol, orthic regosol

This unit of lush growth is intermediate between the more subdued (and marginally higher) "wet" forest and the forested bog of seeps and permanent water holes. Where it occurs close to creek level it probably covers the extent of occasional floods, and here grasses (Glyceria, Agropyron) are thicker than farther away.

UNIT 9 Thuja - Lysichiton (Forested bog)

Western red-cedar - Skunk cabbage association

Thuja plicata	Cornus sericeus	Equisetum arvense
Picea engelmannii	Ribes lacustre	Equisetum scirpoides
Tsuga heterophylla	Alnus incana	Gymnocarpium dryopteris
	var. tenuifolia	Lysichiton americanum
	Lonicera involucrata	Tiarella unifoliata
	Vibernum edulis	
		Athyrium filix-femina
	Taxus brevifolia	Cornus canadensis
	Oplopanax horridum	Streptopus amplexicaulis
		Viola glabella
		Carex disperma
		Ranunculus uncinatus
		Mnium spp.
		Brachythecium spp.
		Lobaria pulmonaria

Terrain: morainal blanket
Slope: 0° - 5°
Drainage: poor

Position: depressions, receiving
moisture: sub-hydric to hydric
Soil: gleyed podzol

Evident courses of seepage outline the bog area, particularly on the west side. Small bodies of standing water, saturated soil surrounding them and slow moving surface trickles lead eventually to the creek but fail to enter it obviously due to coarser deposits of gravel and silt providing better drainage along its immediate channel.

The small isolated patch mapped on Figure 4 near the north boundary differs by being a bed of sedges (mainly C. amplifolia), and two others occur on the west side as part of the larger area of bog.

UNIT 10 Alnus - Equisetum (Creek edge)

Mountain alder - Dwarf scouring rush association

Thuja plicata	Alnus incana	Equisetum scirpoides
Tsuga heterophylla	var. tenuifolia	Gymnocarpium dryopteris
Picea engelmannii	Cornus sericeus	Tiarella unifoliata
Pseudotsuga menziesii	Lonicera involucrata	
	Vibernum edulis	
	Ribes lacustre	

Due to their character units from here onwards are not indicated on maps. This particular one runs the length of the creek on each bank varying capriciously but always with a generous cover of shrubs. Forbs tend to be few of any one species in any one place, and none is general along the whole length except Tiarella unifoliata. Beneath the waterfall where spray is continuous at all seasons a distinct assemblage of mosses occurs, with only a few depauperate Mitella nuda and Cardamine oligosnermum to join them.

Within the creek, gravel bars become colonised if them remain stable long enough but are probably subject to washing out periodically. Erigeron philadelphicum, Aster modestus and Cinna latifolia were seen growing at this level.

UNIT 11 *Poa* - *Leucanthemum* (Track and Field)

Meadow bluegrass - Ox-eye daisy association

From the main entry at the south end a track was cleared in the past to the site of the roofed shelter. It widens into what is now a small open meadow but probably was originally a parking area. These, treated together, provide a discrete unit of altered forest carrying many adventitious species that would not normally be members of the reserve flora. With time it will revert to forest unless intentionally kept open, and already colonisation by Douglas-fir, Western red-cedar, roses, huckleberry, Paper birch and Oregon grape is making inroads around the edges. Whether the meadow area was ever seeded with grass is doubtful as the little Orchard grass and Timothy present is greatly outnumbered by taxa that might be expected to occur naturally on open areas. Some Sulphur cinquefoil is creeping in from the cleared property to the south; there is no knapweed.

UNIT 12 Verge of forestry road

No plant association is shown for this unit which comprises the forest access road sides through the reserve. Legally the road right-of-way is excluded from E.P. property, however, disturbance along its edge is irregular in width and may extend into the reserve proper. Either way, the disturbed area is a fact of life and part of the regional pattern. Also included is the entry from this road into private property to the south which definitely is reserve.

As would be expected, most species in this unit would fall into the category of "weeds" but a few (*Epilobium angustifolium*, *Fragaria vesca*, *Geum macrophyllum*, *Aquilegia formosa*) are opportunistic natives that have benefited from the disturbance. In neither case do they form solid stands nor are they present along the whole extent in sufficient number to be used to designate the unit.

Where the track into the meadow leaves the forestry access road a pile of loose fill was dumped to prevent entry by unauthorised vehicles. A whole collection of waste-land weeds arrived along with the soil but does not show any desire to spread.

VASCULAR PLANTS RECORDED IN 1988

Following each name is a number referring to the unit(s) in which this plant was found with, in brackets, an indication of abundance using Braun-Blanquet scale as modified by E.R. staff. Next are dates (day/month) of visits on which each species was seen in flower.

Aspleniaceae
- Athyrium filix-femina (L) Roth 7(1)8(2)9(2)
- Cystopteris fragilis (L) Bernh rocks of gorge
- Dryopteris expansa (Presl) Fraser J&J 7(r)
- Gymnocarpium dryopteris (L) Newman 7(2)8(1)9(2)

Dennstaedtiaceae
- Pteridium aquilinum (L) Kuhn 1/2(#)

Equisetaceae
- Equisetum arvense L 7(1)8(1)9(#)
- " hyemale L 6(#)
- " pratense Ehrhart 7(1)8(#)
- " scirpoides Michx 8(#)9(#)10(1) 5/5
- " sylvaticum L 1/2(r)

Lycopodiaceae
- Lycopodium annotinum L 7(#)1/2(r)
- " complanatum L 1/2(1)

Ophioglossidae
- Botrichium virginianum (L) Swartz 6(r) 3/6

Cupressaceae
- Thuja plicata Donn 1/2(2)3(2)4(1)6(3)7(3)9(3)11(#)

Pinaceae
Abies lasiocarpa (Hooker)Nutt 1/2(r)
- Larix occidentalis Nutt 1/2(1)3(1)4(2)
- Picea engelmannii Parry 1/2(1)3(#)6(1)7(3)9(2)
- Pinus contorta Dougl 1/2(r)
- " monticola Dougl 1/2(1)
- Pseudotsuga menziesii (Mirbel)Franco 1/2(3)3(3)6(1)7(1)11(#)
- Tsuga heterophylla (Raf) Sargent 1/2(1)3(#)6(2)7(3)

Taxaceae
- Taxus brevifolia Nutt 7(#)9(#) 5/5

Aceraceae
- Acer glabrum var.douglasii (Hook)Dippel 7(1)1/2(#) 5/5

Apiaceae
Angelica arguta Nutt 8(r) 8/7,2/9
Hieracium sphondylium 8(r) 17/6
Osmorhiza chilensis Hook & Arnott 1/2(#), 6(#)
Sanicula marilandica L 6(#), 8/7, 22/7

Apocyneaceae
Apocynum androsaemifolium L 4(r)

Araliaceae
Aralia nudicaule L 1/2(#),6(#),7(1),8(#), 3/6
Oplopanax horridus (Smith) Miquel 7(#),9(#), 17/6

Aristolochiaceae
Asarum caudatum Lindl 6(#),8(r),9(3)

Asteraceae
Achillea millefolium L 11(r),8/7
Adenocaulon bicolor Hook 1/2(#),6(#),7(#),8(#),8/7
Anaphalis margaritacea Benth & Hook 1/2(r),2/9
Antennaria microphylla Rydb 11(r),17/6,8/7
" neglecta Greene 11(#), 20/5,3/6,17/6
Arctium minus Bernh 12(r)
Arnica cordifolia Hook 4(r)
Aster ciliolatus Lindl 6(r),2/9
" modestus Lindl 10(r), 22/7,2/9
Circium vulgare (Savi) Ten 12(#),2/9
Conyza canadensis (L) Conq 12(r), 22/7
Erigeron philadelphicum L 6(r),10(#),12(r) 22/7
Filago arvensis L 12(r), 8/7,22/7
Hieracium albiflorum Hook 1/2(#), 8/7,22/7
" scouleri Hook 1/2 (r), 22/7
Leucanthemum vulgare Lamarck 11(#),12(#),8/7,22/7,2/9
Petasites frigidus var. palmatus (L) Fries 9(#), 5/5,20/5
Senecio pseudaureus Rydb 6(#), 8/7
" triangularis Hook 8(#)
Taraxacum officinale Weber 11(r),12(r),3/6

Berberidaceae
Mahonia aquifolia (Pursh) Nutt 1/2(2),3(#),4(#),11(#) 20/5
" repens (Lindl) Don 1/2(#)

Betulaceae
Alnus incana var. tenuifolia (L) Moench 6(1),9(#),10(1)
Betula papyrifera Marshall 1/2(1), 3(1), 7(1), 11(#)
Corylus cornuta Marshall 1/2(1),6(1),8(#)

Brassicaceae
Capsella bursa-pastoris (L) Medikus 11(r),12(r), 3/6
Cardamine oligosperma Nutt 10(r) 17/6,8/7

Caprifoliaceae
Linnaea borealis L 1/2(2),4(#),7(#) 17/6
Lonicera ciliosa (Pursh) de Candolle 3(#),4(r),20/4
" involucrata (Rich) Banks 9(#),10(#) 20/5, 3/6
" utahensis Watson 1/2(#), 7(#), 5/5, 20/5
Sambucus racemosa L 9(#)
Symphoricarpos albus (L) Blake 1/2(r), 3(#),9(#)
Vibernum edule (Michx) Raf 8(#),9(#),10(#) 3/6

Caryophyllaceae
Arenaria serpyllifolia L 11(#),12(#) 8/7,22/7
Cerastium fontanum Baum 11(r),12(#) 17/6,8/7

Celastraceae
Paxistema myrsinites (Pursh) Raf 1/2(3), 4(#), 3(1),5(#), 6(#), 7(#), 5/5

Cornaceae
Cornus canadensis L 1/2(1), 7(1), 9(1) 3/6,17/6
" sericea L 6(1),9(#),10(1)

Eleagnaceae
Shepherdia canadensis (L) Nutt 1/2(1) 5/5

Ericaceae
Arctostaphylos uva-ursi (L) Spreng 3(1)
Vaccinium caespitosum Michx 1/2(#), 4(#) 20/5
" membranaceum Dougl 1/2(2), 4(#), 11(#)
" ovalifolium 1/2(1), 7(2) 5/5, 20/5

Fabaceae
Lathrys ochroleucus Hook 1/2(#), 3(#), 4(#), 3/6 17/6, 8/7
Lupinus sericeus Pursh 4(#), 17/6, 8/7
Medicago lupulina L 4(#). 12(#) 17/6, 8/7, 22/7, 2/9
Trifolium pratense 11(#), 17/6, 8/7, 22/7, 2/9, 30/9
" repens L 11(1) 17/6, 8/7, 22/7, 2/9
Vicia americana Muhl 1/2(#), 4(#), 17/6, 22/7, 8/7

Gentianaceae
Gentianella amarella (L) Horner 1/2(r), 11(#) 17/6, 8/7

Grossulariaceae
Ribes lacustre (Pers) Poiret 6(#), 8(#), 9(#), 10(#), 5/5, 20/5

Lamiaceae
Prunella vulgaris L 6(#), 8(#), 11(#), 8/7, 22/7

Monotropaceae
Hypopitys monotropa Crantz 1/2(#), 22/7

Onagraceae
Epilobium angustifolium L 11(r), 12(#), 8/7, 22/7
" glandulosum Lehmann 6(#), 11(#), 8/7

Plantaginaceae
Plantago major L 11(#), 12(#), 3/7, 22/7

Polemonaceae
Microsteris gracilis (Hook) Greene 11(#), 3/6

Polygonaceae
Rumex acetosella L 11(r), 12(r), 17/6

Pyrolaceae
Chimaphila umbellata (L) Barton 1/2(2), 3(#), 4(#), 7(#), 8/7, 22/7
Moneses uniflora (L) Gray 10(#), 17/6, 8/7, 22/7
Orthilia secunda (L) House 1/2(#), 8/7
Pyrola asarifolia Michx 1/2(r), 6(#), 8/7
" chlorantha Swartz 1/2(#), 7(#), 17/6, 8/7

Ranunculaceae
Actaea rubra (Aiton) Willd 6(#), 8(#), 20/5
Aquilegia formosa Fischer 1/2(r), 6(r), 12(r), 17/6, 8/7, 22/7
Ranunculus uncinatus Don 3(#), 9(#), 3/6
Thalictrum occidentale Gray 3(#), 6(#), 20/5

Rhamnaceae
Ceanothus sanguineus Pursh 4(r) 17/6

Rosaceae
Amelanchior alnifolia (Nutt) Nutt 4(#), 12(r), 20/5, 3/6
Fragaria vesca L 12(r), 17/6
" virginiana Duchesne 11(#), 17/6
Geum macrophyllum Willd 6(#), 12(#), 3/6, 17/6
Holodiscus discolor (Pursh) Maximow 4(r)
Potentilla recta L 11(#), 17/6, 8/7, 22/7, 2/9
Rosa gymnocarpa Nutt 1/2(#), 7(#), 8(r), 17/6, 8/7
" nutkana Presl 1/2(r), 17/6
" woodsii Lindl 4(r), 17/6
Rubus parviflorus Nutt 1/2(1), 3(#), 4(#), 6(1), 7(1), 9(#), 20/5, 3/6, 17/6, 8/7
Rubus pubescens Raf 6(r), 8(#), 3/6
Sorbus scopulina Greene 4(1)
Spiraea betulifolia Pallas 1/2(r), 4(#), 8/7, 22/7

Rubiaceae
Galium triflorum Michx 9(#), 10(#), 8/7

Salicaceae
Populus balsamifera var. trichocarpa L 6(#), 7(#)
Populus tremuloides Michx 4(r)
Salix bebbiana Sargent 4(#)

Saxifragaceae
Mitella nuda L 10(r) 3/6, 17/6
Tellima grandiflora (Pursh) Dougl 10(r) 17/6
Tiarella unifoliata Hook 1/2(1), 6(1), 7(2), 8(1), 9(2), 10(1), 3/6, 8/7, 22/7, 2/9

Scrophulariaceae
Collinsia parviflora Dougl 11(r), 20/5
Melampyrum lineare Desrouss 1/2(#), 8/7, 22/7
Verbascum thapsus L 12(r), 22/7
Veronica americana Schwein 9(#), 17/6, 8/7
" serpyllifolia L 6(r), 12(#), 3/6, 17/6

Urticaceae
Urtica dioica L 8(r), 17/6

Violaceae
Viola canadensis L 6(#), 12(#), 20/5, 3/6, 17/6
" glabella Nutt 8(#), 9(#), 5/5, 20/5
" orbiculata Geyer 1/2(#), 5/5, 20/5
" palustris L 12(r), 20/5

Araceae
Lysichiton americanum Huten & St John 9(2) 20/4, 5/5

Juncaceae
Juncus bufonius L 12(#) 8/7
" tenuis Willd 11(#), 22/7

Cyperaceae
Carex amplifolia Boott 9(#), 17/6, 8/7
" concinnoides Mackenzie 1/2(1), 4(#), 5/5, 20/5
" deflexa Hornemann 1/2(r), 3/6
" deweyana Schwein 8(r) 22/7
" disperma Dewey 9(#), 3/6
" flava L 6(r)
" macloviana D'Urville 11(#), 3/6
" mertensii Prescott 10(r), 8/7
" vulpinoidea Michx 9(r), 8/7, 22/7

Poaceae
Agropyron pauciflorum (Schwein) Hitchc 8(#), 17/6
Agrostis stolonifera L 11(1), 8/7. 22/7
" thurberi AS Hitchc 1/2(#) 22/7
Bromus vulgaris (Hook) Shear 11(#), 17/6
Calamagrostis rubescens Buckley 1/2(#), 22/7
Cinna latifolia (Trevi) Grise 10(r), 22/7
Dactylis glomerata L 11(r), 3/6, 17/6
Elymus glaucus Buckley 11(#), 8/7, 22/7
Glyceria elata Jones 7(#)
" striata (Lamarck) AS Hitchc 8/7, 22/7

Oryzopsis asperifolia Michx 1/2(#), 5/5, 20/5
Phleum pratense L 11(r) 3/7, 22/7
Poa annua L 11(r), 3/6
" pratense L 11(1), 3/6, 17/6
Trisetum cernuum Trin 1/2(#), 7(#), 17/6, 8/7

Lilaceae
Clintonia uniflora (Schultes) Kunth 1/2(1), 4(#), 8(#), 3/6, 17/6
Disporum hookeri (Torrey) Nicholson 1/2(#), 6(#), 7(#), 8(#), 20/5, 3/6
Lilium columbianum Hanson 1/2(#), 4(#), 17/6, 8/7
Smilacina racemosa (L) Desfontaine 1/2(#), 10(#), 20/5, 3/6, 17/6
Streptopus amplexifolius (L) de Can 8(#), 9(#), 3/6, 17/6

Orchidaceae
Calypso bulbosa (L) Oakes 1/2(r), 5/5, 20/5
Coralorrhiza maculata Raf 1/2(r), 7(#), 17/6
" striata Lindl 7(#)
" trifida Chatelain 10(r), 3/6
Cypripedium montanum Dougl 1/2(r) 17/6
Goodyera oblongifolia Raf 1/2(1), 7(#), 8/7, 22/7
Listera convallarioides (Swartz) Nutt 8(r)
Platanthera hyperborea 8(#), 9(#), 3/6, 17/6
" orbiculata (Pursh) Lindl 1/2(r), 8/7

r = one or two only
\# = uncommon
1 = scattered or locally common
2 = general
3 = abundant

Collectively there is little remarkable about the list above. It fulfills what would be expected of a reserve unit established to provide an average representation of transitional-type forest. What is worthy of comment is how relatively modest a variation in climatic influences is necessary to mediate a noticeable swing in vegetation away from the norm, i.e. exposure to warmer, drier winds along the southern boundary produces a significantly different ground cover than present a few hundreds of metres away.

Of the individual taxa, only Carex amplifolia and C. vulpinoidea need singling out as being members of the list of rare vascular plants of British Columbia.

Cryptogams

Collections of mosses, liverworts and lichens were made for examination and identification, and in most cases have been retained. Determinations have not been confirmed by recognized experts of each particular field.

Species recorded were, like vascular plants, typical of this type of forest without any particular novelties. The only exception to this might be the fact that the small area subject to spray from the waterfall or actual inundation in May and June, was able, because of these conditions, to carry mosses which otherwise would be in more humid forests farther north or east. Without a more general moist influence several West Coast/Wet Interior taxa present at Upper Shuswap River, Kingfisher Creek and Griffin Mountain reserves are not to be found at Vance Creek, confirming it as being in a transitional position. Similarly, the forest floor Dicranum species here is D.polysetum rather than D.scopulorum under drier Okanagan conditions (the latter is restricted to particularly well-drained situations on the rock outcrops of the gorge.

Some attempt was made to determine tree species preference of corticolous lichens but a more widespread examination would be necessary for a useful result.

LICHEN

Alectoria sarmentosa (Ach) Ach	douglas-fir, birch
Bryoria fremontii (Tuck) Brodo & H	larch
" fuscescens (Gyel) Brodo & H	douglas-fir, birch, larch
?Buellia disciformis (Fries) Mudd	birch
" punctata (Hoffm) Mass	douglas-fir, birch
Calicium viride Pers	cedar
Candelaria concolor (Dicks) Stein	birch
Cetraria canadensis Ras	birch
" chlorophylla (Willdt) Vain	birch, cedar
" pinastri (Scop) Gray	douglas-fir
Cladina arbuscula (Wallr) Hale & Cul	humus
" mitis (Sandst) Hale & Culb	humus on stump
Cladonia cenotea (Ach) Schaer	conifer stump
" chlorophaea (Flk) Spreng	humus on stump
" coniocraea (Flk) Spreng	conifer trunk
" crispata (Ach) Flot	conifer stump
" deformis (L) Hoffm	larch, conifer stump
" fimbriata (L) Fr	conifer stump

Cladonia furcata (Huds) Schrad	humus
(or C. pseudorangiformis or C. subrangiformis)	
" gracilis (L) Willd	humus on stump
" macilenta Hoffm	conifer stump
" multiformis Merr	humus
" phyllophora Hoffm	humus
" rei Schaer	conifer stump
(or C. decorticata)	
" squamosa (Scop) Hoffm	conifer stump
Hypogymnia imshaugii Krog	birch
(or H. metaphysodes)	
" occidentalis Pike	alder, birch
" physodes (L) Nyl	douglas-fir
" tubulosa (Schaer) Hav	cedar
Lecanora subfusca (L) Ach complex	birch
Letharia vulpina (L) Hue	douglas-fir
Lobaria pulmonaria (L) Hoffm	all trees near creek and bog
Nephroma parile (Ach) Ach	birch
Ochrolechia sp.	conifer stump
(O. inversa, O. androgyna)	
Parmelia sulcata Tayl	fir, birch, larch, cedar, alder
Parmeliopsis hyperoptera (Ach) Arn	douglas-fir, birch
Peltigera aphthosa (L) Willd)	humus
" canina (L) Willd	humus
" horizontalis (Huds) Baumg	humus
" venosa (L) Baumg	Humus
Pertusaria multipunctata (Turn) Nyl	birch, conifer stump
Platismatia glauca (L) Culb & Culb	douglas-fir, cedar, birch

LIVERWORTS

Barbilophozia barbata (Schmidt) Loese	soil, open area
Conocephalum conicum (L) Lindb	wet soil, boggy area
Ptilidium pulcherrimum (G Web) Hampe	conifer stump

MOSSES

Amblystegium riparium (Hedw) BSG	bog pools, creek silt
Atrichium undulatum (Hedw) P Beauv	forest soil
Aulacomnium androgynum (Hedw) Schwaegr)	forest soil
Barbula rubiginosa Mitt	creek edge
Brachythecium albicans (Hedw) BSG	soil of open area
" ?erythrorrhizon BSG	silt at creek edge, spray
" frigidum (Muell) Besch	bog pools
" rivulare BSG	bog pools, wet soil
Bryum sp. (?B. pallens Sw)	silt at creek edge, spray
" (?B. turbinatum)	wet soil, bog
Campylium polygamum (BSG) C Jens	wet humus, bog
Ceratodon purpureum (Hedw) Brid	soil of open area
Dicranum fuscescens Turn	conifer stump
" polysetum Sw	forest humus
" scoparium Hedw	humus of rocky outcrop
" tauricum Sapeh	decaying wood
Distichium capillaceum (Hedw) BSG	crevices of rock outcrop
Drepanocladus uncinatus (Hedw) Warnst	shrub branches
Eurynchium pulchellum (Hedw) Jenn	soil of open area, dead wood
Hylocomium splendens (Hedw) BSG	forest humus
Hypnum lindbergii Mitt	silt of creek edge
Lindbergia praelonga (Hedw) Ochyra	silt of creek edge, spray
Mnium sp. (?M.marginatum (Witt)Brid)	wet soil, bog
Onchophorus virens (Hedw) Brid	silt and wood, creek edge, spray
Orthotrichium sp.	shrubs near creek
" affine Brid	shrubs, wet forest
Plagiomnium cuspidatum (Hedw) Kop	wet soil, bog and waterfall
" drummondii (Bruch & Sch) Kop	wet silt, creek edge, spray
" ellipticum (Brid) Kop	wet soil and wood, spray
" rostratum (Schraed) Kop	wet soil, bog
Plagiothecium cavifolium (Brid) Iwats	silt of creek edge
Platydictya jungermannoides (Brid) Crum	among mosses under spray
Pleurozium schreberi (Brid) Mitt	dry forest humus, rock outcrop
Pohlia cruda (Hedw) Lindb	forest humus
" nutans (Schwaegr) Broth	conifer stump, fire soil
Polytrichum juniperinum Hedw	soil of open area
Ptilium crista-castrensis (Hedw) De Not	damp forest humus
Rhizomnium nudum (Williams) Kop	wet soil, bog
" sp. (?R. gracile Kop)	bog pools
Rhytidiadelphus triquetrus (Hedw) Warnst	forest humus, rock outcrop
Thuidium recognitum (Hedw) Lindb	creek silt, spray
Timmia austriaca Hedw	wet silt, spray and rock outcrop

FUNGI

By chance 1988 was a particularly good year for fungi - well spaced rains through the summer, then ample fall precipitation before destroying frost. As a result an extensive list follows to which many undistinguished others could have been added if greater facility had been available. The most important larger wood rotting fungi are Phellinus pini and Fomitopsis pinicola.

Numbers to the right of each species name refer to the month in which it was found fruiting.

	dry forest 1	open grass 2	dead wood 3	dead branches 4	wet forest 5	leaves 6
Agaricus sp.	7					
" sylvicola complex	6					
Agrocybe praecox complex		6				
Amanita brunnescens	9					
Armillaria sp.			6			
Auricularia sp. (?A.auricula)			9			
?Baeospora myriadophylla			4			
Bovista pila		5				
Caltricia perennis	9					
Camarophyllus pratensis		9				
Clavaria pulchra (?Clavulinopsis laeticolor)	9					
Clavariadelphus ligula	9					
" truncatus	10					
Clitocybe deceptiva (5)						
Clitocybula familia			3/6			
Clitocybe gibba					7	
" inversa complex	(6)					
" nebularis	10					
Collybia acervata	6					
" butyracea	7/10					
" dryophila	6/10					
Cortinarius sp. (?C. armillatus)	9					
" sp. (6) (?C. obtusata)						
Cystoderma amianthinum	10					
" granulosum	9				9	
Daldina sp.			4			
Fomitopsis pinicola			#			
Galerina autumnalis			9			
Ganoderma sp. (?G. oregonense)			#			

	1	2	3	4	5	6
Geastrum triplex					9(cottonwoods)	
Gloeophyllum saepiarium			#			
Gomphidius glutinosus	7/10					
Guinopsis alpinus				5		
Helvella pezizoides				7 (waterfall)		
Heterobasidion annosum			#			
Hydnellum aurantiacum	6/7					
Hygrocybe conica	6/10					
" miniata	9				9	
" psittacina					9	
Hygrophoropsis aurantiaca			10			
Hygrophorus acutoconicus	7					
" bakerensis	9					
" eberneus	10					
" sp. (?H. sordidus)					9	
" speciosus	9/10					
Inocybe geophylla	6					
" sp.	5					
Inonotus tomentosus			9(roots)			
Laccaria laccata	6					
Lactarius sp. (?L. alnicola)	9					
" deliciosus	7					
" sp. (?L. pseudomucidus)	10					
" sanguifluus	10					
" tomentosus	9					
Lentaria pinicola			9	9		
Lentinus sp.			10			
Leniota clypeolaria	10					
Leucopaxillus giganteus	9					
Lycopodon pyriforme					9	
Macrotyphula juncea						9
Marasmius andosaceus (6)						
" rotula (6)						
Morchella elata	5					
Mycena amabilissima	10					
" galericulata			10			
" murina	10					
" osmundicola						5
" pura	6/10					
" purpureofusca			6			
Naematoloma capnoides	5					
?Nolanea sp. (?N. staurospora)	10					
?Omphalina sp. (9)(?O.chrysophylla)						
Omphalina ericetorum			5/9			
Paxillus atrotomentosus			9/10			
" involutis (9)						
Panellus serotinus			10			

	1	2	3	4	5	6
Peziza badia	7					
Phaeolus schweinitzii			#(roots)			
Phellinus pini			#			
Pholiota lubrica complex			10			
" sp. (6) (?P. vernalis)						
Pleurotus candidissimus			10			
" porrigens			10			
Pleuteus sp.			6			
Polyporus elegans			6/9			
?Ramaria apiculata						10 (hemlock cones)
Ramaria ochraceo-virens	10					
" sp. (?R. suecia)	10					
Russula brevipes	7					
" lutea		7				
" placita complex (7)						
" xerampelina	9					
Spathularia flavida	7					
Stereum spp.			9			
Strobilurus trullisatus						9 (white pine cones)
Suillus sp. (?S. caerulescens)	10					
" grevillei	10					
" lakei	5/9					
" luteus	9					
" sibiricus	10					
" sp. (?S. subolivaceus)	10					
Trametes hirsuta			9			
Tremella encephala			6	4		
Tricholoma flavovirens	10					
" populinum	7/10					
Tricholomopsis rutilans			7			
?Tricholomopsis platyphylla			10			
?Tubaria sp.			6			
Tyromyces albellus			10			
Xeromphalina campanella (5)						

BIRDS

Nearness of the Lumby garbage dump and landfill brings large numbers of ravens into this reserve throughout the year. Their constant hoarse cries and beating wings make up an essential part of the background to visits; of all the birds they were the only ones whose presence was recorded on every occassion. One consequence that can be inferred is the additional pressure their keen-eyed attention would bring to the nesting sucess of other species. A survey to compare numbers and variety with those in less raven-prone similar forest would be of interest.

Next in frequency of record (more by omission than commission) were red-breasted nuthatch, followed by black-capped chickadee, winter wren, golden-crowned kinglet and dark-eyed junco. Pine siskins faltered a little by being unrecorded beyond mid-year after having been seen on every previous visit.

As would be expected in a forested area, woodpeckers(4 species) were not uncommon though never in large numbers. Trees killed by bark-beetle were an obvious attraction to them, many being largely stripped of bark in the effort. Killdeer, mourning dove, American robin and possibly also red-tailed hawk were more likely temporary visitors from open land nearby than seasonal residents.

Along Route 1 where it runs near the creek several nesting boxes have been erected presumably for wood duck, though they could also be of interest to owls. None appeared to be in use in 1983.

The numbers after each name refer to the date of observations (day/month).

Red-tailed hawk	15/3, 20/5
Ruffed grouse	15/3, 30/9
Killdeer	3/6
Mourning dove	8/7
Vaux's swift	20/5
Northern flicker	19/2, 20/4, 5/5, 20/5, 2/9
Pileated woodpecker	3/6
Yellow-bellied sapsucker	8/7
Hairy woodpecker	5/5, 17/6, 8/7
Willow flycatcher	5/5
Western flycatcher	22/7
Western wood pewee	3/6, 8/7
Grey jay	15/3
Steller's jay	15/3, 5/5, 2/9, 30/9, 17/9
Common raven	19/2, 15/3, 20/4, 5/5, 20/5, 3/6, 17/6, 8/7, 22/7, 2/9, 30/9, 17/10

American crow	19/2
Black-capped chickadee	19/2, 15/3, 5/5, 3/6, 17/6, 8/7, 22/7, 2/9
Red-breasted nuthatch	19/2, 15/3, 20/4, 20/5, 3/6, 17/6, 8/7, 22/7, 2/9, 30/9, 17/10
Dipper	17/6
Winter wren	15/3, 20/4, 20/5, 3/6, 17/6, 8/7
American robin	17/6, 2/9
Varied thrush	5/5, 3/6, 2/9, 30/9, 17/10
Golden-crowned kinglet	19/2, 15/3, 20/4, 5/5, 22/7, 2/9, 30/9
Red-eyed vireo	3/6, 17/6, 8/7
Pine siskin	19/2, 15/3, 20/4, 5/5, 20/5, 17/6
Dark-eyed junco	20/4, 5/5, 20/5, 3/6, 17/6, 8/7 (4 eggs), 22/7

MAMMALS

The village of Lumby, only 9 km away, has never been short of shooters and the hill area surrounding it , including the reserve, is well served with access roads. Put together, it makes for a well hunted region and one that now necessitates looking beyond for keen hunters to find opportunity suitable for their talents. Only one spent cartridge case was noted within the reserve. Deer tracks were seen whenever snow or muddy ground provided suitable conditions, though somewhat sparsely, and obvious game trails were present and in use throughout. The only individual encountered was a female White-tailed deer in mid-October but Mule deer could be expected during winter months. Prints of Moose were seen once late in the year.

Bear, also, were recorded only secondarily. Fresh scat was found several times in the spring months and again in the fall when at least some included pieces of polyethylene plastic suggesting that visits to the nearby garbage dump make up part of the itinerary of the local population. At one time coyote were on the list of mammals in this reserve but seeing a dog from a neighbouring property ranging loose on its own makes this only possible.

Regular sightings of Red squirrel leads this species to head the list of residents although others less visible may be just as common. Varying hare are certainly in good number and no doubt trapping would have revealed many small mammals. A shrew of unknown type was busy in vegetation along the creek.

SPIDERS

A certain amount of collecting may have taken place on the reserve in the past judging by published distribution records (A Revised Checklist of the Spiders (Araneae) of British Columbia, West, Dondale, Ring, J. Ent. Soc. B.C. 81 Dec. 1984). These data specify "Trinity Valley" as a location for several species and this is the name used by Canadian Forestry Service personnel for what is now the reserve area. These have been extrapolated and included in the list below, annotated CF unless a substantiating collection was made in 1988.

Being less remote than many reserves and having had a previous collection made there, it was presumed that Vance Creek would produce little beyond a standard list of spiders. Such is the thinness of sampling in this field that even here what appear to be several new provincial records can be reported. A new checklist up-dating that of 1984 has been proposed but it is not known if this is yet available for confirming these records.

As previously, all identifications have been made by Biosystematics Research Centre, Ottawa, on this occasion by Mr. J. H. Redner.

Uloboridae		
Hyptiotes sp. (?H. gertschi)	forest vegetation	
Dictynidae		
Dictyna phylax Gertsch & Ivie	forest vegetation	
Theridiidae		
Steatoda hespera Chamb. & Ivie	forest veg. & behind bark	
Theridion leechi Gertsch & Archer	-	CF
" sexpunctatum Em.	damper forest veg.	
Linyphiidae		
Lepthyphantes intricatus (Em.)	ground by creek	
" zeletus	" & forested bog	
Neriene radiata (Walck.)	forest vegetation	
Pityohyphantes sp.	"	
Erigonidae		
Ceratinops inflatus (Em.)	-	CF
Halorates stylifer (Chamb.)	ground, forested bog	new
Sisicottus nesides (Chamb.)	ground by creek	new
" orites (Chamb.)	-	CF
Symmigma minimum (Em.)	ground, drier & damper forest	
Tachygyna vancouverana (Chamb. & Ivie)	-	CF
Walckenaeria directa (O.P.-Camb)	ground, drier forest	
" exigua Millidge	"	
Araneidae		
Araneus nordmanni (Thorell)	-	CF
" saevus L. Koch)	web, drier forest	
Araniella displicata (Hentz)	web, forest	
Cyclosa conica (Pallas)	-	CF
Tetragnathidae		
Tetragnatha sp.	veg, drier & damper forest	

Agelenidae			
Cryphoeca peckhami Simon	ground,	drier forest	
Cybaeus morosus Simon	"	by creek	
Lycosidae			
Pardosa dorsuncata Lowrie & Dondale	"	drier forest	
" mackenziana (Keys.)	"	"	
Trochosa terricola Thorell	"	"	
Oxyopidae			
Oxyopes scalaris Hentz		-	CF
Gnaphosidae			
Gnaphosa muscarum (L.Koch)		-	CF
Micaria sp. (?M. pulicaria)	"	drier forest	
Sergiolus montanus (Em.)		-	CF
Clubionidae			
Argoeca ornata Banks	"	forested bog	
Clubiona spp.	vegetation,	drier forest	
Thomisidae			
Misumena vatia (Clerck)	"	drier & damper forest	
Philodromidae			
Philodromus oneida Levi	"	drier forest	
Salticidae			
Eris militaris (Hentz)	ground,	forest opening	New

OTHER ANIMALS

Single individuals of Spotted Frog (Rana pretiosa) and Wandering Garter Snake (Thamnophis elegans) were encountered. The former is rather a puzzle as Vance Creek is too swift, subject to seasonal flood and without backwaters to impress as frog territory. The two small pools seemed to be without resident amphibians and no adults or larvae were seen in any of the bog waters.

MANAGEMENT

Because of its history of use for different purposes, Vance Creek reserve is a long way from being unaltered. Selective logging for Douglas-fir and some Western red-cedar took place in the 1930s (Brayshaw and Grant) and logging trails lace the whole area. Recovery of growth along some of these is at a size that they may also have been in use after WW II. The foundered cabin shown on Figure 5 probably dates from the earlier period.

As instructional courses may have been part of Entomology Laboratory service, the large roofed building and clearing at the south end were likely constructed under Canadian Forestry Service auspices. Beneath a shingled roof supported on posts a concrete floor extends approximately 15 m by 7 m, down which is a continuous picnic-type wooden table with board seats. This is often used by school parties for lunching. Not far away overlooking the creek is a small concrete-walled structure with a ventilated roof, now without a door, which gives the impression of having been for specimen or explosive storage.

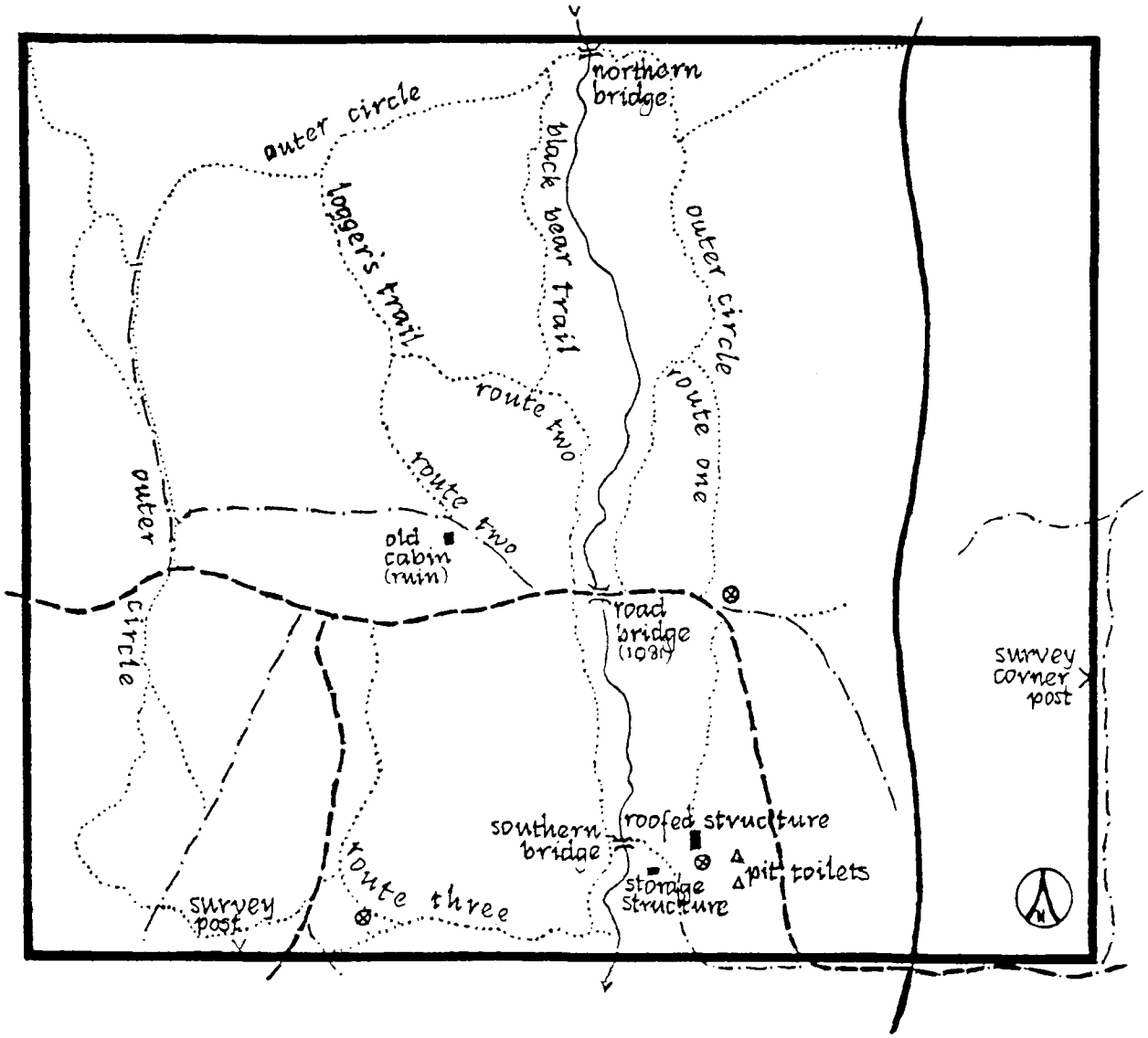
It is believed that the system of trails shown on Figure 5 was laid out (and named) once the area became used by School District #22 utilizing, in part, some pre-existing routes. Barbed wire fencing around the perimeter was erected around this time under a Local Initiatives Project - rather a hopeless exercise in a forested area where falling trees and dropping branches constantly try to reduce any fence to its basic constituents. Only along the southern boundary does it still retain much resemblance to a usable fence; the rest is in various degrees of disrepair. Unless remedial work is done regularly every year a fence cannot keep its integrity under these conditions and there is no good reason for the E.P. agency to undertake this unending chore.

One early problem that exercised management was of livestock (mainly goats) entering the reserve from a property to the south. The fence would have solved this. No domestic animals are visible in the adjoining area at present except a horse near the entry point where the fence is in place. Also fenced is the Trinity Valley Road right-of-way and this, too, is only partially standing.

To reach a forest grazing license on the east side of Silver Star Mountain cattle are taken through the reserve. There was no sign of their having been herded through in the spring but apparently when brought back in October 1987 several animals (owned by Joe Abel of Lumby) wandered off into the reserve and remained there for some considerable time into the winter.

VANCE CREEK ECOLOGICAL RESERVE, No.30

FIGURE 5... MAN-MADE FEATURES



Pit toilets and the two wooded bridges were other additions by school authorities. The northern bridge is in a rather tremulous condition at present and lost much of its hand-railing in 1988 during a school party visit. Unless assaulted by above average flood it should stand for a few more years. The southern bridge crosses Vance Creek at greater height and reliability is therefore of more importance. It was replaced in recent years and baring catastrophe has a long life ahead. School District funds provided for these facilities so presumably this authority would be responsible for upkeep.

After crossing this bridge Route 3 passes south above Vance Creek gorge into which a side path drops to a vantage point for viewing the waterfall. Poles nailed to trees bordering the path and viewing spot could never have been more than a casual deterent and now are not all in place. The fact of their placement at this location bespeaks a realization of danger, yet flimsy construction treats any hazard lightly. Responsibility for safety of school parties while on the reserve would likely be considered to rest entirely with the education authority, however, any legal satisfaction sought by third parties would almost certainly name the E.R. agency as one of the principals. If not already on file, some acceptable statement should be sought from School District #22 absolving E.R. from responsibility for harm arising from any naturally occurring or constructed feature.

When Order in Council #466 was written it established the reserve property within described boundaries subject to the exception of roads "as they exist on the ground". This was intended to allow continued access to timber west of the reserve via the Defies Creek Road which runs through the property. This road is used regularly throughout much of the year. Large projecting loads of logs often severly punish standing trees along the route and in summer a thick coat of dust lies over everything within reach. Grading is carried out by the forest company, and in 1981 the bridge was rebuilt.

One unanticipated and unintended result of the Order in Council is that it leaves open interpretation of the word "roads" and the meaning of the phrase "as they exist on the ground", consequently when one of the owners of property to the south cleaned out and made usable an old logging trail to improve access to his acreage there was nothing to be done than to accept his action as a fait accompli. Presumably this position has not changed and if, for example, someone else decided it were worthwhile to trace and re-open one of the previous logging trails from Trinity Valley Road to make a short cut through the reserve to the east, then a precedent already exists. Unlikely though this is to occur, it might be wise to give some thought to how it can be prevented.

Access to the cleared site and roofed building at the south end was extremely convenient for al fresco partying and was frequently used during good weather. To put an end to unscheduled drive-in jollification a large earth pile was dumped where the track leaves the forestry road and has since reduced these activities. Knowing locals can still walk in with refreshments and small scale happenings occur around the established fireplace. Two other fire sites found in 1988 are shown on Figure 5.

Of greater concern, though, is the garbage problem. Lumby landfill is a few hundred metres south on Trinity Valley Road. It is open for certain hours on specified days. Anyone arriving outside these times tends to look for some handy repository rather than take it all home again. The first quiet turn-off is the one through Vance Creek reserve which has several suitable places for off-loading garbage. A number of loads were deposited between survey visits in 1988 and a sizeable collection could be made from the sides of the forestry road. It is usually required at most dumps that an official permit be held before an individual is allowed to use that facility. It is suggested that the I.R. agency should apply for an official permit so that garbage collected on the reserve may be suitably laid to rest where it belongs.

Cutting of firewood for home use has taken place on the reserve in the past but is a surprisingly small problem in view of the proximity to Lumby and ease of access. It may be that the considerable volume of signs of various vintages going back to Canadian Forest Service days does have a deterrent effect.

Fire originating from adjoining properties, from people passing through the reserve on two roads, from campfire activities, and from incandescent material blown from burning at the garbage dump, raise the hazard on this reserve above the average. On the other hand, presence of neighbours, frequent passers-by travelling through, and active fire response teams at the mills in Lumby point to quick reporting and remedial action. No other special requirements seem necessary.

Below the waterfall plastic piping has been installed at various times to conduct water to some point on the property to the south. Presumably it was necessary to start here in order to accomplish the right slope and head of water. Flood conditions have regularly washed piping out and odd lengths still lie around. An examination was not made to see whether an operating line exists at the present or if it impinges on the reserve, but if it does some official acknowledgement of the fact should be made.

At the time of writing there are plans for enlarging skiing facilities on Silver Star Mountain by constructing new runs on the north and north-east. Depending on actual location these could cover the headwaters of Vance Creek where stripping of surface cover could have a detremental effect by concentrating seasonal snow-melt and possibly encouraging flood conditions, followed by lower water flow through the rest of the year. Erosion and a higher sediment load carried by the stream might be expected under these conditions. Skiing on Silver Star is within a Recreation Area category of the Park Act. E.R. management should monitor plans as they become disclosed and if necessary make representations to prevent disturbance to Vance Creek watershed.

Soon after the reserve's inception many of the potential troubles touched on above arose over a short period of time giving it a reputation as a problem area. Doubts were expressed as to the wisdom of a unit so close to a community and the head of the E.R. Unit at that time stated that new "typical area" reserves would henceforth be established only in remote country. Consideration was given to the possibility of an exchange with another piece of property to the north-west away from public roads but the usefulness of the original location for school parties swayed a decision in favour of retention. Due to budget curtailment school use is considerably lower now than it was in the late 1970s and early 1980s, however, if the only use to be made of this property is going to be by education authorities, E.R. management may wish to consider its future in this light.

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