Vascular plants of Wells Gray Provincial Park and its vicinity, in eastern British Columbia

LEENA HÄMET-AHTI
In 1961 I had an opportunity to spend about one and a half months (June 14 – August 3) in the southernmost portion of Wells Gray Provincial Park and its vicinity, collecting vascular plants and bryophytes and studying the vegetation of forests and timber-line meadows. This paper contains a list of the vascular plants with notes on their ecology and zonal distribution in the park. There has apparently been only one previous small collection of vascular plants from the park, gathered by F. HARTMAN and R. RITCEY, in the Provincial Museum, Victoria, whilst occasional records in the papers by Szczawinski (1959, 1962) and by some game ecologists (e.g. Edwards 1954, Geist 1959, Edwards and Ritcey 1959, 1960, Edwards, Soos and Ritcey 1960) are the only literature notes on the flora of the park. The unpublished report by the late Fay Hartman (1957), who died in an air crash, contains a list of the commonest plants in the park with some indications of their abundance, although a few identifications are doubtful. There is also a report by Ahti (1962 a), which chiefly deals with the lichens and tree species in the park. Kuja’s (1945) phytosociological tables include a number of records along the railway on the east side of the park. His collections, made with Aarno Cajander (Kalela) and deposited in Helsinki, have also been checked.

The nomenclature in this paper mainly follows Hitchcock, Cronquist, Ownbey and Thompson (1955, 1959, 1961, 1964), Hultén (1941 – 1950), and Moss (1959). Since there is no flora that includes all the vascular plants of this area, the nomenclature is not homogenous. In some cases, for instance, the rank of subspecies would be preferable to variety, which is much used in the American taxonomy, but the writer has avoided intricate nomenclatural problems.

The specimens were determined by myself, partly at the British Columbia Provincial Museum, Victoria, B. C. (1961) but mainly at the Botanical Museum, University of Helsinki, Finland (1963 – 64). Some species of Agropyron, Castilleja, Carex, Draba, Elymus, Poa, etc., were identified or checked by Mr. J. A. Calder, Dr. W. Bowden and Dr. W. G. Dore, Science Service, Department of Agriculture, Ottawa, Ontario, for whose valuable help I wish to express my thanks. I am also indebted to Dr. J. Jalas and Dr. I. Huttonen, Department of Botany, University of Helsinki, Finland, for checking a few identifications.

During my stay in Wells Gray Park I was helped by Mr. R. Y. Edwards, Mr. R. W. Ritcey and my husband, Dr. T. Ahti, to whom I convey my gratitude.

Financial support for this study was received from the Finnish National Research Council for Sciences and from the Finnish Zoological and Botanical Society 'Vanamo'.
I. General description of the park

Wells Gray Park is situated in the Cariboo Mountains, eastern British Columbia, the southern portion being at approximately lat. 52° N and long. 120° W (Fig. 1). The lowest elevations in the park are in the valleys of the southermost parts: Clearwater River ca. 2000 feet (ca. 600 m) Mahood Lake 2058 feet (617 m), and Hemp Creek (Ranger Station) 2100 feet (630 m). The highest peaks covered by permanent snow and ice are in the northern portion of the park: Buc Hanan 8500 feet (2600 m), Mt. Hogue 8000 feet (2400 m), Azure Mtn. 8186 feet (2456 m). Characteristic of Wells Gray Park are big lakes between the mountains (Hobson, Azure, Clearwater, Murtle and Mahood Lake) and rivers with frequent rapids (Murtle River, Clearwater River).

From the vegetation it may be concluded that the bedrock in the areas studied consists largely of schistose rocks. Most of the fens are mesotrophic or meso-eutrophic (at Murtle Lake and Stevens Lakes); the only highly eutrophic fen was seen in the Hemp Creek Valley, where the soil is clearly calcareous. The fens on Battle Mtn. and on Fish Lake Hill are oligotrophic or sometimes mesotrophic. The peak of Battle Mtn. – the only extensive area visited that is without a thick soil mantle – is composed of apparently gneissoid rocks. In the low parts of the park the bedrock is usually covered by thick, fine or coarse sandy till and only a few small bare outcrops are found on lake shores and riversides.

In many places there are marks of lightning fires of limited extent (Murtle Lake, Stevens Lakes, Battle Mtn., etc.), but the largest forest fire occurred in 1926, when about 200 square miles of forested land was denuded in the southern part of the park (EDWARDS 1954).

Climatically, Wells Gray Park belongs to the Interior Wet Belt. Very little information is

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<th>Table 1. Mean monthly and annual temperatures and precipitations at Hemp Creek, Blue River and Vavenby, according to MACKIE (1963).</th>
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<td><strong>Mean monthly and annual temperature</strong></td>
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available concerning the climate of most of the park, although at Hemp Creek meteorological observations have been made since the year 1952. The mean monthly and annual precipitation and temperature are given in Table 1 for Hemp Creek and for two other stations (Blue River and Vavenby) situated near the park (Mackie 1963).

In most parts of the park the precipitation is probably close to that at Blue River; the valley of Hemp Creek is in the driest portion of the park. Further, the temperature in the other parts of the park is lower than at Hemp Creek, which is obviously situated near the boundary between the Interior Wet Belt and the Dry Belt.

II. Effect of human activities on the flora of the park

The history of the park has not been published and it is not very well known. Mr. R. Y. Edwards has kindly told me some facts about it. The area was never permanently settled by Indians and was also always by-passed by early explorers. The first record of European man in the area that is now the park was in 1883, when some prospecting was done there. Since that date there has probably been continuous fur trapping, and no doubt also continuous use of packhorses. Various small mining projects have been undertaken, beginning about 1902. All have been small. Access, in these early days, was mainly from the west, via Mahood Lake, or Quesnel Lake. Interest in the timber increased about 1910, some logging equipment being brought into the area. Surveys about 1912 resulted in glowing and erroneous reports on the agricultural potential of the area. There was a small rush of settlers as a result, but they did not stay long, except south of the park. John Ray was an exception. He remained there until he died, about 1950.

Until 1940, the present Wells Gray Park road went only as far as Hemp Creek. By 1955 it was extended to Clearwater Lake. However, a good, well-used horse trail always started where the road ended, and men, horses, and agricultural supplies have been going up the valley for half a century. Trails climbing out of the valley, if used by horses, would repeatedly have been supplied with the seeds of weeds which might be associated with horse feed.

The area became a provincial park in 1939, and a major addition, the Battle Mountain area, was made about 1954. Many of the settlers left the valley after the big fire in 1926 (cf. Edwards 1954), which also destroyed buildings.

To-day, Hemp Creek is the only part by the park where there are people living all the year round, taking care of their farms, hunting and guiding sportsmen. In other portions of the park there are only solitary cabins for fire-patrolmen and hunters.

The park is not a major tourist attraction yet but its importance is steadily increasing (Taylor and Edwards 1960).

Several plant species have been introduced into the park by man. At Hemp Creek, for instance, weeds are widespread around the farms (Capsella bursa-pastoris, Galeopsis bifida, Matricaria matricarioides, Poa trivialis, Stellaria media, etc.) and a horse pasture was rich in species obviously not native to this area (Achillea lanulosa, Carex crawfordii, C. stipata, Cirsiwm vulgare, Juncus ensifolius, Ranunculus pensylvanicus, Rumex crispus, Sisyrinchium montanum, Trifolium agrarium, T. dubium, Vicia americana var. truncata).

Most aliens are confined to man-made habitats but some seem to have become naturalized at Hemp Creek (e.g. Agrostis gigantea, Bromus inermis, Carex pachystachya, Lychnis alba, Ranunculus abortivus var. acerosus, R. macounii, Trifolium repens). On dry, warm roadsides there are also several species, often solitary and casual, that are common in the Interior Dry Belt (Bromus tectorum, Hordeum jubatum, Melilotus albus, Sisymbrium altissimum, S. loselii, Tragopogon pratense, Verbascum thapsus) and have been introduced from that direction with the traffic.

Far from settlements there are some adventive plants to be found, e.g. Trifolium repens is abundant in places in the burned area of the lower part and Poa compressa was growing in the second-growth Populus tremuloides forest near the Murtle River trail about six miles from Hemp Creek. These, as well as plants found in yards of solitary cabins, must have been carried by people or horses. For instance, at Diamond Lake cabin on Murtle Lake Phleum pratense,
Plantago major, Poa annua and Trifolium hybridum were found.

Several indigenous species in the park are also spread by human activities, e.g. Agoseris aurantiaca, Aster ciliolatus, A. modestus, Juncus mertensianus, Carex mertensii, Ranunculus uncinitus var. parviflorus, Veronica americana.

III. Zonal distribution of the vascular plants

When Merriam’s well-known life-zone system (Merriam 1899, etc., Piper 1906, Jones 1936, Brockman 1938, etc.) is applied to the vegetation of the study area, the zones from the Arctic-Alpine to the Canadian zone are to be found. Perhaps the bottom of Clearwater Canyon has features of the Transition zone, but it has not been included in this study. The Canadian zone occupies the lower elevations (below ca. 4000 feet) and was met at Blue River, Hemp Creek; Clearwater River Valley, Clearwater Lake, Azure Lake, Murtle River Valley and Murtle Lake (Fig. 1). The Hudsonian zone was seen at Stevens Lakes, on Battle Mtn. and on Fish Lake Hill. The Arctic-Alpine zone has been studied only on Battle Mtn.

According to Daubenmire (1943), Wells Gray Park belongs floristically to the Northern Rocky Mountains division. Of his vegetation zones (Daubenmire 1942, 1946) there exist the Sedge-grass zone, the Spruce-fir zone and the Arborvitae-hemlock zone.

Of the forest regions of Halliday (1937) and Rowe (1959) there occur the Columbia forest and the subalpine forest region, although in their maps the limits are not at all correctly indicated in the park.

According to Cowan and Guiguet (1960), the study area belongs to the southern alpines, the subalpine forest and the Columbian forest, although in their map the last-mentioned biotic region does not extend to Wells Gray Park.

Krajina (1959) has outlined the major bioclimatic zones of British Columbia and, according to him, the park belongs to the Interior Western Hemlock zone, to the Subalpine Englemann Spruce-Subalpine Fir zone and to the Alpine zone.

Lately, the writer and two colleagues have proposed a zonal division for northwestern Europe (Ahti et al. 1964), which seems to cover the entire boreal and arctic area and which can also be employed in mountains with vegetation closely related to the strictly arctic and boreal. In such comparatively small areas as Wells Gray Park the zones proposed by Merriam, Daubenmire, Krajina and others are too broad to be used as categories in the description of the vegetation and distribution of the flora, and therefore the present author has chosen the refined Finnish system in this paper. The various systems used in western North America are compared in Table 2.

Because a subsequent paper will be published on the forest and the oroalpiarctic meadow vegetation in Wells Gray Park the zones will only be briefly characterized here.

Ooroarctic zone. The treeless zone, to which a great number of oroarctic (salpines, aarctes) species are restricted. On Battle Mtn. this flora includes Campanula lasiocarpa, Cardamine bellidiflora, Cassiope tetragona ssp. saxivontana, Eriogonum humile, Hierochloë alpina, Luzula arcula, Oxyria digyna, Salix cascadensis, Saxifraga hyalii var. hultenii, S. oregonensis, S. mertensiana, Silene parryi, Solidago multiradiata var. scopulorum.

Oroalpiarctic zone. The zone of the timberline meadows (subalpine meadows) intermingled with small or thin stands of Abies lasiocarpa and Picea engelmannii. In the meadows there are found Agoseris aurantiaca, Antennaria lanata, A. umbrinella, Cassiope mertensiana, Carex illota, C. nigricans, Gentiana glauca, Luzula spicata, Pedicularis bracteosa, Salix barclayi and in the tree stands Arnica latifolia, Luetkea peckiana, Mitella brevicaulis, etc.

Upper oroboreal zone. The dominant vegetation of this zone is Abies lasiocarpa–Picea engelmannii forest. Hardly any species in Wells Gray Park are confined to this zone. Many of them also occur in the preceding zone (Arnica latifolia, Epilobium hornemannii, Luetkea peckiana, Mitella brevicaulis, Osmoderma purpurea, etc.) and some frequently descend to the following zone (e.g. Menziesia ferruginea var. ferruginea). The upper limit of this zone is characterized by dense thickets of Rhododendron albiflorum.
Table 2. The zonal division of the study area compared with systems outlined by various authors.

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<tr>
<td>The peak of Battle Mtn. (above ca. 2 000 m)</td>
<td>Arctic-alpine zone</td>
<td>Sedge-grass zone</td>
<td>Alpine tundra</td>
<td>Subalpine forest</td>
<td>Subalpine Engelmann Spruce Subalpine Fir zone</td>
<td>Oroarctic (Arctic)</td>
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<td>Battle Mtn. and Fish Lake Hill (ca. 1 600 – 2 000 m)</td>
<td>Hudsonian zone</td>
<td>Spruce-fir zone</td>
<td>Subalpine forest</td>
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<td>Orohemi-arectic (Hemi-arectic)</td>
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<td>Fish Lake Hill and Stevens Lakes (ca. 1 200 – 1 600 m)</td>
<td>Canadian zone</td>
<td>Arbottae-hemlock zone</td>
<td>Columbian forest region (northern section)</td>
<td>Interior Western Hemlock zone</td>
<td>Columbia forest</td>
<td>Upper oroboreal (Northern boreal)</td>
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<td>Murtle Lake (ca. 1 200 – 900 m)</td>
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<td>Middle oroboreal (Middle boreal)</td>
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<td>The valleys of Blue River, Hemp Creek, Clearwater River and Lake, Azure Lake and lower part of Murtle River (below ca. 900 m)</td>
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<td>Lower oroboreal (Southern boreal)</td>
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**Middle oroboreal zone.** The abundant trees in the old forests are *Abies lasiocarpa*, *Picea engelmannii*, *Thuja plicata* and *Tsuga heterophylla*. A few species were found in the park only in this zone (*Carex chordorrhiza*, *C. sitchensis*, *C. leniflora*, *C. irisperma*, *Salix sitchensis*); several are also found in the next zone, where they are often more abundant (e.g. *Betula papyrifera* var. *commutata*, *Chimaphila umbellata* ssp. *occidentalis*, *Cinnamomum alpinum*, *C. fusca*, *C. occidentale*, *Pachystima myrsinites*, *Picea glauca*, *Populus tremuloides*, *Poa annua* var. *arborea*, *Salix lasiantha*). A great number of species common to the Pacific coastal forests and to the Interior Wet Belt are found in this and the next zone (Lonicera involucrata, *Oplopanax horridus*, *Pinus monticola*, *Rubus parviflorus*, *Spiraea douglasi*, *Thuja plicata*, etc.).

Some species common in the orohemi-arectic zone are still found in this zone: *Erigeron peregrinus*, *Seneo triangularis*, *Valeriana sitchensis*, *Veratrum eschscholtzii*, *Veronica Wormskjoldii*. It is possible that the last-mentioned species, at least, has different races in the park. At Murtle Lake, which is the only place really studied in this zone, some essentially orohemi-arectic species are found sparsely and occasionally in fens and other sites situated near the lake shore and the bank of Murtle River (*Danthonia intermedia*, *Luzula parviflora*, *Pedicularis bracteosa*, etc.). Their seeds have presumably been transported by water from mountains and they can thrive here, perhaps on account of the great cold lake.

**Lower oroboreal zone.** The dominant trees of the forest are the same as in the preceding zone. Typical plants of this zone in the park are *Antennaria howellii*, *A. racemosa*, *Apocynum androsaemifolium*, *Asarum canadum*, *Aster conspicuus*, *Bromus ciliatus*, *Carex aenea*, *C. retorsa*, *Corylus cornuta*, *Crataegus douglasii*, *Clyeria grandis*, *Lilium columbianum*, *Mahonia aquifolium*, *Menziesia ferruginea* var. *glabera*, *Orryza asperifolia*, *Praunus emarginata*, *P. pensylvanica*, *Salix pseudocorda*, *S. scouleriana*, *Schizachne purpurascens*, etc. In the burned areas of this zone *Populus tremuloides* and *Salix scouleriana* are commonly dominant; in the other zones in the park coniferous trees mainly form the second-growth forests.
There are at least two sections \(^1\) of the lower oroboreal zone in the study area. The one represented by the Hemp Creek Valley is dry and in it are found some species common in the Interior Dry Belt (Antennaria rosea, Apoecynum androsaemifolium, Arctostaphylos uva-ursi, Corylus \textit{cf.} cornuta, \textit{Fragaria virginiana} var. glauca, \textit{Lilium columbia}num, \textit{Mahonia aquifolium}, etc.), and the other, including the valleys of Blue River, Clearwater Lake, Azure Lake, Clearwater River and the lower course of Murtle River, is more rainy. The climatic differences between these sections are accentuated by the burned forest of Hemp Creek and its calcareous soil.

IV. The localities

**Lower oroboreal zone**

**Hemp Creek**

1. Outside the park boundary at the south entrance, c. 2 mi. SE of Hemp Creek Ranger Station, on Battle Mtn. Trail. \(^2\)
2. Outside the park boundary at the south entrance, the vicinity of Hemp Creek Ranger Station.
3. On Clearwater Lake road, c. 1 - 1.5 mi. NW of Hemp Creek Ranger Station.

**Murtle River**

4. C. 5 mi. WSW of Mahood Lake, by Dawson and Mushbowl Falls.
5. C. 3 - 4 mi. WSW of Mahood Lake, on Helmcken Falls Trail and above the falls.
6. C. 6 mi. NE of Hemp Creek Ranger Station, on Murtle Lake Trail.
7. C. 10 mi. NE of Hemp Creek Ranger Station, by the Stillwater cabin.

**Clearwater Lake**

8. Southern end of the lake, by the patrolman's cabin.

**Azure Lake**

9. Southern shore of the lake, c. 3 mi. E of the western end.
10. Rainbow Falls at the mouth of Angus Horne Creek.

**Clearwater**

11. Clearwater Station

**Messiter**

12. Messiter Station

**Blue River**

13. Blue River Station, also including collections of A. Cajander and V. Kujala 1931 and records by Kujala (1945).
14. C. 2 mi. SW of Blue River Station.
15. Canoe Creek; collections of A. Cajander and V. Kujala 1931 and records by Kujala (1945).
16. Valemount \(^5\), Jackman \(^6\) and Cedarside \(^6\); collections of A. Cajander and V. Kujala 1931 and records by Kujala (1945).

**Middle oroboreal zone**

**Murtle Lake**

17. SW end, c. 0.5 mi. S of Diamond Lake.
18. SW end, east side of Diamond Lake.
19. W end, 0.5 mi. N of the mouth of File Creek.
20. N shore of the western arm, c. 0.5 mi. E of the mouth of Anderson Creek.
21. N shore of the western arm, foot of Ramsay Mtn.
22. S shore of the northern arm, c. 6.5 mi. S of the mouth of Vachon Creek.
23. W shore of the northern arm, c. 0.5 mi. NE of the mouth of Vachon Creek.
24. N end, c. 1 mi. up Murtle River.
25. SE end, the mouth of Snoookwa Creek and the end of Blue River Trail.
26. S shore of western arm, by patrolman's cabin.
27. S shore of the western arm, c. 1.5 mi. W of patrolman's cabin, on the bay and cape and a little island opposite to Ramsay Mtn.

**Upper oroboreal zone**

**Stevens Lakes**

28. Southern and eastern shore of the southernmost of Stevens Lakes.
29. The northern end of the southernmost of Stevens Lakes.
30. C. 1.5 - 2 mi. NE of the southernmost of Stevens Lakes.

**Fish Lake Hill I**

31. 10 - 11 mi. SW of Blue River Station.

**Orohemiarctic zone**

**Battle Mtn. I**

32. S slope, c. 0.5 mi. S of Fight Lake, Caribou Meadows.
33. E slope, c. 1 mi. SW of the southernmost of Stevens Lakes.
34. S slope, Fight Lake Meadow.
35. S slope, 52 Ridge and Bowl Valley.

**Fish Lake Hill II**

36. 11 - 12 mi. SW of Blue River Station.

**Oroartic zone**

**Battle Mtn. II**

37. Southern slopes of the highest peak and the southwestern peak.
38. Summits of the highest peak and the southwestern peak.

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\(^1\) In the adopted here vegetation zone system the zones are essentially separated by features controlled by quantity of heat; the zones are divided into sections by means of features depending on the degree of continentality (cf. Ahntti et al. 1964).

\(^2\) The places in parentheses are situated outside the park boundary.

\(^3\) Because I have not visited these places, I cannot be quite sure about their zonal situation.
The following list includes all the collections gathered by myself and my husband, Dr. T. Ahti, in 1961, and by Prof. V. Kuja and Prof. A. Kalela (then Cajander) in 1931; these specimens are now deposited at the Botanical Museum, University of Helsinki, Finland, and a great number of duplicates were sent to the British Columbia Provincial Museum, Victoria, B. C. In parentheses are given records based on field notes or on literature only. In many cases the numbered localities are not indicated, because the field notes were not precise enough.

The abbreviations used in the plant list
r = rare
f = fairly rare
se = scattered
fq = fairly frequent
ft = frequent
H = the specimen is at the British Columbia Provincial Museum, Victoria, B. C.
* = the plant was found outside the park boundary only.

Ophioglossaceae

Botrychium boreale (Fr.) Milde ssp. obtusilobum (Rupr.) Clausen - Murtle River: 6, very sparse in dry second-growth Populus tremuloides forest. - Battle Mtn. 1: 34, sparse in mesic Arctostaphylos - Lapinus meadow.

*B. lunaria (L.) Sw. - Hemp Creek: 3, 2 shoots in dry second growth Populus tremuloides forest.

B. multifidum (Gmel.) Rupr. - Murtle Lake: 26, sparse in yellow alder meadow strip on lake shore.

B. virginianum (L.) Sw., s.lat. - Hemp Creek: 3, r. Blue River: 13, 23, 24, 26.

Sparsely in moist, rich forests. The specimen is var. europaeum Angstr.

Polypodiaceae

Asplenium viride Huds. - Azure Lake: 10, locally abundant on wet rock wall by water-falls.

According to Taylor (1956), apparently rare and known only from the southern Rockies in eastern B. C.


Cryptogramma crispa (L.) R. Br. var. stichensis (Rupr.) C. Chr. - Murtle Lake: 21, sparse in wide open boulder bed near the lake shore.

This collection is very typical and its locality is far outside the range of this variety as mapped by Bazz (1947).

Cystopteris fragilis (L.) Bernh. ssp. fragilis - Murtle River: 4, sparse in rock crevice by falls. Spores of this collection are calcareous.

C. montana (Lam.) Bernh. - Azure Lake: 10, sparse on wet rock wall by water-falls.

According to Taylor (1956), known only from a few localities in B. C.

*Dryopteris cristata (L.) A. Gray - Blue River: 13, A. Cajander and V. Kuja 1931.

This species in rare in B. C. and according to Taylor (1956) it has only been collected in the vicinity of Revelstoke and Kittemean.

D. dissecta (Hoffm.) A. Gray - Hemp Creek: 3, se. Blue River: 13, A. Cajander and V. Kuja (also Kuja 1945). - Murtle Lake: 17, 18, 19, 22, 24, f. sq. - Fish Lake Hill: 36, se.

The specimens from Hemp Creek and Murtle Lake seem to fit well with the description of the poorly known western D. dissecta of Wagner and Hagenah (1962) and of Walker (1961). The specimens from Fish Lake Hill agree neither with that nor with the other Dryopteris types described from western North America. Its fronds are rather narrow, about 20 cm in breadth, 45 cm long and lanceolate; the angles between the rachis and the pinnae are often less than 45°. The segments of the pinnales are serrate, the teeth large, deep (0.5 mm) and acuminate. The writer has seen a specimen of the same type from Pine Pass, northern B. C., collected by Calder, Saville and Ferguson (no. 13983; 11).


Common and often abundant in fresh forests up to the upper oroboreal zone.


Pteridium aquilinum (L.) Kuhn var. pubescens Underw. - Hemp Creek: 2, rare in dry second-growth Populus tremuloides forest. Blue River: (13), Kuja 1945. - Murtle Lake: 25, very dense stand 2 m high in a stony furrow caused by an avalanche, with Alnus crispa ssp. sinuata.

Thelypteris phleoides (L.) Slosson (Dryopteris phleoides (L.) C. Chr.)

Murtle Lake: 17, abundant in a rich swamp forest.

Woodia scopulina D. C. Eat. - Murtle River: 4, locally abundant in a boulder bed by water-falls.

Equisetaceae


E. fluviatile L. - Murtle Lake: 18, scattered in mesotrophic fens and in muddy bays of the lake.

*E. × ferrissii Chute (E. hyemale L. ×. E. laevigatum A. Br.)

-Clearwater: 11, 12, Messiter: 12, 14.

Common on dry to moist roadsides and gravelly railroad banks, often forming large pure stands.

The ridges of the specimens are bituberculat (cf. Hauke 1963, p. 97).

*E. hyemale L. var. affine (Engelm.) A. A. Eat. - Hemp Creek: 2, locally abundant on dry roadside. Blue River: (16), Kuja 1945.

The specimen collected does not fit the description of *var. americanum*.

*E. pratense* Ehrh. – Hemp Creek: 2, sparse in an alluvial *Alnus* swamp. Blue River: 16, A. Cajander and V. Kujala, (15, 16), KUJALA 1945.

*E. scirpoides* Michx. – Hemp Creek: 3, sparse along a moist spring-fed brook in shaded coniferous forest. Blue River: 16, A. Cajander and V. Kujala, (also KUJALA 1945).

*E. sylvaticum* L. var. *pauziramum* Milde – Hemp Creek: (2), r. Blue River: (13), KUJALA 1945. – Murtle Lake: 18, (19), r. – Stevens Lakes: (30), r.

Often locally abundant in swamps and swamp forests up to the upper oroboreal zone.

*E. variegatum* Schlech. – *var. variegatum* – Hemp Creek: 2, sparsely along a eutrophic spring-fed brook.

This specimen fits the description of this variety very well and seems to differ from the following type in its ecology as well.

*var. alaskanum* A. A. E. Art. – *var. variegatum* – Murtle Lake: 25, on sandy lake shore.

This specimen has a robust habit, straight teeth with white margins, and narrow sheaths (cf. HAUKE 1963).

*Lycopsidaceae*

*Lycopodium annotinum* L. var. *annotinum* – Hemp Creek: (3), f.q. Blue River: (13, 15), KUJALA 1945. – Murtle Lake: 18, (24, 25), f.q. – Stevens Lakes: (30), r.

In fresh and sandy alluvial coniferous forests.

*var. alpens* Hartm. – Stevens Lakes: 28, sparsely at the margin of a swamp forest on lake shore.

*L. clavatum* L., s.lat. – Blue River: (16), KUJALA 1945. – Stevens Lakes: r.

*L. complanatum* L. ssp. *complanatum* – Hemp Creek: 2, r. Blue River: (13, 15, 16), KUJALA 1945. – Murtle Lake: r. – Stevens Lakes: r.

On dry rock outcrop in second-growth *Populus tremuloides* forest, in dry coniferous forests and in burned areas.

*L. obscurum* L. – Blue River: (15, 16), KUJALA 1945. – Murtle Lake: (26), a dead shoot (an uncertain observation made by Dr. Ahti).

*var. selago* – Fish Lake Hill II: 36, abundant in a dry meadow at margin of forest.

*L. selago* var. *appressum* Desv. – Murtle Lake: 27, sparse on alluvial sandy lake shore

*var. palmum* (Beauv.) Desv. – Murtle River: 5, sparse in fresh coniferous forest on river bank.

*var. selago* – Fish Lake Hill II: 36, abundant in a dry meadow at margin of forest.

*L. selago* – Battle Mt. 1: (32, 33), 34, se. Fish Lake Hill II: 30, se.,

Fairly common in dry orohemiarctic meadows at margins of forests.

*Selaginellaceae*

*Selaginella wallacei* Hieron. – Battle Mt. 1: 32, sparsely in a crevice by small rapids. – Battle Mt. II: (37), scattered in rocky meadows.

*Isoetaceae*

*Isolepis bolanderi* Engelm. – Murtle Lake: 18, few individuals driven ashore.

**Taxaceae**

*Taxus brevifolia* Nutt. – Azure Lake: 10, locally abundant in a rich coniferous forest. Blue River: 13, A. Cajander and V. Kujala, (15), KUJALA 1945.

**Pinaceae**

*Abies lasiocarpa* (Hook.) Nutt. – Hemp Creek: (3), se. Murtle River: (4, 5), Azure Lake: (9). Blue River: (13, 15, 16), KUJALA 1945. – Murtle Lake: (17), 18, (19 – 24, 26), f.q. – Stevens Lakes: (28 – 30), f.q. Fish Lake Hill I: (31), f.q. – Battle Mt. I: (32 – 35), f.q. Fish Lake Hill II: (36), f.q. – Battle Mt. II: (37), r.

In the lower and middle oroboreal zones common but not dominant, mainly in fresh old forests, usually forming a lower tree layer. Dominant tree in forests of the upper oroboreal and the orohemiarctic zones. Very rare, small bush in the orarctic zone.

*Juniperus communis* L. var. *depressa* Pursh – Hemp Creek: (2, 3), scattered in dry second-growth *Populus tremuloides* forests and in dry pastures. – Murtle Lake: (25), sparsely in dry sandy *Pinus contorta* forest.

*var. saxatilis* Pall. – Murtle Lake: 21, sparse in a wide boulder bed on a lake shore. – Battle Mt. II: (38), sparsely in the rocky orarctic zone.

*Picea engelmannii* Parry – Hemp Creek: 3, f.q. Murtle River: (5), Blue River: (13, 15, 16), KUJALA 1945. – Murtle Lake: (17 – 20, 22 – 27), f.q. – Stevens Lakes: (28 – 30), f.q. Fish Lake Hill I: (29), f.q. – Battle Mt. I: (32 – 35), f.q. Fish Lake Hill II: (36), f.q. – Battle Mt. II: (37), r.

Common in fresh to wet forests up to the orohemiarctic zone; very sparsely in the lower part of the orarctic zone as small bushes.

*P. engelmannii* × *P. glauca* – Hemp Creek: (2, 3) f.q. Apparently the most common *Picea* in the Hemp Creek Valley.

*Garman* (1957) reported that this hybrid is abundant in the Clearwater area.

*P. glauca* (Moench) Yoss. – Hemp Creek: (2, 3), se. – Murtle Lake: 18, r. – Battle Mt. I: (34), one small stand.

Sparse in fresh coniferous forests up to the middle oroboreal zone.

*P. mariana* (Mill.) BSP. – Blue River: (16), KUJALA 1945.


*P. contorta* Loudon var. latifolia Engelm. – Hemp Creek: (2, 3), se. Murtle River: (4), Blue River: (13, 15, 16), KUJALA 1945. (13, 14). – Murtle Lake: (18, 24 – 26), f.q. – Stevens Lakes: (30), se. – [Battle Mt. I: (32), r.]

In dry second-growth forest and in mesotrophic to eutrophic fens as a small tree up to the upper oroboreal zone. In the observation from Battle Mt. the identification is uncertain.

*P. monticola* Doug. – Blue River: (13), KUJALA 1945. (14), f.q. – Murtle Lake: (25), 26, r.

Locally abundant in dry to fresh coniferous forests.


*Thuja plicata* D. Don – Hemp Creek: (2, 3), f.q. Murtle River: (4), 5, (6, 7), Clearwater Lake: (8), Azure Lake: (9, 10).
Blue River: (13, 15), Kujala 1945. – Murtle Lake: (17, 18, 21, 22, 25, 26), fg.

Common and often abundant in rich, mesic and moist sites up to the middle ombrochoral zone, in dry habitats more sparsely. Frequently a tree 30 – 35 m high in forest; also characteristically a thick bush, 2 – 4 m high, on shores of Azure, Clearwater and Murtle Lakes.

Tsuga heterophylla (Raf.) Sarg. – Hemp Creek: (2, 3), fg. Murtle River: (4, 5, 7), Azure Lake: (9, 10). Blue River: (13, 15, 16), Kujala 1945, (13, 14). – Murtle Lake: (17, 18, 20, 22, 25, 26), fg.

Common but scattered in dry to fresh forests up to the middle ombrochoral zone. Dominant only in dry to fresh old forests, which are infrequent.

**Typhaceae**

*Typha latifolia* L. – Hemp Creek: 3, abundant in a eutrophic fen, obviously native.

**Juncaginaceae**

*Scheuchzeria palustris* L. var. *americana* Fern. – Murtle Lake: 18, sparse in wet hollows in a mesotrophic fen.


**Gramineae**

*Agropyron repens* (L.) Beauv. – Hemp Creek: 2, in the yard of the Ranger Station, abundant, adventive.

*A. Roegneri* trachycéphale (Link) Malte var. *trachycéphale* – Hemp Creek: 2, in second-growth *Populus tremuloides* forests and in a rich alluvial swamp forest, scattered.

*A. exarata* Trin. – Hemp Creek: 2, along brook.

*A. gigantea* Roth (A. alba auct. Amer.) – Hemp Creek: 2, (3), fg. Murtle River: (4, 5). Blue River: (13). Fully naturalized on roadsides and in alluvial forests at Hemp Creek. – Murtle Lake: 18, in the yard of the cabin sparsely.

*A. idahoensis* Nash – Battle Mtn: 1: 34, on bare mud in pits made by ground squirrels.

*A. maxima* Willd. – Hemp Creek: 2, fg. on roadsides and on bare ground along a brook. – Murtle Lake: 21, in an extensive boulder bed, sparsely, apparently native. – Stevens Lakes: 28, in a wide open burnt area abundant, possibly native.

*A. ruberiana* Hitchc. – Murtle Lake: 17, r. – Battle Mtn: 1: (32), 34, (35), fg. Fish Lake Hill II: 36, fg. – Battle Mtn: 11: (37), s.

In cool seepages, along brooks and in spring-fed fens.

*A. equestris* Sobol. – Hemp Creek: 2, in alluvial meadow near road, sparse.

This species differs from the North European *A. equestris* in its tall size (45 cm), narrow leaves, only weakly dissected sheaths, long (5 – 7 cm) and thin (3 – 4 mm) panicle, and in the erect culms not rooting at the nodes. This type seems to be the common one in North America.

*Anthoxanthum odoratum* L. – Hemp Creek: 1, on trail in dry second-growth *Populus tremuloides* forest, sparse, alien.

*Bronx pilitatus* L. – Hemp Creek: 2, in dry second-growth *Populus tremuloides* forest, sparse, alien.

*Blue River: 16, A. Cajander and V. Kujala.

Fairly abundant in fresh forests on river banks and in rich alluvial swamps and swamp forests, native.

*B. actiniformis* Leyss. – Hemp Creek: 2, naturalized in *Alnus* forest along the creek near the road.

*B. marginatus* Nees – Hemp Creek: 2, on roadside, introduced and casual.

*B. lactuca* L. – Hemp Creek: 2, on dry roadside sparse, introduced, apparently casual.

*Calamagrostis canadensis* (Michx.) Beauv. – Hemp Creek: 2, se. Blue River: 16, A. Cajander and V. Kujala, (13, 16). Kujala 1945, – Murtle Lake: (18), 19, (24, 25), se. – Stevens Lakes: (28, 30), r. – Battle Mtn: 1: (32), 33, 34, r.

Common along breaks up to the ombrochoral zone; also seen in alluvial mesotrophic fens, in wet meadows and abundant in an ombrochoral burned-over fresh forest.

All the other specimens collected seem to fit to *C. canadensis*; only that one gathered by Cajander and Kujala is closest to var. *robusta* Vasey.

*C. inexpansa* A. Gray – Hemp Creek: 3, in eutrophic fen in *Sphagnum fuscum* hummocks.


In moist and rich forests up to the middle ombrochoral zone, common and often abundant.

*Danthonia glomerata* L. – Hemp Creek: 2, sparse on roadside, introduced.

*D. intermedia* Vasey – Murtle Lake: 24, r. – Stevens Lakes: (28), 30, se. – Battle Mtn: 1: (32), 33, 34, (35), fg. – Fish Lake Hill II: (36), fg.

Very common and often abundant in fresh ombrochoral meadows, also in eutrophic fens in the middle and upper ombrochoral zones.

*D. capensis* L. Beauv. var. *pinetorum* Piper – Hemp Creek: 2, sparse in dry second-growth *Populus tremuloides* forest, probably native.

*Deschampsia caespitosa* (L.) Beauv. ssp. *litoralis* (Rehb., s. lat. – Murtle Lake: 25, on alluvial, sandy lake shore, sparse.

The specimens are about 35 – 40 cm tall, with basal leaves strongly involute, panicle 12 cm long, the spikelets three florets, the lower glumes are about 4 – 4.5 mm long, and the anthers about 1.5 – 1.8 mm long and yellow. The last-mentioned features do not agree with those published by Kawan (1963) and others for the typical *Deschampsia caespitosa* ssp. *litoralis*.


In dry second-growth *Populus tremuloides* forests, on river banks and on sandy lake shores, common. It was also found in a swamp forest (18) and in an ombrochoral *Valeriana sitchensis* meadow. This zonal distribution does not seem to fit with the data given in the literature (cf. Piper 1965, Abrams 1940, Hitchcock 1956, etc.).

This species is very variable in the study area, as it also is elsewhere. The population found on Battle Mtn is stout, with leaves 10 – 12 mm broad, and an erect stiff spike, about 6 cm in length, 10 – 12 mm in thickness and spikelets in threes; length of glumes 10 – 12 mm and of awn about 12 – 18 mm. Thus it shows a resemblance to *E. aristatus* Merr.

*E. innovatus* Icel – Blue River: 16, A. Cajander and V. Kujala, also Kujala 1945.

F. pratensis Huds. (F. elatior L.) - Murtle River: 4, on a roadside, sparsely, casual.

*F. occidentalis* Hook. - Hemp Creek: 2, f qq. Murtle River: 4, f qq. - Stevens Lakes: (30), r. In dry second-growth forests, burned areas, and on roadsides. Evidently native, spread by human activities.

*F. rubra* L. - Murtle River: 4, on roadside, sparse, probably introduced.


*F. subulata* Trin. - Hemp Creek: 3, r. In shady old fresh Thuja forest along brook, abundant.

*Glyceria elata* (Nash) Hitchc. - Blue River: (13), Kujala 1945.

*G. grandis* S. Wats. - Hemp Creek: 2, in alluvial moist meadows and Alnus swamps along the creek, common and often abundant.

*G. pauciflora* Presl (det. J. A. Calder) - Hemp Creek: 2, sparse in moist meadow along brook. - Battle Mtn. I: 34, in a small pool on trail.

*G. striata* (Lam.) Hitchc. var. *striata* - Hemp Creek: 2, in alluvial Alnus swamp, fairly abundant. Azure Lake: 10, on wet rock by water-falls. var. *striata* (Seribn.) Fern. - Hemp Creek: 2, in an alluvial grazed meadow, sparse, probably not indigenous.

Hierochloë alpina (Sw.) R. & S. - Battle Mtn. II: 38, very sparse in the rocky oerectic zone.


*H. odorata* (L.) Beauv. - Hemp Creek: 2, r. - Murtle Lake: (18), r. - Stevens Lakes: 28, r.

In alluvial willow thickets and meadows, sparse.

Holcus lanatus L. - Murtle River: 4, introduced on roadside, sparse.

*Hordenum jubatum* L. - Hemp Creek: (2), adventive on roadside, casual.

Muehlenbergia glomerata (Wild.) Trin. - Hemp Creek: 3, on hummocks in euphrone fern, fairly abundant.


*O. purgans* (Torr.) Hitchc. (det. partly J. A. Calder) - Hemp Creek: 2, r. Murtle River (4). Blue River: (13, 16), Kujala 1945.

In dry second-growth forests, sparse.

*Phalaris arundinacea* L. - Hemp Creek: 2, in an alluvial meadow along the creek, sparse.

Phleum pratense L., s. lat. - Stevens Lakes: (28), r. - Battle Mtn. I: (32, 33), 34, (35), f qq. Fish Lake Hill II: 36, f qq. - Battle Mtn. II: (37, 39), sc. In dry to moist meadows. In the study area it does not seem to be spread by human activities, as it is in northern Europe.

*P. pratense* L. - Hemp Creek: 2, on roadsides, sparse. - Murtle Lake: (26), in cabin yard. Adventive.

*A. palustris* L. - Battle Mtn. I: (34), 35, sc. - Battle Mtn. II: 37, r.

Along brooks and in rocky meadows.

*P. annua* L. - Hemp Creek: 2, in moist pasture, sparse. - Murtle Lake: (24), in cabin yard. Adventive.

*P. compressa* L. - Murtle River: 6, in dry recently burned-over forest by trail far from the Hemp Creek village, locally abundant.


*P. palustris* L. - Hemp Creek: 2, in alluvial Alnus swamps and along brooks, abundant; also in dry second-growth *Populus tremuloides* forests, scattered. - Murtle Lake: 18, in cabin yard, probably adventive.

*P. pratensis* L., s. lat. - Hemp Creek: 2, in dry second-growth *Populus tremuloides* forests, on roadsides and in moist pasture, common, apparently introduced, partly at least. - Murtle Lake: 18, in euphrone fern, sparse, native. - Battle Mtn. I: 32, (34, 35), in moist meadows along brooks, scattered, native.

One specimen from Hemp Creek growing on a small rock outcrop in dry *Populus tremuloides* forest seems to fit well with *Poa agassizensis* described by Bovin and D. Löve (1960). Another one from the same forest near the road was referred to *spp. angustifolia* (L.) H. Lindb. by Dr. I. Hiitonen. The native bluegrasses collected from Murtle Lake and Battle Mtn. do not belong to *Poa alpigena* (Fries) Lindlm. s. str.

*P. rigida* L. - Hemp Creek: 2, sparsely on moist roadside ditch, naturalized.

*Schizachne purpurascens* (Torr.) Swallen - Hemp Creek: 2, sparsely in dry second-growth *Populus tremuloides* forest.

Trisetum spicatum (L.) Rchf. cf. ssp. *alaskanum* (Nash) Hult. - Stevens Lakes: (28), r. - Battle Mtn. I: (32, 33, 34, 35), f qq. Fish Lake Hill II: 36. - Battle Mtn. II: (37, 38), sc. According to Hultén's (1959) treatment, these specimens probably belong to *spp. alaskanum*.


Scattered on dry, sandy roadsides, in a rock crevice and in a cabin yard, strongly spread by human activities.

The specimen from Murtle Lake has slightly purple spikelets, the others are greenish.

Vaihifwia atropurpurea (Wahlenb.) Fries, s. lat. - Battle Mtn. I: (32, 33, 34, 35), f qq. Fish Lake Hill II: 36, f qq. - Battle Mtn. II: 37, sc.

Common in fresh meadows and in fresh forests at the timber-line.

Two different types of this species were found. One is very common, occurring in the habitats mentioned above. Its leaves are nearly glabrous, 4-6 mm wide, the panicle branches are very slightly striate, the glumes 4-5 mm long, nearly glabrous, the lemma 2.5 mm, its awn is ca. 3 mm long and attached to the middle of the lemma. Callus hairs are ca. 1/2 of the length of the lemma; a few may be longer. This apparently belongs to *spp. latifolia* (Hook.) A.F. Porsild. A. Cajander and V. Kuja have also collected similar specimens from Field and Longworth, R. C.

The other type, only seen on a small rock outcrop beside a brook at the tree-line on Battle Mtn. (37), has leaves puheose on both sides, 2-3 mm wide, and the panicle
branches are densely strigose. The glumes are ca. 4.5 mm long, pubescent, the lemma ca. 2.3 mm long, its awn 2.3 mm but attached to the upper part of the lemma and so projecting more than in ssp. latifolia. Several callus hairs are about \( \frac{1}{2} \) the length of the lemma. The pubescence of the leaves and some other features in this collection resemble ssp. paramushirense (Kudo) Hult., which Hultén (1942) reports as occurring in western North America and with which he unites ssp. latifolia. It is possible that in western North America there are two races of this species: cf. the discussions of Hultén (1942, 1960), Possiel (1954) and Gaarevoll (1958). In any case, not all the western North American specimens are pubescent, as implied by Hultén (1942), but they are not all essentially glabrous, either, as suspected by Possiel (op.cit.).

**Cyperaceae**

*Carex aenea* Fern. – Hemp Creek: 2, on dry roadsides, sparse. Adventive.

*C. aquatilis* Wahl. var. *altior* (Ryd.) Fern. – Hemp Creek: 3, scattered in a eutrophic fen.

*C. aurea* Nutt. – Hemp Creek: 2, sparse on bare alluvial soil along a brook.


The subspecies was recently described by Kalela (1965). ssp. *sphaerostachya* (Tuckerm.) Kalela (conf. Aarno Kalela) – Hemp Creek: 2, common in alluvial willow stands and on roadside. – Murtle Lake: 17, abundant in swamp forests.

*C. buzzoni*ii Wahl., s.lat. – Murtle Lake: 24, scattered in a mesotrophic alluvial fen.

*C. canescens* L. – Hemp Creek: 2, sc. – Murtle Lake: (19), f.r. – Stevens Lakes: (28) r. – Battle Mtn. I: (34), r.

Sparse along brooks and in alluvial fens up to the oro-hemiarctic zone.

*C. canescens × C. praeceptum* – Battle Mtn. I: 34, on margin of a pool in poor fen with the parental species.

This collection seems to be without achenes and it has features of both parental species (e.g. colour slightly glaucous, the sheaths hyaline and yellowish brown, 5 – 6 spikes, densely aggregated head 1.5 cm long, the lowest bract as long as its spike, the perigynia and scales brownish). Mr. J. A. Calder determined it as an *atypical* C. canescens, but in my opinion it obviously represents a hybrid.

*C. canescens × C. tenuiflora* – Murtle Lake: 18, on margin of a mesotrophic fen with the parental species.

These specimens are also without achenes, although the parents already had well-developed achenes. They also conform well with European specimens of this hybrid.

*C. cephalanthum* (Batley) Biekn. – Murtle Lake: 18, f.r. – Stevens Lakes: (28), r.

 Sparse in mesotrophic fens.

Possibly the northernmost station known in eastern British Columbia (cf. Abrams 1940, Eastsham 1947).

*C. chordorrhiza* Ehrh. – Murtle Lake: 18, very sparse in a mesotrophic fen.

Evidently there is only one record from B. C. before (along Hart Highway 1 mi. S of Summit Lake, 1954 Calder, Savile and Ferguson 12 486; V).

*C. croanfieldii* Fern. – Hemp Creek: 2, common in man-made meadows and on roadsides, dry to moist, probably introduced.

*C. deflexa* Hornem. – Stevens Lakes: 30, fairly abundant in a sandy second-growth *Pinus contorta* forest.

*C. deweyana* Schwein. – Hemp Creek: 2, locally on wet roadside ditch.

*C. diandra* Schrank – Hemp Creek: 3, scattered in a eutrophic fen.

*C. disperma* Dewey – Hemp Creek: 2, r. – Murtle Lake: (18, 19, 24), f.r. – Stevens Lakes: (30), r.

Common in moist pastures and alluvial *Alnus* swamps.

*C. fasticola* Bailey – Murtle Lake: 18, locally abundant in a mesotrophic fen along lake shore.


*C. heteromastes* Ehrh. – Murtle Lake: 18, r. – Stevens Lakes: 28, r.

In meso-eutrophic fens.

Probably the southernmost locality known in B. C., Hultén (1962) did not record this species from B. C. at all.

*C. illa* Bailey (det. J. A. Calder) – Battle Mtn. I: 34, sc. Fish Lake Hill II: 36, r.

In moist meadows along ponds and seasonally wet depressions and poor fens, often forming pure strips between those of *Carex nigricans* and *C. physocarpa*. In many individuals some of the perigynia are not developed.

According to Hensy (1915), this species has been collected from Griffin Lake, B. C.

*C. kelloggii* W. Boott (incl. C. hindsii C. B. Clarke; conf. J. A. Calder) – Hemp Creek: 2, fairly sparsely in moist pastures on roadside. – Murtle Lake: (18), sparse along brooks. – Stevens Lakes: (28), sparse along brooks. – Battle Mtn. I: 34, in shallow pool.

*C. laeviculmis* Meinsh. – Murtle Lake: 18, locally in a rich swamp forest along brook.

*C. laevicarpa* Ehrh. var. *americana* Fern. – Murtle Lake: 18, scattered in a mesotrophic fen.

*C. leptalea* Wahl. – Hemp Creek: 3, along a spring-fed brook in shaded coniferous forest. Blue River: (13), Kuzala 1945.

*C. limosa* L. – Murtle Lake: 18, (24), fairly abundant in meso-eutrophic fens. – Battle Mtn. I: (34), Fish Lake Hill II: (36), in poor fens with wet hollows, abundant.


*C. merkitisii* Prescot – Murtle River: 7. – Murtle Lake: (17), r.

Sparse in wet meadows along brooks and on wet trails in swamps. To some extent spread by human activities.

*C. nigricans* G. A. Meyer – Battle Mtn. I: (32, 34, 35), f.r. Fish Lake Hill II: 36, f.r.

Dominant in poor fens and in a moist meadow type in the oro-hemiarctic zone.

*C. pachystachya* Cham. – Hemp Creek: 2, scattered in moist pastures and on moist roadside, adventive. – Murtle Lake: 18, sparse in a cabin yard, adventive.

*C. pauciflora* Lightf. – Murtle Lake: 18, sparse on hummocks of mesotrophic fen. – Stevens Lakes: (30), in oligotrophic fens.

*C. pauperca* Michx. var. *pallens* Fern. – Murtle Lake: 18, sparse on hummocks in swamps and swamp forests.

var. *paupera* (C. magellanica Lam. ssp. *irrigua*) (Wahn...
lenh.) Hill.) – Battle Mtn. II: 34, scattered in alluvial mesotrophic fens.

*C. peckii* Howe – Hemp Creek: 2, fairly abundant in a dry second-growth *Populus tremuloides* forest.


*C. physocarpa* Presl – Murtle Lake: 26, (27), sparse on sandy lake shores. – Battle Mtn. I: (32), 34, (35), very abundant in poor fens.

*C. physocarpa* Presl × *C. rostrata* Stokes – Battle Mtn. I: 34, locally abundant along margins of a small pool between zones of *C. physocarpa* and of *C. rostrata* var. *rostrata* growing in water.


Obviously the first record of this species for Canada. See also *C. canescens × praeceptorum*.

*C. pyrenaica* Wahlenb., s. lat. – Battle Mtn. II: 37, sparse in rocky meadows.

The specimen has three stigmas, perigynium 3 mm long and strongly channelled leaves; it does not fit to *C. pyrenaica* ssp. *microptera* (C. A. Meyer) Hult. (cf. Mackenzie 1931, Hultén 1942).

*C. retinum* Schwein. – Hemp Creek: 2, fairly common in alluvial thickets, meadows and swamps along brooks.

*C. rostrata* Boott – Murtle River 4, locally abundant in dry coniferous forest near road.

*C. rostrata* Stokes – Hemp Creek: 2, common along brook, in meadow and in moist pastures. – Murtle Lake: 18, (19), 24, rather sparse in mesotrophic fens. – Battle Mtn. I: 34, locally abundant in a small pool.

The collection from Hemp Creek consists of var. *utriculata* Boott, from Murtle Lake of both var. *utriculata* and var. *rostrata*, from Battle Mtn. only of var. *rostrata*; the last-mentioned population has some *C. physocarpa* in it. However, the status of the races of *C. rostrata* is still very poorly known.

*C. stenochlaena* Prescott (conf. J. A. Calder) – Murtle Lake: 18, in a mesotrophic fen, abundant.

A coastal species which is rare in the interior.

*C. specabilis* Dewey (conf. J. A. Calder) – Battle Mtn. I: (32), 33, 34, (35), fq. Fish Lake Hill II: 36, – Battle Mtn. II: 38 (specimen not determinable with certainty). Abundant in oxic horizonic meadows, dry to wet, but best developed in moist habitats. Also one of the commonest plants in the oxic horizonic forest stage, even in deep shade.

*C. stipata* Muhl. – Hemp Creek: 2, in moist grazed meadows and on wet roadside, apparently introduced.

*C. tetraphylla* Wahlenb. – Murtle Lake: 18, locally abundant on the margin of a meso-eutrophic fen.

Possibly the southernmost locality in B. C. (cf. Eastham 1947). See also *C. canescens × tetraphylla*.

*C. trispermum* Dewey – Blue River (13), Kujala 1945. – Murtle Lake: 24, sparse on hummocks in bog forests.

Henry (1915) and Eastham (1947) did not mention this eastern species from B. C.; Moss and Pang (1963) recently reported it from Swan Hills, westcentral Alberta.


This specimen is too young for identification of the variety.

*E. compressa* Sull. – Hemp Creek: 3, abundant in a eutrophic fen.

Reported before in B. C. only from Kimbusquet on Big Bend Highway (Eastham 1947).

*E. fernaldii* (Svensson) Léve (E. pacifica var. *fernaldii*) – Murtle Lake: 18, r. – Stevens Lakes: 28, r.

Sparsely in mesotrophic and meso-eutrophic fens.

The habitats of *E. fernaldii* in the study area do not seem to be as rich in nutrients as fen habitats of *E. pacifica* in northeastern Europe.

*E. palustris* (L.) R. & S., s. str. – Hemp Creek: 2, scattered in alluvial meadow. – Murtle Lake: 18, r.

According to the treatment of Fernald and Bracken (1929), the specimens fit the descriptions of this species well. However, it is too young, being without mature achenes.

*Eriophorum angustifolium* Honck. – Murtle Lake: 17, 24, r. – Stevens Lakes: 28, r. – Battle Mtn. I: (32), 34, (35), r. – Battle Mtn. II: (37), r.

In mesotrophic fens with or without wet hollows from the middle to upper oxic horizons, and in seepage meadows in the oxic horizonic and oxic horizons.

The specimens from stations 24 and 34 have sebaceous peduncles and dark scales and thus apparently represent *E. angustifolium* ssp. *sebaceum* Hult.

*E. gracile* Koch var. *carrieanum* Fern. – Murtle Lake: 18, r. – Stevens Lakes: 28, r.

Sparsely in eutrophic fens.

The specimens have a straw-coloured involucres and scales in the flowers, and the achenes are about 2.5 – 3 mm long (cf. Fernald 1905).


*E. viridi-careinatum* (Engelm.) Fern. – Hemp Creek: 3, abundant in a eutrophic fen.


*S. hudsoniacus* (Michx.) Fern. – Murtle Lake: 24, sparse in a eutrophic fen.

*S. microcarpus* Presl – Hemp Creek: 2, in alluvial Alnus swamps along brook, abundant. Blue River: (13), Kujala 1945.

**Araceae**

*Lysichiton americanum* Hult. & St. John – Hemp Creek: (2), r. – Murtle River: (4), 5, 6, Blue River: (13), Kujala 1945. – Murtle Lake: (18), 19, r.

Fairly common in swamps, especially Alnus swamps.

**Juncaceae**

*Juncus bufonius* L. – Murtle River: 4, sparse on moist roadside, adventive.

*J. drummondii* E. Meyer – Battle Mtn. I: (32), 34, (35), fq. Fish Lake Hill II: 36, fq.

In fresh to moist meadows and in poor fens.

*J. esisfolius* Wikstr. – Hemp Creek: 2, r. – Murtle Lake: (18), r.

Occasional in grazed alluvial meadows, in the yard of the Ranger Station, and on wet trails. Probably alien.

*J. filiformis* L. – Hemp Creek: 2, r. – Stevens Lakes: (30), r. – Battle Mtn. I: (34), r.

Very sparsely in moist horse pasture and in moist meadows along brooks. Evidently spread by horses.

*J. verticillatus* Hong. – Hemp Creek: (2), r. – Murtle Lake: 18, r. – Stevens Lakes: (30), r. – Battle Mtn. I: 32, (34), 35, fq. Fish Lake Hill II: 36.
Fairly common in periodically wet pools in forests and meadows, in poor fens and in wet to moist meadows in the oromelanietic zone. In the other zones rare, but sometimes locally abundant on wet trails, being spread by human activities.

*J. parryi* Engelm. – Battle Mtn. II: 37, in a rocky meadow at the tree-line.

*J. stygius* L. ssp. americanus (Buchanan) Hult. – Murtle Lake: 18, (24), very sparse in mesotrophic fens with wet hollows.

Perhaps the first record of this species in B.C.

*J. tenuis* Willd., coll. – Hemp Creek: (1), occasional on trail.

*Lazula acaulata* (Wahlenb.) Sw. – Battle Mtn. II: 38, sparse in dry rocky meadows.

*L. parviflora* (Ehrh.) Desv., s. lat. – Murtle Lake: 18, adventive in cabin yard. – Stevens Lakes: (28), sparse and rare along brooks. – Battle Mtn. I: (32, 35), abundant in fresh meadows.

*L. piperi* (Gov.) Jones – Battle Mtn. II: 38, very sparse in dry rocky meadows.

Having seen *Lazula wahlenbergii* Pupr. several times in Fenoscandia, I cannot accept the suggestion made by Hultén (1962) and some American authors that *L. piperi* is only its synonym. I have also examined the large collections of *L. piperi* gathered by Aarno Cajander and Viljo Kujala from B. C. and the differences between these types seem to be quite clear. *L. piperi* is usually taller than *L. wahlenbergii*, its leaves are up to 5 mm wide, firm and thick, dull; it often has more than two caule leaves, the bract of the eyme is usually 1.5 – 3 cm long and at least partly green. The panicle has more flowers and it is larger than in *L. wahlenbergii*. The seeds are yellow or yellowish brown, lanceolate-oblong, tapering to each end, while in *L. wahlenbergii* the seeds are brown (the same colour as in the seeds of *L. parviflora*) and ellipsoid. *L. wahlenbergii* is also characterized by more numerous white fibres in the seeds, which remain in open capsules for a longer time than in *L. piperi*, and therefore in the herbaria the specimens of *L. piperi* are generally poor in seeds. The *L. wahlenbergii* specimens in the herbaria have plenty of seeds.

Perhaps the rank of species is too high for the two types with their different areas; they might better be called subspecies.

*L. spicata* (L.) DC., s. lat. – Battle Mtn. I: 34, in dry meadows sparse.

The specimen does not fit to var. nova described by Smiley (1921) from California; it is also not identical with the North European ssp. *spicata* (Chap. & Kříš 1962), from which it differs in having anthers about 0.4 – 0.5 mm long and slightly longer than the filaments, capsules about 2 mm long, and seeds 1.2 mm, which are also broader, blunter and shinier.

**Liliaceae**

*Allium cernuum* Roth – Reported by Hartman (1957), Q. Jones (det. J. A. Calder) – Hemp Creek: 3, sc. Blue River: (13, 16), Kujala 1945. – Murtle Lake: (17, 18, 22, 24, 26, 27), sc.

Scattered in fresh and in rich coniferous forests.

*Erythronium grandiflorum* Pursh – Reported by Hartman (1957) and Edwards and Ritchey (1960).

*Lilium columbianum* Hanson – Hemp Creek: 2, (3), f. g. Murtle River: (4), r.

In warm second-growth forests; fairly common in *Populus tremuloides* forests, sparse in *Pinus contorta* forests.

*L. montanum* A. Nels. – Blue River: (13), Kujala 1945.

*Mialanthemum canadense* Desf., s. lat. – Blue River: 16, A. Cajander and V. Kujala (var. interius Fern.), (13, 15, 16), Kujala 1945, (13), scattered in dry *Pinus contorta* forests.

*Snailacea liliacea* (Greene) Wynd. – Hemp Creek: 3, abundant in a eutrophic fen.

*S. racemosa* (L.) Desf. var. *amplexicaulis* (Nutt.) S. Watts. – Hemp Creek: 2, (3), sc. Blue River: (13, 16), Kujala 1945. – Murtle Lake: (17), r.

Spase in second-growth *Populus tremuloides* forest, and scattered in fresh and in rich coniferous forests.

*S. stellata* (Baker) Nutt. – Hemp Creek: 2, 3, locally in a dry alluvial meadow and in a periodically moist *Thuja* swamp. – Murtle Lake: 18, in fresh coniferous forests near the lake, scattered.

*Streptopus amplexifolius* (L.) DC. – Hemp Creek: 3, sc. Blue River: (13), Kujala 1945. – Murtle Lake: (17, 18, 20, 21, 23, 25, 26), f. g. – Stevens Lakes: (30), f. g.

In fresh coniferous forests, often near brooks.

All the specimens collected from forest sites seem to fit with *var. denticulatus* Fassett. On hummock in an open mesotrophic fen at Murtle Lake a specimen (no. 6776) was gathered which is low, 25 – 30 cm in height, and its leaves are small, very narrow and pale green. I cannot determine it according to Fassett (1935), neither can I regard this type as a mere modification due to the special habitat.

*S. rosens* Michx. ssp. *curvipes* (Vail) Hult. – Blue River: (13, 15, 16), Kujala 1945. – Murtle Lake: (17, 18, 19 – 27), f. g. – Stevens Lakes: (30), f. g.

Common and abundant in fresh and in rich coniferous forests up to the upper oroboreal zone. In Wells Gray Park it was not seen in the lower oroboreal zone, which in this area may be too dry for this species.

*S. streptopoides* (Leeb.) Frye & Riggs. – Blue River: (13), Kujala 1945.

*Tofelfia occidentalis* S. Watts. – Murtle Lake: 18, r. – Stevens Lakes: (28), r.

In eutrophic fens, fairly abundant.

*T. intermedia* Rydb. – Murtle Lake: 27, locally on an alluvial sandy lake shore.

*Veratrum eschscholtzii* A. Gray – Blue River: (13), Kujala 1945 (*V. viride*). – Murtle Lake: (17), scattered in rich, wet woods. – Stevens Lakes: (28), common in fresh forests. – Battle Mtn. I: (32, 33), (34, 35), abundant in *Valeriana stenochina* meadows and at margins of forests.

**Iridaceae**

*Sisyrinchium montanum* Greene – Hemp Creek: 2, in a grazed alluvial meadow sparsely, naturalized.

The species is here close to its western limit (cf. Hultén 1958).
Orchidaceae

Calypso bulbosa (L.) Oakes – Murtle River: 4, some individuals in a dry second-growth Pinus contorta – Populus tremuloides forest. Blue River: (16), Kujala 1945. – Murtle Lake: (27), one individual on a small sandy island.

Corallorhiza maculata Raf. var. pumicea H. H. Bartlett – Murtle River: 4, sparse in fresh Pinus contorta forest. Blue River: (14), sparse in old Tsuga forest.


Goodgera oblongifolia Raf. – Hemp Creek: (3), f & q, Murtle River: 4, (6), Azure Lake: (9), Blue River: 16, A. Cajander and V. Kujala. (13, 16), Kujala 1945. – Murtle Lake: (25, 26), r. – Collected from the park, according to Szczechowiak (1959).

In fresh coniferous forests.

G. repens (L.) Br. var. repens – Hemp Creek: 3, sc. – Murtle Lake: (23), r.

var. ophiiodes Fern. – Hemp Creek: (3). Blue River: (13, 15, 16), Kujala 1945. Scattered in old Tsuga forests.

Habenaria dilatata (Pursh) Hook. – Hemp Creek: 2, r. Murtle Lake: 18, r. – Stevens Lakes: (25, r. – Battle Mtn. I: (32), r. Fish Lake Hill II: 36, r. – Collected from the park, according to Szczechowiak (1959).

Scattered in eutrophic and mesotrophic fens, in alluvial meadows, along brooks, and in swamp forests.

H. orbiculara (Pursh) Torr. – Hemp Creek: (3), r. Murtle River: 5, Azure Lake: (9), Blue River: (13, 15), Kujala 1945. (14).

Sparse both in dry old Tsuga forests and in fresh, rich Thuya forests.

H. saccata Greene – Hemp Creek: (2, 3), r. – Murtle Lake: 18, (19, 24), f, r. – Stevens Lakes: (25, 30), f & q. – Battle Mtn. I: (32, 34), f & q. Fish Lake Hill II: 36, f, q.

In mesotrophic and eutrophic fens and in wet to dry meadows along brooks.

H. unalascensis (Sprague) S. Wats. – Hemp Creek: 2, one individual in dry second-growth Populus tremuloides forest. Murtle River: 5, a few individuals in dry second-growth coniferous forest. – Collected from the park, according to Szczechowiak (1959).

Listera cordata (L.) Br. var. cordata – Hemp Creek: 2, r. – Murtle Lake: 18, (25), f, q. – Stevens Lakes: (30), r.

var. nephrophylla (Ryd.) Hult. – Hemp Creek: 2, r. – Murtle River: 4. – Murtle Lake: (18, 21, 24, 26, 29), q.

Scattered in fresh coniferous forests.

Often these two varieties (or forms?) grow together; var. nephrophylla seems to be common in the park than var. cordata.

Spiranthes romanoffiania Cham. & Schl. – Stevens Lakes: 28, fairly abundant in a meso-eutrophic fen.

Salicaceae

Populus tremuloides Michx. – Hemp Creek: (1, 2), f & q. Blue River: (13, 15, 16), Kujala 1945. – Murtle Lake: r.

The dominant tree in dry burned-over areas in the lower oroboreal zone, very sparsely in the middle oroboreal zone.

P. trichocarpa T. & G. – Hemp Creek: 2, 3, in fresh second-growth Populus tremuloides forests, often as a bush, in seasonally moist old Thuya forests and along brooks also as very big trees. Blue River: (13), Kujala 1945. – Murtle Lake: (18), in fresh coniferous forests near lake shore only.

Salix arbusculoides Anders. – Murtle Lake: 18, sparse in alluvial thickets on lake shore.

The specimens have entire leaves.

S. barclayi Anders. – Battle Mtn. I: (32, 34, 35), f & q. Fish Lake Hill II: (36), q.

Abundant along brooks.

S. barclayi Anders. × S. commutata Behb – Battle Mtn. I: 34, locally along a brook.

Leaves are pubescent, glaucous beneath, bracts dark, with long hairs, ca. 2 mm long, pedicels 1 mm. Only some capsules are developed but they are without seeds.

S. bebbiana Sarg. – Hemp Creek: 2, f & q. Blue River: 16, A. Cajander and V. Kujala.

Common in dry meadows and pastures and in dry second-growth Populus tremuloides forests.

S. candida Pluegge – Hemp Creek: 2, r. – Murtle Lake: (18), r.

In eutrophic fens.

S. caseaeanus Cockerell – Battle Mtn. II: 37, sparse in moist snow-bed along brook.

S. commutata Behb – Stevens Lakes: 30, sparse in spring-fed eutrophic fen on lake shore.

S. lasiandra Bentham var. lanceolata (Anders.) Behb. – Hemp Creek: 2, scattered in meadows along brook. Blue River: 16, A. Cajander and V. Kujala. – Murtle Lake: 25, abundant on sandy alluvial lake shores.

var. lasiandra – Blue River: 16, A. Cajander and V. Kujala. – Murtle Lake: 24, sparse on sandy alluvial lake shores.

S. macelliana Howle – Hemp Creek: 2, r. – Murtle Lake: (18), r.

In eutrophic fens, abundant.

S. mackenzieana (Hook.) Barratt – Blue River: 16, A. Cajander and V. Kujala. – Murtle Lake: 18, common and abundant in alluvial willow thickets on lake shores.

S. nivalis Hook. – Battle Mtn. II: 37, common in dry, rocky meadows.

S. petiolaris Pursh var. hypoglaucia Fern. – Murtle Lake: 18, (24), f, r. – Stevens Lakes: (28), r. Locally abundant in meso- and eutrophic fens.

S. podophylla Rydb. – Murtle Lake: 18, sparse in alluvial willow thickets on lake shore.

*S. planifolia Pursh – Hemp Creek: 2, abundant in alluvial willow thickets along brook and in moist pastures.

S. pseudocordata (Anders.) Rydb. – Hemp Creek: 2, sparse in alluvial willow thickets.

S. scouleriana Barratt var. caelanea Hall – Hemp Creek: 2, f & q. Murtle River: 6, f, q. – Murtle Lake: (21), r.

Very common and often dominant tree in dry to fresh second-growth forests in the Hemp Creek Valley.

S. sitkensis Sanson – Murtle Lake: 18, 25, locally abundant on alluvial lake shores and river banks.

In the park this species is close to its eastern limit (cf. Raup 1959).

S. subcordata Piper – Hemp Creek: 2, r. Blue River: 16, A. Cajander and V. Kujala. – Murtle Lake: 24, r.

The locality is outside the known range of this species as mapped by Froiland (1962).

Common in alluvial willow thickets along brooks and on river banks.
Betulaceae

*Alnus crispa* (Ait.) Pursh ssp. *sinuata* (Regel) Hall. – Murtle River; (3), 4, se. Blue River; (13, 16), KUJALA 1945. – Murtle Lake; 24, (25), se. Stevens Lakes; r.

In fresh coniferous forests, on river banks and in rocky furrows caused by avalanches (Murtle Lake).

*A. tenuifolia* Nutt. – Hemp Creek; 2, dominant species in alluvial swamps along brook, Blue River; 15, A. Cajander and V. Kujala; (13, 16), KUJALA 1945.

*Betula glandulosa* Michx. – Hemp Creek; 3, as abundant, 1 – 2 m high, bush at margins of euphrosine fen. Blue River; (13), KUJALA 1945. – Murtle Lake; 18, a low bush in mesotrophic fens. – Stevens Lakes; (28), in mesotrophic fens.

Also reported from Wells Gray Park by Hartman (1957) and Edwards and Ketey (1959).

*B. papyrifera* Marsh. var. *communis* (Regel) Fern. – Hemp Creek; 2, (3), tq. Blue River; (14), – Murtle Lake; (17), tq.

In coniferous forests and in second-growth *Populus tremuloides* forests. Not seen in the upper ombrophile zone.

*Corylus cl. *ernata* Marsh. – Hemp Creek; 2, (3), scattered in second-growth *Populus tremuloides* forests, in pastures and in seasonally moist *Thuja* forests. Blue River; (13), KUJALA 1945.

Urticaceae

*Urtica gracilis* Ait. – Hemp Creek; 2, scattered in farm yards, on roadsides and in alluvial swamps near road. It may be indigenous, but is spread by human activities.

*U. lyrata* S. Wats. – Blue River; (13), KUJALA 1945. Also reported by Hartman (1957).

Santalaceae

*Geocaulon lividum* (Richards.) Fern. – Hemp Creek; (3), r. Blue River; (15, 16), KUJALA 1945. – Murtle Lake; 27, r.

In *Sphagnum* hummocks in fens and in bog forests, sparse.

Loranthaceae

*Arceuthobium americanum* Nutt. – Blue River; 16, A. Cajander and V. Kujala.

Aristolochiaceae

Asarum caudatum Lindl. – Hemp Creek; 3, sparse in an old rich *Thuja* forest.

Polygonaceae

*Oxyria digyna* (L.) Hill – Battle Mtn. II; 38, sparsely in boulder beds.

*Polygonum arenastrum* Bor. (*P. aviculare* L. ssp. *aqueale* (Lindm.) Aschers. & Graebn.) – Hemp Creek; 2, abundant in the yard of the Ranger Sta., naturalized, adventive.

This specimen was identified according to Styles (1962).

*P. lapathifolium* L. ssp. *rohdii* (Pers.) Fr. – Hemp Creek; 2, occasionally a few individuals in the yard of the Ranger Sta.

*P. douglasii* Greene var. *douglasii* – Clearwater; 11, in railyard.

P. viviparum L. – Battle Mtn. I; 32, 34, in fresh to moist meadows, sparse.

*Rumex acetosa* L. ssp. *alpestris* (Scop.) Löve – Battle Mtn. I; 34, sparse in a moist meadow along brook.

*R. acetosa* L. s. lat. – Hemp Creek; 2, abundant on sandy roadsides, naturalized, adventive.

The collection consists only of male individuals.

*R. crispus* L. – Hemp Creek; 2, r. Clearwater Lake; 8, scattered in moist man-made meadows and in pastures. Identified according to Rechinger (1937).

*R. triangulatifolius* (Danser) Rech. f. – Hemp Creek; 2, a few individuals in the yard of the Ranger Sta. Adventive.

Chenopodiaceae

*Chenopodium album* L., s. lat. – Hemp Creek; 2, in the yard of an abandoned farm.

The specimen is young and therefore determination of the subspecies is not possible.

*Salsola kali* L., s. lat. – Clearwater; 11, in railyard.

Portulacaceae

Claytonia lanceolata Pursh – Battle Mtn. I; 32, r. Fish Lake Hill; II; 36, r.

Scattered in peridically wet seepage meadows. A spring plant, which is very difficult to find after flowering and therefore probably more common.

*Portulaca oleracea* L. – Clearwater; 11, on railway.

Caryophyllaceae

* Arenaria serpyllifolia* L. – Hemp Creek; 2, one individual on dry roadside, adventive.

*Cerastium fontanum* Baumg. ssp. *trivalle* (Link) Jals (*Cerastium caespitosum* L. var. *hirsutum* Fries) (det. J. Jals) – Hemp Creek; 2, scattered along roadside ditches. – Murtle Lake; (28), in the yard of the patrolman’s cabin. Introduced and naturalized.

*Lychnis alba* Mill. (*Melandrium album* (Mill.) Garcke) – Hemp Creek; 2, locally in rich *Alnus* swamp along brook. Adventive, naturalized.

Minuartia biflora* (L.) Sch. & Thell. (* Arenaria sujanensis* Willd.) (conf. J. A. Calder) – Battle Mtn. II; 38, sparse in sheltered rock crevice.

*M. obtusiloba* (Rydbg.) House, s. lat. (* Arenaria obtusiloba* (Rydbg.) Fern.) (conf. J. A. Calder) – Battle Mtn. II; 38, sparse in sheltered rock crevice.


Moehringia lateriflora* (L.) Fenzl, s. str. excl. M. macrophylla (Hook.) Torr. (* Arenaria lateriflora* L.) – Hemp Creek; 2, sparse in a dry warm second-growth *Populus tremuloides* forest.

*Sagina saginoides* (L.) H. Kast. – Battle Mtn. II; 37, 38, sparse in rocky meadows and sheltered crevices from tree-line up to the peak.

Silene acaulis L. cf. var. *subacaulescens* (Williams) Fern. & St. John. – Battle Mtn. II; (37), 38, fairly common in rocky meadows.
S. parryi (S. Wats.) C. L. Hitchc. & Maguire – Battle Mtn: 11; 37, sparse in a dry rocky meadow at the tree-line.

Stellaria calycantha (Ledeb.) Bong. ssp. calycantha – Stevens Lakes: (28), sparse along brooksides. – Battle Mt. I: 34, sparsely in periodically moist seepage meadows.

S. crispa Cham. & Schle. – Murtle Lake: 17, abundant on bare wet soil in a rich swamp forest.

*S. longifolia Muehl. – Hemp Creek: 2, sparse in alluvial willow thickets along brook near road and in a moist farm yard.

According to Borvins (1953) treatment, the specimen represents S. atrata (J. W. Moore) Boivin var. ecellata Boivin.

*S. media (L.) Cyrillo – Hemp Creek: 2, sparsely in the yard of an abandoned farm.

S. monantha Hult. – Stevens Lakes: (28), sparse in mesotrophic fens. – Battle Mt. I: (32, 33), 34, (35), scattered in moist meadows.

These localities seem to fit well with Porsild's map (1963) of this species. Borvins (1948) described S. halleni from the Rocky Mts. but it is obviously identical with S. monantha.

S. sitchana Steud. – Murtle River: 4, locally in a moist coniferous forest on river bank.

The specimens do not belong to var. bongardiana (Fern.) Hult.

*S. stricta Richards. – Hemp Creek: 2, sparse in alluvial meadows.

Nymphaeaceae

Nuphar polysepala Engelm. – Murtle Lake: f r. – Stevens Lakes: 28, r.

Scattered in shallow meso-eutrophic bays, being able to grow even on shores above water-level in the middle of summer.

Ranunculaceae

Aconitum argutum Nutt. – Hemp Creek: (2), 3, scattered in fresh, old Thuja forests and in swamp forest along brook. – Murtle Lake: 17, sparse in swamps along brook.

At Hemp Creek individuals with white berries were also seen, along with the red-fruited ones.

*Anemone multifida Poir., s. lat. – Hemp Creek: 2, fairly abundant on a dry warm southern slope.

A. occidentalis S. Wats. – Stevens Lakes: (23), r. – Battle Mt. I: (32 – 33), f q. Fish Lake Hill II: 36, f r.

In dry meadows, sometimes as a dominant species.

A. richardsonii Hook. – Stevens Lakes: 28, sparse in hummocks on lake shore.

In Wells Gray Park this species is apparently at the southernmost limit of its range. Recently it was reported from Jasper National Park and from the Swan Hills region, Alberta, by Moss and Pegg (1963).

Aquilgia formosa Fisch. – Hemp Creek: 2, (3), fairly common in dry warm second-growth Populus tremuloides forests, possibly enophyllous. – Murtle Lake: (26), cultivated in the yard of the patrolman’s cabin.

Caltha leptosepala DC. – Stevens Lakes: r. – Battle Mt. I: (32 – 33), f q. Fish Lake Hill II: 36, f q.

Abundant along brooks and in seepage meadows.

Coptis trifolia (L.) Salish. – Blue River: (13), Kujala 1943. – Murtle Lake: 19, sparse on Pleurozium hummocks in swamp forest.

The specimen fits to C. trifolia rather than to C. groenlandica (Oeder) Fern. (cf. Fernald 1929).

*Ranunculus abortivus L. var. acrolaxis Fern. – Hemp Creek: 2, sparse in second-growth Populus tremuloides forests near roadside, adventive but naturalized.

R. aquatilis L. var. capillacea (Thuill.) DC. – Battle Mt. I: (34), in a brook.

R. eschscholtzii Schlecht. – Stevens Lakes: (28, 29), scattered along brooks and on lake shore. – Battle Mt. I: (32 – 35), f q. Fish Lake Hill II: 36, f q. Common and often abundant in fresh meadows and in fresh forests.

R. reptans L. var. reptans – Murtle Lake: 18, f r. – Stevens Lakes: r. – Battle Mt. I: r. –

Scattered on shores of alluvial ponds and along brooks.

R. macounii Britt. – Hemp Creek: 2, fairly abundant and probably naturalized on wet roadsides. – Murtle Lake: 17, occasionally on wet trail.

R. occidentalis Nutt. – Murtle River: 4, one adventive individual on roadside.

R. pensylvanicus L. f. – Hemp Creek: 2, sparsely in a moist pasture.

R. gmelinii DC. var. hookeri (D. Don) L. Benson – Hemp Creek: (3), sparse in wet roadside ditch.

R. uncinatus D. Don. var. parviflorus (Torr.) L. Benson (R. bongardii Greene) – Hemp Creek: 2, sc. Messiter: 12, sc. – Murtle Lake: (17), r.

Sparsely in dry to fresh roadsides and on trails.

R. orecteus B. L. Robins. – Murtle Lake: 17, sparse along a spring-fed brook in rich Thuja forest.

Thalictrum sparsiflorum Turcz. – Murtle Lake: 25, fairly abundant along a spring-fed brook. (Also at Stevens Lakes a Thalictrum was seen).

*T. occidentale A. Gray – Blue River: (13, 16), Kujala 1945.

Trollius albilorius (A. Gray) Rydb. – Battle Mt. I: (32 – 35), f q. Fish Lake Hill II: 36, f q.

Common in wet seepage meadows with Caltha leptosepala in mesotrophic fens and along brooks.

Berberidaceae

Mahonia aquifolium (Pursh) Nutt. – Hemp Creek: 2, (3), f q. Murtle River: (4). –

Common in dry second-growth Populus tremuloides forests, very sparse in old fresh coniferous forests.

Fumariaceae

Corydalis aurea Willd. – Murtle Lake: 21, sparse in a dry boulder bed with Rubus iberiensis; apparently native.

Cruciferae

Arabis drummondii A. Gray – Battle Mt. I: 35, locally in a Valeriana sitchensis meadow along brook.

*A. holboellii Hornem. var. pendulocarpa (A. Nels.) Robins. – Hemp Creek: 2, in a small gravel-pit on roadside, evidently adventive.

Capsella bursa-pastoris (L.) Medic. – Hemp Creek: 2, scattered on roadsides. – Murtle Lake: 26, in the yard of the patrolman’s cabin.

Introduced.
Cardamine bellidifolia L. – Battle Mtn. II: 38, sparsely in rocky meadows.

G. pensylvanica Muhl. – Hemp Creek: 2, in alluvial Amaus swamps and in willow thickets, scattered. – Murtle Lake: 18, sparse along brooks and in swamps. – Battle Mtn. II: very sparse along a brook.

G. umbellata Greene – Murtle Lake: 17, sparse along a spring-fed brook in rich Thuya forest.


The specimen is low (5 cm) and it has narrower pods (5 mm long, 1 mm wide) than in the descriptions of EKMAN (1933), PERNALD (1934), and HITCHCOCK (1941).

D. incurta Payson – Battle Mtn. II: 38, in dry rocky meadows, very sparse.

D. nivialis Liljeb., s. lat. (det. J. A. CALDER) – Battle Mtn. II: 37, in dry Antennaria meadow at the tree-line, very sparse.

Another specimen without flowers collected from a boulder bed near the top of Battle Mtn. was also referred to the D. nivialis complex by Mr. J. A. Calder.

D. stenoloba Ledeb. (partly det. J. A. CALDER) Battle Mtn. I: 34, in bare mull in pits made by ground squirrels in dry meadow. – Battle Mtn. II: 37, in a rock crevice near the tree-line.

These specimens have yellow petals spotted with red.

*Erysimum cheiranthoides* L.ssp. cheiranthoides – Hemp Creek: 2, one individual on roadside, introduced.

According to the specimens of this species in the major herbaria of British Columbia, the tall biennial *sp. altum* Ahti (or a race very close to it; cf. Ahti 1962, p. 27) is commoner in the province than *sp. cheiranthoides*.

* E. inconspicuum (S. Wats.) MacMill. – Messiter: (12), on railroad.

*Horippa islandica* (Oeder) BORB. var. fernakiana Butters & Abbe – Hemp Creek: 2, scattered on moist roadside and in ditches, introduced.

*Sisymbrium altissimum* L. – Hemp Creek: 2, local and sparse on dry roadside, casual adventive.

*S. lasellii* L. – Hemp Creek: 2, very sparse on roadside, casual adventive.


*Turrellia glabra* L. (Arabis glabra (L.) Bernh.) – Hemp Creek: 2, in small gravel-pit on roadside with *Arabis holboellii* var. *pendulocarpa*, introduced.

Droseraceae

Drosera anglica HUDS. – Murtle Lake: 18, abundant in mesotrophic fens with wet hollows.

D. rotundifolia L. – Hemp Creek: 3, abundant on *Sphagnum fuscum* hummocks in a eutrophic fen.

Crassulaceae

Sedum stenopetalum Pursh – Battle Mtn. II: 37, scattered in rocky meadows.

* S. oreganum Nutt. – Blue River: 16, A. Cajander and N. Kujala.

Saxifragaceae

*Chrysosplenium tetrandrum* (N. Lund) Fries – Murtle Lake: 17, in a wet swamp forest, sparsely.

According to PACKER (1963), this specimen fits the description of *C. tetrandrum* better than that of *C. iowense* Rydb.


r. on shady wet rock wall by waterfalls.

*H. ciliata* Dougl. – Reported by HARTMAN (1957).

*Leptorrhena pyrolifolia* (D. Don) R. Br. – Stevens Lakes: r. Fish Lake Hill I: (31); r. Battle Mtn. I: (32 – 35), fq. Fish Lake Hill II: 36, fq. – Battle Mtn. II: 37, se.

Common along spring-fed brooks and at margins of poor fens.

*Mitella breviri *A. Gray – Stevens Lakes: (29), (30), r. – Battle Mtn. I: (32, 33), fq. Fish Lake Hill II: (30), fq.

A typical plant in fresh orehemiacclare *Abies lasiocarpa – Picea engelmannii* forests, rare in meadows and only seen in *Valeriana sitchensis* meadows near forests.


In the park the species seems to be at the westernmost limit of its range (cf. PORSILD 1938, PORSILD and GRUM 1961).

*M. pentandra* Hook. – Murtle Lake: 18, locally in a moist coniferous forest.

* M. trifida* Graham – Hemp Creek: 2, sparse in dry second-growth *Populus tremuloides* forests.


r. in moist meadows and by rapids along brooks.

* P. palustris* L. var. neogaea Fern. – Hemp Creek: 2, sparse in alluvial man-made meadow along brook.


R. lacustris (Pers.) Poir. – Hemp Creek: 2, (3), sc. Blue River: (13, 16), KUJALA 1945, – Murtle Lake: (18, 19, 24, 25, 27), fq. – Stevens Lakes: r.

In fresh to moist coniferous forests, not seen in forest glades.

* R. oxyacanthoides* L. – Hemp Creek: 2, in dry second-growth *Populus tremuloides* forests and also in alluvial willow thickets.

Saxifraga bronchialis L. ssp. austromontana (Wieg.) Pip – Messiter: 12, on cliff by waterfalls in the lower oroboreal zone. – Battle Mtn. II: 38, sparse in rock outcrop in the oroboreal zone.

Both these zonally widely separated specimens represent *S. bronchialis ssp. austromontana*, according to the descriptions of CALDER and SAVILLE (1959).


S. igaliEngler var. *hultenii* Calder & Savile – Battle Mtn. II: 37, sparse along brook.

This specimen fits well with the description of CALDER and SAVILE (1960).

S. mertensiana Bong. – Battle Mtn. II: 38, sparse along brook.
S. oregona (Raf.) A. Nels. (S. adscendens L. ssp. oregona (Raf.) Bailey) - Battle Mtn. II: 11, 38, very sparse in rocky meadow.

S. rivularia L. var. flexuosa (Sternb.) Engl. - Battle Mtn. II: 11, 37, sparse in rocky meadow.

Telima grandiflora (Pursh) Douglas - Murtle Lake: 18, in a glade in swamp forest.

Tilia trifoliata L. - Murtle Lake: 18, sparse in a dry coniferous forest near lake. Blue River: (13), KuJaula 1945.

T. unifoliata Hook. - Hemp Creek: 2, (3), f. sp. Azure Lake: (9), Blue River: (13), KuJaula 1945. - Murtle Lake: (17 - 22, 24, 26, 27), f. sp. - Stevens Lakes: (30), sp?

Very abundant in old fresh coniferous forests up to the upper oroboreal zone, sparse in dry second-growth Populus tremuloides forests.

Rosaceae

Amelanchier alnifolia Nutt. - Hemp Creek: 2, 3, very common in dry, second-growth Populus tremuloides forests and scattered in old fresh Thuja forests. Blue River: (13, 15), KuJaula 1945, 16, A. Cajar and V. Kula, (14). - Murtle Lake (18), very rare on lake shore.

In Hemp Creek there were Amelanchier bushes with big, bad-tasting and others with small, palatable berries. The latter type also has smaller leaves but they are both var. alnifolia according to Hirtchcock et al. (1961).

Aruncus sylvester Kostel., s. lat. - Murtle River: 6, r - Murtle Lake: 17, f. r.

Sparse in wet open swamp forests and rich alder-willow thickets on riverbank. Common outside the park boundary in the lower moist valley south of the Blue River Station in the lower oroboreal zone.

Crataegus douglasii Lindl. - Hemp Creek: 2, one bush on a warm slope in dry second-growth Populus tremuloides forest.

Dipsis hookeriana Juz. - Reported by Hartman (1957) under the name Dorsetidapalas.

*Fragaria vesca L. var. braeucteta (Heller) Davis - Hemp Creek: (1), 2, locally common in dry second-growth Populus tremuloides forests.

*F. virginiuna Duchesne var. glauca S. Wats. - Hemp Creek: (1), 2, fairly abundant in dry warm second-growth Populus tremuloides forests. Blue River: (16), KuJaula 1945. var. platypetalata (Rydberg) Hall - Stevens Lakes: (28, 30, no specimens, but probably this variety), sp. - Battle Mtn. I: 32, r.

In dry meadows and on open burns.

Geum cf. oregonsense (Schultz) Rydberg. - Hemp Creek: 2, sparse in dry pasture and on roadside. - Murtle Lake: (20), in the yard of the palm's cabin, adventive.

It was not definitely proved that the species is not a hybrid, e.g. G. macrophyllum X G. pericinsum (cf. Gajewski 1955)

Luehke pettina (Pursh) Kunze - Stevens Lakes: (28, 30, sc. Fish Lake Hill I: (31), sc. - Battle Mtn. II: (32, 33, 34, (35), f. q. Fish Lake Hill II: (36, f. q.

Very abundant in orohemeric coniferous forests of the northeastern, apparently more humid slopes of Battle Mtn. and Fish Lake Hill; also abundant in dry treeless heaths and meadows at margins of forests in the same zone.

Potentilla diversifolia Lehm. var. diversifolia - Battle Mtn. I: 32, (33 - 35), f. q. common in dry to moist meadows; also seen (35) sparsely along a brook a type commonly called by the name glaucaphylla but which, according to Clausen et al. (1946), does not represent a distinct ecotype.

P. emarginata Pursh, s. lat. (det. J. A. Calder) - Battle Mtn. II: 37, rare on bare soil.

The leaves of this collection are tomentose beneath.

*P. gracilis Douglas ssp. nutallii (Lehm.) Keck - Hemp Creek: 2, sparse in the yard of the Ranger Sta., adventive. According to Clausen et al. (1940), this species is fairly rare in B. C.

*P. norvegica L. (P. monspeliensis L.) - Hemp Creek: 2, in the dry yard of the Ranger Sta., adventive. Blue River: 16, A. Cajar and V. Kula.

P. palustris (L.) Scop. - Hemp Creek: (3), r. - Murtle Lake: 17, r. - Stevens Lakes: (28), r. - Battle Mtn. I: r.

Sparsely in mesotrophic and eutrophic fen.

Even though this plant grows in soils of good bonity in the park it is low (20 cm), with leaves light green above and glaucous beneath and leaflets spatulate, subtruncate at the tip, thus resembling var. parvifolia (Raf.) Fern. & Long.

*Prunus emarginata (Douglas) Walpers var. emarginata - Hemp Creek: 2, in dry second-growth Populus tremuloides forests, sparsely. Blue River: (16), KuJaula 1945.

*P. pensylvanica L. f. - Hemp Creek: 2, sparse in dry second-growth Populus tremuloides forests.

*Rosa acicularis Lindl. ssp. sayi (Schw.) Lewis - Blue River: (13, 15, 16), KuJaula 1945.

R. gymnocarpa Nutt. - Hemp Creek: 3, r. - Murtle River: 6. Rare in old Thuja forests.

R. nuthana Presl, coll. - Hemp Creek: 2, abundant in dry second-growth Populus tremuloides forests. The leaflets of this species are mostly doubly serrate with glandular teeth and the lower surface as in var. nuthana, but the arms are as in var. hispida Fern. (cf. Hitchcock et al. 1961). Blue River: 16, A. Cajar and V. Kula, (13, 16), KuJaula 1945. - Murtle Lake: (17), locally in a fresh coniferous forest.

R. paracaulis Bailey - Murtle Lake: 18, local in a eutrophic fen. - Stevens Lakes: (30), in a moist meadow.

R. parviflorus Nutt. - Hemp Creek: (1), (2), (3), f. q. Murtle River: (4). Blue River: (13, 16), KuJaula 1945, (14). - Murtle Lake: (17, 18, 22), f. q. - Stevens Lakes: (29), f. q.

Common and often abundant in dry second-growth Populus tremuloides forests, scattered in old fresh coniferous forests up to the upper oroboreal zone, but occurs mainly near lake shores in the middle and upper oroboreal zones. In the whole area this species seems to avoid paludized habitats.

R. petasites J. E. Sm. - Hemp Creek: (3), (2), f. q. Azure Lake: (9), Blue River: (13, 15, 16), KuJaula 1945, (13, 14). - Murtle Lake: (17, 18 - 27), f. q. - Stevens Lakes: (29), r.

Very common and often abundant in old coniferous forests, particularly in fresh Tsuga forests of the middle oroboreal zone. It seems to prefer strongly humid regions, being therefore rare in the dry valley of Hemp Creek.

R. pubescens Raf. - Hemp Creek: (3), s. sc. Murtle River: 5, scattered in old fresh coniferous forests near river banks.
Blue River: (13, 16), KUJALA 1945. - Murtle Lake: 25, very sparse along spring-fed brook.

*R. nubarnifolius* (Greene) Rydb. - Murtle Lake: 21, r.

In a boulder bed on lake shore a low, glandular *Rabdosia* was detected very densely beset with prickles broadened at the base, having only a few white flowers and with leaves becoming subglabrous and light green beneath. It would seem to be the same type that *R. nigromontana* (1913) called *R. nigromontana* (Greene) Rydb., which HIRCHOCK et al. (1961), among others, included in *R. idaeus* L. var. *peraromatica* (Greene) Fern.

This plant is certainly native, occurring in association with *Corydalis aurea*.

*Sibbaldiopsis procumbens* L. - Stevens Lakes: (28), sparse in dry meadows near lake shore. - Battle Mtn. I: (32), (34), (35), f.qu. Fish Lake Hill III: 36, common in dry meadows. - Battle Mtn. II: (36), (37), scattered in dry rocky meadows.

*Sorbus scopulina* Greene, s. lat. - Blue River: (13, 15, 16), KUJALA 1945.

*S. sitchensis* Roemer var. *sitchensis* - Hemp Creek: (2, 3), fr. Blue River: (13), KUJALA 1945. - Murtle Lake: (17), (18), (22), 25, sc. - Stevens Lakes: (28), r.

Scattered in dry to fresh, second-growth or older forests.

*Spirodea douglasii* Hook. var. *menziesii* (Hook.) Presl - Hemp Creek: 2, common in moist pastures, in wet, alluvial meadows and in swamp forests, often forming pure thickets. Blue River: (13), (15), KUJALA 1945. - Murtle Lake: (18), (19), (24), (25), (27), as large pure thickets on lake shores and on river banks and scattered in mesotrophic fens. - Stevens Lakes: (60), sparse in alluvial meadows on lake shore.


Common but not abundant in dry second-growth *Populus tremuloides* forests, scattered in dry to fresh coniferous forests; also in pastures of the Hemp Creek village.

**Leguminosae**

*Lathyrus ochroleucus* Hook. - Hemp Creek: 3, Blue River: (16), KUJALA 1945.

In warm, dry to fresh second-growth coniferous forests; abundant especially in dry clearings and on roadsides.

*Lupinus latifolius* Agardh var. *subalpinus* (Piper & Robins.) C. P. Smith - Stevens Lakes: (28), sparsely in dry meadows. - Battle Mtn. I: (32), (33), (34), f.qu. Fish Lake Hill III: 36, f.qu. abundant in fresh meadows at margins of forests and in openings of fresh forests.

Determined according to HIRCHOCK et al. (1961).


Only this variety has been found in Canada according to BOYIN (1960) s.n. var. *lanata*.

*Melilotus albus* Desr. - Hemp Creek: 2, sparsely on roadside, adventive.

*Oxytropis campestris* (L.) DC. var. *grocilis* (A. Nels.) Barmeby - Blue River: 13, A. Cajander and V. KUJALA.

*Trifolium agrarium* L. - Hemp Creek: 2, fairly sparse in horse pasture, adventive.

*T. dubium* Sneath. - Murtle River: 4, sparse on roadside, introduced.

**Geraniaceae**

*Geranium bicknellii* Britt. - Hemp Creek: 2, fairly common on dry roadside and in dry second-growth *Populus tremuloides* forests near road. Naturalized adventive.

**Euphorbiaceae**

*Euphorbia glyptosperma* Engelm. - Clearwater: 11, in railyard, adventive.

**Callitrichaceae**

*Callitriche verna* L. - Stevens Lakes: 28, sparsely on muddy alluvial lake shore.

According to FASSETT's (1951) map, very few stations are known from B. C.

**Empetraceae**

*Empetrum nigrum* L., s. lat. - Blue River: 16, A. Cajander and V. KUJALA, also KUJALA 1945. - Stevens Lakes: 30, scattered in open born at margin of poor fen. - Battle Mtn. II: 37, locally abundant on wet rock by spring-fed brook at tree-line.

The two latter specimens have several flowers, mostly female, only a few being hermaphrodite. The collection from Stevens Lakes has no berries, while the other has some. In northwestern Europe *E. hermaphroditum* is nearly always rich in berries; its leaves are also relatively shorter than in the present specimens, which resemble the European *E. nigrum* s. str. In the opinion of LÖVE and LÖVE (1959) and LÖVE (1960) *E. nigrum* s. str. does not occur in North America. According to the monograph by Vasilyev (1961), there is a widespread *Empetrum* type in western North America, which is characterized by staminal filaments 3.5 times as long as the respective bracts and by the irregular occurrence of unisexual and bisexual flowers. He called this type *E. subbolareicum* V. Vassil., which is hardly a species but may represent a recognizable geographical race.

**Celastraceae**


Abundant in dry warm second-growth forests and also in fresh coniferous forests.

In Murtle Lake, east side of Diamond Lake, in a dry coniferous forest two types of this species grow together.
One, with narrow and densely serrate leaves, seems to be common in the area, the other, with oval leaves, was seen only in that one place.

**Aceraceae**

*Acer glabrum* Torr. var. douglasii (Hook.) Dippel – Hemp Creek: 2, (3), f.q., Murdle River: (4). Blue River: (13, 16), KUJALA 1945. – Murdle Lake: (17), r.

A small tree in fresh and seasonally wet old *Thuja* forests, a bush in second-growth *Populus tremuloides* forests.

[A. negundo L. var. negundo – Hemp Creek: 2, one planted tree in a farm yard.]

**Balsaminaceae**

*Impatiens noli-tangere* L., s. lat. – Hemp Creek: 2, abundant in clearing of *Alnus* swamp near road, perhaps indigenous. Blue River: (13), KUJALA 1945; *I. occidentalis*).

**Rhamnaceae**

*Ceanothus sanguineus* Pursh – Blue River: 16, A. Cajander and V. Kujala. Reported also by HARTMAN (1957) from Wells Gray Park.

*C. velutinus* Doug. – Reported by HARTMAN (1957).

**Violaceae**

*Viola adunca* J. E. Sm. – Hemp Creek: 2, abundant in dry second-growth *Populus tremuloides* forests. Blue River: (13, 16), KUJALA 1945. – Stevens Lakes: (25), sparse in dry meadow.

The collection from Hemp Creek belongs to var. *adunca*, KUJALA (op.cit.) mentioned var. *glabra* Brain. from Valemount.

*V. epipsila* Ledeb. ssp. *repens* (Turcz.) W. Bekr. – Murdle Lake: 17, sparse in rich swamp forests.

*V. glabella* Nutt. – Murdle Lake: 17, abundant in a rich swamp forest.

[V. rupicola Greene – Hemp Creek: 2, sparse in dry second-growth *Populus tremuloides* forest and in thickets along brook. Blue River: (13, 16), KUJALA 1945 (including *V. canadensis*).

V. nephrphylla* Greene var. nephrphylla – Hemp Creek: 3, sparse on margin of a eutrophic fen.

*V. arcticula* Geyer – Blue River: (13), KUJALA 1945.

*V. renifolia* Gray – Hemp Creek: 2, abundant in dry second-growth *Populus tremuloides* forests. Blue River: (13), KUJALA 1945. – Battle Mtn. I: (32), sparse in fresh forests. Fish Lake Hill II: 36, very sparse in dry meadows.

The specimens from Hemp Creek seem to fit with var. *renifolia*, but those from Fish Lake Hill belong to var. *brevifolii* (Greene) Fern. (cf. FERNALD 1912).

*V. seltzkii* Pursh – Blue River: (13), KUJALA 1945.

**Elaeagnaceae**

*Shepherdia canadensis* (L.) Nutt. – Hemp Creek: 2, f.q. Murdle River: (4). Blue River: (13, 16), KUJALA 1945. – Murdle Lake: (25), r.

In dry second-growth *Populus tremuloides* and *Pinus contorta* forests. Favours calcareous soil and apparently therefore occurs abundantly only in Hemp Creek Valley.

**Onagraceae**

*Circsea alpina* L. cf. var. *pacificana* (Asch. & Magnus) M. E. Jones – Hemp Creek: 2, common on roadsides and in yards of farms. Spread by human activities, probably not native. Blue River: (13), KUJALA 1945. – Murdle Lake: 18, sparse in mesotrophic fens, in wet swamps and along brooks, native.

*E. anagallidifolium* Lam. – Battle Mtn. I: 32, (34, 35), f.g., Fish Lake Hill II: 36, f.g. – Battle Mtn. II: 37, sc.

In periodically wet seepage meadows and along spring-fed brooks.

*E. angustifolium* L. – Hemp Creek: 2, f.q. Blue River: (13, 15, 16), KUJALA 1945. – Murdle Lake: f.r. – Stevens Lakes: r. – Battle Mtn. I: (34), r.

In second-growth dry to fresh forests, on roadsides, in pastures. In many habitats spread by human activities.

*E. eichiamum* Raf. – Murdle River: 4, one individual on river bank near road.

E. cf. *velutina* Trel. – Battle Mtn. I: 34, in moist meadows along brook, sparsely.

*E. hoernemannii* Reichenb. – Murdle Lake: 18, r. – Stevens Lakes: r. – Battle Mtn. I: (32), 33, (34, 35), f.g., Fish Lake Hill II: 36, f.g. – Battle Mtn. II: 37, sc.

In springs, along spring-fed brooks, in meso- and eutrophic fens.

*E. latifolium* L. – Azure Lake: 10, sparse on wet cliff by waterfall.

*E. leptocarpum* Hausskn. var. *maeconium* Trel. – Azure Lake: 10, in wet rocky meadow by waterfall.

*E. oregonense* Hausskn. – Murdle Lake: 18, sparse in a mesotrophic fen.

*E. palustris* L. var. *lapponicum* Wahlenb. – Murdle Lake: 18, 19, sparse in meso-eutrophic fens.

*E. paniculatum* Nutt. – Hemp Creek: 2, abundant on dry roadsides, in dry meadows and in other dry warm habitats. Naturalized adventive.

*Oenothera biennis* L., s. lat. – Messiter: 12, sparse in rallyard, adventive.

This specimen has no hairs with reddish pustular bases and therefore it could be called *O. rybergii* House (cf. HIRCUMCOCK et al. 1961).

**Hippuridaceae**

*Hippuris montana* Ledeb. – Stevens Lakes: (28), r. – Fish Lake Hill II: 36, r. Local along brooks.

A very rare species (RAUP 1947), perhaps overlooked on account of its small size.

**Araliaceae**

*Aralia nudicaulis* L. – Hemp Creek: 2, (3), Murdle River: (4), fairly abundant in fresh to dry, second-growth to old
forests. Blue River: (13, 15, 16), Kuwala 1945. – Murtle Lake: 18, very sparsely in dry coniferous forests near lake shore.

Oplopanax horridum (Sw.) Michx. – Hemp Creek: (3), sparsely in fresh coniferous forests. Blue River: (13, 16), Kuwala 1945. Murtle River: (7). – Murtle Lake: 17, (18, 21 – 24, 26), common and often abundant in fresh and especially in moist old coniferous forests.

Umbelliferae

Cicuta douglasii (DC.) Coulz. & Rose – Hemp Creek: 2, scattered in alluvial Alnus swamps. – Murtle Lake: 18, in mesotrophic fens, sparse.

Heracleum lanatum Michx. – Hemp Creek: 2, f r. Blue River: (16), Kuwala 1945. – Murtle Lake: (17), f r. – Stevens Lakes: (30), r.

In alluvial swamp forests.

*Osmorhiza chilensis Hook. & Arn. – Hemp Creek: 3, f r. – Murtle Lake: (17), f r.

Scattered in fresh to moist rich Thuja forests.

*O. depauperata Philippi – Blue River: (13), Kuwala 1945 (under O. obtusata).

O. purpurea (Coulz. & Rose) Sukosl. – Stevens Lakes: (28), f r. Battle Mt. I: (32, 33), f r. Fish Lake Hill II: 36, f r.

In fresh coniferous forests.

Cornaceae

Cornus canadensis L. – Hemp Creek: (1), 2, (3), f q. Murtle River: (4, 5, 7), Azure Lake: (9, 10), Blue River: (13, 15, 16), Kuwala 1945. (13, 14). – Murtle Lake: (17 – 20, 22 – 27), f q. – Stevens Lakes: r.

Very common and abundant in dry to fresh coniferous forests and in second-growth *Populus tremuloides* forests up to the middle of oroboreal zone, sparse in fresh forests in the upper oroboreal zone.

C. stolonifera Michx., s. lat. – Hemp Creek: 2, (3), scattered in fresh forests, in alluvial swamps and along brooks. Blue River: (13), Kuwala 1945 (under *C. pubescens*), 16, A. Cajander and V. Kuwala. – Murtle Lake: 18, sparse on alluvial lake shores with willows.

The specimen from Hemp Creek has appressed pubescence and style about 2.5 mm long and so, according to the treatment by Britton (1944), it may be a hybrid between the eastern *C. stolonifera* and the western *C. occidentalis*.

Pyrolaceae

Chimaphila umbellata (L.) Bart. ssp. occidentalis (Rydby) Hall. – Hemp Creek: (2, 3), Murtle River: 4, abundant in dry second-growth *Pinus contorta* forests, scattered in dry second-growth *Populus tremuloides* forests. Blue River: (13, 15, 16), Kuwala 1945. (13, 14). – Murtle Lake: 25, 26, sparse on dry warm southern slope in coniferous forests. Also reported by Szczawinski (1962) from Wells Gray Park.

Moennes uniflora (L.) A. Gray – Hemp Creek: (3), r. Blue River: (13), Kuwala 1945. – Murtle Lake: (19, 20, 22), f r. – According to Szczawinski (1962), collected from the park.

In old fresh coniferous forests.

*Orthilia secunda* (L.) House (Ramischia s.) – Hemp Creek: 2, 3, f q. Murtle River (4), 5. Azure Lake: (9), Blue River: (13, 15, 16), Kuwala 1945. – Murtle Lake: 18, (22 – 26), f q. – Stevens Lakes: (29), r. – Battle Mt. I: (32, 34), r. According to Szczawinski (1962), collected from the park.

A common species in dry and fresh coniferous forests, sparse in orehemiarctic meadow forests.

The specimens fit better with var. 

var. secunda than with var. obtusata.

Pyrola asarifolia Michx. var. asarifolia – Murtle River: 6, r. Blue River: (13, 16), Kuwala 1945. – Murtle Lake: 25, r. According to Szczawinski (1962), collected from the park.

Locally abundant in swamp forests and in fresh alluvial coniferous forests.

var. purpurea (Bunge) Fern. – Hemp Creek: (3), r. Murtle River: 4, Blue River: (13, 16), Kuwala 1945. – Murtle Lake: (25), r.

Sparse in fresh *Thuja* and fresh *Pinus contorta* forests.

*P. chlorantha* Sw. (*P. nires* Schweigg.) – Hemp Creek: 3, r. Blue River: (13, 15, 16) Kuwala 1945. – Murtle Lake: (26, 26), f q. According to Szczawinski (1962), collected from the park.

Sparse in old, dry to fresh coniferous forests.

P. minor L. – Murtle Lake: 25, locally abundant on sandy lake shore under willows. – Stevens Lakes: r.

Monotropaceae

Monotropa hypopitys L. var. americana (DC.) Don. – Monotropa americana (Don) Spreng. var. conellis Fern. & Mabr. – Hemp Creek: 2, scattered on rock outcrops in second-growth *Populus tremuloides* forests. Blue River: (16), Kuwala 1945. According to Szczawinski (1962), collected from the park.

Cassiope mertensiana (Bong.) D. Don var. mertensiana – Battle Mt. I: (32 – 35), f q. Fish Lake Hill II: 36, f q. According to Szczawinski (1962), collected from the park.

Common in dry meadows at margins of forests and on hummocks at margins of fens.

C. tetragona (L.) D. Don ssp. saximontana (Small) Porsild – Battle Mt. II: 38, scattered in rocky orarctic meadows.

Gaultheria hispidula (L.) Bigel. – Hemp Creek: (3), r. Blue River: (13, 15, 16), Kuwala 1945. – Murtle Lake: 18, 19, (27), f r. – According to Szczawinski (1962), collected from the park.

Sparse on oligotrophic hummocks in eutrophic fens and in swamps.

G. humifusa (Graham) Rydb. – Battle Mt. I: (34, 35), 36, sc. Fish Lake Hill II: 36, se. – Battle Mt. II: (37, 38), f r.

In dry meadows and dry heaths. These are apparently the northernmost known localities of this species in B. C. (cf. Szczawinski 1962, p. 65).

Kalmia polifolia Wang var. microphylla (Hook.) Rehd. – Battle Mt. I: (32, 34, 35), common on thin hummocks at margins of fens and in mesic meadows.

var. polifolia – Hemp Creek: (3), r. – Murtle Lake: 18, (19), f r. – Stevens Lakes: (38), f q.

Sparse in oligotrophic hummocks of eutrophic and mesotrophic fens.
According to Szczawinski (1962), K. polifolia has been collected from Wells Gray Park.

*Ledum glandulosum* Nutt. – Collected from the park, according to Szczawinski (1962).


Sparse in fresh, old *Thuja* forests in the lower oroboreal zone, very abundant in fresh coniferous forests in the middle and upper oroboreal zones.

The specimens collected from Hemp Creek seem to be close to *var. globella* (Gray) Peck, which is known in the Rocky Mts. area. Those from Murtle Lake fit better with *var. fergusinae*, which is a coastal type (Szczawinski 1962).

*Phylocladus empetrifolius* (Sm.) D. Don – Murtle Lake: (7), very sparsely in a burned forest. – Murtle Lake: r. – Stevens Lakes: (30), sparse at margins of poor fens. – Battle Mtn. I: (34, 35), f. Fish Lake Hill II: 36, f. in marginal heaths of forests and fens, and in dry meadows. – Battle Mtn. II: (37, 38), fairly abundant in rocky meadows.

According to Szczawinski (1962), collected from the park.

*P. glanduliflora* (Hook.) Coville – Battle Mtn. II: 37, in rocky ororectic meadows.

*Rhododendron abiflorum* Hook. – Azure Lake: (9), very sparsely in forest and in rocky lakes on lake shore. – Murtle Lake: (17, 18, 23, 26), sc. – Stevens Lakes: (28 – 30), f. Fish Lake Hill II: 31, f. – Battle Mtn. I: (33), r. Collected from the park, according to Szczawinski (1962).

In fresh coniferous forests from the middle to the upper oroboreal zone. The upper limit of this species, where it forms a continuous thicket difficult to penetrate, is very sharp and seems to be the same as the limit between the upper oroboreal and the orohemiacretic zone on Battle Mtn. and Fish Lake Hill.


On dry sandy lake shores and river banks, in dry *Pinus contorta* forests and in dry ororectic meadows.


Common and abundant in fresh coniferous forests; sparse in very shady localities. *V. myrtillioides* Michx. – Blue River: 15, 16, A. Cajander and V. Kujala. (13, 15, 16). *KuJala* 1945. 14, abundant in old dry and shady *Tsuga* forests.

*V. oxyccos* L. – Murtle River: (7). – Murtle Lake: 18, (19), f. r. – Stevens Lakes: (30), r. Scattered in all kinds of fens. The collection is closest to var. *intermedium* A. Gray, its pedicles are pubescent, leaves broadest near the base.

*V. ovalifolium* J. E. Sm. – Hemp Creek: r. Murtle River: (6), Azure Lake: (9, 10). Blue River: (13, 15). *KuJala* 1945, (13, 14). – Murtle Lake: (18 – 24), f. – Stevens Lakes: (30), f. – Battle Mtn. I: (32, 33), f.

In dry to fresh coniferous forests. Very rare in the dry Hemp Creek valley, like the other species common on the Coastal and in the Interior Wet Belt.

*V. vitis-idaea* L. ssp. minus (Lodd.) Hult. – Blue River: 15, 16, A. Cajander and V. Kujala, also *KuJala* 1945.

**Primulaceae**

*Trientalis europaea* L. ssp. arctica (Fisch.) Hult. – Murtle Lake: 18, f. r. – Stevens Lakes: 28, r. Scattered in mesotrophic and eutrophic fens.

**Gentianaceae**

*Gentiana glauca* Pall. – Battle Mtn. I: (32), 34, (35), scattered in moist *Carex nigricans* meadows.


**Apocynaceae**

*Apocynum androsaemifolium* L. var. androsaemifolium – Hemp Creek: 2, fairly abundant in dry warm second-growth *Populus tremuloides* forests and on dry roadsides, probably prefers calcareous ground and is also spread by human activities. Blue River: (16). *KuJala* 1945.

**Polonionaceae**

*Colowia linearis* Nutt. – Blue River: 16, A. Cajander and V. Kujala.

*Microstegium gracilis* (Hook.) Greene var. *humilis* (Hook.) Cronq. – Hemp Creek: 2, adventive in bare gravel in the yard of the Ranger Sta.

**Labiatae**

*Galeopsis bifida* Boemn. (G. tetraphylL var. *bijida* (Boemn.) Lej. & Court.) – Hemp Creek: 2, as a weed in the yard of an abandoned farm, adventive.

*Lygeum anisophorum* Michx. – Murtle Lake: 18, sparse in a moist coniferous forest.

*Menhita speciosa* L. – Hemp Creek: 2, sparse in the yard of an abandoned farm, probably originally planted.

*M. arvensis* L. var. *globulara* (Benth.) Fern. – Hemp Creek: 2, abundant in alluvial forests and in swamp forests along brook near road, perhaps adventive. The determination and nomenclature is according to Hitchcock et al. (1959).

*Prunella vulgaris* L. ssp. lanceolata (Barton) Hult. – Hemp Creek: 2, scattered in moist pastures and on moist roadside. – Murtle Lake: (18), in cubin yard. – Stevens Lakes: (30), sparse on stony lake shore near cabin (native?).

*Scutellaria galericulata* L. (incl. *S. epilobiifolia* A. Hamilton) – Hemp Creek: 2, sparse in rich alluvial forest along a brook, in moist pastures and in grazed alluvial meadows.
Scrophulariaceae

Castilleja minima Dougl. (conf. J. A. Calder) – Hemp Creek: 1, 2, common in dry second-growth Populus tremuloides forests.


The colour of inflorescences varies from yellow to purple and red.


*Linaria vulgaris L. – Hemp Creek: (2), on roadside, adventive.

Melampyrum lineare Desr., var. lineare – Murtle River: 4, abundant in 80-year-old, warm and dry Pinus contorta forests. Blue River: (13, 15, 16), KUJALA 1945, (13).

Minuartia guttata DC. – Hemp Creek: 2, scattered in grazed alluvial meadows, along brooks and on wet trails; spread by human activities. – Murtle Lake: 18, r. – Stevens Lakes: (28), r. in meso-euphoriic fens, native.

M. levisii Pursh – Battle Mtn. 1: 35, locally abundant along a spring-fed brook.

M. muscatus Doug. – Murtle River: 4, locally abundant in moist roadside ditches, adventive.

Pedicularis baeoensis Bent. – Murtle Lake: 24, scattered in a mesorotic fen. – Battle Mtn. 1: 32, (33 – 34), Fq. Fish Lake Hill II: (36), qf, common and often abundant in fresh to moist meadows, especially in Valeriana sitchensis meadows, and in fresh forests.


*Penstemon procerus Doug. – Blue River: 16, A. Cajander and V. Kujala.

Penstemon sp. – Reported by Hartman (1957).

Verbasum thapsus L. – Hemp Creek: 2, on dry roadside and on an abandoned road, probably naturalized. (Very common in burned areas along the Wells Gray Park road about 10 miles N of Clearwater) -

Veronica americana (Raf.) Schwein. – Hemp Creek: 2, r. – Murtle Lake: r. – Stevens Lakes: (30), r. – Battle Mtn. 1: (34), r. –

In alluvial Alnus swamps and along brooks. Indigenous, but seems to be spread by human activities.

V. serpilflora L. var. humifusa (Dieck.) Vahl – Battle Mtn. (32), sparse in moist meadow along a brook.

V. scoulerioidii Roem. & Schult. – Murtle Lake: 18, sparse in euphorbic fens. – Battle Mtn. I: (32 – 34), (35, qf, Fish Lake Hill II: (36), qf, common in fresh meadows. – Battle Mtn. II: 37, sparsely along brook.

The specimens from Murtle Lake seem to fit Fernald’s (1939) description of Veronica alpina var. geminiflora. The others cannot be determined according to Fernald’s paper. On Battle Mtn. there was seen a small patch of a form with white flowers and another with red flowers.

Plantaginaceae

Plantago major L. – Hemp Creek: 2, on moist trails, on roadsides and in moist pastures. – Murtle Lake: (28), in the yard of the patrolman’s cabin. Introduced.

Rubiaceae

Galium boreale L. ssp. septentrionale (Roem. & Schult.) Ilis – Blue River: (16), KUJALA 1945. Reported also by Hartman (1957).

G. trifidum L. var. pacificum Wieg. – Hemp Creek: 2, abundant on wet roadside near road. – Murtle Lake: (17), sparsely along a brook.

var. trifidum – Stevens Lakes: r. – Battle Mtn. I: r.

Sparsely along brooks and in moist meadows.


In alluvial Alnus swamps, in fresh to moist coniferous forests, in dry second-growth Populus tremuloides forests and on dry to wet roadsides; spread somewhat by human activities.

Caprifoliaceae


Common in dry to fresh forests of second-growth or older, in shady habitats usually small and sterile.

Sambucus racemosa L., s. lat. – Hemp Creek: 2, r. – Blue River: (13), KUJALA 1945. – Murtle Lake: r. – Stevens Lakes: r.

Rare along brooks and in alluvial swamps.

Symphoricarpus albus (L.) Blake – Hemp Creek: 2, 3, uncommon in dry second-growth Populus tremuloides forests, common in fresh coniferous forests and in alluvial Alnus swamps. Blue River: (13), KUJALA 1945.

The specimens are probably var. laevigatus (Fern.) Blake.

*Viburnum edule (Michx.) Raf. – Blue River: (13, 16), KUJALA 1945.

V. trilobum Marsh. – Hemp Creek: 2, (3), r. – Blue River: (16), KUJALA 1945. – Murtle Lake: (17, 18, 20, 21, 25), sc. Common in fresh and rich forests and along brooks.

Adoxaceae

*A. moschatellina L. – Blue River: (13), KUJALA 1945.

Valerianaceae

Valeriana sitchensis Doug. – Murtle Lake: 18, (24), fairly abundant in swamp forests. – Stevens Lakes: (28 – 30), abundant in fresh coniferous forests. – Battle Mtn. I: (32 – 35), Fq. in fresh woods and along brooks.
35), Fish Lake Hill II: (36), dominant in a fresh orehemiatic meadow type and scattered in fresh forests.

**Compositae**

*Campanula lasiocarpa* Cham. – Battle Mt. I: 38, scattered in rocky meadows.

*G. rotundifolia* L. – Messiter: (12), on cliff by waterfalls, native. Blue River: 16, A. Cajander and V. Kujala, also Kujala 1945.

**Composilae**

*Achillea lanulosa* Nutt. var. alpica Rubd. – Battle Mt. I: 32, fairly sparsely in a moist meadow.

*var. lanulosa* – Hemp Creek: 2, sparsely in horse pasture, introduced. Blue River: 16, A. Cajander and V. Kujala, also Kujala 1945.

*Adenocaulon bicolor* Hook. – Hemp Creek: 3, sparsely in moist, rich Thuya forest.

*Agoseris aurantiaca* (Hook.) Greene – Murtle River: 6, one individual on trail in second-grown *Populus tremuloides* forest. – Stevens Lakes: r. – Battle Mt. I: 32, (35 – 35), fq. Fish Lake Hill II: 36, fq.

Chiefly in moist orehemiatic meadows. The colour of the corollas varies from bluish violet to brownish orange.

*Anaphalis margaritacea* (L.) Benth & Hook. – Hemp Creek: (1), 2, fq. – Murtle Lake: r. – Battle Mt. I: r.

Very common and abundant in dry warm second-grown *Populus tremuloides* forests in the lower orehemiatic zone. Very rare in the other zones, but it was found, for instance, to be abundant in orehemiatic burned forest on the southern slope of Battle Mt. (alt. ca. 4500 feet).

*Antennaria alpina* group – Battle Mt. I: 37, in dry meadows, sparse.

This collection does not seem to fit with any *Antennaria* species described by Porsild (1960) or by Rydberg (1922). It has short stalks, the leaves are densely greyish tomentose on both surfaces, the flowering stems are about 10 cm tall, purplish, floccose, with 5 – 7 well-developed leaves. The involucre is about 5 mm high, the achenes glabrous, and the pappus dirty white.


*A. lanata* (Hook.) Greene – Stevens Lakes: (28), r. – Battle Mt. I: 32, (33 – 35), fq. Fish Lake Hill II: 36, fq.

Common and abundant in dry orehemiatic meadows, giving them a greyish colour.

Curtier and Pouzar (1961) have demonstrated that the name *lanata* belongs to the European taxon called *A. carpathica*, which is clearly distinct from the *A. lanata* of the North American flora.

*A. unibracteata* Ryd. – Battle Mt. I: 34, in moist meadows, sparse.

*A. racemosa* Hook. – Murtle River: 4, 5, locally in a rock outcrop in second-grown *Populus tremuloides* forest and on dry roadsides.

*A. rosca* Greene – Hemp Creek: 2, r. Murtle River: 4, r.

Sparse in dry second-grown *Populus tremuloides* forests and on dry roadsides. Native, spread by human activities.

*Arisaema chaminosporum* Less. sp. *chaminosporum* și *sp. foliosa* (Nutt.) Maguire – Clearwater Lake: 8, abundant in a manmade meadow.

*A. cordifolia* Hook. var. *cordifolia* – Murtle River: 6, r. Blue River: (16), Kujala 1945. – Murtle Lake: (18), r.

Sparse in swamp and swamps forests.

*A. diversifolia* Greene – Battle Mt. II: 37, sparse in moist meadows along brook.

*A. latifolia* Bong. var. *latifolia* – Murtle Lake: 18, sparse in swamps along brook. – Stevens Lakes: (28 – 30), Fish Lake Hill I: (31), abundant in fresh coniferous forests. – Battle Mt. I: (32), (33), (34), Fish Lake Hill II: (36), one of the most common herbs in shady orehemiatic forests, sparsely in meadows and only at margins of forests.

*A. mollis* Hook. – Murtle River: 18, sparse in mesotrophic fens but fairly abundant in eutrophic fens. – Battle Mt. I: (32), (33), (34), (35), common and often abundant in moist to wet meadows along brooks.

*A. typhergae* Greene – Battle Mt. II: 37, in a meadow along brook.

*Atemisia arctica* Less. – Battle Mt. I: (33), (34), (35), common in dry meadows. – Battle Mt. II: (37), rare in rocky meadows.

According to Hultén’s map (1954), this species is fairly common in mountains in B. C.

*Aster ciliolatus* Lindl. – Hemp Creek: 2, common in dry second-grown *Populus tremuloides* forests and on dry roadside. Native, spread by human activities.

*A. conspicuus* Lindl. – Hemp Creek: 3, sparse in dry second-grown coniferous forest. Blue River: 16, A. Cajander and V. Kujala.

*Engelmannii* (Engel.) A. Gray – Blue River: (13), (16), Kujala 1945.

*A. foliosa* Lindl. var. *foliosa* – Murtle Lake: 19, fairly abundant in a mesotrophic fen.

*A. junceiformis* Rydhab. – Hemp Creek: 3, abundant in a eutrophic fen.

*A. modestus* Lindl. – Hemp Creek: 2, r. Murtle River: 4, r.

Scattered in alluvial meadows, on abandoned road in shady rich forest and on moist roadside. Perhaps indigenous but spread by human activities.

*Chrysanthenum lanuginosum* L. – Murtle Lake: 4, sparsely on roadside, occasional adventive.

*Cirsium arvense* (L.) Scop. var. *maritimum* Fr. – Hemp Creek: 2, fairly abundant in the yard of the Ranger Sta.

*C. vulgare* (Savi) Airy-Shaw – Hemp Creek: (2), scattered in pastures and on roadsides.

*Crepis tectorum* L. – Murtle River: 4, occasional adventive on roadside.

*Erigeron acris* L., s.lat. – Hemp Creek: 2, abundant on dry roadside, probably adventive.

*E. canadensis* L. (Conyza canadensis (L.) Cronq.) – Hemp Creek: 2, sparsely in pastures and on roadside, adventive.

*E. lanitis* Graham – Battle Mt. II: 38, sparsely in hulder bed.

*E. pergerius* (Porsild) Greene sp. *callianthemus* (Greene) Cronq. var. *callianthemus* – Murtle Lake: 18, (21), r. sparse in mesotrophic fens and one individual in a cabin yard. – Stevens Lakes: (29), f q. Fish Lake Hill I: (31), f r, scattered in mesotrophic fens and forest openings. – Battle Mt. I: (32 – 35), f q. Fish Lake Hill II: 36, f q, common and abundant in mesic to moist meadows.
E. philadelphicus L. – Hemp Creek; 2, scattered in dry second-growth Populus tremuloides forests and on moist roadside ditches like an adventive plant. – Murtle Lake: 21, sparse in a boulder bed near lake shore with Ribes viburnifolius and Cornus australis, apparently indigenous.

*Gnaphalium eiscosum* H. K. B. – Hemp Creek: 2, common in second-growth *Populus tremuloides* forests.


Common in dry second-growth *Populus tremuloides* forests and on dry roadside.

*I. canadense* Michx. – Hemp Creek: 2, sparse on dry roadside, adventive.


*Lactuca biennis* (Moench) Fern. – Hemp Creek: 2, fairly abundant along moist brook near road. Clearwater: 11, common.

*Matriaria matriarcioides* (Less.) Porter – Hemp Creek: 2, abundant in the yard of the Ranger Sta., adventive.

*Petasites hyperboreus* Rydb. – Hemp Creek: 2, sparse in alluvial *Alnus* swamp on roadside.

P. palmatus (Ait.) A. Gray – Murtle River: 5, in fresh coniferous forests on river bank.


S. integerrimus Nutt. var. exaltatus (Nutt.) Cronq. – Battle Mtn. I: (32), 34, (35). Sparse in fresh Valeriana silvatica meadows.

S. pauciflora Pursh – Battle Mtn. II: 32, scattered along moist alluvial brook.

*S. pseudaneum* Rydb. – Hemp Creek: 2, common on dry roadside and scattered in fresh second-growth *Populus tremuloides* forests and in alluvial willow fens, perhaps adventive.

*T. triangularis* Hook. – Blue River: 18, 24, r. Sparse in eutrophic fens. – Stevens Lakes: 28, 30, scattered in mesotrophic fens and along brooks. – Battle Mtn. I: (32, 34, 35), f. abundant in moist to fresh meadows.

*Solidago canadensis* L. – Hemp Creek: 2, in horse pasture, adventive. The collections include both var. subserrata (DC.) Cronq. and var. sabulosa (Piper) Jones.

*S. multiflora* Ait. var. scopulorum A. Gray – Battle Mtn. I: 38, sparse in rocky meadows.

Tarraxacum lycotum (Ledeb.) DC. – Battle Mtn. II: 38, scattered on mineral soil.

*T. scincum* Dahlst. (det. H. SÄLTIN) – Hemp Creek: 2, in yard of farm, adventive.

*Tarraxacum spp.* – Hemp Creek: 2, r, in yards of farms, adventive. – Murtle Lake: r, adventive. – Stevens Lakes: (35), on lake shore, apparently native.

Two specimens approach *T. erectiflorum* Dahlst. (det. H. SÄLTIN).

*Tragopogon pratense* L. – Hemp Creek: (2), on roadside, casual adventive.

VI. Summary

This paper lists about 550 species, subspecies or varieties known to occur in or in the vicinity of Wells Gray Provincial Park, British Columbia. One of them, Carex preecepiorum, is now reported from Canada for the first time. New published records for B.C. are evidently Carex helionastes, C. trisperma and Juncus stygius. Anemone richardsonii, Cryptogramma crispa var. stichens, Carex tenuiflora and Hierochloe alpina probably have their southernmost and Carex cephalantha, C. illota and Gaultheria humifusa their northernmost known localities in this area.

References


– 1959: Studies in Saxifragaceae III: Saxifraga odontoloma and Iyali, and North American subspecies of S. punc-

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