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FLORA OF THE LEE CREEK VALLEY, ALBERTA

R. Keith Shaw¹

ABSTRACT.— The floristic composition of the Lee Creek valley in southwestern Alberta, Canada, is presented. The valley flora consists of 299 species of vascular plants representing 173 genera and 46 families. The flora is dominated by forbs (73 percent), followed by grasses (24 percent), shrubs (12 percent), and trees (11 percent). The valley of Lee Creek is divided into upper and lower sections on the basis of elevational, climatic, and biotic differences. Floristic richness of the Lee Creek valley is quite evenly divided between the upper and lower valleys: 105 species limited to the upper valley, 95 to the lower valley, and 99 species shared by both upper and lower valleys.

In this paper the results of my field and herbarium work over the years 1957–1978 are presented for that part of the Lee Creek valley lying inside the southwestern corner of the Province of Alberta. The ecological aspects of the river bottom forest biome along the prairie section of Lee Creek have been reported (Shaw 1976), with a combined plant species list for the river bottom forest on St. Mary River, Lee Creek, and Belly River. This paper borrows the river bottom forest species list for lower Lee Creek and adds to it the greater species lists for the other Lee Creek valley biomes.

GEOLOGY AND GEOGRAPHY

Lee Creek originates on the north and east slopes of Old Chief Mountain in Glacier National Park, Montana. It flows from alpine meadows at 2,000–3,000 m in three branches that join where the creek crosses the International Boundary at Alberta's Range 27. The creek then flows through the lower montane forest and aspen parkland biomes of the upper valley to Section 11 Township 2 Range 27 West of 4, where it crosses the treeless stretches of the fescue prairie biome at elevations of 1,400 m down to 900 m. Along the lower stream course the poplar-dominated river bottom forest biome becomes a unique ecological entity on Lee Creek. This biome's presence identifies the lower valley and is continuous downstream, through the town of

Cardston, to the creek's confluence with St. Mary River at Section 23 Township 3 Range 25 West of 4. Lee Creek drains about 290 square kilometers of northwest Montana and southwest Alberta.

Streamside and valley floor vegetation patterns are modified by Lee Creek streamflow (Shaw 1976). Monthly water flow varies widely throughout the year (Table 1). From late July through autumn and winter the flow is fairly constant and moderate, but during March warmer weather causes snow melt in the foothills and on the lower mountain slopes to increase stream flow. The most rapid melting of deep mountain snow occurs in late May and early June. This coincides with the season of highest precipitation (Table 2), swelling stream flow to its maximum, which is four to five times the winter flow rate. Severe flooding, with considerable streamside vegetation and habitat alteration, occurred in 1902, 1908, 1950, 1964, and 1975.

The mountain section of the Lee Creek valley, in Montana, is carved through geological formations of the Lewis Range's Belt Series and transported eastward as the Lewis Overthrust and overlying the younger Cretaceous shales and sandstones of the plains (Wyatt 1939). The prairie section of Lee Creek flows through and over a variety of consolidated and unconsolidated deposits, from the transported Belt series rocks of Proterozoic time to the more recent Cretaceous and Tertiary series. Bedrock cut through and

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exposed along the Alberta section of Lee Creek is mainly an exposure of the highly calcareous light gray sandstones and sandy shales of the St. Mary River nonmarine sandstone, the uppermost of the Cretaceous formations of southwest Alberta. Irregular bedding and cross-bedding are common, and freshwater oyster shells and coal beds are frequently exposed. Much of this bedrock is veneered with glacial deposits left when the Ice Age glaciers melted. There is also widespread distribution of reworked glacial deposits as well as alluvial and lacustrine deposits transported by the creek.

The soils along the creek valley bottom are of alluvial deposition and some, still liable to frequent flooding, are quite variable in fertility, texture, and utilization.

In southwest Alberta the break from mountains to plains is fairly rapid, there being no wide range of foothills.

CLIMATE

Summer along Lee Creek is normally warm, but winter is usually long and cold (Table 3). Mean temperatures are below 0 degrees C from November through March at Cardston on lower Lee Creek. A wide variation in winter temperatures occurs, depending on the southerly flow of cold Arctic air and the easterly flow of temperature-moderating Chinook winds. Temperatures rise rapidly from winter to summer and decline with equal rapidity from summer to winter. Monthly mean temperatures at Cardston are above 10 degrees C for the five months from May to September. The average frost-free period on Lee Creek to which the native plants have adapted ranges from 70 days in montane forest on upper Lee Creek to 100 days at Cardston near the creek's confluence. Precipitation along the valley shows wide variation from year to year. Winter snowfall in the lower valley is comparatively light, with amounts ranging from 76 to 127 cm. This increases in the upper valley to 180 cm. Total precipitation at Cardston in the lower valley averages 45.8 cm and gradually increases through the upper valley (Canada Transport 1967). A combination of snowfall and wind causes drift buildup in the stream valley throughout winter.

ECOLOGY AND TAXONOMY

The Lee Creek valley in Alberta is a post-glacial, meandering, stream-carved valley. The stream itself works back and forth from

TABLE 1. Mean monthly stream flow in cubic meters per second of Lee Creek in southwest Alberta, Canada.

Month	Lee Creek Cardston
January	0.4
February	0.4
March	1.1
April	2.4
May	4.6
June	4.5
July	1.5
August	0.5
September	0.5
October	0.6
November	0.5
December	0.3

TABLE 2. Mean monthly precipitation in inches and centimeters for Cardston, Alberta, elevation 1,151 m.

Month	Inches	Centimeters
January	0.75	1.9
February	0.91	2.3
March	1.14	2.9
April	1.39	3.5
May	2.38	6.1
June	3.59	9.1
July	1.62	4.1
August	1.50	3.8
September	1.75	4.4
October	1.19	3.0
November	0.94	2.4
December	0.88	2.2
Total	18.04	45.8

TABLE 3. Mean daily temperature in degrees Centigrade and degrees Fahrenheit at Cardston, Alberta.

Month	Centigrade	Fahrenheit
January	-7.4	18.7
February	-6.5	20.3
March	-2.5	27.5
April	4.5	40.2
May	10.3	50.6
June	13.7	56.5
July	17.9	64.1
August	16.1	61.1
September	11.6	52.7
October	6.6	43.8
November	-0.4	31.3
December	-4.2	24.4
Year	5.0	40.9

year to year resorting its gravel base, eroding on the outside bends and depositing on the inside ones as it cuts a deeper channel. Major alteration occurs during the season of high water in late May and early June.

The life span of a gravel bar, the first terrace of the valley floor, is entirely fortuitous, depending on the vagaries of Alberta weather and its effect on streamflow. If the first terrace escapes erosional destruction for 20 years or more, natural succession will change the herb-dominated first terrace plant community to the poplar-dominated lower valley, and poplar and spruce-dominated upper valley, communities on the terrace. As erosion and channel shifting are directed away from the terrace and the stream cuts deeper into the valley floor, what was once a first terrace becomes a second terrace, and it is here the river bottom forest thrives. Years or centuries later the second terrace may be left even higher as a third terrace, and when this happens the river bottom forest fails to be self-sustaining. As the mature trees die out without seed or vegetative replacement, the grassland biome (fescue prairie) in the lower valley, or in the upper valley the deciduous forest biome (aspen parkland), take over with virtual similarity to the vegetation on valley slopes and surrounding terrain.

With the constant erosion, deposition, and channel shifting, fresh bars of material sorted into various textures and of varying depths annually become available for colonization by plants. In spite of this constancy of change, the creek bottom floodplain is a very uniform habitat where climate and substrate determine the establishment of plant species.

The combined upper and lower Lee Creek vascular flora consists of 49 species of woody plants and 250 species of herbaceous ones, for a total of 299 species.

In ecological distribution 105 species were confined to the upper Lee Creek valley, 95 species to the lower Lee Creek valley, and 99 species were found in both the upper and lower valleys.

Naturalized exotics made up 7.7 percent (23 species) and native species 92.3 percent (276 species) of the total species number.

Taxonomically the 299 species were contributed by 46 families and 173 genera. Nine families dominated the flora. A dominant

family arbitrarily was one with 10 or more species in the valley (Table 4). Floristic richness is enhanced by the high yearly frequency of new gravel bar pioneer sites and the availability of plant reproductive material from five major biomes: alpine tundra, montane forest, aspen parkland, fescue prairie, and river bottom forest.

Within the Lee Creek valley flora there are 11 plant species listed by Argus and White (1978) as being rare in Alberta. These 11 are *Angelica dawsonii*, *Balsamorhiza sagittata*, *Calochortus apiculatus*, *Disporum oreganum*, *Hydrophyllum capitatum*, *Larix occidentalis*, *Lesquerella alpina*, *Phlox alyssifolia*, *Plantago canescens*, *Populus angustifolia*, and *Senecio hydrophiloides*.

Lee Creek, like many other stream systems, provides excellent seed dispersal habitat. Flowing water can bring mountain or submontane species to greater range extensions down the valley. Windborne seeds are readily dropped in the lee of sheltering banks and thickets as wind velocity decreases. Bird activities provide other transport mechanisms. Downstream species are able to extend their ranges upstream nearly as readily (Table 5).

All parts of the Lee Creek valley in Alberta are grazed by domestic livestock, principally cattle. The upper valley represents mainly summer-use pasture and the lower valley receives year-round grazing use. Deer, both white-tail and mule, are common throughout the length of the valley.

Intensive plant collecting was done at many valley sites throughout the growing

TABLE 4. Dominant plant families of the Lee Creek valley.

Family	Number of species	Percent of total species
Compositae	52	17.4
Leguminosae	32	10.7
Gramineae	24	8.0
Liliaceae	17	5.7
Rosaceae	17	5.7
Salicaceae	15	5.0
Ranunculaceae	13	4.3
Scrophulariaceae	12	4.0
Orchidaceae	10	3.3
Total	192	64.2

seasons of several years. The valley flowering season usually began in early May and ended by late September. Specimens were preserved according to standard herbarium practice. Almost all identifications were checked against known herbarium reference material. Taxonomy of the poplars follows Brayshaw (1965), the genus *Cryptantha* after Higgins (1971), and the remainder after Moss (1959), Boivin (1969), Booth (1950), and Booth and Wright (1966). The willows were identified by George Argus of the National Museum of Natural Sciences.

Only those flowering plants native to Lee Creek valley, or naturalized and viable exotics, are included in the species list. Cultivated agricultural and ornamental species were deleted.

The valley is considered to be all the area below the rim elevation of the adjoining land surface.

All specimens collected are in the author's personal herbarium at Cardston, Alberta. A nearly complete duplicate set is on deposit in the Brigham Young University Herbarium (BRY) at Provo, Utah.

For convenience, plant families, genera, and species are listed in alphabetical order. Because of the ecological differences along Lee Creek between the upper and lower valleys, plant species listed will be designated as found in the upper valley only (U), lower valley only (L), or in both upper and lower valleys (UL).

SPECIES LIST

- BERBERIDACEAE
Berberis repens Lindl. U
- BETULACEAE
Betula glandulosa Michx. U
Betula occidentalis Hook. UL
Betula pumila L. var. *glandulifera* Regel U
- BORAGINACEAE
Hackelia floribunda (Lehm.) I.M. Johnston UL
Lappula echinata Gilib. L
Lithospermum incisum Lehm. L
Lithospermum ruderales Lehm. UL
- CAMPANULACEAE
Campanula rotundifolia L. UL
- CAPPARIDACEAE
Cleome serrulata Pursh L
- CAPRIFOLIACEAE
Linnæa borealis L. var. *americana* (Forbes) Rehd. U
Lonicera dioica L. var. *glaucescens* (Rydb.) Butters UL
Lonicera involucrata (Richards.) Banks U
Lonicera tartarica L. L
Symphoricarpos occidentalis Hook. UL
Viburnum edule (Michx.) Raf. U
- CARYOPHYLLACEAE
Arenaria lateriflora L. UL
Arenaria rubella (Wahlenb.) J.E. Sm. U
Cerastium arvense L. UL
Silene menziesii Hook. U
Stellaria longipes Goldie U
- COMPOSITAE
Achillea millefolium L. UL
Agoseris glauca (Pursh) Raf. UL
Anaphalis margaritacea (L.) Benth. & Hook. U
Antennaria neglecta Greene U
Antennaria pulcherrima (Hook.) Greene U
Antennaria racemosa Hook. U
Antennaria rosea Greene UL
Arnica chamissonis Less. ssp. *foliosa* (Nutt.) Mag. U
Arnica cordifolia Hook. U

TABLE 5. Dispersal of species up and down the Lee Creek valley beyond their usual geographic ranges.

Downstream range extensions	Upstream range extensions
<i>Actaea rubra</i>	<i>Astragalus flexuosus</i>
<i>Arctostaphylos uva-ursi</i>	<i>Elaeagnus commutata</i>
<i>Astragalus bourgovii</i>	<i>Oxytropis campestris gracilis</i>
<i>Corallorhiza striata</i>	<i>Oxytropis sericea spicata</i>
<i>Epilobium angustifolium</i>	<i>Oxytropis ciscida</i>
<i>Epilobium latifolium</i>	<i>Populus angustifolia</i>
<i>Heracleum lanatum</i>	<i>Salix interior</i>
<i>Larix occidentalis</i>	
<i>Picea glauca</i>	
<i>Pinus flexilis</i>	
<i>Populus balsamifera trichocarpa</i>	
<i>Populus tremuloides</i>	
<i>Pseudotsuga menziesii</i>	
<i>Pyrola asarifolia purpurea</i>	
<i>Smilacina racemosa amplexicaulis</i>	
<i>Veratrum eschscholtzii</i>	

- Arnica lonchophylla* Greene U
Arnica sororia Greene UL
Artemisia biennis Willd. L
Artemisia campestris L. L
Artemisia ludoviciana Nutt. L
Aster foliaceus Lindl. U
Aster laevis L. var. *geyeri* A. Gray UL
Aster occidentalis (Nutt.) T. & G. UL
Aster pansus (Blake) Cronq. UL
Aster sibiricus L. U
Balsamorhiza sagittata (Pursh) Nutt. UL
Chrysanthemum leucanthemum L. UL
Chrysopsis villosa (Pursh) Nutt. var. *hispida* (Hook.) Gray L
Cichorium intybus L. L
Cirsium arvense (L.) Scop. UL
Cirsium undulatum (Nutt.) Spreng. L
Crepis elegans Hook. U
Erigeron caespitosus Nutt. L
Erigeron glabellus Nutt. var. *pubescens* (Hook.) Cronq. U
Erigeron peregrinus (Pursh) Greene ssp. *calianthemus* (Greene) Cronq. L
Erigeron philadelphicus L. U
Erigeron speciosus (Lindl.) DC. L
Erigeron strigosus Muhl. L
Erigeron subtrinervis Rydb. var. *conspicuus* (Rydb.) Cronq. U
Caillardia aristata Pursh UL
Helianthus laetiflorus Pers. var. *subrhomboideus* (Rydb.) Fern. L
Hieracium scouleri AA. U
Hieracium umbellatum L. L
Hymenoxys acaulis (Pursh) Parker L
Liatris punctata Hook. L
Ratibida columnifera (Nutt.) Wooton & Standl. L
Rudbeckia serotina Nutt. U
Senecio canus Hook. UL
Senecio hydrophiloides Rydb. U
Senecio integerrimus Nutt. var. *exaltatus* (Nutt.) Cronq. L
Senecio lugens Richards. UL
Senecio pauperculus Michx. U
Senecio triangularis Hook. U
Solidago decumbens Greene var. *oreophila* (Rydb.) Fern. L
Solidago missouriensis Nutt. UL
Solidago multiradiata Ait. U
Taraxacum officinale Weber UL
Tragopogon dubius Scop. L
- CORNACEAE
Cornus canadensis L. U
Cornus stolonifera Michx. UL
- CRASSULACEAE
Sedum stenopetalum Pursh U
- CRUCIFERAE
Arabis divaricata A. Nels. U
Arabis hirsuta (L.) Scop. var. *glabrata* T. & G. UL
Arabis holboellii Hornem. var. *retrofracta* (Graham) Rydb. L
Erysimum cheiranthoides L. U
Erysimum inconspicuum (S. Wats.) MacM. U
Lesquerella alpina (Nutt.) S. Wats. var. *spathulata* (Rydb.) Payson L
Physaria didymocarpa (Hook.) A. Gray U
- Rorippa nasturtium-aquaticum* (L.) Schinz & Thell. L
- CYPERACEAE
Carex filifolia Nutt. UL
Carex hystricina Muhl. U
Carex rostrata Stokes L
Scirpus microcarpus Presl L
Scirpus validus Vahl U
- ELAEAGNACEAE
Elaeagnus commutata Bernh. UL
Shepherdia argentea Nutt. L
Shepherdia canadensis (L.) Nutt. U
- EQUISETACEAE
Equisetum arvense L. UL
Equisetum fluviatile L. U
- ERICACEAE
Arctostaphylos uva-ursi (L.) Spreng. UL
- EUPHORBACEAE
Euphorbia esula L. L
- GENTIANACEAE
Gentiana detonsa Rottb. L
Gentianella amarella (L.) Borner ssp. *acuta* (Michx.) J. M. Gillett U
- GERANIACEAE
Geranium nervosum Rydb. U
Geranium richardsonii Fisch. & Trautv. U
Geranium viscosissimum Fisch. & Mey. U
- GRAMINEAE
Agropyron smithii Rydb. L
Agropyron subsecundum (Link.) Hitchc. L
Agrostis alba L. L
Beckmannia syzigachne (Steud.) Fern. L
Bouteloua gracilis (HBK.) Lag. L
Bromus commutatus Schrad. L
Bromus inermis Leys. L
Calamagrostis purpurascens R. Br. U
Danthonia parryi Scribn. U
Danthonia spicata (L.) Beauv. U
Deschampsia caespitosa (L.) Beauv. U
Festuca idahoensis Elmer L
Festuca ovina L. L
Festuca scabrella Torr. UL
Glyceria grandis S. Wats. UL
Helictotrichon hookeri (Scribn.) Henr. U
Koeleria cristata (L.) Pers. L
Oryzopsis hymenoides (R. & S.) Ricker L
Phleum pratense L. UL
Poa arctica R. Br. U
Poa compressa L. U
Poa pratensis L. UL
Stipa columbiana Macoun U
Stipa richardsonii Link U
- HYDROPHYLLACEAE
Hydrophyllum capitatum Dougl. U
Phacelia sericea (Graham) A. Gray U
- IRIDACEAE
Sisyrinchium montanum Greene U
- JUNCACEAE
Juncus alpinus Vill. var. *rariflorus* Hartm. L
Juncus longistylis Torr. L
- LABIATAE
Mentha arvensis L. var. *villosa* (Benth.) S.R. Stewart UL
Monarda fistulosa L. var. *menthaefolia* (Graham) Fern. UL

- Prunella vulgaris* L. UL
- LEGUMINOSAE
- Astragalus aboriginum* Richards. UL
- Astragalus alpinus* L. U
- Astragalus bisulcatus* (Hook.) A. Gray L
- Astragalus bourgovii* A. Gray UL
- Astragalus canadensis* L. L
- Astragalus crassicaarpus* Nutt. L
- Astragalus drummondii* Dougl. L
- Astragalus flexuosus* Dougl. UL
- Astragalus missouriensis* Nutt. L
- Astragalus robinsii* (Oakes) Gray UL
- Astragalus striatus* Nutt. L
- Astragalus triphyllus* Pursh L
- Astragalus vexilliflexus* Sheld. U
- Glycyrrhiza lepidota* (Nutt.) Pursh L
- Hedysarum alpinum* L. UL
- Hedysarum sulphurescens* Rydb. U
- Lathyrus ochroleucus* Hook. UL
- Lupinus argenteus* Pursh L
- Lupinus sericeus* Pursh U
- Medicago lupulina* L. L
- Medicago sativa* L. L
- Melilotus alba* Desr. L
- Melilotus officinalis* (L.) Lam. L
- Oxytropis campestris* (L.) DC. var. *gracilis* (A. Nels.) Barneby UL
- Oxytropis sericea* Nutt. var. *spicata* (Hook.) Barneby UL
- Oxytropis splendens* Dougl. UL
- Oxytropis viscida* Nutt. UL
- Petalostemon purpureum* (Vent.) Rydb. L
- Thermopsis rhombifolia* (Nutt.) Richards. UL
- Trifolium hybridum* L. L
- Trifolium pratense* L. L
- Vicia americana* Muhl. UL
- LILIACEAE
- Allium cernuum* Roth UL
- Allium schoenoprasum* L. var. *sibiricum* (L.) Hartm. U
- Allium textile* Nels. & Macbr. L
- Calochortus apiculatus* Baker U
- Camassia quamash* (Pursh) Greene U
- Clintonia uniflora* (Schult.) Kunth U
- Disporum oregonum* (S. Wats.) B. & H. L
- Erythronium grandiflorum* Pursh U
- Fritillaria pudica* (Pursh) Spreng. UL
- Lilium philadelphicum* L. var. *andinum* (Nutt.) Ker U
- Smilacina racemosa* (L.) Desf. var. *amplexicaulis* (Nutt.) S. Wats. UL
- Smilacina stellata* (L.) Desf. UL
- Stenanthium occidentale* A. Gray U
- Streptopus amplexifolius* (L.) DC. U
- Veratrum eschscholtzii* A. Gray U
- Zygadenus elegans* Pursh UL
- Zygadenus gramineus* Rydb. L
- LINACEAE
- Linum lewisii* Pursh UL
- MALVACEAE
- Sphaeralcea coccinea* (Pursh) Rydb. L
- ONAGRACEAE
- Epilobium angustifolium* L. U
- Epilobium glandulosum* Lehm. L
- Epilobium latifolium* L. UL
- Gaura coccinea* Pursh var. *glabra* (Lehm.) Torr. & Gray L
- Oenothera biennis* L. L
- Oenothera caespitosa* Nutt. L
- ORCHIDACEAE
- Calypso bulbosa* (L.) Oakes U
- Corallorhiza maculata* Raf. UL
- Corallorhiza striata* Lindl. UL
- Corallorhiza trifida* Chatelain U
- Cypripedium passerinum* Richards. U
- Habenaria dilatata* (Pursh) Hook. U
- Habenaria obtusata* (Pursh) Richards. U
- Habenaria unalascensis* (Spreng.) S. Wats. U
- Habenaria viridis* (L.) R. Br. var. *bracteata* (Muhl.) A. Gray UL
- Orchis rotundifolia* Banks U
- PINACEAE
- Juniperus communis* L. var. *depressa* Pursh UL
- Juniperus horizontalis* Moench UL
- Larix occidentalis* Nutt. U
- Picea glauca* (Moench) Voss UL
- Pinus contorta* Loudon var. *latifolia* Engelm. U
- Pinus flexilis* James UL
- Pseudotsuga menziesii* (Mirb.) Franco UL
- PLANTAGINACEAE
- Plantago major* L. UL
- Plantago septata* Morris L. = *P. canescens* Adams
- POLEMONIACEAE
- Collomia linearis* Nutt. U
- Phlox altyssifolia* Greene UL
- Phlox hoodii* Richards. UL
- Polemonium pulcherrimum* Hook. L
- POLYGONACEAE
- Eriogonum flavum* Nutt. L
- Polygonum bistortoides* Pursh U
- Rumex crispus* L. L
- PRIMULACEAE
- Dodecatheon conjugens* Greene UL
- Dodecatheon radicum* Greene U
- Lysimachia ciliata* L. UL
- PYROLACEAE
- Moneses uniflora* (L.) A. Gray U
- Pyrola asarifolia* Michx. var. *purpurea* (Bunge) Fern. UL
- Pyrola virens* Schweigg. U
- RANUNCULACEAE
- Actaea rubra* (Ait.) Willd. UL
- Anemone multifida* Poir. UL
- Anemone parviflora* Michx. U
- Anemone patens* L. var. *wolfgangiana* (Bess.) Koch UL
- Aquilegia flavescens* S. Wats. UL
- Clematis ligusticifolia* Nutt. L
- Clematis verticillaris* DC. var. *columbiana* (Nutt.) A. Gray UL
- Delphinium bicolor* Nutt. UL
- Ranunculus acris* L. UL
- Ranunculus flammula* L. var. *filiformis* (Michx.) Hook. UL
- Ranunculus pedatifidus* J.E. Smith var. *affinis* (R. Br.) L. Benson U
- Ranunculus sceleratus* L. var. *multifidus* Nutt. L
- Thalictrum venulosum* Trel. U
- RHAMNACEAE
- Rhamnus cathartica* L. L

ROSACEAE

- Amelanchier alnifolia* Nutt. UL
Crataegus chrysoarpa Ashe L.
Dryas drummondii Richards. UL
Fragaria virginiana Duchesne var. *glauca* S. Wats. UL
Geum allepicum Jacq. UL
Geum rivale L. U
Geum triflorum Pursh UL
Potentilla concinna Richards. L.
Potentilla fruticosa L. UL
Potentilla glandulosa Lindl. ssp. *pseudorupestris* (Rydb.) Keck U
Potentilla gracilis Dougl. var. *flabelliformis* (Lehm.) Nutt. U
Potentilla gracilis Dougl. var. *pulcherrima* (Lehm.) Fern. U
Prunus virginiana L. var. *melanocarpa* (A. Nels.) Sarg. UL
Rosa acicularis Lindl. UL
Rosa woodsii Lindl. UL
Rubus parviflorus Nutt. U
Rubus strigosus Michx. UL

RUBIACEAE

- Galium boreale* L. UL
Galium triflorum Michx. L

SALICACEAE

- Populus acuminata* Rydb. L.
Populus angustifolia James L.
Populus angustifolia James X *balsamifera* L. L.
Populus balsamifera L. subsp. *balsamifera* L.
Populus balsamifera L. subsp. *trichocarpa* (T.&G. ex Hook.) Brayshaw UL
Populus tremuloides Michx. UL
Salix barclayi Anderss. U
Salix bebbiana Sarg. L
Salix discolor Muhl. L
Salix glauca Anderss. U
Salix interior Rowlee L.
Salix lasiandra Benth. L
Salix lutea Nutt. L
Salix melanopsis Nutt. L
Salix pseudomonticola Ball L

SANTALACEAE

- Comandra pallida* A. DC. UL

SAXIFRAGACEAE

- Parnassia palustris* L. var. *neogaea* Fern. L.
Ribes lacustre (Pers.) Poir. U

SCROPHULARIACEAE

- Besseyia wyomingensis* (A. Nels.) Rydb. L
Castilleja miniata Dougl. UL
Castilleja septentrionalis Lindl. U
Orthocarpus luteus Nutt. L
Pedicularis bracteosa Benth. U
Pedicularis groenlandica Retz. U
Penstemon confertus Dougl. UL

- Penstemon nitidus* Dougl. UL
Rhinanthus crista-galli L. U
Verbascum thapsus L. L
Verbena bracteata Lag. & Rodr. U
Veronica americana (Raf.) Schw. UL

UMBELLIFERAE

- Angelica dawsonii* S. Wats. U
Cicuta douglasii (DC.) Coult. & Rose UL
Heracleum lanatum Michx. UL
Lomatium simplex (Nutt.) Macbr. var. *leptophyllum* (Hook.) Mathias L
Lomatium triternatum (Pursh) Coult. & Rose U
Osmorhiza depauperata Phillippi U
Perideridia gairdneri (Hook. & Arn.) Mathias UL
Zizia aptera (A. Gray) Fern. UL

VALERIANACEAE

- Valeriana septentrionalis* Rydb. U

VIOLACEAE

- Viola adunca* J.E. Smith UL
Viola nephrophylla Greene U
Viola orbiculata Geyer L
Viola rugulosa Greene UL
Viola selkirkii Pursh U

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