

**ORIGINAL PURPOSE** Protection of calcicolous vegetation, hydrology and geology as well as ecosystems representative of the Interior Douglas-fir zone

#### OVERVIEW

<b>Date established:</b>	4 May 1971	<b>Location:</b>	E side of Columbia Lake, 4.5 km N of Canal Flats
<b>ORC #:</b>	3020	<b>Latitude:</b>	50°12'N
<b>Map number:</b>	82 J/4	<b>Longitude:</b>	115°49'W

<b>Total Area:</b>	32 ha	<b>Elevation:</b>	945-1,160 m
<b>Land:</b>	32 ha		

**Access:** Accessible via a rough Forest Service Road along the western boundary of the reserve. No formalized trails exist within the reserve.

<b>Biogeoclimatic Zones:</b>	Interior Douglas-Fir (IDF); Montane Spruce (MS)
<b>Biogeoclimatic Variants:</b>	IDFdm2 Kootenay Dry Mild; MSdk Dry Cool
<b>Ecosections:</b>	Southern Park Ranges; Upper Columbia Valley
<b>Region:</b>	Kootenay
<b>Management Area:</b>	Purcell Lussier

#### COMPOSITION

**Physical:** The reserve lies mostly on the west-facing slope of a north-south trending ridge, about 300 m east of Columbia Lake and 150 m higher in elevation. Slope exposure is mostly to the west and southwest which, together with the rain shadow effect of the Selkirk and Purcell Mountains, results in a locally dry climate. Exposed bedrock, including low cliffs and small talus slopes, is frequent. The bedrock is limestone and this is reflected in the soils derived from it. A small spring-fed stream in the southern end of the reserve has a bed crusted with calcium carbonate.

**Biological:** Of major significance here are limestone loving (calcicolous) plants growing in wet sites along the stream and on limestone cliffs. In the restricted area of riparian habitat, common shrubs are water birch, red-osier dogwood and shrubby cinquefoil; frequent herbs are Kalm's lobelia, grass-of-Parnassus, common harebell, fringed aster, white prairie aster, prickly lettuce, yellowish paintbrush and green-flowered bog-orchid. Rare plants in these habitats include annual Indian paintbrush, sulphur Indian paintbrush, and marsh muhlenbergia. Two rare ferns have been recorded on limestone cliffs here—slender lip fern and purple cliff-brake. One limber pine tree (rare in the province) grows in the reserve, well below its usual alpine habitat.

Well-spaced Douglas-fir trees cover most of the reserve and junipers of three species are also common. The Douglas-fir –pinegrass type is extensive, while the fir-snowberry association occurs in moister sites and the fir-bluebunch wheatgrass-rabbitbush community in the driest situations. Ponderosa pine, lodgepole pine and trembling aspen are also present. Rare upland plants

recorded in the reserve include sparrow's egg, lady's slipper, tufted fleabane wood lily, yellow gromwell, and an as yet unidentified species of *Townsendia*. The reserve is part of an important winter range for mule deer, elk and bighorn sheep. Grazing and browsing is evident; trails and droppings frequent.

**Cultural:** The entire east side of Columbia Lake was used extensively by First Nations groups in the pre-colonial period, evidenced by remaining lithics and ceremonial relics. The Spirit Trail (an 8,000 year old First Nations' trade and travel route) passes within one kilometre of the ecological reserve.

#### MANAGEMENT CONCERNS

SIGNIFICANT SPECIES	BC LIST STATUS	COSEWIC STATUS	CF PRIORITY
Hooker's townsendia	Red listed		2
Badger	Red listed	Endangered (2000)	1
saltwater cress	Red listed		1
annual paintbrush	Red listed		2
Gastony's cliff-brake	Blue listed		2
Flammulated Owl	Blue listed	Special Concern (2010)	2
Bighorn Sheep	Blue listed		3
giant helleborine	Blue listed	Special Concern (1998)	2
marsh muhly	Blue listed		4

#### THREATS

<b>Climate Change:</b>	As the climate continues to change, effects of projected shifts such as reduced snow pack, increased summer drought and increased spring precipitation may alter the regular hydrology in the Kootenay region. These shifts are influenced by innumerable factors, making authoritative predictions nearly impossible. Should these shifts in hydrology affect this reserve, the calcicolous vegetation growing in the wet sites along the spring-fed stream may be impacted.
<b>Transportation corridors:</b>	A logging road adjacent to the reserve boundary dissects and alters the calcium formation. The road also increases access to the reserve.
<b>Urban and/or rural development:</b>	A water diversion line put in through the ecological reserve alters the water flows within the boundaries, affecting the tufa formations and wetland plant communities.
<b>Baseline gap:</b>	Purpose for the reserve was missed in initial mapping – boundary expansion is desired as many known species at risk are in areas adjacent to the reserve.

#### RESEARCH OPPORTUNITIES

This reserve provides an opportunity to study the role of protected areas in conserving rare species especially those that are associated with unusual habitats. Research directed at determining the long-

term stability of the habitat conditions would be most helpful in directing site management.

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<b>ER WARDEN ACTIVITIES</b>	Monitor flora & fauna present in ER Monitor for invasive plants (control or eradicate where possible)
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### SCIENTIFIC NAMES OF SPECIES MENTIONED IN THE COLUMBIA LAKE ER ACCOUNT

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#### **Fauna**

aspen, trembling (*Populus tremuloides*)  
aster, Lindley's (aka fringed aster) (*Symphyotrichum ciliolatum*)  
aster, white prairie (*Aster pansus*)  
birch, water (*Betula occidentalis*)  
bog-orchid, northern green-flowered (*Platanthera aquilonis*)  
cinquefoil, shrubby (*Pentaphylloides floribunda*)  
cliff-brake, Gastony's (*Pellaea gastonyi*)  
cliff-brake, purple, (*Pellaea atropurpurea*)  
cress, saltwater (*Arabidopsis salsuginea*)  
dogwood, red-osier (*Cornus stolonifera*)  
Douglas-fir (*Pseudotsuga menziesii*)  
fern, slender lip (*Cheilanthes feei*)  
fleabane, tufted (*Erigeron caespitosus*)  
grass-of-Parnassus (*Parnassia spp*)  
gromwell, yellow (*Lithospermum incisum*)  
harebell, common (*Campanula rotundifolia*)  
helleborine, giant (*Epipactis gigantean*)  
juniper (*Juniperus spp.*)  
lady's slipper, sparrow's egg (*Cypripedium passerinum*)  
lettuce, prickly (*Lactuca serriola*)  
lily, wood (*Lilium philadelphicum*)  
lobelia, Kalm's (*Lobelia kalmii*)  
muhly, marsh (*Muhlenbergia glomerata*)  
paintbrush, annual (*Castilleja minor ssp. minor*)  
paintbrush, sulphur (*Castilleja sulphurea*)  
paintbrush, yellowish (*Castilleja lutescens*)  
pine, limber (*Pinus flexilis*)  
pine, lodgepole (*Pinus contorta var. latifolia*)  
pine, ponderosa (*Pinus ponderosa*)  
pinegrass (*Calamagrostis rubescens*)  
rabbit-bush, common (*Ericameria nauseosa var. speciosa*)  
snowberry (*Symphoricarpos spp.*)  
townsendia, Hooker's (*Townsendia hookeri*)  
wheatgrass, bluebunch (*Pseudoroegneria spicata*)

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#### **Fauna**

Badger (*Taxidea taxus*)  
Deer, Mule (*Odocoileus hemionus*)  
Elk (*Cervus Canadensis*)

Owl, Flammulated (*Otus flammeolus*)  
Sheep, Bighorn (*Ovis canadensis*)