Blind Bay and White Lake Trails

Environmental Screening Report – 2010

Date: September 16, 2010

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Summary of Recommendations

Issues, hotspots, and values

The primary environmental issues to consider when managing the Blind Bay to White Lake trail network are expanding footprints at view points on dry rocky outcrops and small meadows, and sediment and erosion control at stream crossings. Given that several of these trail sections are relatively new and that this area is also well-used by back country horse groups and motorized trail users, a preliminary inventory for invasive plant species will be useful as baseline information for future monitoring.

Adaptive management plans for the Blind bay to White Lake trail system will include options for corrective actions to avoid these potential impacts:

1. Destruction or degradation of habitat for vulnerable and at-risk grassland plant and animal species (provincially red and blue listed species).
2. Degradation of water quality due to increased sediment load in streams.
3. The introduction of invasive plant species.

Recommendation #1: Control sprawl at view points

Several viewpoints are located within small grassland meadows on this trail system. The unique micro-climate and soils of these pocket-meadows often support a diversity of plant and animal communities. As trail use increases, many plants that are intolerant to trampling by foot and horse traffic will be replaced by more resistant species. Among the most sensitive plants to trampling in these areas will be ground lichens and herbaceous plants (e.g., wild flowers).

Constructing benches or strategically located railings at viewpoints will help limit trampling. Benches concentrate seating and mitigate vegetation trampling.

Constructing dedicated trails to the “climbing tree” at Tappen Valley Lookout and to a social area may control trail proliferation.

Recommendation #2: Sediment and erosion control at stream crossings

Several stream crossings on the Blind Bay to White Lake trail system are used by both hikers and horses. Where small bridges on abutments control sediment and erosion by hikers, horse traffic will continue to cross streams adjacent to the bridges. Allowing for horse crossings where they are less likely to erode banks and increase sediment transport into the stream will help minimize the impact on downstream water quality.

A specific recommendation can be made for the second bridge (1012M west of Post WL 16) on the White Lake to Blind Bay trail. Dig out the bank on the north east side of the bridge to create a trail for horse traffic around the upper side of the bridge. This should prevent the bank erosion currently occurring on the south east side.

Recommendation #3: Invasive plant management

A baseline inventory on the presence of invasive plants will also be useful to monitor trends in distribution and abundance. Select sites where there is potential for invasive plants to displace native plants, such as viewpoints where trampling has removed the native vegetation or trail junctions where motorized use may act as a vector for seed transmission. Invasive plant species lists and guidelines on inventory methods can be coordinated through the Invasive Plant Council of BC (http://www.invasiveplantcouncilbc.ca/).

Part 1: Development and Use Activities

Action Description

This environmental screening report was conducted for the trail sections that link MacArthur Heights at Blind Bay to White Lake. Most of the trail sections that link these two areas were constructed in 2009/2010 and are non-motorized. Trail activities are primarily summer use and include hiking, biking and horse riding.

Grades on the trail system range from the steep and challenging scree slope and exposed rock at the MacArthur Heights access from Blind Bay to gentle switchbacks and wide trail beds supported by retaining walls of rock and metal baskets.

Purpose

There are several panoramic views of Shuswap Lake, White Lake and Tappen from the rock outcrops and small meadows across this rolling topography. The trail system is close to the summer resort-based communities of Blind Bay and Sorrento as well as Salmon Arm. Residents and visitors to these communities are the primary users.

There are five trails in the Blind Bay/White Lake Trail system:

The Balmoral Bluffs Trail System is a series of easy loops through open fir forests typical of the Interior Douglas Fir BEC zone. The viewpoint overlooking Blind Bay is fenced to prevent intrusions onto private property. This viewpoint is a possible environmental monitor site to monitor vegetation trampling and social trails. The Balmoral trail head is another possible site in order to monitor litter and facility degradation. The length of the loops varies from 0.5 km to 4 km.

The Blind Bay Lookout Trail is a 6.5 km trail from the Balmoral Trail Head to the Blind Bay Lookout. The middle section of this trail uses a shared ATV trail before turning onto the single track trail again. There are three spectacular viewpoints overlooking Shuswap Lake on the last 2 km of this trail. All three of these viewpoints are possible monitoring sites to check vegetation trampling and social trail. The middle viewpoint is currently being accessed by ATV's from the adjoining clear cut and this has caused erosion on the trail to the lookout. The other two

viewpoints are more heavily used and are smaller sites so traffic is has more visible effects on the vegetation.

The McArthur Heights Trail is a steep 1 km climb to Blind Bay Lookout. This is an old user maintained trail that has had sections rebuilt in 2009. There are scree slopes and a unique cliff area along the trail. These special features may provide habitat for rare species not seen elsewhere in this area (e.g., the fringed myotis bat). There is a viewpoint near the top of the cliff section. This scree/cliff/ viewpoint area is a possible environmental monitoring site.

The Blind Bay to White Lake Trail is a 6.8 km trail from the Balmoral trail head to the White Lake trail head at the White Lake Bike Skills Park. A main feature of this trail is the spectacular view from the Tappen Valley viewpoint. This small pocket grassland is an obvious environmental monitoring site because of current vegetation trampling, social trail proliferation and erosion.

The fifth trail in this system is the Blind **Bay Lookout Trail**. It is an old 2.5 km user maintained trail to a tower and cutblock on the top..The lower third of the trail is douglas fir forest, the upper two thirds is open grassland, ponderosa pine, fir forest. There are several lookout areasi, the main one has a funky guest book maintained by the local users. This is a possible environmental monitoring site. However there is a site further north (2150 metres from the trail head) where trail braiding by bike riders is causing serious erosion to the pine grass meadow. This may be a more appropriate site to monitor.

Location

The Blind Bay/White Lake trail system is located 10 km East of Sorrento, and 24 km West of Salmon Arm.

Activities

Trail design and construction has followed provincial standards and best practices for non-motorized recreation. Trail use is primarily non-motorized hiking, biking and horse riding in the spring, fall and summer with limited cross country skiing and snowshoeing in the winter and spring. Ongoing management activities will consist of clearing blow down and brush on the trail corridor.

Part 2: Environmental and land-use

Biology-Geology-Climate

The Blind Bay to White Lake Trail is primarily in the Thompson moist warm Interior Douglas Fir (IDFmw2) biogeoclimatic subzone variant (Fig. 1). The IDFmw2 occurs along the transition between the dry and wet belts of the southern interior. Dry sites within the IDFmw2 have

moderate to open tree canopies formed by Douglas fir in mature stands. The sparse understory often contains pine grass and red-stemmed feathermoss. Steep slopes will support bluebunch wheatgrass (Site Identification and Interpretation Manual - Kamloops Forest Region, 1990).

Given that many of these trails are on dry south-facing hillsides, fire frequency is high and trail users should take precautions to limit the threat of human-caused fires.

Ecological Communities

There are 5 ecological communities that may occur within this biogeoclimatic subzone variant. Three of these are yellow listed (not at risk), and the other two are considered blue listed (of special concern) but are very common to this area (Table 1).

Plants

There are 2 red listed and 8 blue listed species in the IDFmw2 biogeoclimatic zone of the Columbia-Shuswap Regional District and Kamloops Forest District.(Table 2) Of these 10 listed species 6 are unlikely to exist in the habitat found along these trails. Pink agoseris is a plant of the sub-alpine/alpine. Geyer's onion, porcupine sedge, crested wood-fern, western St. John's-wort and False-pimpernel are all plants associated with moist, wet habitats not found along these trails. The two red listed species dark lamb's-quarters and satin flower and two blue listed plants thyme-leaved spurge and white wintergreen do occur in or close to our region. Special attention will be paid to these plant species during trail monitoring and maintenance.

Wildlife

There are 13 bird, 14 mammal, and 5 invertebrate (insects, snails and slugs) species at risk in the Interior Douglas Fir biogeoclimatic zone in this area (Tables 3,4). Red listed species which may occur in the trail system include Badger, Swainson’s hawk, Lark Sparrow, Western screech-owl, and Lewis’s woodpecker. Special attention should be paid to these species and their habitat if observed. Blue listed species that we also need to be aware of during trail monitoring and maintenance. are the fisher (dens in hollow logs) and the fringed myotis. This bat roosts in caves, mines and rock crevices. According to the COSEWIC fringed myotis cliff roosts tend to be situated on south-facing slopes. Another blue-listed species that was not listed in our search but is known to inhabit south-facing rock outcrops and talus sloeps is the Racer snake. The racer typically hibernates in fractured rock and talus slopes on warm aspects. The White Lake Blind Bay trail system has several rock faces that would fit this description.

A search on the GeoBC data base for Mapped Wildlife Species Point Locations from the provincial wildlife database showed no recorded observations of wildlife in this area.

The Blind Bay – White Lake trail system is almost exclusively within a mapped Ungulate Winter Ranges (Fig. 2) . These areas are managed by the Ministry of Environment for their high value winter range (providing cover and forage) for mule deer and moose.

Fish and fish habitat

While there are several small stream crossing throughout the Blind Bay – White Lake trail system, there are no lakes or wetlands. All foot bridges have been constructed as clear-span bridges at a height to allow woody debris to pass beneath during high water in the spring.

Soil and water degradation

Other than stream crossings most of the trails in this system are predominantly dry (Figure 1). Current standards and best practices (Whistler Standards, International Mountain Bike Association) for trail construction related to grade and drainage concerns will minimize any negative impacts of the trail on surrounding soil and water quality (e.g., rock French drains have been constructed as low-maintenance water control points).

Current and historic land use

The entire Blind Bay White Lake area is an area of historical interest and claim by the Shuswap First Nation.

Logging interests in this area are held by B.C. Timber Sales. They have been consulted regarding trail routing.

A check with the BC government Mineral Titles Online does not show any current mineral claims throughout the area of the Blind Bay /White Lake Trail System.

There is no Guide Outfitter operating in this area. Most of the trail is within an existing large trapline license #TR0326T00

Part 3: Mitigation and monitoring

This is the framework for long-term adaptive management planning:

A. **Results:** What we are attempting to achieve?

B. **Desired Behaviours:** Actions by users that are most likely to achieve results.

C. **Indicators:** What to measure to determine if results are being achieved?

D. **Limits:** Acceptable bounds of the measured indicator?

E. **Monitoring Schedule:** How often the indicators will be measured?

F. **Corrective Actions:** Actions triggered if limits are surpassed.

A. Results

1. No sprawl at viewpoints.

2. No erosion near riparian areas.

3. No spread of invasive plant species.

4. Minimize physiological or behavioural disruption of wildlife (especially near rock outcrops and scree slopes).

5. Avoid increased threat to wildfire along the private land interface.

B. Desired Behaviours

1. Stay on trails. Do not trample vegetation outside the trail corridor. Do not create alternate trails

2. Use foot bridges where available. Horses cross creeks above foot bridges and do not cause soil erosion or bank stability

3. Learn to identify invasive plants, inspect clothing, equipment, and animals before and after activity, restrict use of areas with invasive plants to times of the year when spread is unlikely, remove invasive plants using appropriate techniques (contact Invasive Plant Council of BC). Conduct a baseline inventory.

4. Do not harass wildlife, record wildlife encounters on standard forms provided at trail heads/campground.

5. No open fires, no trail use during high fire risk periods when backcountry closures are in effect. No smoking.

C. Indicators

1. Trail widths, trail braiding, evidence of trampling and erosion at view points. Change in plant communities to species more resistant to trampling (may include invasive plants)

2. Bank sloughing, sediment and debris pushed into stream. Downstream sedimentation

3. Extent and frequency of invasive species occurrence within 5 m of trails

4. Proportion of wildlife encounters resulting in an alarm response (movement by animals to safer locations)

5. Fire rings/scars, reports of trail use during closed periods.

D. Limits

1. No increase in trail width, no expansion of viewpoint areas, no more new trail sections near viewpoints

2. Stable banks on either side of stream crossings, no signs of bank instability caused by foot or horse traffic

3. No increase in invasive species stem densities, or spatial extent of current infestations

4. No increase in rate of alarm responses over time, no harassment reported, no abandonment of habitats caused by trail activities

5. No increase in fire scars outside of campsites.

E. Monitoring Schedule

- Select monitoring sites at view points where sprawl is likely. Use photo documentation and/or follow BC Parks method to measure trends in trail widening and vegetation damage. Monitor sites during a the 2 scheduled maintenance inspections (spring and fall).

- Trail user survey forms should be made available at trail heads.

- Incorporate assessments and compilation of trail use forms into a trail maintenance plan (e.g., spring trail clearing and trail monitoring, end of season form collection and summary). Create central repository for this information with CSRD Area C Parks staff (where will this information be stored, who will be responsible for managing it?)

- Provide a process for people to record and report observations non-conforming use of the new trail (e.g., motorized use in riparian area, open fires outside of campsites)

F. Corrective Actions

- Install benches, handrails or fences to control sprawl at viewpoints, use signage to keep users on existing trails and avoid trail braiding
- Possible seasonal trail closures during high water in spring
- Trail relocation (specific thresholds that would trigger this level of corrective action would require more discussion)

Part 4: Pre-screen checklist

Compliance (legislation, land-use plans, guidelines)

Riparian Areas Regulation (BC Water Act, Federal Fisheries Act)

- ✓ Maintain no-disturbance zones alongside streams
- ✓ Notify Ministry of Environment and Fisheries and Oceans Canada (DFO) if work is unavoidable in and about a stream (section 9 notification application)
- ✓ Follow intent and criteria for no harmful alteration or disruption of fish habitat in DFO's Operational Statements for clear span bridges when constructing or maintaining foot bridges over streams

Species at Risk Act

- protection to listed species (extirpated, endangered, or threatened)
- federal government has responsibility for federal lands, aquatic species, and migratory birds

Wildlife Act

- protection of nests and nesting birds

Identified wildlife management strategy

- protection of species at risk and regionally important wildlife that the provincial government has designated as requiring special management under the Forest and Range Protection Act (FRPA)

Notification/Consultation

Sexqéltkemc Lakes Division and Neskonlith Indian Band

Private land holders

Federated Co-op

B.C. Timber Sales

Woodlot license holders

Range tenure holders

Local motorized recreation groups

Checklist of potential impacts:

Avoid sprawl at viewpoints

Avoid disturbance (bank instability, erosion, soil compaction) near streams

Invasive plant inventory as baseline information

Avoid direct disturbance to wildlife (harassment by people and dogs)

Minimize wildlife tree removal

Web-based Information Sources

BC government Land and Resource Data Warehouse. December 2009 extractions through GeoBC Data Distribution Service.

BC Conservation Data Centre 2010, BC Species and Ecosystem Explorer, BC Ministry of Environment, Victoria BC, Available: http://a100.gov.bc.ca/pub/eswp/ (accessed Jan 8, 2010).

Habitat Wizard. BC Ministry of Environment FDIS Fisheries Database.

E-Flora. Electronic atlas of the plants of BC. In: Klinkenberg, Brian. (Editor) 2009.

E-Flora BC: Electronic Atlas of the Plants of British Columbia [eflora.bc.ca]. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver. January, 2009.

Mineral Titles on Line BC. www.mton.gov.bc.ca/mtov (checked on September 21, 2010)

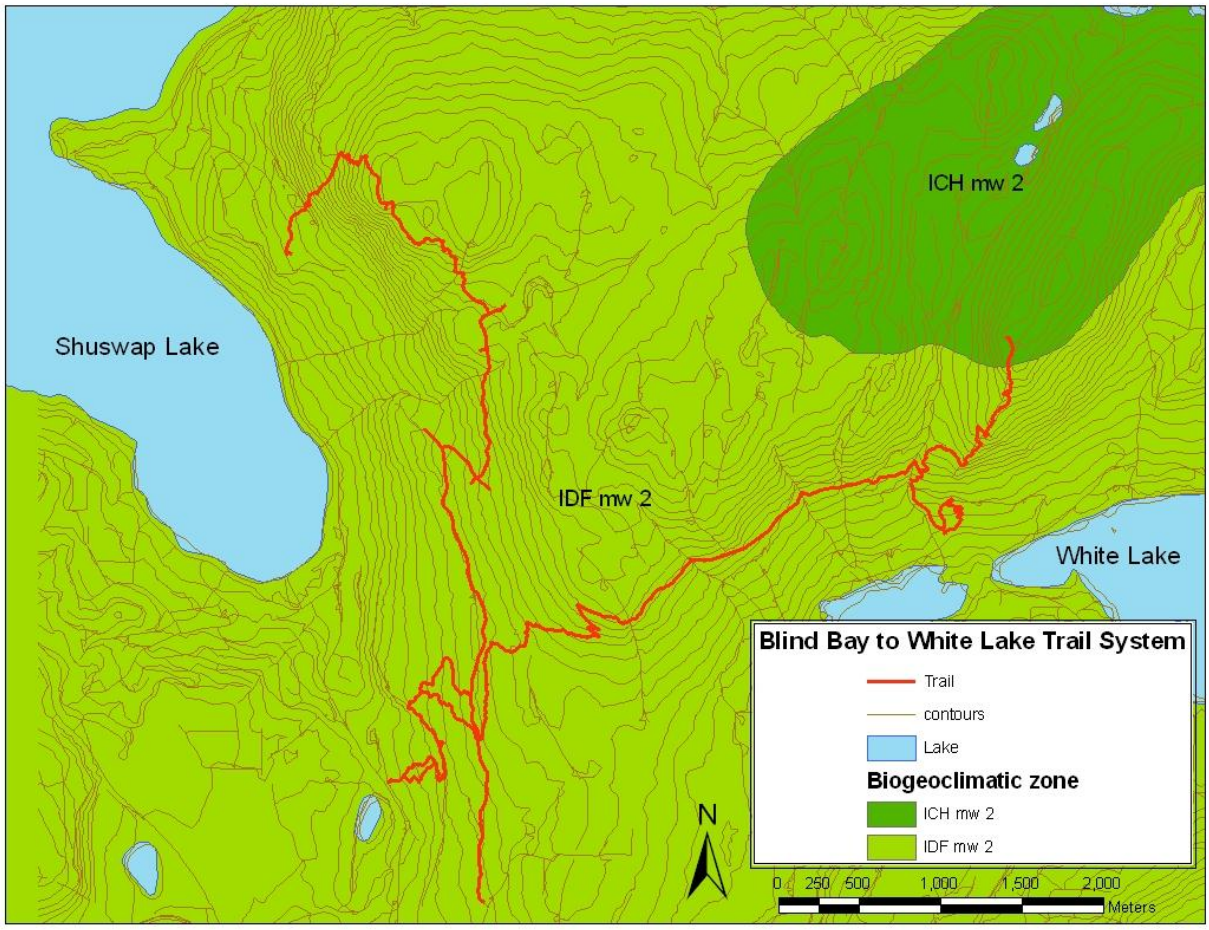


Figure 1 The trails in the Blind Bay White Lake area are primarily in the Thompson moist warm Interior Douglas Fir biogeoclimatic subzone variant (IDF mw2).

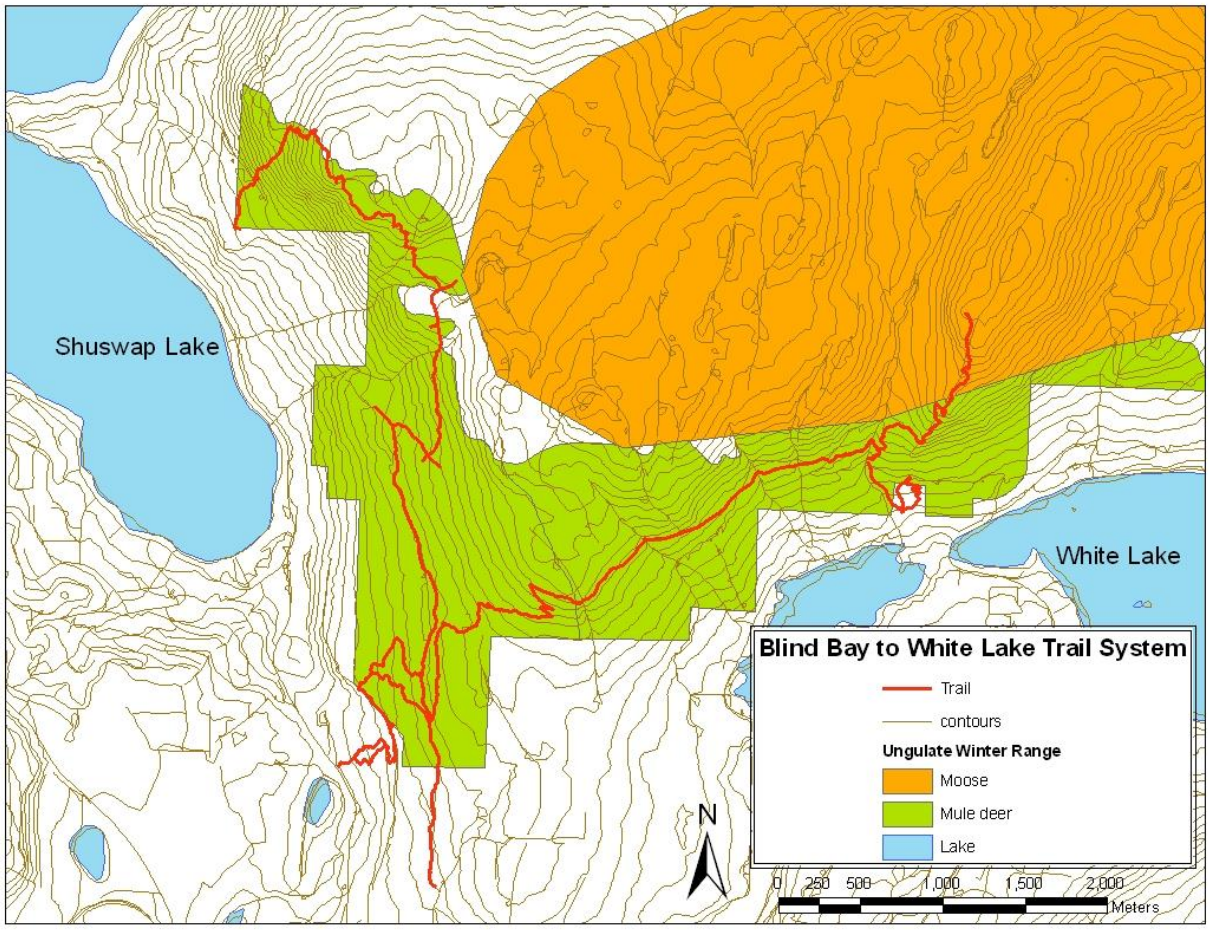


Figure 2. The Blind Bay and White Lake trail system is mainly within a mule deer winter range. A small part of the Blind bay lookout trail is in a moose winter range.

Table 1. Ecological communities at risk in the Thompson moist warm interior douglas fir biogeoclimatic subzone variant (IDFmw2) .

English Name	BC List	Ecosystem Group
Douglas-fir / pinegrass / red-stemmed feathermoss	Yellow	Forest, Woodland
Douglas-fir / common snowberry / bluebunch wheatgrass	Yellow	Woodland, Forest
Douglas-fir - western redcedar / falsebox	Yellow	Forest
western redcedar - paper birch / oak fern	Blue	Forest
common cattail Marsh	Blue	Wetland, Herbaceous

Table 2. Plant species at risk in the interior douglas fir biogeoclimatic zone (IDF) within the Kamloops Forest District and Columbia Shuswap Regional District .These plant species will be avoided where possible during trail design and construction.

Scientific Name	English Name	BC List	Name Category
Chenopodium atrovirens	dark lamb's-quarters	Red	Vascular Plant
Olsynium douglasii var. *inflatum*	satinflower	Red	Vascular Plant
Agoseris lackschewitzii	pink agoseris	Blue	Vascular Plant
Allium geyeri var. *tenerum*	Geyer's onion	Blue	Vascular Plant
Carex hystericina	porcupine sedge	Blue	Vascular Plant
Chamaesyce serpyllifolia ssp. *serpyllifolia*	thyme-leaved spurge	Blue	Vascular Plant
Dryopteris cristata	crested wood fern	Blue	Vascular Plant
Hypericum scouleri ssp. *nortoniae*	western St. John's-wort	Blue	Vascular Plant
Lindernia dubia var. *anagallidea*	false-pimpernel	Blue	Vascular Plant
Pyrola elliptica	white wintergreen	Blue	Vascular Plant

Table 3. Bird species at risk in the interior douglas fir biogeoclimatic zone (IDF) w7ithin the Kamloops Forest District and Columbia Shuswap Regional District .Habitat features (e.g., wildlife trees) used by these bird species will be avoided where possible during trail design construction and maintenance.

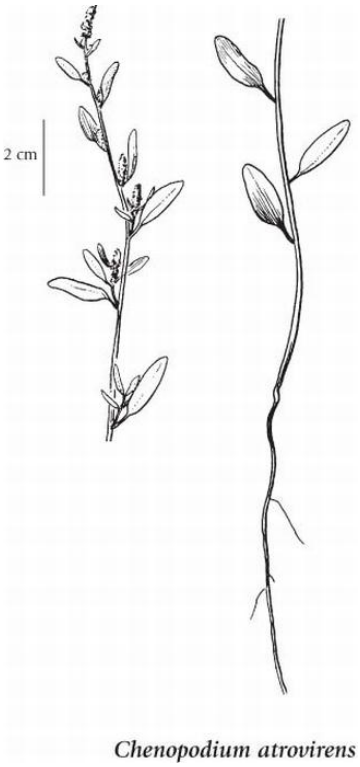
Scientific Name	English Name	BC List	Identified Wildlife	Breeding Bird
Buteo swainsoni	Swainson's Hawk	Red		Y
Chondestes grammacus	Lark Sparrow	Red		Y
Megascops kennicottii macfarlanei	Western Screech-Owl, *macfarlanei* subspecies	Red	Y (May 2004)	Y
Melanerpes lewis	Lewis's Woodpecker	Red	Y (May 2004)	Y
Ardea herodias herodias	Great Blue Heron, *herodias* subspecies	Blue	Y (Jun 2006)	Y
Asio flammeus	Short-eared Owl	Blue	Y (May 2004)	Y
Catherpes mexicanus	Canyon Wren	Blue		Y
Contopus cooperi	Olive-sided Flycatcher	Blue		Y
Dolichonyx oryzivorus	Bobolink	Blue		Y
Eremophila alpestris merrilli	Horned Lark, *merrilli* subspecies	Blue		Y
Hirundo rustica	Barn Swallow	Blue		Y
Numenius americanus	Long-billed Curlew	Blue	Y (May 2004)	Y
Grus canadensis	Sandhill Crane	Yellow	Y (Jun 2006)	Y

Table 4. Other wildlife species (mammals, insects, amphibians, reptiles, gastropods) at risk in the interior cedar hemlock biogeoclimatic zone (ICH) within the Kamloops Forest District and Columbia Shuswap Regional District .Habitat features used by these species will be avoided where possible during trail construction and maintenance.

Scientific Name	English Name	BC List	Identified Wildlife
Taxidea taxus	American Badger	Red	Y (May 2004)
Corynorhinus townsendii	Townsend's Big-eared Bat	Blue	
Euderma maculatum	Spotted Bat	Blue	Y (May 2004)
Gulo gulo luscus	Wolverine, *luscus* subspecies	Blue	Y (May 2004)
Martes pennanti	Fisher	Blue	Y (Jun 2006)
Myotis thysanodes	Fringed Myotis	Blue	Y (May 2004)
Ovis canadensis	Bighorn Sheep	Blue	Y (Jun 2006)
Spea intermontana	Great Basin Spadefoot	Blue	Y (May 2004)
Ursus arctos	Grizzly Bear	Blue	Y (May 2004)
Chlosyne whitneyi	Rockslide Checkerspot	Blue	
Danaus plexippus	Monarch	Blue	
Hemphillia camelus	Pale Jumping-slug	Blue	
Magnipelta mycophaga	Magnum Mantleslug	Blue	
Pholisora catullus	Common Sootywing	Blue	

APPENDIX A – Field guide to plant species at risk in the Blind Bay and White Lake area.
Reference: Klinkenberg, Brian (Editor). 2008. E-Flora BC: Atlas of the Plants of British Columbia [www.eflora.bc.ca]. Lab for Advanced Spatial Analysis, Department of Geography, University of British Columbia, Vancouver. Available: http://www.eflora.bc.ca. (Accessed: [*September 28, 2010*]).

Dark lamb’s quarters



Chenopodium atrovirens

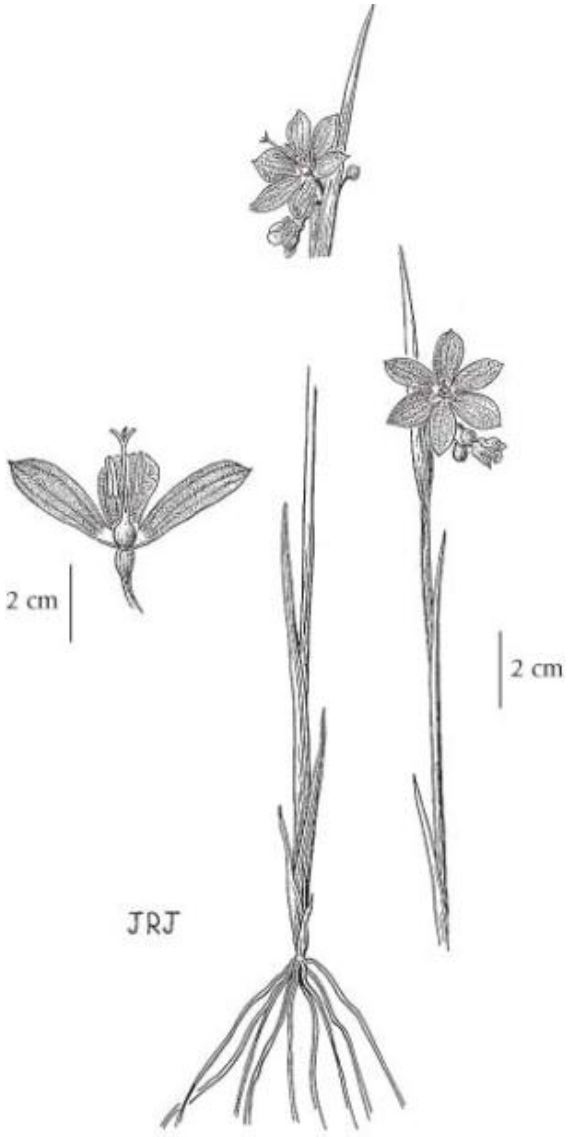
General:
Annual herb from a taproot; stems erect, solitary, simple to branched, 10-50 cm tall.

Leaves:
Stem leaves lanceolate, usually not arrowhead-shaped, greenish on upper surfaces but sparsely mealy below, stalked, 1-4 cm long, rounded to pointed.

Flowers:
Inflorescence of dense clusters in large terminal and smaller lateral spikes, densely mealy, without stalks.

Fruits:
Thin, membranous envelopes, 1 mm wide; seeds obtusely margined, slightly roughened.

Satin flower



Olsynium douglasii var. *inflatum*

General:
Perennial tufted herb from a fibrous root; stems somewhat compressed, simple, 10-30 cm tall.

Leaves:
Basal leaves reduced, bractlike, blades lacking or sometimes 1-2 cm long; stem leaves 2 to 4, linear, on the lower 1/2 of stem, sheathing, the blades 10-30 cm long, 1.5-3 mm wide, the tips long-pointed.

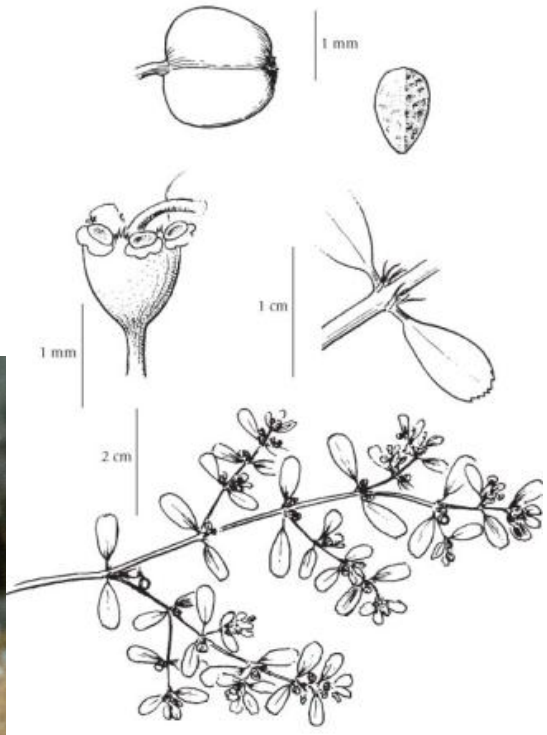
Flowers:
Inflorescence of (1) 2 or 3 showy, nodding flowers on slender, flexuous, 3- to 4-cm long stalks;

flowers reddish-purple, of 6 distinct oblanceolate to egg-shaped segments, these similar, 1.5-2.5 cm long, 5-nerved, abruptly pointed, the tubes slightly inflated below, 1-2 mm long; bracts 2, unequal, the upper one usually exceeding the flowers; filaments fused about 1/3 to 1/2 their length; anthers 3-7 mm long, yellow.

Fruits:
Capsules, 5-9 mm long; seeds numerous, egg-shaped, brown, 1.5-2.5 mm long.

Notes:
Two varieties occur in BC
1. Perianth segments dark red-purple; filament tubes only slightly enlarged above the base; flowers commonly 2 per stem; plants of SW BC .....var. douglasii
1. Perianth segments pale purple; filament tubes with an inflated area just above the base; flowers commonly 3 per stem; plants of SC BC..... var. inflatum (Suksd.) Cholewa & Henderson

Thyme-leaved spurge



Chamaesyce serpyllifolia ssp. *serpyllifolia*

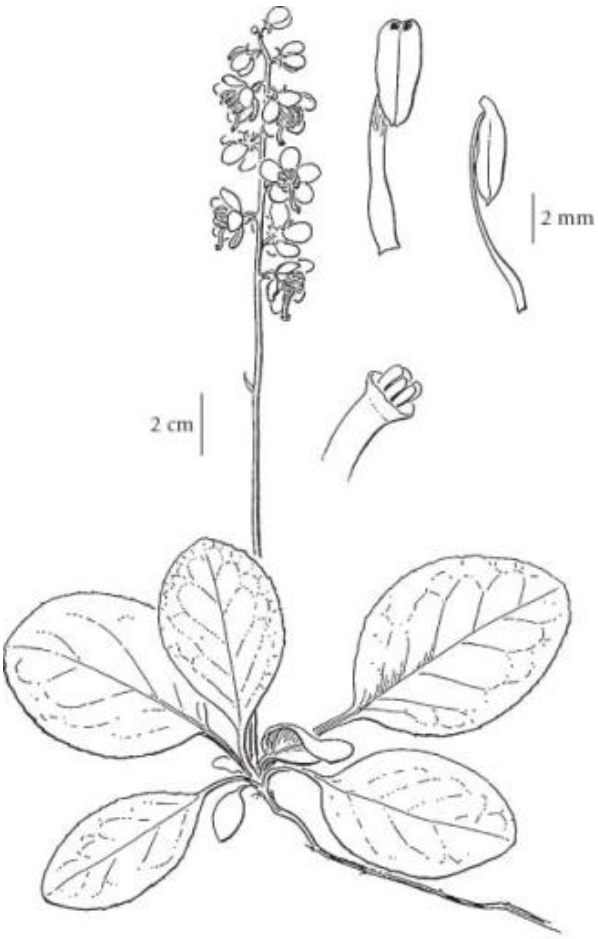
General:
Annual herb from a fibrous root; stems usually prostrate, freely branched with milky juice, 5-30 cm long.

Leaves:
Obliquely oblong to more oblong egg-shaped, toothed near the tip, 5-15 mm long; stipules at the base lanceolate, irregularly margined, 0.5-1.5 mm long.

Flowers:
Inflorescence of small clusters of axillary involucres; involucres 1 mm long, bell-shaped; glands 4, with sunken centres, appendages whitish, lobed or small-toothed.

Fruits:
Capsules, 1.5-2 mm long, glabrous; seeds 1.2 mm long, greyish-brown, sticky when wet, pitted to wrinkled or cross-corrugated.

White Wintergreen



Pyrola elliptica

General:
Perennial herb from a spreading, slender rhizome; flowering stems 15-25 cm tall, with many basal leaves.

Leaves:
Basal, evergreen, somewhat leathery, the blades broadly elliptic to oblong or egg-shaped, mostly 3.5-7 cm long and about 3/4 as wide, fine-toothed, thin, and dull; stalks rarely as long as blades.

Flowers:
Inflorescence a 2- to 20-flowered terminal, cylindric raceme, the flowers weakly bilaterally symmetric, 10-12 mm wide; flower stalks 3-8 mm long, nearly equaled by the linear-lanceolate bracts; petals white or creamy, rarely pink-tinged, egg-shaped, spreading, 6-8 mm long; sepals longer than wide, triangular to egg-shaped, tips usually sharp-pointed and somewhat bent back;

tubes of anthers short, usually somewhat bent back; styles declined, curved, 5-7 mm long, with a distinct collar below the stigma.

Fruits:
Capsules, depressed globe-shaped, 4-5 mm wide.