

Rubberhead Trails

Environmental Screening Report 2011



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Summary of Recommendations: Issues, hotspots, and values

The primary environmental issues to consider when managing the Rubberhead trail network is the erosion caused by mountain bike activity and expansion of unauthorized and possibly non-conforming trails. Although there no streams or wetlands in the area, there are several steep gullies where erosion will destroy vegetation and may impact downstream water bodies.

Adaptive management plans for the Rubberhead trail system will include options for corrective actions to avoid these potential impacts:

1. Erosion on steep slopes caused by mountain bikes .
2. Destruction or degradation of habitat for vulnerable and at-risk plant and animal species (provincially red and blue listed species).

Recommendation #1: Control unauthorized trail construction

Continue to meet with all user groups , land tenure holders, relevant businesses , Ministry of the Environment, and any others interested in the Rubberhead area. Stress the need to build sustainable trails only with consultation and pre-approval of all concerned parties.

Recommendation #2: Sediment and erosion control

Mountain bikes can cut trenches in steep sections of trail and on shortcuts off the trail. Monitor for these locations. Take corrective action in order to control erosion at these locations.

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 monitoring for erosion problems will take place as there is potential for invasive plants to displace native plants. 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

Activity Description

This environmental screening report was developed for the Rubberhead trail on the west slope of Larch Hills. Rubberhead trail system is built along FSR 110 (Larch Hills Road). Trail development and use in this area was historically hiking and cross country skiing.

The Larch Hills Nordic ski area extends into the upper part of the Rubberhead. During the past 20 years mountain bike trails and play areas have been built by various users. Recently the Shuswap Trail Alliance(STA), Skookum Cycle and local mountain bike enthusiasts have come together to upgrade old trails and construct new ones to IMBA

standards. The STA has installed signs and maps throughout the trail system. As well there has been an increase in motorized ATV and motorbike use primarily on the logging roads. There is some horseback riding which seems to be increasing with the reconstruction of some of the trails to International Mountain Bike Association (IMBA) standards.

There are a variety of downhill mountain bike grades on the trail systems ranging from very steep and technical to intermediate terrain. The topography of this area and its proximity to town offers an ideal area for the rapidly growing popularity of mountain biking. During the past few years mountain bike trail development in this area has significantly increased along with an interest in long-term stewardship and sustainable management.

Purpose

The Rubberhead trail system is on crown land bordering Salmon Arm. Residents and visitors to Salmon Arm are the primary users. While mountain biking is the primary use the trails are also used regularly by hikers and horse riders. In the winter snowshoers and back country skiers also use the trails.

Location

Rubberhead is located along FSR 110 off the Trans Canada Highway 5KM east of Federated Coop mill.

Activities

Sanctioned or authorized trails have been designed and constructed following IMBA and provincial standards and best practices for non-motorized recreation. Ongoing management activities will consist of removal or reconstruction of older and unsustainable or unauthorized trails, and clearing blow down and brush on the trail corridors.

Trail Stewardship

The establishment of stewardship teams to oversee the trail systems is an important initiative for the Shuswap Trail Alliance, especially where mountain biking has become the main trail activity. Stewardship will encourage local users to take responsibility for their trails. Managing current trails and guiding the creation of new trails with a focus on long-term environmentally sustainable use will be the main focus of each team. For instance, creation of new trails will require compliance with the nine step process outlined by the STA (Appendix A) in order to meet the criteria for approved trails. This will assure appropriate consultation with all interested parties and neighbours prior to trail construction and that trail design and construction meets current best practices and protective legislation (e.g., trail stream crossing and the Riparian Regulation).

Part 2: Environment and land-use

Biology-Geology-Climate

The Rubberhead trail system is primarily in the Shuswap Interior Cedar Hemlock moist wet zone - ICHmw2 (Fig. 1). Some lower, west sloping sections of the Rubberhead Trails

are in the moist warm Interior Douglas Fir (IDFmw1 and IDFmw2) biogeoclimatic subzone variant.

As this area is on the boundary of two biogeoclimatic zones and several subzones this report will list all species that may occur in any zone or sub-zone variant that may occur in this transition zone. Determining which provincial biogeoclimatic zone trails are located in is a useful way to classify the ecology of the area and cross-reference to lists of vulnerable plant and animal species that are likely to exist in a particular area.

Given that many of these trails are on dry south or west facing hillsides, fire risk may be high during the summer months. Trail users should be reminded of this and encouraged to take precautions to limit the threat of human-caused fires when fire risk is high.

Ecological Communities

There is one blue listed (special concern) ecological community (western red cedar/western hemlock/common horsetail) in the ICHmw2. There are six ecological communities that may occur within the IDF mw1 and mw2 biogeoclimatic subzone variants. Four of these are yellow listed (not at risk), one (western red cedar/douglas fir/red-osier dogwood) is blue listed but very common to this area. One (black cottonwood/common snowberry/roses) is red listed (extirpated, endangered or threatened) but is typically found near riparian areas (low-slope creeks and wetlands) and is very unlikely to occur in the Rubberhead trail area (see Table 1).

Plants

There are 2 red listed and 9 blue listed vascular species in the ICHmw2 and IDFmw1 biogeoclimatic zones of the Columbia-Shuswap Regional District and Kamloops Forest District (Table 2). Of these 11 listed species, 6 are unlikely to exist in the habitat found along the Larch Hills West 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. Two red listed species: Dark lamb's-quarters and Satin flower, and 3 blue listed plants: Purple leaved willowherb, Thyme-leaved spurge and White wintergreen may be found within the specific type of landscape that the trails are in. There is one occurrence of Thyme-leaved spurge in this area on the shoreline of Shuswap Lake. It's common habitat is moist rocky shoreline areas. Given that the Rubberhead trails are higher up on dry steep slopes, it is unlikely that the use of these trails will impact this blue-listed (of special concern) plant.

Appendix B provides images and detailed descriptions to help identify the at risk plant species that may be encountered in the Larch Hills West trail areas. Special attention will be paid to these plant species during trail monitoring and maintenance.

Wildlife

There are 13 bird and 14 species at risk in the ICH and IDF biogeoclimatic zone in this area (Tables 3,4). Red listed species that may occur in the Larch Hills West area include badger, Swainson's hawk, lark sparrow, western screech-owl, and Lewis's woodpecker. Special attention should be paid to these species and their preferred habitat if observed

A search on the iMapBC data base for Mapped Wildlife Species Point Locations from the provincial wildlife database showed no recorded observations of wildlife in this area (09/28/11).

There is an Ungulate Winter Range south of the Rubberhead area (Fig. 3). Ungulate Winter Ranges in the Larch Hills area provide important cover and forage habitat during the winter for mule deer. The establishment of an Ungulate Winter Range implies that there will occasionally be higher concentrations of deer in the area, which may result in large carnivores such as cougar, bear and wolf also inhabiting the area. Signage and other educational material may help trail users understand this ecological relationship and plan their trips to minimize the risk of dangerous encounters with large carnivores.

Fish and fish habitat

There are no year round streams or creeks crossed by the Rubberhead trails. There are however some intermittent flows related to snowmelt in the numerous gullies on the steep hillside. Although there are no streams mapped in this area, intermittent flow from spring melt and heavy rains can transport sediment downstream to fish bearing streams. Recognizing that there is seasonal connectivity with fish habitat will help trail stewardship protect steep sections of trails in gullies from impacting downstream water quality.

Soil and water degradation

The Rubberhead trails are predominantly dry with no streams appearing in provincial mapping sources, Steep trails and clear cut areas above Shuswap Lake however raise some concerns around soil erosion during periodic heavy rain events (Figs. 1-3).

Following current standards and best practices (Whistler Standards, International Mountain Bike Association) for trail construction related to grade and drainage concerns will help to minimize any negative impacts of the trails 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 Larch Hills area is an area of historical interest and claim by the Shuswap First Nation.

Logging interests in this area are held by Federated Coop. They have been consulted regarding trail routing.

A check with the iMapBC(09/28/11) does not show any current mineral claims throughout the area of the Rubberhead trails.

There is a gravel pit on the northwest corner of the trail system but there are no Rubberhead trails adjoining that claim.

There is no Guide Outfitter operating in this area. Most of the trail is within an existing large trapline license #TR0326T00. The trapline license holder has not been contacted as there has not been evidence of active trapping here at least for the last forty years.

Part 3: Mitigation and monitoring

The information gathered together for this environmental screening report will be used to develop an Adaptive Management Plan for the Rubberhead Trails. The following framework provides the rationale behind the adaptive management approach. Categorizing these components help us to understand and predict what corrective actions may be required in order to achieve environmentally sustainable use of trails.

- 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.

Results

1. No sprawl at viewpoints, junctions or switchbacks.
2. No expanding erosion near gullies or riparian areas.
3. No spread of invasive plant species.
4. Minimal physiological or behavioural disruption of wildlife.
5. No increased threat to wildfire along the private land interface as a result of trail use.

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 instability
- 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, control pets on leashes when wildlife are encountered, record wildlife encounters on standard forms provided at trail heads or website (to be determined).
- 5 No open fires, no trail use during high fire risk periods when backcountry closures are in effect. No smoking.

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 gullies or channels causing 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.

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 gullies or stream crossings, no signs of bank instability caused by bike 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.

Monitoring Schedule

- Select monitoring sites at gullies and view points where expanding erosion and vegetation degradation is likely. Use photo documentation and/or follow BC Parks method to measure trends in trail widening and vegetation damage. Monitor sites during the two 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 a 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)

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)

- Signage and educational material to inform users the biogeoclimatic zone and forests they are travelling through will have a seasonally high fire risk.

Part 4: Pre-screen checklist: Compliance legislation, land-use plans, guidelines, and consultation

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 (DFO – Project Review Application Form, MOE - Section 9 Notification application)
- ✓ Follow intent and criteria for no harmful alteration or disruption of fish habitat in DFO's Operational Statements as a result of constructing clear span 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

Sexqéltkemoc 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

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).

Guide to Site Identification and Interpretation for the Kamloops Forest Region.
<http://www.for.gov.bc.ca/hfd/pubs/docs/lmh/Lmh23-1.pdf>

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 kiosk map developed for the Rubberhead trail system shows the steep technical type of mountain biking trails and their proximity to Shuswap Lake.

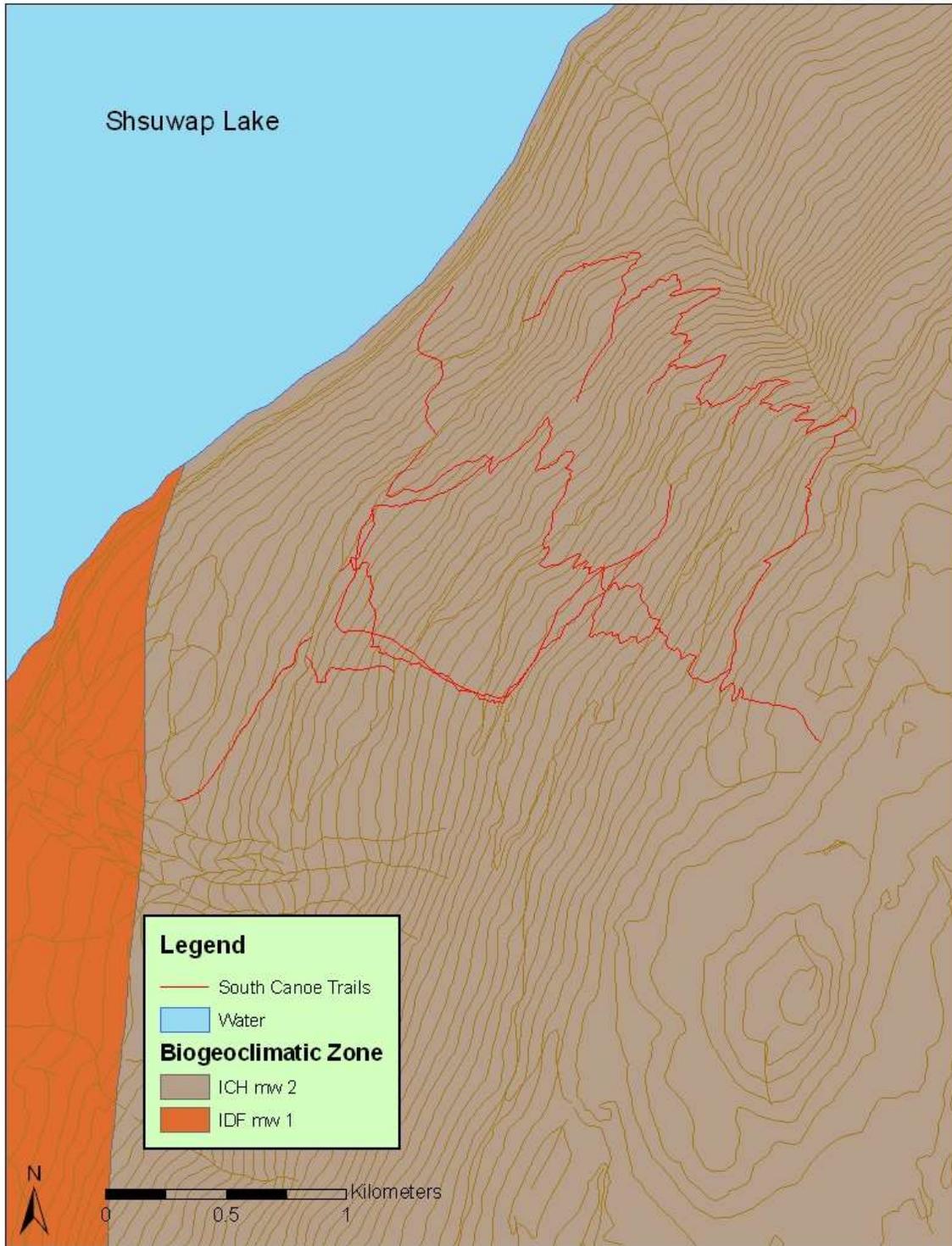


Figure 2. The trails in the Rubberhead area are within the Shuswap moist-warm Interior Cedar Hemlock zone on a north-facing slope above Shuswap lake.

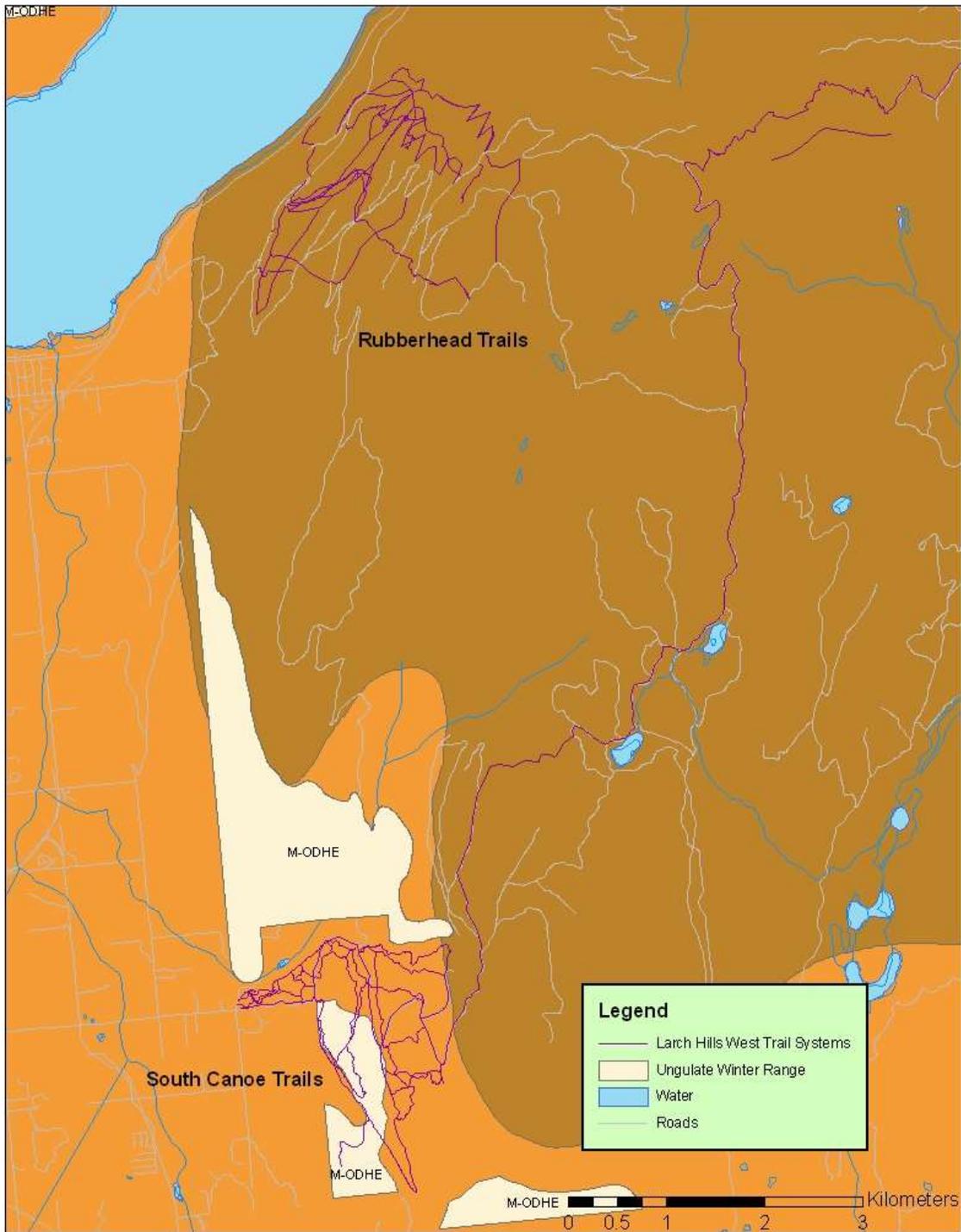


Figure 3. There are Ungulate Winter Ranges (managed by Ministry of Environment to provide cover and forage for deer and moose) south of the Rubberhead trails but none within the immediate area.

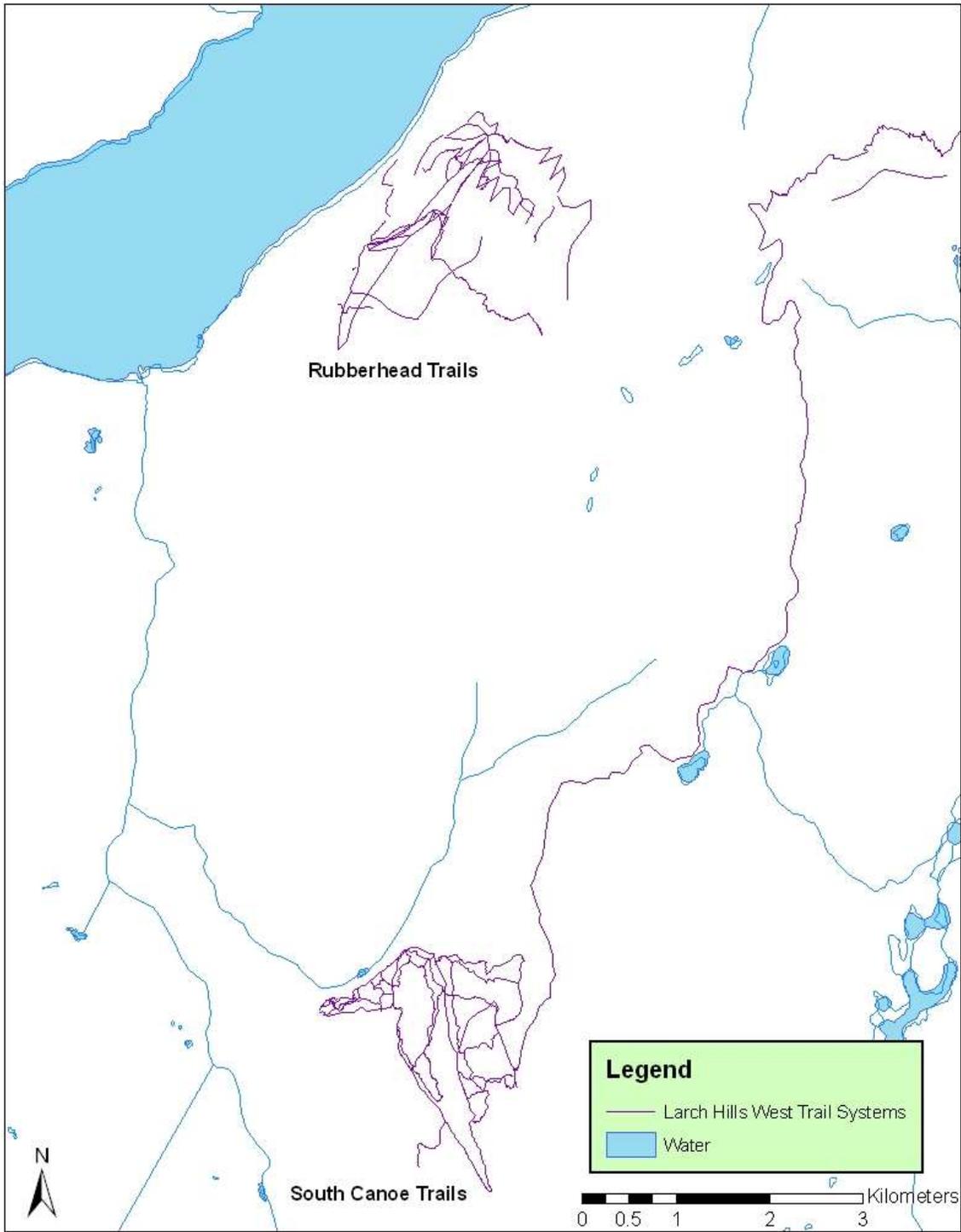


Figure 4. There are no mapped stream lines draining north off of Larch Hills through the Rubberhead trail system.

Table 1. Ecological communities at risk in the South Canoe area of the Larch Hills .

English Name	BC List	BEC zone	Ecosystem Group
Douglas-fir / pinegrass / red-stemmed feathermoss	Yellow	IDFmw1 IDFmw2	Forest, Woodland
Douglas-fir / common snowberry / bluebunch wheatgrass	Yellow	IDFmw1 IDFmw2	Woodland, Forest
Douglas-fir - western redcedar / falsebox	Yellow	IDFmw1 IDFmw2	Forest
Western red cedar /devil's club/lady fern	yellow	IDFmw1	Forest
Black cottonwood/common snowberry/roses	Red	IDFmw1	Forest
Western red cedar/western hemlock/common horsetail	Blue	ICHmw2	Forest
Western red cedar/Douglas fir/red-osier dogwood	Blue	IDFmw1	Forest

Table 2. Plant species at risk in the Interior Douglas Fir (IDF) and Interior Cedar Hemlock (ICH) biogeoclimatic zones within the Kamloops Forest District and Columbia Shuswap Regional District .If found these plant species should be protected during trail design and construction. Plants in bold are most likely to be seen in this area.

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

Table 3. Bird species at risk in the Interior Douglas Fir (IDF) and Interior Cedar Hemlock (ICH) biogeoclimatic zones within 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
<i>Buteo swainsoni</i>	Swainson's Hawk	Red		Y
<i>Chondestes grammacus</i>	Lark Sparrow	Red		Y
<i>Megascops kennicottii macfarlanei</i>	Western Screech-Owl, <i>macfarlanei</i> subspecies	Red	Y (May 2004)	Y
<i>Melanerpes lewis</i>	Lewis's Woodpecker	Red	Y (May 2004)	Y
<i>Ardea herodias herodias</i>	Great Blue Heron, <i>herodias</i> subspecies	Blue	Y (Jun 2006)	Y
<i>Asio flammeus</i>	Short-eared Owl	Blue	Y (May 2004)	Y
<i>Catherpes mexicanus</i>	Canyon Wren	Blue		Y
<i>Contopus cooperi</i>	Olive-sided Flycatcher	Blue		Y
<i>Dolichonyx oryzivorus</i>	Bobolink	Blue		Y
<i>Eremophila alpestris merrilli</i>	Horned Lark, <i>merrilli</i> subspecies	Blue		Y
<i>Hirundo rustica</i>	Barn Swallow	Blue		Y
<i>Numenius americanus</i>	Long-billed Curlew	Blue Yello	Y (May 2004)	Y
<i>Grus canadensis</i>	Sandhill Crane	w	Y (Jun 2006)	Y

Table 4. Animal species at risk in the interior douglas fir (IDF) and interior cedar hemlock (ICH) biogeoclimatic zones within the Kamloops Forest District and Columbia Shuswap Regional District .Habitat features (e.g., wildlife trees) used by these species will be avoided where possible during trail design construction and maintenance.

Scientific Name	English Name	BC List	Name Category	BGC
<i>Taxidea taxus</i>	American Badger	Red	Vertebrate Animal	ICH;IDF
<i>Chlosyne whitneyi</i>	Rockslide Checkerspot	Blue	Invertebrate Animal	IDF
<i>Corynorhinus townsendii</i>	Townsend's Big-eared Bat	Blue	Vertebrate Animal	ICH;IDF
<i>Danaus plexippus</i>	Monarch	Blue	Invertebrate Animal	ICH;IDF
<i>Euderma maculatum</i>	Spotted Bat	Blue	Vertebrate Animal	IDF
<i>Gulo gulo luscus</i>	Wolverine, <i>luscus</i> subspecies	Blue	Vertebrate Animal	ICH;IDF
<i>Hemphillia camelus</i>	Pale Jumping-slug	Blue	Invertebrate Animal	ICH;IDF
<i>Magnipelta mycophaga</i>	Magnum Mantle slug	Blue	Invertebrate Animal	ICH;IDF
<i>Martes pennanti</i>	Fisher	Blue	Vertebrate Animal	ICH;IDF
<i>Myotis thysanodes</i>	Fringed Myotis	Blue	Vertebrate Animal	ICH;IDF
<i>Ovis canadensis</i>	Bighorn Sheep	Blue	Vertebrate Animal	ICH;IDF
<i>Pholisora catullus</i>	Common Sootywing	Blue	Invertebrate Animal	ICH;IDF
<i>Spea intermontana</i>	Great Basin Spadefoot	Blue	Vertebrate Animal	IDF
<i>Ursus arctos</i>	Grizzly Bear	Blue	Vertebrate Animal	ICH;IDF

Table 5. Important habitats used by vulnerable species that may be found in the South Canoe Trails area (reference: BC Species and Ecosystem Explorer reports).

English Name	Scientific Name	BC Status	Habitat Notes
American Badger	<i>Taxidea taxus</i>	Red	Grasslands, deep soil
Rockslide checkerspot	<i>Chlosyne whitneyi</i>	Blue	Alpine rockslides, bare rock/talus/scree
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	Blue	Mosaic of wood/grass/shrubland, Cliffs, Caves, Mines
Monarch	<i>Danaus plexippus</i>	Blue	Patches of milkweed
Spotted bat	<i>Euderma maculatum</i>	Blue	Conifer forests desert to montane, near fields and marshes, roost in caves and cliffs
Wolverine, luscus subspecies	<i>Gulo gulo luscus</i>	Blue	Wide ranging, mainly alpine
Pale jumping slug	<i>Hemphillia camelus</i>	Blue	Coniferous forests, mossy stumps, rocks, logs, leaf litter
Magnum mantleslug	<i>Magnipelta mycophaga</i>	Blue	Cool, moist coniferous forest, logs, bark, depressions, talus rock
Fisher	<i>Martes pennanti</i>	Blue	Dense forests, dens in hollow trees and rock crevices
Fringed Myotis	<i>Myotis thysanodes</i>	Blue	Roosts in rock crevices
Bighorn sheep	<i>Ovis canadensis</i>	Blue	alpine to desert grassland, shrub-steppe with steep "escape" terrain
Common sootywing	<i>Pholisora catullus</i>	Blue	disturbed sites, weedy open areas, edges of pastres and gulches
Great Basin spadefoot toad	<i>Spea intermontana</i>	Blue	semi-desert shrubland, loose soil, temporary or permanent pools of water
Grizzly bear	<i>Ursus arctos</i>	Blue	alpine, sub-alpine forests, require large areas where food is abundant

APPENDIX A – Shuswap Trail Alliance Trail Development Protocol and Stewardship Information.

Shuswap Trail Protocol

The Shuswap Trail Alliance – Updated: July 25, 2011

Know the Layers

- The Environment/Ecology – Riparian, Wetlands, Watersheds, Critical Habitats, Red/Blue Lists
- Secwepemc (Shuswap) Nation – Sexqueltquin (Adams Lake), Qw7ewt (Little Shuswap), Sk’atsin (Neskonlith), Splatsin
- Provincial/Federal Government – Natural Resources, MoE, DFO, BC Parks, Rec Sites and Trails. . .
- Municipal/Regional Districts – Staff/ Councils, Parks Commissions, Greenway Liaison Committee,
- Land Tenure Holders – Forestry, Range, Mining, Trapping, Harvest, Tourism. . .
- Private Land Owners/Local Residents
- Recreational User Groups – Hiking, Mountain Biking, Equestrian, Nordic Ski, Snowshoe, ATV, Off-road Motorcycle, Snowmobile, Fish & Game, Nature Viewing, Camping, Berry Picking. . .
- Safety – RCMP, Fire Protection, Search & Rescue. . .

“So You Want to Build a Trail” Steps

1. Call the Shuswap Trail Alliance (250-832-0102). . .
2. Do your homework – check with area trail stewards, research the “layers”, look at maps/Google Earth/GeoBC Online/Front Counter BC Online, study sustainable design standards, find out about other’s plans, talk to people. . .
3. Get permission to explore on the ground
4. Find the Lines (GPS/mapping)
5. Conduct Environmental Screening
6. Write up a draft plan (include design, build, maintenance, and budget)
7. Bring plan to the local Stewardship Advisory or Lead Steward
8. Submit for First Nation (Lakes Division/Little Shuswap), Stewardship Partners, Land Management, and key stakeholder review (see layer contacts). . .
9. Revise lines and plan (as required), and resubmit for review. . .
10. Apply for Authorization – Front Counter BC, Municipal/Regional Government, Private Owner, Department of Fisheries and Oceans, Ministry of Environment. . .
11. Upon authorization – Build, Monitor, Maintain, Adapt. . .

The Shuswap Trail Stewardship Program

1. **Trail Stewardship Advisory Committees** – formed as local advisory groups around specific trail systems (under the umbrella of the Shuswap Trail Alliance) to provide direction to land managers on priorities and needs for trail maintenance, planning, environmental monitoring, user interaction, and adaptive responses – including assistance with volunteer engagement
2. **Lead Trail Stewards** – individuals appointed as the main contact for a specific trail system (under the umbrella of the Shuswap Trail Alliance), assisting with annual trail inventories, inspection of environmental monitor sites, regular walking and register box checks, spring volunteer clean-up days, liaison with land managers through the regional trail stewardship coordinator, and attendance at an annual debrief, planning, and celebration conference of regional trail stewards.
3. **Trail Stewardship Teams** – local individuals who act as the eyes/ears for a specific trail system, assisting the Lead Trail Steward (see tasks above). May also include maintenance support.

4. **Adopt-a-Trail Stewards** – an individual, family, or organization who commit to periodically monitor and provide basic maintenance through the year for a specific section of trail.
5. **The Trail Stewardship “Binder”** – the go-to resource developed for each trail system held by the Lead Trail Steward or Stewardship Advisory Chair that contains the trail management and adaptive plan, schedules, maps, inspection and monitor forms, contact information, and other background information and resources.

Appendix B: Field Identification Information for Potential Plant Species at Risk in the South Canoe Trail System.

Information to assist field identification of the following plants can be found in this appendix:

- dark lamb's-quarters
- satinflower
- pink agoseris
- Geyer's onion
- thyme-leaved spurge
- crested wood fern
- purple -leaved willowherb
- western St. John's-wort
- false-pimpernel
- white wintergreen

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.

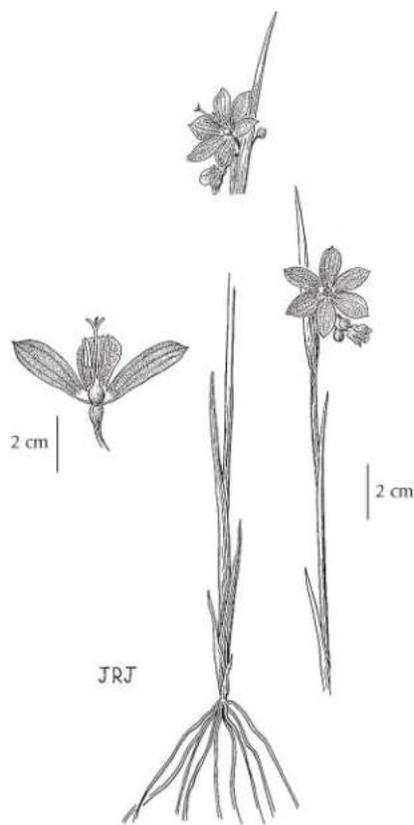
Flowers:

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.

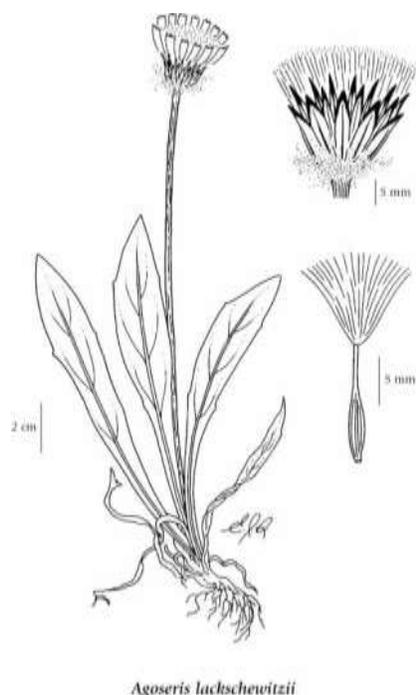
Notes:

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 BCvar. *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

Pink agoseris



Scientific Name	<i>Agoseris lackschewitzii</i>
English Name	pink agoseris
Plant type	Herbaceous vascular plant
Plant family	Aster
BC List	Blue
IDF and ICH zone	ICHmw
Habitat Type	Wet meadows

Habitat Description

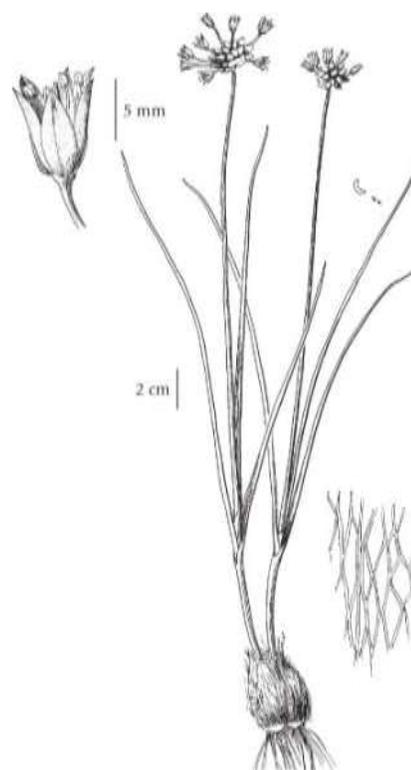
Restricted to perennially wet montane meadows on substrates in which the soil is saturated throughout the growing season in mid-montane to subalpine zones.

Plant Description

Pink Agoseris is a taprooted perennial with milky sap. Glabrous leaves are clustered at the base, and there are 1 to several leafless stems, 10-60 cm tall, arising from the center; leaves taper gradually to a long petiole, are narrowly lance-shaped, 5-25 cm long, and 10-25 cm wide. Flower heads resemble those of the common dandelion; they are solitary at the ends of the stems and composed entirely of deep pink to light purple ray flowers, ca. 15-20 mm long. Involucral bracts are narrowly lance-shaped, 10-15 mm long, villous, with non-glandular hairs, purple-striped, mottled, and obtuse-tipped. Fruits (achenes) have beaks 1/2 to 2/3 the length of their bodies. Fruits also resemble those of the dandelion; they are spindle-shaped, and the top tapers to a slender beak to which numerous, long, white bristles are attached.

Flower Colour	Pink
Flowering period	
E Flora	

<http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Agoseris+lackschewitzii>

Geyer's onion*Allium geoyeri* var. *tenerum***Scientific Name***Allium geoyeri* var. *tenerum***English Name**

Geyer's onion

Plant type

Herbaceous vascular plant

Plant family

Lily

BC List

Blue

IDF and ICH zone

IDFmw

Habitat Type

Moist meadows and rock outcrops

Habitat Description

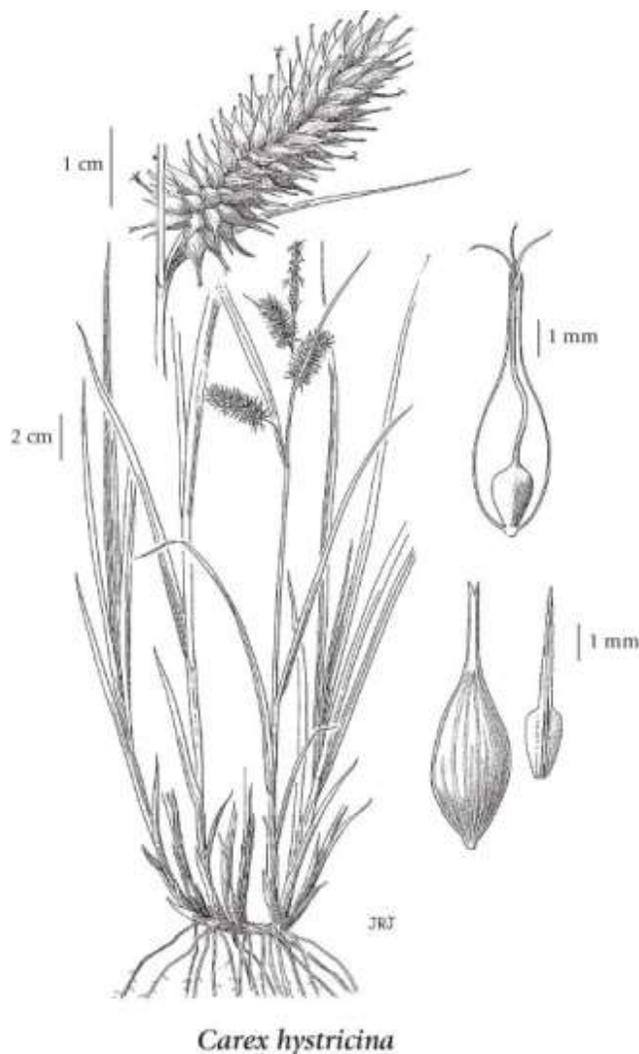
Moist meadows and rock outcrops in the lowland, steppe and montane zones

Plant Description

Perennial herb from an egg-shaped, scaly bulb, the bulbs often clustered, the outer scales brownish, fibrous, in a coarse-meshed network, the inner scales whitish; flowering stems erect, 10-50 cm tall, slender, cylindric to somewhat angled, smooth. Basal leaves usually 3 or more, persisting, linear, channeled, shorter than the flowering stem, 2-5 mm wide, smooth, the margins entire; stem leaves lacking. Flowers a terminal umbel of several to many, stalked flowers, above 2 or 3 membranous, egg-shaped to lanceolate bracts, the stalks longer than the flowers. Flowers pink, rarely white, bell-shaped, of 6 distinct tepals, mostly replaced by bulbils; tepals usually 6-8 mm long, egg-shaped to lanceolate, somewhat long-tapering to pointed or blunt tips, sometimes obscurely toothed on the margins, erect, in fruit becoming tough-keeled and enclosing the capsule; stamens 6, usually shorter than the tepals; pistil 1, 3-chambered. Fruits capsules, more or less egg-shaped, 3-lobed, with 6 low, knob-like crests; seeds 6 or fewer, shiny-black.

Flower Colour**Flowering period****E Flora**

<http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Allium+geoyeri+var.+tenerum>

Porcupine sedge**Scientific Name***Carex hystricina***English Name**

porcupine sedge

Plant type

Sedge

Plant family

Sedge

BC List

Blue

IDF and ICH zoneIDF_{xh}**Habitat Type**

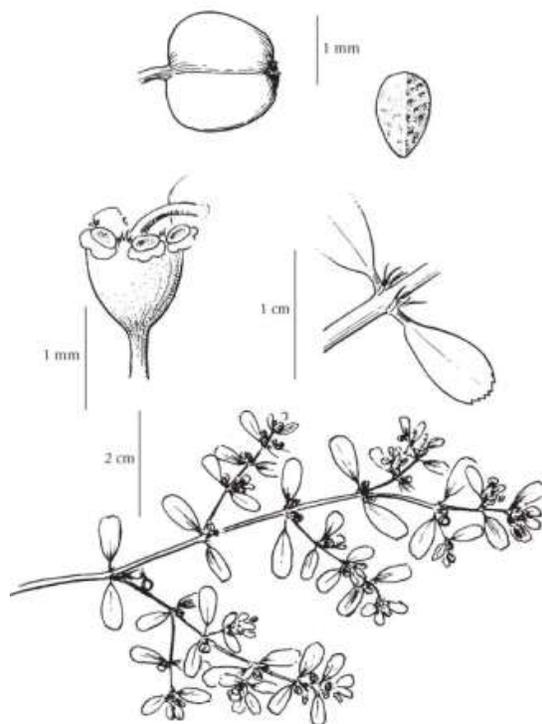
Swamps, shorelines and wet meadows

Habitat Description

Swamps, shorelines and wet meadows in the steppe and montane zones
 Perennial, tufted herb from short, stout rhizomes; stems 15-100 cm tall, as long as or longer than the leaves. Leaves sheaths reddish, the lower ones breaking into threads; blades 3 to 7 per stem, flat, with crosswalls, the margins slightly rolled-under, 2-10 mm wide. Flowers are spikes 2 to 5, the terminal one linear, 2-4 cm long, with male flowers, the lower spikes 1 to 4, cylindrical, with female flowers, the lower long-stalked, reflexed, the upper short-stalked, erect; bracts subtending the female spikes tubular-sheathing, leaflike, the lower bracts much longer than the spikes and their stalks, the upper ones progressively reduced. Fruits perigynia lanceolate to narrowly egg-shaped, 5-7 mm long, 1.5-2 mm wide, usually pale greenish, shiny, inflated, convex, smooth above, (12-) 15- to 20-nerved, numerous, separate or crowded, spreading or directed downward, short-stalked, the beaks about 1/2 as long as the bodies, bidentate; the teeth 0.3-0.9 mm long, straight; female scales lanceolate, translucent, much shorter than the perigynia, the midribs extending into rough, tapered awns, the awns 2-6 mm long; stigmas 3; achenes 3-angled, 1.2-1.6 mm long.

Plant Description**Flower Colour****Flowering period****E Flora**
<http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Carex+hystricina>

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 involucre; involucre 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.

Crested Wood Fern

Scientific Name	<i>Dryopteris cristata</i>
English Name	crested wood fern
Plant type	Fern
Plant family	Fern
BC List	Blue
IDF and ICH zone	ICHmw;IDFmw;IDFxh
Habitat Type	Swamps and wet meadows

Habitat Description

Swamps and wet meadows in the mountains.

Buckler Fern is an herbaceous perennial with clustered fronds arising from a short rhizome. The stalked fronds have narrowly elliptic blades pinnately divided into numerous pairs of pinnately lobed leaflets, or pinnae. The fertile fronds, 3-6 dm long, are erect and deciduous, while the sterile ones are evergreen, smaller, and more lax. Clusters of spores, or sori are borne along either side of the pinnae midveins on the underside of fertile fronds. Sori are covered by a whitish, broadly horseshoe-shaped membrane, or indusium. The broadly horseshoe-shaped indusium identifies this species as a *Dryopteris*. Other members of the genus in our area have more highly divided leaves and sterile and fertile fronds that are similar to each other.

Plant Description

Flower Colour

Flowering period

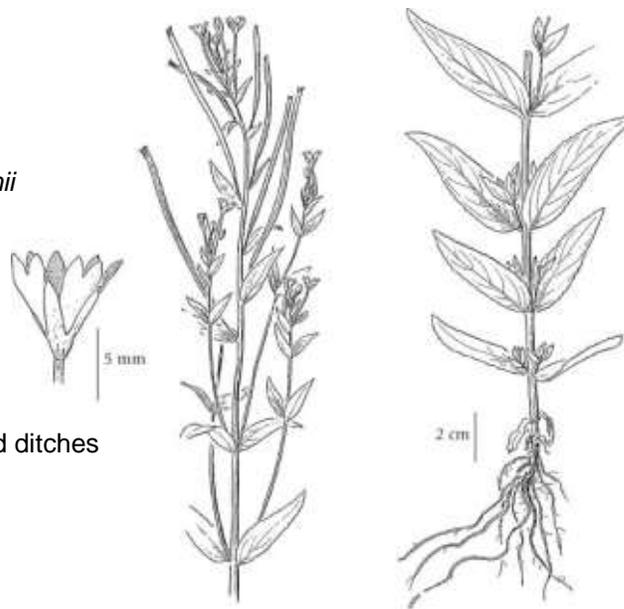
E Flora

<http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Dryopteris+cristata>



Purple-leaved willowherb

Scientific Name	<i>Epilobium ciliatum</i> ssp. <i>watsonii</i>
English Name	purple-leaved willowherb
Plant type	Herbaceous vascular plant
Plant family	Evening primrose
BC List	Blue
IDF and ICH zone	ICHmw



Epilobium ciliatum ssp. *watsonii*

Habitat Type	Wet disturbed areas, fields and ditches
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Habitat Description

Wet to mesic disturbed areas, roadsides, fields and ditches from the lowland to montane zones

Plant Description

Perennial herb, from basal rosettes or fleshy bulblets, lacking rhizomes; stems 15-150 cm tall, simple or branched, generally finely stiff-hairy in lines or spreading-hairy. Leaves opposite, or alternate above, lance- or lance egg-shaped, 1-15 cm long, finely sharp-toothed to almost entire, veins distinct; stalks 0-8 mm long. Flowers a terminal, leafy-bracted panicle or raceme, finely stiff-hairy, with some spreading and glandular hairs; hypanthium 0.5-2.6 mm long; petals 2-14 mm long, rose-purple to white, notched at tip; sepals 2-7.5 mm long, often reddish; stamens less than or equal to length of pistil; stigmas club- or head-shaped. Fruits capsules, 1.5-10 cm long, hairy; stalks 0-30 mm long; seeds 0.8-1.9 mm long, longitudinally grooved, tuft of hairs white, 2-8 mm long, readily detaching. Note: Three subspecies occur in BC 1. Stem leaves relatively narrow and not crowded around inflorescences; plants usually branched above; petals white to pale pink or purple ssp. *ciliatum*1. Stem leaves broad and often crowded around inflorescences; plants usually unbranched above; petals dark purple. 2. Underground scales or buds present; inflorescences loose, extended ssp. *glandulosum* (Lehm.) Hoch & Raven2. Underground scales or buds absent; inflorescences more or less flat-topped ssp. *watsonii* (Barbey) Hoch & Raven

Flower Colour

Rose purple to white

Flowering period

E Flora

<http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Epilobium+ciliatum+ssp.+watsonii>

Western St. John's-wort



Scientific Name *Hypericum scouleri ssp. nortoniae*

English Name Western St. John's-wort

Plant type Herbaceous vascular plant

Plant family Clusiaceae

BC List Blue

IDF and ICH zone ICHwk

Habitat Type Estuaries and wetland edges

Habitat Description Moist to wet streamsides, estuaries, marshes and open slopes in all zones except alpine and steppe zones.

Plant Description Perennial herb from a long stolon and rhizome. Stems erect, branched above, glabrous 5-80 cm tall. Stem leaves oblong to rounded, unstalked, obtuse, 1-3 cm long, 0.5-1.5 cm wide, glabrous with black marginal dots.

Inflorescence up to 50+ flowered; petals pale to bright yellow, 7-12 mm long; sepals narrowly egg-shaped to triangular, obtuse, 3-4 mm long; stamens 75-100, united basally into 3 groups; styles 3, 3-5 mm long.

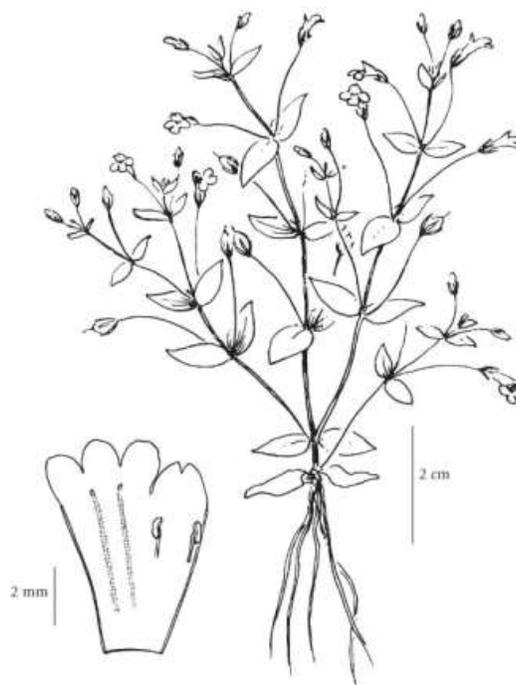
Two subspecies occur in Bcd:

Flower Colour 1. Stems few branched in the inflorescence, mostly 5-20 cm tall; leaves rounded; plants infrequent at higher elevations in S BC, most common in SE BC..... ssp. nortoniae (M.E. Jones) J. Gillett

1. Stems branched below the inflorescence, mostly 20-80 cm tall; leaves narrowly egg-shaped; infrequent at lower elevations in S BC, most common in SW BC.....ssp. scouleri

E Flora <http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Hypericum%20scouleri%20ssp.%20nortoniae&redblue=Both&lifeform=7>

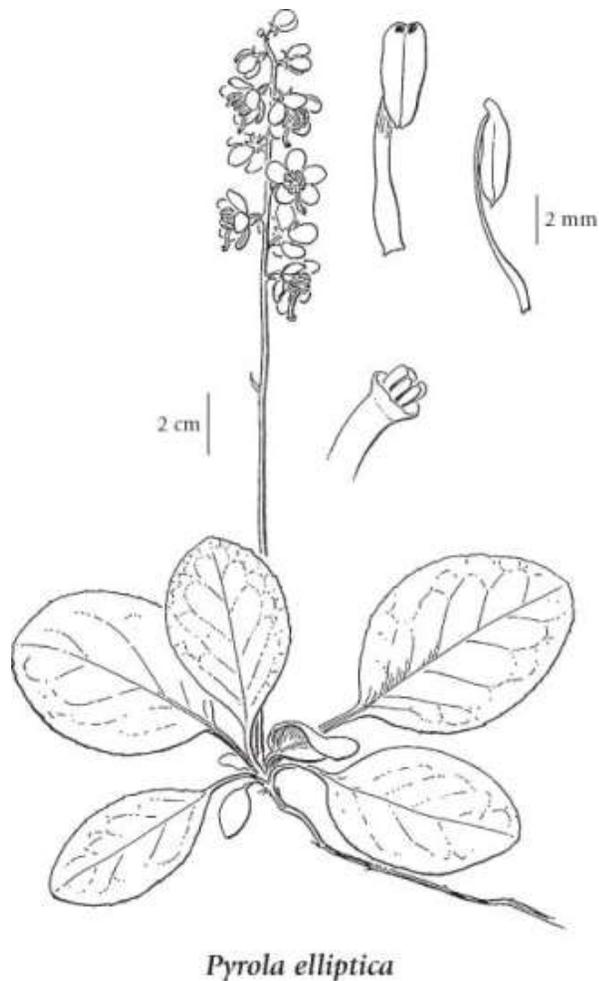
False pimpernel



Lindernia dubia var. *anagallidea*

Scientific Name	<i>Lindernia dubia</i> var. <i>anagallidea</i>
English Name	false-pimpernel
Plant type	Herbaceous vascular plant
Plant family	Figwort
BC List	Blue
IDF and ICH zone	IDFxh
Habitat Type	Wet banks or shores
Habitat Description	Wet, sandy or muddy banks and shores in the lowland and steppe zones
Plant Description	Low annual herb from fibrous roots; stems ascending to erect, 5-20 cm tall, slender, branched, smooth. Leaves opposite, unstalked, egg-shaped to elliptic, 0.5-2 cm long, entire to obscurely few-toothed, 3- to 5-veined, smooth. Inflorescence of single stalked flowers in the leaf axils, the thread-like stalks longer than the leaves; corollas blue-violet to whitish, narrowly bell-shaped, 6-9 mm long, 2-lipped, the upper lip with 2 short teeth, the lower lip longer, projecting, 3-lobed, the throat with 2 yellow-hairy ridges; calyces of 5 nearly distinct, equal, linear segments, 3-4 mm long; fertile stamens 2. Fruits capsules, ellipsoid, 4-6 mm long; seeds numerous, yellowish, 0.2-0.4 mm long, smooth to finely net-veined.
Flower Colour	Blue violet to whitish
Flowering period	
E Flora	http://linnet.geog.ubc.ca/Atlas/Atlas.aspx?sciname=Lindernia+dubia+var.+anagallidea

White Wintergreen



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.