

TABLE 4.1. (Continued)

Subzone/variant names, tree species and elevation

Biogeoclimatic zone	Climate region	Map symbol	Subzone/variant	Tree species <sup>a</sup>	Elevation ranges S=South aspect N=North aspect
ESSF Engelmann Spruce - Subalpine Fir	Moist	ESSFwmp	Wet Mild Parkland Engelmann Spruce - Subalpine Fir Subzone	Bl, Se Pa, La	1950- 2600m <sup>S</sup> 1950- 2600m <sup>N</sup>
	Moist, Wet	ESSFwcl	Columbia Wet Cold Engelmann Spruce - Subalpine Fir Variant	Se, Bl Hw, Cw, Pl, (Fd, Pw, Lw, Pa)	1450- 1650m <sup>S</sup> 1400- 1600m <sup>N</sup>
	Moist, Wet	ESSFwc2 <sup>d</sup>	Northern Monashee Wet Cold Engelmann Spruce - Subalpine Fir Variant	Se, Bl Pl, (Fd) <sup>f</sup>	1450- 1800m <sup>S</sup> 1400- 1800m <sup>N</sup>
	Moist, Wet	ESSFwc4	Selkirk Wet Cold Engelmann Spruce - Subalpine Fir Variant	Se, Bl Pl, Pa	1650- 1950m <sup>S</sup> 1600- 1950m <sup>N</sup>
	Moist, Wet	ESSFwcp	Wet Cold Parkland Engelmann Spruce - Subalpine Fir Subzone	Se, Bl La, Pa	1950- 2440m <sup>S</sup> 1950- 2400m <sup>N</sup>
	Wet	ESSFvc	Very Wet Cold Engelmann Spruce - Subalpine Fir Subzone	Se, Bl, Hm (Cw <sup>f</sup> , Hw <sup>f</sup> )	1350- 1800m <sup>S</sup> 1250- 1800m <sup>N</sup>
	Wet	ESSFvcp	Very wet Cold Parkland Engelmann Spruce - Subalpine Fir Subzone	Se, Bl, Hm Pa	1800- 2300m <sup>S</sup> 1800- 2300m <sup>N</sup>

TABLE 4.1. (Concluded)

Biogeoclimatic zone	Climate region	Map symbol	Subzone/variant	Tree species <sup>a</sup>	Elevation ranges S=South aspect N=North aspect
AT Alpine Tundra	Dry, Moist, Wet	AT			Min. Elev. 2600 m in Dry Region; 2400 m in Moist Region; 2300 m in Wet Region

- <sup>a</sup> Species in bold type are zonal climax, other species are seral or non-zonal species.
- <sup>b</sup> ( ) Bracketted species are rare species.
- <sup>c</sup> [-] Square brackets and minus sign denote diagnostic absence of species.
- <sup>d</sup> Please refer to Kamloops Forest Region Fieldguide (Lloyd *et al.*, 1990) for site identification and management interpretations for the IDFxh1, ICHmw3, and ESSFwc2. These variants are of limited extent in the Nelson Region.
- <sup>e</sup> The southern portion of this variant is found above the ICHdw, i.e., at elevations of 1200-1550 m.
- <sup>f</sup> These species occur in the lower elevations of the subzone/variant.

# ESSFwc4

## Variant Summary

### Selkirk Wet Cold Engelmann Spruce - Subalpine Fir Variant

**Location:** Upper slopes in the Monashee and Selkirk mountains south of Revelstoke.

**Elevation range:** 1650 to 1950 m (south aspect); 1600 to 1950 m (north aspect).

**Climate:** Moist Climatic Region; no climate data. The ESSFwc4 is likely colder and wetter, with more snow than the ICH and the ESSFwc1; drier, with less snow than the ESSFvc1; and wetter, with more snow than the ESSFdc1.

**Soils, geology, and landforms:** Common rock types in the Selkirk Mountain areas of the ESSFwc4 include granodiorite, quartz diorite, shale, argillite, quartzite, and slate. In the Monashee Mountain area of this variant, bedrock types consist of gneiss, schist, granite, granodiorite, quartz diorite, basalt, and andesite. Morainal soils with loamy to silty surface textures occur on lower to upper slopes. Colluvial soils with silty textures are found on upper, steeper slopes. These shallow to bedrock soils are more frequent in this variant than in the ESSFwc1. Fluvial soils with silty or loamy surface textures occur on lower to level slopes. Depressional sites often have organic soils. Glaciofluvial soils with variable textures are found on toe and lower slope positions. Seepage is common on mid to lower slopes.

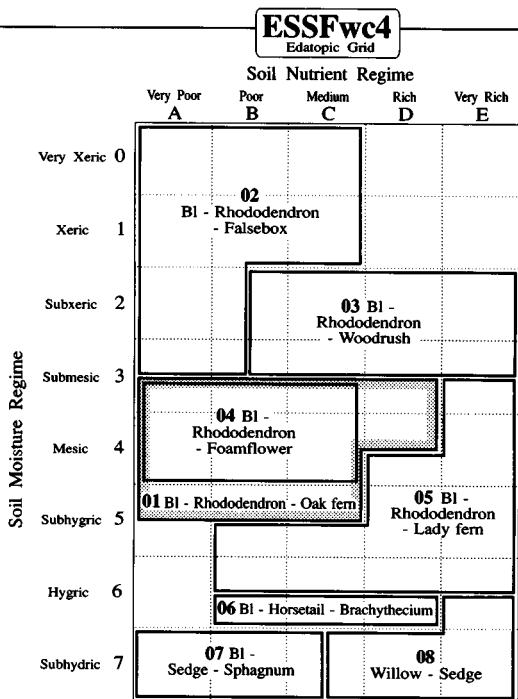
**Zonal vegetation:** Climax zonal sites have stands of Bl and Se. White-flowered rhododendron, black huckleberry, and gooseberry are common shrubs. Herbs include oak fern, one-leaved foamflower, Sitka valerian, and five-leaved bramble.

#### Distinguishing the ESSFwc4 from adjacent subzones/variants

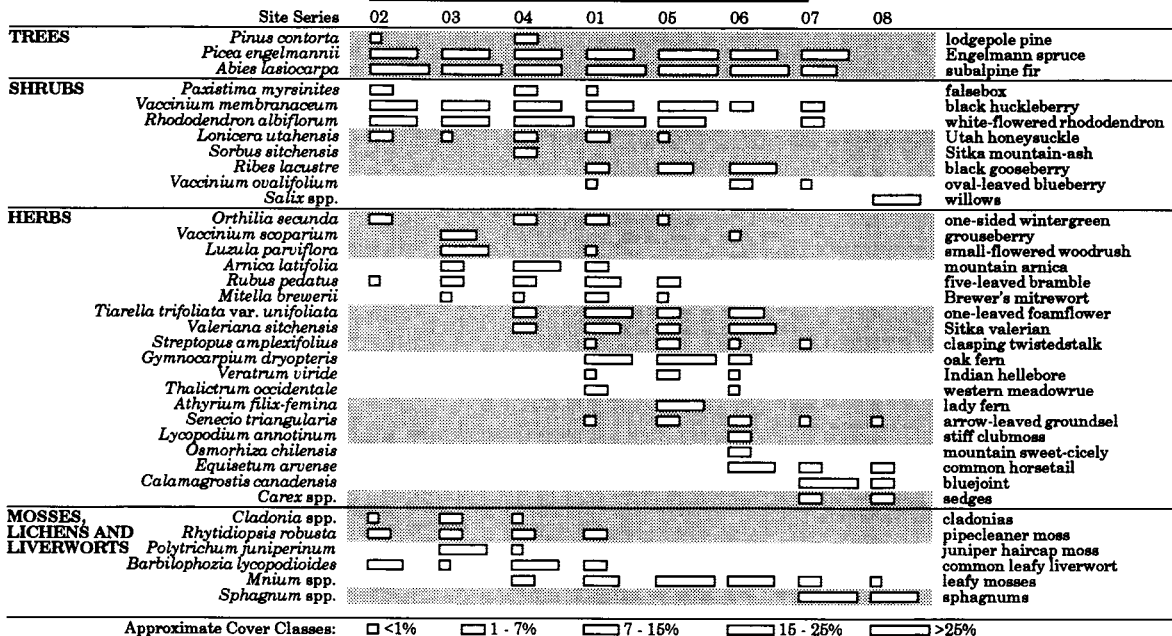
In the ESSFwc1 most sites have:	<ul style="list-style-type: none"> <li>- more Hw, Cw, thimbleberry, false Solomon's-seal, bunchberry, and sweet-scented bedstraw</li> <li>- less white-flowered rhododendron, small-flowered woodrush, and mountain hairgrass</li> </ul>
wet sites have:	<ul style="list-style-type: none"> <li>- devil's club and cow-parsnip</li> </ul>
In the ESSFvc most sites have:	<ul style="list-style-type: none"> <li>- Hm</li> <li>- more false Solomon's-seal and rosy twistedstalk</li> </ul>
dry sites have:	<ul style="list-style-type: none"> <li>- partridgefoot</li> <li>- no Pl or grouseberry</li> </ul>
In the ESSFwm most sites have:	<ul style="list-style-type: none"> <li>- Lw and Pw</li> <li>- no small-flowered woodrush or juniper haircap moss</li> <li>- more false azalea</li> <li>- less mountain hairgrass, Sitka valerian, and Indian hellebore</li> </ul>
wet sites have:	<ul style="list-style-type: none"> <li>- bluejoint</li> <li>- less five-stamened mitrewort, arrow-leaved groundsel, and globeflower</li> </ul>
In the ESSFdc1 most sites have:	<ul style="list-style-type: none"> <li>- trapper's tea</li> <li>- no spiny wood fern, lady fern, small twistedstalk, or oval-leaved blueberry</li> <li>- more Pl, grouseberry, and arctic lupine</li> <li>- less black gooseberry and small-flowered woodrush</li> </ul>
dry sites have:	<ul style="list-style-type: none"> <li>- more common juniper and pinegrass</li> </ul>

**Forest characteristics:** Relatively long fire return periods have led to few stands with seral species. Stand replacement often occurs through insects, disease, and windthrow. The transition to the parkland, starting at about 1900 m, is critical since regeneration becomes very difficult and tree growth is very slow. The presence of mountain-heathers and tree islands indicate the parkland. In the extreme southern Selkirks, south of Nelson, bear-grass may dominate the understory vegetation. This is indicative of a drier, warmer climate. However, due to the lack of sufficient sampling in this area, a separate unit has not been identified.

**Wildlife habitat:** Extensive old-growth forests support a range of dependent wildlife species. Maintenance of enough old growth to preserve these species is important. Maintenance of insect-feeding birds through preservation of snags and large woody debris will reduce the incidence of insect pest outbreaks.



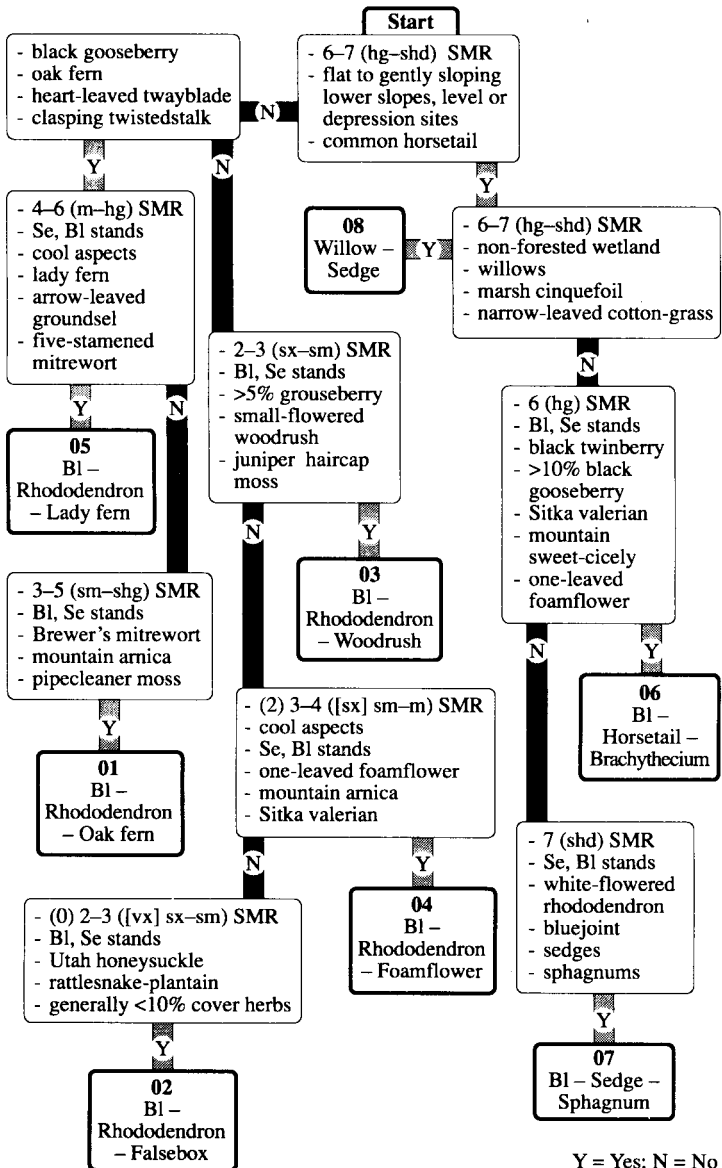
# ESSF<sup>wc4</sup> Vegetation Table



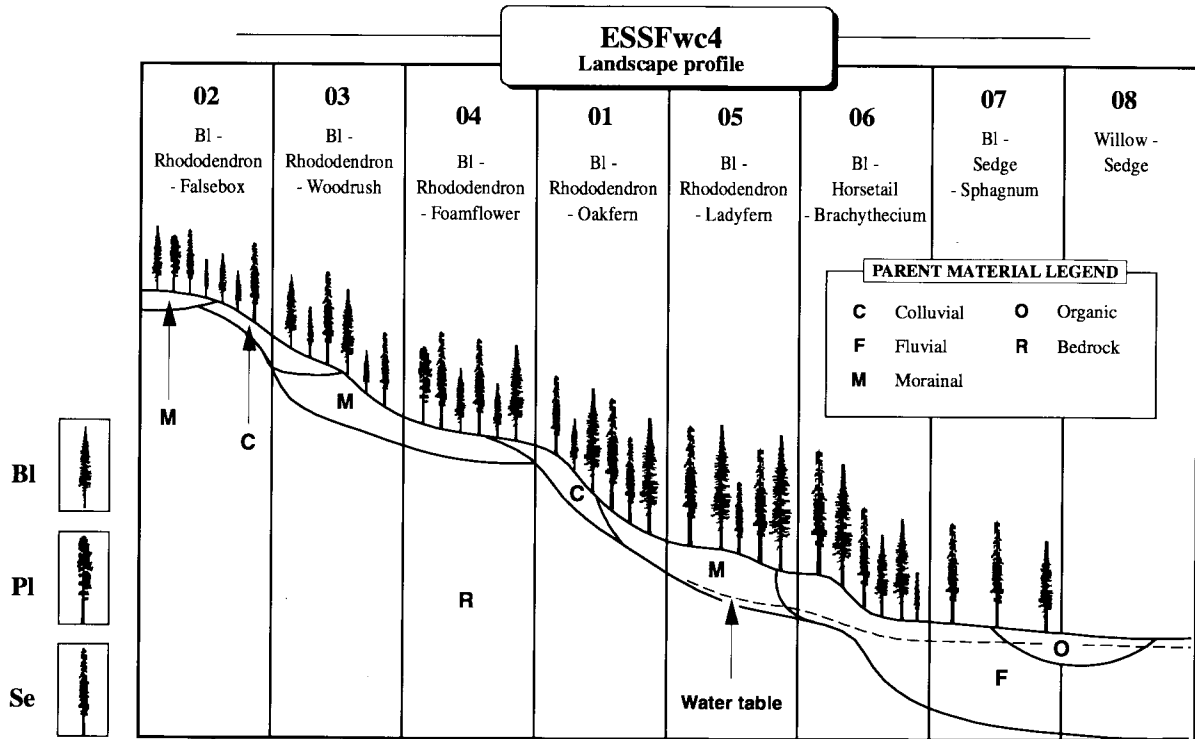
Approximate Cover Classes:    □ <1%    ▬ 1 - 7%    ▬ 7 - 15%    ▬ 15 - 25%    ▬ >25%

# ESSFwc4

## Site Series Flowchart



Y = Yes; N = No



**ESSI wc4 Environmental Table**

Site series		02	03	04	01	05	06	07	08
Number of plots		10	4	5	28	5	1	2	4
Soil moisture regime <sup>a</sup> (SMR)		(0) <sup>b</sup> 2-3 (vx)sx-sm	2-3 sx-sm	(2)3-4 (sx)sm-m	(2)3-5 (sx)sm-shg	4-6 m-hg	6 hg	7 shd	6-7 hg-shd
Aspect		variable	variable	cool	variable	cool	variable	n.a.	n.a.
Slope gradient %		variable	0-40	25-70	variable	10-25	0-20	0	0
Slope position		upper-mid (crest)	mid-upper	mid (lower)	variable	variable	lower-level	lower-level	level, depression
Parent material		C,M	M(C)	C,M	M,C,F	M(C,F)	F	O,F	O,M,F
Soil texture coarse fragments % (min.- <b>mean</b> -max.)	0-30 cm	L,C(\$) 30-50-70	L,\$ 43-47-50	L,\$ 30-36-40	L(\$,C) 14-32-55	,\$L 30-41-53	C 15-15-15	S,\$ 0	,\$L 0-10-20
	30+ cm	L,S(\$) 45-67-90	L(S,\$) 63-67-70	L(S,C) 40-55-67	L,S(\$,C) 23-49-80	L 47-49-55	L 30-30-30	S,\$ 0	L(\$) 15-27-27
Humus form — LFH thickness cm (min.- <b>mean</b> -max.)		Mor 2-6-13	Moder, Mor 1-2-3	Mor 1-3-6	Mor (Moder) 2-7-30	Mor 2-5-10	Mor 4	saturated Mors 17-48-80	saturated Mors 4-13-26
Important site features		generally, steeply sloping; restricting layers common; very low cover of herbs	—	—	some sites with temporary seepage <100 cm	some sites with seepage <100 cm; if not on a cool aspect, then affected by cold air	—	water table near surface (<30 cm); organic veneers	poorly drained open sites; some organic veneers

<sup>a</sup> Environmental features contained in this table are defined in Section 3.4.4.

<sup>b</sup> Values in brackets less common.



**ESSFwc4**  
**Management Interpretations<sup>a</sup>**

Site series	Number of plots	Common seedling growth limiting factors <sup>a,b</sup>	Relative tree productivity		Vegetation potential - common complexes <sup>c</sup>	Road drainage control needs (see cautions <sup>a,c</sup> )	Common site sensitivities (see cautions <sup>a,c</sup> )	Other prescription considerations <sup>f</sup>
			Gross volume productivity	Growth class (site index, tree species)				
02	10	Cold air temp., Dry soils, Nutrients (on clay soils)	Low	Medium (15, Se)	Low - ericaceous shrub, fireweed	High	H compaction hazard on clayey soils; H surface erosion and forest floor displacement hazard on moderate slopes; H displacement hazard on very steep slopes.	Random machine travel on snow pack on clayey soils; Conserve limited organic matter on moderate slopes; Special road construction/maintenance on very steep slopes
03	4	Cold air temp., Cold soil, Nutrients	Med.	Good (16, Se)	Low - ericaceous shrub, fireweed	High	H forest floor displacement and surface erosion hazard on moderate and steeper slopes	Special road construction/maintenance on very steep slopes
04	5	Cold soil, Cold air temp., Vegetation, Nutrients (on slopes >30cm)	Med.	Good (18, Se)	Medium - ericaceous shrub, fireweed	High	H compaction hazard on silty soils; H surface erosion & forest floor displacement hazard; H displacement hazard on steep slopes; H mass wasting hazard on very steep slopes	Random machine travel on snowpack on clayey soils; Conserve limited organic matter; Special road construction/maintenance on very steep slopes
01	28	Cold soil, Cold air temp., Vegetation, Nutrients (where C.F.30-70% on slope >30% or C.F.<30% on slope >60%)	Med.	Good (18, Se)	Medium - ericaceous shrub, fireweed	Very high	H surface erosion & forest floor displacement hazard on moderate slopes; H mass wasting hazard on steep slopes	Conserve limited organic matter on moderate and steep slopes; Special road construction/maintenance on very steep slopes

05	5	Cold soil, Vegetation, Cold air temp., Nutrients (on coarser soils)	Med.	Good (18, Se)	Medium - ericaceous shrub, fireweed, subalpine herb	Very high	-	-
06	1	Cold soil, Cold air temp., Vegetation, Nutrients	Med.	Good (18, Se)	High - fireweed, subalpine herb, mixed shrub	Very high	H mass wasting and forest floor displacement hazard on all sites; H compaction hazard on clayey soils	Windthrow hazard; Water table may rise post-harvest; Frost prone sites; Conserve organic matter; Special road construction/maintenance; Random machine travel on snowpack on clayey soils; Riparian
07	2	Cold soil, Wet soil, Cold air temp., Vegetation	Very low	Low <sup>g</sup> (4, Se)	High - reedgrass	Very high	H surface erosion and mass wasting hazard on all sites; H compaction and displacement hazard on organics	No timber values; Random machine travel on snowpack on organics; Special road construction/maintenance; Riparian
08	4	Cold soil, Wet soil, Cold air temp.	n.a.	n.a.	Medium - bog	Very high	H compaction and displacement hazard on organics	No timber values; Riparian

<sup>a</sup> **Caution:** Based on sample data; some interpretations expected to vary with individual site conditions. Use of original interpretive tools is necessary; these interpretations are presented here to "red flag" common concerns. This table outlines key considerations that should go into management decisions. Rationale and interpretive tools are discussed in Section 3.6.

<sup>b</sup> These include air temperature, soil temperature, vegetation, soil moisture, and soil nutrients; use of SYTEPREP recommended, see Section 3.6.1. C.F. = coarse fragments.

<sup>c</sup> Complexes described in Newton and Comeau (1990).

<sup>d</sup> **Caution:** This is presented here to "red flag" common drainage needs and is not intended to substitute for site specific engineering interpretations, see Section 3.6.4.

<sup>e</sup> **Caution:** Site sensitivity keys must be used with your site data for the PHSP; see Section 3.6.5.

H = high, 30 - 45% = moderate slope, 45 - 60% = steep slope, >60% = very steep slope.

<sup>f</sup> Partial cutting or no harvesting recommended where regeneration restricted to tree islands (above approximately 1 900 m).

<sup>g</sup> Sample size less than five plots for site index determination.



TABLE 6.1 Selected wildlife species by subzone and variant<sup>a</sup>

Species	Status <sup>b</sup>	Degree of old-growth need <sup>c</sup>	PP dh1	PP dh2	MS dm	MS dk	IDF xh	IDF dm1	IDF dm2	ICH dw, xw	ICH mk	ICH mw	ICH wk	ESSF dk, dc	ESSF wm, wc, vc
<b>AMPHIBIANS</b>															
Coeur d'Alene salamander	B									y <sup>d</sup>					
Ensatina salamander	G	a					y								
Tailed frog	B	a									y				
Tiger salamander	B						Y	Y							
<b>REPTILES</b>															
Gopher snake	B		Y				Y								
Night snake	B						y								
Western rattlesnake	B		Y				Y			y					
Painted turtle	Y		Y	Y			Y	Y	Y	Y	Y	Y	y		
<b>MAMMALS</b>															
Badger	B		y	y	y	y	Y	Y	Y	y	y	y	y	y	y
Big brown bat	G	a	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bighorn sheep	Y			pw	y	Psaw	PW	Y	Y	y	s			Y	s
Black bear	Y	a	y	y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bobcat	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Caribou	B	d				w						sW	Y	PsAW	Y
Cascade mantled ground squirrel	R	a			y		y	y						y	
Cougar	Y		y	y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Coyote	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Elk	Y		Y	Y	s	Y	y	Y	Y	Y	Y	Sy	y	PSAw	SA
Fisher	B	a			Y	Y	Y		Y		y	y	y	Y	Y

TABLE 6.1. (Continued)

Species	Status <sup>b</sup>	Degree of old-growth need <sup>c</sup>	PP dh1	PP dh2	MS dm	MS dk	IDF xh	IDF dm1	IDF dm2	ICH dw, xw	ICH mk	ICH mw	ICH wk	ESSF dk, dc	ESSF wm, wc, vc
<b>MAMMALS</b>															
Gray wolf	Y		y	y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Great Basin pocket mouse	B		Y												
Grizzly bear	B	a			y	PSAw	p	p	p	Psaw	y	y	Y	SAW	SAW
Long-legged myotis	G	a	S	S			S	S	S	S	S	S	S	S	S
Lynx	Y		y	y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Marten	Y	d	y	y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Moose	Y	a			Y	Y	PsAW		Y	y	Y	Y	y	pSAw	pSAw
Mountain goat	Y	a			y	PsAW	y		w			Y		Y	Y
Mule deer	Y	a	PsAW		PSAW	Y	Y	Y	Y	Y	S	Sw	S	SA	SA
Northern flying squirrel	G	a			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Northern long-eared myotis	B	a										s	s		S
Porcupine	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red-tailed chipmunk	B					Y				Y	y	Y			
River otter	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Silver-haired bat	Y	a	S	S	S	S	S	S	S	Y	Y	Y	Y	S	S
Southern red-backed vole	G	a			Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Townsend's big-eared bat	R		S				S	S		y	y	y			
White-tailed deer	Y		Y	Y	PSA	Y	Y	Y	Y	Y	S	S	s	PSA	PSA
Wolverine	Y	a	y	y	y	y	Y	Y	Y	y	y	y	y	y	y

TABLE 6.1. (Continued)

Species	Status <sup>b</sup>	Degree of old-growth need <sup>c</sup>	PP dh1	PP dh2	MS dm	MS dk	IDF xh	IDF dm1	IDF dm2	ICH dw, xw	ICH mk	ICH mw	ICH wk	ESSF dk, dc	ESSF wm, wc, vc
<b>BIRDS</b>															
American Avocet	B		p			p		ps		p	p				
American White Pelican	R		sm				sM	sM		sm		sm			
Anna's Hummingbird	B						aw	sw		w		pw			
Arctic Tern	B						sa	a							
Bald Eagle	B	a	swM		ps	ps	swM	swM		swM	sM	swM	Psa	ps	ps
Barn Owl	Y						y	s				psw			
Barred Owl	G	a	pw				y	y		y	a	y	a		
Barrow's Goldeneye	Y	a	SwM		sm	sm	SwM	SwM		SwM	sm	y	y	sm	sm
Black-backed Woodpecker	G	a	y		y	y	y	y		y	y	y	y	y	y
Black-chinned Hummingbird	B						ps	ps		ps		ps			
Black-crowned Night Heron	B						sm			s	ps				
Blue Grouse	Y	a	y		y	y	y	y		y	y	y	y	y	y
Bobolink	B		ps			s	ps	ps		ps	ps	ps			
Boreal Owl	G	a			a	a				p		p		y	y
Brewer's Sparrow	B		ps				ps	ps		ps					
Brown Creeper	G	a	y		y	y	y	y		y	y	y	y	y	y
Bufflehead	Y	a	SwM		SwM	SwM	SwM	SwM		SwM	sm	SwM	ps	ps	ps
Burrowing Owl	R		wm				y	a							
California Gull	B		sa				Y	ps		sm	sm	PSa w	sa		
Canyon Wren	R		y				sm			y					

TABLE 6.1. (Continued)

Species	Status <sup>b</sup>	Degree of old-growth need <sup>c</sup>	PP dh1	PP dh2	MS dm	MS dk	IDF xh	IDF dm1	IDF dm2	ICH dw, xw	ICH mk	ICH mw	ICH wk	ESSF dk, dc	ESSF wm, wc, vc
<b>BIRDS</b>															
Caspian Tern	B						ps			ps					
Chestnut-backed Chickadee	G	a			y	y				Y	y	Y	Y		
Clark's Nutcracker	G	a	AW		psAW	psAW	sMW	sMW		psAW	psAW	psAW	y	y	y
Common Merganser	Y	a	SwM		sm	sm	SwM	SwM		PSaw	SwM	SwM	sm	ps	ps
Common Poorwill	R		s				sm	s		ps					
Flammulated Owl	B	a	a		ps		s	sm						s	
Forster's Tern	R						sm			PSa					
Grasshopper Sparrow	B						sm	ps							
Gray Jay	G	a	w		y	y	y	y		y	y	y	y	y	y
Great Blue Heron	B	a	Y		s	s	Y	Y		SwM	sa	SwM	sa		
Great Gray Owl	G	a	y		s		y	y			w	w			
Green-backed Heron	B							s		p					
Gyrfalcon	B						wm	wm			a				
Hairy Woodpecker	G	a	y		y	y	y	y		y	y	y	y	ps	ps
Hermit Thrush	G	a	sm		sa	sa	sm	sm		sm	sm	sm	sm	s	s
Hooded Merganser	Y	a	SwM		sm	sm	SwM	SwM		PSaw	SwM	SwM	sm	ps	ps
Hudsonian Godwit	B					s	a	p							
Least Sandpiper	B		sm		a	a	sm	sm		a	a	a	a	a	a
Le Conte's Sparrow	B							s							

TABLE 6.1. (Continued)

Species	Status <sup>b</sup>	Degree of old-growth need <sup>c</sup>	PP dh1	PP dh2	MS dm	MS dk	IDF xh	IDF dm1	IDF dm2	ICH dw, xw	ICH mk	ICH mw	ICH wk	ESSF dk, dc	ESSF wm, wc, vc
<b>BIRDS</b>															
Lesser Golden-plover	B		m				m	m		a		a			
Lewis' Woodpecker	B	a	sm				SwM	sm		sm	sm	sm	a		
Long-billed Curlew	B		ps				psa	ps		ps					
Merlin	G	a	y	sm	sm	y	y	y	y	y	y	sm	sm	sm	
Northern Goshawk	G	a	y	y	y	y	y	y	y	y	y	y	y	y	y
Northern Shrike	B		mw	mw	mw	y	y	y		mw	mw	mw	mw	a	a
Olive-sided Flycatcher	G	a		ps	ps	sm	sm	sm		ps	ps	ps		s	s
Osprey	Y	a	PSa	ps	ps	PSaw	PSa	SwM		ps	PSaw	sm			
Pacific Loon	B		swm	s		swm	swm	swm		sm	swm	sm	sm	sm	sm
Peregrine Falcon	B		sm	m	sm	y	sm	sm		sm	sm	sm	ps	ps	ps
Pileated Woodpecker	Y	a	y		y	y	y	y		y	y	y			ps
Prairie Falcon	R		m			y	sm	sw		y	s				
Pygmy Nuthatch	G	a	y			y	y								
Red-breasted Nuthatch	G	a	y	y	y	y	y	y		y	y	y	y	y	y
Red-breasted Sapsucker	G	a				s						ps			
Red Crossbill	G	a		Y	Y	Y	Y	Y		Y	Y	Y	Y	y	y
Red-throated Loon	B					aw	a								
Ring-billed Gull	B		sm			Y	sm	swM		sm	sM	s			
Short-billed Dowitcher	B		p		ps	a	m	s			s				
Spruce Grouse	Y	a	y	y	y	y	y	y		y	y	y	y	y	y
Three-toed Woodpecker	G	a	y	y	y	y	y	y		y	y	y	y	y	y
Townsend's Warbler	G	a		sm	sm	sm	sm	sm		sm	sm	sm	sm	sa	sa

TABLE 6.1. (Continued)

Species	Status <sup>b</sup>	Degree of old-growth need <sup>c</sup>	PP dh1	PP dh2	MS dm	MS dk	IDF xh	IDF dm1	IDF dm2	ICH dw, xw	ICH mk	ICH mw	ICH wk	ESSF dk, dc	ESSF wm, wc, vc
<b>BIRDS</b>															
Varied Thrush	G	a	w		sm	sm	y		y	psAW	smw	psA W	psA W	sm	sm
Vaux's Swift	B	a	PS				PSa	PSa	PSa	ps	PSa	s			
Western Bluebird	B		ms				sm			sm	sm	sm			
Western Flycatcher	G	a			sm	sm				sm	sm	sm	sm		
Western Grebe	B					m	SwM	sm	SwM	sm	sm	sm	sm		
White-breasted Nuthatch	G	a	y				y	y	y	y	y	m			
White-headed Woodpecker	B	a					y	ps							
White-throated Swift	B		ps				ps			ps					
White-winged Crossbill	G	a			sm	sm	sm	sm	sm	sm	sm	sm	sm	sa	sa
Williamson's Sapsucker	B	a	ps		sm		ps								
Wood Duck	Y	a	sm				w	ps		sm	ps	ps			
Yellow-breasted Chat	B									s					
Yellow-headed Blackbird	Y		PSaw		ps	ps	PSaw	PSaw	PSa	sm	PSa	ps			
<b>TOTAL<sup>e</sup> AMPHIBIANS</b>			4		4	5	8	7	6	7	6	6	3	3	
<b>TOTAL REPTILES</b>			6		0	0	10	3	7	6	6	4	0	0	
<b>TOTAL MAMMALS</b>			51		54	57	62	63	58	57	63	57	57	56	
<b>TOTAL BIRDS</b>			220		154	172	281	250	262	205	234	188	114	108	

See footnotes next page



TABLE 6.1. (Concluded)

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- a** The following subzones and variants are grouped to match the level of information available for the species listed. IDFxh includes data from IDFxh, xw, and xm; IDFdm includes data from IDFdm and dk; ICHmk includes data from ICHmk and dk; ESSFdk and dc includes data from ESSFdk, dc, and dv; and ESSFwm, wc, vc includes data from ESSFwm, wc, vc, vv, vw, and wk. The IDFxw, xm, and dk, ICHdk, and ESSFdv, vv, vw, and wk are not found in the Nelson Forest Region.
- b** R=red; B=blue; Y=yellow; G=green.
- c** a=attribute dependent. Species requires old-growth forest attributes such as large dead trees or coarse woody debris (stand level).  
d=forest dependent. Species requires intact old-growth forests (landscape level).
- d** Abundance is indicated by a lower or upper case letter. Common or abundant is an upper case letter. Uncommon, scarce, rare, or casual is a lower case letter. An upper case letter does not indicate abundance throughout a subzone variant, but nearly always refers to local abundance. However, if a species has a known abundance in only a small locality in a subzone or variant a lower case letter is used. Seasonality is indicated by a letter code.  
P - spring (March-May); S - summer (June -August); A - autumn (September-November); W - winter (December-February); M - migratory (Spring and Autumn);  
Y - yearlong. Some cases do not fit neatly into this scheme. For instance, a species which is known to be migratory, but has on occasion been seen in December in a particular subzone, would still be listed as M. All entries are based on the provincial wildlife data base prepared by Stevens (1992) for the Wildlife Interpretation Subgroup.
- e** Totals refer to the total number of species known to occur in each subzone.

TABLE 5.2.1 Distribution of Fen Site Associations by biogeoclimatic zone

	BG PP	BWBS SWB	ESSF	ICH	IDF	MS	SBPS SBS	CDF	CWH	MH
Wf01 Water sedge – Beaked sedge		xx	x	xx	xxx	xxx	xxx		x <sup>i</sup>	
Wf02 Scrub birch – Water sedge		xxx	x	xx	xx	xx	xx			
Wf03 Water sedge – Peat-moss			xx				x			
Wf04 Barclay's willow – Water sedge – Glow mosses		x	xxx			x	x			
Wf05 Slender sedge – Common hook-moss		x		xx	xx	xx	xx			
Wf06 Slender sedge – Buckbean		x		x	x		x			
Wf07 Scrub birch – Buckbean – Shore sedge		x		x	x		x			
Wf08 Shore sedge – Buckbean – Hook-moss		x	x		x	x	x			
Wf09 Few-flowered spike-rush – Hook-moss			x			x	x			
Wf10 Hudson Bay clubrush – Red hook-moss							x			
Wf11 Tufted clubrush – Star moss		x	x	x		x	x			
Wf12 Narrow-leaved cotton-grass – Marsh-marigold			xxx							
Wf13 Narrow-leaved cotton-grass – Shore sedge			xx			x				
Wf50 Narrow-leaved cotton-grass – Peat-moss									x	xxx
Wf51 Sitka sedge – Peat-moss				x				xx	xx	
Wf52 Sweet gale – Sitka sedge								xx	xx <sup>s</sup>	
Wf53 Slender sedge – White beak-rush								x	xx <sup>s</sup>	

x = incidental; &lt; 5% of wetlands

i = inland areas only

xx = minor; 5–25% of wetlands

s = southern subzones only

xxx = major; &gt;25% of wetlands

TABLE 5.2.2 Fen Species Importance Table

Species		WF01	WF02	WF03	WF04	WF05	WF06	WF07	WF08
Shrubs	<i>Betula nana</i>								
	<i>Salix barclayi</i>								
	<i>Salix pedicellaris</i>								
	<i>Spiraea douglasii</i>								
	<i>Myrica gale</i>								
Herbs and Dwarf Shrubs	<i>Carex utriculata</i>								
	<i>Carex aquatilis</i>								
Shrubs	<i>Comarum palustre</i>								
	<i>Calamagrostis canadensis</i>								
Herbs and Dwarf Shrubs	<i>Carex lasiocarpa</i>								
	<i>Menyanthes trifoliata</i>								
	<i>Carex limosa</i>								
	<i>Carex chordorrhiza</i>								
	<i>Eleocharis quinqueflora</i>								
	<i>Trichophorum alpinum</i>								
	<i>Trichophorum cespitosum</i>								
	<i>Eriophorum angustifolium</i>								
	<i>Caltha leptosepala</i>								
	<i>Carex anthoxanthea</i>								
	<i>Equisetum fluviatile</i>								
	<i>Carex magellanica</i>								
	<i>Carex sitchensis</i>								
	<i>Rhynchospora alba</i>								
	<i>Carex livida</i>								
	<i>Eriophorum chamissonis</i>								
	<i>Vahlodea atropurpurea</i>								
	<i>Drosera anglica</i>								
	<i>Hypericum anagalloides</i>								
	<i>Triantha glutinosa</i>								
Schoenoplectus tabernaemontani	<i>Fauria crista-galli</i>								
	<i>Senecio triangularis</i>								
	<i>Andromeda polifolia</i>								
	<i>Kalmia microphylla</i>								
	<i>Oxycoccus oxycoccus</i>								
	<i>Triglochin maritima</i>								
	<i>Drosera rotundifolia</i>								
	<i>Leptarrhena pyrolifolia</i>								
	<i>Platanthera dilatata</i>								
	<i>Sanguisorba canadensis</i>								
Lichens and Mosses	<i>Utricularia intermedia</i>								
	<i>Viola palustris</i>								
	<i>Sphagnum</i> Group I								
	<i>Aulacomnium palustre</i>								
	<i>Drepanocladus</i> spp.								
	<i>Sphagnum</i> Group II								
	<i>Tomentypnum nitens</i>								
	<i>Philonotis fontana</i>								
	<i>Calliergon stramineum</i>								
	<i>Scorpidium</i> spp.								
Mosses	<i>Campylopus stellatum</i>								
	<i>Warnstorfia</i> spp.								
	<i>Meesia triquetra</i>								

Wf09	Wf10	Wf11	Wf12	Wf13	Wf50	Wf51	Wf52	Wf53	Common Name
									scrub birch
									Barclay's willow
									bog willow
									pink spirea
									sweet gale
									beaked sedge
									water sedge
									marsh cinquefoil
									bluejoint reedgrass
									slender sedge
									buckbean
									shore sedge
									cordroot sedge
									few-flowered spike-rush
									Hudson Bay clubrush
									tufted clubrush
									narrow-leaved cotton-grass
									white mtn. marsh-marigold
									yellow-flowered sedge
									swamp horsetail
									poor sedge
									Sitka sedge
									white beak-rush
									pale sedge
									Chamisso's cotton-grass
									mountain hairgrass
									great sundew
									bog St. John's-wort
									sticky asphodel
									great bulrush
									deer-cabbage
									arrow-leaved groundsel
									bog-rosemary
									western bog-laurel
									bog cranberry
									seaside arrow-grass
									round-leaved sundew
									leatherleaf saxifrage
									fragrant white rein orchid
									Sitka burnet
									flat-leaved bladderwort
									marsh violet
									peat-moss Group I
									glow moss
									hook-mosses
									peat-moss Group II
									golden fuzzy fen moss
									spring moss
									straw spear-moss
									sausage-moss
									yellow star-moss
									hook-mosses
									three-ranked hump-moss

*Eriophorum angustifolium* – *Caltha leptosepala*



**General Description**

The Narrow-leaved cotton-grass – Marsh-marigold Site Association is common at subalpine elevations (above 1200 m) throughout the Sub-Boreal and Central Interior. It occurs on gently sloping peatlands where there is continual seepage from snowmelt and groundwater.

*Eriophorum angustifolium* occurs on most sites with high cover. Sites with abundant surface seepage will also have a high cover of *Caltha leptosepala* and/or *Leptarrhena pyrolifolia*. Other graminoids such as *C. anthoxantha*, *C. aquatilis*, or *C. nigricans* may also occur with high cover on some sites. The moss layer is usually well developed but compositionally variable.



Soils are usually deep, mushy sedge peat. Typic Mesisols and Fibrisols are the most common soil types.

**Characteristic Vegetation**

- Tree layer** (0 - 0 - 0)
- Shrub layer** (0 - 1 - 10)
- Herb layer** (12 - 80 - 100)
- Caltha leptosepala*, *Eriophorum angustifolium*
- Moss layer** (0 - 75 - 95)
- Aulacomnium palustre*

**Comments**

The Wf12 occurs on sites with more active seepage than the related Wf13 Site Association. It also has similar site characteristics to the Wf08, but that unit is fed by groundwater with high levels of base cations and has dense peat deposits.

The Wf12 occurs alone or in complex with the Wf03, on microsites with more active seepage.

Some Wf12 sites in the upper Skeena drainage have high cover of *Carex anthoxantha*, which is a common species of bog forests on the north Coast. The Interior distribution of this species is greatly restricted and could be limited to these high-elevation wetland ecosystems.

**Wetland Edatopic Grid**

