

TABLE 4.1. Subzone/variant names, tree species and elevation

Biogeoclimatic zone	Climate region	Map symbol	Subzone/variant	Tree species ^a	Elevation ranges S=South aspect N=North aspect
PP Ponderosa Pine	Dry	PPdh1	Kettle Dry Hot Ponderosa Pine Variant	Py, Fd At, Ac, Sxw, (Lw ^b), [-Pl ^c]	500-950m ^S
	Dry	PPdh2	Kootenay Dry Hot Ponderosa Pine Variant	Py, Fd Sxw, At, Ac, (Lw, Pl)	700-950m ^S
IDF Interior Douglas-fir	Dry	IDFhx1 ^d	Okanagan Very Dry Hot Interior Douglas-fir Variant	Fd, Py At, Ep, (Lw), [-Pl]	500-1200m ^S 500-1050m ^N
	Dry	IDFun	Undifferentiated Interior Douglas-fir Subzone	Fd	
	Dry	IDFdm1	Kettle Dry Mild Interior Douglas-fir Variant	Fd Lw, Pl, Py, Sxw, At, Ac, Ep, (Cw)	500-1370m ^S 500-1280m ^N
	Dry	IDFdm2	Kootenay Dry Mild Interior Douglas-fir Variant	Fd Py, Lw, Pl, Sxw, At, Ac, (Ep)	800-1200m ^S 800-1100m ^N
ICH Interior Cedar - Hemlock	Moist	ICHxw	Very Dry Warm Interior Cedar - Hemlock Subzone	Cw, Bg Lw, Fd, Pl, Py, Sxw, At, Ac, Ep, Hw, Pw	450-1100m ^S
	Moist	ICHdw	Dry Warm Interior Cedar - Hemlock Subzone	Hw, Cw, Ac, (Bl) Lw, Fd, Pl, Py, Sxw, Pw, Bg, Ep, At	450-1200m ^S 450-1000m ^N
	Moist	ICHmw1	Golden Moist Warm Interior Cedar - Hemlock Variant	Hw, Cw Fd, Pl, Sxw, Pw, Ep, Ac, (Bl), [-Lw]	750-1550m ^S 750-1500m ^N
	Moist	ICHmw2 ^e	Columbia-Shuswap Moist Warm Interior Cedar - Hemlock Variant	Hw, Cw Fd, Pl, Pw, Sxw, At, Lw, Ac, Ep, Bl [-Bg, -Py]	500-1450m ^S 500-1400m ^N

TABLE 4.1. (Concluded)

Biogeoclimatic zone	Climate region	Map symbol	Subzone/variant	Tree species ^a	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

^a Species in bold type are zonal climax, other species are seral or non-zonal species.

^b () Bracketted species are rare species.

^c [-] Square brackets and minus sign denote diagnostic absence of species.

^d 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.

^e The southern portion of this variant is found above the ICHdw, i.e., at elevations of 1200-1550 m.

^f These species occur in the lower elevations of the subzone/variant.

Kootenay Dry Hot Ponderosa Pine Variant

Location: Rocky Mountain Trench between Skookumchuck Creek and the St. Mary River and between Baynes Lake and Tobacco Plains.

Elevation range: 700 to 950 m.

Climate¹⁹: Dry Climatic Region; very hot, dry summers; mild winters with very light snowfall. Soils generally dry out for long to short time periods during late summer. Snow accumulations are insignificant and of very short duration. As a result, soils may freeze to a shallow depth on some sites. Lack of soil moisture is a major limitation to tree growth. Frost may be a problem on level or depressional sites.

Soils, geology, and landforms: The soils of the PPdh2 are derived from deep sediments of glacial and recent origin. Exposed and near-surface bedrock are uncommon. Morainal soils with loamy or silty surface textures occur on a variety of slope gradients and positions. Glaciofluvial soils with sandy surface textures often occur in proximity to morainal soils. Fluvial and glaciolacustrine soils with gentle to level slopes occur on the lowest slope positions. Surface horizons for fluvial soils are loamy textured while lacustrine soils are silty textured. Eolian veneers (loess cappings) of silty texture, often occur in this variant. At depth, fluvial, glaciofluvial and morainal soils are often sandy in texture. Calcareous subsoil horizons are common.

Zonal vegetation: Zonal sites have open stands of Fd and Py with an understory of predominantly bluebunch wheatgrass. Other common species are saskatoon, prairie rose, and rosy pussytoes.

Distinguishing the PPdh2 from adjacent subzone/variants

In the IDFdm2, most sites have:	- Pl, Douglas maple, common juniper, tall Oregon-grape, and thimbleberry; - more heart-leaved arnica and asters; - less bluebunch wheatgrass;
zonal sites also have:	- more pinegrass;
dry sites have:	- no shaggy fleabane, prairie crocus, or rosy pussytoes;
wet sites have:	- trailing raspberry, wild sarsaparilla, and sweet-scented bedstraw; - more common horsetail.

Forest characteristics: This variant is dominated by drier sites and has had an extensive fire history. It has a legacy of intensive domestic grazing and selective logging. Coupled with a more recent trend toward fire management and controlled grazing, the area has become a complex mosaic of vegetation communities in response to the fluctuating disturbance and use.

Range characteristics: Forage is heavily used by elk in late winter and early spring. Forest ingrowth is a problem because of fire suppression. Noxious weeds are invading.

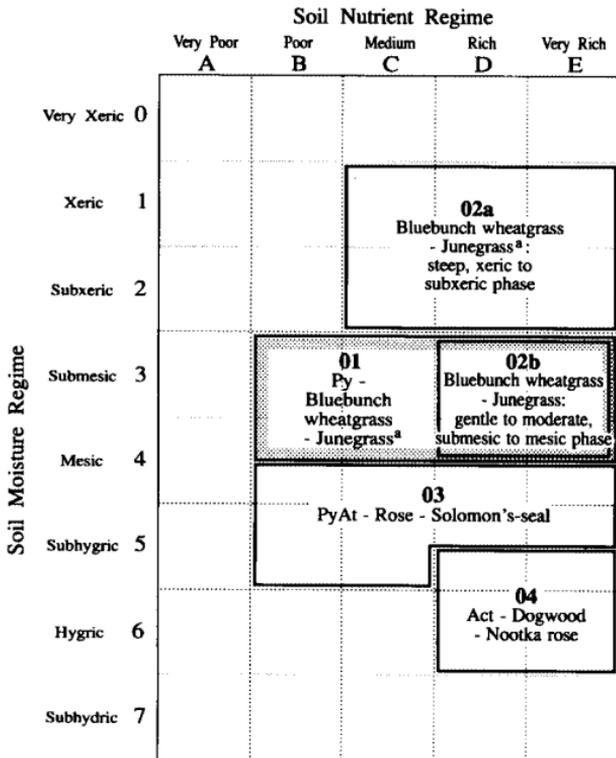
The classification of grasslands for this variant is based on good range condition data. The most notable feature for deteriorating range condition is the reduction in cover of bluebunch wheatgrass.

Wildlife habitat: Dry sites support Sharp-tailed Grouse and badgers, two rare species in the Nelson Forest Region. Preserving the grassland/forest mix for these and other species is important, as is management of winter range for elk, mule deer, and white-tailed deer. Mature and old-growth riparian forests provide essential habitats for Bald Eagle, Osprey, Great Blue Heron, and cavity-nesting ducks.

¹⁹ Values for climate descriptors given in Appendix 12.

PPdh2

Edatopic Grid



Shading used where considerable site series overlap occurs.

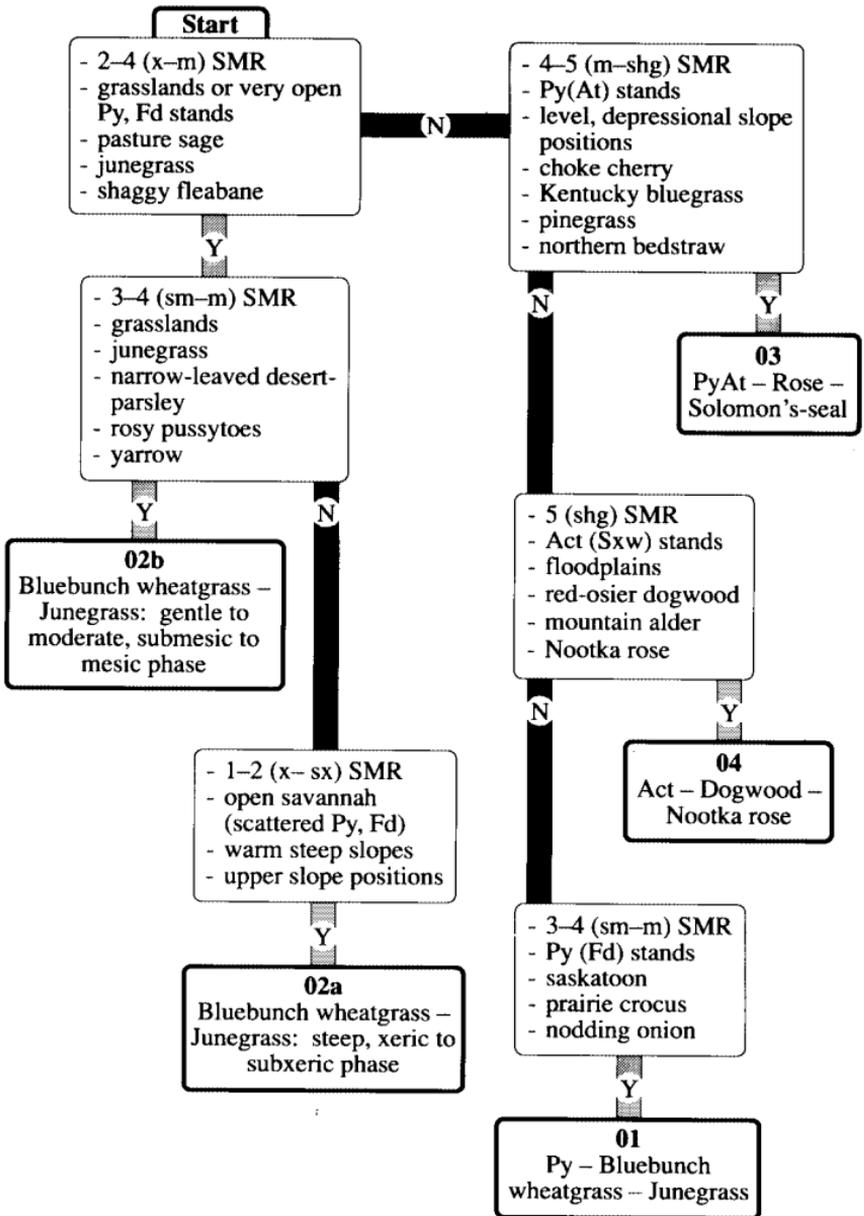
^a Junegrass uncommon in 02a and 01

PPdh2 Vegetation Table

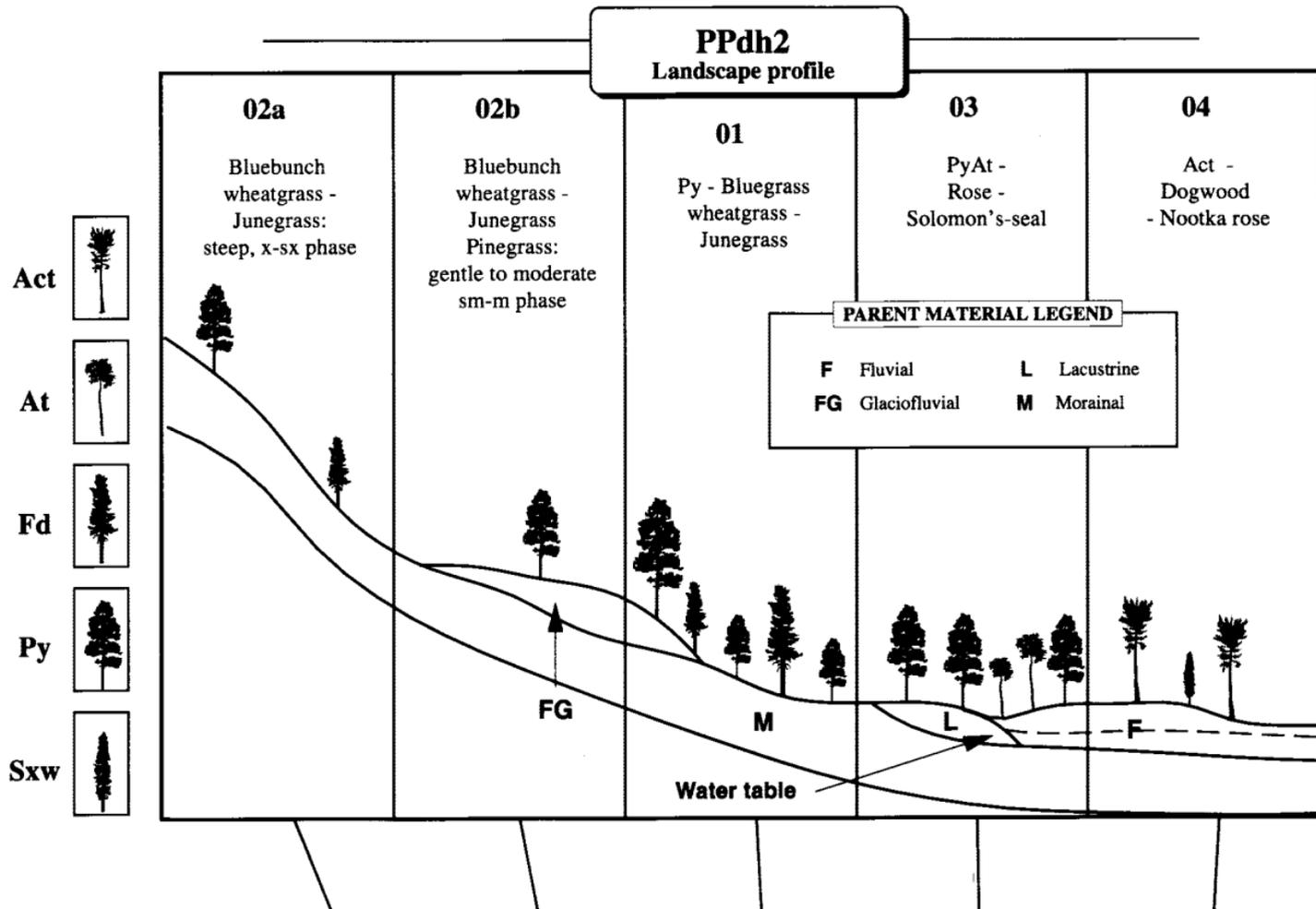
Site Series/Phases		02a	02b	01	03	04	
TREES	<i>Pseudotsuga menziesii</i>	□	□	▬	▬		Douglas-fir
	<i>Pinus ponderosa</i>	□	□	▬	▬		ponderosa pine
	<i>Populus tremuloides</i>				▬	▬	trembling aspen
	<i>Populus balsamifera</i>					▬	black cottonwood
	<i>Picea glauca x engelmannii</i>					▬	hybrid white spruce
SHRUBS	<i>Artemisia frigida</i>	□	□				pasture sage
	<i>Rosa woodsii</i>		▬	▬	▬		prairie rose
	<i>Amelanchier alnifolia</i>			▬	▬	□	saskatoon
	<i>Prunus virginiana</i>				▬		choke cherry
	<i>Symphoricarpos occidentalis</i>				▬	□	western snowberry
	<i>Rosa acicularis</i>				▬	▬	prickly rose
	<i>Cornus stolonifera</i>					▬	red-osier dogwood
	<i>Alnus incana</i> ssp. <i>tenuifolia</i>					▬	mountain alder
	<i>Rosa nutkana</i>					▬	Nootka rose
HERBS	<i>Koeleria macrantha</i>	□	▬				junegrass
	<i>Agropyron spicatum</i>	▬	▬	▬		□	bluebunch wheatgrass
	<i>Achillea millefolium</i>		□	□			yarrow
	<i>Antennaria microphylla</i>		□	▬			rosy pussytoes
	<i>Anemone patens</i>			▬			prairie crocus
	<i>Poa pratensis</i>		□		▬		Kentucky bluegrass
	<i>Calamagrostis rubescens</i>				▬		pinegrass
	<i>Galium boreale</i>				▬		northern bedstraw
	<i>Taraxacum officinale</i>				▬	□	common dandelion
	<i>Smilacina stellata</i>				▬		star-flowered false Solomon's-seal
	<i>Equisetum hyemale</i>					▬	scouring-rush
Approximate Cover Classes:		□ <1%	▬ 1 - 7%	▬ 7 - 15%	▬ 15 - 25%	▬ >25%	

PPdh2

Site Series Flowchart



Y = Yes; N = No



PPdh2 Environmental Table

Site series/phases		02a	02b	01	03	04
Number of plots		5	12	11	3	1
Soil moisture regime ^a (SMR)		(1) ^b 2 (x)sx	3(4) sm(m)	3(4) sm(m)	4-5 m-shg	shg
Aspect		warm	mostly warm	variable	n.a.	n.a.
Slope gradient %		45-60	0-45	0-50	0	0
Slope position		upper	variable	variable	level-depression	level
Parent material		M	M(FG)	M(L,FG)	L,F	F
Soil texture coarse fragments % (min.- mean -max.)	0-30 cm	L 30- 35 -43	\$,L(S) 0- 19 -32	\$,L(S) 0- 13 -25	\$(L) 0- 1 -3	L 0- 0 -0
	30+ cm	L,S 50- 64 -70	S,C,L(\$) 0- 39 -60	S,L(\$,C) 0- 38 -67	S(\$) 0- 3 -8	\$ 45- 45 -45
Humus form — LFH thickness cm (min.- mean -max.)		Mull 0- 1 -1	Mull, Mor 0- 0.5 -2	Mull, Moder 1- 4 -8	Moder 5- 8 -11	Moder 5
Important site features		restricting layer common 50-100 cm; some eolian veneers	eolian veneers common	eolian veneers common	—	recent floodplains

^a Environmental features contained in this table are defined in Section 3.4.4.

^b Values in brackets less common.

PPdh2
Management Interpretations^a

Site series	Number of plots	Common seedling growth limiting factors ^{a,b}	Relative tree productivity		Vegetation potential - common complexes ^c	Road drainage control needs (see cautions ^{a,e})	Common site sensitivities (see cautions ^{a,e})	Other prescription considerations
			Gross volume productivity	Growth class (site index, tree species)				
02a	5	Dry soil	n.a.	Low ^f (9, Fd)	Low - grass	Low	H displacement hazard on all sites	No timber values
02b	12	Dry soil	Nonforested to Very low	Poor (14, Fd)	Medium - grass	Low	H displacement hazard on silty soils	No timber values
01	11	Dry soil, Cold air temp.	Very low	Poor (14, Fd)	Medium - grass	Low	H compaction hazard on silty soils	Partial cutting recommended; Random machine travel when soil dry
03	3	Cold air temp., Dry soil	Low	No data	Medium - dry shrub, pinegrass	Moderate	H compaction hazard on silty soils	Frost prone sites; Seedbanking species prolific after fire; Random machine travel when soil dry; Riparian

04	1	Cold air temp.	Low	No data	Medium - wet alder	Moderate	-----	Frost prone sites; Riparian
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^a **Caution:** Based on sample plot 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.

^b These include air temperature, soil temperature, vegetation, soil moisture, and soil nutrients; use of SYTEPREP recommended, see Section 3.6.1.

^c Complexes described in Newton and Comeau (1990).

^d **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.

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

H = high.

^f Sample size less than five plots for site index determination.

TABLE 6.1 Selected wildlife species by subzone and variant^a

Species	Status ^b	Degree of old-growth need ^c	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
AMPHIBIANS															
Coeur d'Alene salamander	B									y ^d					
Ensatina salamander	G	a					y								
Tailed frog	B	a									y				
Tiger salamander	B						Y	Y							
REPTILES															
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		
MAMMALS															
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 ^b	Degree of old-growth need ^c	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
MAMMALS															
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 ^b	Degree of old-growth need ^c	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
BIRDS															
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 ^b	Degree of old-growth need ^c	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
BIRDS															
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 ^b	Degree of old-growth need ^c	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
BIRDS															
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	ps	s	s
Osprey	Y	a	PSa	ps	ps	PSaw	PSa	SwM		ps	PSaw	sm			
Pacific Loon	B		swm	s		swm	swm	swm		swm	swm	swm	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 ^b	Degree of old-growth need ^c	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
BIRDS															
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			
TOTAL^e AMPHIBIANS			4	4	5	8	7	6	7	6	6	3	3		
TOTAL REPTILES			6	0	0	10	3	7	6	6	4	0	0		
TOTAL MAMMALS			51	54	57	62	63	58	57	63	57	57	56		
TOTAL BIRDS			220	154	172	281	250	262	205	234	188	114	108		

See footnotes next page

TABLE 6.1. (Concluded)

- 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.