

SUBZONES

Fifteen forested subzones are currently recognized in the ESSF (Table 31 and Figure 56). This large number is due to the very broad latitudinal and elevational range of the zone and to the variability in climate, especially precipitation. The 15 subzones can be grouped into three broad climatic types: dry, moist, and wet.

The four dry climate subzones (ESSFxc, ESSFdc, ESSFdk, ESSFdv) occur in the southern third of the province in the rainshadow of the Coast and Columbia mountains. They occur primarily above the Montane Spruce zone and are characterized by abundant *Vaccinium scoparium* (grouseberry) and sparse herb cover in the undergrowth.

TABLE 31. Synopsis of subzones in the Engelmann Spruce — Subalpine Fir zone (ESSF)^a

Subzone	Code	Old code
Very Dry Cold ESSF	ESSFxc	(ESSFd)
Dry Cool ESSF	ESSFdk	(ESSFa)
Dry Cold ESSF	ESSFdc	(ESSFel/e2)
Dry Very Cold ESSF	ESSFdv	(ESSFe3)
Moist Warm ESSF	ESSFmw	(ESSFf)
Moist Mild ESSF	ESSFmm	(ESSFo)
Moist Cool ESSF	ESSFmk	(ESSFi)
Moist Cold ESSF	ESSFmc	(ESSFk)
Moist Very Cold ESSF	ESSFmv	(ESSFv/n)
Wet Mild ESSF	ESSFwm	(ESSFc)
Wet Cool ESSF	ESSFwk	(ESSFh1/h3)
Wet Cold ESSF	ESSFwc	(ESSFc/m/b/h2/h3)
Wet Very Cold ESSF	ESSFvw	(ESSFi)
Very Wet Cold ESSF	ESSFvc	(ESSFb/w)
Very Wet Very Cold ESSF	ESSFvv	(ESSFu)

^a Parkland subzones occur above each of the forested subzones. They are designated by the letter 'p' appended to the code (e.g., ESSFxcp is the Very Dry Cold Parkland ESSF subzone).

The moist climate group includes three Interior subzones (ESSFmv, ESSFmc, ESSFmm) and two subcontinental subzones (ESSFmk and ESSFmw). They are characterized by an ericaceous shrub layer, a sparse cover of herbs, and a relatively dense moss layer. The Interior subzones are distinguished by the presence of *Ptilium crista-castrensis* (knight's plume), *Cornus canadensis* (bunchberry), and *Arnica cordifolia* (heart-leaved arnica). The subcontinental subzones occur immediately leeward of the Coast Mountains from the Bulkley Ranges south to the U.S. border. They are distinguished by a poorly developed herb layer and the frequent occurrence of mountain hemlock and amabilis fir.

The six subzones in the wet climate group have a moderately dense ericaceous shrub layer and a very productive, luxuriant herbaceous layer on zonal sites. Characteristic species of these subzones are *Vaccinium ovalifolium* (oval-leaved blueberry), *Gymnocarpium dryopteris* (oak fern), *Tiarella unifoliata* (one-leaved foamflower), *Streptopus roseus* (rosy twistedstalk), and *Valeriana sitchensis*. Five of

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 ⁱ	
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 ^s	
Wf53	Slender sedge – White beak-rush								x	xx ^s	

x = incidental; < 5% of wetlands

i = inland areas only

xx = minor; 5–25% of wetlands

s = southern subzones only

xxx = major; >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 pedicularis</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>								
Shrubs	<i>Carex lasiocarpa</i>								
	<i>Menyanthes trifoliata</i>								
Shrubs	<i>Carex limosa</i>								
	<i>Carex chordorrhiza</i>								
Shrubs	<i>Eleocharis quinqueflora</i>								
	<i>Trichophorum alpinum</i>								
Shrubs	<i>Trichophorum cespitosum</i>								
	<i>Eriophorum angustifolium</i>								
Shrubs	<i>Caltha leptosepala</i>								
	<i>Carex anthoxanthea</i>								
Shrubs	<i>Equisetum fluviatile</i>								
	<i>Carex magellanica</i>								
Shrubs	<i>Carex sitchensis</i>								
	<i>Rhynchospora alba</i>								
Shrubs	<i>Carex livida</i>								
	<i>Eriophorum chamissonis</i>								
Shrubs	<i>Vahlodea atropurpurea</i>								
	<i>Drosera anglica</i>								
Shrubs	<i>Hypericum anagalloides</i>								
	<i>Triantha glutinosa</i>								
Shrubs	<i>Schoenoplectus tabernaemontani</i>								
	<i>Fauria crista-galli</i>								
Shrubs	<i>Senecio triangularis</i>								
	<i>Andromeda polifolia</i>								
Shrubs	<i>Kalmia microphylla</i>								
	<i>Oxycoccus oxycoccus</i>								
Shrubs	<i>Triglochin maritima</i>								
	<i>Drosera rotundifolia</i>								
Shrubs	<i>Leptarrhena pyrolifolia</i>								
	<i>Platanthera dilatata</i>								
Shrubs	<i>Sanguisorba canadensis</i>								
	<i>Utricularia intermedia</i>								
Shrubs	<i>Viola palustris</i>								
	<i>Sphagnum Group I</i>								
Lichens and Mosses	<i>Aulaconnium palustre</i>								
	<i>Drepanocladus spp.</i>								
Lichens and Mosses	<i>Sphagnum Group II</i>								
	<i>Tomentypnum nitens</i>								
Lichens and Mosses	<i>Philonotis fontana</i>								
	<i>Calliergon stramineum</i>								
Lichens and Mosses	<i>Scorpidium spp.</i>								
	<i>Campylopus stellatum</i>								
Lichens and Mosses	<i>Warnstorfia spp.</i>								
	<i>Meesia triquetra</i>								

Betula nana – *Carex aquatilis*

General Description

The Scrub birch – Water sedge Fen Site Association is one of the most common peatland Site Associations throughout the Interior and is absent only from PP/BG and wet ESSF subzones. It is frequently a major component of large peatlands where there is some surfactable fluctuation and the surface becomes aerated by mid-season. These sites are often hummocked, with shrubs rooting on elevated microsites.

Betula nana and *Carex aquatilis* are the characteristic species but *Salix pedicellaris* and *Carex utriculata* dominate on wetter sites. The moss layer is variable and can be diverse, absent, or dominated by *Tomentypnum nitens*, *Sphagnum*, or *Drepanocladus*. Some drier sites will have scattered, stunted trees (spruce or black spruce most commonly).



Common soil types are terric and typic Mesisols and Fibrisols. Peat depths are frequently between 1 and 2 m but deep sedge-derived peat to 4 m occurs; this Site Association can occasionally occur on thin organic veneers.

Characteristic Vegetation

Tree layer (0 - 0 - 10)

Shrub layer (10 - 35 - 100)

Betula nana, *Salix pedicellaris*

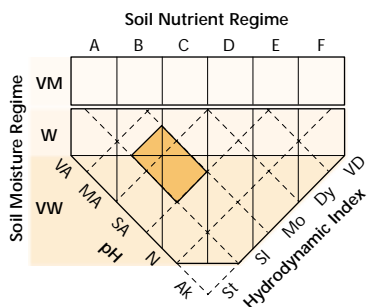
Herb layer (5 - 60 - 100)

Carex aquatilis, *C. utriculata*,
Comarum palustre

Moss layer (0 - 70 - 100)

Aulacomnium palustre, *Drepanocladus aduncus*, *Sphagnum* Group I,
Tomentypnum nitens

Wetland Edatopic Grid



Comments

The Wf02 Site Association often occurs around the periphery of the wetter Wf01 or adjacent to the drier Wb05. These three Site Associations may represent a sequence of long-term peatland succession. Many sites have a moss layer with rich and poor site indicators, suggesting that they are in transition from fen to bog conditions.

The Wf02 is one of the most common Interior peatland community types at low to subalpine elevations. It is probably only absent from the AT, BG, and PP zones. In coastal areas, similar sites are occupied by the Wf52.

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 ⁱ	
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 ^s	
Wf53 Slender sedge – White beak-rush								x	xx ^s	

x = incidental; < 5% of wetlands

i = inland areas only

xx = minor; 5–25% of wetlands

s = southern subzones only

xxx = major; >25% of wetlands

TABLE 5.2.2 Fen Species Importance Table

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Shrubs	<i>Eleocharis quinqueflora</i>								
	<i>Trichophorum alpinum</i>								
Shrubs	<i>Trichophorum cespitosum</i>								
	<i>Eriophorum angustifolium</i>								
Shrubs	<i>Caltha leptosepala</i>								
	<i>Carex anthoxanthea</i>								
Shrubs	<i>Equisetum fluviatile</i>								
	<i>Carex magellanica</i>								
Shrubs	<i>Carex sitchensis</i>								
	<i>Rhynchospora alba</i>								
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Shrubs	<i>Vahlodea atropurpurea</i>								
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	<i>Platanthera dilatata</i>								
Shrubs	<i>Sanguisorba canadensis</i>								
	<i>Utricularia intermedia</i>								
Shrubs	<i>Viola palustris</i>								
	<i>Sphagnum Group I</i>								
Lichens and Mosses	<i>Aulaconnium palustre</i>								
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	<i>Calliergon stramineum</i>								
Lichens and Mosses	<i>Scorpidium spp.</i>								
	<i>Campylopus stellatum</i>								
Lichens and Mosses	<i>Warnstorfia spp.</i>								
	<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

Trichophorum cespitosum – *Campyllum stellatum*

General Description

The Tufted clubrush – Star moss Fen Site Association is scattered throughout the Interior at middle to subalpine elevations, most commonly in regions underlain with base-rich parent materials. These fens occur on level and gently sloping, groundwater-fed peatlands that are permanently saturated but rarely inundated. Sites have smooth, ribbed, or slightly hummocked topography and any depressions are water-filled.



Trichophorum cespitosum and *Campyllum stellatum* are constant dominants and occur mainly on drier microsites. *Menyanthes trifoliata* and calcium-encrusted *Scorpidium scorpioides* and *Scorpidium revolvans* are commonly found in very shallow pools.

Most sites have a distinct dense and tenacious turfy peat. Deep peat is typical (to 5 m) but occasionally thin peat veneers occur. Fibrisols and Mesisols are typical soil types.

Characteristic Vegetation

- Tree layer** (0 - 0 - 0)
- Shrub layer** (0 - 1 - 10)
- Herb layer** (20 - 75 - 97)
- Carex limosa*, *Eriophorum angustifolium*, *Menyanthes trifoliata*, *Trichophorum cespitosum*
- Moss layer** (0 - 70 - 95)
- Campyllum stellatum*, *Sphagnum* Group II

Comments

The Wf11 occurs where extremely high pH limits the availability of phosphorous, making these sites nutrient-poor even though they have an abundance of cations. Tufted clubrush-dominated wetlands are also found in regions underlain by base-poor granitic parent material, such as coastal British Columbia, where phosphorus is also limited. These communities lack minerotrophic site indicators and have a *Sphagnum*-dominated moss layer. Tufted clubrush – Peat-moss ecosystems (Wb52) are very common in coastal British Columbia but several sites have been observed in interior locations where the local geology is of igneous intrusive origin (e.g., Monashee Ranges).

Wetland Edatopic Grid

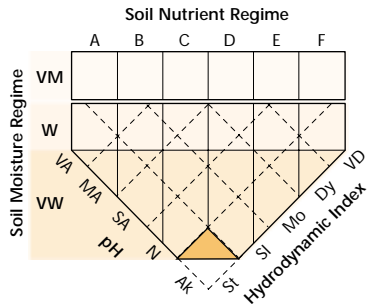


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Wf02 Scrub birch – Water sedge		xxx	x	xx	xx	xx	xx			
Wf03 Water sedge – Peat-moss			xx				x			
Wf04 Barclay's willow – Water sedge – Glow mosses		x	xxx			x	x			
Wf05 Slender sedge – Common hook-moss		x		xx	xx	xx	xx			
Wf06 Slender sedge – Buckbean		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 ^s	
Wf53 Slender sedge – White beak-rush								x	xx ^s	

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									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. anthoxanthea*, *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 anthoxanthea*, 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

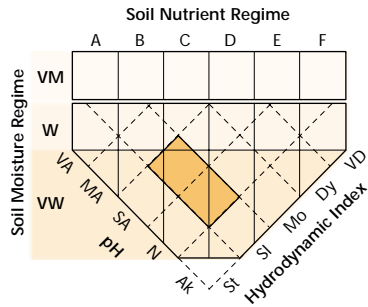


TABLE 5.3.1 Distribution of Marsh Site Associations by biogeoclimatic zone

	BG PP	BWBS SWB	ESSF	ICH	IDF	MS	SBPS SBS	CDF	CWH	MH
Wm01 Beaked sedge – Water sedge	x	xx	x	xxx	xxx	xx	xx		x	
Wm02 Swamp horsetail – Beaked sedge		x		x	x	x	xx			
Wm03 Awned sedge	x				x					
Wm04 Common spike-rush	x	x		xx	x	x	xx		x	
Wm05 Cattail	xxx	x		xx	xx	x	xx	xx	x ^s	
Wm06 Great bulrush	xxx	x		x	xx	xx	x	x	x	
Wm07 Baltic rush	x				xx					
Wm50 Sitka sedge – Hemlock-parsley								xx	xx	
Wm51 Three-way sedge				x				x	x	

x = incidental; < 5% of wetlands

xx = minor; 5–25% of wetlands

xxx = major; >25% of wetlands

s = southern subzones only

TABLE 5.3.2 Marsh Species Importance Table

	Species	Wm01	Wm02	Wm03	Wm04	Wm05
Herbs and Dwarf Shrubs	<i>Carex utriculata</i>					
	<i>Carex aquatilis</i>					
	<i>Equisetum fluviatile</i>					
	<i>Comarum palustre</i>					
	<i>Sium suave</i>					
	<i>Carex exsiccata</i>					
	<i>Carex atherodes</i>					
	<i>Polygonum amphibium</i>					
	<i>Eleocharis palustris</i>					
	<i>Potamogeton richardsonii</i>					
	<i>Typha latifolia</i>					
	<i>Schoenoplectus acutus</i>					
	<i>Menyanthes trifoliata</i>					
	<i>Utricularia macrorhiza</i>					
	<i>Juncus balticus</i>					
	<i>Hordeum jubatum</i>					
	<i>Potentilla anserina</i>					
	<i>Calamagrostis canadensis</i>					
	<i>Cicuta douglasii</i>					
	<i>Lysichiton americanus</i>					
	<i>Oenanthe sarmentosa</i>					
	<i>Galium trifidum</i>					
	<i>Spiraea douglasii</i>					
	<i>Carex sitchensis</i>					
	<i>Nuphar lutea</i> ssp. <i>polysepala</i>					
	<i>Dulichium arundinaceum</i>					
Mosses	<i>Drepanocladus</i> spp.					
	<i>Wamstorfia</i> spp.					

Carex utriculata – *Carex aquatilis*

General Description

Beaked sedge – Water sedge marshes constitute the most common and widespread Marsh Site Association in the province. The **Wm01** occurs in all subzones from low to sub-alpine elevations on sites that are inundated by shallow,

low-energy floodwaters and that experience some late-season drawdown. These marshes are found in a wide variety of landscape positions including flooded beaver ponds, lake margins, floodplains, and palustrine basins.



Species diversity is low and plant cover is strongly dominated by *Carex utriculata* and *C. aquatilis* with scattered forbs, aquatics, and mosses. On sites experiencing significant surface drying, species diversity increases and sites become more meadow-like. Species such as *Calamagrostis canadensis*, *Geum macrophyllum*, or *Deschampsia cespitosa* can become prominent.

The **Wm01** occurs over a wide range of site conditions on mineral substrates with thin peat veneers. Common soil types include Gleysols and Terric Humisols.

Characteristic Vegetation

- Tree layer (0 - 0 - 0)
- Shrub layer (0 - 0 - 5)
- Herb layer (13 - 80 - 100)
- Carex aquatilis*, *C. utriculata*
- Moss layer (0 - 5 - 100)

Comments

The **Wf01** and **Wm01** have similar plant communities, but, because these units are species-poor and the two dominant sedge species have a wide ecological amplitude, the plant community poorly differentiates between sites on peat (**Wf01**) and those on mineral soil (**Wm01**). In general, the **Wm01** is more deeply flooded, has more dynamic hydrology, and has a higher cover of *C. utriculata*.

The **Wm02** is another similar community that occurs on more hydrologically dynamic locations such as lake margins or floodplains. In cooler climates the **Wm01** frequently develops into **Wf01** on sites with less dynamic hydrology.

Some **Wm01** sites have scattered tall shrubs; those sites supporting > 10% shrub cover are described by Swamp Site Associations (Section 5.4).

Wetland Edatopic Grid

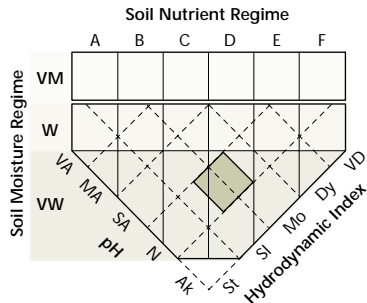


TABLE 5.3.1 Distribution of Marsh Site Associations by biogeoclimatic zone

	BG PP	BWBS SWB	ESSF	ICH	IDF	MS	SBPS SBS	CDF	CWH	MH
Wm01 Beaked sedge – Water sedge	x	xx	x	xxx	xxx	xx	xx		x	
Wm02 Swamp horsetail – Beaked sedge		x		x	x	x	xx			
Wm03 Awned sedge	x				x					
Wm04 Common spike-rush	x	x		xx	x	x	xx		x	
Wm05 Cattail	xxx	x		xx	xx	x	xx	xx	x ^s	
Wm06 Great bulrush	xxx	x		x	xx	xx	x	x	x	
Wm07 Baltic rush	x				xx					
Wm50 Sitka sedge – Hemlock-parsley								xx	xx	
Wm51 Three-way sedge				x				x	x	

x = incidental; < 5% of wetlands

xx = minor; 5–25% of wetlands

xxx = major; >25% of wetlands

s = southern subzones only

TABLE 5.3.2 Marsh Species Importance Table

	Species	Wm01	Wm02	Wm03	Wm04	Wm05
Herbs and Dwarf Shrubs	<i>Carex utriculata</i>					
	<i>Carex aquatilis</i>					
	<i>Equisetum fluviatile</i>					
	<i>Comarum palustre</i>					
	<i>Sium suave</i>					
	<i>Carex exsiccata</i>					
	<i>Carex atherodes</i>					
	<i>Polygonum amphibium</i>					
	<i>Eleocharis palustris</i>					
	<i>Potamogeton richardsonii</i>					
	<i>Typha latifolia</i>					
	<i>Schoenoplectus acutus</i>					
	<i>Menyanthes trifoliata</i>					
	<i>Utricularia macrorhiza</i>					
	<i>Juncus balticus</i>					
	<i>Hordeum jubatum</i>					
	<i>Potentilla anserina</i>					
	<i>Calamagrostis canadensis</i>					
	<i>Cicuta douglasii</i>					
	<i>Lysichiton americanus</i>					
	<i>Oenanthe sarmentosa</i>					
	<i>Galium trifidum</i>					
	<i>Spiraea douglasii</i>					
	<i>Carex sitchensis</i>					
	<i>Nuphar lutea</i> ssp. <i>polysepala</i>					
	<i>Dulichium arundinaceum</i>					
Mosses	<i>Drepanocladus</i> spp.					
	<i>Wamstorfia</i> spp.					

Eleocharis palustris**General Description**

Common spike-rush marshes are widely distributed throughout the Interior at elevations below 1300 m. They occur along lakeshores, and as a zone in larger potholes, oxbows, and slow-moving rivers, where there is some weak waterflow or wave action. Sites are shallowly flooded in the early season in all locations; the watertable often drops to the surface in palustrine locations but is permanent in lacustrine or fluvial systems. **Wm04** sites also occur in freshwater and brackish tidal reaches of large coastal rivers and estuaries.

Plant diversity is low; *Eleocharis palustris* is often the only emergent species with significant cover. In interior sites, submerged and floating aquatics can be common; in estuarine sites *Carex lyngbyei* is often present.

Soils are typically sandy or gravelly with or without a thin organic veneer.

**Characteristic Vegetation**

Tree layer (0 - 0 - 0)
Shrub layer (0 - 0 - 0)
Herb layer (10 - 70 - 100)
Eleocharis palustris,
Potamogeton richardsonii
Moss layer (0 - 0 - 10)

Comments

Eleocharis palustris occurs commonly in a wide variety of wetland habitats, including alkaline and weakly saline marshes, rich fens, and estuarine marshes. However, the **Wm04** describes only those sites where *E. palustris* dominates. **Wm04** sites are generally more shallowly flooded than **Wm06** sites and better aerated than **Wm05** sites.

The **Wm04** commonly occurs adjacent to **Wm05**, **Wm06**, and **Wm07** Site Associations or shallow-water ecosystems.

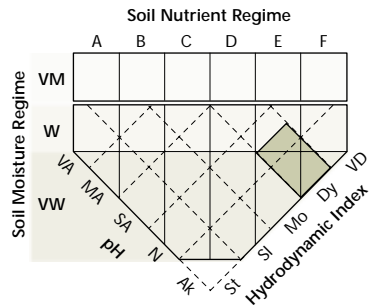
Wetland Edatopic Grid

TABLE 5.4.1 Distribution of Swamp Site Associations by biogeoclimatic zone

	BG PP	BWBS SWB	ESSF	ICH	IDF	MS	SBPS SBS	CDF	CWH	MH
Ws01 Mountain alder – Skunk cabbage – Lady fern				XX			XX ^w			
Ws02 Mountain alder – Pink spirea – Sitka sedge		X	X	XX	X	X	X ^w		X	
Ws03 Bebb's willow – Bluejoint	X	XX			XX	X	XX			
Ws04 Drummond's willow – Beaked sedge				X	X	X	XX			
Ws05 MacCalla's willow – Beaked sedge					X		X			
Ws06 Sitka willow – Sitka sedge				XX			X ^w			
Ws07 Spruce – Common horsetail – Leafy moss		XX	X	XX	XX	XX	XXX			
Ws08 Subalpine fir – Sitka valerian – Common horsetail			XX							
Ws09 Black spruce – Skunk cabbage – Peat-moss				XX			X ^w			
Ws10 Western redcedar – Spruce – Skunk cabbage				XX						
Ws11 Spruce – Subalpine fir – Skunk cabbage							X ^w			
Ws50 Pink spirea – Sitka sedge				X			X ^w	XXX	XX	
Ws51 Sitka willow – Pacific willow – Skunk cabbage				X				X	X	
Ws52 Red alder – Skunk cabbage								XX	XX	
Ws53 Western redcedar – Sword fern – Skunk cabbage								X	X ^x	
Ws54 Western redcedar – Western hemlock – Skunk cabbage								X	XX	
Ws55 Yellow-cedar – Mountain hemlock – Skunk cabbage										XX

x = incidental; < 5% of wetlands

w = wet subzones only

xx = minor; 5–25% of wetlands

x = very dry subzones only

xxx = major; >25% of wetlands

TABLE 5.4.2 Swamp Species Importance Table

Species		Ws03	Ws04	Ws05	Ws02	Ws06	Ws07	Ws08	Ws01
Trees	<i>Picea X</i>								
	<i>Picea mariana</i>								
	<i>Abies lasiocarpa</i>								
	<i>Tsuga heterophylla</i>								
	<i>Thuja plicata</i>								
	<i>Picea sitchensis</i>								
	<i>Alnus rubra</i>								
	<i>Acer macrophyllum</i>								
	<i>Chamaecyparis nootkatensis</i>								
	<i>Tsuga mertensiana</i>								
	<i>Abies amabilis</i>								
	Shrubs	<i>Salix bebbiana</i>							
<i>Salix drummondiana</i>									
<i>Salix maccalliana</i>									
<i>Alnus incana</i>									
<i>Lonicera involucrata</i>									
<i>Spiraea douglasii</i>									
<i>Cornus stolonifera</i>									
<i>Vaccinium alaskaense/ovalifolium</i>									
<i>Salix sitchensis</i>									
<i>Salix lucida</i>									
<i>Rubus spectabilis</i>									
<i>Sambucus racemosa</i>									
<i>Gaultheria shallon</i>									
<i>Ribes bracteosum</i>									
<i>Elliottia pyroliflorus</i>									
Herbs and Dwarf Shrubs	<i>Calamagrostis canadensis</i>								
	<i>Carex aquatilis/sitchensis</i>								
	<i>Carex utriculata</i>								
	<i>Gymnocarpium dryopteris</i>								
	<i>Valeriana sitchensis</i>								
	<i>Scirpus microcarpus</i>								
	<i>Equisetum arvense</i>								
	<i>Lysichiton americanus</i>								
	<i>Athyrium filix-femina</i>								
	<i>Tiarella trifoliata</i>								
	<i>Streptopus lanceolatus</i>								
	<i>Maianthemum dilatatum</i>								
	<i>Oenanthe sarmentosa</i>								
	<i>Polystichum munitum</i>								
	<i>Equisetum telmateia</i>								
	<i>Blechnum spicant</i>								
	<i>Veratrum viride</i>								
	<i>Fauria crista-galli</i>								
Mosses and Lichens	<i>Drepanocladus spp.</i>								
	<i>Mnium spp.</i>								
	<i>Aulacomnium palustre</i>								
	<i>Sphagnum spp.</i>								
	<i>Hylocomium splendens</i>								
	<i>Pleurozium schreberi</i>								
	<i>Eurhynchium praelongum</i>								
	<i>Rhytidiadelphus loreus</i>								

Salix maccalliana – *Carex utriculata*

General Description

MacCalla's willow – Beaked sedge swamps/fens occur in scattered locations in drier climates of the Central and Sub-Boreal Interior in basins, hollows, and streamside areas that are shallowly flooded in the early season by slowly flowing waters.



Sites often have complex microtopography with tall willows rooting on elevated hummocks, and with depressions with standing water.

Tall *Salix maccalliana* dominates these sites but a diversity of other shrubs is common. *Carex utriculata* or *C. aquatilis* are usually dominant in the understorey but because of the pronounced microtopography a diversity of species often occurs. The moss layer is often moderately developed.

Soils are variable, ranging from deep mesic peat to thin layers of humic muck. Peat accumulations from 20 to 400 cm with well-humified surface tiers are typical.



Characteristic Vegetation

Tree layer (0 - 1 - 2)

Shrub layer (25 - 60 - 85)

Betula nana, *Salix glauca*, *S. maccalliana*

Herb layer (13 - 54 - 95)

Calamagrostis canadensis, *Carex aquatilis*, *C. utriculata*

Moss layer (0 - 40 - 100)

Aulacomnium palustre, *Drepanocladus* spp., *Mnium* spp.

Comments

Pronounced lateral water flow in Ws05 sites allow the robust growth of *Salix maccalliana* on peaty soils.

Sites occasionally occur on deep deposits of sedge peat with a humic surface tier, suggesting that these sites have developed on hydrologically modified fens.

Sites with more active flooding are occupied by the Ws04.

Wetland Edatopic Grid

