

Lichen Species Groups in the Columbia Basin
Ecosystem Functions and Indicator Values

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Eastside Ecosystem Management Project

Lichen files included on enclosed diskettes from McCune:

Disk 1: Wordperfect and spreadsheet files (** = printed copies provided)

** SPGROUPS.WP5 = this document, wordperfect 5.1 format

EASTSPP.WK1 = Table 3 of this document in Lotus 123 format

SPGROUP.WK1 = Tables 1 and 2 of this document, Lotus 123 format

** EASTSIDE.TXT = Database report of McCune's lichen database in wordperfect format.

Disk 2: Paradox database files

EASTSIDE.DB = McCune's lichen database, Paradox 4.5 format, including only those records from the Columbia Basin east of the Cascade Crest. Same as EASTSIDE.TXT but that file is reformatted for wordperfect and several fields are not included.

EASTSPP.DB = Database of lichen species on eastside, Paradox 4.5 format, one record per species, along with indicator of group membership.

SPGROUPS.DB = Database of lichen species groups, Paradox 4.5 format, listing each group and the functions and indicator value of each group.

Table 1. Ecosystem functions of species groups of lichens. A "Y" in a column indicates "Yes, one or more members of a given species group perform the indicated function.

Notes:

N fix = Nitrogen fixation via cyanobacteria

Forage = Use as forage by ungulates

Nest = Commonly used as nesting materials by birds and small mammals

Soil stab = Contributes to stabilization of the soil surface

Rock weath = Contributes to rock weathering and soil formation

Lower albedo = Significantly lowers albedo of exposed rock or soil, as in high mountain areas and arid ecosystems

Microhabitat = Provides microhabitat and food for invertebrates

Species group	No. spp	Ecosystem Functions						
		N fix	For-age	Nest	Soil stab	Rock weath	Lower albedo	Micro-habitat
DEAD ORGANIC SUBSTRATES								
charred snag lichens	3							Y
fencepost lichens	3							Y
oceanic log lichens	6							Y
rotten log and tree base	11							Y
moss & detritus binders	38				Y			Y
EPIPHYTES								
N-fixing epiphytes	8	Y						Y
N-fixing riparian	7	Y						Y
riparian	10							Y
aspen specialists	1							Y
excess nitrogen indicators	2							Y
urban pollution-tolerant	1							Y
forage	10		Y	Y				Y
oceanic forage lichens	3		Y	Y				Y
oceanic leaf lichens	14							Y
oceanic tree crusts	20							Y
oceanic fruticose	6		Y	Y				Y
fruticose tree lichens	14		Y	Y				Y
pin	9							Y
tree crusts	81							Y

leaf lichens	40							Y
bog lichens	1							Y
ROCK LICHENS								
aquatic rocks	16					Y		Y
calcareous rock indicators	40					Y	Y	Y
metal-rich rock indicators	1					Y	Y	Y
sheltered ledges & overhangs	12					Y		Y
seepage rocks	3	Y				Y	Y	Y
N-fixing rock lichens	21	Y				Y		Y
tundra rock lichens	17					Y	Y	Y
rock crusts	129					Y	Y	Y
rock mats and cushions	20		Y			Y	Y	Y
rock pin lichens						Y		Y
oceanic rock lichens	4					Y	Y	Y
rock macrolichens	52					Y	Y	Y
SOIL LICHENS								
N-fixing soil crusts		Y			Y		Y	Y
N-fixing soil lichens	21	Y			Y			Y
N-fixing soil old-growth		Y						Y
calcareous steppe indicators	9				Y		Y	Y
steppe soil crusts	17				Y		Y	Y
pioneer soil stabilizers	6				Y			Y
tundra forage lichens	4		Y		Y			Y
tundra sod builders	34				Y			Y
tundra soil	3	Y			Y			Y
vagrant ground lichens	8		Y					Y
soil lichens	18				Y			Y

Table 2. Indicator values of functional groups of lichen species.

Notes:

Air qual = Indicator of air quality (either good or reduced, depending on the species)

Metal-rich rock = Indicates high content of metals in rock

High N = Indicates excess concentrations of biologically active nitrogen, as in agricultural areas with heavy fertilizer use, as well as natural locally high concentrations (as on bird perches and below packrat middens)

CaCO₃ = Indicates high concentration of free calcium carbonate, either in soil or rock

Old growth = Indicates long period without major disturbance. Applied here both to forests and to steppe ecosystems

Flow level = Bands of occurrence indicates water flow levels, perennial seepage, or lake levels

Species group	No. spp	Indicator Values					
		Air Qual	Metal-rich rock	High N	CaCO ₃	Old growth	Flow level
DEAD ORGANIC SUBSTRATES							
charred snag lichens	3	Y				Y	
fencepost lichens	3	Y					
oceanic log lichens	6	Y				Y	
rotten log and tree base	11	Y				Y	
moss & detritus binders	38	Y				Y	
EPIPHYTES							
N-fixing epiphytes	8	Y				Y	
N-fixing riparian	7	Y				Y	
riparian	10	Y				Y	
aspen specialists	1	Y					
excess nitrogen indicators	2	Y		Y			
urban pollution-tolerant	1	Y		Y			
forage	10	Y				Y	
oceanic forage lichens	3	Y				Y	
oceanic leaf lichens	14	Y				Y	
oceanic tree crusts	20	Y				Y	
oceanic fruticose	6	Y				Y	
fruticose tree lichens	14	Y				Y	
pin	9	Y				Y	
tree crusts	81	Y				Y	

leaf lichens	40	Y					
bog lichens	1	Y					
ROCK LICHENS							
aquatic rocks	16						Y
calcareous rock indicators	40	Y			Y		
metal-rich rock indicators	1	Y	Y				
sheltered ledges & overhangs	12	Y					
seepage rocks	3	Y					Y
N-fixing rock lichens	21	Y					
tundra rock lichens	17	Y					
rock crusts	129	Y	Y	Y	Y		
rock mats and cushions	20	Y					
rock pin lichens		Y					
oceanic rock lichens	4	Y					
rock macrolichens	53	Y		Y			
SOIL LICHENS							
N-fixing soil crusts		Y			Y	Y	
N-fixing soil lichens	21	Y					
N-fixing soil old-growth		Y				Y	
calcareous steppe indicators	9	Y			Y	Y	
steppe soil crusts	17	Y				Y	
pioneer soil stabilizers	6	Y					
tundra forage lichens	4	Y					
tundra sod builders	34	Y					
tundra soil	3	Y			Y		
vagrant ground lichens	8	Y			Y		
soil lichens	18	Y					

Table 3. Lichen species (count = 725) in the Columbia River Basin east of the Cascade crest. and their membership in species groups. A "1" under "rare" indicates that the species is rare within this region.

Species	Rare	Species Group
<i>Acarospora bullata</i>	0	rock crusts
<i>Acarospora chlorophana</i>	0	rock crusts
<i>Acarospora fuscata</i>	0	rock crusts
<i>Acarospora glaucocarpa</i>	0	calcareous rock indicator
<i>Acarospora murorum</i>	1	rock crusts
<i>Acarospora schleicheri</i>	0	steppe soil crusts
<i>Acarospora smarag. v. lesd</i>	0	rock crusts
<i>Acarospora smaragdula</i>	0	rock crusts
<i>Acarospora strigata</i>	0	calcareous rock indicator
<i>Acarospora thamnina</i>	0	rock crusts
<i>Acarospora veronensis</i>	0	rock crusts
<i>Actinogyra polyrhiza</i>	1	rock macrolichens
<i>Adelolecia pilati</i>	1	rock crusts
<i>Ahtiana sphaerosporella</i>	0	leaf lichens
<i>Alectoria imshaugii</i>	0	fruticose tree lichens
<i>Alectoria nigricans</i>	1	tundra sod builders
<i>Alectoria sarmentosa</i>	0	oceanic forage lichens
<i>Alectoria vancouverensis</i>	1	oceanic forage lichens
<i>Alectoria vexillifera</i>	0	tundra sod builders
<i>Allantoparmelia alpicola</i>	0	rock macrolichens
<i>Anaptychia ulotrichodes</i>	0	calcareous rock indicator
<i>Arctoparmelia incurva</i>	1	rock macrolichens
<i>Arctoparmelia subcentrifuga</i>	1	rock macrolichens
<i>Arthonia glebosa</i>	0	steppe soil crusts
<i>Arthonia intexta</i>	1	rock crusts
<i>Arthonia patellulata</i>	0	aspen specialists
<i>Arthonia radiata</i>	1	tree crusts
<i>Arthroraphis citrinella</i>	0	moss & detritus binders
<i>Aspicilia "convoluta"</i>	0	rock crusts
<i>Aspicilia "glebosa"</i>	0	rock crusts
<i>Aspicilia aliena</i>	0	rock crusts

Aspicilia alphoplaca	0	rock crusts
Aspicilia aquatica	0	aquatic rocks
Aspicilia arctica	1	rock crusts
Aspicilia caesiocinerea	0	rock crusts
Aspicilia calcarea	0	rock crusts
Aspicilia candida	0	rock crusts
Aspicilia cinerea	0	rock crusts
Aspicilia desertorum	0	rock crusts
Aspicilia desertotum	0	rock crusts
Aspicilia fruticulosa	1	vagrant ground lichens
Aspicilia hispida	0	vagrant ground lichens
Aspicilia mastrucata	0	rock crusts
Aspicilia praeradiosa	0	rock crusts
Aspicilia reptans	0	steppe soil crusts
Aspicilia supertegens	0	rock crusts
Bacidia akompsa	0	tree crusts
Bacidia bagliettoana	0	moss & detritus binders
Bacidia beckhausii	1	tree crusts
Bacidia hegetschweileri	1	tree crusts
Bacidia herrei	1	tree crusts
Bacidia idahoensis	0	oceanic tree crusts
Bacidia sabulaetotum	0	moss & detritus binders
Bacidia subincompta	0	tree crusts
Bacidia trachona	1	tree crusts
Baeomyces rufus	0	soil lichens
Bellemerea alpina	0	rock crusts
Bellemerea cinereorufescens	0	rock crusts
Bellemerea diamarta	1	rock crusts
Biatora albohyalina	0	tree crusts
Biatora sphaeroides	0	moss & detritus binders
Biatora vernalis	0	moss & detritus binders
Brodoa oroarctica	0	tundra rock lichens
Bryonora castanea	0	tundra sod builders
Bryonora pruinosa	0	tundra sod builders

Bryoria abbreviata	0	fruticose tree lichens
Bryoria capillaris	0	f o r a g e
Btyoria chalybeiformis	0	tundra sod builders
Bryoria fremontii	0	forage
Bryoria friabilis	0	oceanic forage lichens
Bryoria fuscescens	0	forage
Bryoria glabra	0	forage
Bryoria implexa	1	forage
Bryoria lanestris	0	forage
Bryoria nadvomikiana	1	forage
Bryoria oregana	0	forage
Bryoria pseudofuscescens	0	forage
Bryoria simplicior	1	fruticose tree lichens
Bryoria subdivergens	1	tundra sod builders
Bryoria vrangiana	0	forage
Buellia badia	0	moss & detritus binders
Buellia disciformis	0	tree crusts
Buellia elegans	0	calcareous steppe indicat
Buellia erubescens	0	tree crusts
Buellia geophila	0	moss & detritus binders
Buellia papillata	0	moss & detritus binders
Buellia punctata	0	tree crusts
Buellia retrovertens	0	rock crusts
Buellia zahlbruckneri	0	tree crusts
Calicium adaequatum	0	pin
Calicium corynellum	1	sheltered ledges & overha
Calicium trabinellum	0	pin
Calicium viride	0	pin
Caloplaca albovariegata	0	rock crusts
Caloplaca approximata	0	rock crusts
Caloplaca arenaria	0	rock crusts
Caloplaca atroalba	0	calcareous rock indicator
Caloplaca atosanguinea	0	oceanic tree crusts
Caloplaca cerina	0	tree crusts

Caloplaca chrysophthalma	0	tree crusts
Caloplaca cinnabarina	0	rock crusts
Caloplaca cinnamomea	0	tundra sod builders
Caloplaca citrina	0	rock crusts
Caloplaca cladodes	0	calcareous rock indicator
Caloplaca decipiens	0	calcareous rock indicator
Caloplaca diphyodes	0	aquatic rocks
Caloplaca epithallina	0	rock crusts
Caloplaca feracissima ?	0	calcareous rock indicator
Caloplaca flavorubescens	0	tree crusts
Caloplaca flavovirescens	0	rock crusts
Caloplaca fraudans	0	rock crusts
Caloplaca holocarpa	0	tree crusts
Caloplaca invadens	0	rock crusts
Caloplaca jungermanniae	0	moss & detritus binders
Caloplaca lactea	0	calcareous rock indicator
Caloplaca lamprocheila	0	rock crusts
Caloplaca lithophila	0	calcareous rock indicator
Caloplaca modesta	0	rock crusts
Caloplaca saxicola	0	rock crusts
Caloplaca sinapisperma	1	tundra sod builders
Caloplaca stillicidiorum	0	moss & detritus binders
Caloplaca subpyraceola	0	moss & detritus binders
Caloplaca tirolensis	0	moss & detritus binders
Caloplaca tominii	0	calcareous steppe indicat
Caloplaca trachyphylla	0	calcareous rock indicator
Calopiaca ulmorum	0	tree crusts
Caloplaca variabilis	0	calcareous rock indicator
Candelaria concolor	0	urban pollution-tolerant
Candelariella aurella	0	calcareous rock indicator
Candelariella efflorescens	0	tree crusts
Candelariella rosulans	0	rock crusts
Candelariella terrigena	0	soil lichens
Candelariella vitellina	0	rock crusts

<i>Carbonea vitellinaria</i>	0	rock crusts
<i>Carbonea vorticosa</i>	0	rock crusts
<i>Catapyrenium cinereum</i>	0	tundra sod builders
<i>Catapyrenium congestum</i>	1	steppe soil crusts
<i>Catapyrenium daedaleum</i>	1	tundra sod builders
<i>Catapyrenium lachneum</i>	0	'soil lichens
<i>Catapyrenium lachneum v oleosum</i>	0	soil lichens
<i>Catapyrenium lacinulatum</i>	0	steppe soil crusts
<i>Catapyrenium norvegicum</i>	1	sheltered ledges & overha
<i>Catapyrenium rufescens</i>	0	steppe soil crusts
<i>Catapyrenium squamulosum</i>	0	steppe soil crusts
<i>Catillaria sphaeroides</i>	0	tree crusts
<i>Cetraria canadensis</i>	0	leaf lichens
<i>Cetraria chlorophylla</i>	0	leaf lichens
<i>Cetraria commixta</i>	1	rock macrolichens
<i>Cetraria cucullata</i>	0	tundra forage lichens
<i>Cetraria eric. ssp retic.</i>	0	tundra forage lichens
<i>Cetraria hepaticum</i>	0	rock macrolichens
<i>Cetraria idahoensis</i>	0	leaf lichens
<i>Cetraria islandica</i>	0	tundra forage lichens
<i>Cetraria merrillii</i>	0	leaf lichens
<i>Cetraria nivalis</i>	0	tundra forage lichens
<i>Cetraria orbata</i>	0	leaf lichens
<i>Cetraria pallidula</i>	0	leaf lichens
<i>Cetraria pinastri</i>	0	leaf lichens
<i>Cetraria platyphylla</i>	0	leaf lichens
<i>Cetraria sepincola</i>	1	bog lichens
<i>Cetraria tilesii</i>	0	tundra sod builders
<i>Chaenotheca furfuracea</i>	0	sheltered ledges & overha
<i>Chaenotheca laevigata</i>	0	pin
<i>Chaenotheca stemonea</i>	0	pin
<i>Chaenotheca subroscida</i>	0	pin
<i>Chromatochlamys muscorum</i>	0	steppe soil crusts

Chrysothrix candelaris	0	tree crusts
Chrysothrix chlorina	0	sheltered ledges & overha
Ciadina arbuscula	1	rock mats and cushions
Cladina mitis	1	rock mats and cushions
Cladina rangiferina	1	rock mats and cushions
Cladonia bacillaris	0	rotten log and tree base
Cladonia borealis	0	rock mats and cushions
Cladonia botrytes	1	rotten log and tree base
Cladonia cariosa	0	pioneer soil stabilizers
Cladonia cameola	0	rotten log and tree base
Cladonia cenotea	0	rotten log and tree base
Cladonia cervicomis	0	rock mats and cushions
Cladonia chlorophaea	0	soil lichens
Cladonia coniocraea	0	rotten log and tree base
Cladonia comuta	0	rock mats and cushions
Cladonia crispata	1	rock mats and cushions
Cladonia dahliana	0	soil lichens
Cladonia deformis	0	rock mats and cushions
Cladonia digitata	1	rotten log and tree base
Cladonia ecmocyna	0	rock mats and cushions
Cladonia fimbriata	0	soil lichens
Cladonia firma ?	0	soil lichens
Cladonia gracilis	0	rock mats and cushions
Cladonia luteoalba	1	soil lichens
Cladonia macrophyllodes	0	soil lichens
Cladonia merochlorophaea	0	oceanic log lichens
Cladonia multiformis	0	rock mats and cushions
Cladonia norvegica	1	rotten log and tree base
Cladonia ochrochlora	0	rotten log and tree base
Cladonia phyllophora	0	rock mats and cushions
Cladonia pleurota	0	rock mats and cushions
Cladonia pocillum	0	soil lichens
Cladonia pyxidata	0	soil lichens
Cladonia squamosa	0	oceanic log lichens

<i>Cladonia subsquamosa</i>	1	oceanic log lichens
<i>Cladonia subulata</i>	0	rotten log and tree base
<i>Cladonia sulphurina</i>	0	rotten log and tree base
<i>Cladonia transcendens</i>	1	oceanic log lichens
<i>Cladonia umbricola</i>	0	oceanic log lichens
<i>Cladonia uncialis</i>	1	rock mats and cushions
<i>Cladonia verruculosa</i>	0	soil lichens
<i>Cliostomum corrugatum</i>	1	oceanic tree crusts
<i>Coelocaulon aculeatum</i>	0	rock mats and cushions
<i>Coelocaulon muricatum</i>	0	tundra sod builders
<i>Collema ceraniscum</i>	1	tundra sod builders
<i>Collema coccophorum</i>	0	steppe soil crusts
<i>Collema crispum</i>	0	N-fixing rock lichens
<i>Collema curtisporum</i>	1	riparian
<i>Collema furfuraceum</i>	0	N-fixing rock lichens
<i>Collema fuscovirens</i>	0	N-fixing rock lichens
<i>Collema polycarpon</i>	0	N-fixing rock lichens
<i>Collema tenax</i>	0	N-fixing soil lichens
<i>Collema undulatum</i>	1	N-fixing rock lichens
<i>Comicularia normoerica</i>	1	tundra rock lichens
<i>Cyphelium inquinans</i>	0	tree crusts
<i>Cyphelium karelicum</i>	1	tree crusts
<i>Cyphelium pinicola</i>	0	fencepost lichens
<i>Cyphelium tigillare</i>	0	fencepost lichens
<i>Cystocoleus ebeneus</i>	0	seepage rocks
<i>Dactylina madreporiformis</i>	1	tundra sod builders
<i>Dactylina ramulosa</i>	1	tundra sod builders
<i>Dermatocarpon intestiniiformis</i>	0	tundra rock lichens
<i>Dermatocarpon luridum</i>	0	aquatic rocks
<i>Dermatocarpon miniatum</i>	0	calcareous rock indicator
<i>Dermatocarpon moulinsii</i>	0	calcareous rock indicator
<i>Dermatocarpon reticulatum</i>	0	rock macrolichens
<i>Dermatocarpon rivulorum</i>	0	aquatic rocks
<i>Dermatocarpon vellereum</i>	0	calcareous rock indicator

<i>Dimelaena oreina</i>	0	rock crusts
<i>Dimelaena thysanota</i>	0	rock crusts
<i>Dimerella pineti</i>	0	rotten log and tree base
<i>Diploschistes albescens</i>	0	rock crusts
<i>Diploschistes muscorum</i>	0	moss & detritus binders
<i>Diploschistes scruposus</i>	0	rock crusts
<i>Diplotomma epipolium</i>	1	rock crusts
<i>Diplotomma penichrum</i>	0	oceanic tree crusts
<i>Diplotomma</i> sp. nov.	1	sheltered ledges & overha
<i>Endocarpon pulvinatum</i>	0	rock crusts
<i>Endocarpon pusillum</i>	0	steppe soil crusts
<i>Endocarpon tortuosum</i>	0	rock crusts
<i>Ephebe hispidula</i>	1	riparian
<i>Ephebe lanata</i>	1	seepage rocks
<i>Ephebe perspinulosa</i>	1	riparian
<i>Ephebe solida</i>	1	seepage rocks
<i>Euopsis pulvinata</i>	1	rock crusts
<i>Evemia divaricata</i>	1	fruticose tree lichens
<i>Evemia mesomorpha</i>	1	fruticose tree lichens
<i>Evemia prunastri</i>	0	oceanic leaf lichens
<i>Famoldia jurana</i>	0	calcareous rock indicator
<i>Flavopunctelia flaventior</i>	1	riparian
<i>Fulgensia bracteata</i>	0	calcareous steppe indicat
<i>Fulgensia desertorum</i>	0	calcareous steppe indicat
<i>Fuscidea praeruptorum</i>	1	rock crusts
<i>Glaucumaria rupicola</i>	0	rock crusts
<i>Glaucumaria rupicola</i> v sor	0	sheltered ledges & overha
<i>Gonohymenia nigritella</i>	0	calcareous rock indicator
<i>Graphis scripta</i>	1	oceanic tree crusts
<i>Gyalecta foveolaris</i>	1	tundra soil
<i>Heppia lutosa</i>	0	steppe soil crusts
<i>Hydrothyria venosa</i>	1	aquatic rocks
<i>Hypocenomyce castaneocine</i>	0	charred snag lichens
<i>Hypocenomyce friesii</i>	1	charred snag lichens

Hypocenomyce scalaris	0	charred snag lichens
Hypogymnia apinnata	1	oceanic leaf lichens
Hypogymnia austerodes	0	leaf lichens
Hypogymnia bitteri	1	leaf lichens
Hypogymnia enteromorpha	1	oceanic leaf lichens
Hypogymnia imshaugii	0	leaf lichens
Hypogymnia inactiva	1	oceanic leaf lichens
Hypogymnia metaphysodes	0	oceanic leaf lichens
Hypogymnia montana	0	leaf lichens
Hypogymnia occidentalis	0	oceanic leaf lichens
Hypogymnia physodes	0	leaf lichens
Hypogymnia rugosa	1	oceanic leaf lichens
Hypogymnia tubulosa	0	leaf lichens
Icmadophila' ericetorum	0	oceanic log lichens
Imshaugia aleurites	0	leaf lichens
Japewia subaurifera	1	oceanic tree crusts
Japewia tomoensis	1	oceanic tree crusts
Koerberia sonomensis	0	rock macrolichens
Lecania fuscella	0	tree crusts
Lecania koerberiana	0	tree crusts
Lecanora argopholis	0	rock crusts
Lecanora atrosulphurea	1	tundra rock lichens
Lecanora beringii	0	tundra sod builders
Lecanora cadubriae	0	tree crusts
Lecanora caesiorubella var sax.	0	rock crusts
Lecanora carpineae	0	oceanic tree crusts
Lecanora cascadensis	0	rock crusts
Lecanora cenisea	0	rock crusts
Lecanora chlarona	0	tree crusts
Lecanora chlarotera	0	tree crusts
Lecanora circumborealis	0	tree crusts
Lecanora crenulata	0	calcareous rock indicator
Lecanora demissa	0	rock crusts
Lecanora dispersa	0	calcareous rock indicator

Lecanora epi bryon	0	tundra sod builders
Lecanora flowersiana	0	rock crusts
Lecanora fuscescens	0	tree crusts
Lecanora garovaglii	0	rock crusts
Lecanora hageni	0	tree crusts
Lecanora hybocarba	1	tree crusts
Lecanora hypoptoides	0	tree crusts
Lecanora impudens	0	tree crusts
Lecanora intricata	0	rock crusts *
Lecanora marginata	0	rock crusts
Lecanora melanaspis	1	aquatic rocks
Lecanora microfusca	1	tundra sod builders
Lecanora muralis	0	rock crusts
Lecanora nevadensis	0	rock crusts
Lecanora occidentalis	0	rock crusts
Lecanora 'pacifica	1	oceanic tree crusts
Lecanora palanderi	0	tree crusts
Lecanora phaedrophthalma	0	rock crusts
Lecanora piniperda	0	tree-crusts
Lecanora polytropa	0	rock crusts
Lecanora populicola	0	tree crusts
Lecanora pringlei	0	sheltered ledges & overha
Lecanora pseudomellea	0	rock crusts
Lecanora pulicaris	0	tree crusts
Lecanora reagens	0	soil lichens
Lecanora rugosella	0	tree crusts
Lecanora rupicola v. soledata	0	sheltered ledges & overha
Lecanora salicicola	0	tree crusts
Lecanora sierrae	0	rock crusts
Lecanora symmicta	0	tree crusts
Lecanora thomsonii	0	rock crusts .
Lecanora umbrosa	0	rock crusts
Lecanora varia	0	tree crusts
Lecanora zosterae	0	moss & detritus binders

Lecidea atrobrunnea	0	rock crusts
Lecidea atromarginata	0	rock crusts
Lecidea auriculata	0	rock crusts
Lecidea berengeriana	0	‘ moss & detritus binders
Lecidea cinnabarina	0	tree crusts
Lecidea confluens	0	rock crusts
Lecidea dolodes	1	tree crusts
Lecidea elabens	0	tree crusts
Lecidea fuscoatra	0	rock crusts
Lecidea lactea	0	rock crusts
Lecidea lapicida f ochracea	0	rock crusts
Lecidea lapicida	0	rock crusts
Lecidea lithophila	0	rock crusts
Lecidea mannii	0	rock crusts
Lecidea marginata	0	rock crusts
Lecidea myriocarpoides	0	tree crusts
Lecidea paddensis	0	tree crusts
Lecidea plana	0	rock crusts
Lecidea plebeja	0	tree crusts
Lecidea protobacina	0	rock crusts
Lecidea sp. nov.	1	steppe soil crusts
Lecidea syncarpa	0	rock crusts
Lecidea tessellata	0	rock crusts
Lecidea turgidula	0	tree crusts
Lecidea umbonata	0	rock crusts
Lecidella ‘riparia’	0	aquatic rocks
Lecidella anomaloides	0	rock crusts
Lecidella carpathica	0	rock crusts
Lecidella elaeochroma	0	tree crusts
Lecidella euphorea	0	tree crusts
Lecidella goniophila	0	rock crusts
Lecidella inamoena	0	rock crusts
Lecidella incongruella	0	rock crusts
Lecidella patavina	0	calcareous rock indicator

<i>Lecidella stigmatea</i>	0	rock crusts
<i>Lecidella wulfenii</i>	0	tundra sod builders
<i>Lecidoma demissum</i>	0	tundra sod builders
<i>Lempholemma myriococcum</i>	1	sheltered ledges & overha
<i>Lempholemma radiatum</i>	1	soil lichens
<i>Lepraria finkii</i>	0	rock crusts
<i>Lepraria neglecta</i>	0	tundra sod builders
<i>Leprocaulon microscopicum</i>	0	moss & detritus binders
<i>Leprocaulon subalbicans</i>	0	moss & detritus binders
<i>Leproloma cacuminum</i>	0	tundra sod builders
<i>Leptochidium albociliatum</i>	0	N-fixing rock lichens
<i>Leptogium comiculatum</i>	1	rock mats and cushions
<i>Leptogium cyanescens</i>	1	N-fixing rock lichens
<i>Leptogium gelatinosum</i>	0	N-fixing rock lichens
<i>Leptogium hirsutum</i>	1	N-fixing riparian
<i>Leptogium intermedium</i>	1	moss & detritus binders
<i>Leptogium lichenoides</i>	0	moss & detritus binders
<i>Leptogium rivale</i>	1	aquatic rocks
<i>Leptogium satuminum</i>	0	N-fixing riparian
<i>Leptogium tenuissimum</i>	1	soil lichens
<i>Leptogium teretiusculum</i>	1	N-fixing riparian
<i>Letharia columbiana</i>	0	fruticose tree lichens
<i>Letharia vulpina</i>	0	fruticose tree lichens
<i>Lichenothelia scopularia</i>	0	moss & detritus binders
<i>Lobaria hallii</i>	1	N-fixing riparian
<i>Lobaria linita</i>	1	N-fixing rock lichens
<i>Lobaria oregana</i>	1	N-fixing epiphytes
<i>Lobaria pulmonaria</i>	0	N-fixing epiphytes
<i>Lobaria scrobiculata</i>	1	N-fixing rock lichens
<i>Lopadium disciforme</i>	0	oceanic tree crusts
<i>Massalongia camosa</i>	0	moss & detritus binders
<i>Megaspora verrucosa</i>	0	moss & detritus binders
<i>Melanelia disjuncta</i>	0	rock macrolichens
<i>Melanelia elegantula</i>	0	leaf lichens

Melanelia exasperatula	0	leaf lichens
Melanelia fuliginosa	0	leaf lichens
Melanelia glabra	1	leaf lichens
Melanelia infumata	0	rock macrolichens
Melanelia multispora	0	oceanic leaf lichens
Melanelia panniformis	0	rock macrolichens
Melanelia solediosa	0	rock macrolichens
Melanelia stygia	0	rock macrolichens
Melanelia subargentifera	0	rock macrolichens
Melanelia subaurifera	0	leaf lichens
Melanelia subelegantula	0	oceanic leaf lichens
Melanelia subolivacea	0	leaf lichens
Melanelia tominii	0	rock macrolichens
Micarea assimilata	1	tundra sod builders
Micarea melaena	1	tundra sod builders
Micarea prasina	1	tree crusts
Micarea sylvicola	1	rock crusts
Miriquidica garovaglii	1	rock crusts
Miriquidica leucophaea	1	rock crusts
Multiclavula corynoides	0	soil lichens
Multiclavula vemalis	0	soil lichens
Mycobilimbia berengeriana	0	moss & detritus binders
Mycobilimbia hypnorum	0	moss & detritus binders
Mycobilimbia lobulata	0	moss & detritus binders
Mycobilimbia microcarpa	1	tundra sod builders
Mycobilimbia obscurata	0	moss & detritus binders
Mycobilimbia sabuletorum	0	moss & detritus binders
Mycoblastus sanguinarius	0	tree crusts
Neofuscelia loxodes	0	rock macrolichens
Neofuscelia subhosseana	0	rock macrolichens
Neofuscelia verruculifera	0	rock macrolichens
Nephroma bellum	0	N-fixing riparian
Nephroma helveticum	0	N-fixing riparian
Nephroma parile	0	N-fixing rock lichens

Nephroma resupinatum	0	N-fixing riparian
Normandina pulchella	0	tree crusts
Ochrolechia androg. v saxorum	0	rock crusts
Ochrolechia androgyna	0	tree crusts
Ochrolechia cf. mexicana	0	tree crusts
Ochrolechia frigida	0	tundra sod builders
Ochrolechia gowardii	0	tree crusts
Ochrolechia juvenalis	0	tree crusts
Ochrolechia montana	0	tree crusts
Ochrolechia oregonensis	1	tree crusts
Ochrolechia szatalaensis	0	tree crusts
Ochrolechia upsaliensis	0	moss & detritus binders
Ophioparma lapponicum	0	rock crusts
Pannaria cyanolepra	0	N-fixing soil lichens
Pannaria leucophaea	0	rock macrolichens
Pannaria leucostictoides	1	N-fixing epiphytes
Pannaria mediterranea	1	N-fixing epiphytes
Pannaria pezizoides	0	moss & detritus binders
Pannaria praetermissa	0	N-fixing rock lichens
Pannaria saubinetii	1	N-fixing epiphytes
Parmelia fraudans	1	rock macrolichens
Parmelia hygrophila	0	oceanic leaf lichens
Parmelia omphalodes	0	tundra sod builders
Parmelia saxatilis	0	rock macrolichens
Parmelia sulcata	0	leaf lichens
Parmeliella triptophylla	1	N-fixing epiphytes
Parmeliopsis ambigua	0	leaf lichens
Parmeliopsis hyperopta	0	leaf lichens
Peltigera aphthosa	0	N-fixing soil lichens
Peltigera britannica	0	N-fixing soil lichens
Peltigera canina	0	N-fixing soil lichens
Peltigera cinnamomea	0	N-fixing soil lichens
Peltigera collina	0	N-fixing rock lichens
Peltigera didactyla	0	pioneer soil stabilizers

<i>Peltigera elisabethae</i>	0	N-fixing rock lichens
<i>Peltigera horizontalis</i>	0	N-fixing rock lichens
<i>Peltigera kristinssonii</i>	0	N-fixing soil lichens
<i>Peltigera lepidophora</i>	0	tundra sod builders
<i>Peltigera leucophlebia</i>	0	N-fixing soil lichens
<i>Peltigera malacea</i>	0	N-fixing rock lichens
<i>Peltigera membranacea</i>	0	N-fixing soil lichens
<i>Peltigera neckeri</i>	0	N-fixing soil lichens
<i>Peltigera neopolydactyla</i>	1	N-fixing soil lichens
<i>Peltigera pacifica</i>	1	N-fixing soil lichens
<i>Peltigera polydactyla</i>	0	N-fixing soil lichens
<i>Peltigera ponojensis</i>	0	N-fixing soil lichens
<i>Peltigera praetextata</i>	0	N-fixing soil lichens
<i>Peltigera rufescens</i>	0	N-fixing soil lichens
<i>Peltigera venosa</i>	0	N-fixing soil lichens
<i>Peltula euploca</i>	1	N-fixing rock lichens
<i>Pertusaria amara</i>	0	tree crusts
<i>Pertusaria borealis</i>	0	tree crusts
<i>Pertusaria leucostoma</i>	1	oceanic tree crusts
<i>Pertusaria ophthalmiza</i>	0	tree crusts
<i>Pertusaria pupillaris</i>	1	rock crusts
<i>Pertusaria sommerfeltii</i>	1	oceanic tree crusts
<i>Pertusaria stenhammari</i>	1	oceanic tree crusts
<i>Pertusaria subambigans</i>	1	oceanic tree crusts
<i>Pertusaria suboculata</i>	1	oceanic tree crusts
<i>Phaeocalicium compressulum</i>	0	pin
<i>Phaeocalicium populneum</i>	0	pin
<i>Phaeophyscia ciliata</i>	1	leaf lichens
<i>Phaeophyscia constipata</i>	0	rock macrolichens
<i>Phaeophyscia decolor</i>	0	rock macrolichens
<i>Phaeophyscia hirsuta</i>	0	leaf lichens
<i>Phaeophyscia kairamoi</i>	1	rock macrolichens
<i>Phaeophyscia nigricans</i>	0	leaf lichens
<i>Phaeophyscia orbicularis</i>	0	leaf lichens

Phaeophyscia sciastra	0	rock macrolichens
Phaeorrhiza nimbose	0	tundra sod builders
Phaeorrhiza sareptana	0	steppe soil crusts
Phlyctis argena	0	oceanic tree crusts
Phlyctis speirea	1	tree crusts
Phylliscum demangeonii	0	aquatic rocks
Physcia adscendens	0	excess nitrogen indicator
Physcia aipolia	0	leaf lichens
Physcia biziana	0	rock macrolichens
Physcia caesia	0	rock macrolichens
Physcia dimidiata	0	rock macrolichens
Physcia dubia	0	rock macrolichens
Physcia magnussonii	0	rock macrolichens
Physcia phaea	0	rock macrolichens
Physcia semipinnata	1	riparian
Physcia stellaris	0	leaf lichens
Physcia tenella	0	leaf lichens
Physciella chloantha	0	leaf lichens
Physciella melanchra	0	leaf lichens
Physconia americana	0	oceanic leaf lichens
Physconia detersa	0	leaf lichens
Physconia enteroxantha	0	leaf lichens
Physconia isidiigera	0	leaf lichens
Physconia muscigena	0	moss & detritus binders
Physconia perisidiosa	0	leaf lichens
Physconia thomsonii	0	calcareous rock indicator
Pilophorus acicularis	1	N-fixing rock lichens
Pilophorus clavatus	1	N-fixing rock lichens
Placopsis gelida	1	N-fixing rock lichens
Placynthiella icmalea	0	pioneer soil stabilizers
Placynthiella oligotropa	0	pioneer soil stabilizers
Placynthiella uliginosa	0	pioneer soil stabilizers
Placynthium nigrum	0	calcareous rock indicator
Platismatia glauca	0	leaf lichens

Platismatia herrei	1	oceanic leaf lichens
Platismatia norvegica	1	oceanic leaf lichens
Platismatia stenophylla	1	oceanic leaf lichens
Polyblastia cruenta	1	aquatic rocks
Polychidium muscicola	0	moss & detritus binders
Polysporina simplex	0	rock crusts
Porpidia crustulata	0	rock crusts
Porpidia glaucophaea	0	rock crusts
Porpidia macrocarpa	0	rock crusts
Porpidia thomsonii	0	rock crusts
Protoblastenia rupestris	0	calcareous rock indicator
Protoparmelia badia	0	rock crusts
Protoparmelia cupreobadia	1	tundra rock lichens
Protoparmelia ochrococca	0	oceanic tree crusts
Pseudephebe minuscula	0	tundra rock lichens
Pseudephebe pubescens	0	rock macrolichens
Pseudocyphellaria anomala	1	N-fixing epiphytes
Pseudocyphellaria anthras	1	N-fixing epiphytes
Psora cerebriiformis	0	calcareous steppe indicat
Psora decipiens	0	calcareous steppe indicat
Psora globifera	0	steppe soil crusts
Psora himalayana	0	calcareous steppe indicat
Psora montana	0	steppe soil crusts
Psora nipponica	0	rock crusts
Psora tuckermanii	0	calcareous steppe indicat
Psoroma hypnorum	0	moss & detritus binders
Psorotichia schaeferi	1	N-fixing rock lichens
Ramalina dilacerata	0	riparian
Ramalina farinacea	1	riparian
Ramalina obtusata	1	riparian
Ramalina pollinaria	1	riparian
Ramalina thrausta	1	riparian
Rhizocarpon badioatrum	0	aquatic rocks
Rhizocarpon bolanderi	0	rock crusts

Rhizocarpon concentricum	0	aquatic rocks
Rhizocarpon copelandii	1	tundra rock lichens
Rhizocarpon disporum	0	rock crusts
Rhizocarpon effiguratum	0	rock crusts
Rhizocarpon geminatum	0	rock crusts
Rhizocarpon geographicum	0	rock crusts
Rhizocarpon grande	0	rock crusts
Rhizocarpon hochstetteri	1	tundra rock lichens
Rhizocarpon lecanorinum	0	rock crusts
Rhizocarpon macrosporum	0	rock crusts
Rhizocarpon polycarpum	0	tundra rock lichens
Rhizocarpon pusillum	0	rock crusts
Rhizocarpon riparium	0	rock crusts
Rhizocarpon sphaerosporum	0	rock crusts
Rhizocarpon supetficiale	0	tundra rock lichens
Rhizoplaca chtysoleuca	0	rock macrolichens
Rhizoplaca haydenii	1	vagrant ground lichens
Rhizoplaca idahoensis	1	vagrant ground lichens
Rhizoplaca melanophthalma	0	rock macrolichens
Rhizoplaca peltata,	0	calcareous rock indicator
Rimularia insularis	0	rock crusts
Rinodina archaea	0	tundra sod builders
Rinodina bischofii	0	rock crusts
Rinodina castanomelodes	0	calcareous rock indicator
Rinodina colobina	0	tree crusts
Rinodina confragosa	0	rock crusts
Rinodina convexula	0	tree crusts
Rinodina corticola	0	tree crusts
Rinodina dakotensis	0	tree crusts
Rinodina disjuncta	1	oceanic tree crusts
Rinodina exigua	0	tree crusts
Rinodina glauca	1	tree crusts
Rinodina ligniaria	0	tree crusts
Rinodina lignicola	0	tree crusts

Rinodina marysvillensis	0	tree crusts
Rinodina milvina	0	rock crusts
Rinodina mniaraea	0	tundra sod builders
Rinodina mucronatula	0	tree crusts
Rinodina oregana	0	oceanic tree crusts
Rinodina pyrina	0	t r e e c r u s t s
Rinodina roscida.	0	tundra sod builders
Rinodina septentrionalis	0	oceanic tree crusts
Rinodina trevisani	0	tree crusts
Rinodina turfacea	0	tundra sod builders
Rinodina zwackhiana	0	calcareous rock indicator
Rinodinella lobulata	0	tree crusts
Sarcogyne privigna	0	calcareous rock indicator
Sarcogyne pruinosa	0	calcareous rock indicator
Sarcogyne regularis	0	calcareous rock indicator
Sarcosagium campestre	0	moss & detritus binders
Schaereria tenebrosa	1	tundra rock lichens
Solorina bispora	1	tundra soil
Solorina crocea	0	N-fixing soil lichens
Solorina saccata	1	tundra soil
Solorina spongiosa	1	N-fixing soil lichens
Sphaerophorus globosus	1	oceanic fruticose
Sporastatia polyspora	1	tundra rock lichens
Sporastatia testudinea	0	tundra rock lichens
Staurothele areolata	0	rock crusts
Staurothele clopimoides	0	rock crusts
Staurothele drummondii	0	rock crusts
Staurothele fissa	0	aquatic rocks
Staurothele monicae	0	calcareous rock indicator
Stenocybe pullata	0	pin
Stereocaulon alpinum	0	N-fixing soil lichens
Stereocaulon glareosum	0	N-fixing soil lichens
Stereocaulon grande	1	rock mats and cushions
Stereocaulon paschale	1	rock mats and cushions

Stereocaulon sasakii v. tom.	0	rock mats and cushions
Stereocaulon sterile	0	rock macrolichens
Stereocaulon tomentosum	0	rock mats and cushions
Strangospora moriformis	0	tree crusts
Teloschistes contortuplicatus	0	calcareous rock indicator
Tephromela aglaea	1	rock crusts
Tephromela armehiaca	0	tundra rock lichens
Tephromela atra	0	rock crusts
Texosporium sancti-jacobi	1	steppe soil crusts
Thamnia subuliformis	0	tundra sod builders
Thelocarpon sp.	0	moss & detritus binders
Thelomma ocellatum	0	fencepost lichens
Thrombium epigaeum	0	pioneer soil stabilizers
Toninia candida	0	calcareous rock indicator
Toninia ruginosa	0	moss & detritus binders
Toninia sedifolia	0	calcareous steppe indicat
Toninia squalida	0	moss & detritus binders
Trapelia involuta	1	rock crusts
Trapeliopsis flexuosa	0	tree crusts
Trapeliopsis granulosa	0	moss & detritus binders
Trapeliopsis sp. nov.	0	steppe soil crusts
Trapeliopsis wallrothii	0	moss & detritus binders
Tremolecia atrata	0	metal-rich rock indicator
Umbilicaria americana	0	sheltered ledges & overha
Umbilicaria angulata	1	oceanic rock lichens
Umbilicaria arctica	0	rock macrolichens
Umbilicaria decussatus	0	rock macrolichens
Umbilicaria deusta	0	rock macrolichens
Umbilicaria havaasii	1	oceanic rock lichens
Umbilicaria hyperborea	0	rock macrolichens
Umbilicaria krascheninnik	0	tundra rock lichens
Umbilicaria lambii	1	oceanic rock lichens
Umbilicaria phaea	0	rock macrolichens
Umbilicaria polyphylla	0	rock macrolichens

Umbilicaria polyrrhiza	1	oceanic rock lichens
Umbilicaria torrefacta	0	rock macrolichens
Umbilicaria vellea	0	sheltered ledges & overha
Umbilicaria virginis	0	tundra rock lichens
Usnea cavemosa	1	fruticose tree lichens
Usnea diplotypus	0	fruticose tree lichens
Usnea filipendula	0	oceanic fruticose
Usnea glabrata	1	oceanic fiuticose
Usnea glabrescens	0	fruticose tree lichens
Usnea hirta	0	fruticose tree lichens
Usnea lapponica	0	fruticose tree lichens
Usnea plicata agg.	0	oceanic fruticose
Usnea scabrata	0	oceanic fruticose
Usnea scabrata ssp nylan.	0	oceanic fruticose
Usnea sphacelata	1	tundra rock lichens
Usnea subfloridana	0	fruticose tree lichens
Usnea substerilis	0	fruticose tree lichens
Varicellaria rhodocarpa	1	tree crusts
Verrucaria aethiobola	0	aquatic rocks
Verrucaria calciseda	0	calcareous rock indicator
Verrucaria calkinsiana	0	rock crusts
Verrucaria compacta	0	calcareous rock indicator
Verrucaria fuscella	0	calcareous rock indicator
Verrucaria glaucovirens	0	calcareous rock indicator
Verrucaria hydrela ,	0	aquatic rocks
Verrucaria margacea	0	aquatic rocks
Verrucaria muralis	0	calcareous rock indicator
Verrucaria viridula	0	calcareous rock indicator
Verrucaria zamenhofiana	0	calcareous rock indicator
Xanthoparmelia angustiphyllia	1	rock macrolichens
Xanthoparmelia chlorochroa	0	vagrant ground lichens
Xanthoparmelia coloradoensis	0	rock macrolichens
Xanthoparmelia cumberlandia	0	rock macrolichens
Xanthoparmelia hypopsila	0	rock macrolichens

Xanthoparmelia lineola	0	rock macrolichens
Xanthoparmelia mexicana	0	rock macrolichens
Xanthoparmelia montanensis	1	rock macrolichens
Xanthoparmelia neochlorochroa	1	vagrant ground lichens
Xanthoparmelia norchlorochroa	1	vagrant ground lichens
Xanthoparmelia plittii	0	rock macrolichens
Xanthoparmelia subdecipiens	0	rock macrolichens
Xanthoparmelia wyomingica	0	vagrant ground lichens
Xanthoria candelaria	0	sheltered ledges & overha
Xanthoria elegans	0	rock macrolichens
Xanthoria fallax	0	excess nitrogen indicator
Xanthoria lobulata	0	calcareous rock indicator
Xanthoria polycarpa	0	leaf lichens
Xanthoria soorediata	0	rock macrolichens
Xylographa abietina	0	tree crusts

Table 3- b. Lichen Species (count = 725) in the Columbia Basin east of the Cascade crest, arranged by Species functional groups. A "1" under "rare" indicates that the species is rare within this region.

Species	Rare	Species Group	Group
Aspicilia aquatica	0	aquatic rocks	aqua
Caloplaca diphyodes	0	aquatic rocks	aqua
Dermatocarpon luridum	0	aquatic rocks	aqua
Dermatocarpon rivulorum	0	aquatic rocks	aqua
Hydrothyria venosa	1	aquatic rocks	aqua
Lecanora melanaspis	1	aquatic rocks	aqua
Lecidella 'riparia'	0	aquatic rocks	aqua
Leptogium rivale	1	aquatic rocks	aqua
Phylliscum demangeonii	0	aquatic rocks	aqua
Polyblastia cruenta	1	aquatic rocks	aqua
Rhizocarpon badioatrum	0	aquatic rocks	aqua
Rhizocarpon concentricum	0	aquatic rocks	aqua
Staurothele fissa	0	aquatic rocks	aqua
Verrucaria aethiobola	0	aquatic rocks	aqua
Verrucaria hydrela	0	aquatic rocks	aqua
Verrucaria margacea	0	aquatic rocks	aqua
Arthonia patellulata	0	aspen specialists	aspen
Cetraria sepincola	1	bog lichens	bog
Acarospora glaucocarpa	0	calcareous rock indicator	calc
Acarospora strigata	0	calcareous rock indicator	calc
Anaptychia ulotrichodes	0	calcareous rock indicator	calc
Caloplaca atroalba	0	calcareous rock indicator	calc
Caloplaca cladodes	0	calcareous rock indicator	calc
Caloplaca decipiens	0	calcareous rock indicator	calc
Caloplaca feracissima ?	0	calcareous rock indicator	calc
Caloplaca lactea	0	calcareous rock indicator	calc
Caloplaca lithophila	0	calcareous rock indicator	calc
Caloplaca trachyphylla	0	calcareous rock indicator	calc

Caloplaca variabilis	0	calcareous rock indicator	calc
Candelariella aurella	0	calcareous rock indicator	calc
Dermatocarpon miniatum	0	calcareous rock indicator	calc
Dermatocarpon moulinsii	0	calcareous rock indicator	calc
Dermatocarpon vellereum	0	calcareous rock indicator	calc
Farnoldia jurana	0	calcareous rock indicator	calc
Gonohymenia nigritella	0	calcareous rock indicator	calc
Lecanora crenulata	0	calcareous rock indicator	calc
Lecanora dispersa	0	calcareous rock indicator	calc
Lecidella patavina	0	calcareous rock indicator	calc
Physconia thomsonii	0	calcareous rock indicator	calc
Placynthium nigrum	0	calcareous rock indicator	calc
Protoplastenia rupestris	0	calcareous rock indicator	calc
Rhizoplaca peltata	0	calcareous rock indicator	calc
Rinodina castanomelodes	0	calcareous rock indicator	calc
Rinodina zwackhiana	0	calcareous rock indicator	calc
Sarcogyne privigna	0	calcareous rock indicator	calc
Sarcogyne pruinosa	0	calcareous rock indicator	calc
Sarcogyne regularis	0	calcareous rock indicator	calc
Staurothele monicae	0	calcareous rock indicator	calc
Teloschistes contortuplic	0	calcareous rock indicator	calc
Toninia candida	0	calcareous rock indicator	calc
Verrucaria calciseda	0	calcareous rock indicator	calc
Verrucaria compacta	0	calcareous rock indicator	calc
Verrucaria fuscella	0	calcareous rock indicator	calc
Verrucarii glaucovirens	0	calcareous rock indicator	calc
Verrucaria muralis	0	calcareous rock indicator	calc
Verrucaria viridula	0	calcareous rock indicator	calc
Verrucaria zamenhofiana	0	calcareous rock indicator	calc
Xanthoria lobulata	0	calcareous rock indicator	calc
Buellia elegans	0	calcareous steppe indicat	cstep
Caloplaca tominii	0	calcareous steppe indlcat	cstep

Fulgensia bracteata	0	calcareous steppe indicat	cstep
Fulgensia desertorum	0	calcareous steppe indicat	cstep
Psora cerebriformis	0	calcareous steppe indicat	cstep
Psora decipiens	0	calcareous steppe indicat	cstep
Psora himalayana	0	calcareous steppe indicat	cstep
Psora tuckermanii	0	calcareous steppe indicat	cstep
Toninia sedifolia	0	calcareous steppe indicat	cstep
Hypocenomyce castaneocine	0	charred snag lichens	char
Hypocenomyce friesii	1	charred snag lichens	char
Hypocenomyce scalaris	0	charred snag lichens	char
Physcia adscendens	0	excess nitrogen indicator	N+ind
Xanthoria fallax	0	excess nitrogen indicator	N+ind
Cyphelium pinicola	0	fencepost lichens	post
Cyphelium tigillare	0	fencepost lichens	post
Thelomma ocellatum	0	fencepost lichens	post
Bryoria capillaris	0	forage	for
Bryoria fremontii	0	forage	for
Bryoria fuscescens	0	forage	for
Bryoria glabra	0	forage	for
Bryoria implexa	1	forage	for
Bryoria lanestrís	0	forage	for
Bryoria nadvornikiana	1	forage	for
Bryoria oregana	0	forage	for
Bryoria pseudofuscescens	0	forage	for
Bryoria vrangiana	0	forage	for
Alectoria imshaugii	0	fruticose tree lichens	frut
Bryoria abbreviata	0	fruticose tree lichens	frut
Bryoria simplicior	1	fruticose tree lichens	frut
Evernia divaricata	1	fruticose tree lichens	frut
Evernia mesomorpha	1	fruticose tree lichens	frut
Letharia columbiana	0	fruticose tree lichens	frut
Letharia vulpina	0	fruticose tree lichens	frut

Usnea cavernosa	1	fruticose tree lichens	frut
Usnea diplotypus	0	fruticose tree lichens	frut
Usnea glabrescens	0	fruticose tree lichens	frut
Usnea hirta	0	fruticose tree lichens	frut
Usnea lapponica	0	fruticose tree lichens	frut
Usnea subfloridana	0	fruticose tree lichens	frut
Usnea substerilis	0	fruticose tree lichens	frut
Ahtiana sphaerosporella	0	leaf lichens	leaf
Cetraria canadensis	0	leaf lichens	leaf
Cetraria chlorophylla	0	leaf lichens	leaf
Cetraria idahoensis	0	leaf lichens	leaf
Cetraria merrillii	0	leaf lichens	leaf
Cetraria orbata	0	leaf lichens	leaf
Cetraria pallidula	0	leaf lichens	leaf
Cetraria pinastri	0	leaf lichens	leaf
Cetraria platyphylla	0	leaf lichens	leaf
Hypogymnia austerodes	0	leaf lichens	leaf
Hypogymnia bitteri	1	leaf lichens	leaf
Hypogymnia imshaugii	0	leaf lichens	leaf
Hypogymnia montana	0	leaf lichens	leaf
Hypogymnia physodes	0	leaf lichens	leaf
Hypogymnia tubulosa	0	leaf lichens	leaf
Imshaugia aleurites	0	leaf lichens	leaf
Melanelia elegantula	0	leaf lichens	leaf
Melanelia exasperatula	0	leaf lichens	leaf
Melanelia fuliginosa	0	leaf lichens	leaf
Melanelia glabra	1	leaf lichens	leaf
Melanelia subaurifera	0	leaf lichens	leaf
Melanelia subolivacea	0	leaf lichens	leaf
Parmelia sulcata	0	leaf lichens	leaf
Parmeliopsis ambigua	0	leaf lichens	leaf
Parmeliopsis hyperopta	0	leaf lichens	leaf

Phaeophyscia <i>ciliata</i>	1	leaf lichens	leaf
Phaeophyscia <i>hirsuta</i>	0	leaf lichens	leaf
Phaeophyscia <i>nigricans</i>	0	leaf lichens	leaf
Phaeophyscia <i>orbicularis</i>	0	leaf lichens	leaf
Physcia <i>aipolia</i>	0	leaf lichens	leaf
Physcia <i>stellaris</i>	0	leaf lichens	leaf
Physcia <i>tenella</i>	0	leaf lichens	leaf
Physciella <i>chloantha</i>	0	leaf lichens	leaf
Physciella <i>melanchra</i>	0	leaf lichens	leaf
Physconia <i>detersa</i>	0	leaf lichens	leaf
Physconia <i>enteroxantha</i>	0	leaf lichens	leaf
Physconia <i>isidiigera</i>	0	leaf lichens	leaf
Physconia <i>perisidiosa</i>	0	leaf lichens	leaf
Platismatia <i>glauca</i>	0	leaf lichens	leaf
Xanthoria <i>polycarpa</i>	0	leaf lichens	leaf
Tremolecia <i>atrata</i>	0	metal-rich rock indicator	metal
Arthroraphis <i>citrinella</i>	0	moss & detritus binders	moss
Bacidia <i>bagliettoana</i>	0	moss & detritus binders	moss
Bacidia <i>sabulaetorum</i>	0	moss & detritus binders	moss
Biatora <i>sphaeroides</i>	0	moss & detritus binders	moss
Biatora <i>vernalis</i>	0	moss & detritus binders	moss
Buellia <i>badia</i>	0	moss & detritus binders	moss
Buellia <i>geophila</i>	0	moss & detritus binders	moss
Buellia <i>papillata</i>	0	moss & detritus binders	moss
Caloplaca <i>jungermanniae</i>	0	moss & detritus binders	moss
Caloplaca <i>stillicidiorum</i>	0	moss & detritus binders	moss
Caloplaca <i>subpyraceola</i>	0	moss & detritus binders	moss
Caloplaca <i>tirolensis</i>	0	moss & detritus binders	moss
Diploschistes <i>muscorum</i>	0	moss & detritus binders	moss
Lecanora <i>zosteriae</i>	0	moss & detritus binders	moss
Lecidea <i>berengeriana</i>	0	moss & detritus binders	moss
Leprocaulon <i>microscopicum</i>	0	moss & detritus binders	moss

<i>Leprocaulon subalbicans</i>	0	moss & detritus binders	moss
<i>Leptogium intermedium</i>	1	moss & detritus binders	moss
<i>Leptogium lichenoides</i>	0	moss & detritus binders	moss
<i>Lichenothelia scopularia</i>	0	moss & detritus binders	moss
<i>Massalongia carnosa</i>	0	moss & detritus binders	moss
<i>Megaspora verrucosa</i>	0	moss & detritus binders	moss
<i>Mycobilimbia berengeriana</i>	0	moss & detritus binders	moss
<i>Mycobilimbia hypnorum</i>	0	moss & detritus binders	moss
<i>Mycobilimbia lobulata</i>	0	moss & detritus binders	moss
<i>Mycobilimbia obscurata</i>	0	moss & detritus binders	moss
<i>Mycobilimbia sabuletorum</i>	0	moss & detritus binders	moss
<i>Ochrolechia upsaliensis</i>	0	moss & detritus binders	moss
<i>Pannaria pezizoides</i>	0	moss & detritus binders	moss
<i>Physconia muscigena</i>	0	moss & detritus binders	moss
<i>Polychidium muscicola</i>	0	moss & detritus binders	moss
<i>Psoroma hypnorum</i>	0	moss & detritus binders	moss
<i>Sarcosagium campestre</i>	0	moss & detritus binders	moss
<i>Thelocarpon</i> sp.	0	moss & detritus binders	moss
<i>Toninia ruginosa</i>	0	moss & detritus binders	moss
<i>Toninia squalida</i>	0	moss & detritus binders	moss
<i>Trapeliopsis granulosa</i>	0	moss & detritus binders	moss
<i>Trapeliopsis wallrothii</i>	0	moss & detritus binders	moss
<i>Lobaria oregana</i>	1	N-fixing epiphytes	Nepi
<i>Lobaria pulmonaria</i>	0	N-fixing epiphytes	Nepi
<i>Pannaria leucostictoides</i>	1	N-fixing epiphytes	Nepi
<i>Pannaria mediterranea</i>	1	N-fixing epiphytes	Nepi
<i>Pannaria saubinetii</i>	1	N-fixing epiphytes	Nepi
<i>Parmeliella triptophylla</i>	1	N-fixing epiphytes	Nepi
<i>Pseudocyphellaria anomala</i>	1	N-fixing epiphytes	Nepi
<i>Pseudocyphellaria anthras</i>	1	N-fixing epiphytes	Nepi
<i>Leptogium hirsutum</i>	1	N-fixing riparian	Nrip
<i>Leptogium saturninum</i>	0	N-fixing riparian	Nrip

Leptogium teretiusculum	1	N-fixing riparian	Nrip
Lobaria hallii	1	N-fixing riparian	Nrip
Nephroma bellum	0	N-fixing riparian	Nrip
Nephroma helveticum	0	N-fixing riparian	Nrip
Nephroma resupinatum	0	N-fixing riparian	Nrip
Collema crispum	0	N-fixing rock lichens	Nrock
Collema furfuraceum	0	N-fixing rock lichens	Nrock
Collema fuscovirens	0	N-fixing rock lichens	Nrock
Collema polycarpon	0	N-fixing rock lichens	Nrock
Collema undulatum	1	N-fixing rock lichens	Nrock
Leptochidium albociliatum	0	N-fixing rock lichens	Nrock
Leptogium cyanescens	1	N-fixing rock lichens	Nrock
Leptogium gelatinosum	0	N-fixing rock lichens	Nrock
Lobaria linita	1	N-fixing rock lichens	Nrock
Lobaria scrobiculata	1	N-fixing rock lichens	Nrock
Nephroma parile	0	N-fixing rock lichens	Nrock
Pannaria praetermissa	0	N-fixing rock lichens	Nrock
Peltigera coliina	0	N-fixing rock lichens	Nrock
Peltigera elisabethae	0	N-fixing rock lichens	Nrock
Peltigera horizontalis	0	N-fixing rock lichens	Nrock
Peltigera malacea	0	N-fixing rock lichens	Nrock
Peltula euploca	1	N-fixing rock lichens	Nrbck
Pilophorus acicularis	1	N-fixing rock lichens	Nrock
Pilophorus clavatus	1	N-fixing rock lichens	Nrock
Placopsis gelida	1	N-fixing rock lichens	Nrock
Psorotichia schaererii	1	N-fixing rock lichens	Nrock
Collema tenax	0	N-fixing soil lichens	Nsoil
Pannaria cyanolepra	0	N-fixing soil lichens	Nsoil
Peltigera aphthosa	0	N-fixing soil lichens	Nsoil
Peltigera britannica	0	N-fixing soil lichens	Nsoil
Peltigera canina	0	N-fixing soil lichens	Nsoil
Peltigera cinnamomea	0	N-fixing soil lichens	Nsoil

<i>Peltigera kristinssonii</i>	0	N-fixing soil lichens	Nsoil
<i>Peltigera leucophlebia</i>	0	N-fixing soil lichens	Nsoil
<i>Peltigera membranacea</i>	0	N-fixing soil lichens	Nsoil
<i>Peltigera neckeri</i>	0	N-fixing soil lichens	Nsoil
<i>Peltigera neopolydactyla</i>	1	N-fixing soil lichens	Nsoil
<i>Peltigera pacifica</i>	1	N-fixing soil lichens	Nsoil
<i>Peltigera polydactyla</i>	0	N-fixing soil lichens	Nsoil
<i>Peltigera ponojensis</i>	0	N-fixing soil lichens	Nsoil
<i>Peltigera praetextata</i>	0	N-fixing soil lichens	Nsoil
<i>Peltigera rufescens</i>	0	N-fixing soil lichens	Nsoil
<i>Peltigera venosa</i>	0	N-fixing soil lichens	Nsoil
<i>Solorina crocea</i>	0	N-fixing soil lichens	Nsoil
<i>Solorina spongiosa</i>	1	N-fixing soil lichens	Nsoil
<i>Stereocaulon aloinum</i>	0	N-fixing soil lichens	Nsoil
<i>Stereocaulon glareosum</i>	0	N-fixing soil lichens	Nsoil
<i>Alectoria sarmentosa</i>	0	oceanic forage lichens	ofor
<i>Alectoria vancouverensis</i>	1	oceanic forage lichens	ofor
<i>Bryoria friabilis</i>	0	oceanic forage lichens	ofor
<i>Sphaerophorus globosus</i>	1	oceanic fruticose	ofrut
<i>Usnea filipendula</i>	0	oceanic fruticose	ofrut
<i>Usnea glabrata</i>	1	oceanic fruticose	ofrut
<i>Usnea plicata</i> agg.	0	oceanic fruticose	ofrut
<i>Usnea scabrata</i>	0	oceanic fruticose	ofrut
<i>Usnea scabrata</i> ssp nylan.	0	oceanic fruticose	ofrut
<i>Evernia prunastri</i>	0	oceanic leaf lichens	oleaf
<i>Hypogymnia apinnata</i>	1	oceanic leaf lichens	oleaf
<i>Hypogymnia enteromorpha</i>	1	oceanic leaf lichens	oleaf"
<i>Hypogymnia inactiva</i>	1	oceanic leaf lichens	oleaf'
<i>Hypogymnia metaphysodes</i>	0	oceanic leaf lichens	oleaf
<i>Hypogymnia occidentalis</i>	0	oceanic leaf lichens	oleaf
<i>Hypogymnia rugosa</i>	1	oceanic leaf lichens	oleaf
<i>Melanelia multispora</i>	0	oceanic leaf lichens	oleaf

Melanelia subelegantula	0	oceanic leaf lichens	oleaf
Parmelia hygrophila	0	oceanic leaf lichens	oleaf
Physconia americana	0	oceanic leaf lichens	oleaf
Platismatia herrei	1	oceanic leaf lichens	oleaf
Platismatia norvegica	1	oceanic leaf lichens	oleaf
Platismatia stenophylla	1	oceanic leaf lichens	oleaf
Cladonia merochlorophaea	0	oceanic log lichens	olog
Cladonia squamosa	0	oceanic log lichens	olog
Cladonia subsquamosa	1	oceanic log lichens	olog
Cladonia transcendens	1	oceanic log lichens	olog
Cladonia umbricola	0	oceanic log lichens	olog
Icmadophila ericetorum	0	oceanic log lichens	olog
Umbilicaria angulata	1	oceanic rock lichens	orock
Umbilicaria havaasii	1	oceanic rock lichens	orock
Umbilicaria lambii	1	oceanic rock lichens	orock
Umbilicaria polyrhiza	1	oceanic rock lichens	orock
Bacidia idahoensis	0	oceanic tree crusts	ocrus
Caloplaca atosanguinea	0	oceanic tree crusts	ocrus
Cliostomum corrugatum	1	oceanic tree crusts	ocrus
Diplotomma penichrum	0	oceanic tree crusts	ocrus
Graphis scripta	1	oceanic tree crusts	ocrus
Japewia subaurifera	1	oceanic tree crusts	ocrus
Japewia tornoensis	1	oceanic tree crusts	ocrus
Lecanora carpineae	0	oceanic tree crusts	ocrus
Lecanora pacifica	1	oceanic tree crusts	ocrus
Lopadium disciforme	0	oceanic tree crusts	ocrus
Pertusaria leucostoma	1	oceanic tree crusts	ocrus
Pertusaria sommerfeltii	1	oceanic tree crusts	ocrus
Pertusaria stenhammari	1	oceanic tree crusts	ocrus
Pertusaria subambigens	1	oceanic tree crusts	ocrus
Pertusaria suboculata	1	oceanic tree crusts	ocrus
Phlyctis argena	0	oceanic tree crusts	ocrus

Protoparmelia ochrococca	0	oceanic tree crusts	ocrus
Rinodina disjuncta	1	oceanic tree crusts	ocrus
Rinodina oregana	0	oceanic tree crusts	ocrus
Rinodina septentrionalis	0	oceanic tree crusts	ocrus
Calicium adaequatum	0	pin	pin
Calicium trabinellum	0	pin	pin
Calicium viride	0	pin	pin
Chaenotheca laevigata	0	pin	pin
Chaenotheca stemonea	0	pin	pin
Chaenotheca subroscida	0	pin	pin
Phaeocalicium compressulu	0	pin	pin
Phaeocalicium populneum	0	pin	pin
Stenocybe pullata	0	pin	pin
Cladonia cariosa	0	pioneer soil stabilizers	pion
Peltigera didactyla	0	pioneer soil stabilizers	pion
Placynthiella icmalea	0	pioneer soil stabilizers	pion
Placynthiella oligotropha	0	pioneer soil stabilizers	pion
Placynthiella uliginosa	0	pioneer soil stabilizers	pion
Thrombium epigaeum	0	pioneer soil stabilizers	pion
Collema curtisporum	1	riparian	rip
Ephebe hispidula	1	riparian	rip
Ephebe perspinulosa	1	riparian	rip
Flavopunctelia flaventior	1	riparian	rip
Physcia semipinnata	1	riparian	rip
Ramalina dilacerata	0	riparian	rip
Ramalina farinacea	1	riparian	rip
Ramalina obtusata	1	riparian	rip
Ramalina pollinaria	1	riparian	rip
Ramalina thrausta	1	riparian	rip
Acarospora bullata	0	rock crusts	crock
Acarospora chlorophana	0	rock crusts	crock
Acarospora fuscata	0	rock crusts	crock

Acarospora murorum	1	rock crusts	crook
Acarospora smaragdula	0	rock crusts	crook
Acarospora smarag. v.lesd	0	rock crusts	crook
Acarospora thamnina	0	rock crusts	crook
Acarospora veronensis	0	rock crusts	crook
Adelolecia pilati	1	rock crusts	crook
Arthonia intexta	1	rock crusts	crook
Aspicilia aliena	0	rock crusts	crook
Aspicilia alphoplaca	0	rock crusts	crook
Aspicilia arctica	1	rock crusts	crook
Aspicilia caesiocinerea	0	rock crusts	crook
Aspicilia calcarea	0	rock crusts	crook
Aspicilia candida	0	rock crusts	crook
Aspicilia cinerea	0	rock crusts	crook
Aspicilia desertorum	0	rock crusts	crook
Aspicilia desertorum	0	rock crusts	crook
Aspicilia mastrucata	0	rock crusts	crook
Aspicilia praeradiosa	0	rock crusts	crook
Aspicilia supertegens	0	rock crusts	crook
Aspicilia "convoluta"	0	rock crusts	crook
Aspicilia "glebosa"	0	rock crusts	crook
Bellemeria alpina	0	rock crusts	crook
Bellemeria cinereorufesce	0	rock crusts	crook
Bellemeria diamarta	1	rock crusts	crook
Buellia retrovertens	0	rock crusts	crook
Caloplaca albovariegata	0	rock crusts	crook
Caloplaca approximata	0	rock crusts	crook
Caloplaca arenaria	0	rock crusts	crook
Caloplaca cinnabarina	0	rock crusts	crook
Caloplaca citrina	0	rock crusts	crook
Caloplaca epithallina	0	rock crusts	crook
Caloplaca flavovirescens	0	rock crusts	crook

Caloplaca fraudans	0	rock crusts	crock
Caloplaca invadens	0	rock crusts	crock
Caloplaca lamprocheila	0	rock crusts	crock
Caloplaca modesta	0	rock crusts	crock
Caloplaca saxicola	0	rock crusts	crock
Candelariella rosulans	0	rock crusts	crock
Candelariella vitellina	0	rock crusts	crock
Carbonea vitellinaria	0	rock crusts	crock
Carbonea vorticosa	0	rock crusts	crock
Dimelaena oreina	0	rock crusts	crock
Dimelaena thysanota	0	rock crusts	crock
Diploschistes albescens	0	rock crusts	crock
Diploschistes scruposus	0	rock crusts	crock
Diplozona epipolium	1	rock crusts	crock
Endocarpon pulvinatum	0	rock crusts	crock
Endocarpon tortuosum	0	rock crusts	crock
Euopsis pulvinata	1	rock crusts	crock
Fuscidea praeruptorum	1	rock crusts	crock
Glaucomaria rupicola	0	rock crusts	crock
Lecanora argopholis	0	rock crusts	crock
Lecanora caesio. var sax.	0	rock crusts	crock
Lecanora cascadiensis	0	rock crusts	crock
Lecanora cenisea	0	rock crusts	crock
Lecanora demissa	0	rock crusts	crock
Lecanora flowersiana	0	rock crusts	crock
Lecanora garovaglii	0	rock crusts	crock
Lecanora intricata	0	rock crusts	crock
Lecanora marginata	0	rock crusts	crock
Lecanora muralis	0	rock crusts	crock
Lecanora nevadensis	0	rock crusts	crock
Lecanora occidentalis	0	rock crusts	crock
Lecanora phaedrophthalma	0	rock crusts	crock

Lecanora polytropa	0	rock crusts	crook
Lecanora pseudomellea	0	rock crusts	crook
Lecanora sierrae	0	rock crusts	crook
Lecanora thomsonii	0	rock crusts	crook
Lecanora umbrosa	0	rock crusts	crook
Lecidea atrobrunnea	0	rock crusts	crook
Lecidea atromarginata	0	rock crusts	crook
Lecidea auriculata	0	rock crusts	crook
Lecidea confluens	0	rock crusts	crook
Lecidea fuscoatra	0	rock crusts	crook
Lecidea lactea	0	rock crusts	crook
Lecidea lapicida	0	rock crusts	crook
Lecidea lapi. f ochracea	0	rock crusts	crook
Lecidea lithophila	0	rock crusts	crook
Lecidea mannii	0	rock crusts	crook
Lecidea marginata	0	rock crusts	crook
Lecidea plana	0	rock crusts	crook
Lecidea protobacina	0	rock crusts	crook
Lecidea syncarpa	0	rock crusts	crook
Lecidea tessellata	0	rock crusts	crook
Lecidea umbonata	0	rock crusts	crook
Lecidella anomaloides	0	rock crusts	crook
Lecidella carpathica	0	rock crusts	crook
Lecidella goniophila	0	rock crusts	crook
Lecidella inamoena	0	rock crusts	crook
Lecidella incongruella	0	rock crusts	crook
Lecidella stigmathea	0	rock crusts	crook
Lepraria finkii	0	rock crusts	crook
Micarea sylvicola	1	rock crusts	crook
Miriquidica garovaglii	1	rock crusts	crook
Miriquidica leucophaea	1	rock crusts	crook
Ochrolechia androg. v.sax	0	rock crusts	crook

Ophioparma lapponicum	0	rock crusts	crock
Pertusaria pupillaris	1	rock crusts	crock
Polysporina simplex	0	rock crusts	crock
Porpidia crustulata	0	rock crusts	crock
Porpidia glaucophaea	0	rock crusts	crock
Porpidia macrocarpa	0	rock crusts	crock
Porpidia thomsonii	0	rock crusts	crock
Protoparmelia badia	0	rock crusts	crock
Psora nipponica	0	rock crusts	crock
Rhizocarpon bolanderi	0	rock crusts	crock
Rhizocarpon disporum	0	rock crusts	crock
Rhizocarpon effiguratum	0	rock crusts	crock
Rhizocarpon geminatum	0	rock crusts	crock
Rhizocarpon geographicum	0	rock crusts	crock
Rhizocarpon grande	0	rock crusts	crock
Rhizocarpon lecanorinum	0	rock crusts	crock
Rhizocarpon macrosporum	0	rock crusts	crock
Rhizocarpon pusillum	0	rock crusts	crock
Rhizocarpon riparium	0	rock crusts	crock
Rhizocarpon sphaerosporum	0	rock crusts	crock
Rimularia insularis	0	rock crusts	crock
Rinodina bischoffii	0	rock crusts	crock
Rinodina confragosa	0	rock crusts	crock
Rinodina milvina	0	rock crusts	crock
Staurothele areolata	0	rock crusts	crock
Staurothele clopimoides	0	rock crusts	crock
Staurothele drummondii	0	rock crusts	crock
Tephromela aglaea	1	rock crusts	crock
Tephromela atra	0	rock crusts	crock
Trapelia involuta	1	rock crusts	crock
Verrucaria calkinsiana	0	rock crusts	crock
Actinogyra polyrrhiza	- 1	rock macrolichens	rock

Allantoparmelia alpicola	0	rock macrolichens	rock
Arctoparmelia subcentrifuga	1	rock macrolichens	rock
Cetraria commixta	1	rock macrolichens	rock
Cetraria hepatizon	0	rock macrolichens	rock
Dermatocarpon reticulatum	0	rock macrolichens	rock
Koerberia sonomensis	0	rock macrolichens	rock
Melanelia disjuncta	0	rock macrolichens	rock
Melanelia infumata	0	rock macrolichens	rock
Melanelia panniformis	0	rock macrolichens	rock
Melanelia solediosa	0	rock macrolichens	rock
Melanelia stygia	0	rock macrolichens	rock
Melanelia subargentifera	0	rock macrolichens	rock
Melanelia tomini	0	rock macrolichens	rock
Neofuscelia loxodes	0	rock macrolichens	rock
Neofuscelia subhosseana	0	rock macrolichens	rock
Neofuscelia verruculifera	0	rock macrolichens	rock
Pannaria leucophaea	0	rock macrolichens	rock
Parmelia fraudans	1	rock macrolichens	rock
Parmelia saxatilis	0	rock macrolichens	rock
Phaeophyscia constipata	0	rock macrolichens	rock
Phaeophyscia decolor	0	rock macrolichens	rock
Phaeophyscia kairamoi	1	rock macrolichens	rock
Phaeophyscia sciastra	0	rock macrolichens	rock
Physcia biziana	0	rock macrolichens	rock
Physcia caesia	0	rock macrolichens	rock
Physcia dimidiata	0	rock macrolichens	rock
Physcia dubia	0	rock macrolichens	rock
Physcia magnussonii	0	rock macrolichens	rock
Physcia phaea	0	rock macrolichens	rock
Pseudephebe pubescens	0	rock macrolichens	rock
Rhizoplaca chrysoleuca	0	rock macrolichens	rock
Rhizoplaca melanophthalma	0	rock macrolichens	rock

Stereocaulon sterile	0	rock macrolichens	rock
Umbilicaria arctica	0	rock macrolichens	rock
Umbilicaria decussatus	0	rock macrolichens	rock
Umbilicaria deusta	0	rock macrolichens	rock
Umbilicaria hyperborea	0	rock macrolichens	rock
Umbilicaria phaea	0	rock macrolichens	rock
Umbilicaria polyphylla	0	rock macrolichens	rock
Umbilicaria torrefacta	0	rock macrolichens	rock
Xanthoparmelia angustiphy	1	rock macrolichens	rock
Xanthoparmelia coloradoen	0	rock macrolichens	rock
Xanthoparmelia cumberland	0	rock macrolichens	rock
Xanthoparmelia hypopsila	0	rock macrolichens	rock
Xanthoparmelia lineola	0	rock macrolichens	rock
Xanthoparmelia mexicana	0	rock macrolichens	rock
Xanthoparmelia montanensi	1	rock macrolichens	rock
Xanthoparmelia plittii	0	rock macrolichens	rock
Xanthoparmelia subdecipie	0	rock macrolichens	rock
Xanthoria elegans	0	rock macrolichens	rock
Xanthoria soorediata	0	rock macrolichens	rock
Cladina arbuscula	1	rock mats and cushions	mat
Cladina mitis	1	rock mats and cushions	mat
Cladina rangiferina	1	rock mats and cushions	mat
Cladonia borealis	0	rock mats and cushions	mat
Cladonia cervicornis	0	rock mats and cushions	mat
Cladonia cornuta	0	rock mats and cushions	mat
Cladonia crispata	1	rock mats and cushions	mat
Cladonia deformis	0	rock mats and cushions	mat
Cladonia ecmocyna	0	rock mats and cushions	mat
Cladonia gracilis	0	rock mats and cushions	mat
Cladonia multiformis	0	rock mats and cushions	mat
Cladonia phyllophora	0	rock mats and cushions	mat
Cladonia pleurota	0	rock mats and cushions	mat

<i>Cladonia uncialis</i>	1	rock mats and cushions	mat
<i>Coelocaulon aculeatum</i>	0	rock mats and cushions	mat
<i>Leptogium corniculatum</i>	1	rock mats and cushions	mat
<i>Stereocaulon grande</i>	1	rock mats and cushions	mat
<i>Stereocaulon paschale</i>	1	rock mats and cushions	mat
<i>Stereocaulon sasakii</i> v. t	0	rock mats and cushions	mat
<i>Stereocaulon tomentosum</i>	0	rock mats and cushions	mat
<i>Cladonia bacillaris</i>	0	rotten log and tree base	log
<i>Cladonia botrytes</i>	1	rotten log and tree base	log
<i>Cladonia carneola</i>	0	rotten log and tree base	log
<i>Cladonia cenotea</i>	0	rotten log and tree base	log
<i>Cladonia coniocraea</i>	0	rotten log and tree base	log
<i>Cladonia digitata</i>	1	rotten log and tree base	log
<i>Cladonia norvegica</i>	1	rotten log and tree base	log
<i>Cladonia ochrochlora</i>	0	rotten log and tree base	log
<i>Cladonia subulata</i>	0	rotten log and tree base	log
<i>Cladonia sulphurina</i>	0	rotten log and tree base	log
<i>Dimerella pineti</i>	0	rotten log and tree base	log
<i>Cystocoleus ebeneus</i>	0	seepage rocks	rseep
<i>Ephebe lanata</i>	1	seepage rocks	rseep
<i>Ephebe solida</i>	1	seepage rocks	rseep
<i>Calicium corynellum</i>	1	sheltered ledges & overha	shelt
<i>Catapyrenium norvegicum</i>	1	sheltered ledges & overha	shelt
<i>Chaenotheca furfuracea</i>	0	sheltered ledges & overha	shelt
<i>Chrysothrix chlorina</i>	0	sheltered ledges & overha	shelt
<i>Diplotomma</i> sp. nov.	1	sheltered ledges & overha	shelt
<i>Glaucomarzia rupicola</i> v so	0	sheltered ledges & overha	shelt
<i>Lecanora pringlei</i>	0	sheltered ledges & overha	shelt
<i>Lecanora rupicola</i> v. sor.	0	sheltered ledges & overha	shelt
<i>Lempholemma myriococcum</i>	1	sheltered ledges & overha	shelt
<i>Umbilicaria americana</i>	0	sheltered ledges & overha	shelt
<i>Umbilicaria vellea</i>	0	sheltered ledges & overha	shelt

<i>Xanthoria candelaria</i>	0	sheltered ledges & overha	shelt
<i>Baeomyces rufus</i>	0	soil lichens	soil
<i>Candelariella terrigena</i>	0	soil lichens	soil
<i>Catapyrenium lachneum</i>	0	soil lichens	soil
<i>Catapyrenium lachneum v o</i>	0	soil lichens	soil
<i>Cladonia chlorophaea</i>	0	soil lichens	soil
<i>Cladonia dahliaana</i>	0	soil lichens	soil
<i>Cladonia fimbriata</i>	0	soil lichens	soil
<i>Cladonia firma ?</i>	0	soil lichens	soil
<i>Cladonia luteoalba</i>	1	soil lichens	soil
<i>Cladonia macrophyllodes</i>	0	soil lichens	soil
<i>Cladonia pocillum</i>	0	soil lichens	soil
<i>Cladonia pyxidata</i>	0	soil lichens	soil
<i>Cladonia verruculosa</i>	0	soil lichens	soil
<i>Lecanora reagens</i>	0	soil lichens	soil
<i>Lempholemma radiatum</i>	1	soil lichens	soil
<i>Leptogium tenuissimum</i>	1	soil lichens	soil
<i>Multiclavula corynoides</i>	0	soil lichens	soil
<i>Multiclavula vernalis</i>	0	soil lichens	soil
<i>Acarospora schleicheri</i>	0	steppe soil crusts	stepp
<i>Arthonia glebosa</i>	0	steppe soil crusts	stepp
<i>Aspicilia reptans</i>	0	steppe soil crusts	stepp
<i>Catapyrenium congestum</i>	1	steppe soil crusts	stepp
<i>Catapyrenium lacinulatum</i>	0	steppe soil crusts	stepp
<i>Catapyrenium rufescens</i>	0	steppe soil crusts	stepp
<i>Catapyrenium squamulosum</i>	0	steppe soil crusts	stepp
<i>Chromatochlamys muscorum</i>	0	steppe soil crusts	stepp
<i>Collema coccophorum</i>	0	steppe soil crusts	stepp
<i>Endocarpon pusillum</i>	0	steppe soil crusts	stepp
<i>Heppia lutosa</i>	0	steppe soil crusts	stepp
<i>Lecidea sp. nov.</i>	1	steppe soil crusts	stepp
<i>Phaeorrhiza sareptana</i>	0	steppe soil crusts	stepp

<i>Psora globifera</i>	0	steppe soil crusts	stepp
<i>Psora montana</i>	0	steppe soil crusts	stepp
<i>Texosporium sancti-jacobi</i>	1	steppe soil crusts	stepp
<i>Trapeliopsis</i> sp. nov.	0	steppe soil crusts	stepp
<i>Arthonia radiata</i>	1	tree crusts	tcrus
<i>Bacidia akompsa</i>	0	tree crusts	tcrus
<i>Bacidia beckhausii</i>	1	tree crusts	tcrus
<i>Bacidia hegetschweileri</i>	1	tree crusts	tcrus
<i>Bacidia herrei</i>	1	tree crusts	tcrus
<i>Bacidia subincompta</i>	0	tree crusts	tcrus
<i>Bacidia trachona</i>	1	tree crusts	tcrus
<i>Biatora albohyalina</i>	0	tree crusts	tcrus
<i>Buellia disciformis</i>	0	tree crusts	tcrus
<i>Buellia erubescens</i>	0	tree crusts	tcrus
<i>Buellia punctata</i>	0	tree crusts	tcrus
<i>Buellia zahlbruckneri</i>	0	tree crusts	tcrus
<i>Caloplaca cerina</i>	0	tree crusts	tcrus
<i>Caloplaca chrysophthalma</i>	0	tree crusts	tcrus
<i>Caloplaca flavorubescens</i>	0	tree crusts	tcrus
<i>Caloplaca holocarpa</i>	0	tree crusts	tcrus
<i>Caloplaca ulmorum</i>	0	tree crusts	tcrus
<i>Candelariella efflorescen</i>	0	tree crusts	tcrus
<i>Catillaria sphaeroides</i>	0	tree crusts	tcrus
<i>Chrysothrix candelaris</i>	0	tree crusts	tcrus
<i>Cyphelium inquinans</i>	0	tree crusts	tcrus
<i>Cyphelium karelicum</i>	1	tree crusts	tcrus
<i>Lecania fuscella</i>	0	tree crusts	tcrus
<i>Lecania koerberiana</i>	0	tree crusts	tcrus
<i>Lecanora cadubriae</i>	0	tree crusts	tcrus
<i>Lecanora chlarona</i>	0	tree crusts	tcrus
<i>Lecanora chlarotera</i>	0	tree crusts	tcrus
<i>Lecanora circumborealis</i>	0	tree crusts	tcrus

Lecanora fuscescens	0	tree crusts	terus
Lecanora hageni	0	tree crusts	terus
Lecanora hybocarpa	1	tree crusts	terus
Lecanora hypoptoides	0	tree crusts	terus
Lecanora impudens	0	tree crusts	terus
Lecanora palanderi	0	tree crusts	terus
Lecanora piniperda	0	tree crusts	terus
Lecanora populicola'	0	tree crusts	terus
Lecanora pulicaris	0	tree crusts	terus
Lecanora rugosella	0	tree crusts	terus
Lecanora salicicola	0	tree crusts	terus
Lecanora symmicta	0	tree crusts	terus
Lecanora varia	0	tree crusts	terus
Lecidea cinnabarina	0	tree crusts	terus
Lecidea dolodes	1	tree crusts	terus
Lecidea elabens	0	tree crusts	terus
Lecidea myriocarpoides	0	tree crusts	tcnls
Lecidea paddensis	0	tree crusts	terus
Lecidea plebeja	0	tree crusts	terus
Lecidea turgidula	0	tree crusts	terus
Lecidella elaeochroma	0	tree crusts	terus
Lecidella euphorea	0	tree crusts	terus
Micarea prasina	1	tree crusts	terus
Mycoblastus sanguinarius	0	tree crusts	terus
Normandina pulchella	0	tree crusts	terus
Ochrolechia androgyna	0	tree crusts	tcnls
Ochrolechia cf. mexicana	0	tree crusts	terus
Ochrolechia gowardii	0	tree crusts	tcnls
Ochrolechia juvenalis	0	tree crusts	terus
Ochrolechia montana	0	tree crusts	terus
Ochrolechia oregonensis	1	tree crusts	terus
Ochrolechia szatalaensis	0	tree crusts	terus

Pertusaria amara	0	tree crusts	terus
Pertusaria borealis	0	tree crusts	terus
Pertusaria ophthalmiza	0	tree crusts	terus
Phlyctis speirea	1	tree crusts	terus
Rinodina colobina	0	tree crusts	terus
Rinodina convexula	0	tree crusts	terus
Rinodina corticola	0	tree crusts	terus
Rinodina dakotensis	0	tree crusts	terus
Rinodina exigua	0	tree crusts	terus
Rinodina glauca	1	tree crusts	terus
Rinodina ligniaria	0	tree crusts	terus
Rinodina lignicola	0	tree crusts	terus
Rinodina marysvillensis	0	tree crusts	terus
Rlnodina mucronatula	0	tree crusts	terus
Rinodina pyrina	0	tree crusts	terus
Rinodina trevisani	0	tree crusts	terus
Rinodinella lobulata	0	tree crusts	terus
Strangospora moriformis	0	tree crusts	terus
Trapeliopsis flexuosa	0	tree crusts	terus
Varicellaria rhodocarpa	1	tree crusts	terus
Xylographa abietina	0	tree crusts	terus
Cetraria cucullata	0	tundra forage lichens	tfor
Cetraria eric. ssp retic.	0	tundra forage lichens	tfor
Cetraria islandica	0	tundra forage lichens	tfor
Cetraria nivalis	0	tundra forage'lichens	tfor
Brodoa oroarctica	0	tundra rock'lichens	trock
Cornicularia normoerica	1	tundra rock lichens	trock
Dermatocarpon intestinifo	0	tundra rock lichens	trock
Lecanora atosulphurea	1	tundra rock lichens	trock
Protoparmelia cupreobadia	1	tundra rock'lichens	trock
Pseudephebe minuscule	0	tundra rock lichens	trock
Rhizocarpon copelandii	1	tundra rock lichens	trock

Rhizocarpon hochstetteri	1	tundra rock lichens	trock
Rhizocarpon polycarpum	0	tundra rock lichens	trock
Rhizocarpon superficiale	0	tundra rock lichens	trock
Schaereria tenebrosa	1	tundra rock lichens	trock
Sporastatia polyspora	1	tundra rock lichens	trock
Sporastatia testudinea	0	tundra rock lichens	trock
Tephromela armeniaca	0	tundra rock lichens	trock
Umbilicaria krascheninnik	0	tundra rock lichens	trock
Umbilicaria virginis	0	tundra rock lichens	trock
Usnea sphacelata	1	tundra rock lichens	trock
Alectoria nigricans	1	tundra sod builders	tsod
Alectoria vexillifera	0	tundra sod builders	tsod
Bryonora castanea	0	tundra sod builders	tsod
Bryonora pruinosa	0	tundra sod builders	tsod
Bryoria chalybeiformis	0	tundra sod builders	tsod
Bryoria subdivergens	1	tundra sod builders	tsod
Caloplaca cinnamomea	0	tundra sod builders	tsod
Caloplaca sinaplsperma	1	tundra sod builders	tsod
Catapyrenium cinereum	0	tundra sod builders	tsod
Catapyrenium daedaleum	1	tundra sod builders	tsod
Cetraria tilesii	0	tundra sod builders	tsod
Coelocaulon muricatum	0	tundra sod builders	tsod
Collema ceraniscum	1	tundra sod builders	tsod
Dactylina madreporiformis	1	tundra sod builders	tsod
Dactylina ramulosa	1	tundra sod builders	tsod
Lecanora beringii	0	tundra sod builders	tsod
Lecanora epibryon	0	tundra sod builders	tsod
Lecanora microfusca	1	tundra sod builders	tsod
Lecidella wulfenii	0	tundra sod builders	tsod
Lecidoma demissum	0	tundra sod builders	tsod
Lepraria neglecta	0	tundra sod builders	tsod
Leproloma cacuminum	0	tundra sod builders	tsod

Micarea assimolata	1	tundra sod builders	tsod
Micarea melaena	1	tundra sod builders	tsod
Mycobilimbia microcarpa	1	tundra sod builders	tsod
Ochrolechia frigida	0	tundra sod builders	tsod
Parmelia omphalodes	0	tundra sod builders	tsod
Peltigera lepidophora	0	tundra sod builders	tsod
Phaeorrhiza nimbose	0	tundra sod builders	tsod
Rinodina archaea	0	tundra sod builders	tsod
Rinodina mniaraea	0	tundra sod builders	tsod
Rinodina roscida	0	tundra sod builders	tsod
Rinodina turfacea	0	tundra sod builders	tsod
Thamnia subuliformis	0	tundra sod builders	tsod
Gyalecta foveolaris	1	tundra soil	tsoil
Solorina bispora	1	tundra soil	tsoil
Solorina saccata	1	tundra soil	tsoil
Candelaria concolor	0	urban pollution-tolerant	poll
Aspicilia fruticulosa	1	vagrant ground lichens	vagr
Aspicilia hispida	0	vagrant ground lichens	vagr
Rhizoplaca haydenii	1	vagrant ground lichens	vagr
Rhizoplaca idahoensis	1	vagrant ground lichens	vagr
Xanthoparmelia chlorochroa	0	vagrant ground lichens	vagr
Xanthoparmelia neochloroc	1	vagrant ground lichens	vagr
Xanthoparmelia norchloroc	1	vagrant ground lichens	vagr
Xanthoparmelia wyomingica	0	vagrant ground lichens	vagr