

Colville National Forest Non-vascular Plant Survey and Reference Collection
 Interagency Special Status/Sensitive Species Program
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Introduction

Through this project the populations of 12 rare nonvascular taxa were revisited at seven locations on the Colville National Forest. The rarity status for each is displayed on Table 1. These taxa were included on the Interagency Special Status/Sensitive Species Program (ISSSSP) High Priority Special Status and Sensitive Species List, Regional Forester's Special Status Species List, or a Washington Natural Heritage Program (WNHP) list. Bryophytes were identified by Erica Heinlen and lichens by Dr. Katherine Glew.

In 2009 23 collections of lichens were identified to the 18 taxa in Appendix A and were gathered from 15 sites, as displayed on Appendix B. In addition, 132 vouchers of mosses were identified to the 74 taxa in Appendix C and were collected from 37 locations as shown on Appendix D.

Table 1. Rankings of Rare Nonvascular Taxa Documented from the Colville National Forest. (Note: FSSO = Forest Service Sensitive in Oregon, FSSW = Forest Service Sensitive in Washington, G = Global Ranking, S = Washington State Ranking.)

Taxa	Status on ISSSSP High Priority Special Status and Sensitive Species List (2007)	Regional Forester's Special Status Species List (2008)	Status (WNHP 2009¹ or Nature Serve 2009²)
Liverworts			
<i>Calypogeia sphagnicola</i>	First Priority	FSSO	G4 ²
Mosses			
<i>Hedwigia ciliata</i>			G5 SNR ¹
<i>Helodium blandowii</i>		FSSO	G5 S1 ¹
<i>Myurella julacea</i>			G5 S1 ¹
<i>Rhizomnium nudum</i>	First Priority	FSSO	G4 ²
<i>Tomentypnum nitens</i>		FSSO	G5 ¹
Lichens			
<i>Alectoria lata</i>			G3G4 S2 ¹
<i>Collema nigrescens</i>	First Priority	FSSW	G5? SNR ¹
<i>Dimerella pineti</i>			GNR ²
<i>Phylliscum demangeonii</i>			G3G5 S2 ¹
<i>Ramalina thrausta</i>		FSSO	G3G4 S1 ¹
<i>Solorina spongiosa</i>			G4G5 ²

Background

Since 2004, projects funded by the ISSSSP and/or Challenge Cost Share have contributed to the documentation of 260 lichen (Appendix E) and 344 bryophyte (Appendix F) taxa on the Colville National Forest. The current project contributed information regarding the occurrence, distribution, abundance, and habitat of non-vascular plants in northeastern Washington. The Washington Natural Heritage Program has no records for any of the taxa on Table 1, except for three sites of *Collema nigrescens* (McMillen pers. comm. 2008) and one of *Solorina spongiosa* (Glew pers. comm. 2007). This project increased identification skills of Forest Service employees, as they developed a reference collection for the Forest, which occurred across the Colville National Forest.

Methods

In 12 days seven sites were revisited (Table 2) and 713 acres were surveyed. Nine of the 12 rare taxa were relocated and vouchered (Table 3), as well as other nonvascular taxa collected at the sites. Field data collected included standard specimen location documentation. The USDA Forest Service TES Plant Survey Field Forms were completed for all surveys and TES Plant Element Occurrence Field Forms were used to document all rare taxa. The NRIS database was updated for sensitive taxa.

Results

This project resulted in the extension of nonvascular surveys in four Research Natural Areas (Bunchgrass Meadows, Halliday Fen, Matilen Creek, and Salmo Mountain) and two cattle allotments (Quartz and Tiger Hill). In the course of curating the Forest herbarium, an existing collection of *Collema nigrescens* was found (Table 3). An attempt to relocate this lichen at the Harvey Creek site in 2009 was unsuccessful. A new location for *Hedwigia ciliata* was discovered in the Quartz Mountain area and one for *Tomentypnum nitens* at Halliday Fen. Two new sites of *Rhizomnium nudum* were documented; one at Bunchgrass Meadows and the other on the Grassy Top Trail.

In 2009 Dr. Richard Andrus verified *Sphagnum obtusum* from Bunchgrass Meadows. There is only one other sighting for it in Washington (Andrus pers. comm. 2009). It was initially misidentified as *S. jensenii*. The *Dimerella pineti* voucher collected near the Salmo RNA by Gail McHenry in 2004 (Table 3) was misidentified and is *Biatora vernalis*. Although surveys in 2009 located a site with lichens initially identified as *Dimerella pineti*, in light of the initial misidentification, a specimen from the new site will be verified.

Twelve of the taxa on the Forest list of 260 lichens and 13 bryophytes of the 344 on the Forest (Table 4) may warrant monitoring, as they are included in a list of rare taxa compiled by the Forest Service and/or WNHP.

Table 2. Locations, Taxa, Survey Days and Acres.

Location	Taxa Found in 2009, (Yes/ No)	2009 Survey Dates	Number of Days Surveyed (Proposed for Surveys)	Number of Acres Surveyed from NRIS (Number of Acres Proposed to Survey)
Bunchgrass Meadows RNA	<i>Alectoria lata</i> , N <i>Calypogeia sphagnicola</i> , Y	12 & 25 August	2 (2)	105 (40)
Halliday Fen Trail and RNA	<i>Collema nigrescens</i> , N <i>Helodium blandowii</i> , Y <i>Myurella julacea</i> , Y <i>Ramalina thrausta</i> , N	18 August	2 (2)	40 (40)
Harvey Creek	<i>Solorina spongiosa</i> , Y	16 June	3 (1)	351 (5)
Lower Stewart Meadow (Tiger Hill Cattle Allotment)	<i>Tomentypnum nitens</i> , Y	22 July	1 (1)	2 (10)
Maitlen Creek RNA	<i>Hedwigia ciliate</i> , Y	16 June	1 (1)	3 (2)
Refrigerator Canyon (Quartz Cattle Allotment)	<i>Hedwigia ciliate</i> , Y	3 June	2 (1)	78 (3)
Salmo Mountain RNA	<i>Dimerella pineti</i> , Y <i>Phylliscum demangeonii</i> , N <i>Rhizomnium nudum</i> , Y	14 & 29 July, 5 August	1 (2)	134 (40)
Totals	9 Taxa of 13 Relocated		12 (10)	713 (140)

Table 3. Vouchers for Rare Taxa. (Note: * voucher is at the Colville National Forest Supervisor's Office.)

Location and Taxa	2009 Collection Date, Collector, & Collection Number *	Original Voucher Date, Collector, & Collection Number
Bunchgrass Meadows RNA		
<i>Alectoria lata</i>		30 August 2005, Katie Glew 050830-50*
<i>Calypogeia sphagnicola</i>		Judy Harpel has Amy Cabral's 2005 collection (?)
<i>Rhizomnium nudum</i>	Amy Cabral	
Halliday Fen RNA and Trail		
<i>Collema nigrescens</i>		13 October 2004, Gail McHenry 101304.105*
<i>Helodium blandowii</i>	18 August, Amy Cabral 081809AC100*	2005, Judy Harpel
<i>Myurella julacea</i>	18 August, Amy Cabral 081809AC101	13 October 2004, Judy Harpel has Amy Cabral's collection
<i>Ramalina thrausta</i>		31 August 2005, Katie Glew, 050831-2*
<i>Tomentypnum nitens</i>	18 August, Amy Cabral, 081809AC102	
Grassy Top Trail		
<i>Rhizomnium nudum</i>	27 July, Cecily Kowitz, 072909CK001	
Harvey Creek		
<i>Collema nigrescens</i>		1 September 2005, Katie Glew, 050901-46*
<i>Solorina spongiosa</i>	16 June, Amy Cabral 061609AC08	1 September 2005, Katie Glew 050901-47*
Lower Stewart Meadow		
<i>Tomentypnum nitens</i>	22 July, Amy Cabral 072209AC39	Judy Harpel has Amy Cabral's 2005 collection
Maitlen Creek RNA		
<i>Hedwigia ciliata</i>	16 June, Amy Cabral 061609AC07	2005, Judy Harpel
Pass Creek Pass		
<i>Dimerella pineti</i> (Verify identification)	1 September, Jake Wilson, 062109JW31	
Quartz Mountain		
<i>Hedwigia ciliata</i>	13 July, Amy Cabral, 071309AC16	
Refrigerator Canyon		
<i>Hedwigia ciliata</i>	3 June, Amy Cabral 060309AC01, 060309AC02	2005, Judy Harpel
Salmo Mountain RNA		
<i>Dimerella pineti</i> (misidentified = <i>Biatora vernalis</i>)	29 July, Amy Cabral 072909AC62	6 September 2004 Gail McHenry 90698.321*
<i>Phylliscum demangeonii</i>		14 October 2004, Gail McHenry 101404.219*
<i>Rhizomnium nudum</i>	5 August, Amy Cabral 080509AC66, 080509AC69, 080509AC76	14 August 2007, Amy Cabral 922*

Table 4. Rankings of Rare Lichens and Bryophytes Documented on the Colville National Forest. (Note: FSSO = Forest Service Sensitive in Oregon, FSSW = Forest Service Sensitive in Washington, G = Global Ranking, S = Washington State Ranking.)

Taxa	Status on ISSSSP High Priority Special Status and Sensitive Species List (2007)	Regional Forester's Special Status Species List (2008)	Status (WNHP 2009¹ or Nature Serve 2009²)	Potentially Endangered Lichens in Washington (WNHP 2009)	Monitor for Rarity in Washington (WNHP 2009)
Lichens					
Ahtiana sphaerosporella			G5 SNR ¹		X
Chaenotheca chrysocephala			G4G5 SNR ¹		X
Lecanora pringlei			G3Q S1 ¹		X
Nephroma occultum		FSS	G4 S1 ¹	X	
Peltigera lepidophora			G4 S1 ¹	X	
Peltigera neckeri	Third Priority		G4G5 ²		
Protoparmelia ochrococca			GNR S3 ¹		X
Ramalina pollinaria		FSSO	G4 SNR ¹		X
Stereocaulon myriocarpum			G4 SNR ¹		X
Umbilicaria arctica			G3 S1 ¹		X
Umbilicaria phaea			G5?TNR S1 ¹	X	
Umbilicaria vellea			G4? S2 ¹		X
Liverworts					
Tritomaria exsectiformis		FSSO	G5		
				Included on Washington List of Rare Mosses (WNHP 2009)	
Mosses					
Aloina bifrons	First Priority		G3 ²		
Bryum calobryoides	First Priority	FSSO	G3S1 ¹	X	
Buxbaumia aphylla			G4G5 S3 ¹	X	
Buxbaumia viridis			G3G4 SU ¹	X	
Campylium stellatum			G5 SNR ¹	X	
Dicranum muehlenbeckii			G3G5 S1 ¹	X	
Herzogiella seligeri			G3G4 S1 ¹	X	
Meesia triquetra			G5 S1 ¹	X	
Orthotrichum hallii			G4 S1 ¹	X	
Ptilium crista-castrensis			G5 SU ¹	X	
Sphagnum					
Sphagnum riparium			G5 S1 ¹	X	
Tortula mucronifolia		FSSO	G5 ²		

References

- Andrus, Dr. Richard. 2009. Personal communication regarding the identification of *Sphagnum obtusum* at Halliday Fen.
- Huff, Rob, Kelli Van Norman, Russ Holmes, and Carol Hughes. 2007. Interagency Special Status and Sensitive Species Programs High Priority Species Implementation Guide. Region 6 US Forest Service, and Oregon and Washington Bureau of Land Management.
- Glew, Dr. Katherine Glew. 2007. Personal communication regarding the occurrence of *Solorina spongiosa* in Washington.
- McMillen, Jack. 2008. Personal communication regarding the occurrence of *Collema nigrescens* in Washington.
- NatureServe Explorer. 2009. An Online Encyclopedia of Life. Available at <http://www.natureserve.org/explorer/>.
- U.S. Department of Agriculture, Forest Service. 2008. Regional Forester's Special Status Species List, Sensitive Nonvascular Plants, USDA Forest Service Pacific Northwest Region January 2008. Available online at <http://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/>.
- Washington Natural Heritage Program. 2009. Washington Natural Heritage Program List of Rare Mosses and Lichens, April 2009. Available online at http://www1.dnr.wa.gov/nhp/refdesk/non_vascular.html.

Acknowledgements

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Appendix A. Lichens Collected in 2009.

Taxa
Alectoria imshaugii Brodo & D. Hawksw.
Ahtiana sphaerosporella (Mull. Arg.) Goward
Collema furfuraceum (Arnold) Du Rietz
Dimerella pineti (Schrader ex Ach.) Vezda
Hypogymnia heterophylla Pike
Lepraria incana (L.) Ach.
Letharia columbiana (Nutt.) J. W. Thomson
Nephroma bellum Wetm.
Nephroma parile (Ach.) Ach.
Pannaria pezizoides (Weber) Trevisan
Psilolechia lucida (Ach.) Choisy
Psoroma hypnorum (Vahl) Gray
Pyrrhospora cinnabarina (Sommerf.) Choisy
Solorina crocea (L.) Ach.
Solorina spongiosa (Ach.) Anzi
Tuckermannopsis subalpina (Imshaug) Karnefelt
Umbilicaria cylindrica (L.) Delise ex Duby
Vulpicida pinastri (Scop.) J. E. Mattsson & M. J. Lai

Appendix B. 2009 Lichen Collections by Location.

Taxa	Location
<i>Pyrrhospora cinnabarina</i> (Sommerf.) Choisy	Bunchgrass Meadows
<i>Vulpicida pinastri</i> (Scop.) J. E. Mattsson & M. J. Lai	Bunchgrass Meadows
<i>Letharia columbiana</i> (Nutt.) J. W. Thomson	Bunchgrass Meadows Spruce Island #1
<i>Lepraria incana</i> (L.) Ach.	Grassy Top Trail
<i>Psoroma hypnorum</i> (Vahl) Gray	Grassy Top Trail
<i>Solorina crocea</i> (L.) Ach.	Grassy Top Trail
<i>Lepraria incana</i> (L.) Ach.	Grassy Top Trail #2
<i>Nephroma parile</i> (Ach.) Ach.	Grassy Top Trail #2
<i>Psilolechia lucida</i> (Ach.) Choisy	Grassy Top Trail #2
<i>Dimerella pineti</i> (Schrader ex Ach.) Vezda	Grassy Top Trailhead, nearby talus
<i>Collema furfuraceum</i> (Arnold) Du Rietz	Halliday Fen Trail
<i>Solorina spongiosa</i> (Ach.) Anzi	Harvey Creek
<i>Solorina crocea</i> (L.) Ach.	Monumental Mtn.
<i>Dimerella pineti</i> (Schrader ex Ach.) Vezda	Pass Creek Pass
<i>Psoroma hypnorum</i> (Vahl) Gray	Pass Creek Pass
<i>Tuckermannopsis subalpina</i> (Imshaug) Karnefelt	Pass Creek Pass
<i>Psoroma hypnorum</i> (Vahl) Gray	Pass Creek Pass Talus
<i>Alectoria imshaugii</i> Brodo & D. Hawksw.	Salmo Mtn. RNA #1
<i>Hypogymnia heterophylla</i> Pike	Salmo Mtn. RNA #3
<i>Ahtiana sphaerosporella</i> (Mull. Arg.) Goward	Salmo Mtn. Road
<i>Umbilicaria cylindrica</i> (L.) Delise ex Duby	Salmo Mtn. Road
<i>Nephroma bellum</i> Wetm.	Slate Creek #2
<i>Pannaria pezizoides</i> (Weber) Trevisan	Sullivan Lake

Appendix C. Bryophytes Collected in 2009.

Taxa
Amblystegium serpens (Hedw.) Schimp.
Aulacomnium palustre (Hedw.) Schwaegr.
Barbilophozia hatcheri (A. Evans) Loeske
Barbilophozia lycopodioides (Wallr.) Loeske
Blepharostoma trichophyllum (L.) Dumort.
Brachythecium erythrorrhizon Schimp.
Brachythecium frigidum (C. Mull.) Besch.
Brachythecium leibergii Grout
Brachythecium oedipodium (Mitt.) Jaeg.
Bryum pseudotriquetrum (Hedw.) Gaertn. et al.
Calliergon giganteum (Schimp.) Kindb.
Calliergon stramineum (Brid.) Kindb.
Campylium stellatum (Hedw.) C. Jens.
Cephalozia lunulifolia (Dumort.) Dumort.
Cephaloziella sp.
Chiloscyphus pallescens (Hoffm.) Dumort.
Chiloscyphus polyanthos (L.) Corda
Climacium dendroides (Hedw.) Web. & Mohr
Cratoneuron filicinum (Hedw.) Spruce
Dicranoweisia crispula (Hedw.) Milde
Dicranum fuscescens Turn. var. fuscescens
Dicranum scoparium Hedw.
Dicranum tauricum Sapeh.
Didymodon vinealis (Brid.) Zand. var. vinealis
Disttichium capillaceum (Hedw.) Bruch & Schimp. var. capillaceum
Dryptodon patens (Hedw.) Brid.
Eurhynchium praelongum (Hedw.) Schimp.
Eurhynchium pulchellum (Hedw.) Jenn. var. pulchellum
Fissidens grandifrons Brid.
Fontinalis antipyretica Hedw. var. antipyretica
Hamatocaulis vernicosus (Mitt.) Hedenas
Harpanthus flotovianus (Nees) Nees
Hedwigia ciliata (Hedw.) P. Beauv.
Helodium blandowii (Web. & Mohr) Warnst. var. blandowii
Heterocladium dimorphum (Brid.) Schimp.
Heterocladium procurrens (Mitt.) Jaeg.
Hylocomium splendens (Hedw.) Schimp.
Lescurea patens (Lindb) Arn. & C. Jens.
Lescurea radicata (Mitt.) Moenk. var. radicata
Lophocolea heterophylla (Schrad.) Dumort.
Lophozia incisa (Schrad.) Dumort.
Lophozia ventricosa (Dicks.) Dumort.
Metaneckera menziesii (Hook.) Steere
Neckera douglasii Hook.
Pellia endiviifolia (Dicks.) Dumort.
Philonotis fontana (Hedw.) Brid.
Plagiomnium ellipticum (Brid.) T. Kop.
Plagiomnium insigne (Mitt.) T. Kop

Appendix C. Continued.**Taxa**

Plagiomnium sp.

Platydictya jungermannioides (Brid.) Crum

Pleurozium schreberi (Brid.) Mitt.

Pohlia wahlenbergii (Web. & Mohr) Andrews

Polytrichum juniperinum Hedw.

Polytrichum lyallii (Mitt.) Kindb.

Pterigynandrum filiforme Hedw.

Ptilidium californicum (Austin) Pearson

Ptilidium pulcherrimum (Weber) Vainio

Racomitrium ericoides (Brid.) Brid.

Racomitrium sudeticum (Funck) Bruch & Schimp.

Radula complanata (L.) Dumort.

Rhizomnium glabrescens (Kindb.) T. Kop

Rhizomnium gracile T. Kop.

Rhizomnium magnifolium (Horik.) T. Kop.

Rhizomnium nudum (Britt. & Williams) T. Kop.

Rhizomnium pseudopunctatum (Bruch & Schimp.) T. Kop.

Rhytidiopsis robusta (Hook.) Broth.

Roellia roellii (Broth.) Crum

Sanionia uncinata (Hedw.) Loeske

Scapania apiculata Spruce

Scouleria aquatica Hook.

Sphagnum fuscum (Schimp.) Klinggr.

Sphagnum subsecundum Nees

Sphagnum warnstorffii Russ.

Tetraxis sp.

Tomenthypnum nitens (Hedw.) Loeske

Tortella tortuosa (Hedw.) Limpr.

Tortula ruralis (Hedw.) Gaertn. et al.

Appendix D. 2009 Bryophyte Collections by Location.

Taxa	Location
<i>Rhizomnium nudum</i> (Britt. & Williams) T. Kop.	Bunchgrass Lake
<i>Aulacomnium palustre</i> (Hedw.) Schwaegr.	Bunchgrass Meadows
<i>Sphagnum subsecundum</i> Nees	Bunchgrass Meadows
<i>Scapania apiculata</i> Spruce	Bunchgrass Meadows
<i>Calliergon stramineum</i> (Brid.) Kindb.	Bunchgrass Meadows
<i>Ptilidium pulcherrimum</i> (Weber) Vainio	Catherine Creek
<i>Dicranum tauricum</i> Sapeh.	Catherine Creek
<i>Dicranum scoparium</i> Hedw.	Catherine Creek
<i>Barbilophozia hatcheri</i> (A. Evans) Loeske	Catherine Creek
<i>Lophozia incisa</i> (Schrad.) Dumort.	Copper Creek
<i>Ptilidium californicum</i> (Austin) Pearson	Copper Creek
<i>Cephalozia lunulifolia</i> (Dumort.) Dumort.	Copper Creek
<i>Ptilidium pulcherrimum</i> (Weber) Vainio	Copper Creek
<i>Lophozia ventricosa</i> (Dicks.) Dumort.	Copper Creek
<i>Blepharostoma trichophyllum</i> (L.) Dumort.	Copper Creek
<i>Dicranum scoparium</i> Hedw.	Dry Canyon
<i>Barbilophozia hatcheri</i> (A. Evans) Loeske	Dry Canyon
<i>Racomitrium sudeticum</i> (Funck) Bruch & Schimp.	Dry Canyon Stop #2
<i>Dicranum scoparium</i> Hedw.	Grassy Top Trail
<i>Polytrichum lyallii</i> (Mitt.) Kindb.	Grassy Top Trail #1
<i>Dicranum fuscescens</i> Turn. var. <i>fuscescens</i>	Grassy Top Trail #1
<i>Polytrichum juniperinum</i> Hedw.	Grassy Top Trail #1
<i>Racomitrium ericoides</i> (Brid.) Brid.	Grassy Top Trail #1
<i>Brachythecium leibergii</i> Grout	Grassy Top Trail #1
<i>Barbilophozia lycopodioides</i> (Wallr.) Loeske	Grassy Top Trail #1
<i>Pohlia wahlenbergii</i> (Web. & Mohr) Andrews	Grassy Top Trail #2
<i>Amblystegium serpens</i> (Hedw.) Schimp.	Grassy Top Trail #2
<i>Brachythecium oedipodium</i> (Mitt.) Jaeg.	Grassy Top Trail #2
<i>Barbilophozia lycopodioides</i> (Wallr.) Loeske	Grassy Top Trail #2
<i>Dicranoweisia crispula</i> (Hedw.) Milde	Grassy Top Trail #2
<i>Brachythecium frigidum</i> (C. Mull.) Besch.	Grassy Top Trail #2
<i>Dryptodon patens</i> (Hedw.) Brid.	Grassy Top Trail/Pass Cr. Pass
<i>Rhytidiopsis robusta</i> (Hook.) Broth.	Grassy Top Trail/Pass Cr. Pass
<i>Helodium blandowii</i> (Web. & Mohr) Warnst. var. <i>blandowii</i>	Halliday Fen
<i>Tomenthypnum nitens</i> (Hedw.) Loeske	Halliday Fen
<i>Pleurozium schreberi</i> (Brid.) Mitt.	Halliday Fen
<i>Rhytidiopsis robusta</i> (Hook.) Broth.	Halliday Fen
<i>Calliergon giganteum</i> (Schimp.) Kindb.	Halliday Fen
<i>Dryptodon patens</i> (Hedw.) Brid.	Halliday Fen Trail Bald Knob
<i>Dicranum fuscescens</i> Turn. var. <i>fuscescens</i>	Halliday Fen Trail Bald Knob
<i>Dicranum scoparium</i> Hedw.	Halliday Fen Trail Bald Knob
<i>Heterocladium dimorphum</i> (Brid.) Schimp.	Halliday Fen Trail Bald Knob
<i>Racomitrium ericoides</i> (Brid.) Brid.	Halliday Fen Trail Bald Knob
<i>Racomitrium ericoides</i> (Brid.) Brid.	Harvey Creek
<i>Racomitrium ericoides</i> (Brid.) Brid.	Kettle Face
<i>Rhytidiopsis robusta</i> (Hook.) Broth.	Krabbenhof Waterline
<i>Brachythecium leibergii</i> Grout	Krabbenhof Waterline
<i>Plagiomnium</i> sp.	Krabbenhof Waterline

Appendix D. Continued.	
Taxa	Location
<i>Fissidens grandifrons</i> Brid.	Krabbenhof Waterline
<i>Eurhynchium praelongum</i> (Hedw.) Schimp.	Krabbenhof Waterline
<i>Hamatocaulis vernicosus</i> (Mitt.) Hedenas	Lower Stewart Meadow
<i>Plagiomnium ellipticum</i> (Brid.) T. Kop.	Lower Stewart Meadow
<i>Rhizomnium gracile</i> T. Kop.	Lower Stewart Meadow
<i>Fontinalis antipyretica</i> Hedw. var. <i>antipyretica</i>	Lower Stewart Meadow
<i>Pellia endiviifolia</i> (Dicks.) Dumort.	Lower Stewart Meadow
<i>Philonotis fontana</i> (Hedw.) Brid.	Lower Stewart Meadow
<i>Rhizomnium magnifolium</i> (Horik.) T. Kop.	Lower Stewart Meadow
<i>Tomenthypnum nitens</i> (Hedw.) Loeske	Lower Stewart Meadow
<i>Aulacomnium palustre</i> (Hedw.) Schwaegr.	Lower Stewart Meadow
<i>Chiloscyphus pallescens</i> (Hoffm.) Dumort.	Lower Stewart Meadow
<i>Sphagnum fuscum</i> (Schimp.) Klinggr.	Lower Stewart Meadow
<i>Sphagnum warnstorffii</i> Russ.	Lower Stewart Meadow
<i>Bryum pseudotriquetrum</i> (Hedw.) Gaertn. et al.	Lower Stewart Meadow
<i>Calliergon stramineum</i> (Brid.) Kindb.	Lower Stewart Meadow
<i>Hedwigia ciliata</i> (Hedw.) P. Beauv.	Maiten Creek Talus
<i>Racomitrium sudeticum</i> (Funck) Bruch & Schimp.	Matsen Creek
<i>Brachythecium frigidum</i> (C. Mull.) Besch.	Nancy Creek
<i>Eurhynchium pulchellum</i> (Hedw.) Jenn. <i>pulchellum</i>	Nancy Creek
<i>Sanionia uncinata</i> (Hedw.) Loeske	Nancy Creek
<i>Plagiomnium</i> sp.	Nancy Creek
<i>Chiloscyphus polyanthos</i> L.) Corda	Nancy Creek
<i>Pohlia wahlenbergii</i> (Web. & Mohr) Andrews	Nancy Creek
<i>Rhizomnium magnifolium</i> (Horik.) T. Kop.	Nancy Creek
<i>Bryum pseudotriquetrum</i> (Hedw.) Gaertn. et al.	Nancy Creek
<i>Climacium dendroides</i> (Hedw.) Web. & Mohr	Nile Lake
<i>Racomitrium ericoides</i> (Brid.) Brid.	Paupae Rd
<i>Tortula ruralis</i> (Hedw.) Gaertn. Et al.	Paupae Rd
<i>Racomitrium ericoides</i> (Brid.) Brid.	Quartz Mtn
<i>Pterigynandrum filiforme</i> Hedw.	Refrigerator Canyon
<i>Hedwigia ciliata</i> (Hedw.) P. Beauv.	Refrigerator Canyon Sub #2
<i>Hedwigia ciliata</i> (Hedw.) P. Beauv.	Refrigerator Canyon Talus
<i>Rhizomnium nudum</i> (Britt. & Williams) T. Kop.	Round Top Trail
<i>Roellia roellii</i> (Broth.) Crum	Salmo #2
<i>Cephaloziella</i> sp.	Salmo #3
<i>Amblystegium serpens</i> (Hedw.) Schimp.	Salmo #3
<i>Didymodon vinealis</i> (Brid.) Zand. var. <i>vinealis</i>	Salmo #3
<i>Metaneckera menziesii</i> (Hook.) Steere	Salmo #3
<i>Tortella tortuosa</i> (Hedw.) Limpr.	Salmo #3
<i>Ptilidium californicum</i> (Austin) Pearson	Salmo #3
<i>Platydictya jungermannioides</i> (Brid.) Crum	Salmo #3
<i>Lescuraea patens</i> (Lindb) Arn. & C. Jens.	Salmo #3
<i>Radula complanata</i> (L.) Dumort.	Salmo #3
<i>Lophozia ventricosa</i> (Dicks.) Dumort.	Salmo #3
<i>Ptilidium pulcherrimum</i> (Weber) Vainio	Salmo #3
<i>Eurhynchium pulchellum</i> (Hedw.) Jenn. var. <i>pulchellum</i>	Salmo #3
<i>Campylium stellatum</i> (Hedw.) C. Jens.	Salmo #4

Appendix D. Continued.	
Taxa	Location
<i>Bryum pseudotriquetrum</i> (Hedw.) Gaertn. et al.	Salmo #4
<i>Pohlia wahlenbergii</i> (Web. & Mohr) Andrews	Salmo #4
<i>Cratoneuron filicinum</i> (Hedw.) Spruce	Salmo #4
<i>Pellia endiviifolia</i> (Dicks.) Dumort.	Salmo #4
<i>Rhizomnium nudum</i> (Britt. & Williams) T. Kop.	Salmo #4
<i>Lophocolea heterophylla</i> (Schrad.) Dumort.	Salmo #4
<i>Disttichium capillaceum</i> (Hedw.) Bruch & Schimp. var. <i>capillaceum</i>	Salmo #4
<i>Rhizomnium pseudopunctatum</i> (Bruch & Schimp.) T. Kop.	Salmo #4
<i>Heterocladium procurrens</i> (Mitt.) Jaeg.	Salmo #4
<i>Harpanthus flotovianus</i> (Nees) Nees	Salmo #4
<i>Sanionia uncinata</i> (Hedw.) Loeske	Salmo #4
<i>Rhizomnium nudum</i> (Britt. & Williams) T. Kop.	Salmo Mtn Trail Stop #1
<i>Brachythecium frigidum</i> (C. Mull.) Besch.	Salmo Trail #1
<i>Ptilidium californicum</i> (Austin) Pearson	Salmo Trail #1
<i>Rhizomnium magnifolium</i> (Horik.) T. Kop.	Salmo Trail #1
<i>Eurhynchium praelongum</i> (Hedw.) Schimp.	Salmo Trail #1
<i>Plagiomnium insigne</i> (Mitt.) T. Kop.	Salmo Trail #1
<i>Rhizomnium nudum</i> (Britt. & Williams) T. Kop.	Salmo Trail #2
<i>Brachythecium erythrorrhizon</i> Schimp.	Salmo Trail Near Top
<i>Barbilophozia lycopodioides</i> (Wallr.) Loeske	Salmo Trail Near Top
<i>Lescurea radicata</i> (Mitt.) Moenk. var. <i>radicata</i>	Salmo Trail Near Top
<i>Polytrichum lyallii</i> (Mitt.) Kindb.	Salmo Trail Near Top
<i>Lophozia ventricosa</i> (Dicks.) Dumort.	Salmo Trail Near Top
<i>Rhizomnium glabrescens</i> (Kindb.) T. Kop.	Sullivan Creek
<i>Tetraphis</i> sp.	Sullivan Creek
<i>Scouleria aquatica</i> Hook.	Sullivan Creek
<i>Racomitrium ericoides</i> (Brid.) Brid.	Sullivan Creek
<i>Eurhynchium praelongum</i> (Hedw.) Schimp.	Sullivan Creek, North Fork
<i>Amblystegium serpens</i> (Hedw.) Schimp.	Sullivan Creek, North Fork
<i>Scouleria aquatica</i> Hook.	Sullivan Creek, North Fork
<i>Hylocomium splendens</i> (Hedw.) Schimp.	Sullivan Creek, North Fork
<i>Neckera douglasii</i> Hook.	Sullivan Creek, North Fork
<i>Racomitrium sudeticum</i> (Funck) Bruch & Schimp.	Sullivan Mtn Rd
<i>Racomitrium ericoides</i> (Brid.) Brid.	Sullivan Mtn Rd
<i>Barbilophozia lycopodioides</i> (Wallr.) Loeske	Sullivan Mtn Talus
<i>Barbilophozia hatcheri</i> (A. Evans) Loeske	Sullivan Mtn Talus
<i>Racomitrium ericoides</i> (Brid.) Brid.	Sullivan Mtn Talus
<i>Pterigynandrum filiforme</i> Hedw.	Sullivan Mtn Talus
<i>Lophozia ventricosa</i> (Dicks.) Dumort.	Sullivan Mtn Talus
<i>Dicranum fuscescens</i> Turn. var. <i>fuscescens</i>	Sullivan Mtn Talus

Appendix E. Lichens of the Colville National Forest, November 2009.

Taxa
Acarospora fuscata (Schrader) Arnold
Acarospora glaucocarpa (Ach.)Korber
Acarospora smaragdula (Wahlenb.) A. Massal.
Acarospora veronensis A. Massal.
Ahtiana pallidula (Tuck. ex Riddle) Goward & Thell
Ahtiana sphaerosporella (Mull. Arg.) Goward
Alectoria imshaugii Brodo & Hawks.
Alectoria lata (Taylor) Lindsay
Alectoria sarmentosa (Ach.) Ach.
Arctoparmelia subcentrifuga (Oksner) Hale
Aspicilia caesiocinerea (Nyl. ex Malbr.) Arnold
Aspicillia contorta (Hoffm.) Kremp.
Bellemerea cinereorufescens (Ach.) Clauzade & Cl. Roux
Biatora vernalis (L.) Fr.
Bryonora castanea (Hepp.) Poelt
Bryoria glabra (Mot.) Brodo & D. Hawksw.
Bryoria capillaris (Ach.) Brodo & Hawks.
Bryoria fremontii (Tuck.) Brodo & D. Hawksw.
Bryoria fuscescens (Gyelnik) Brodo & D. Hawksw.
Bryoria glabra (Mot.) Brodo & Hawks.
Bryoria implexa (Hoffm.) Brodo & D. Hawksw.
Bryoria lanestris (Ach.) Brodo & D. Hawksw.
Bryoria pseudofuscescens (Gyeln.) Brodo & Hawks.
Bryoria trichodes ssp. americana (Mot.) Brodo & Haw
Buellia papillata (Sommerf.) Tuck.
Calicium viride Pers.
Caloplaca adnexa Vezda
Caloplaca castellana (Ras.) Poelt
Caloplaca epithallina Lynge
Caloplaca ferruginea (Hudson) Th Fr.
Caloplaca inconnexa (Nyl.) Zahlbr.
Calvitimela (Tephromela) armeniaca (DC.) Hafellner
Candelariella aurella (Hoffm.) Zahlbr.
Candelariella vitellina (Hoffm.) Mull. Arg.
Candelariella xanthostigma (Ach.) Lettau
Chaenotheca brunneola (Ach.) Müll. Arg.
Chaenotheca chrysocephala (Ach.) Th.Fr.
Chaenotheca phaeocephala (Turner) Th. Fr.
Cladina mitis (Sandst.) Hustich
Cladonia asahinae J. W. Thomson
Cladonia borealis S. Stenroos
Cladonia carneola (Fr.) Fr.
Cladonia cenotea (Ach.) Schaerer
Cladonia cervicornis (Ach.) Flotow
Cladonia chlorophaea (Flörke ex Sommerf.) Sprengel
Cladonia coniocraea (Florke) Spreng.
Cladonia cfr. coniocraea (Florke) Sprengel
Cladonia cornuta (L.) Hoffm.

Appendix E. Continued.
Taxa
Cladonia ecmocyna Leighton
Cladonia fimbriata (L.) Fr.
Cladonia furcata (Huds.) Schrader
Cladonia gracilis (L.) Willd.
Cladonia multiformis G. Merr.
Cladonia norvegica Tønsberg & Holien
Cladonia ochrochlora Flörke
Cladonia phyllophora Hoffm.
Cladonia pleurota (Flörke) Schaerer
Cladonia pocillum (Ach.) Grognot
Cladonia pyxidata (L.) Hoffm.
Cladonia subulata (L.) Weber ex F. H. Wigg.
Cladonia sulphurina (Michaux) Fr.
Cladonia verruculosa (Vain.) Ahti
Cladonia umbricola Tonsberg & Ahti
Clauzedeia immersa (Hoffm.) Hafellner & Bellem.
Cliostomum griffithii (Sm.) Coppins
Collema bachmanianum (Fink) Degel
Collema ceraniscum Nyl.
Collema coccophorum Tuck.
Collema furfuraceum (Arnold) Du Rietz
Collema fuscovirins (With.) J. R. Laundon
Collema nigrescens (Huds.) DC.
Collema polycarpon Hoffm.
Collema subparvum Degel
Collema undulatum Degel var. granulosum
Cyphelium inquinans (Sm.) Trevisan
Dermatocarpon miniatum (L.) Mann
Dermatocarpon reticulatum H. Magn.
Dimerella pineti (Schrader ex Ach.) Vezda (=Coenogonium pineti)
Diploschistes muscorum (Scop.) Sant.
Diploschistes scruposus (Schreber) Norman
Diplotomma alboatrum (Hoffm.) Flotow
Endocarpon adsurgens (Breuss & McCune 1994)
Endocarpon pusillum Hedw.
Ephebe lanata (L.) Vainio
Fuscopannaria cyanolepra (Tuck.) P.M.Jorg.
Fuscopannaria praetermissa s. lat. (Nyl.) P.M.Jorg.
Hypocenomyces scalaris (Ach.) M. Choisy
Hypogymnia physodes (L.) Nyl.
Hypogymnia imshaugii Krog
Hypogymnia metaphysodes (Asah.) Rass.
Hypogymnia occidentalis L. Pike
Hypogymnia physodes (L.) Nyl.
Hypogymnia rugosa (G. Merr.) L. Pike
Hypogymnia tubulosa (Schaerer) Hav.
Hypogymnia tubulosa (Schaerer) Hav.
Icmadophila ericetorum (L.) Zahlbr.

Appendix E. Continued.
Taxa
<i>Kaernefeltia merrillii</i> (DuRoi) Thell & Goward
<i>Lecanora allophana</i> Nyl. [subfusca]
<i>Lecanora argopholis</i> (Ach.) Ach.
<i>Lecanora bicincta</i> Ramond
<i>Lecanora carpinea</i> (L.) Vainio
<i>Lecanora mughicola</i> Nyl.
<i>Lecanora muralis</i> (Schreber) Rabenh.
<i>Lecanora pacifica</i> Tuck.
<i>Lecanora polytropa</i> (Hoffm.) Rabenh.
<i>Lecanora pringlei</i> (Tuck.) Lamb
<i>Lecanora subfusca</i> goup
<i>Lecanora varia</i> (Hoffm.) Ach.
<i>Lecidea atrobrunnea</i> (Ramond ex Lam. & DC) Schaerer
<i>Lecidea lapicida</i> (Ach.) Ach.
<i>Lecidea tessellata</i> Flörke
<i>Lecidella stigmataea</i> (Ach.) Hertel & Leuckert
<i>Lecidella</i> [stygia type]
<i>Lecidoma demissum</i> (Rustr.) G. Schneider & Hertel
<i>Leciophysma furfurascens</i> (Nyl.) Gyelnik
<i>Lepraria cacuminum</i> (Massal.) Lohtander
<i>Leprocaulon subalbicans</i> (Lamb) Lamb & Ward
<i>Leptogium corniculatum</i> (Hoffm.) Minks
<i>Leptogium gelatinosum</i> (With.) Laund.
<i>Leptogium intermedium</i> (Arnold) Arnold
<i>Leptogium lichenoides</i> (L.) Zahlbr.
<i>Leptogium saturninum</i> (Dicks.) Nyl.
<i>Leptogium schraderi</i> (Ach.) Nyl.
<i>Leptogium subtile</i> (Schrader) Torss.
<i>Leptogium tenuissimum</i> (Dicks.) Korb.
<i>Letharia vulpina</i> (L.) Hue
<i>Lichenomphalia umbellifera</i> (L.: Fr.) Redhead, Lutzoni, Moncalvo & Vilgalys
<i>Lobaria halii</i> (Tuck.) Zahlbr.
<i>Lobaria pulmonaria</i> (L.) Hoffm.
<i>Lopadium disciforme</i> (Flotow) Kullhem
<i>Massalongia carnosia</i> (Dickson) Korber
<i>Melanelia disjuncta</i> (Erichsen) Essl.
<i>Melanelia multispora</i> (A. Schneider) Blanco et al
<i>Melanelia panniformis</i> (Nyl.) Essl.
<i>Melanelia soreliata</i> (Ach.) Goward & Ahti
<i>Melanelixia subaurifera</i> (Nyl.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch
<i>Melanelia subolivacea</i>
<i>Melanohalea exasperatula</i> (De Not.) O. Blanco, A. Crespo, Divakar, Essl., D. Hawksw. & Lumbsch
<i>Mycobilimbia hypnorum</i> (Lib.) Kalb & Hafellner
<i>Mycoblastus affinis</i> (Schaerer) Schauer
<i>Mycocalicium subtile</i> (Pers.) Szatala
<i>Nephroma bellum</i> (Sprengel) Tuck.
<i>Nephroma helveticum</i> Ach.
<i>Nephroma occultum</i> Wetm.

Appendix E. Continued.
Taxa
<i>Nephroma parile</i> (Ach.) Ach.
<i>Nephroma resupinatum</i> (L.) Ach.
<i>Nodobryoria abbreviata</i> (Mull. Arg) Commons & Brodo
<i>Nodobryoria oregana</i> (Tuck.) Common & Brodo
<i>Pannaria pezizoides</i> (Weber) Trevisan
<i>Parmelia hygrophila</i> Goward & Ahti
<i>Parmelia saxatilis</i> (L.) Ach.
<i>Parmelia sulcata</i> Taylor
<i>Parmeliopsis ambigua</i> (Wulfen) Nyl.
<i>Parmeliopsis hyperopta</i> (Ach.) Arnold
<i>Peltigera aphthosa</i> (L.) Willd.
<i>Peltigera canina</i> (L.) Willd.
<i>Peltigera</i> cfr. <i>ponojensis</i> Gyelnick
<i>Peltigera</i> cfr. <i>rufescens</i> (Weiss.) Humb.
<i>Peltigera cinnamomea</i> Goward
<i>Peltigera collina</i> (Ach.) Schrader
<i>Peltigera didactyla</i> (With.) Laund.
<i>Peltigera didactyla</i> (With.) Laund. var. <i>extenuata</i>
<i>Peltigera didactyla</i> var. <i>didactyla</i> (With.) Laund.
<i>Peltigera elisabethae</i> Gyelnick
<i>Peltigera horizontalis</i> (Hudson) Baumg.
<i>Peltigera kristinssonii</i> Vitik.
<i>Peltigera lepidophora</i> (Nyl. ex Vainio) Bitter
<i>Peltigera leucophlebia</i> (Nyl.) Gyelnick
<i>Peltigera malacea</i> (Ach.) Funck
<i>Peltigera membranacea</i> (Ach.) Nyl.
<i>Peltigera neopolydactyla</i> (Gyelnick) Gyelnick
<i>Peltigera polydactylon</i> (Necker) Hoffm.
<i>Peltigera ponojensis</i> Gyelnick
<i>Peltigera praetextata</i> (Flörke ex Sommerf.) Zopf
<i>Peltigera retifoveata</i> Vitik.
<i>Peltigera rufescens</i> (Weiss) Humb.
<i>Peltigera venosa</i> (L.) Hoffm.
<i>Pertusaria amara</i> (Ach.) Nyl.
<i>Phaeophyscia decolor</i> (Kashiw.) Essl.
<i>Phaeophyscia hispidula</i> (Ach.) Essl.
<i>Phaeophyscia sciastra</i> (Ach.) Moberg
<i>Phylliscum demangeonii</i> (Moug & Mont.) Nyl.
<i>Physcia caesia</i> (Hoffman) Furnr.
<i>Physcia dimidiata</i> (Arnold) Nyl.
<i>Physcia dubia</i> (Hoffm.) Lettau
<i>Physcia stellaris</i> (L.) Nyl.
<i>Physcia tenella</i> (Scop.) DC.
<i>Physconia enteroxantha</i> (Nyl.) Poelt
<i>Placidium squamulosum</i>
<i>Placynthiella icmalea</i> (Ach.) Coppins & James
<i>Placynthiella uliginosa</i> (Schrader) Coppins & P. James
<i>Placynthium stenophyllum</i> var. <i>isidiatum</i> Henssen

Appendix E. Continued.**Taxa**

Platismatia glauca (L.) Culb. & C. Culb.

Polychidium muscicola (Sw.) Gray

Porpidia thomsonii Gowan

Protobalstinea incrustans (DC.) J. Steiner

Protoparmelia cfr. badia (Hoffm.) Hafel.

Protoparmelia ochrococca (Nyl.) P.M. Jorg.

Psilolechia luicida (Ach.) Choisy

Psora globifera (Ach.) Massal.

Psora luridella (Tuck.) Fink

Psora nipponica (Zahlbr.) G. Schneid

Psora himalayana (Church.Bad.) Timdal

Psora tuckermanii R. Anderson ex Timdal

Psoroma hypnorum (Vahl) Gray

Pyrrhospora cinnabarina (Sommerf.) Choisy

Ramalina dilacerata (Hoffm.) Hoffm.

Ramalina pollinaria (Westr.) Ach.

Ramalina farinacea (L.) Ach.

Ramalina thrausta (Ach.) Nyl.

Rhizocarpon cinereonigrum Vainio

Rhizocarpon geminatum Körber

Rhizocarpon geographicum (L.) DC.

Rhizocarpon grande (Florke ex Flowtow) Arnold

Rhizocarpon lecanorinum Anders

Rhizoplaca chrysoleuca (Sm.) Zopf

Rhizoplaca melanothalma (DC.) Leuckert & Poelt

Rhizoplaca cfr. melanothalma (DC.) Leuckert & Poel

Rinodina exigua (Ach.) Gray

Rinodina glauca Ropin

Rinodina turfacea (Wahlenb) Korber

Sarcogyne regularis Körber

Solorina crocea (L.) Ach.

Solorina spongiosa (Ach.) Anzi

Staurothele drummondii (Tuck.) Tuck.

Stereocaulon alpinum Laurer ex Funck

Stereocaulon grande (H. Magn.) H. Magn.

Stereocaulon myriocarpum Th. Fr.

Stereocaulon sasakii Zahlbr

Stereocaulon tomentosum Fr.

Stereocaulon tomentosum s. lato Fr.

Tephromela atra (Hudson) Hafellner

Thelotrema lepadinum (Ach.) Ach.

Thermutis velutina (Ach.) Flowtow

Toninia squalida (Ach.) Massal.

Trapeliopsis granulosa (Hoffm.) Lumbsch

Tuckermannopsis chlorophylla (Willd.) Hale

Tuckermannopsis merrillii (Du Rietz) Hale

Tuckermannopsis platyphylla (Tuck.) Hale

Tuckermannopsis sepincola (Ehrh.) Hale

Appendix E. Continued.**Taxa**

Tuckermannopsis subaplina (Imshaug) Karnefelt

Umbilicaria americana Poelt & T. Nash

Umbilicaria arctica (Ach.) Nyl.

Umbilicaria deusta (L.) Baumg.

Umbilicaria hyperboera (Ach.) Hoffm.

Umbilicaria phaea Tuck.

Umbilicaria polyphylla (L.) Baumg.

Umbilicaria polyrrhiza (L.) Fr.

Umbilicaria torrefacta (Lightf.) Schrader

Umbilicaria vellea (L.) Hoffm.

Usnea diplotypus Vainio

Usnea lapponica Vainio

Verrucaria muralis Ach.

Verrucaria aethiobola Wahlenbr.

Vulpicida canadensis (Rasanen) Matts.

Vulpicida pinastri (Scop.) J.-E. Mattsson & M. J. Lai

Xanthoparmelia cumberlandia (Gyelnik) Hale

Xanthoria candelaria (L.) Th. Fr.

Xanthoria elegans (Link) TH.Fr.

Xanthoria polycarpa (Hoffm.) Rieber

Appendix F. Bryophytes of the Colville National Forest, November 2009.

Taxa
<i>Aloina bifrons</i> (De Not.) Delg.
<i>Aloina rigida</i> (Hedw.) Limpr.
<i>Amblystegium serpens</i> (Hedw.) Schimp. var. <i>juratzkanum</i> (Schimp.) Rau & Herv.
<i>Amblystegium serpens</i> (Hedw.) Schimp. var. <i>serpens</i>
<i>Amphidium lapponicum</i> (Hedw.) Schimp.
<i>Amphidium mougeotii</i> (Bruch & Schimp.) Schimp.
<i>Anacolia menziesii</i> (Turn.) Par. var. <i>menziesii</i>
<i>Anastrophyllum hellerianum</i> (Nees) R. M. Schust.
<i>Andreaea rupestris</i> Hedw. var. <i>rupestris</i>
<i>Aneura pinguis</i> (L.) Dumort.
<i>Asterella lindenberghiana</i> (Corda) Lindb.
<i>Athalamia hyalina</i> (Sommerf.) S. Hatt.
<i>Atrichum selwynii</i> Aust.
<i>Atrichum tenellum</i> (Rohl) Bruch & Schimp.
<i>Aulacomnium androgynum</i> (Hedw.) Schwaegr.
<i>Aulacomnium palustre</i> (Hedw.) Schwaegr.
<i>Barbilophozia atlantica</i> (Kaal.) Mull. Frib.
<i>Barbilophozia barbata</i> (Schreb.) Loeske
<i>Barbilophozia hatcheri</i> (A. Evans) Loeske
<i>Barbilophozia lycopodioides</i> (Wallr.) Loeske
<i>Barbula convoluta</i> Hedw. var. <i>convoluta</i>
<i>Barbula convoluta</i> Hedw. var. <i>eustegia</i> Card. & Ther.
<i>Bartramia ithyphylla</i> Brid.
<i>Bartramia pomiformis</i> Hedw.
<i>Blepharostoma trichophyllum</i> (L.) Dumort.
<i>Brachythecium albicans</i> (Hedw.) Schimp.
<i>Brachythecium bolanderi</i> (Lesq.) Jaeg.
<i>Brachythecium collinum</i> (C. Mull.) Schimp.
<i>Brachythecium erythrorrhizon</i> Schimp.
<i>Brachythecium frigidum</i> (C. Mull.) Besch.
<i>Brachythecium holzingeri</i> (Grout) Grout
<i>Brachythecium hylotapetum</i> B. Hig. & N. Hig.
<i>Brachythecium leibergii</i> Grout
<i>Brachythecium nelsonii</i> Grout
<i>Brachythecium oedipodium</i> (Mitt.) Jaeg.
<i>Brachythecium oxycladon</i> (Brid.) Jaeg.
<i>Brachythecium rivulare</i> Schimp.
<i>Brachythecium rutabulum</i> (Hedw.) B.S.G.
<i>Brachythecium salebrosum</i> (Web. & Mohr) Schimp. var. <i>salebrosum</i>
<i>Brachythecium velutinum</i> (Hedw.) Schimp. var. <i>venustum</i> (De Not.) Arc.
<i>Bryoerythrophyllum recurvirostre</i> (Hedw.) Chen
<i>Bryum argenteum</i> Hedw.
<i>Bryum caespiticium</i> Hedw.
<i>Bryum calobryoides</i> Spence
<i>Bryum capillare</i> Hedw. var. <i>capillare</i>
<i>Bryum gemmiparum</i> De Not.
<i>Bryum lisae</i> De Not. var. <i>cuspidatum</i> (Bruch & Schimp.) Marg.
<i>Bryum miniatum</i> Lesq.

Appendix F. Continued.
Taxa
<i>Bryum muehlenbeckii</i> Bruch & Schimp.
<i>Bryum pallescens</i> Schwaegr.
<i>Bryum pseudotriquetrum</i> (Hedw.) Gaertn. et al.
<i>Bryum subapiculatum</i> Hampe
<i>Bryum turbinatum</i> (Hedw.) Turn.
<i>Bryum weigeli</i> Spreng.
<i>Buxbaumia aphylla</i> Hedw.
<i>Buxbaumia piperi</i> Best
<i>Buxbaumia viridis</i> (DC.) Moug. & Nestl.
<i>Calliergon cordifolium</i> (Hedw.) Kindb.
<i>Calliergon giganteum</i> (Schimp.) Kindb.
<i>Calliergon richardsonii</i> (Mitt.) Kindb.
<i>Calliergon stramineum</i> (Brid.) Kindb.
<i>Calypogeia azurea</i> Stotler & Crotz
<i>Calypogeia muelleriana</i> (Schiffn.) Mull. Frib.
<i>Calypogeia neesiana</i> (C. Massal. & Carestia) Mull. Frib.
<i>Calypogeia sphagnicola</i> (Arnell & J. Perss.) Warnst. & Loeske
<i>Campylium hispidulum</i> (Brid.) Mitt.
<i>Campylium polygamum</i> (Schimp. in B.S.G.) C. Jens
<i>Campylium stellatum</i> (Hedw.) C. Jens.
<i>Cephalozia connivens</i> (Dicks.) Lindb.
<i>Cephalozia leucantha</i> Spruce
<i>Cephalozia lunulifolia</i> (Dumort.) Dumort.
<i>Cephalozia pleniceps</i> (Austin) Lindb.
<i>Cephaloziella divaricata</i> (Sm.) Schiffn.
<i>Cephaloziella rubella</i> (Nees) Warnst.
<i>Cephaloziella spinigera</i> (Lindb.) Jorg.
<i>Ceratodon purpureus</i> (Hedw.) Brid. var. <i>purpureus</i>
<i>Chiloscyphus pallescens</i> (Hoffm.) Dumort.
<i>Chiloscyphus polyanthos</i> (L.) Corda
<i>Cladopodiella fluitans</i> (Nees) H. Buch
<i>Claopodium bolanderi</i> Best
<i>Conardia compacta</i> (C. Mull.) Robins.
<i>Conocephalum conicum</i> (L.) Dumort.
<i>Coscinodon calyptratus</i> (Hook.) Kindb.
<i>Cratoneuron filicinum</i> (Hedw.) Spruce
<i>Cynodontium strumiferum</i> (Hedw.) Lindb.
<i>Dendroalsia albietina</i> (Hook.) Britt.
<i>Desmatadon cernuus</i> (Hub.) Bruch & Schimp.
<i>Desmatadon convolutus</i> (Brid.) Grout
<i>Desmatadon heimii</i> (Hedw.) Mitt. var. <i>heimii</i>
<i>Desmatadon latifolius</i> (Hedw.) Brid.
<i>Dichelyma uncinatum</i> Mitt.
<i>Dichodontium pellucidum</i> (Hedw.) Schimp.
<i>Dicranella crispa</i> (Hedw.) Schimp.
<i>Dicranella heteromalla</i> (Hedw.) Schimp.
<i>Dicranella palustris</i> (Dicks.) Warb.
<i>Dicranella schreberiana</i> (Hedw.) Crum & Anderson var. <i>robusta</i> (Braithw.) Crum & Anderson

Appendix F. Continued.
Taxa
Dicranoweisia crispula (Hedw.) Milde
Dicranum elongatum Schwaegr.
Dicranum fuscescens Turn. var. fuscescens
Dicranum montanum Hedw.
Dicranum muehlenbeckii Bruch & Schimp.
Dicranum polysetum Sw.
Dicranum scoparium Hedw.
Dicranum spadiceum Zett.
Dicranum tauricum Sapeh.
Didymodon brachyphyllus (Sull.) Zand.
Didymodon rigidulus Hedw. var. gracilis (Hook. & Grev.) Zand.
Didymodon rigidulus Hedw. var. subulatus (Ther. & Bartr.) Zand.
Didymodon rigidulus Hedw.
Didymodon tophaceus (Brid.) Lisa
Didymodon vinealis (Brid.) Zand. var. vinealis
Diplophyllum taxifolium (Wahlenb.) Dumort.
Distichium capillaceum (Hedw.) Bruch & Schimp. var. capillaceum
Ditrichum flexicaule (Schwaegr.) Hampe
Drepanocladus aduncus (Hedw.) Warnst. var. aduncus
Drepanocladus aduncus (Hedw.) Warnst. var. kniefii (Schimp.) Monk.
Drepanocladus aduncus (Hedw.) Warnst. var. polycarpus (Voit.) G. Roth.
Drepanocladus capillifolius (Warnst.) Warnst.
Drepanocladus revolvens (Sw.) Warnst.
Drepanocladus sendtneri (Schimp.) Warnst.
Dryptodon patens (Hedw.) Brid.
Encalypta ciliata Hedw.
Encalypta procera Bruch
Encalypta raptocarpa Schwaegr.
Encalypta vulgaris Hedw.
Eurhynchium praelongum (Hedw.) Schimp.
Eurhynchium pulchellum (Hedw.) Jenn. var. pulchellum
Fissidens bryoides Hedw.
Fontinalis antipyretica Hedw. var. antipyretica
Fontinalis antipyretica Hedw. var. oregonensis Ren. & Card.
Fontinalis hypnoides Hartm. var. hypnoides
Frullania bolanderi Aust.
Funaria hygrometrica Hedw.
Geocalyx graveolens (Schrad.) Nees
Grimmia alpestris (Weber & Mohr) Schleich.
Grimmia anodon Bruch & Schimp.
Grimmia donniana Sm.
Grimmia laevigata (Brid.) Brid.
Grimmia longirostris Hook.
Grimmia montana Bruch & Schimp.
Grimmia ovalis (Hedw.) Lindb.
Grimmia pulvinata (Hedw.) Sm. var. pulvinata
Grimmia reflexidens Mull. Hal.
Grimmia tenerrima Ren. & Card.

Appendix F. Continued.
Taxa
Grimmia torquata Hornsch. var. torquata
Gymnocolea inflata (Huds.) Dumort.
Gymnostomum aeruginosum Sm.
Hamatocaulis vernicosus (Mitt.) Hedenas
Harpanthus flotovianus (Nees) Nees
Hedwigia ciliata (Hedw.) P. Beauv.
Helodium blandowii (Web. & Mohr) Warnst. var. blandowii
Herzogiella seligeri (Brid.) Iwats.
Homalothecium aeneum (Mitt.) Lawt.
Heterocladium dimorphum (Brid.) Schimp.
Homalothecium fulgescens (Mitt. Ex C. Muell.) Lawt.
Homalothecium nevadense (Lesq.) Ren. & Card. ssp. aeneum (Mitt.) H. Hofmann
Homalothecium nevadense (Lesq.) Ren. & Card. ssp. nevadense
Hygroamblystegium tenax (Hedw.) Jenn. var. spinifolium (Schimp.) Jenn.
Hygroamblystegium tenax (Hedw.) Jenn. var. tenax
Hygrohypnum bestii (Ren. & Bryhn) Broth.
Hygrohypnum luridum (Hedw.) Jenn.
Hygrohypnum molle (Hedw.) Loeske
Hygrohypnum ochraceum (Wils.) Loeske
Hylocomium splendens (Hedw.) Schimp.
Hypnum circinale Hook.
Hypnum lindbergii Mitt.
Hypnum pallescens (Hedw.) P. Beauv.
Hypnum pratense (Rabenh.) Spruce
Hypnum recurvatum (Lindb. & Arnell) Kindb.
Hypnum revolutum (Mitt.) Lindb.
Hypnum subimponens Lesq.
Isopterygiopsis pulchella (Hedw.) Iwats.
Jungermannia exsertifolia Steph. ssp. cordifolia Vana
Jungermannia leiantha Grolle
Kindbergia praelonga (Hedw.) Ochyra
Lepidozia reptans (L.) Dumort.
Leptobryum pyriforme (Hedw.) Wils.
Leptodictyum humile (P. Beauv.) Ochyra
Leptodictyum riparium (Hedw.) Warnst.
Lescuraea incurvata (Hedw.) Lawt. var. incurvata
Lescuraea patens (Lindb) Arn. & C. Jens.
Lescuraea radicata (Mitt.) Moenk. var. radicata
Lescuraea stenophylla (Ren. & Card.) Kindb.
Limprichtia revolvens (Sw.) Loeske
Lophocolea bidentata (L.) Dumort.
Lophocolea heterophylla (Schrad.) Dumort.
Lophocolea minor Nees
Lophozia ascendens (Warnst.) R. M. Schust.
Lophozia excisa (Dicks.) Dumort.
Lophozia heterocolpos (Hartm.) M. Howe
Lophozia incisa (Schrad.) Dumort.
Lophozia longidens (Lindb.) Macoun

Appendix F. Continued.
Taxa
Lophozia longiflora (Nees) Schiffn.
Lophozia obtusa (Lindb.) A. Evans
Lophozia sudetica (Huebener) Grolle
Lophozia ventricosa (Dicks.) Dumort.
Marchantia polymorpha L.
Meesia longiseta Hedw.
Meesia triquetra (Richt.) Angstr.
Metaneckera menziesii (Hook.) Steere
Mnium ambiguum H. Mull.
Mnium marginatum (With.) P. Beauv.
Mnium spinulosum Bruch & Schimp.
Myurella julacea (Schwaegr.) Schimp.
Neckera douglasii Hook.
Oligotrichum hercynicum (Hedw.) Lam. & DC.
Oncophorus virens (Hedw.) Brid.
Orthotrichum affine Brid.
Orthotrichum alpestre Hornsch.
Orthotrichum anomalum Hedw.
Orthotrichum cupulatum Brid.
Orthotrichum hallii Sull. & Lesq.
Orthotrichum holzingeri Ren. & Card.
Orthotrichum laevigatum Zett.
Orthotrichum lyellii Hook. & Tayl.
Orthotrichum obtusifolium Brid.
Orthotrichum pallens Bruch ex Brid.
Orthotrichum pellucidum Lindb.
Orthotrichum pumilum Sw.
Orthotrichum rupestre Schwaegr.
Orthotrichum speciosum Nees var. speciosum
Orthotrichum striatum Hedw.
Paludella squarrosa (Hedw.) Brid.
Pellia endiviifolia (Dicks.) Dumort.
Phascum cuspidatum Hedw.
Philonotis fontana (Hedw.) Brid. var. americana (Dism.) Flow.
Philonotis fontana (Hedw.) Brid. var. fontana
Philonotis fontana (Hedw.) Brid. var. pumila (Turn.) Brid.
Physcomitrium washingtoniense Crum & Anderson
Plagiochila asplenoides (L. emend. Tayl.) Dum.
Plagiochila porelloides (Nees) Lindenb.
Plagiomnium cuspidatum (Hedw.) T. Kop.
Plagiomnium ellipticum (Brid.) T. Kop.
Plagiomnium insigne (Mitt.) T. Kop
Plagiomnium medium (Bruch & Schimp.) T. Kop. var. medium
Plagiomnium venustum (Mitt.) T. Kop.
Plagiothecium denticulatum (Hedw.) Schimp.
Plagiothecium laetum Schimp. in B.S.G.
Platydictya jungermannioides (Brid.) Crum
Pleurozium schreberi (Brid.) Mitt.

Appendix F. Continued.**Taxa**

Pogonatum urnigerum (Hedw.) P. Beauv.
Pohlia andaluscia (Hohn.) Broth.
Pohlia annotina (Hedw.) Lindb.
Pohlia cruda (Hedw.) Lindb.
Pohlia drummondii (C. Mull) Andrews
Pohlia nutans (Hedw.) Lindb.
Pohlia prolifera (Breidl.) Arnell
Pohlia wahlenbergii (Web. & Mohr) Andrews
Polytrichastrum alpinum (Hedw.) G. L. Sm. var. alpinum
Polytrichum commune Hedw. var. commune
Polytrichum formosum Hedw.
Polytrichum juniperinum Hedw.
Polytrichum longisetum Brid.
Polytrichum lyallii (Mitt.) Kindb.
Polytrichum piliferum Hedw.
Polytrichum strictum Brid.
Porella cordaeana (Huebener) Moore
Pseudocrossidium revolutum (Brid.) Zand.
Pseudoleskea atricha (Kindb.) Kindb.
Pseudoleskea incurvata (Hedw.) Loeske
Pseudoleskea patens (Lindb.) Kindb.
Pseudoleskea radicata (Mitt.) Mac. & Kindb.
Pseudoleskea stenophylla Ren. & Card. in Roll
Pseudoleskeella tectorum (Brid.) Kindb.
Pterigynandrum filiforme Hedw.
Pterygoneurum ovatum (Hedw.) Dix.
Ptilidium californicum (Austin) Pearson
Ptilidium ciliare (Linnaeus) Nees
Ptilium crista-castrensis (Hedw.) De Not.
Ptilidium pulcherrimum (Weber) Vainio
Racomitrium aciculare (Hedw.) Brid.
Racomitrium brevipes Kindb.
Racomitrium canescens (Hedw.) Brid. var. canescens
Racomitrium ericoides (Brid.) Brid.
Racomitrium fasciculare (Hedw.) Brid.
Racomitrium heterostichum (Hedw.) Brid.
Reboulia hemisphaerica (L.) Raddi
Racomitrium occidentale (Ren. & Card.) Ren. & Card.
Racomitrium sudeticum (Funck) Bruch & Schimp.
Radula complanata (L.) Dumort.
Rhizomnium magnifolium (Horik.) T. Kop.
Rhizomnium nudum (Britt. & Williams) T. Kop.
Rhizomnium pseudopunctatum (Bruch & Schimp.) T. Kop.
Rhytidiadelphus loreus (Hedw.) Warnst.
Rhytidiadelphus squarrosus (Hedw.) Warnst.
Rhytidiadelphus triquetrus (Hedw.) Warnst.
Rhytidiopsis robusta (Hook.) Broth.
Riccardia latifrons (Lindb.) Lindb.

Appendix F. Continued.
Taxa
Riccardia multifida (L.) Gray
Riccardia palmata (Hedw.) Carruth.
Riccia cavernosa Hoffm.
Riccia frostii Austin
Roellia roellii (Broth.) Crum
Sanionia symmetrica (Ren. & Card.) Wheldon
Sanionia uncinata (Hedw.) Loeske
Scapania curta (Mart.) Dumort.
Scapania irrigua (Nees) Gottsche & Lindenb. & Nees
Scapania mucronata H. Buch.
Scapania paludicola Loeske & Mull.
Scapania subalpina (Nees) Dumort.
Scapania uliginosa (Mull. Frib.) Mull. Frib.
Scapania umbrosa (Schrad.) Dumort.
Scapania undulata (L.) Dumort.
Schistidium apocarpum (Hedw.) Bruch & Schimp.
Schistidium atrichum (C.M. et Kindb.) W.A. Weber
Schistidium flaccidum (De Not.) Ochyra
Schistidium papillosum Culm. in J. Amann et al.
Schistidium rivulare (Brid.) Podp.
Schistidium strictum (Turn.) O. Mart.
Scleropodium obtusifolium (Jaeg.) Kindb.
Scouleria aquatica Hook.
Sphagnum angustifolium (Russow) C. Jens.
Sphagnum capillifolium (Ehrh.) Hedw.
Sphagnum fallax (Klinggr.) Klinggr.
Sphagnum fuscum (Schimp.) Klinggr.
Sphagnum magellanicum Brid.
Sphagnum obtusum Warnst.
Sphagnum riparium Angstr.
Sphagnum russowii Warnst.
Sphagnum squarrosum Crome
Sphagnum subsecundum Nees
Sphagnum teres (Schimp.) Angstr.
Sphagnum warnstorffii Russ.
Targionia hypophylla L.
Tetraphis pellucida Hedw.
Tetraphis pellucida (Hedw.) var. trachypoda (Kindb.) J. Harpel
Thuidium recognitum (Hedw.) Lindb.
Timmia austriaca Hedw.
Timmia megapolitana Hedw. var. bavarica (Hessl.) Brid.
Timmiella crassinervis (Hampe) L. Koch.
Tomenthypnum nitens (Hedw.) Loeske
Tortella fragilis (Hook. & Wils.) Limpr.
Tortella tortuosa (Hedw.) Limpr.
Tortula bartramii Steere
Tortula brevipes (Lesq.) Broth.
Tortula inermis (Brid.) Mont.

Appendix F. Continued.**Taxa**

Tortula latifolia Hartm.

Tortula mucronifolia Schwaegr.

Tortula princeps De Not.

Tortula ruralis (Hedw.) Gaertn. et al.

Trichodon cylindricus (Hedw.) Schimp. var. cylindricus

Tritomaria exsectiformis (Breidl.) Loeske

Warnstorfia exannulata (Schimp.) Loeske var. exannulata

Warnstorfia fluitans (Hedw.) Loeske