

The Bryophyte Flora of Bighorn National Forest Fens

An Annotated Checklist



prepared for the
Bighorn National Forest
and the
The University of Wyoming
Wyoming Natural Diversity Database

by

Martin J. Lenz
400 Del Monte St.
Montague, CA 96064

10 April 2011

Introduction

The Bighorn National Forest, located in north-central Wyoming, encompasses the bulk of the Bighorn Mountains, an isolated mountain range of just over one million acres considered to be part of the Rocky Mountains. The area includes numerous land formations favorable to the development of fens and consequently has a large number and variety of these distinctive wetlands.

The U.S. Environmental Protection Agency, defines fens as “peat-forming wetlands that receive nutrients from sources other than precipitation: usually from upslope sources through drainage from surrounding mineral soils and from groundwater movement. Fens differ from bogs because they are less acidic and have higher nutrient levels. They are therefore able to support a much more diverse plant and animal community.” (EPA, 2011). That diverse plant community includes bryophytes, a group that consists of mosses, liverworts and hornworts.

This work is an inventory of the bryophyte taxa that have been found in these fen habitats of the Bighorn Mountains. It includes many species that are unique to fens in addition to others that occur in different wetland habitats as well. It is likely that more species remain to be discovered here and provide material for future additions to this inventory.

The checklist presented here follows a preliminary version completed in 2010 and includes field work from four additional sites by both the author and Bonnie Heidel of the Wyoming Natural Diversity Database. The earlier checklist was constructed from the collections to date of the author (approximately 1400 specimens from the Bighorn Mountains between 2004 and the present), as well as those of Jim Zier in the pursuit of his research at the University of Wyoming (Zier, pers. comm.) and those of Bonnie Heidel (Heidel, pers. comm.). It also included a few Aven Nelson collections cited by Patricia Eckel (Eckel, 2007). These collections represent a total of 20 sites that could potentially be classified as fens.

The bulk of the historical bryophyte work in the Bighorns was conducted by three collectors, namely Aven Nelson in the 1890's to about 1902, C.L. Porter in the 1930's and W.S. Hong in the 1970's and 1980's. Additional collections were contributed sporadically by a number of other researchers, including but not limited to Gooding in 1901, Rollins in 1934, Whitehouse in 1951, Hartman in 1979, B.E. Nelson in 1979-80, Eckel in 1985, McKee in 1992 and Zacharkevics in 1992. Many of these collections were referenced in the writings of Porter in 1933 and 1935, Hong in 1977 and Eckel in 1996. Given the size of the area and the time span involved, this equates to a relatively small amount of bryological exploration of these mountains. (Eckel, 2007; Hong, 1977)

To my knowledge there is no published localized inventory of the bryophyte flora of the Bighorn Mountains. It is beyond the scope of this project to research and develop one at this time. It is intended, however, that this project will be a preliminary element in the future development of such a flora.

The current lack of such an inventory makes it difficult to make any meaningful comparison of what was found with what was previously known, thereby arriving at a list of new taxa for the area. It is possible, however, to make such a comparison on a statewide level, with the stipulation that it is on an “as published” basis. Obviously, in view of the fact that considerable time has elapsed since the release of various publications detailing the known flora for the state, unpublished records do exist of taxa previously unknown in Wyoming. With that in mind, then, the following species are noted as additions to the bryophyte flora of Wyoming. (Eckel, 1996; Hong, 1977; Spence, 1985; Weber & Wittman, 2007; Vitt, 2007)

Meesia longiseta (known from Idaho, Montana and Colorado and expected from Wyoming) (Vitt, 2007)

Meesia triquetra (known from Montana, South Dakota and Nebraska and expected from Wyoming) (Vitt, 2007)

Hamatocaulis vernicosus is previously unknown from any of the adjacent states and not particularly expected from Wyoming. It is known from Oregon, Washington, British Columbia, Alberta, Manitoba, Minnesota and Illinois, forming a distant northern semi-circle around Wyoming. This collection was verified by Lars Hedenäs of the Swedish Museum of Natural History in Stockholm, Sweden. (Hedenäs, pers. comm.; Hedenäs, 2000)

Jungermannia atrovirens (known from Montana and expected from Wyoming) (Hong, 1977; Elliott, 1993)

Jungermannia obovata (known from Montana and Colorado and expected from Wyoming) (Hong, 1977; Weber & Wittman, 2007)

Riccardia multifida (known from Montana and expected from Wyoming) (Hong, 1977; Elliott, 1993)

In addition, one other species was discovered in Wyoming in connection with this project and its occurrence there was published in 2006.

Sarmentypnum tundrae (as *Warnstorfia tundrae*) (Lenz, 2006)

List of Collection Sites

1. **Camp Creek** - This site is a sloping shrub fen draining from the east into Camp Creek. The collections were made on 23 August 2007. Coordinates: UTM 13, 302504 E, 4968120 N (Datum NAD 27); Elevation 2295 meters (7527 feet)

Taxa collected:

Mosses

Amblyodon dealbatus
Aulacomnium palustre
Brachythecium rivulare
Brachythecium salebrosum
Bryoerythrophyllum recurvirostrum
Climacium dendroides
Cratoneuron filicinum
Dicranella schreberiana
Dicranella varia
Drepanocladus aduncus
Hypnum lindbergii
Meesia uliginosa
Palustriella falcata
Philonotis fontana var. *fontana*
Plagiomnium ellipticum
Ptychostomum pallens
Ptychostomum pseudotriquetrum
Tomentypnum nitens

Liverworts

Barbilophozia hatcheri
Lophozia ventricosa
Marchantia alpestris



2. **Nickel Creek 2** - This site is a sloping shrub fen at the head of a small tributary of Nickel Creek, which is in turn a tributary to the North Tongue River. Collections were made on 29 August 2007. Coordinates: UTM 13, 304204 E, 4964957 N (Datum NAD 27); Elevation: 2350 meters (7708 feet)

Taxa collected:

Mosses

Amblystegium serpens
Breidleria pratensis
Climacium dendroides
Dicranella schreberiana
Drepanocladus aduncus
Hypnum lindbergii
Pohlia nutans
Ptychostomum pseudotriquetrum
Rhizomnium pseudopunctatum
Sarmentypnum exannulatum
Sphagnum warnstorffii
Straminergon stramineum
Tomentypnum nitens

Liverworts

Cephalozia pleniceps
Cephaloziella divaricata
Chiloscyphus polyanthos
Riccardia latifrons

3. **Black Mountain NE 3** - This site is a sloping shrub fen at the head of a small tributary of the Little Tongue River. The collections were made on 28 August 2007. Coordinates: UTM 13, 312418 E, 4958471 N (Datum NAD 27); Elevation: 2450 meters (8036 feet)

Taxa collected:

Mosses

Aulacomnium palustre
Brachythecium nelsonii
Climacium dendroides
Drepanocladus aduncus
Philonotis fontana var. *americana*
Plagiomnium ellipticum
Rhizomnium pseudopunctatum
Sanionia uncinata
Sarmentypnum exannulatum
Sphagnum warnstorffii
Straminergon stramineum

Liverworts

Marchantia alpestris
Pellia neesiana

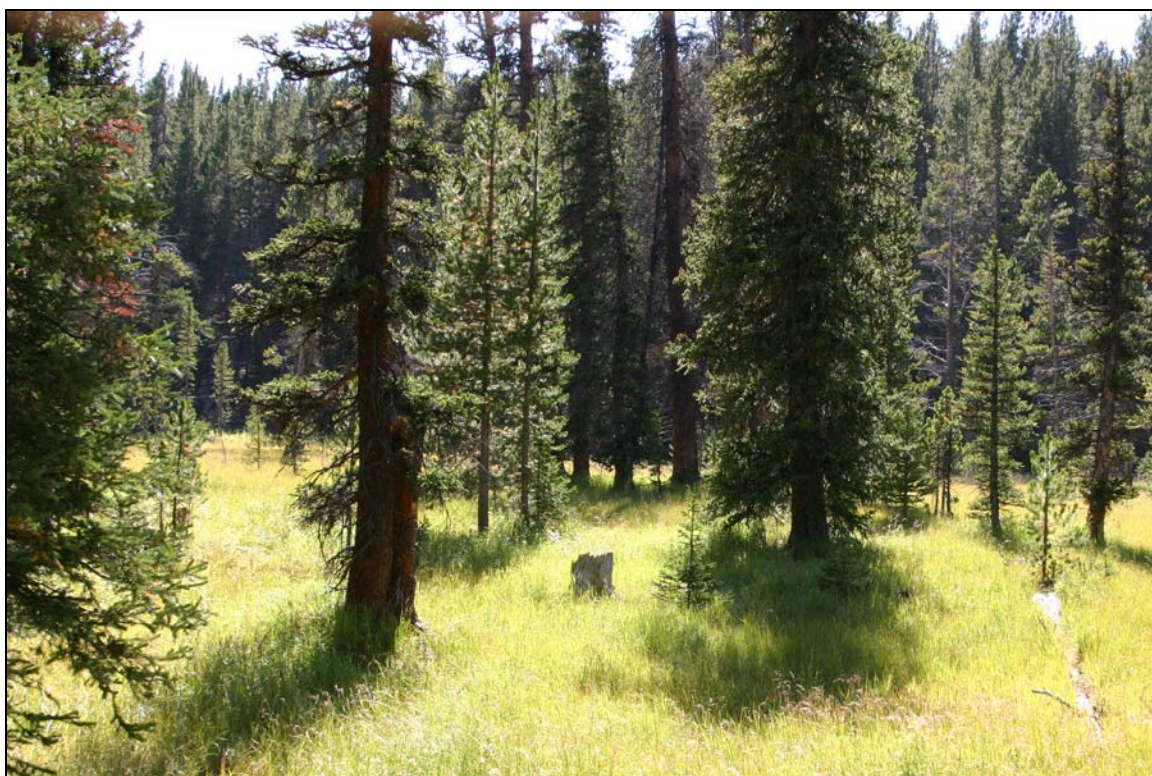
4. **Graves Creek** - This site is in a shallow basin along Graves Creek below Graves Lake. The collection date was 19 August 2006. Coordinates: UTM 13, 307544 E, 4948063 N (Datum NAD 27); Elevation: 2665 meters (8741 feet)

Taxa collected:

Mosses

Liverworts

Aulacomnium palustre
Brachythecium nelsonii
Brachythecium rivulare
Calliergon cordifolium
Climacium dendroides
Helodium blandowii
Paludella squarrosa
Rhizomnium pseudopunctatum
Sarmentypnum exannulatum
Straminergon stramineum
Tomentypnum nitens



5. **Sawmill Pass Fen** - This is a large sloping shrub fen, draining from the south into the headwaters of the East Fork of the South Tongue River. The collections were made on 24 August 2007.

Coordinates: UTM 13, 310204 E, 4944172 N (Datum NAD 27); Elevation: 2805 meters (9200 feet)

Taxa collected:

Mosses

Aulacomnium palustre
Brachythecium nelsonii
Brachythecium salebrosum
Campylium stellatum
Climacium dendroides
Dichodontium pellucidum
Fontinalis antipyretica var. *gigantea*
Helodium blandowii
Hygrohypnum ochraceum
Hypnum lindbergii
Meesia uliginosa
Mnium marginatum
Oncophorus virens
Paludella squarrosa
Philonotis fontana var. *americana*
Philonotis fontana var. *fontana*
Plagiothecium denticulatum
Pohlia prolifera
Pohlia wahlenbergii
Polytrichastrum alpinum var. *alpinum*
Ptychostomum pallescens
Ptychostomum weigeli
Rhizomnium pseudopunctatum
Sanionia uncinata
Sarmentypnum exannulatum

Liverworts

Cephalozia pleniceps
Cephaloziella divaricata
Jungermannia atrovirens
Lophozia incisa
Lophozia ventricosa
Pellia neesiana
Scapania irrigua
Scapania undulata

Mosses (cont.)

Sphagnum warnstorffii
Splachnum sphaericum
Straminergon stramineum
Tayloria lingulata
Tomentypnum nitens



6. **Sawmill Lake Fen** - This site is a shrub fen encircling a floating mat, in a deep glaciated basin. The collections were made on 13 August 2009 and on 8 September 2010. Coordinates: UTM 13, 317658 E, 4943127 N (Datum NAD 27); Elevation: 2505 meters (8216 feet)

Taxa collected:

Mosses

Amblystegium serpens
Aulacomnium palustre
Brachythecium nelsonii
Brachythecium rutabulum
Calliergon giganteum
Drepanocladus aduncus
Hamatocaulis vernicosus
Helodium blandowii
Meesia triquetra
Paludella squarrosa
Philonotis fontana var. *fontana*
Plagiomnium ellipticum
Pohlia nutans
Polytrichum strictum
Pseudocalliergon trifarium
Ptychostomum weigelii
Rhizomnium pseudopunctatum
Sanionia uncinata
Sarmentypnum exannulatum
Sarmentypnum tundrae
Scorpidium scorpioides
Sphagnum fuscum
Sphagnum platyphyllum
Sphagnum russowii

Liverworts

Aneura pinguis
Calypogeia neesiana
Cephalozia pleniceps
Lophozia ventricosa
Marchantia alpestris

Mosses (cont.)

Sphagnum squarrosum
Sphagnum teres
Sphagnum warnstorffii
Straminergon stramineum
Tomentypnum nitens

7. **Upper Preacher Rock Bog** - This is a shrub fen with an associated spring/seep zone, near the south edge of large wet meadow complex. The collection date was 8 September 2010. Coordinates: UTM 13, 319681E, 4942223N (Datum NAD 27); Elevation: 2526 meters (8285 feet)

Taxa collected:

Mosses

Aulacomnium palustre
Brachythecium frigidum
Brachythecium nelsonii
Calliergon giganteum
Climacium dendroides
Drepanocladus aduncus
Helodium blandowii
Paludella squarrosa
Philonotis fontana var. *americana*
Polytrichum strictum
Ptychostomum weigelii
Rhizomnium pseudopunctatum
Sphagnum warnstorffii
Straminergon stramineum
Tomentypnum nitens

Liverworts

Aneura pinguis
Lophozia ventricosa
Marchantia alpestris

8. **Bootstrap Bill Fen** – “Striking patterned formation of hummocks (strings) and pools (flarks).” (J.L. Zier); Coordinates: UTM 13, 317247 E, 4941449 N (datum WGS 84); Elevation: 2616 meters (8580 feet)

Taxa collected:

Mosses

Liverworts

Aulacomnium palustre
Brachythecium salebrosum
Breidleria pratensis
Meesia longiseta
Ptychostomum pseudotriquetrum
Scorpidium scorpioides
Sphagnum platyphyllum
Sphagnum warnstorffii
Straminergon stramineum,
Tomentypnum nitens



photo courtesy of Jim Zier

9. **Dome Peak Fen** - Coordinates: UTM 13, 318592 E, 4940978 N (datum WGS 84); Elevation: 2641 meters (8662 feet)

Taxa collected:

Mosses

Liverworts

Polytrichastrum longisetum
Sarmentypnum exannulatum
Sphagnum platyphyllum
Straminergon stramineum

10. Jakes Fen - Coordinates: UTM 13, 317915 E, 4940580 N (datum WGS 84); Elevation: 2646 meters (8679 feet)

Taxa collected:

Mosses

Liverworts

Aulacomnium palustre
Brachythecium nelsonii
Helodium blandowii
Ptychostomum pseudotriquetrum
Sanionia uncinata
Sarmentypnum exannulatum
Sphagnum platyphyllum
Sphagnum warnstorffii
Straminergon stramineum
Tomentypnum nitens

11. Finger Fen – “This is a small fen that has developed in a Nuphar kettle pond. The center of the fen is a floating mat dominated by *Carex limosa*, while both ends are grounded peat dominated by *Carex utriculata*.” (J.L. Zier); Coordinates: UTM 13, 317875 E 4941940 N (Datum WGS 84); Elevation: 2585 meters (8479 feet)

Taxa collected:

Mosses

Liverworts

Sarmentypnum exannulatum
Sphagnum platyphyllum
Sphagnum teres
Straminergon stramineum



photo courtesy of Jim Zier

12. Little Moose Run Fen

Taxa collected:

Mosses
Sphagnum platyphyllum

Liverworts

13. Dome Lake - Coordinates: UTM 13, 318185E, 4939430 N ±; Elevation: 2675 meters ± (8774 feet)

Taxa collected:

Mosses
Rosulabryum capillare
Drepanocladus longifolius

Liverworts

14. Shell Reservoir - This site is a small, flat, shrub fen at source of small stream flowing into southwest side of Shell Reservoir. The collection date was 26 August 2006. Coordinates: UTM 13, 308118 E, 4931010 N (Datum NAD 27); Elevation: 2790 meters (9151 feet)

Taxa collected:

Mosses
Aulacomnium palustre
Brachythecium nelsonii
Climacium dendroides
Dichelyma falcatum
Helodium blandowii
Mnium ambiguum
Philonotis fontana var. *fontana*
Pohlia drummondii
Pohlia nutans
Polytrichastrum alpinum var. *alpinum*
Rhizomnium magnifolium
Rhizomnium pseudopunctatum
Sanionia uncinata
Sarmentypnum exannulatum
Straminergon stramineum
Tomentypnum nitens

Liverworts

Barbilophozia hatcheri
Barbilophozia lycopodioides
Blepharostoma trichophyllum
Cephalozia pleniceps
Chiloscyphus pallescens
Jungermannia sphaerocarpa
Lophozia collaris
Pellia neesiana
Scapania irrigua
Scapania undulata

15. Edelman Trail - This is a shallow basin fen along a small tributary of upper Medicine Lodge Creek. The collections date was 20 August 2006. Coordinates: UTM 13, 312109 E, 4921494 N (Datum NAD 27) Elevation: 2890 meters (9479 feet)

Taxa collected:

Mosses

Aulacomnium palustre
Brachythecium rivulare
Breidleria pratensis
Campylium stellatum
Climacium dendroides
Philonotis fontana var. *fontana*
Plagiomnium ellipticum
Polytrichastrum alpinum var. *alpinum*
Ptychostomum pseudotriquetrum
Rhizomnium pseudopunctatum
Sanionia uncinata
Sarmentypnum exannulatum
Sarmentypnum sarmentosum
Scorpidium revolvens
Sphagnum angustifolium
Tayloria lingulata
Tomentypnum nitens

Liverworts

Barbilophozia lycopodioides
Blepharostoma trichophyllum
Calypogeia neesiana
Cephalozia pleniceps
Jungermannia atrovirens
Lophozia ventricosa
Scapania irrigua



16. North Fork Powder River 1 - This site is a large sloping shrub fen that constitutes the headwaters of one branch of the North Fork Powder River. The collections were made on 30 August 2005. Coordinates: UTM 13, 335028 E, 4889876 N (Datum NAD 27) Elevation: 2825 meters (9266 feet)

Taxa collected:

Mosses

Aulacomnium palustre
Calliergon giganteum
Calliergon richardsonii
Campylium stellatum
Climacium dendroides
Fissidens osmundioides
Hypnum lindbergii
Meesia longiseta
Meesia triquetra
Meesia uliginosa
Paludella squarrosa
Ptychostomum pseudotriquetrum
Rhizomnium pseudopunctatum
Sarmentypnum exannulatum
Sarmentypnum tundrae
Sphagnum warnstorffii
Tayloria lingulata
Tomentypnum nitens

Liverworts

Aneura pinguis



17. North Fork Powder River 2 - This is a sloping shrub fen associated with margin of the North Fork of the Powder River. The collections were made on 1 September 2005. Coordinates: UTM 13, 332871 E, 4885470 N (Datum NAD 27) Elevation: 2694 meters (8836 feet)

Taxa collected:

Mosses

Hypnum lindbergii
Meesia triquetra
Pohlia wahlenbergii
Ptychostomum pseudotriquetrum

Liverworts

Harpanthus flotovianus
Jungermannia obovata

18. North Fork Powder River 3 - This is a sloping shrub fen adjacent to and draining from south into the North Fork of the Powder River. The collections were made on 1 September 2005. Coordinates: UTM 13, 332949 E, 4885436 N (Datum NAD 27) Elevation: 2700 meters (8856 feet)

Taxa collected:

Mosses

Aulacomnium palustre
Breidleria pratensis
Calliergon richardsonii
Climacium dendroides
Philonotis fontana var. *fontana*
Plagiothecium denticulatum
Pohlia nutans
Ptychostomum pseudotriquetrum
Sanionia uncinata
Sarmentypnum exannulatum
Sphagnum warnstorffii
Tomentypnum nitens

Liverworts

Lophozia ventricosa
Scapania irrigua



19. Bruce Creek Fen - This is a sloping patterned fen on the south side of the drainage with a raised spring mound near the head of it. The collections were made on 7 September 2010. Coordinates: UTM 13, 303930E, 4946124N (Datum NAD 27) Elevation: 2705 meters (8872 feet)

Taxa collected:

Mosses

Aulacomnium palustre
Brachythecium nelsonii
Breidleria pratensis
Climacium dendroides
Helodium blandowii
Hygrohypnum ochraceum
Meesia longiseta
Paludella squarrosa
Pohlia prolifera
Polytrichastrum alpinum var. *alpinum*
Polytrichum commune var. *perigoniale*
Ptychostomum pseudotriquetrum
Rhizomnium pseudopunctatum
Sanionia uncinata
Sarmentypnum exannulatum
Sphagnum squarrosum
Sphagnum teres
Sphagnum warnstorffii
Straminergon stramineum
Tayloria lingulata
Tomentypnum nitens

Liverworts

Lophocolea heterophylla
Lophozia ventricosa
Marchantia alpestris
Plagiochila asplenioides
Scapania irrigua

20. Woodrock Fen - This site is a large patterned basin fen with seep zones and scattered trees over part. The collections were made on 9 September 2010. Coordinates: UTM 13, 306028E, 4947594N (Datum NAD 27) Elevation: 2718 meters (8915 feet)

Taxa collected:

Mosses

Amblystegium serpens
Aulacomnium palustre
Brachythecium nelsonii
Breidleria pratensis
Calliergon giganteum
Calliergon richardsonii
Climacium dendroides
Helodium blandowii
Hypnum lindbergii
Meesia triquetra
Paludella squarrosa
Philonotis fontana var. *fontana*
Plagiomnium ellipticum
Plagiothecium denticulatum
Pohlia nutans
Polytrichum strictum
Ptychostomum pseudotriquetrum
Rhizomnium pseudopunctatum
Sarmentypnum exannulatum

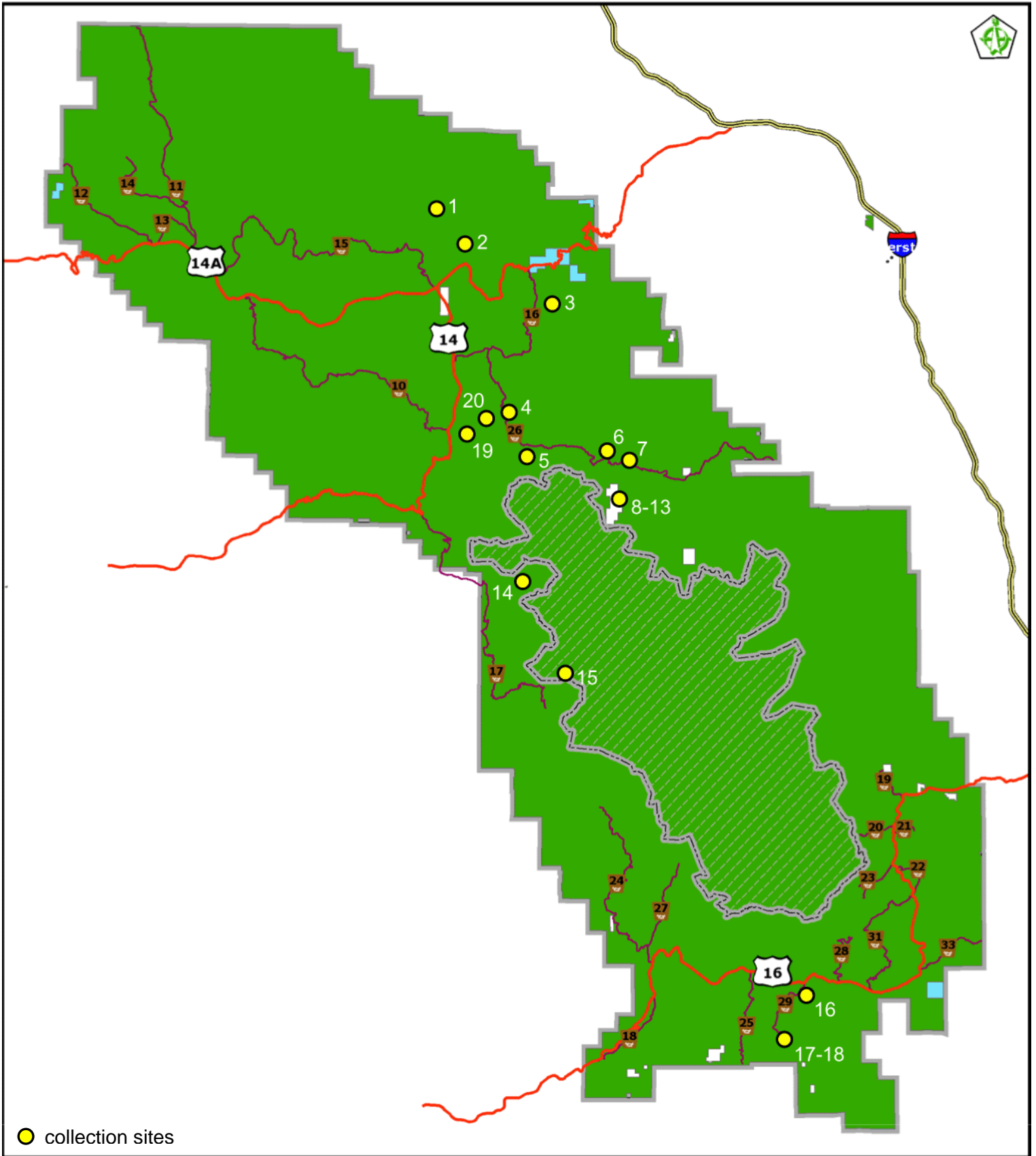
Liverworts

Cephalozia pleniceps
Chiloscyphus pallescens
Lophozia ventricosa
Marchantia alpestris
Pellia neesiana
Riccardia multifida
Scapania irrigua

Mosses (cont.)

Sphagnum warnstorffii
Straminergon stramineum
Tomentypnum nitens

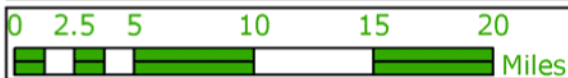
BIGHORN NATIONAL FOREST



● collection sites

Road Type		Ownership	
	Highway		Private
	Interstate		State
	Major Roads		Forest Service
	Forest Boundary		Wilderness

Map Scale 1:500,000 at 8.5"x11" page size



The Forest Service uses the most current and complete data it has available. GIS data and product accuracy may vary. They may be developed from sources of differing accuracy, accurate only at certain scales, based on modeling or interpretation, incomplete while being created or revised, have represented features not in accurate geographic locations, etc. The Forest Service makes no expressed or implied warranty, including warranty of merchantability and fitness, with respect to the character, function, or capabilities of the data or their appropriateness for any user's purposes. The Forest Service reserves the right to correct, update, modify, or replace this geospatial information without notification. For more information, contact the Bighorn National Forest Supervisor's Office (2033 Eastside Second Street, Sheridan, WY 82801, 307-674-2600).

ArcGIS File:T:\FS\NFS\Bighorn\Program\6600SystemsManagement\66XXGIS\DataManager\WYND0.mxd
David Anderson 02/17/2011

The Checklist

Each entry consists of the taxon name, synonymy, and distribution, including the site number as described above and a collection reference for each, with the collector's name, specimen number, and the herbarium housing the specimen when applicable. All of the specimens are either in the possession of the collector or reside at the Rocky Mountain Herbarium (RM) at the University of Wyoming at Laramie. All of the Lenz specimens cited here will eventually be at RM.

The nomenclature follows, to the extent possible, that used in the *Bryophyte Flora of North America* (BFNA), both the already published volume 27 and the "provisional publication" of treatments for the two future volumes as posted on the BFNA website.

Mosses

Amblyodon dealbatus (Hedwig) Bruch & Schimper in B.S.G.

Meesia dealbatus Hedwig

Amblyodon dealbatus var. *americanus* Renauld & Cardot

distribution:

1 - Camp Creek Lenz 3795 (RM)

Amblystegium serpens (Hedwig) Schimper

Hypnum serpens Hedwig

Amblystegium serpens var. *juratzkanum* (Schimper) Rau & Hervey

Amblystegium juratzkanum Schimper

Amblystegium juratzkanum var. *giganteum* (Grout) Grout

Amblystegium juratzkanum var. *juratzkanum*

distribution:

2 - Nickel Creek 2 Lenz 4036

6 - Sawmill Lake Fen Lenz 4350 (RM)

20 - Woodrock Fen Lenz 4432 (RM)

Aulacomnium palustre (Hedwig) Schwaegrichen

Mnium palustre Hedwig

Aulacomnium palustre var. *congestum* Boulay

Aulacomnium palustre var. *imbricatum* Bruch & Schimper

distribution:

1 - Camp Creek Lenz 3790 (RM)

3 - Black Mountain NE 3 Lenz 4007

4 - Graves Creek Lenz 3147 (RM)

5 - Sawmill Pass Fen Lenz 3805

6 - Sawmill Lake Fen Lenz 4343

7 - Upper Preacher Rock Bog Lenz 4384 (RM)

8 - Bootstrap Bill Fen Zier s.n.

10 - Jakes Fen Zier s.n.

14 - Shell Reservoir Lenz 3358 (RM)

15 - Edelman Trail Lenz 3164 (RM)

16 - North Fork Powder River 1 Lenz 2380 (RM)

18 - North Fork Powder River 3 Lenz 2456 (RM)

19 - Bruce Creek Fen Lenz 4294 (RM)

20 - Woodrock Fen Lenz 4409 (RM)

Brachythecium frigidum (C. Muell.) Besch.

Brachythecium lamprochryseum C. Muell. & Kindb. in Macoun

Brachythecium lamprochryseum var. *giganteum* Grout

Hypnum frigidum C. Muell.

distribution:

7 - Upper Preacher Rock Bog Heidel s.n.

Brachythecium nelsonii Grout

distribution:

3 - Black Mountain NE 3 Lenz 3999

4 - Graves Creek Lenz 3148 (RM)

5 - Sawmill Pass Fen Lenz 3852

6 - Sawmill Lake Fen Lenz 4374 (RM)

7 - Upper Preacher Rock Bog Lenz 4399 (RM)

10 - Jakes Fen Zier s.n.

14 - Shell Reservoir Lenz 3352 (RM)

19 - Bruce Creek Fen Lenz 4323 (RM)

20 - Woodrock Fen Lenz 4452 (RM)

Brachythecium rivulare Schimper

Brachythecium rivulare var. *cataractarum* Sauter

Brachythecium rivulare var. *lamoillense* Grout

Brachythecium rivulare var. *laxum* Grout

distribution:

1 - Camp Creek Lenz 3783 (RM)

4 - Graves Creek Lenz 3157a (RM)

15 - Edelman Trail Lenz 3177 (RM)

Brachythecium rutabulum (Hedwig) Schimper in B.S.G.

Hypnum rutabulum Hedwig

distribution:

6 - Sawmill Lake Fen Lenz 4341 (RM)

Brachythecium salebrosum (Weber & Mohr) Schimper

Hypnum salebrosum Weber & Mohr

Brachythecium laevisetum Kindberg in Macoun

distribution:

1 - Camp Creek Lenz 3789a (RM)

5 - Sawmill Pass Fen Lenz 3833a

8 - Bootstrap Bill Fen Zier s.n.

Breidleria pratensis (Rabenhorst) Loeske

Hypnum pratense (Rabenhorst) Koch ex Spruce

distribution:

2 - Nickel Creek 2 Lenz 4042

8 - Bootstrap Bill Fen Zier s.n.

15 - Edelman Trail Lenz 3169a (RM)

18 - North Fork Powder River 3 Lenz 2454 (RM)

19 - Bruce Creek Fen Lenz 4321 (RM)

20 - Woodrock Fen Lenz 4414 (RM)

Bryoerythrophyllum recurvirostrum (Hedwig) Chen

Bryoerythrophyllum recurvirostrum var. *dentatum* (Schimper) Crum, Streere & Anderson

Didymodon recurvirostris (Hedwig) Jennings

Didymodon recurvirostris var. *dentatus* (W. P. Schimper) Steere in Grout

distribution:

1 - Camp Creek Lenz 3800 (RM)

Calliergon cordifolium (Hedwig) Kindberg

Hypnum cordifolium Hedwig

distribution:

4. - Graves Creek Lenz 3153 (RM)

Calliergon giganteum (Schimper) Kindberg

Hypnum giganteum Schimper

Calliergon giganteum var. *fluitans* G. Roth

Calliergon giganteum var. *cyclophyllotum* (Holzinger) Grout

Calliergon giganteum var. *dendroides* (Limpricht) G. Roth

Calliergon giganteum var. *labradorensis* (Renauld & Cardot) Grout

distribution:

6 - Sawmill Lake Fen Lenz 4364 (RM)

7 - Upper Preacher Rock Bog Lenz 4392 (RM)

16 - North Fork Powder River 1 Lenz 2391

20 - Woodrock Fen Lenz 4439 (RM)

Calliergon richardsonii (Mitten) Kindberg

Stereodon richardsonii Mitten

distribution:

16 - North Fork Powder River 1 Lenz 2391 (RM)

18 - North Fork Powder River 3 Lenz 2450 (RM)

20 - Woodrock Fen Lenz 4428 (RM)

Campylium stellatum (Hedwig) Jensen

Hypnum stellatum Hedwig

distribution:

5 - Sawmill Pass Fen Lenz 3907

15 - Edelman Trail Lenz 3168 (RM)

16 - North Fork Powder River 1 Lenz 2400 (RM)

Climacium dendroides (Hedwig) Weber & Mohr

Leskea dendroides Hedwig

distribution:

- 1 - **Camp Creek** Lenz 3778 (RM)
- 2 - **Nickel Creek 2** Lenz 4042a
- 3 - **Black Mountain NE 3** Lenz 3995
- 4 - **Graves Creek** Lenz 3150 (RM)
- 5 - **Sawmill Pass Fen** Lenz 3834
- 7 - **Upper Preacher Rock Bog** Lenz 4400 (RM)
- 14 - **Shell Reservoir** Lenz 3362 (RM)
- 15 - **Edelman Trail** Lenz 3185 (RM)
- 16 - **North Fork Powder River 1** Lenz 2382 (RM)
- 18 - **North Fork Powder River 3** Lenz 2455 (RM)
- 19 - **Bruce Creek Fen** Lenz 4308 (RM)
- 20 - **Woodrock Fen** Lenz 4434 (RM)

Cratoneuron filicinum (Hedwig) Spruce

Hypnum filicinum Hedwig

Cratoneuron filicinum var. *aciculinum* (C. Müller & Kindberg) Grout

distribution:

- 1 - **Camp Creek** Lenz 3787 (RM)

Dichelyma falcatum (Hedwig) Myrin

Fontinalis falcata Hedwig

distribution:

- 14 - **Shell Reservoir** Lenz 3360 (RM)

Dichodontium pellucidum (Hedwig) Schimper

Dicranum pellucidum Hedwig

Dichodontium pellucidum var. *flavescens* (Withering) Moore

distribution:

- 5 - **Sawmill Pass Fen** Lenz 3860

Dicranella schreberiana (Hedwig) Hilfert ex Crum & Anderson

Dicranum schreberianum Hedwig

Dicranella grevilleana (Bridel) Schimper

Dicranella schreberi (Swartz ex Anon.) Schimper

Dicranella schreberi var. *elata* Schimper

Dicranella schreberiana var. *robusta* (Braithwaite) Crum & Anderson

distribution:

- 1 - **Camp Creek** Lenz 3786 (RM)
- 2 - **Nickel Creek 2** Lenz 4044

Dicranella varia (Hedwig) Schimper

Dicranum varium Hedwig

Dicranella howei Renauld & Cardot

distribution:

- 1 - **Camp Creek** Lenz 3792 (RM)

Drepanocladus aduncus (Hedwig) Warnstorf

Hypnum aduncum Hedwig

Brachythecium edentatum R. S. Williams

Calliergidium bakeri (Renauld) Grout

Drepanocladus aduncus var. *kneiffii* (Bruch, Schimper & Gumbel) Mönkemeyer

Drepanocladus aduncus var. *polycarpus* (Voit) G. Roth

Drepanocladus aduncus var. *pseudofluitans* (Sanio) Głowacki

Drepanocladus kneiffii (Bruch, Schimper & W. T. Gumbel) Warnstorf

Drepanocladus simplicissimus Warnstorf

distribution:

1 - Camp Creek Lenz 3775 (RM)

2 - Nickel Creek 2 Lenz 4045

3 - Black Mountain NE 3 Lenz 3996

6 - Sawmill Lake Fen Lenz 4345 (RM)

7 - Upper Preacher Rock Bog Lenz 4402 (RM)

Drepanocladus longifolius (Mitten) Brotherus ex Paris

Drepanocladus aduncus var. *capillifolius* (Warnstorf) Riehmer

Drepanocladus capillifolius (Warnstorf) Warnstorf

Drepanocladus crassicosatus Janssens

distribution:

13 - Dome Lake A Nelson 2408 (RM), as *Drepanocladus capillifolius*

Fissidens osmundioides Hedwig

distribution:

16 - North Fork Powder River 1 Lenz 2397 (RM)

Fontinalis antipyretica Hedwig var. *gigantea* (Sullivant) Sullivant

Fontinalis gigantea Sullivant

distribution:

5 - Sawmill Pass Fen Lenz 3845

Hamatocaulis vernicosus (Mitten) Hedenäs

Stereodon vernicosum Mitten

Drepanocladus vernicosus (Mitten) Warnstorf

distribution:

6 - Sawmill Lake Fen Lenz 4368 (RM)

Helodium blandowii (Weber & Mohr) Warnstorf

Hypnum blandowii Weber & Mohr

distribution:

4 - Graves Creek Lenz 3152 (RM)

5 - Sawmill Pass Fen Lenz 3817

6 - Sawmill Lake Fen Lenz 4339 (RM)

7 - Upper Preacher Rock Bog Lenz 4385 (RM)

10 - Jakes Fen Zier s.n.

14 - Shell Reservoir Lenz 3357 (RM)

19 - Bruce Creek Fen Lenz 4317 (RM)

20 - Woodrock Fen Lenz 4453 (RM)

Hygrohypnum ochraceum (Turner ex Wilson) Loeske

Hypnum ochraceum Turner ex Wilson

Hygrohypnum ochraceum (Turner ex Wilson) Loeske var. *filiforme* (Limpricht) Amann

Hygrohypnum ochraceum (Turner ex Wilson) Loeske var. *flaccidum* (Milde) Amann

Hygrohypnum ochraceum (Turner ex Wilson) Loeske var. *uncinatum* (Milde) Loeske

distribution:

5 - Sawmill Pass Fen Lenz 3904

19 - Bruce Creek Fen Lenz 4307 (RM)

Hypnum lindbergii Mitten

Hypnum arcuatum Lindberg var. *americanum* Renauld & Cardot

Hypnum arcuatum Lindberg var. *demissum* Schimper

Hypnum arcuatum Lindberg var. *elatum* Schimper

Calliegonella lindbergii (Mitten) Hedénas

Stereodon patientiae Lindberg

distribution:

1 - Camp Creek Lenz 3791 (RM)

2 - Nickel Creek 2 Lenz 4033

5 - Sawmill Pass Fen Lenz 3807

16 - North Fork Powder River 1 Lenz 2403 (RM)

17 - North Fork Powder River 2 Lenz 2436a (RM)

20 - Woodrock Fen Lenz 4427 (RM)

Meesia longiseta Hedwig

Meesia longiseta var. *macounii* (Kindberg) Grout

distribution:

8 - Bootstrap Bill Fen Zier s.n.

16 - North Fork Powder River 1 Lenz 2407 (RM)

19 - Bruce Creek Fen Lenz 4313 (RM)

Meesia triquetra (Jolyclerc) Ångström

Mnium triquetrum Jolyclerc

distribution:

6 - Sawmill Lake Fen Lenz 4366 (RM)

16 - North Fork Powder River 1 Lenz 2413 (RM)

17 - North Fork Powder River 2 Lenz 2436b (RM)

20 - Woodrock Fen Lenz 4404 (RM)

Meesia uliginosa Hedwig

Meesia uliginosa Hedwig var. *alpina* (Bruch) Hampe

Meesia uliginosa Hedwig var. *minor* (Bridel) Weber & Mohr

distribution:

1 - Camp Creek Lenz 3798a (RM)

5 - Sawmill Pass Fen Lenz 3816

16 - North Fork Powder River 1 Lenz 2396 (RM)

Mnium ambiguum H. Müller

distribution:

14 - Shell Reservoir Lenz 3321c

Mnium marginatum (Withering) Bridel ex P. Beauvois

Bryum marginatum Withering

Mnium serratum Bridel

distribution:

5 - Sawmill Pass Fen Lenz 3863a

Oncophorus virens (Hedwig) Bridel

Dicranum virens Hedwig

Oncophorus virens var. *serratus* (Bruch & Schimper) Braithwaite

distribution:

5 - Sawmill Pass Fen Lenz 3806

Paludella squarrosa (Hedwig) Bridel

Bryum squarrosum Hedwig

distribution:

4 - Graves Creek Lenz 3146 (RM)

5 - Sawmill Pass Fen Lenz 3811

6 - Sawmill Lake Fen Lenz 4353 (RM)

7 - Upper Preacher Rock Bog Lenz 4391 (RM)

16 - North Fork Powder River 1 Lenz 2406 (RM)

19 - Bruce Creek Fen Lenz 4296 (RM)

20 - Woodrock Fen Lenz 4408 (RM)

Palustriella falcata (Bridel) Hedenäs

Hypnum falcatum Bridel

Cratoneuron falcatum (Bridel) G. Roth

Cratoneuron commutatum var. *falcatum* (Bridel) Mönkemeyer

Cratoneuron commutatum var. *sulcatum* (Lindberg) Mönkemeyer

Cratoneuron williamsii Grout

Cratoneuron falcatum var. *williamsii* (Grout) Flowers

distribution:

1 - Camp Creek Lenz 3780 (RM)

Philonotis fontana (Hedwig) Bridel var. *americana* (Dismier) H. A. Crum

Philonotis americana Dismier

distribution:

3 - Black Mountain NE 3 Lenz 4009

5 - Sawmill Pass Fen Lenz 3856

7 - Upper Preacher Rock Bog Heidel s.n.

Philonotis fontana (Hedwig) Bridel var. *fontana*

distribution:

1 - Camp Creek Lenz 3781 (RM)

5 - Sawmill Pass Fen Lenz 3844

6 - Sawmill Lake Fen Lenz 4380 (RM)

14 - Shell Reservoir Lenz 3342 (RM)

15 - Edelman Trail Lenz 3171 (RM)

18 - North Fork Powder River 3 Lenz 2445 (RM)

20 - Woodrock Fen Lenz 4416 (RM)

Plagiomnium ellipticum (Bridel) Iwatsuki

Plagiomnium rugicum (Laurer) T. Koponen

Mnium rugicum Laurer

Mnium affine var. *rugicum* (Laurer) B.S.G.

distribution:

1 - Camp Creek Lenz 3794 (RM)

3 - Black Mountain NE 3 Lenz 4001

6 - Sawmill Lake Fen Lenz 4348 (RM)

15 - Edelman Trail Lenz 3186 (RM)

20 - Woodrock Fen Lenz 4429 (RM)

Plagiothecium denticulatum (Hedw.) Schimp. in B.S.G.

Hypnum denticulatum Hedwig

H. donnianum Smith

H. obtusifolium (Turner) Bridel

Plagiothecium denticulatum var. *bullulae* Grout

P. ruthei Limpricht

P. sandbergii Renaud & Cardot

P. sylvaticum var. *squarrosus* Kindberg

distribution:

5 - Sawmill Pass Fen Lenz 3836

18 - North Fork Powder River 3 Lenz 2449 (RM)

20 - Woodrock Fen Lenz 4448a (RM)

Pohlia drummondii (Müller Hal.) Andrews in Grout

Bryum drummondii Müller Hal.

distribution:

14 - Shell Reservoir Lenz 3335a (RM)

Pohlia nutans (Hedwig) Lindberg

Webera nutans Hedwig

Pohlia sphagnicola (Bruch & Schimper) Lindberg & Arnell

distribution:

2 - Nickel Creek 2 (Lenz 4034)

6 - Sawmill Lake Fen (Lenz 4360, RM)

14 - Shell Reservoir Lenz 3345 (RM)

18. North Fork Powder River 3 (Lenz 2453, RM)

20 - Woodrock Fen (Lenz 4444, RM)

Pohlia proligera (Kindberg) Brotherus

Webera proligera Kindberg

distribution:

5 - Sawmill Pass Fen Lenz 3903a

19 - Bruce Creek Fen Lenz 4309 (RM)

Pohlia wahlenbergii (F. Weber & D. Mohr) Andrews in A. J. Grout

Hypnum wahlenbergii F. Weber & D. Mohr

Mniobryum wahlenbergii (F. Weber & D. Mohr) Jennings

distribution:

5 - Sawmill Pass Fen Lenz 3850

17 - North Fork Powder River 2 Lenz 2436 (RM)

Polytrichastrum alpinum (Hedwig) G. L. Smith *var. alpinum*
Polytrichum alpinum var. arcticum (Bridel) Wahlenburg
Pogonatum alpinum var. brevifolium (R. Brown) Bridel
distribution:

- 5 - Sawmill Pass Fen** Lenz 3835
- 14 - Shell Reservoir** Lenz 3353 (RM)
- 15 - Edelman Trail** Lenz 3176 (RM)
- 19 - Bruce Creek Fen** Lenz 4310 (RM)

Polytrichastrum longisetum (Bridel) G. L. Smith
Polytrichum longisetum Bridel
Polytrichum formosum var. aurantiacum (Bridel) C. J. Hartman
distribution:

- 9 - Dome Peak Fen** Zier s.n.

Polytrichum commune var. perigoniale (Michaux) Hampe
Polytrichum perigoniale Michaux
distribution:

- 19 - Bruce Creek Fen** Lenz 4314 (RM)

Polytrichum strictum Bridel
Polytrichum juniperinum var. affine (Funck) Bridel
distribution:

- 6 - Sawmill Lake Fen** Lenz 4351 (RM)
- 7 - Upper Preacher Rock Bog** Lenz 4395 (RM)
- 20 - Woodrock Fen** Lenz 4443 (RM)

Pseudocalliergon trifarium (F. Weber & D. Mohr) Loeske
Hypnum trifarium F. Weber & D. Mohr
Calliergon trifarium (F. Weber & D. Mohr) Kindberg
Scorpidium trifarium (F. Weber & D. Mohr) H. K. G. Paul
distribution:

- 6 - Sawmill Lake Fen** Lenz 4365b (RM)

Ptychostomum pallens (Swartz) J. R. Spence
Bryum pallens Swartz
distribution:

- 1 - Camp Creek** Lenz 3792a (RM)

Ptychostomum pallescens (Schleicher ex Schwägrichen) J. R. Spence
Bryum pallescens Schleicher ex Schwägrichen
distribution:

- 5 - Sawmill Pass Fen** Lenz 3828

Ptychostomum pseudotriquetrum (Hedwig) J. R. Spence ex D.T. Holyoak & N. Pederson

Mnium pseudotriquetrum Hedwig

Bryum pseudotriquetrum (Hedwig) Gaertner, Meyer & Scherbius

distribution:

- 1 - Camp Creek Lenz 3789 (RM)
- 2 - Nickel Creek 2 Lenz 4041
- 8 - Bootstrap Bill Fen Zier s.n.
- 10 - Jakes Fen Zier s.n.
- 15 - Edelman Trail Lenz 3186a (RM)
- 16 - North Fork Powder River 1 Lenz 2384 (RM)
- 17 - North Fork Powder River 2 Lenz 2439 (RM)
- 18 - North Fork Powder River 3 Lenz 2444 (RM)
- 19 - Bruce Creek Fen Lenz 4323a (RM)
- 20 - Woodrock Fen Lenz 4421 (RM)

Ptychostomum weigeli (Sprengel) J. R. Spence

Bryum weigeli Sprengel

distribution:

- 5 - Sawmill Pass Fen Lenz 3902
- 6 - Sawmill Lake Fen Lenz 4349 (RM)
- 7 - Upper Preacher Rock Bog Lenz 4401 (RM)

Rhizomnium magnifolium (Horikawa) T. Koponen

Rhizomnium perssonii T. Koponen

Mnium punctatum Hedwig var. *elatum* Schimper

distribution:

- 14 - Shell Reservoir Lenz 3354 (RM)

Rhizomnium pseudopunctatum (Bruch & W. P. Schimper) T. Koponen

Mnium pseudopunctatum Bruch & W. P. Schimper

distribution:

- 2 - Nickel Creek 2 Lenz 4035
- 3 - Black Mountain NE 3 Lenz 4008
- 4 - Graves Creek Lenz 3143 (RM)
- 5 - Sawmill Pass Fen Lenz 3808
- 6 - Sawmill Lake Fen Lenz 4340 (RM)
- 7 - Upper Preacher Rock Bog Lenz 4387 (RM)
- 14 - Shell Reservoir Lenz 3370 (RM)
- 15 - Edelman Trail Lenz 3177a (RM)
- 16 - North Fork Powder River 1 Lenz 2390 (RM)
- 19 - Bruce Creek Fen Lenz 4326 (RM)
- 20 - Woodrock Fen Lenz 4431 (RM)

Rosulabryum capillare (Hedwig) Spence

Bryum capillare Hedwig

distribution:

- 13 - Dome Lake A. Nelson 8826 (RM)

Sanionia uncinata (Hedwig) Loeske

Hypnum uncinatum Hedwig

Drepanocladus uncinatus (Hedwig) Warnstorf

distribution:

- 3 - **Black Mountain NE 3** Lenz 4003
- 5 - **Sawmill Pass Fen** Lenz 3906
- 6 - **Sawmill Lake Fen** Lenz 4375 (RM)
- 10 - **Jakes Fen** Zier s.n.
- 14 - **Shell Reservoir** Lenz 3363 (RM)
- 15 - **Edelman Trail** Lenz 3172 (RM)
- 18 - **North Fork Powder River 3** Lenz 2446 (RM)
- 19 - **Bruce Creek Fen** Lenz 4324 (RM)

Sarmentypnum exannulatum (Schimper) Hedenäs

Hypnum exannulatum Schimper

Drepanocladus exannulatus (Schimper) Warnstorf

Drepanocladus exannulatus var. *purpurascens* (Schimper) Herzog

Drepanocladus exannulatus var. *rotae* (De Notaris) Loeske

Warnstorfia exannulata (Schimper) Loeske

Warnstorfia exannulata var. *purpurascens* (Schimper) Tuomikoski & T. J. Koponen

distribution:

- 2 - **Nickel Creek 2** Lenz 4030
- 3 - **Black Mountain NE 3** Lenz 4002
- 4 - **Graves Creek** Lenz 3156 (RM)
- 5 - **Sawmill Pass Fen** Lenz 3804
- 6 - **Sawmill Lake Fen** Lenz 4359 (RM)
- 9 - **Dome Peak Fen** Zier s.n.
- 10 - **Jakes Fen** Zier s.n.
- 11 - **Bootstrap Bill Fen** Zier s.n.
- 14 - **Shell Reservoir** Lenz 3338 (RM)
- 15 - **Edelman Trail** Lenz 3162 (RM)
- 16 - **North Fork Powder River 1** Lenz 2379 (RM)
- 18 - **North Fork Powder River 3** Lenz 2448 (RM)
- 19 - **Bruce Creek Fen** Lenz 4311 (RM)
- 20 - **Woodrock Fen** Lenz 4415 (RM)

Sarmentypnum sarmentosum (Wahlenberg) Tuomikoski & T.J. Koponen

Hypnum sarmentosum Wahlenberg

Calliargon sarmentosum (Wahlenberg) Kindberg

Calliargon sarmentosum var. *beringianum* (Cardot & Thériot) Grout

Calliargon sarmentosum var. *fallaciosum* (Milde) G. Roth

Calliargon sarmentosum var. *fontinaloides* (Berggren) G. Roth

Warnstorfia sarmentosa (Wahlenberg) Hedenäs

distribution:

- 15. **Edelman Trail** Lenz 3161 (RM)

Sarmentypnum tundrae (Arnell) Hedenäs

Amblystegium tundrae Arnell in Lindberg and Arnell

Drepanocladus exannulatus var. *tundrae* (Arnell) Warnstorf

Drepanocladus tundrae (Arnell) Loeske

Warnstorfia tundrae (Arnell) Loeske

distribution:

6 - Sawmill Lake Fen Lenz 4365 (RM)

16 - North Fork Powder River 1 Lenz 2412 (RM)

Scorpidium revolvens (Swartz ex Anonymo) Rubers in A. Touw & W. V. Rubers

Hypnum revolvens Swartz ex Anonymo

Drepanocladus revolvens (Swartz ex Anonymo) Warnstorf

Drepanocladus revolvens var. *miquelonensis* (Renauld & Cardot) Grout

Limprichtia revolvens (Swartz ex Anonymo) Loeske

distribution:

15 - Edelman Trail Lenz 3160 (RM)

Scorpidium scorpioides (Hedwig) Limpricht

Hypnum scorpioides Hedwig

distribution:

6 - Sawmill Lake Fen Lenz 4365a (RM)

8 - Bootstrap Bill Fen Zier s.n.

Sphagnum angustifolium (C. Jensen ex Russow) C. Jensen in Tolf

Sphagnum recurvum var. *tenue* H. Klinggraffin

distribution:

15 - Edelman Trail Lenz 3166 (RM)

Sphagnum fuscum (Schimper) H. Klinggraff

Sphagnum acutifolium var. *fuscum* Schimper

S. tenuifolium Warnstorf

S. vancouveriense Warnstorf

distribution:

6 - Sawmill Lake Fen Lenz 4352 (RM)

Sphagnum platyphyllum (Lindberg) Warnstorf

Sphagnum laricinum var. *platyphyllum* Lindberg

Sphagnum subsecundum var. *platyphyllum* (Braithwaite) Cardot

distribution:

6 - Sawmill Lake Fen Zier s.n.

8 - Bootstrap Bill Fen Zier s.n.

9 - Dome Peak Fen Zier s.n.

10 - Jakes Fen Zier s.n.

11 - Bootstrap Bill Fen Zier s.n.

12 - Little Moose Run Fen Zier s.n.

Sphagnum russowii Warnstorf

Sphagnum acutifolium var. *robustum* Russow

distribution:

6 - Sawmill Lake Fen Lenz 4382 (RM)

Sphagnum squarrosum Crome

Sphagnum squarrosum var. *imbricatum* Schimper

distribution:

6 - Sawmill Lake Fen Lenz 4372 (RM)

19 - Bruce Creek Fen Lenz 4319 (RM)

Sphagnum teres Ångström in C. J. Hartman

Sphagnum squarrosum var. *teres* Schimper

distribution:

6 - Sawmill Lake Fen Lenz 4372a (RM)

11 - Bootstrap Bill Fen Zier s.n.

19 - Bruce Creek Fen Lenz 4297 (RM)

Sphagnum warnstorffii Russow

Sphagnum warnstorffianum Du Rietz

distribution:

2 - Nickel Creek 2 Lenz 4028

3 - Black Mountain NE 3 Lenz 3997

5 - Sawmill Pass Fen Lenz 3825

6 - Sawmill Lake Fen Lenz 4356 (RM)

7 - Upper Preacher Rock Bog Lenz 4389 (RM)

8 - Bootstrap Bill Fen Zier s.n.

10 - Jakes Fen Zier s.n.

16 - North Fork Powder River 1 Lenz 2386 (RM)

18 - North Fork Powder River 3 Lenz 2442 (RM)

19 - Bruce Creek Fen Lenz 4299 (RM)

20 - Woodrock Fen Lenz 4410 (RM)

Splachnum sphaericum Hedwig

Splachnum ovatum Dickson ex Hedwig

distribution:

5 - Sawmill Pass Fen Lenz 3826

Straminergon stramineum (Dickson ex Bridel) Hedenäs

Hypnum stramineum Dickson ex Bridel

Calliargon stramineum (Dickson ex Bridel) Kindberg

distribution:

2 - Nickel Creek 2 Lenz 4031

3 - Black Mountain NE 3 Lenz 4000

4 - Graves Creek Lenz 3157 (RM)

5 - Sawmill Pass Fen Lenz 3849

6 - Sawmill Lake Fen Lenz 4357 (RM)

7 - Upper Preacher Rock Bog Lenz 4397 (RM)

8 - Bootstrap Bill Fen Zier s.n.

9 - Dome Peak Fen Zier s.n.

10 - Jakes Fen Zier s.n.

11 - Bootstrap Bill Fen Zier s.n.

14 - Shell Reservoir Lenz 3343 (RM)

19 - Bruce Creek Fen Lenz 4305 (RM)

20 - Woodrock Fen Lenz 4418 (RM)

Tayloria lingulata (Dickson) Lindberg

Splachnum lingulatum Dickson

distribution:

- 5 - Sawmill Pass Fen Lenz 3866
- 15 - Edelman Trail Lenz 3178 (RM)
- 16 - North Fork Powder River 1 Lenz 2398 (RM)
- 19 - Bruce Creek Fen Lenz 4312 (RM)

Tomentypnum nitens (Hedwig) Loeske

Hypnum nitens Hedwig

Camptothecium nitens (Hedwig) Schimper

Homalothecium nitens (Hedwig) H. Robinson

distribution:

- 1 - Camp Creek Lenz 3777 (RM)
- 2 - Nickel Creek 2 Lenz 4029
- 4 - Graves Creek Lenz 3145 (RM)
- 5 - Sawmill Pass Fen Lenz 3809
- 6 - Sawmill Lake Fen Lenz 4342 (RM)
- 7 - Upper Preacher Rock Bog Lenz 4383 (RM)
- 8 - Bootstrap Bill Fen Zier s.n.
- 10 - Jakes Fen Zier s.n.
- 14 - Shell Reservoir Lenz 3340 (RM)
- 15 - Edelman Trail Lenz 3165 (RM)
- 16 - North Fork Powder River 1 Lenz 2381 (RM)
- 18 - North Fork Powder River 3 Lenz 2457 (RM)
- 19 - Bruce Creek Fen Lenz 4295 (RM)
- 20 - Woodrock Fen Lenz 4407 (RM)

Hepatics

Aneura pinguis (Linnaeus) DuMortier
Jungermannia pinguis (Linnaeus)
Riccardia pinguis (Linnaeus) Gray

distribution:

- 6 - Sawmill Lake Fen** Lenz 4371 (RM)
- 7 - Upper Preacher Rock Bog** Lenz 4398 (RM)
- 16 - North Fork Powder River 1** Lenz 2404 (RM)

Barbilophozia hatcheri (A. Evans) Loeske
Jungermannia hatcheri A. Evans

distribution:

- 1 - Camp Creek** Lenz 3798 (RM)
- 14 - Shell Reservoir** Lenz 3332 (RM)

Barbilophozia lycopodioides (Wallroth) Loeske
Jungermannia lycopodioides Wallroth

distribution:

- 14 - Shell Reservoir** Lenz 3333 (RM)
- 15 - Edelman Trail** Lenz 3179 (RM)

Blepharostoma trichophyllum (Linnaeus) Dumortier
Jungermannia trichophylla Linnaeus

distribution:

- 14 - Shell Reservoir** Lenz 3321b (RM)
- 15 - Edelman Trail** Lenz 3182a (RM)

Calypogeia neesiana (C. Massalongo & Carestia) K. Müller
Kantia trichomanis (Gray) var *neesiana* C. Massal & Carestia

distribution:

- 6 - Sawmill Lake Fen** Lenz 4378 (RM)
- 15 - Edelman Trail** Lenz 3184a (RM)

Cephalozia pleniceps (Austin) Lindberg
Jungermannia pleniceps (Austin)
Cephalozia pleniceps var. *sphagnorum* (C. Massalongo) Jörgensen

distribution:

- 2 - Nickel Creek 2** Lenz 4039
- 5 - Sawmill Pass Fen** Lenz 3824
- 6 - Sawmill Lake Fen** Lenz 4378a (RM)
- 14 - Shell Reservoir** Lenz 3341 (RM)
- 15 - Edelman Trail** Lenz 3170 (RM)
- 20 - Woodrock Fen** Lenz 4448 (RM)

Cephaloziella divaricata (Smith) Schiffner
Jungermannia divaricata Smith
Cephaloziella byssacea (Roth) Warnstorf

distribution:

- 2 - Nickel Creek 2** Lenz 4038
- 5 - Sawmill Pass Fen** Lenz 3822

Chiloscyphus pallescens (Ehrhart ex Hoffmann) Dumortier

Jungermannia pallescens Ehrhart. ex Hoffmann

distribution:

14 - Shell Reservoir Lenz 3337 (RM)

20 - Woodrock Fen Lenz 4435 (RM)

Chiloscyphus polyanthos (Linnaeus) Corda

Jungermannia polyanthos Linnaeus

Chiloscyphus polyanthos var. *rivularis* (Schrader) Nees

distribution:

2 - Nickel Creek 2 Lenz 4032

Harpanthus flotovianus (Nees) Nees

Jungermannia flotoviana Nees

distribution:

17 - North Fork Powder River 2 Lenz 2437 (RM)

Jungermannia atrovirens Dumortier

Aplozia riparia (Taylor) Dumortier

Aplozia atrovirens (Dumortier) Dumortier

Solenostoma atrovirens (Dumortier) Müll. Frib.

Solenostoma triste (Nees) Müll. Frib.

distribution:

5 - Sawmill Pass Fen Lenz 3854

15 - Edelman Trail Lenz 3174 (RM)

Jungermannia obovata Nees

Eucalyx obovatus (Nees) F. Lees

Plectocolea obovata (Nees) Mitten

Solenostoma obovatum (Nees) C. Massalonga

distribution:

17 - North Fork Powder River 2 Lenz 2438 (RM)

Jungermannia sphaerocarpa Hooker

distribution:

14 - Shell Reservoir Lenz 3329 (RM)

Leiocolea alpestris (F. Weber) Isov.

Lophozia muelleri (Nees) Dumortier

Lophozia collaris (Nees) Dumortier

Leiocolea muelleri (Nees) Jörgensen

Leiocolea collaris (Nees) Schljakov

distribution:

14 - Shell Reservoir Lenz 3334 (RM)

Lophocolea heterophylla (Schrader) Dumortier

Chiloscyphus profundus (Nees) J.J. Engel & R.M. Schuster

distribution:

19 - Bruce Creek Fen Lenz 4337 (RM)

Lophozia incisa (Schrader) Dumortier

Jungermannia incisa Schrader

distribution:

5 - Sawmill Pass Fen Lenz 3820

Lophozia ventricosa (Dickson) Dumortier

Jungermannia ventricosa Dickson

Lophozia silvicola H. Buch

Lophozia ventricosa var. *silvicola* (H. Buch) E. Jones

Lophozia ventricosa var. *longiflora* (Nees) Macoun

distribution:

1 - Camp Creek Lenz 3796 (RM)

5 - Sawmill Pass Fen Lenz 3818

6 - Sawmill Lake Fen Lenz 4377 (RM)

7 - Upper Preacher Rock Bog Lenz 4396 (RM)

15 - Edelman Trail Lenz 3180 (RM)

18 - North Fork Powder River 3 Lenz 2452 (RM)

19 - Bruce Creek Fen Lenz 4338 (RM)

20 - Woodrock Fen Lenz 4447 (RM)

Marchantia alpestris (Nees) Burgeff

Marchantia polymorpha ssp. *montivagans* Bischler & Boisselier

distribution:

1 - Camp Creek Lenz 3793 (RM)

3 - Black Mountain NE 3 Lenz 4004 (RM)

6 - Sawmill Lake Fen Lenz 4347 (RM)

7 - Upper Preacher Rock Bog Lenz 4386 (RM)

19 - Bruce Creek Fen Lenz 4337a (RM)

20 - Woodrock Fen Lenz 4441 (RM)

Pellia neesiana (Gottsche) Limpricht

Pellia epiphylla fo. *neesiana* Gottsche

distribution:

3 - Black Mountain NE 3 Lenz 3998

5 - Sawmill Pass Fen Lenz 3855

14 - Shell Reservoir Lenz 3328 (RM)

20 - Woodrock Fen Lenz 4446 (RM)

Plagiochila asplenioides (Linnaeus) Dumortier

Plagiochila asplenioides var. *major* Nees

Plagiochila major (Nees) S. Arnell

distribution:

19 - Bruce Creek Fen Lenz 4336 (RM)

Riccardia latifrons (Lindberg) Lindberg

Aneura latifrons Lindberg

distribution:

2 - Nickel Creek 2 Lenz 4040

Riccardia multifida (Linnaeus) Gray
Aneura multifida (Linnaeus) Dumortier

distribution:

20 - Woodrock Fen Lenz 4438 (RM)

Scapania irrigua (Nees) Gottsche & Lindenberg & Nees
Jungermannia irrigua Nees

distribution:

5 - Sawmill Pass Fen Lenz 3846

14 - Shell Reservoir Lenz 3351 (RM)

15 - Edelman Trail Lenz 3167a (RM)

18 - North Fork Powder River 3 Lenz 2443 (RM)

19 - Bruce Creek Fen Lenz 4338a (RM)

20 - Woodrock Fen Lenz 4403 (RM)

Scapania undulata (Linnaeus) Dumortier
Jungermannia undulata Linnaeus

distribution:

5 - Sawmill Pass Fen Lenz 3854a

14 - Shell Reservoir Lenz 3364 (RM)

This checklist contains 73 mosses and 24 liverworts. The following additional species were found in the above sites, but in islands of non-fen habitat such as drier mineral soil or rock, and were therefore excluded from the checklist.

Bartramia ithyphylla
Brachythecium erythrorrhizon
Ceratodon purpureus
Dicranella subulata
Dicranoweisia crispula
Dicranum tauricum
Distichium inclinatum
Grimmia sessitana

Isopterygiopsis pulchella
Lescuraea incurvata
Pohlia cruda
Polytrichum juniperinum
Syntrichia norvegica
Timmia austriaca
Tortula obtusifolia

Acknowledgements

I would again like to acknowledge Bonnie Heidel, whose idea initially generated this project, for providing guidance and arranging funding to carry it out. Acknowledgements also go to Bernie Bornong, Resources Staff Officer with the Bighorn National Forest and the driving force behind the project funding, as well as collecting permits and maps, to Jim Zier for providing additional collections upon which to base this checklist, complete with site descriptions and photographs, to Yelena Kosovich-Anderson for her determinations of the Zier specimens and her constructive comments, to Bruce Allen of the Missouri Botanical Garden for his help with determinations, and to Lars Hedenäs of the Swedish Museum of Natural History for his help in confirming the determinations of *Hamatocaulis vernicosus* and *Sarmentypnum tundrae*.

Literature Cited

- Eckel, P.M. 1996. Synopsis of the mosses of Wyoming. *Great Basin Naturalist* 56(3):197-204
- Eckel, P. M. 2007. County Checklist of the Mosses of Wyoming. *Res Botanica*, a Missouri Botanical Garden Web Site. <http://www.mobot.org/plantscience/resbot/1Bryo.htm> August 17, 2007.
- Elliott, Joe C. "Second Checklist of Montana Mosses (Draft)". Conservation Biology Research, Ltd. Helena, MT. 1993.
- EPA - <http://water.epa.gov/type/wetlands/fen.cfm>, 2011
- Flora of North America Editorial Committee, eds. 1993+. *Flora of North America North of Mexico*. 15+ vols. New York and Oxford. vol. 27, 2007.
- Flora of North America Editorial Committee, eds. 1993+. *Flora of North America North of Mexico*. 15+ vols. New York and Oxford. Provisional Publication. Flora of North America Association. <http://www.mobot.org/plantscience/BFNA/bfnamenu.htm>
- Hedenäs, L. 2000. Bryophyte flora of North America, provisional publication, *Hamatocaulis* Hedenäs. <http://www.mobot.org/plantscience/BFNA/v2/CallHamatocaulis.htm>
- Hong, W.S. 1977. An Annotated Checklist of the Hepaticae of Wyoming. *Bryologist* 80:480-491
- Lenz, Martin J. *Warnstorfia tundrae* (Arnell) Loeske (Campyliaceae) new for Wyoming. *Evansia* 23(3):68. September 2006.
- Spence, J.R. 1985. Hepatics New to Wyoming. *Bryologist* 88:30
- Vitt, Dale. 2007. Bryophyte flora of North America, provisional publication, *Meesia* Hedwig. <http://www.mobot.org/plantscience/BFNA/V2/MeesMeesiaceae.htm>
- Weber, William A. and Ronald C. Wittman. *Bryophytes of Colorado: Mosses, Liverworts and Hornworts*. Pilgrims Process, Inc. 2007