PLANTS AND VEGETATION OF THE POTENTIAL SAWTOOTH FEN-PALSA SPECIAL INTEREST AREA WITHIN THE SHOSHONE NATIONAL FOREST, PARK COUNTY, WYOMING

Prepared for the

Shoshone National Forest, USDA Forest Service

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March, 2011

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INTRODUCTION

This report presents information on the rare plants and the vegetation types in the potential Sawtooth Fen-Palsa Special Interest Area (SIA). The information is arranged in the structure used in a special interest area establishment report, to allow its easy incorporation into an establishment report for Sawtooth Fen-Palsa, should the area be designated as a special interest area.

Much of the information in this report is derived from an earlier report about the Sawtooth Fen-Palsa (Mellman-Brown 2004). The information from that earlier report has been updated in several ways. First, the proposed boundary of the potential SIA may differ slightly from that shown in the original report, as a result of changes made by Forest Service staff. Second, when necessary, names of vascular plant species have been converted to those used in the PLANTS database (USDA, Natural Resources Conservation Service 2009), which is now the standard for plant names used by U.S. Department of Agriculture agencies. Third, names of plant associations have been brought up to date. Fourth, new information about rare plants, within the potential SIA and outside it, has been included. This information may have changed our understanding of the distribution of some plants in the potential SIA, and may have caused some plant species to be dropped from the list of rare plants in the area. Fifth, the maps of cover-types have been digitized using digital raster graphic files (i.e., digital topographic maps) and true-color aerial photographs as backgrounds, and boundaries of cover-types have been changed slightly during digitizing when the topographic maps and aerial photographs indicated mistakes in earlier maps. Consequently, the area covered by each cover-type may have changed slightly.

LAND MANAGEMENT PLANNING

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OBJECTIVES

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PRINCIPAL DISTINGUISHING FEATURES

The principal distinguishing features of the potential Sawtooth Fen-Palsa SIA are a graminoid-covered mound, approximately 20 acres (8 ha) in area and containing permafrost (the palsa), surrounded by a sedge-dominated fen (Collins *et al.* 1984). The palsa is the only one known from the lower 48 United States, and the area contains the southernmost permafrost known in North America.

LOCATION

The potential Sawtooth Fen-Palsa SIA is located within the Shoshone National Forest in northwestern Wyoming (Figure 1). The potential SIA includes all or parts of the following public land survey system sections (all on the 6th Principal Meridian): Township 57 North, Range 104 West, Sections 29, 30, and 32.

BOUNDARY

The boundary of the potential SIA (Figure 2) is drawn between hills that surround the fen-palsa.

AREA

The area of the potential Sawtooth Fen-Palsa SIA is 648 acres (262 ha).[1]

ELEVATION

The elevation of the potential Sawtooth Fen-Palsa SIA ranges from approximately 9,560 feet (2,194 meters) on Thief Creek at the southern end and at the small lake on the northeastern side, to 10,142 feet (3,091 meters) atop the hill at the southeastern corner.

ACCESS

The potential Sawtooth Fen-Palsa SIA may be reached via Low Standard Forest Road 1201 (the Morrison Jeep Trail), from its intersection with U.S. Highway 212 (the Beartooth Highway). The potential SIA lies approximately 6 road miles (10 km) south of Highway 212. The intersection of Forest Road 1201 with Highway 212 lies approximately 15 road miles (24 km) east of that highway's intersection with Wyoming Highway 296 (the Chief Joseph Scenic Highway).

ECOREGION

The potential Sawtooth Fen-Palsa SIA lies within the Southern Rocky Mountain Steppe-Open Woodland-Coniferous Forest-Alpine Meadow Province, Yellowstone Highlands Section, Beartooth Mountains Subsection (M331Ah) of the ecoregion classification of Bailey *et al*. (1994) (Freeouf 1996).

MAPS

USDA Forest Service 1/2 inch = 1 mile scale map of the Shoshone National Forest.

USDI Geological Survey 7.5 minute topographic Quadrangle Maps: Deep Lake, Wyo.

AREA BY COVER-TYPE

Knowledge of the distributions of plant associations, habitat types, Kuchler vegetation types, and Society of American Foresters forest cover-types is based on field work conducted by several investigators over the years: S. Mellman-Brown (1984), G.P. Jones (unpublished field notes, 1998), T. Wolfe (No date). The earlier information has been revised with additional information gained from recent aerial photographs and from more detailed descriptions of plant associations.

Maps of these cover-types were digitized on-screen by Natural Diversity Database staff, using the ESRI® ArcMap™ 9 software; boundaries are based on maps from the earlier investigations and were digitized using digital raster graphic files (digital topographic maps) and 2006 National Agriculture Imagery Program true-color aerial photographs (USDA, Farm Services Administration, Aerial Photography Field Office) as backgrounds. The areas of these various cover-types were computed in the ArcMap™ software.

1. The area of the potential Sawtooth Fen-Palsa SIA was computed by WYNDD staff with the ESRI® ArcMap™ 9.3 software, using a digital version of the boundary supplied by the Forest Service.

PLANT ASSOCIATIONS[2]

Five plant associations can be identified in the potential Sawtooth Fen-Palsa SIA (Table 1, Figure 3). The raised surface of the palsa is very sparsely vegetated and does not seem to fit into the plant association classification. The fen surrounding the palsa is classified as the *Carex scopulorum-Caltha leptosepala* association. Patches of short willows in the fen are classified as the *Salix planifolia* / *Carex scopulorum* shrub association. The bulk of the vegetation in the potential SIA is turf (the *Carex rupestris-Geum rossii* association) and meadow (the *Deschampsia cespitosa – Geum rossii* association). Groves of woodland in the potential SIA are classified predominantly in the *Pinus albicaulis / Vaccinium scoparium* association, but small patches of the *Picea engelmannii* / *Vaccinium scoparium* association also have been identified in the area.

Table 1. Plant associations in the potential Sawtooth Fen-Palsa Special Interest Area. See Figure 3. "M" in a cell indicates that a plant association or alliance is a major component of a complex, and "m" indicates that it is a minor component of the complex.

	Complexes of Plant Associations (and areas)			
Plant Association	Carex rupestris-Geum rossii & Deschampsia cespitosa-Geum rossii (341 acres, 138 ha)	Carex rupestris-Geum rossii & Pinus albicaulis/Vaccinium scoparium (44 acres, 18 ha)	Carex scopulorum-Caltha leptosepala & Salix planifolia/Carex scopulorum (82 acres, 33ha)	Pinus albicaulis/Vaccinium socparium (174 acres, 70 ha)
Herbaceous				
Carex rupestris-Geum rossii Herbaceous Vegetation	M	M		m
Carex scopulorum-Caltha leptosepala Herbaceous Vegetation	m		M	
Deschampsia cespitosa – Geum rossii Herbaceous Vegetation	M			m
Shrub				
Salix planifolia/Carex scopulorum Shrubland			m	
Forest & Woodland				
Picea engelmannii / *Vaccinium scoparium* Woodland		m		m
Pinus albicaulis / Vaccinium scoparium Woodland		M		M

KUCHLER VEGETATION TYPES

Most of the potential Sawtooth Fen-Palsa Special Interest Area is vegetated with Kuchler's (1966) Alpine Meadow and Barren type (Table 2, Figure 4). The Western Spruce-Fir Forest type comprises the conifer forest stands in the area.

2. Names of plant associations are from NatureServe (2010).

Table 2. Kuchler vegetation types in the potential Sawtooth Fen-Palsa Special Interest Area. See Figure 4.

Vegetation Type (Kuchler 1966)	Acres	Hectares
Western spruce-fir forest (*Picea – Abies*)	196	79
Alpine Meadows & Barrens (*Agrostis, Carex, Festuca, Poa*)	452	185

HABITAT TYPES

Only the conifer woodland in the potential SIA grows on a recognized habitat type (Table 3, Figure 5), the *Pinus albicaulis* / *Vaccinium scoparium* habitat type described from western Wyoming (Steele *et al.* 1983). The herbaceous vegetation corresponds to three community types described from the Shoshone National Forest (Tweit and Houston 1980).

Table 3. Occurrence of habitat types in the potential Sawtooth Fen-Palsa Special Interest Area. See Figure 5. "M" in a cell indicates that a habitat type is a major component of a complex, and "m" indicates that it is a minor component of the complex.

	Complexes of Habitat Types and Community Types (and areas)			
Habitat or Community Type	Geum rossii Turf Community Type (341 acres, 183 ha)	Geum rossii Turf Comm. Type & Pinus albicaulis/Vaccinium scoparium Hab. Type	Carex scopulorum Bog & Deschampsia cespitosa Meadow Comm. Types (82 acres, 33ha)	Pinus albicaulis/ Vaccinium scoparium Habitat Type (44 acres, 18 ha)
Herbaceous				
Carex scopulorum Bog community type			M	
Deschampsia caespitosa Meadow CommunityType			M	
Geum rossii Turf community type	M	M		
Forest & Woodland				
Pinus albicaulis / *Vaccinium scoparium* Habitat Type		M		M

SOCIETY OF AMERICAN FORESTERS COVER TYPES

Two high-elevation conifer forest types (Eyre 1980) are present in the potential SIA (Table 4, Figure 6). The Whitebark Pine type (208) accounts for most of the woodland, and the Engelmann Spruce – Subalpine Fir type (206) for the small groves of spruce. The herbaceous and shrub vegetation does not fall into a forest cover type.

Table 4. Society of American Foresters Cover Types in the potential Sawtooth Fen-Palsa Special Interest Area. See Figure 6.

Cover Type (Eyre 1980)	Complex of Cover Types (and areas) Whitebark pine – Engelmann spruce woodland (218 acres, 88 ha)
Engelmann Spruce – Subalpine Fir (206)	m
Whitebark Pine (208)	M

ECOLOGICAL SYSTEMS

The U.S. Forest Service's Landscape Fire and Resource Management Planning Tools Project (Landfire Project) (http://www.landfire.gov/) uses ecological systems as a way to display general vegetation/environment types nation-wide. Descriptions of ecological systems are available at http://www.natureserve.org/explorer/servlet/NatureServe?init=Ecol. Figure 7 shows the ecological systems in the potential Sawtooth Fen-Palsa SIA. This figure was produced from data extracted from the nation-wide Landfire map of ecological systems and a few additional cover-types, updated to 2008 (http://landfire.cr.usgs.gov/viewer/). One change was made to those data in the production of Figure 7: the area originally mapped as the *Artemisia tridentata* ssp. *vaseyana* Plant Alliance was re-classified as the Inter-Mountain Basins Montane Sagebrush Steppe Ecological System. Table 5 shows the area of each ecological system within the potential SIA.

Eight ecological systems are each mapped on more than 1% of the area of the potential SIA (Table 5). The unforested portion of the area is mapped primarily into the Rocky Mountain Alpine Turf system, with smaller areas of four additional herbaceous or shrub systems. The woodlands are divided into five systems. The most common of these, the Northern Rocky Mountain Subalpine Woodland and Parkland system, seems to be mapped in error: information about plant species composition of the woodlands, obtained from field surveys, suggests that they are better placed into either the Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland system or the Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland system. Three additional errors in the Landfire data-set are the putative presence of the Northern Rocky Conifer Swamp system, the Northern Rocky Mountain Mesic Montane Mixed Conifer Forest system, and the Agriculture-Pasture and Hay system. The field surveys have shown that none of these systems occurs in the potential SIA. Their putative presence is a consequence of the automatic classification of pixels on the satellite images used as the basis for the data-set.

Table 5. Ecological systems in the potential Sawtooth Fen-Palsa Special Interest Area. See Figure 7. Normal type-face indicates systems that each cover at least 1% of the area, and italic type-face indicates systems that each cover < 1% of the area.

Ecological System	Acres	Ha
Northern Rocky Mountain Subalpine Deciduous Shrubland	16.000	6.000
Northern Rocky Mountain Subalpine Woodland and Parkland	114.000	46.000
Northern Rocky Mountain Subalpine-Upper Montane Grassland	47.000	19.000
Rocky Mountain Alpine Dwarf-Shrubland	28.000	11.000
Rocky Mountain Alpine Turf	294.000	119.000
Rocky Mountain Subalpine Mesic-Wet Spruce-Fir Forest and Woodland	50.000	20.000
Rocky Mountain Subalpine/Upper Montane Riparian Systems	20.000	8.000
Rocky Mountain Subalpine-Montane Mesic Meadow	66.000	27.000
Agriculture-Pasture and Hay	*1.000*	*0.000*
Barren	*3.000*	*1.000*
Inter-Mountain Basins Montane Sagebrush Steppe	*2.000*	*1.000*
Northern Rocky Mountain Conifer Swamp	*4.000*	*2.000*
Northern Rocky Mountain Mesic Montane Mixed Conifer Forest	*1.000*	*0.000*
Open Water	*0.000*	*0.000*
Rocky Mountain Subalpine Dry-Mesic Spruce-Fir Forest and Woodland	*2.000*	*1.000*
Snow-Ice	*0.000*	*0.000*

PHYSICAL AND CLIMATIC CONDITIONS

PHYSICAL SETTING

The potential Sawtooth Fen-Palsa SIA lies near the southern edge of the Beartooth Plateau, in a broad, shallow basin on the drainage divide between Thief Creek to the south and Canyon Creek to the west (Figure 2). Both creeks are southward-flowing tributaries of the Clark's Fork of the Yellowstone River. The overall aspect of the basin is northwest. Hillslopes in the area generally are gentle, with the exception of steep slopes forming a narrow valley of Thief Creek at the area's southern edge.

GEOLOGY

Bedrock beneath the potential Sawtooth Fen-Palsa SIA is Precambrian granitic rock (Pierce 1965). The potential SIA lies on the sub-summit pediment surface of the Beartooth Plateau, thought to have been formed by weathering in Tertiary Period. The peat deposit in the center of the area is mapped as a Quaternary-age deposit. Peat apparently has not been forming since the mid-20th century (Pierce 1961).

SOILS

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CLIMATE

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Pierce (1961) noted that peat was not forming in the area in the mid-20th century, but the climate then was suitable for maintaining the peat that had formed earlier.

DESCRIPTION OF VALUES

VEGETATION

The potential Sawtooth Fen-Palsa Special Interest Area illustrates upper tree-line and alpine vegetation that grows on much of the Beartooth Plateau.

FLORA

Plant Species List

A list of 62 vascular plant species documented in the potential Sawtooth Fen-Palsa Special Interest Area is included in Appendix 1.

Rare Plants

No federally listed Threatened or Endangered plant species, or species on the USDA Forest Service Region 2 Sensitive Species List, are found in the potential Sawtooth Fen-Palsa SIA. One plant listed by the Wyoming Natural Diversity Database as a species of concern is known from the potential SIA. Information about that species is summarized below. The heritage ranks, assigned by the Wyoming Natural Diversity Database, are explained in Appendix 2.

Agrostis mertensii (Northern bentgrass)
Synonym: *Agrostis borealis*
Heritage Rank: G5/S2.
Federal Status: None.
Geographic Range: Alaska east to Newfoundland, south in the Appalachian Mountains to North Carolina, and in the Rocky Mountains to Colorado and Utah. In Wyoming, it is known from the northern Absaroka, the Beartooth and the eastern Wind River Mountains in Fremont and Park Counties.
Habitat: Alpine to subalpine turf, tundra, wet meadows and margins of lakes and rivers, from 8,800-11,500 ft. In the potential Sawtooth Fen-Palsa Special Interest Area, northern bentgrass was found on the dry palsa surface in association with *Deschampsia cespitosa* and *Festuca brachyphylla* var. *brachyphylla.*
Comments: Northern bentgrass was collected in the center of the palsa by Bonnie Heidel in 2007 and was present in low numbers. It is possible that surrounding wetlands provide better habitat than does the dry turf on the palsa and that the species is growing in the wetlands as well.

GEOLOGY

The permafrost in the potential SIA apparently is the southern-most occurrence of permafrost in North America, and the palsa (the raised peat bed) is the only example of that periglacial feature known from the contiguous United States.

FAUNA

Threatened, Endangered, and Sensitive Vertebrates

Grizzly bear (*Ursos arctos*).

The grizzly bear is listed as threatened under the provisions of the federal Endangered Species Act (USDI Fish and Wildlife Service, No date). The approximate distribution area of the bear in Wyoming, as mapped by the Wyoming Game and Fish Department, includes the potential Sawtooth Fen-Palsa SIA (Wyoming Game and Fish Department, No date). The potential SIA also lies within the Conservation Strategy Management Area for the Yellowstone Distinct Population Segment of the grizzly bear, and within the area of suitable grizzly bear habitat (USDI Fish and Wildlife Service, No date).

Gray wolf (*Canis lupus*).

The potential Sawtooth Fen-Palsa SIA is within the Greater Yellowstone Recovery Area for the Northern Rocky Mountain Distinct Population Segment of the gray wolf (USDI, Fish and Wildlife Service 1987), which is protected under the provisions of the federal Endangered Species Act.

Animal Species List

U.S. Forest Service staff will write this section.

LANDS

All of the land within and surrounding the potential Sawtooth Fen-Palsa SIA is National Forest System land, in the Clark's Fork Ranger District of the Shoshone National Forest.

IMPACTS AND POSSIBLE CONFLICTS

MINERAL RESOURCES

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GRAZING

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TIMBER

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WATERSHED VALUES

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RECREATION VALUES

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WILDLIFE AND PLANT VALUES

U.S. Forest Service staff will write this section.

TRANSPORTATION VALUES

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MANAGEMENT CONCERNS

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FIGURES

Figure 1. Location of the potential Sawtooth Fen-Palsa Special Interest Area.
The inset map shows position of the potential SIA within the Shoshone National Forest and the State of Wyoming.

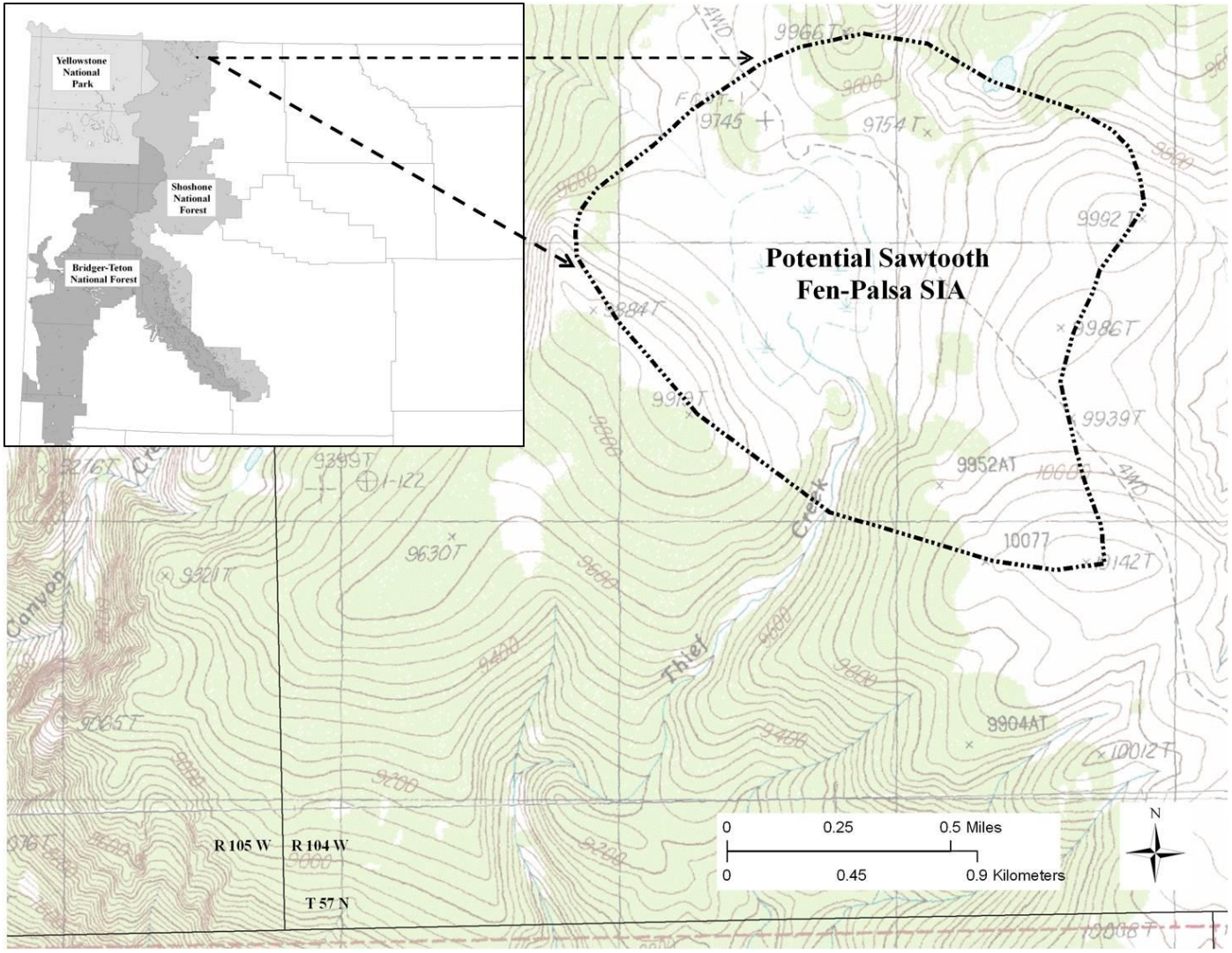


Figure 2. Proposed boundary of the potential Sawtooth Fen-Palsa Special Interest Area.

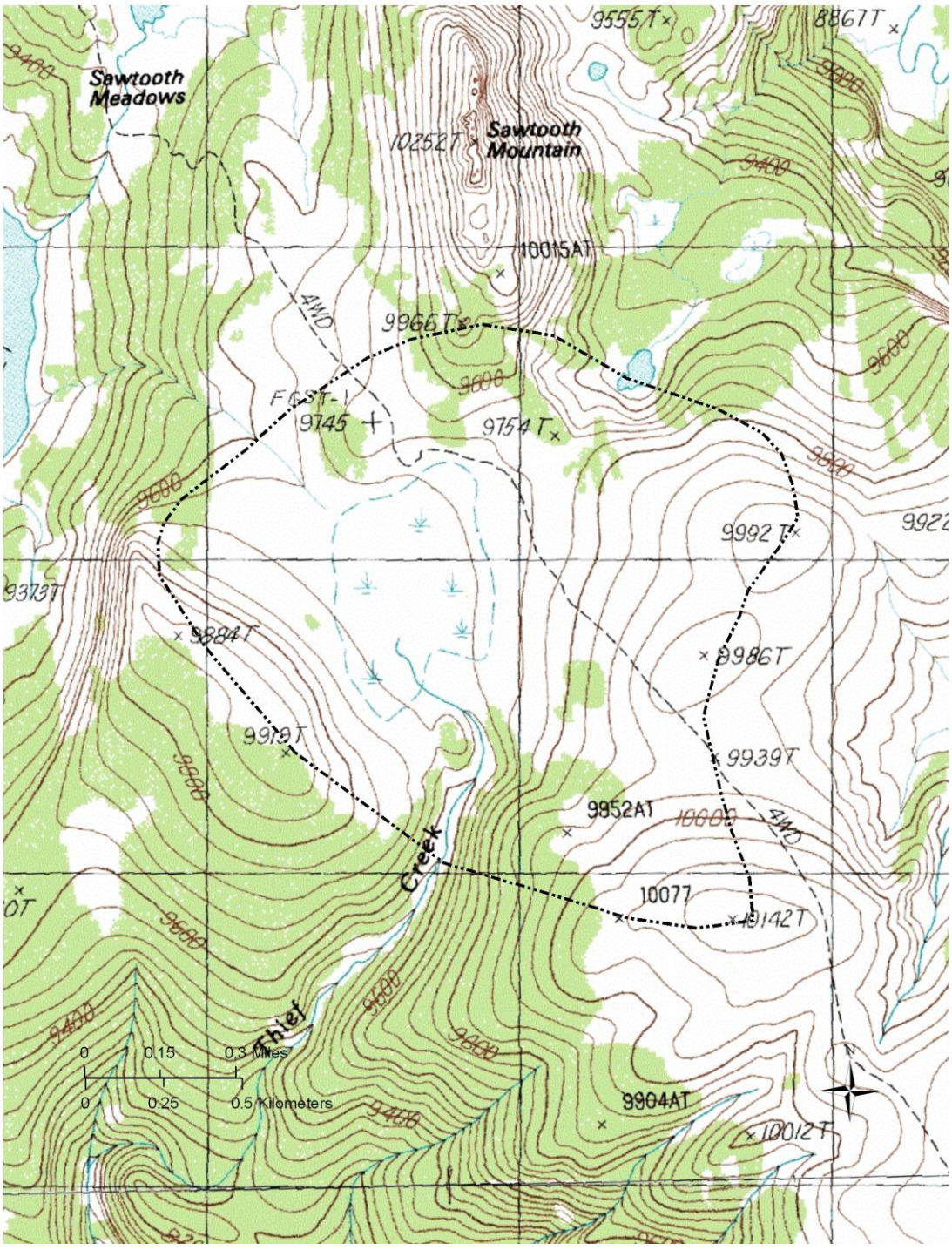


Figure 3. Complexes of plant associations in the potential Sawtooth Fen-Palsa Special Interest Area The plant associations present in each complex are listed in Table 1.

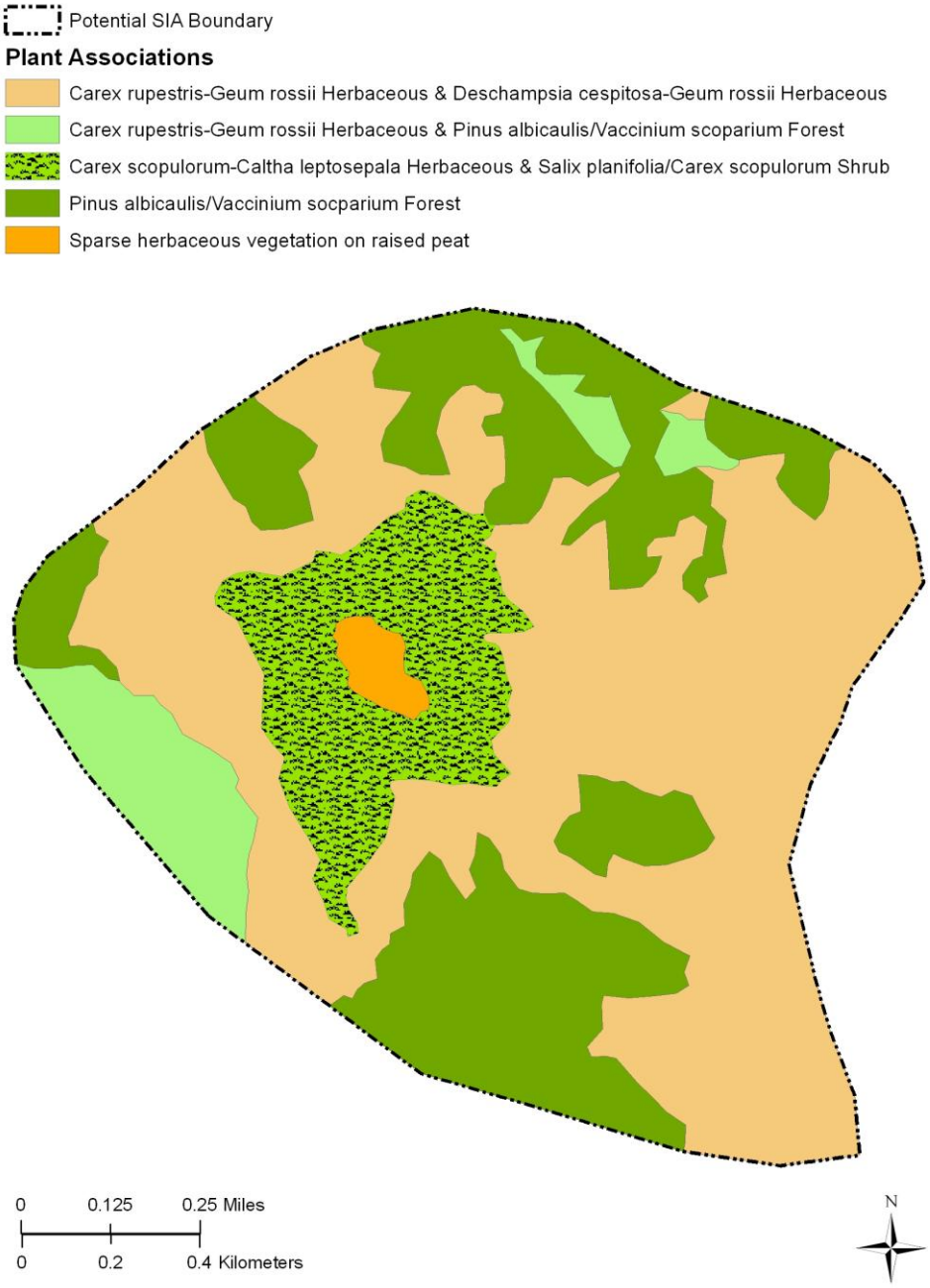


Figure 4. Kuchler vegetation types (Kuchler 1964) in the potential Sawtooth Fen-Palsa Special Interest Area. Areas of these types are listed in Table 2.

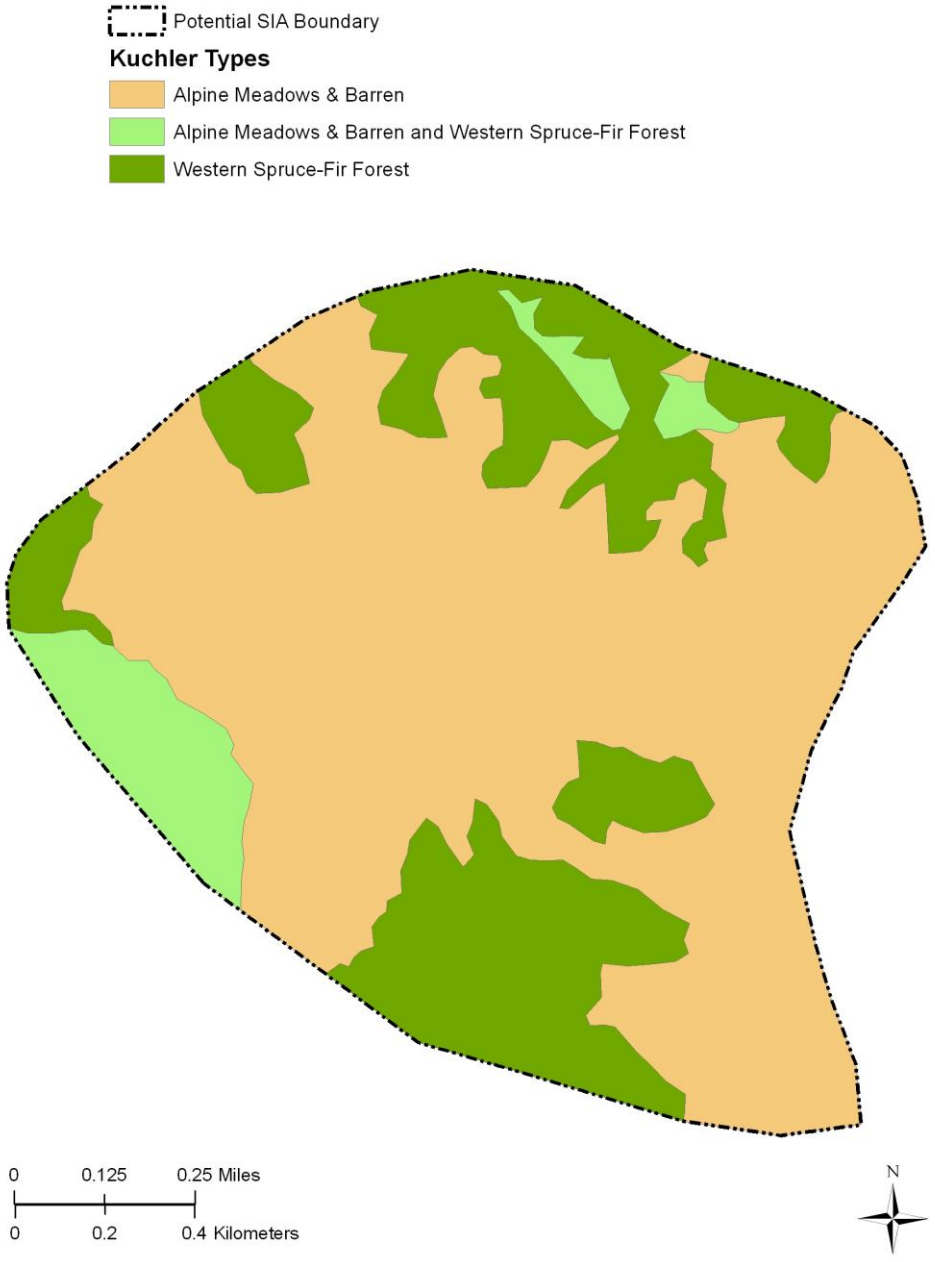


Figure 5. Habitat types in the potential Sawtooth Fen-Palsa Special Interest Area. Each map unit is named for the dominant habitat type present. Other habitat types in the map units are listed in Table 3.

Figure 6. Society of American Foresters Cover Type (Eyre 1980) in the potential Sawtooth Fen-Palsa Special Interest Area. The area of this type is shown in Table 4.

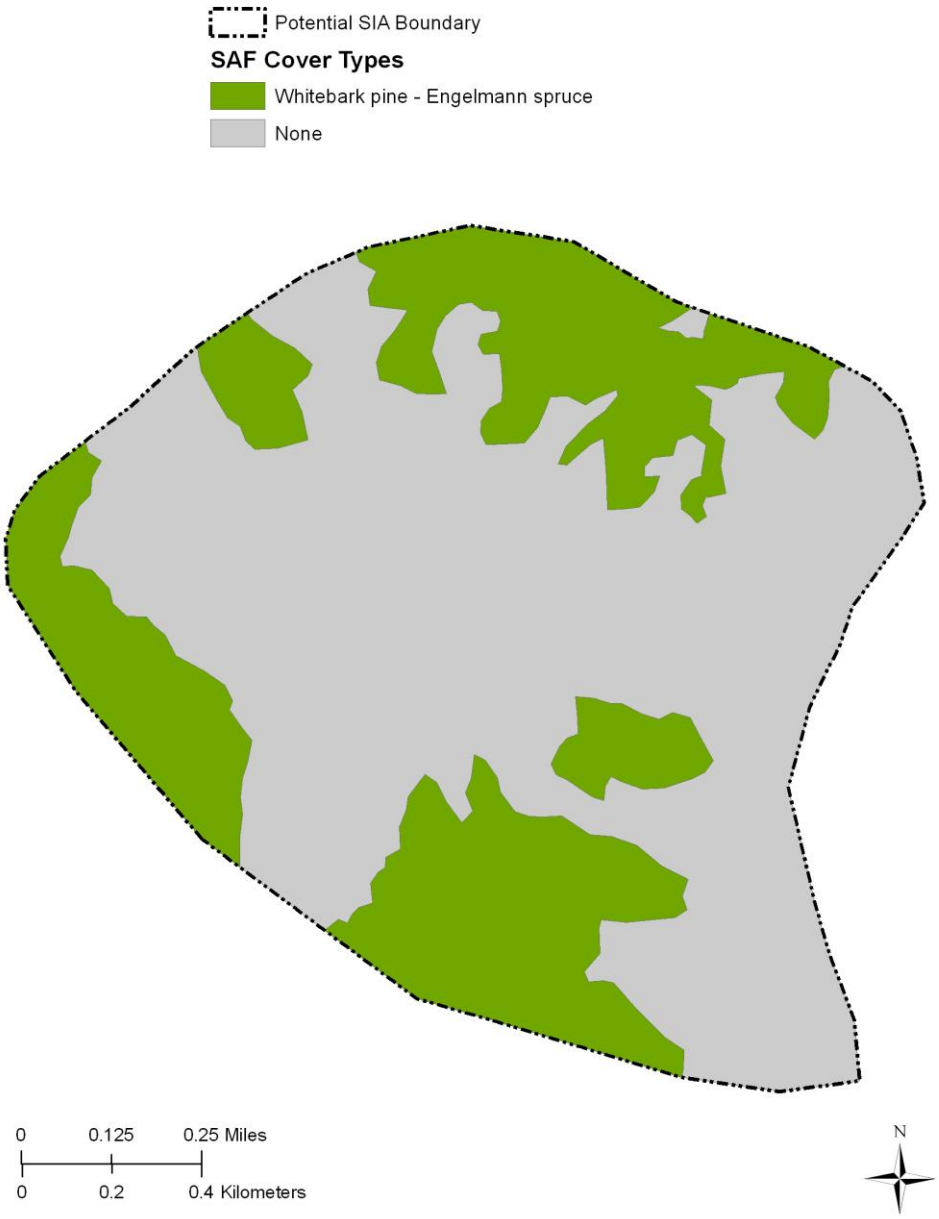


Figure 7. Ecological systems in the potential Sawtooth Fen-Palsa Special Interest Area. See following page for legend. Areas of these types are listed in Table 5.

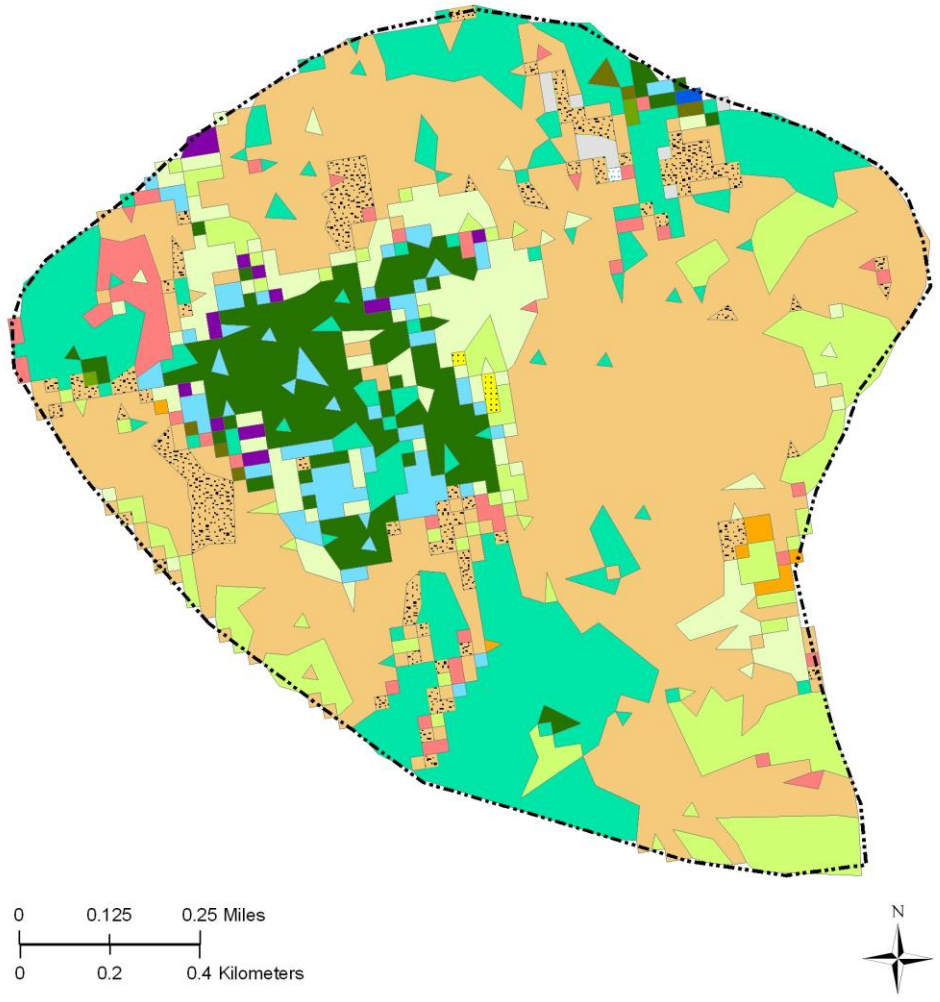
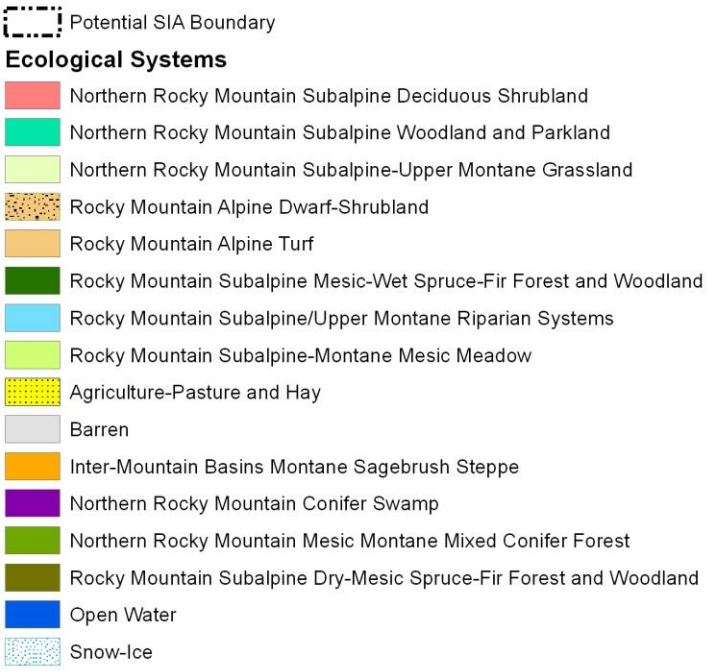


Figure 7 (continued). Legend for map of ecological systems in the potential Sawtooth Fen-Palsa Special Interest Area.
System names are listed alphabetically in two groups. Systems in the first group ("Barren" through "Rocky Mountain Subalpine-Montane Mesic Meadow") each cover ≥ 1% of the area; systems in the second group each cover <1% of the area.



APPENDICES

APPENDIX 1. VASCULAR PLANT SPECIES DOCUMENTED IN THE POTENTIAL SAWTOOTH FEN-PALSA SPECIAL INTEREST AREA.

This list of plant species was compiled from several surveys of the area. Scientific and common names are from the PLANTS Database, September 2009 (USDA, Natural Resources Conservation Service, 2009). "!" indicates an introduced taxon.

PLANTS Accepted Scientific Name with Author	PLANTS Common Name
Trees	
Picea engelmannii Parry ex Engelm.	Engelmann spruce
Pinus albicaulis Engelm.	whitebark pine
Shrubs	
Salix brachycarpa Nutt.	shortfruit willow
Salix planifolia Pursh	diamondleaf willow
Salix wolfii Bebb	Wolf's willow
Vaccinium scoparium Leiberg ex Coville	grouse whortleberry
Forbs	
Antennaria corymbosa E.E. Nelson	flat-top pussytoes
Antennaria lanata (Hook.) Greene	woolly pussytoes
Arnica mollis Hook.	hairy arnica
Callitriche L.	water starwort
Caltha leptosepala DC.	white marsh marigold
Castilleja rhexiifolia Rydb.	splitleaf Indian paintbrush
Chamerion angustifolium (L.) Holub	fireweed
Draba albertina Greene	slender draba
Epilobium anagallidifolium Lam.	pimpernel willowherb
Galium trifidum L.	threepetal bedstraw
Gentiana algida Pall.	whitish gentian
Gentianella tenella (Rottb.) Böerner	Dane's dwarf gentian
Kalmia microphylla (Hook.) A. Heller	alpine laurel
Packera subnuda (DC.) D.K. Trock & T.M. Barkley	Buek's groundsel
Pedicularis groenlandica Retz.	elephanthead lousewort
Polygonum bistortoides Pursh	American bistort
Polygonum viviparum L.	alpine bistort
Potentilla diversifolia Lehm.	varileaf cinquefoil
Rhodiola rhodantha (A. Gray) H. Jacobsen	redpod stonecrop
Sibbaldia procumbens L.	creeping sibbaldia
Stellaria borealis Bigelow	boreal starwort
Symphyotrichum foliaceum (Lindl. ex DC.) G.L. Nesom var. apricum (A. Gray) G.L. Nesom	alpine leafybract aster
Trollius laxus Salisb. ssp. albiflorus (A. Gray) A. Love & D. Love & Kapoor	American globeflower
Veronica wormskjoldii Roem. & Schult.	American alpine speedwell
Viola L.	violet
Graminoids	
Agrostis exarata Trin.	spike bentgrass
Agrostis mertensii Trin.	northern bentgrass
Calamagrostis canadensis (Michx.) P. Beauv.	bluejoint

Appendix 1 (continued).

PLANTS Accepted Scientific Name with Author	PLANTS Common Name
Calamagrostis purpurascens R. Br.	purple reedgrass
Calamagrostis stricta (Timm) Koeler ssp. inexpansa (A. Gray) C.W. Greene	northern reedgrass
Carex aquatilis Wahlenb.	water sedge
Carex canescens L.	silvery sedge
Carex gynocrates Wormsk. ex Drejer	northern bog sedge
Carex illota L.H. Bailey	sheep sedge
Carex microptera Mack.	smallwing sedge
Carex neurophora Mack.	alpine nerve sedge
Carex nigricans C.A. Mey.	black alpine sedge
Carex paysonis Clokey	Payson's sedge
Carex pellita Muhl. ex Willd.	woolly sedge
Carex phaeocephala Piper	dunhead sedge
Carex saxatilis L.	rock sedge
Carex scirpoidea Michx. ssp. pseudoscirpoidea (Rydb.) Dunlop	western singlespike sedge
Carex scopulorum T. Holm	mountain sedge
Carex utriculata Boott	Northwest Territory sedge
Danthonia intermedia Vasey	timber oatgrass
Deschampsia cespitosa (L.) P. Beauv.	tufted hairgrass
Eriophorum angustifolium Honck. ssp. angustifolium	tall cottongrass
Festuca brachyphylla Schult. ex Schult. & Schult. f.	alpine fescue
Juncus drummondii E. Mey.	Drummond's rush
Juncus mertensianus Bong.	Mertens' rush
Luzula parviflora (Ehrh.) Desv.	smallflowered woodrush
Luzula spicata (L.) DC.	spiked woodrush
Phleum alpinum L.	alpine timothy
Poa alpina L.	alpine bluegrass
Poa wheeleri Vasey	Wheeler's bluegrass
Trisetum wolfii Vasey	Wolf's trisetum

APPENDIX 2. EXPLANATIONS OF RANKS USED BY THE WYOMING NATURAL DIVERSITY DATABASE

As part of the North American network of natural heritage programs, the Wyoming Natural Diversity Database (WYNDD) uses the natural heritage element ranking system developed by The Nature Conservancy. In this system, each element (in this case, species) is assigned a two-part rank that reflects its rarity and security both globally (the G part of the rank) and within a state or province (the S part of the rank). Both the global rank and the state rank can range from 1 (extremely rare or threatened) to 5 (common and secure). Ranks are defined as follows:

Global Ranks

G1: Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals) or because of some factors making it especially vulnerable to extinction.

G2: Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals) or because of factors making it very vulnerable to extinction.

G3: Either very rare and localized throughout its range, or found locally (and perhaps abundantly at some sites) throughout a restricted range, or vulnerable to extinction throughout its range.

G4: Apparently secure globally, although it may be quite rare in parts of its range, especially at the periphery.

G5: Demonstrably secure globally and essentially ineradicable under present conditions.

T: A "T" following the global rank (G#T#) refers to a rank assigned to a subspecific taxon. The number following the "G" is the rank of the species, and the number following the "T" is the rank of the subspecific taxon.

Q: Taxonomic questions or problems exist about the taxon; more information is needed. A "G#Q" rank implies that the taxonomic distinctiveness of the taxon may be of questionable validity. A "G#T#Q" rank implies that the taxonomic distinctiveness of the subspecific taxon is of questionable validity.

State Ranks

S1: Critically imperiled in the state or province because of extreme rarity (5 or fewer occurrences or very few remaining individuals) or because of some factors making it especially vulnerable to extinction.

S2: Imperiled in the state or province because of rarity (6 to 20 occurrences or few remaining individuals) or because of factors making it very vulnerable to extinction.

S3: Rare or uncommon in the state (on the order of 21 to 100 occurrences).

S4: Apparently secure in the state or province, with many occurrences.

G5: Demonstrably secure in the state or province and essentially ineradicable under present conditions.

SU: Possibly imperiled in the state but status is uncertain; more information needed before a numerical rank can be assigned.

S?: Status uncertain due to lack of information. The "?" is usually combined with any of the numerical ranks, as in "S3?".

Migratory Ranks

B: A "B" following a rank (e.g., S3B) indicates that the rank refers to the breeding status of the species within the state. B ranks are usually assigned to birds.

N: An "N" following a rank (e.g., S3N) indicates that the preceding rank refers to the non-breeding status of the species in the state. N ranks are usually assigned to birds.

A state rank of S2BS5N indicates that the species is rare in the state as a breeder, but abundant as a non-breeder.