

San Juan National Forest

Botanical Survey of Fens



Prepared for San Juan National Forest
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Introduction

The San Juan National Forest began a systematic survey of fens on the forest in 2005. Potential areas were identified from aerial photos and other sources, and staff and volunteers investigated as many areas as possible to determine whether they were in fact fens. They documented physical characteristics, but vegetation data were limited. The forest then contracted with Colorado Natural Heritage Program in 2006 to collect detailed vegetation data on these fens.

CNHP produced species lists for ninety-four fens. There are 66 on the Dolores Ranger District, 24 on the Columbine Ranger District, and 4 on the Pagosa Ranger District. Some of these had not yet been determined to be actual fens, but were included opportunistically when we were in the area. Eighteen fens in the Grindstone Lake area that were surveyed by Marian Rohman in 1999 are also included in this report. Results include a species database with 219 species, in 123 genera and 52 families.

The most frequent species encountered, with over 70 occurrences out of 95 fens, were:

<i>Deschampsia cespitosa</i>	78
<i>Carex aquatilis</i>	77
<i>Pedicularis groenlandica</i>	77
<i>Psychrophila leptosepala</i>	74
<i>Clementsia rhodantha</i>	72

Other common species, with more than 30 occurrences, were:

<i>Salix planifolia</i>	55
<i>Veratrum tenuipetalum</i>	54
<i>Calamagrostis canadensis</i>	54
<i>Carex utriculata</i>	52
<i>Phleum commutatum</i>	51
<i>Eleocharis quinqueflora</i>	49
<i>Swertia perennis</i>	49
<i>Eriophorum angustifolium</i>	48
<i>Senecio triangularis</i>	46
<i>Carex nova</i>	42
<i>Conioselinum scopulorum</i>	41
<i>Epilobium hornemannii</i>	39
<i>Carex saxatilis</i>	38
<i>Bistorta bistortoides</i>	36
<i>Carex illota</i>	33
<i>Veronica nutans</i>	32

The most frequent genus, *Carex*, was represented by 39 species.

The top six families encountered were:

Family	Number of Genera
Cyperaceae	39
Asteraceae	29
Poaceae	19
Scrophulariaceae	12
Juncaceae	9
Rosaceae	8

Two discoveries were especially noteworthy: *Utricularia intermedia* was found at three fens near Lizard Head, numbers D101, 102 and 127. This species is new to Colorado, and will be tracked as a state rare (S1) species by CNHP. *Drosera anglica* was found by Forest Service personnel at Fen C0919 near Purgatory. This is the first occurrence of this species documented in Colorado. Both of these carnivorous plants have a broad distribution but are confined to very specific habitats. *Utricularia intermedia* occurs throughout Canada and the western and northern US. It is ranked S1 (critically imperiled) in Montana, Wyoming and Utah. *Drosera anglica* is known from Canada, Alaska and several northern states, including Wyoming, Montana and California, where it is ranked S2 (imperiled).

Eleven new element occurrence records were submitted to CNHP for inclusion in the data system. They were:

Carex limosa update Andrews Lake area, fen C0254
Carex viridula update Andrews Lake area, fen C0254
Carex limosa, Molas Pass, fen C0261
Woodsia neomexicana, Vallecito Reservoir, (on the way to fens)
Eriophorum altaicum, Grindstone Lake, fen D002 (update, not found in 2006, present in 2001)
Utricularia minor, Grindstone Lake area, fen D017
Utricularia minor, Grindstone Lake area, fen D025
Eriophorum altaicum, Highline Trail, fen C0878
Drosera anglica, Purgatory, fen C0919
Utricularia intermedia, Lizard Head area, fens D101, 102, 127
Carex buxbaumii herbaceous vegetation, Andrews Lake area, fen C0252

PC-Ord Indicator Species Analysis was used to calculate an importance value and associated p-value (Monte Carlo test) for each species in 89 of the sampled fens (those with recorded elevation). These values were used to identify the most important species that characterized four elevational classes (11,000' – 11,400' [36 fens]; 10,750' – 11,099' [36 fens]; 10,394' – 10,749' [11 fens] and below 10,393' [6 fens]). Indicator values were calculated by combining relative abundance (proportional abundance of a particular species in a particular group relative to the abundance of that species in all groups) and relative frequency (proportional frequency of the species in each group) following the method of Dufrene and Legendre (1997).

Indicator species analysis revealed some overlap in species composition and importance within higher elevation fens: *Deschampsia cespitosa*, *Psychrophila leptosepala*, *Clementsia rhodantha*, and *Pedicularis groenlandica*, (Table 1 a, b, and c). Indicator species of fens over 11,000' also included *Podagrostis thurberiana*, *Carex illota*, and *Carex nova* (Table 1a). Fens at 10,750' – 11,099' elevation had just one unique indicator, *Salix planifolia* (Table 1b). Fens at 10,394' – 10,749' elevation also had just one unique indicator species, *Carex microptera* (Table 1c). Fens below 10,393' elevation had many unique indicators including the exotic *Cirsium arvense* (Table 1d).

Table 1. Indicator species analysis for each of four elevation ranges.

	Species	IV	p-value
a) Fens at 11,000'–11,400' elevation	<i>Pedicularis groenlandica</i>	37	0.001
	<i>Podagrostis thurberiana</i>	36	0.006
	<i>Carex illota</i>	36	0.026
	<i>Deschampsia cespitosa</i>	33	0.002
	<i>Carex nova</i>	33	0.04
	<i>Psychrophila leptosepala</i>	32	0.008
	<i>Clementsia rhodantha</i>	27	0.013
b) Fens at 10,750' – 11,099' elevation	<i>Salix planifolia</i>	34	0.039
	<i>Clementsia rhodantha</i>	33	0.013
	<i>Psychrophila leptosepala</i>	32	0.008
	<i>Pedicularis groenlandica</i>	31	0.001
	<i>Deschampsia cespitosa</i>	29	0.002
c) Fens at 10,394' – 10,749' elevation	<i>Carex microptera</i>	40	0.007
	<i>Deschampsia cespitosa</i>	30	0.002
	<i>Clementsia rhodantha</i>	22	0.013
	<i>Psychrophila leptosepala</i>	21	0.008
d) Fens below 10,393' elevation	<i>Hippochaete hyemalis</i>	50	0.001
	<i>Cirsium arvense</i>	47	0.001
	<i>Calamagrostis canadensis</i>	38	0.008
	<i>Carex utriculata</i>	38	0.023
	<i>Galium trifidum</i>	33	0.005
	<i>Mentha arvensis</i>	33	0.007
	<i>Geranium richardsonii</i>	33	0.008
	<i>Salix lasiandra</i>	33	0.008
	<i>Scutellaria galericulata</i>	33	0.008
	<i>Fragaria virginiana</i>	33	0.016
	<i>Viola adunca</i>	29	0.025

Individual reports with photographs and species lists for each fen are arranged alphabetically by fen number. The first letter of each fen identifies the ranger district, D for Dolores, C for Columbine and P for Pagosa. Fens that were found during this survey that had not previously been identified are given the initials of the surveyor, e.g. MR 1 for Marian Rohman.

For the convenience of locating fens by area, they are also listed below by district and general area.

Ranger District	General Location	Fen number	Page
Dolores	Grindstone Lake area	CG2	56
		D001	58
		D002	60
		D003	63
		D004	64
		D005	65
		D008	66
		D009	65
		D010	67
		D011	68
		D012	68
		D013	70
		D014	72
		D015	72
		D016	73

		D017	74
		D018	76
		D019	79
		D020	80
		D021	82
		D022	84
		D025	86
		D026	88
		D027	89
		D175	126
		D176	127
		D177	129
		MR01	148
		MR02	150
		MR15	171
		MR16	172
		MR17	173
		MR18	175
	Taylor Park	D223	134
		D233	136
		D234	138
	Twin Lakes	MA001	145
	Lizard Head	D101	102
		D102	106
		D123	112
		D124	114
	Lizard Head cont.	D125	116
		D127	117
		D128	119
		D129	121
		MR03	152
	Bolam Pass	D039	90
		D040	95
		D041	97
		D045	99
		D046	100
		MR09	159
		MR10	160
		MR11	162
		MR12	165
		MR13	167
	Hillside Drive	D179	131
		D180	132
		D182	133
		MR05	155
		MR06	156
		MR07	157
		MR08	158
	Highline Trail	D163	122
		D164	123
		D170	125
		D173	125
		MR4	154
		MR14	169
Columbine	Bolam Pass	C0902	40
		C0904	42
		C0906	44
		C0907	50
	Molas Pass area	C252	6
		C254	8
		C261	10
		C264	11
		C265	13
		C267	15
		C289	16
		C291	17
		C292	19
		C293	21
	Molas Pass area cont.	C295	22
	Highline Trail	C0878	30

		C0879	34
		C0882	35
	Vallecito Reservoir area	C829	26
		C836	28
	Mineral Point	C0489	24
		LK12	140
		LK 13	142
	Purgatory	C0919	54
Pagosa	V-Rock	P085	180
		P086	180
	Wolf Creek Pass	P047	176
		P048	178

Literature Cited:

Dufrene, M. and P. Legendre. 1997. Species assemblages and indicator species: the need for a flexible asymmetrical approach. *Ecological Monographs* 67:345-366.

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0252
General area: Andrews Lake SE
Elevation: 10,833 feet
Date surveyed: 7-9-06
Surveyor: P. Lyon



Eriophorum angustifolium

Total number of species observed: 19

Dominant species: *Carex aquatilis*, *C. buxbaumii*

Comments: Smaller and less diverse than C254. Surrounded by dense *Salix planifolia*

Species list:

Antennaria umbrinella
Psychrophila leptosepala
Cardamine cordifolia
Carex aquatilis
Carex capillaris
Carex microglochin
Carex saxatilis
Carex utriculata
Deschampsia cespitosa
Eriophorum angustifolium

Geum macrophyllum
Habenaria hyperborea
Parnassia fimbriata
Pedicularis groenlandica
Potentilla fruticosa
Salix planifolia
Senecio dimorphophyllus
Senecio triangularis
Swertia perennis

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0254
General area: Andrews Lake
Elevation: 10,801 feet
Date surveyed: 7-9-06
Surveyor: P. Lyon



Total number of species observed: 38

Dominant species: *Carex aquatilis*. *Eleocharis quinqueflora* in lower, wettest areas, with *Carex viridula*. *Senecio dimorphophyllus* in some areas.

Additional photos: Andrews Lake 7-9, 001 to 008 and 011; Molas Pass, 10-13.

Comments: Large areas dominated by *Danthonia intermedia*, probably not in fen. Several small ponds. Mossy beneath herbaceous plants. Two rare species present: *Carex viridula* (G5 S1) and *C. limosa* (G5 S2). Community: *Carex buxbaumii*, G3 SU.

Species list:

Achillea lanulosa
Allium geyeri
Antennaria umbrinella
Bistorta vivipara
Psychrophila leptosepala
Cardamine cordifolia
Carex aquatilis
Carex aurea
Carex buxbaumii
Carex canescens
Carex capillaris
Carex echinata
Carex illota
Carex limosa
Carex microglochin
Carex nova
Carex saxatilis
Carex utriculata
Carex viridula
Castilleja occidentalis
Clementsia rhodantha
Danthonia intermedia
Deschampsia cespitosa
Eleocharis quinqueflora
Epilobium hornemannii

Erigeron perigrinus
Eriophorum angustifolium
Gentianella heterosepala
Habenaria hyperborea
Hierochloa hirta
Luzula parviflora
Mitella stauropetala
Nocca montana
Nuphar lutea
Parnassia fimbriata
Pedicularis groenlandica
Phleum commutatum
Poa alpina
Podistera eastwoodiae
Potentilla fruticosa
Potamogeton sp.
Salix planifolia
Senecio dimorphophyllus
Solidago multiradiata
Stellaria umbellata
Swertia perennis
Taraxacum officinalis
Valeriana edulis
Veronica nutans
Viola sororia

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0261
General area: Molas Pass
Elevation: 10,838 feet
Date surveyed: 8-22-06
Surveyor: P. Lyon with J. Redders

Total number of species observed: 23
Dominant species: *Deschampsia cespitosa*

Photos: none

Comments: *Carex limosa* EOR. Small fen next to highway.

Species list:

<i>Achillea lanulosa</i>	<i>Conioselinum scopulorum</i>
<i>Antennaria pulcherrima</i>	<i>Danthonia intermedia</i>
<i>Bistorta vivipara</i>	<i>Deschampsia cespitosa</i>
<i>Psychrophila leptosepala</i>	<i>Eleocharis quinqueflora</i>
<i>Carex aquatilis</i>	<i>Eriophorum angustifolium</i>
<i>Carex aurea</i>	<i>Habenaria hyperborea</i>
<i>Carex buxbaumii</i>	<i>Moss</i>
<i>Carex capillaris</i>	<i>Parnassia fimbriata</i>
<i>Carex limosa</i>	<i>Potentilla fruticosa</i>
<i>Carex microglochin</i>	<i>Salix planifolia</i>
<i>Carex utriculata</i>	<i>Swertia perennis</i>
<i>Clementsia rhodantha</i>	<i>Trisetum spicatum</i>

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0264
General area: Andrews Lake east
Elevation: 10,723 feet
Date surveyed: 8-22-06
Surveyor: Peggy Lyon, with Jeff Redders



Total number of species observed: 45
Dominant species: *Carex aquatilis*

Species list:

Achillea lanulosa
Aconitum columbianum
Allium geyeri
Bistorta vivipara
Calamagrostis canadensis
Psychrophila leptosepala
Cardamine cordifolia
Carex aquatilis
Carex aurea
Carex canescens
Carex microglochin
Carex microptera
Carex norvegica ssp. stevenii
Carex utriculata
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Dugaldia hoopsii
Eleocharis quinqueflora
Epilobium hornemannii
Erigeron coulteri
Eriophorum angustifolium
Fragaria virginiana
Gentiana thermalis
Gentianella heterosepala

Geum macrophyllum
Juncus mertensianus
Luzula parviflora
Micranthes odontoloma
Moss
Pedicularis groenlandica
Pneumonanthe parryi
Poa pratensis
Potentilla fruticosa
Rhodiola integrifolia
Rumex sp.
Salix planifolia
Senecio triangularis
Solidago multiradiata
Spiranthes romanzoffiana
Stellaria umbellata
Swertia perennis
Taraxacum officinalis
Trollius albiflorus
Valeriana edulis
Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C265
General area: Andrews Lake
Elevation: 10,766 feet
Date surveyed: 8-22-06
Surveyor: P. Lyon with J. Redders



Total number of species observed: 34

Dominant species: *Carex aquatilis*, *Deschampsia cespitosa*

Species list:

Achillea lanulosa
Agrostis scabra
Anaphalis margaritacea
Bistorta vivipara
Calamagrostis canadensis
Psychrophila leptosepala
Carex aquatilis
Carex aurea

Carex canescens
Carex utriculata
Clementsia rhodantha
Conioselinum scopulorum
Danthonia intermedia
Deschampsia cespitosa
Elymus trachycaulus
Epilobium hornemannii

Erigeron coulteri
Gentiana thermalis
Gentianella heterosepala
Geum macrophyllum
Habenaria hyperborea
Juncus balticus
Juncus ensifolius
Pneumonanthe parryi
Poa pratensis
Potentilla fruticosa

Potentilla pulcherrima
Rumex sp.
Salix brachycarpa
Salix planifolia
Senecio triangularis
Solidago multiradiata
Swertia perennis
Trisetum spicatum
Trollius albiflorus

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C267
General area: Andrews Lake East
Elevation: 10,662 feet
Date surveyed: 8-22-06
Surveyor: P. Lyon with J. Redders

Total number of species observed: 21

Dominant species: *Carex aquatilis*, *C. utriculata*

Photos: none taken; raining.

Species list:

<i>Bistorta vivipara</i>	<i>Gentianella heterosepala</i>
<i>Calamagrostis canadensis</i>	<i>Habenaria hyperborea</i>
<i>Psychrophila leptosepala</i>	Moss
<i>Cardamine cordifolia</i>	<i>Pedicularis groenlandica</i>
<i>Carex aquatilis</i>	<i>Phleum commutatum</i>
<i>Carex canescens</i>	<i>Poa pratensis</i>
<i>Carex capillaris</i>	<i>Poa reflexa</i>
<i>Carex echinata</i>	<i>Polemonium caeruleum</i>
<i>Carex utriculata</i>	<i>Salix planifolia</i>
<i>Clementsia rhodantha</i>	<i>Senecio triangularis</i>
<i>Conioselinum scopulorum</i>	<i>Stellaria umbellata</i>
<i>Deschampsia cespitosa</i>	<i>Swertia perennis</i>
<i>Gentiana thermalis</i>	

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0289
General area: Molas Pass
Elevation: 10,764 feet
Date surveyed: 8-22-06
Surveyor: P. Lyon with J. Redders

Total number of species observed: 27
Dominant species: *Carex utriculata*

Photos: none taken

Comments: on east side of Highway 550 by Little Molas Road.

Species list:

<i>Achillea lanulosa</i>	<i>Gentiana thermalis</i>
<i>Aconitum columbianum</i>	<i>Habenaria hyperborea</i>
<i>Allium geoyeri</i>	<i>Juncus mertensianus</i>
<i>Antennaria pulcherrima</i>	<i>Ligularia bigelovii</i>
<i>Bistorta vivipara</i>	<i>Mertensia ciliata</i>
<i>Psychrophila leptosepala</i>	<i>Moss</i>
<i>Carex aquatilis</i>	<i>Parnassia fimbriata</i>
<i>Carex buxbaumii</i>	<i>Pedicularis groenlandica</i>
<i>Carex capillaris</i>	<i>Picea engelmanni</i>
<i>Carex norvegica ssp. stevenii</i>	<i>Poa reflexa</i>
<i>Carex utriculata</i>	<i>Potentilla fruticosa</i>
<i>Castilleja occidentalis</i>	<i>Salix planifolia</i>
<i>Clementsia rhodantha</i>	<i>Senecio triangularis</i>
<i>Deschampsia cespitosa</i>	<i>Swertia perennis</i>
<i>Eleocharis quinqueflora</i>	<i>Trollius albiflorus</i>

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0291
General area: Little Molas road
Elevation: 10,919 feet
Date surveyed: 8-22-06
Surveyor: P. Lyon with J. Redders



Total number of species observed: 34
Dominant species: *Carex aquatilis*, *C. buxbaumii*

Additional photos: 15, 16

Comments: Patterned ground with strings and flarks. Pond with *Nuphar*, *Menyanthes*.

Species list:

Achillea lanulosa
Allium geyseri
Antennaria rosea
Bistorta vivipara
Calamagrostis canadensis
Psychrophila leptosepala
Carex aquatilis
Carex aurea
Carex buxbaumii
Carex canescens
Carex capillaris
Carex utriculata
Castilleja occidentalis
Clementsia rhodantha
Conioselinum scopulorum
Danthonia intermedia
Deschampsia cespitosa
Eleocharis quinqueflora

Epilobium hornemannii
Eriophorum angustifolium
Gentiana thermalis
Habenaria hyperborea
Menyanthes trifoliata
Moss
Pedicularis groenlandica
Poa pratensis
Poa reflexa
Podistera eastwoodiae
Potentilla diversifolia
Potentilla fruticosa
Rorippa sp.
Salix planifolia
Senecio dimorphophyllus
Swertia perennis
Taraxacum officinalis
Veronica nutans



**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0292
General area: Little Molas Lake road
Elevation: 10,891 feet
Date surveyed: 8-22-06
Surveyor: P. Lyon with J. Redders



Total number of species observed: 45

Dominant species: *Carex aquatilis*, *Deschampsia cespitosa*

Comments: Checked peat depth-OK.

Species list:

Achillea lanulosa

Agrostis scabra

Bistorta vivipara

Boechera drummondii

Calamagrostis canadensis

Psychrophila leptosepala

Carex aquatilis

Carex aurea

Carex canescens
Carex capillaris
Carex echinata
Carex microglochin
Carex microptera
Carex norvegica ssp. *stevenii*
Carex nova
Carex utriculata
Castilleja occidentalis
Clementsia rhodantha
Conioselinum scopulorum
Danthonia intermedia
Deschampsia cespitosa
Eleocharis quinqueflora
Epilobium hornemannii
Erigeron coulteri
Eriophorum angustifolium
Geum macrophyllum
Habenaria hyperborea

Juncus balticus
Juncus saximontanus
Oxypolis fendleri
Pedicularis groenlandica
Poa pratensis
Poa reflexa
Podistera eastwoodiae
Potentilla diversifolia
Potentilla fruticosa
Rumex sp.
Salix planifolia
Senecio dimorphophyllus
Spiranthes romanzoffiana
Swertia perennis
Taraxacum officinalis
Trisetum spicatum
Trollius albiflorus
Veronica nutans

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0293
General area: Molas Pass
Elevation: 10,834 feet
Date surveyed: 8-22-06
Surveyor: P. Lyon with J. Redders

Total number of species observed: 8
Dominant species: *Carex utriculata*

Photos: none taken

Comments: Just below highway on west side. Altered, culvert under highway.

Species list:

<i>Allium geyeri</i>	<i>Carex utriculata</i>
<i>Calamagrostis canadensis</i>	<i>Salix brachycarpa</i>
<i>Carex aquatilis</i>	<i>Salix planifolia</i>
<i>Carex microptera</i>	

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0295
General area: Little Molas Lake
Elevation: 10,908 feet
Date surveyed: 8-21-06
Surveyor: Peggy Lyon



Total number of species observed: 36

Dominant species: *Carex utriculata*, *Carex aquatilis*

Additional photos: SJNF fens/Molas Pass fens/#2,3,4

Species list:

Agrostis scabra
Antennaria corymbosa
Antennaria rosea
Boechera drummondii
Calamagrostis canadensis

Psychrophila leptosepala
Carex aquatilis
Carex canescens
Carex capillaris
Carex microptera

Carex utriculata
Castilleja occidentalis
Cirsium arvense
Clementsia rhodantha
Deschampsia cespitosa
Epilobium hornemannii
Erigeron perigrinus
Gentiana thermalis
Geum macrophyllum
Glyceria striata
Juncus drummondii
Juncus mertensianus
Moss
Pedicularis groenlandica
Phleum commutatum

Potentilla diversifolia
Potentilla fruticosa
Potentilla gracilis
Rhodiola integrifolia
Rumex sp.
Salix brachycarpa
Salix planifolia
Senecio dimorphophyllus
Senecio triangularis
Spergulastrum lanuginosum
Swertia perennis
Taraxacum officinalis
Veratrum tenuipetalum
Veronica nutans

Comments: Lake shore with narrow band of *Carex utriculata*. Fen area appears to be considerably smaller than mapped. Several foot trails, but closed to motorized vehicles. Non-native species *Taraxacum officinalis* and *Cirsium arvense* common.



Cirsium arvense at Little Molas Lake

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0489
General area: Mineral Point
Elevation: 12,044 feet
Date surveyed: 8-25-06
Surveyor: P. Lyon



Total number of species observed:

Dominant species: *Carex aquatilis*, *Calamagrostis canadensis*

Additional photos: SJNF fens 8-25 008

Comments: Floating mat at edge of pond. Unidentified aquatic in deep water with small yellow spikes, unable to access.

Species list:

Bistorta vivipara
Psychrophila leptosepala
Cardamine cordifolia
Calamagrostis canadensis
Carex aquatilis
Carex canescens
Carex microglochin
Carex microptera
Clementsia rhodantha
Danthonia intermedia
Deschampsia cespitosa
Eleocharis quinqueflora

Hierochloe hirta
Juncus drummondii
Juncus mertensianus
Moss
Pedicularis groenlandica
Phleum commutatum
Podistera eastwoodiae
Salix planifolia
Senecio dimorphophyllus
Sparganium angustifolium?
Swertia perennis



Psychrophila leptosepala, *Clementsia rhodantha* and mosses

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0829
General area: Vallecito Reservoir
Elevation: 8,518 feet
Date surveyed: 7-13-06
Surveyor: P. Lyon with A. Oliver



Total number of species observed: 18
Dominant species: *Carex utriculata*

Additional photos: 43, 44, 46

Comments: Long narrow wetland. Unknown, probably not a fen.
Carex utriculata dense, not much else. Waded to middle, solid *C. utriculata*, nothing underneath. *Lemna* on surface of open water.
Uplands mixed conifer forest with *Pinus ponderosa*, *Pseudotsuga menziesii*, *Abies concolor*, *Picea pungens* and occasional *Pinus strobiformis*.

Species list:

Achillea lanulosa
Agrostis scabra
Calamagrostis canadensis
Carex bella
Carex norvegica ssp. stevenii
Carex utriculata
Cirsium arvense
Cirsium vulgare
Epilobium lactiflorum
Fragaria virginiana
Galium trifidum

Geranium richardsonii
Geum macrophyllum
Habenaria hyperborea
Juncus ensifolius
Lemna minor
Poa pratensis
Scutellaria galericulata
Viola adunca

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0836
General area: Vallecito Reservoir
Elevation: 8,384 feet
Date surveyed: 7-13-06
Surveyor: P. Lyon with A. Oliver



Total number of species observed: 32

Dominant species: *Carex utriculata*, *Calamagrostis canadensis*

Additional photos: 28-31 (*Cirsium*)

Comments: Dried out, stream down cut, probably due to fire, then heavy flows. Invaded by Canada thistle all the way to center of (former) fen. See photos. Stream enters at north end, flows around west side. Some trout in stream. Coarse sandy bottom. Small drainage along east side. Center dry. Alder and willow along stream. North end mostly

Calamagrostis canadensis and *Carex microptera*, in wettest area. No evidence of cattle. Deer/elk bedding.

Species list:

Acetosella vulgaris
Achillea lanulosa
Agrostis scabra
Alnus incana
Calamagrostis canadensis
Carex bebbii
Carex foenea
Carex microptera
Carex phaeocephala
Carex utriculata
Cirsium arvense
Equisetum arvense
Fragaria virginiana
Galium trifidum
Geum macrophyllum
Heracleum lanatum
Hippochaete hyemalis

Mentha arvensis
Mertensia ciliata
Mimulus guttatus
Poa pratensis
Rudbeckia hirta
Rumex sp.
Salix drummondiana
Salix lasiandra
Salix planifolia
Sidalcea
Solidago multiradiata
Taraxacum officinalis
Tragopogon dubius
Veratrum tenuipetalum
Veronica Americana
Viola adunca



Canada thistle invasion at Fen 836

**Fen Botanical Survey
San Juan National Forest**

District: Columbine

Fen number: C0878

General area: Highline Trail

Location: on the east side of the Highline Trail, south of the Cape of Good Hope

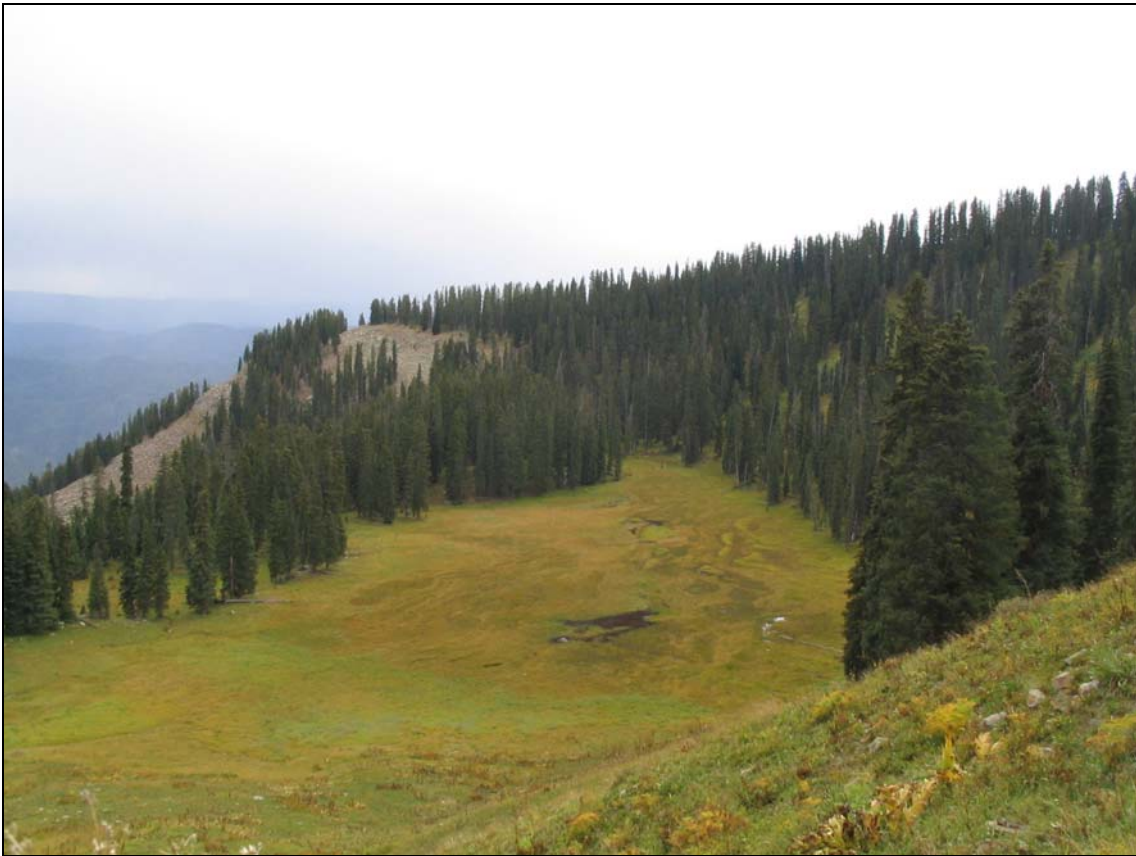
Size: approx. 300 feet north/south x 150 feet east/west

Centerpoint: too cloudy to get new GPS reading

Elevation: approx. 11,220 feet

Date surveyed: 8-31-06

Surveyor: Marian Rohman



Fen C0878: from above, looking to the southeast. Note wallow in the approx. center and small open water areas to the right. *Eriophorum altaicum* is in "cove" at the upper center. C0879 is behind trees on the left.

Total number of species observed in the fen: 36

Dominant species: *Carex saxatilis*, *Carex praeceptorum*, *Carex utriculata* – particularly in the wetter flarks, *Eleocharis quinqueflora* in the shallower flarks.

Species of particular interest: *Eriophorum altaicum*

Comments: Large fen with areas of pronounced strings and flarks. Flarks range from barely moist at the north end to deep and water-filled at the south end. About 100 fruiting stalks of *Eriophorum altaicum* were found in an area approx. 40 feet east/west by 15 feet north/south in a small "cove" at the south edge of the fen. The northwest side is much drier, but appears to be part of the fen. There are two wallow areas and a few small pools of open water. Wetland C0879 is immediately to the east near the north end of C0878

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*I was unable to differentiate between *Agrostis scabra* and *Podagrostis thurberiana* in the field. Specimens collected at other fens in the Highline Trail area keyed to *Agrostis scabra* in the lab.

Achillea lanulosa
prob. *Agrostis scabra* *
Calamagrostis canadensis
Cardamine cordifolia
Carex aquatilis
Carex ebenea
Carex illota
Carex nelsonii
Carex nova
Carex praeceptorum
Carex saxatilis
Carex utriculata
Conioselinum scopulorum
Danthonia intermedia
Deschampsia dcespitosa
Dugaldia hoopesii
Eleocharis quinqueflora
Epilobium anagallidifolium
Epilobium hornemannii

Eriophorum altaicum
Eriophorum angustifolium
Juncus drummondii
Oxyopolis fendleri
Packera dimorphophylla
Pedicularis groenlandica
Phleum commutatum
poss. *Poa* sp.
Podistera eastwoodiae
Psychrophila leptosepala
Ranunculus alismifolius
Rorippa alpina
Salix planifolia
Senecio triangularis
Spiranthes romanzoffiana
Swertia perennis
Veratrum tenuipetalum
Veronica nutans
Viola sp.



Fen C0878: "Cove" with *Eriophorum altaicum* at the southern edge of the fen.
Below: Fen C0878: *Eriophorum altaicum*





Fen C0878: mud wallow.

**Fen Botanical Survey
San Juan National Forest**

District: Columbine

Wetland number: C0879

General area: Highline Trail

Location: east side of the Highline Trail, south of the Cape of Good Hope, immediately east of the north end of Fen C0878

Centerpoint: too cloudy to get new GPS reading

Elevation: approx. 11,200 feet

Date photographed: 8-31-06

Surveyor: Marian Rohman

Comments: Fen C0879 is a wetland with mineral soil showing, probably not a fen. It was not surveyed due to time and weather constraints.



Wetland C0879: small area behind trees on west side of Fen C0878.

**Fen Botanical Survey
San Juan National Forest**

District: Columbine

Fen number: C0882

General area: Highline Trail

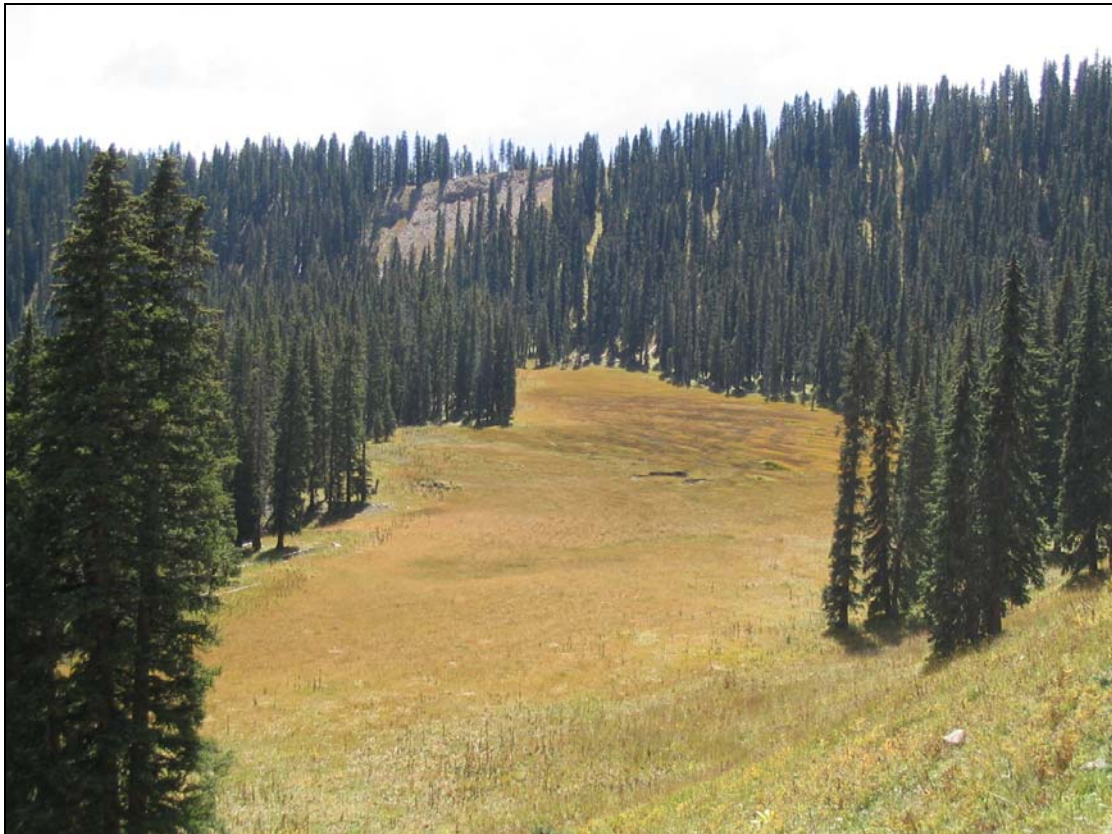
Location: east of the Highline Trail, immediately north of the west end of the Cape of
Good Hope

Centerpoint: 12 S, 76302E, 4157759N

Elevation: 11,319 feet

Date surveyed: 9-5-06

Surveyor: Marian Rohman



Fen C0882: looking south-southeast across the fen. Well-developed terraces are visible in the center, along with a wallow. The nearer end is a large meadow, probably a part of the fen that has become drier.

Total number of species observed in the fen: 29

Dominant species: *Carex aquatilis*, especially in some of the flarks, *Carex* prob. *saxatilis*, *Carex nova* on some of the strings, north meadow (probably old fen) – *Carex aquatilis*, *Deschampsia cespitosa*, *Podistera eastwoodiae*, *Pedicularis groenlandica*

Comments: C0882 is a large fen with areas of well-developed terraces. Flarks range from barely moist at the north end to a mix of moist, shallow water, or deep and water-filled at the south end. One of the larger flarks has large egg masses in the water around the edge. There is a large meadow at the north end which appears to be a drier part of the fen – there are overgrown strings visible in the area. There is a large wallow area in the central part of the fen. There is a fire ring just into the trees on the east side and an aluminum can in the wallow.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

The probable *Carex saxatilis* and *C. utriculata* in this fen do not fit completely within their defined limits. They appear to have a varying mix of characteristics of the two species. I am currently waiting to verify these identifications with a *Carex* authority and to discuss the possibility of *Carex saxatilis* x *utriculata* hybrids.

Achillea lanulosa
Bistorta bistortoides
Calamagrostis canadensis
Carex aquatilis
Carex ebenea
Carex illota
Carex nova
Carex praeceptorum
Carex scopulorum
Carex prob. *utriculata*
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora

Epilobium hornemannii
Eriophorum angustifolium
Juncus drummondii
Oxypolis fendleri
Packera dimorphophylla
Pedicularis groenlandica
Phleum commutatum
Poa prob. *pratensis*
Podistera eastwoodiae
Psychrophila leptosepala
Senecio triangularis
Swertia perennis
Veratrum tenuipetalum
Viola sp.



Fen C0882: Wallow area in approximate center of the fen.



Fen C0882: egg masses in one of the larger flarks.



Fen C0882: Open water in one of the larger flarks.

**Fen Botanical Survey
San Juan National Forest**

District: Columbine

Fen number: C0902

General area: Bolam Pass

Location: west side of Barlow Creek Road (FS578), southwest of Bolam Pass

Elevation: 11,156 feet

Date surveyed: 8-11-06

Surveyor: Marian Rohman



Fen C0902: looking southeast; note large area of open water with road just beyond trees

Total number of species observed in the fen: 29

Dominant species: *Deschampsia cespitosa*, *Carex aquatilis* around the open water, *Clementsia rhodantha* over large areas, *Carex paupercula* and *Eleocharis quinqueflora* in the shallow flarks

Comments: Fen C0902 is a large fen with a large area of open water with a floating mat around its' edge occupying most of the east quarter of the fen. There are also many small

pockets of deep open water throughout the fen. There is slight terracing in the southwest area.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Aconitum columbianum

Bistorta bistortoides

Cardamine cordifolia

Carex aquatilis

Carex ebenea

Carex magellanica

Carex nova

Carex praeceptorum

Clementsia rhodantha

Deschampsia cespitosa

Dugaldia hoopesii

Eleocharis quinqueflora

Epilobium prob. *hornemannii*

Erigeron* prob. *coulteri

Erigeron sp.

Gentianella acuta

Gentianopsis thermalis

Noccaea montana

Packera dimorphylla

Pedicularis groenlandica

Phleum commutatum

Podagrostis thurberiana

Podistera eastwoodiae

Potentilla sp.

Psychrophila leptosepala

Sparganium angustifolium

Swertia perennis

Swertia perennis – white flowers

Veratrum tenuipetalum

Viola sp.



Fen C0902: *Clementsia rhodantha*

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0904
General area: Bolam Pass
Location: southwest of C0902, southwest of Bolam Pass
Centerpoint: 13 S, 243705E, 4178103N
Elevation: 11,093 feet
Date surveyed: 8-11-06
Surveyor: Marian Rohman



Fen C0904: looking looking north-northeast; note open water in center

Total number of species observed in the fen: 22

Dominant species: *Carex aquatilis*, *Psychrophila leptosepala*, *Calamagrostis canadensis*, especially around open water

Comments: Fen C0904 is a moderate size fen with large open pool in the approximate center. No terraces were observed.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Calamagrostis canadensis
Carex aquatilis
Carex illota
Carex nigricans
Carex nova
Carex praeceptorum
Carex saxatilis
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora

Erigeron peregrinus
Eriophorum angustifolium
Gentianella acuta
Packera dimorphylla
Pedicularis groenlandica
Phleum commutatum
Podistera eastwoodiae
Psychrophila leptosepala
Ranunculus alismifolius
Swertia perennis
Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Columbine

Fen number: C0906

General area: Bolam Pass

Location: along the west side of the Barlow Creek Road (FS578), SW of Bolam Pass

Elevation: 11,236

Date surveyed: 8-11-06

Surveyor: Marian Rohman



Fen C0906: looking north-northeast; Fen C0907 is visible beyond the open water

Total number of species observed in the fen: 36

Dominant species: *Carex aquatilis*, *Deschampsia cespitosa*, *Eleocharis quinqueflora*, *Clementsia rhodantha*, *Podistera eastwoodiae*, *Carex nova* in west half, *Carex aquatilis* and *Calamagrostis canadensis* around the open water, *Podagrostis thurberiana* very abundant in northeast

Comments: C0906 is a large fen with a large pool of open water on its' northeast side. There are numerous salamanders and frogs in the water. The north, east, and south sides of the pool are bordered by a narrow band of wetland vegetation dominated by *Calamagrostis canadensis* and *Carex aquatilis*. The pool is dammed at the south end. The inlet is at the northeast end and flows into this fen from Fen C0907 immediately to the northeast. Fen C0906 is on the west side of this open water and is quite extensive. There are well-developed, closely spaced strings and flarks through much of the fen. There is a large "sinkhole" at the southwest end. There are several sets of ATV tracks on the southwest end of the fen.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*Collected specimens keyed to *Carex atosquama*, a sedge quite similar in appearance to *Carex nova*. Some of the sedges that I called *Carex nova* in the field probably are this more common sedge.

Allium geoyeri
Bistorta bistortoides
Calamagrostis canadensis
Cardamine cordifolia
Carex aquatilis
Carex atosquama
Carex illota
Carex microptera
*Carex prob. nova **
Carex praeceptorum
Carex saxatilis
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis macrostachya
Eleocharis quinqueflora
Epilobium hornemannii
Eriophorum angustifolium

Galium sp.
Gentianopsis thermalis
Juncus mertensianus
Limnorchis prob. hyperborea
Oxypolis fendleri
Packera dimorphylla
Pedicularis groenlandica
Phleum commutatum
Poa pratensis
Podagrostis thurberiana
Podistera eastwoodiae
Psychrophila leptosepala
Salix planifolia
Senecio triangularis
Sparganium angustifolium
Spiranthes romanzoffiana
Swertia perennis
Veratrum tenuipetalum



Fen C0906: looking north-northeast; Fen C0907 is visible beyond the open water



Fen C0906: edge of open water showing band of *Carex aquatilis* around edge and *Sparganium angustifolium* in water.



Fen C0906: sinkhole in the southwest end of the fen



Fen C0906: *Gentianopsis thermalis* with *Clementisia rhodantha*

**Fen Botanical Survey
San Juan National Forest**

District: Columbine

Fen number: C0907

General area: Bolam Pass

Location: east side of Barlow Creek Road (FS578), southwest of Bolam Pass, directly across the road from C0906, a much larger fen

Elevation: 11,150 feet

Date surveyed: 8-11-06

Surveyor: Marian Rohman



Total number of species observed in the fen: 33

Dominant species: *Eleocharis quinqueflora*, *Podistera eastwoodiae*, *Psychrophila leptosepala* in some areas, *Calamagrostis canadensis* in some areas, *Carex utriculata* and *Menyanthes trifoliata* in pool

Comments: Fen C0907 is a moderate size fen with a pool of open water on its' east side. The pool supports a healthy population of *Menyanthes trifoliata*, as well as *Carex utriculata*. There are widely spaced well-developed terraces in the north half of the fen.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*Collected specimens keyed to *Carex atosquama*, a sedge quite similar in appearance to *Carex nova*. Some of the sedges that I called *Carex nova* in the field probably are this more common sedge.

**I was unable to differentiate between *Podagrostis thurberiana* and *Agrostis scabra* in the field. Specimens collected at other fens in the Bolam Pass area keyed to *Podagrostis thurberiana* in the lab.

Achillea lanulosa
Bistorta bistortoides
Calamagrostis canadensis
Carex angustior
Carex atosquama
Carex prob. *disperma*
Carex poss. *ebenea*
Carex illota
Carex magellanica
Carex prob. *nova* *
Carex praeceptorum
Carex saxatilis
Carex utriculata
Clementsia rhodantha
Deschampsia cespitosa
Dugaldia hoopesii
Eleocharis quinqueflora

Erigeron sp.
Eriophorum angustifolium
Menyanthes trifoliata
Noccaea montana
Packera dimorphylla
Pedicularis groenlandica
Phleum commutatum
Podistera eastwoodiae
prob. *Podagrostis thurberiana* **
Potentilla sp.
Psychrophila leptosepala
Senecio triangularis
Spiranthes romanzoffiana
Swertia perennis
Veronica nutans
Viola sp.



Fen C0907: open water; note *Menyanthes trifoliata* in foreground and *Carex utriculata* in background.



Fen C0907: well-developed strings in the north half of the fen

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: C0919
General area: Purgatory
Elevation: 8,605 feet
Date surveyed: 8-25-06
Surveyor: P. Lyon with A. Oliver, G. Thrash and J. Redders



Total number of species observed: 19

Dominant species: *Carex lanuginosa*

Comments: *Drosera anglica* was found here, the first record in Colorado. This is the only fen surveyed where *Carex lanuginosa* was dominant. The only other fens where it was present are in the Pagosa District, P47 and P48, and there the dominant sedge was *Carex aquatilis*. There are a number of exotic species in area, presumably due to proximity to hwy 550 and other development, although none were observed in the fen.

Species list:

Calamagrostis canadensis
Carex aquatilis
Carex buxbaumii
Carex canescens
Carex echinata
Carex lanuginosa
Carex utriculata
Drosera anglica
Habenaria hyperborea

Juncus articulatus
Mentha arvensis
Menyanthes trifoliata
Moss
Pedicularis groenlandica
Sphagnum sp.
Torreyochloa (Glyceria) pauciflora
Viola labradorica



Drosera anglica at Fen C0919

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: CG002

Previous fen number: PL2 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: north of Hillside Drive at the east end;
southeast of Fen D001/Grindstone Lake

Date surveyed: 6-27-99, 8-14-99 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 24

Additional species observed: 8

Dominant species: not noted

Comments: Fen CG2 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL2. It has been assigned CG2 for the current fen survey. It is a small fen with moderately well-developed terraces. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and also in parentheses may not have been growing on the peat, but my notes are incomplete.

Acomastylis rossii
Allium geyeri
Anticlea elegans
Cardamine cordifolia
Carex nova
Carex utriculata
Castilleja rhexifolia
Clementsia rhodantha
Epilobium anagallidifolium
Gentianella acuta
Juncus mertensianus
(*Mertensia* sp.)
(*Micranthes odontoloma*)
(*Noccaea montana*)
Oxypolis fendleri
Parnassia fimbriata

Pedicularis groenlandica
Pedicularis racemosa
(*Polemonium pulcherrimum*)
Primula parryi
Pseudocymopterus montanus
Psychrophila leptosepala
(*Pyrola minor*)
Ranunculus alismifolius
Ribes sp.
Salix planifolia
(*Streptopus fassettii*)
Swertia perennis
Trollius albiflorus
(*Vaccinium myrtillus*)
Veratrum tenuipetalum
Viola adunca

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D001 – Grindstone Lake

Previous fen number: PL22 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: southwest of Hillside Drive, between Fens D002 and D003

Date surveyed: 7-12-06; also 11-16-99, 8-26-00, 9-1-01

Surveyor: Marian Rohman



Fen D001, looking northwest along the northeast side. Note large stand of *Menyanthes trifoliata*.

Total number of species observed in the fen: 47

Total number of species observed in surrounding area: 1

Dominant species: *Carex aquatilis*, *Carex praeceptorum*, extensive areas of *Menyanthes trifoliata* and *Sparganium angustifolium* in the lake

Comments: Fen D001 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL22. It has been assigned D001 for the current fen survey. Grindstone Lake is a large pool surrounded by fen margins. The pool supports nice populations of *Menyanthes trifoliata* and *Sparganium angustifolium* and many salamanders! The fen border is narrower on the west side. There is minimal terracing on the southeast side that becomes more pronounced on the south end.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (ie. not *italicized*) are in the immediate area of the fen, but not growing on the peat.

Acomastylis rossii
Bistorta bistortoides
Bistorta vivipara
Calamagrostis canadensis
Cardamine cordifolia
Carex aquatilis
Carex poss. *canescens*
Carex illota
Carex limosa (poss)
Carex microglochin
Carex nigricans
Carex nova
Carex praeceptorum
Carex saxatilis
Carex scopulorum
Carex utriculata
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora
Epilobium sp.
Erigeron sp.
Eriophorum angustifolium
Erythronium grandiflorum
Juncus mertensianus

Limnorchis saccata
Maianthemum stellatum
Menyanthes trifoliata
Micranthes odontoloma
Oxyopolis fendleri
Packera dimorphophylla
Pedicularis groenlandica
(*Pedicularis groenlandica* – white flowers)
Phleum commutatum
Pneumonthe parryi
Podagrostis thurberiana
Potentilla sp.
Psychrophila leptosepala
Ranunculus alismifolius
Senecio triangularis
Sparganium angustifolium
Spiranthes romanzoffiana
Streptopus fassetti
Swertia perennis
Vaccinium myrtillus
Veratrum tenuipetalum
Veronica nutans
Viola sp.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D002

Previous fen number: PL23 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: southwest of Hillside Drive, immediately southeast of
Fen D001/Grindstone Lake

Centerpoint: 12 S, 760298E, 4156774N

Elevation: 11,090 feet

Date surveyed: 7-12-06; also 11-16-99, 8-26-00, 9-1-01

Surveyor: Marian Rohman



Fen D002: looking northwest.

Total number of species observed in the fen: 29

Additional species observed: 3

Plants of particular interest: *Eriophorum altaicum*, known from this fen in 2000, was not seen in 2006.

Dominant species: *Carex illota*, *Carex aquatilis*, *Psychrophila leptosepala*, *Pedicularis groenlandica*

Comments: Fen D002 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL23. It has been assigned D002 for the current fen survey. It is a large fen with well-developed terracing, especially at the south end. In 2000, there was no observable damage in the fen although cow pies were present on the east side. In 2006, some of the strings were noticeably damaged. During the 2000 survey, 30 – 50 plants of *Eriophorum altaicum* were observed in a fairly small area on the southeast side of the fen. These plants were observed again in 2001. During the 2006 survey, no plants of this rare species were observed, even though *Eriophorum angustifolium* was in full fruit. Since this most recent survey was approx. one month earlier than in previous years, perhaps the *E. altaicum* fruits later in the season than the *E. angustifolium*.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

Bistorta vivipara
Calamagrostis canadensis
Cardamine cordifolia
Carex sp. (single spike)
Carex aquatilis
Carex illota
Carex nova
Carex saxatilis
Carex utriculata
Clementsia rhodantha
Deschampsia cespitosa
Eleocharis quinqueflora
Eriophorum angustifolium
Gentianella acuta
(*Ligularia amplexans*)
Packera dimorphophylla

Parnassia fimbriata
(*Pedicularis bracteosa*)
Pedicularis groenlandica
Phleum commutatum
poss. *Podagrostis thurberiana*
Podistera eastwoodiae
Psychrophila leptosepala
Salix planifolia
Senecio triangularis
Spiranthes romanzoffiana
(*Streptopus fassettii*)
Swertia perennis
Trisetum wolfii
Vaccinium myrtillus
Veratrum tenuipetalum



Fen D002: *Eriophorum altaicum*.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D003

Previous fen number: PL21 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: southwest of Hillside Drive, northwest of Fen D001/Grindstone Lake and
between it and Fen MR16

Date surveyed: 11-16-99, 7-26-00 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 19

Dominant species: not noted

Comments: Fen D003 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL21. It has been assigned D003 for the current fen survey. This is a medium size fen with minimal terracing. There is a large pool at the northwest end and a smaller one at the southeast end. The southeast pool has a deep center surrounded by shallow rings. There are several downed trees from earlier logging. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Carex aquatilis

Carex illota

Carex lenticularis

Carex magellanica

Carex prob. *nigricans*

Carex nova

Carex praeceptorum

Carex saxatilis

Clementsia rhodantha

Deschampsia cespitosa

Eriophorum angustifolium

Juncus drummondii

Juncus mertensianus

Menyanthes trifoliata

Oxypolis fendleri

Pedicularis groenlandica

Sparganium angustifolium

Swertia perennis

Veronica nutans

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D004

Previous fen number: PL5 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: immediately west of Hillside Drive, northwest of Fen D001/Grindstone Lake
and east of Fens D011 and D012

Date surveyed: 7-10-99, 7-2-00 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 15

Additional species observed: 1

Dominant species: not noted

Comments: Fen D004 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL5. It has been assigned D004 for the current fen survey. It is a small – medium size fen with moderately well-developed terraces. There are a lot of down trees in the fen from previous logging activities. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. All identifications were done in the field.

Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

Cardamine cordifolia

Carex aquatilis

Carex nova

Carex prob. *praeceptorum*

Carex saxatilis

Castilleja rhexifolia

Clementsia rhodantha

prob. *Deschampsia cespitosa*

Distegia involucrata

Pedicularis groenlandica

Psychrophila leptosepala

Ranunculus alismifolius

Senecio triangularis

(*Vaccinium myrtillus*)

Veratrum tenuipetalum

Viola macloskeyi ssp. *pallens*

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen numbers: D005 & D009

Probable previous fen number: PL11 (assigned during the 1999 – 2001 fen study; it was not revisited to determine if this should be one or two fens)

General area: Grindstone Lake

Location: southwest of Hillside Drive, northeast of Fen D001/Grindstone Lake and south-southeast of Fen D004

Date surveyed: 11-16-99

Surveyor: Marian Rohman

Total number of species observed in the fen: 2

Dominant species: not noted

Comments: Fens D005 and D009 were originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time they were probably treated as one fen and assigned PL11. They have been assigned D011 and D012 for the current fen survey. PL11 is a small fen with some moderately well-developed terraces and a small pool.. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. All identifications were done in the field.

This is not a complete survey.

prob. *Deschampsia cespitosa*
Pedicularis groenlandica

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D008

Previous fen number: PL3 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: west of Hillside Drive, north-northwest of Fen D001/Grindstone Lake and
north of Fen D010

Date surveyed: 6-27-99, 8-14-99 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 21

Additional species observed: 2

Dominant species: not noted

Comments: Fen D008 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL3. It has been assigned D008 for the current fen survey. It is a small fen with well-developed terraces on the west side and minimal terracing in the rest of the fen. There is a small pool containing *Menyanthes trifoliata*. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in parentheses may not have been growing on the peat, but my notes are incomplete.

Bistorta bistortoides

Carex aquatilis

Carex ebenea

Carex illota

Carex limosa

Carex nova

Carex praeceptorum

Carex utriculata

Clementsia rhodantha

Deschampsia cespitosa

Eriophorum angustifolium

(*Fragaria virginiana*)

Menyanthes trifoliata

(*Oreochrysum parryi*)

Oxypolis fendleri

Packera dimorphophylla

Pedicularis groenlandica

Phleum commutatum

Psychrophila leptophylla

Swertia perennis

Veratrum tenuipetalum

Veronica nutans

Viola macloskeyi ssp. pallens

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D010

Previous fen number: PL19 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: southwest of Hillside Drive, northwest of Fen D001/Grindstone Lake and south
of Fen D005

Date surveyed: 11-16-99, 7-26-00 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 20

Additional species observed: 3

Dominant species: not noted

Comments: Fen D010 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL19. It has been assigned D010 for the current fen survey. This is a small fen with minimal terracing. Fens D010 and MR16 are separated by a poorly defined wetland with scattered spruce. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in parentheses may not have been growing on the peat, but my notes are incomplete

Bistorta bistortoides

Carex aquatilis

Carex illota

Carex prob. *praeceptorum*

Carex saxatilis

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

(*Dugaldia hoopesii*)

Epilobium sp.

(*Erigeron* prob. *peregrinus*)

Eriophorum angustifolium

(*Micranthes odontoloma*)

Oxypolis fendleri

Packera dimorphophylla

Pedicularis groenlandica

Phleum commutatum

Poa pratensis

Psychrophila leptosepala

Senecio triangularis

Swertia perennis

Veratrum tenuipetalum

Viola prob. *macloskeyi* ssp. *pallens*

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen numbers: D011 & D012

Probable previous fen number: PL6 (assigned during the 1999 – 2001 fen study; it was
not revisited to determine if it should be one or two fens)

General area: Grindstone Lake

Location: southwest of Hillside Drive, northwest of Fen D001/Grindstone Lake and west
of Fen D004

Date surveyed: 7-10-99, 11-16-99 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 12

Additional species observed: 4

Dominant species: not noted

Comments: Fens D011 and D012 were originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time they were probably treated as one fen and assigned PL6. They have been assigned D011 and D012 for the current fen survey. PL6 is a medium size fen with minimal terracing. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. All identifications were done in the field.

Species listed in parentheses may not have been growing on the peat, but my notes are incomplete.

(*Achillea lanulosa*)
(*Acomastylis rossii*)
Bistorta bistortoides
Clementsia rhodantha
prob. *Deschampsia cespitosa*
Equisetum arvense
Eriophorum angustifolium
(*Erythronium grandiflorum*)
Juncus sp.
Packera dimorphophylla
Pedicularis groenlandica
Psychrophila leptosepala
Ranunculus alismifolius

(Vaccinium myrtillus)
Veratrum tenuipetalum
Viola adunca

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D013

Previous fen number: PL1 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: bordering southwest side of Hillside Drive, northwest of D001/Grindstone
Lake

Date surveyed: 8-21-06; also 6-27-99, 8-14-99, 7-26-00, 8-18-01, 9-1-01,

Surveyor: Marian Rohman

Total number of species observed in the fen: 46

Additional species observed: 12

Dominant species: *Carex aquatilis*, *Eleocharis quinqueflora* and *Carex aquatilis* in the flarks

Comments: Fen D013 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL1. It has been assigned D013 for the current fen survey. It is a medium size fen with well-developed terraces. A cow was observed in the fen on 8-14-99. There is a high density of *Eriophorum angustifolium* in the northwest end. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (ie. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and also in parentheses may not have been growing on the peat, but my notes are incomplete.

Acomastylis rossii

Allium geyeri

Bistorta bistortoides

Calamagrostis canadensis

(*Campanula rotundifolia*)

Cardamine cordifolia

Carex angustior

Carex aquatilis

Carex ebenea

Carex illota

Carex magellanica

Carex microglochin

Carex nova

Carex praeceptorum

Carex saxatilis

Carex utriculata

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Distegia involucrata

Eleocharis quinqueflora

Epilobium prob. *hornemannii*

Erigeron sp.
Eriophorum angustifolium
(*Erythronium grandiflorum*)
(*Fragaria virginiana*)
Gentianella acuta
Iris missouriensis
Juncus mertensianus
Limnorchis saccata
Luzula parviflora
(*Mertensia* sp.)
(*Noccaea montana*)
Oxypolis fendleri
Packera dimorphophylla
Pedicularis groenlandica
(*Pedicularis racemosa*)
Phleum commutatum
Pneumonthe parryi
Podagrostis thurberiana

(*Polemonium pulcherrimum*)
Primula parryi
Pseudocymopterus montanus
Psychrophila leptosepala
(*Pyrola minor*)
Ranunculus alismifolius
(*Ribes* sp.)
Scirpus sp.
Senecio triangularis
Sibbaldia procumbens
Spiranthes romanzoffiana
(*Streptopus fassetti*)
Swertia perennis
Trollius albiflorus
(*Vaccinium myrtillus*)
Veratrum tenuipetalum
Viola adunca
Viola macloskeyi ssp. *pallens*

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen numbers: D014 & D015

Probable previous fen number: PL17 (assigned during the 1999 – 2001 fen study; it was not revisited to determine if it should be one or two fens)

General area: Grindstone Lake

Location: south of Hillside Drive, northwest of Fen D001/Grindstone Lake and southeast of D016

Date surveyed: 11-16-99, 7-26-00

Surveyor: Marian Rohman

Total number of species observed in the fen: 17

Additional species observed: 1

Dominant species: not noted

Comments: Fens D014 and D015 were originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time they were probably treated as one fen and assigned PL17. They have been assigned D014 and D015 for the current fen survey. PL17 is a large fen with minimal terracing and one extended shallow pool. There is abundant *Menyanthes trifoliata* growing around the pool. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type are in the immediate area of the fen, but not growing on the peat. Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

(*Aconitum columbianum*)

Carex prob. *angustior*

Carex *nova*

Carex prob. *praeceptorum*

Carex* poss. *saxatilis

Carex* poss. *utriculata

Clementsia *rhodantha*

Deschampsia *cespitosa*

Epilobium sp.

Eriophorum *angustifolium*

Juncus *mertensianus*

Menyanthes *trifoliata*

Oxypolis *fendleri*

Pedicularis *groenlandica*

Senecio *triangularis*

Spiranthes *romanzoffiana*

Swertia *perennis*

Veratrum *tenuipetalum*

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D016

Previous fen number: PL16 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: south of Hillside Drive, northwest of Fen D001/Grindstone Lake and northwest
of Fen D013

Date surveyed: 11-16-99, 7-26-00 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 22

Additional species observed: 3

Dominant species: not noted

Comments: Fen D016 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL16. It has been assigned D016 for the current fen survey. It is a large fen with well-developed terraces and a shallow pool with a small deep center. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

Calamagrostis canadensis

Cardamine cordifolia

Carex prob. *angustior*

Carex aquatilis

Carex buxbaumii

Carex magellanica

Carex praeceptorum

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

(*Dugaldia hoopesii*)

Eleocharis quinqueflora

(*Erigeron* prob. *peregrinus*)

Eriophorum angustifolium

(*Fragaria virginiana*)

Juncus mertensianus

Menyanthes trifoliata

Oxypolis fendleri

Pedicularis groenlandica

***Potentilla* sp.**

Ranunculus alismifolius

Senecio triangularis

Swertia perennis

Veratrum tenuipetalum

Veronica nutans

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D017

Previous fen number: PL4 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: south of Hillside Drive, northwest of Fen D001/Grindstone Lake and southeast of Fen D175

Date surveyed: 7-10-99, 8-14-99, 7-19-00, 7-26-00, 8-18-01, 9-1-01 (not revisited in 2006)

Surveyor: Marian Rohman



Fen D017: *Carex echinata*.

Total number of species observed in the fen: 48

Additional species observed: 10

Plants of particular interest: *Utricularia minor*

Dominant species: not noted

Comments: Fen D017 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL47. It has been assigned D017 for the current fen survey. It is a large fen with shallow terraces. There is a pool supporting

Menyanthes trifoliata. *Utricularia minor* was in full bloom on the 7-19-00 visit. (No photograph taken.)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and also in parentheses may not have been growing on the peat, but my notes are incomplete.

Agrostis scabra

Allium geyeri

Arnica cordifolia

Arnica mollis

prob. *Bistorta bistortoides*

Bistorta vivipara

Calamagrostis canadensis

Cardamine cordifolia

Carex angustior

Carex aquatilis

Carex canescens

Carex ebenea

Carex illota

Carex limosa

Carex magellanica

Carex nova

Carex praeceptorum

Carex saxatilis

Carex utriculata

Castilleja rhexifolia

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Distegia involucrata

Eleocharis quinqueflora

Epilobium anagallidifolium

(*Erigeron peregrinus*)

Eriophorum angustifolium

Erythronium grandiflorum

Gentianella acuta

Juncus sp.

Limnorchis saccata

Listera cordata

Maianthemum stellatum

Menyanthes trifoliata

(*Micranthes odontoloma*)

(*Mitella pentandra*)

(*Nocca montana*)

Oxypolis fendleri

Pedicularis groenlandica

Pedicularis racemosa

Pneumonanthe parryi

Primula parryi

Pseudocymopterus montanus

Psychrophila leptophylla

Salix planifolia

Senecio triangularis

Sparganium angustifolium

Spiranthes romanzoffiana

(*Streptopus fassettii*)

Swertia perennis

Utricularia minor

(*Vaccinium myrtillus*)

Veratrum tenuipetalum

Veronica nutans

Viola adunca

Viola macloskeyi* ssp. *pallens



Fen D017: *Listera cordata*.



Fen D017: *Carex nova*.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D018

Previous fen number: PL14 (assigned in the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: south of Hillside Drive, southeast of Fen D001/Grindstone Lake and northeast
of Fen D019

Date surveyed: 8-21-99, 9-1-01

Surveyor: Marian Rohman



Fen D018.

Total number of species observed in the fen: 33

Additional species observed: 6

Dominant species: not noted

Comments: Fen D018 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL14. It has been assigned D018 for the current fen survey. This is a moderate size fen with well developed terraces.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

(*Aconitum columbianum*)

(***Arnica mollis***)

Bistorta bistortoides

Calamagrostis canadensis

Cardamine cordifolia

Carex aquatilis

Carex atosquama

Carex ebenea

Carex saxatilis

Carex utriculata

Castilleja rhexifolia

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Distegia involucrata

prob. *Dugaldia hoopesii*

Eleocharis quinqueflora

Epilobium prob. *hornemannii*

Erigeron sp.

Eriophorum angustifolium

Gentianella acuta

Gentianopsis thermalis

Juncus mertensianus

(*Micranthes odontoloma*)

(***Orthilia secunda***)

Oxypolis fendleri

Packera dimorphophylla

Pedicularis groenlandica

Phleum commutatum

Primula parryi

Psychrophila leptophylla

Ranunculus alismifolius

Senecio triangularis

(*Streptopus fassettii*)

Swertia perennis

Trifolium parryi

(*Vaccinium myrtillus*)

Veratrum tenuipetalum

Veronica nutans



Pneumonanthe parryi

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D019

Previous fen number: PL13 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: southwest of Hillside Drive, southeast of Fen D001/Grindstone Lake and
southwest of Fen D018

Date surveyed: 8-21-99, 9-1-01

Surveyor: Marian Rohman

Total number of species observed in the fen: 33

Additional species observed: 7

Dominant species: not noted

Comments: Fen D019 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL13. It has been assigned D019 for the current fen survey. It is a large fen with broad terraces. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

(*Aconitum columbianum*)

Erythronium grandiflorum

Agrostis scabra

Gentianella acuta

Bistorta bistortoides

Juncus mertensianus.

Calamagrostis canadensis

Luzula parviflora

Cardamine cordifolia

(*Micranthes odontoloma*)

Carex aquatilis

(*Mitella pentandra*)

Carex illota

Oxypolis fendleri

Carex nova

Packera dimorphophylla

Carex praeceptorum

Pedicularis groenlandica

Carex saxatilis

Phleum commutatum

Carex utriculata

Psychrophila leptophylla

Castilleja rhexifolia

(*Pyrola minor*)

Clementsia rhodantha

Ranunculus alismifolius

Conioselinum scopulorum

Senecio triangularis

Deschampsia cespitosa

Spiranthes romanzoffiana

Eleocharis quinqueflora

(*Streptopus fassettii*)

Epilobium anagallidifolium

Swertia perennis

Epilobium prob. hornemannii

(*Vaccinium myrtillus*)

(*Erigeron peregrinus*

Veratrum tenuipetalum

Eriophorum angustifolium

Viola prob. macloskeyi ssp. pallens

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D020

Previous fen number: PL12 (assigned during the 1999 – fen 2001 study)

General area: Grindstone Lake

Location: south of east end of Hillside Drive, southeast of Fen D001/Grindstone Lake,
northwest of Fen D027

Date surveyed: 7-12-06; also 8-21-99, 7-19-00

Surveyor: Marian Rohman

Total number of species observed in the fen: 33

Additional species observed: 2

Dominant species: *Carex illota*, *Carex aquatilis*, *Eleocharis quinqueflora*

Comments: Fen D020 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL12. It has been assigned D020 for the current fen survey. It is a large flooded fen with well-developed terraces. Logs have been placed along the strings to stabilize them after damage from cow traffic in the fen. They are working well. The northwest end has a higher density of forbs. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and parentheses may not have been growing on the peat, but my notes are incomplete.

Achillea lanulosa

Bistorta bistortoides

Calamagrostis canadensis

Carex aquatilis

Carex ebenea

Carex illota

Carex nigricans

Carex nova

Carex praeceptorum

Carex saxatilis

Carex utriculata

Castilleja rhexifolia

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Eleocharis quinqueflora

Epilobium anagallidifolium

Epilobium prob. *hornemannii*

Erigeron sp.

Eriophorum angustifolium

Gentianella acuta
Juncus sp.
Oxyopolis fendleri
Packera dimorphophylla
Pedicularis groenlandica
Phleum commutatum
Psychrophila leptosepala
Ranunculus alismifolius

Salix planifolia
Spiranthes romanzoffiana
(*Streptopus fassetti*)
Swertia perennis
(*Vaccinium myrtillus*)
Veratrum tenuipetalum
Viola prob. *adunca*

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D021

Previous fen number: PL28 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: southwest of the east end of Hillside Drive, southeast of Fen D001/Grindstone
Lake and west of Fen D022

Date surveyed: 77-2-00 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 24

Additional species observed: 13

Dominant species: not noted

Comments: Fen D021 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL28. It has been assigned D021 for the current fen survey. It is a long curving fen. The south limb has many small terraces and several small pools. The north limb has a large pool with *Menyanthes trifoliata*. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and also in parentheses may not have been growing on the peat, but my notes are incomplete.

(*Acomastylis rossii*)

(*Aconitum columbianum*)

Bistorta bistortoides

Cardamine cordifolia

Carex disperma

Carex illota

Carex nova

Castilleja rhexifolia

Clementsia rhodantha

poss. *Conioselinum scopulorum*

Distegia involucrata

Eriophorum angustifolium

(*Erythronium grandiflorum*)

Juncus mertensianus

Limnorchis saccata

(*Listera cordata*)

Lloydia serotina

Menyanthes trifoliata

(*Micranthes odontoloma*)

(*Mitella pentandra*)

(prob. *Noccaea montana*)

Oxypolis fendleri

Packera dimorphophylla

(*Pedicularis bracteosa*)

Pedicularis groenlandica

(*Pedicularis racemosa*)

Primula parryi

Pseudocymopterus montanus

Psychrophila leptophylla

Ranunculus alismifolius

Senecio triangularis

(*Streptopus fassettii*)

(*Trollius albiflorus*)

Vaccinium myrtillus

Veratrum tenuipetalum

Viola adunca

Viola macloskeyi ssp. *pallens*

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D022

Previous fen number: PL27 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: south of east end of Hillside Drive, southeast of Fen D001/Grindstone Lake

Date surveyed: 7-12-06; also 11-16-99, 8-26-00, 9-1-01

Surveyor: Marian Rohman

Total number of species observed in the fen: 38

Additional species observed: 13

Dominant species: *Carex illota*, especially in central area, *Psychrophila leptosepala* throughout, *Eleocharis quinqueflora* in north section, *Carex aquatilis* and *Pedicularis groenlandica* in south, *Carex utriculata* bordering north pool

Comments: Fen D022 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL27. It has been assigned D022 for the current fen survey. It is a large fen that is partially divided by an archipelago of spruce "islands". The southern section is higher than the northern section. There is well-developed terracing in both areas with an area of subsidence in the lower section. There is a small pool of open water in each section. The pool in the upper section measures 10 feet x 4 feet and is bordered with *Carex aquatilis*. The pool in the lower section is somewhat larger and is bordered by *Carex utriculata*. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and parentheses may not have been growing on the peat, but my notes are incomplete.

Acomastylis rossii
(*Aconitum columbianum*)
Allium geyeri
(*Aquilegia coerulea*)
Bistorta bistortoides
Cardamine cordifolia
Carex angustior

Carex aquatilis
Carex ebenea
Carex illota
Carex nigricans
Carex nova
Carex praeceptorum
Carex saxatilis

Carex utriculata

Castilleja rhexifolia

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Draba spectabilis

Eleocharis quinqueflora

Epilobium prob. *hornemannii*

(*Erigeron melanocephalus*)

Juncus drummondii

Juncus mertensianus

Lloydia serotina

(*Micranthes odontoloma*)

(*Noccaea montana*)

(*Oreobroma pygmaea*)

Oxyopolis fendleri

Packera dimorphophylla

Pedicularis groenlandica

Phleum commutatum

Poa alpina

Podistera eastwoodiae

(*Polemonium pulcherrimum*)

Primula parryi

Pseudocymopterus montanus

Psychrophila leptosepala

Ranunculus alismifolius

Salix planifolia

Senecio triangularis

Stellaria sp.

(*Streptopus fassettii*)

Taraxacum officinalis

(*Trollius albiflorus*)

(*Vaccinium myrtillus*)

(*Valeriana capitata*)

(*Valeriana edulis*)

Veratrum tenuipetalum

Viola adunca

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D025

Previous fen number: PL7 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: northeast of Hillside Drive, north of Fen D001/Grindstone Lake and northwest of Fen D027

Date surveyed: 7-25-99, 7-19-00 (not visited in 2006)

Surveyor: Marian Rohman



Fen D025.

Total number of species observed in the fen: 37

Additional species observed: 10

Plants of particular interest: *Utricularia minor*

Dominant species: not noted

Comments: Fen D025 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL7. It has been assigned D025 for the current fen survey. It is a large fen with many well-defined terraces and several

pools. *Utricularia minor* was present in one of the pools. At the time of observation, this was probably the first sighting of this species on the West Slope.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and also in parentheses may not have been growing on the peat, but my notes are incomplete.

(*Acomastylis rossii*)

Agrostis scabra

Allium geyeri

Bistorta bistortoides

Cardamine cordifolia

Carex prob. *angustior*

Carex aquatilis

Carex limosa

Carex magellanica

Carex microglochin

Carex praeceptorum

Carex poss. *utriculata*

Castilleja rhexifolia

Clementsia rhodantha

Deschampsia cespitosa

(*Dugaldia hoopesii*)

Eleocharis quinqueflora

Epilobium anagallidifolium

Epilobium hornemannii

Erigeron sp.

Eriophorum angustifolium

Juncus drummondii

Listera cordata

Luzula parviflora

(*Micranthes odontoloma*)

(*Mitella pentandra*)

Oxypolis fendleri

Pedicularis bracteosa

Pedicularis groenlandica

Pedicularis racemosa

Phleum commutatum

Primula parryi

Pseudocymopterus montanus

Psychrophila leptosepala

(*Pyrola minor*)

Ranunculus alismifolius

Salix planifolia

Senecio triangularis

(*Streptopus fassettii*)

Swertia perennis

Trifolium brandegei

Utricularia minor

(*Vaccinium myrtillus*)

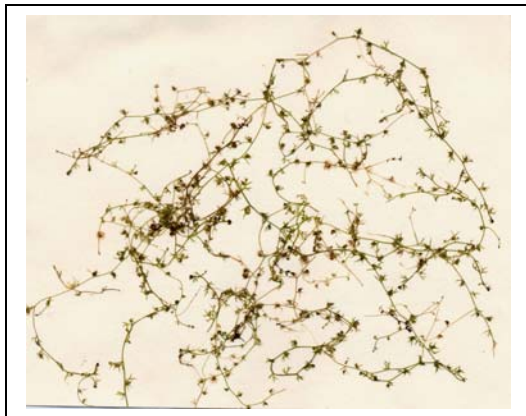
(*Valeriana edulis*)

Veratrum tenuipetalum

Veronica nutans

Viola adunca

Viola macloskeyi ssp. *pallens*



Utricularia minor specimen

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D026

Previous fen number: PL30 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: northeast of Hillside Drive, northeast of Fen D001/Grindstone Lake and north
of Fen D027

Date surveyed: 7-2-00, 8-18-01 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 21

Additional species observed: 3

Dominant species: not noted

Comments: Fen D026 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL30. It has been assigned D026 for the current fen survey. It is a small – medium size fen with minimal terracing. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Wes
Ronald C. Wittman. Identifications for species
collections. All others are based on field identifications.

Species listed in plain type are in the immediate area of the fen, but not growing on the peat. Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

Allium geyeri

Bistorta bistortoides

Calamagrostis canadensis

Carex prob. *aquatilis*

Carex canescens

Carex illota

Carex limosa

Carex praeceptorum

Castilleja rhexifolia

Clementsia rhodantha

prob. *Deschampsia cespitosa*

Eriophorum angustifolium

Juncus mertensianus

Packera dimorphophylla

Phleum commutatum

Psychrophila leptosepala

Ranunculus alismifolius

Senecio triangularis

(*Streptopus fassettii*)
(*Trollius albiflorus*)
(*Vaccinium myrtillus*)

Veratrum tenuipetalum
Veronica nutans
Viola adunca

Fen Botanical Survey San Juan National Forest

District: Dolores

Fen number: D027

Previous fen number: PL8 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: northeast of Hillside Drive, northeast of Fen D001/Grindstone Lake and
southeast of Fen D025

Date surveyed: 7-25-99 (not visited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 32

Additional species observed: 9

Dominant species: not noted

Comments: Fen D027 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL8. It has been assigned D027 for the current fen survey. It is a large fen. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and also in parentheses may not have been growing on the peat, but my notes are incomplete.

(*Achillea lanulosa*)
(*Acomastylis rossii*)
Allium geyeri
Anticlea elegans
Bistorta bistortoides
Cardamine cordifolia
Castilleja rhexifolia
Clementsia rhodantha
(*Dugaldia hoopesii*)

Epilobium anagallidifolium
Epilobium hornemanii
Erigeron sp.
Eriophorum angustifolium
Juncus sp.
Listera cordata
Luzula parviflora
(*Mertensia* sp.)
(*Micranthes odontoloma*)

(*Mitella pentandra*)
Mitella stauropetala
Oxyopis fendleri
Packera dimorphophylla
Pedicularis bracteosa
Pedicularis groenlandica
Pedicularis racemosa
Phleum commutatum
(*Polemonium pulcherrimum*)
Primula parryi
Psychrophila leptosepala
(*Pyrola minor*)

Ranunculus alismifolius
Salix planifolia
Senecio triangularis
(*Streptopus fassettii*)
Swertia perennis
Taraxacum officinalis
(*Vaccinium myrtillus*)
Veratrum tenuipetalum
Veronica nutans
Viola adunca
Viola macloskeyi

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D039

General area: Bolam Pass

Location: immediately south of Barlow Creek Road (FS578),
well west and slightly north of Bolam Pass, west of Fen D040

Elevation: 11,376

Date surveyed: 8-17-06

Surveyor: Marian Rohman



Fen D039: looking north-northwest across terraces to the pool of open water in the center of the photograph

Total number of species observed in the fen: 24

Dominant species: *Carex aquatilis*, especially in the flarks, *C. utriculata* in the flarks, *Deschampsia cespitosa* on the strings.

Comments: D039 is a large fen with three sets of broad well-developed terraces running from the south down to the north. There is a pool of open water on the north edge with many plants of *Potamogeton pusillus*, some in fruit.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*I was unable to differentiate between *Podagrostis thurberiana* and *Agrostis scabra* in the field. Specimens collected at other fens in the Bolam Pass area keyed to *Podagrostis thurberiana* in the lab.

Bistorta bistortoides
Calamagrostis canadensis
Carex aquatilis
Carex illota
Carex nova
Carex praeceptorum
Carex saxatilis
Carex utriculata
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora

Epilobium hornemannii
Packera dimorphylla
Pedicularis groenlandica
Phleum commutatum
prob. *Podagrostis thurberiana* *
Podistera eastwoodiae
Potamogeton pusillus
Psychrophila leptosepala
Salix planifolia
Swertia perennis
Veronica nutans
Viola sp.



Fen D039: Pool of open water on north edge of fen; note Barlow Creek Road in the background on the left.



Fen D039: *Potamogeton pusillus* in the pool.



Fen D039: *Potamogeton pusillus* specimen.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D040

General area: Bolam Pass

Location: immediately south of Barlow Creek Road (FS578),
well west and slightly north of Bolam Pass, east of Fen D039

Elevation: 11,354 feet

Date surveyed: 8-17-06

Surveyor: Marian Rohman



Fen D040: looking north-northeast with the San Miguel Mountains in the background.

Total number of species observed in the fen: 23

Dominant species: *Carex aquatilis*, *Deschampsia cespitosa*, especially on the strings,
Psychrophila leptosepala, *Eleocharis quinqueflora* in the flarks,

Comments: Fen D040 is a large fen with a mix of both broad and narrow terraces. The flarks were shallow and wet. Some of the broader strings were quite dry. *Salix planifolia* grows on the southwest side

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

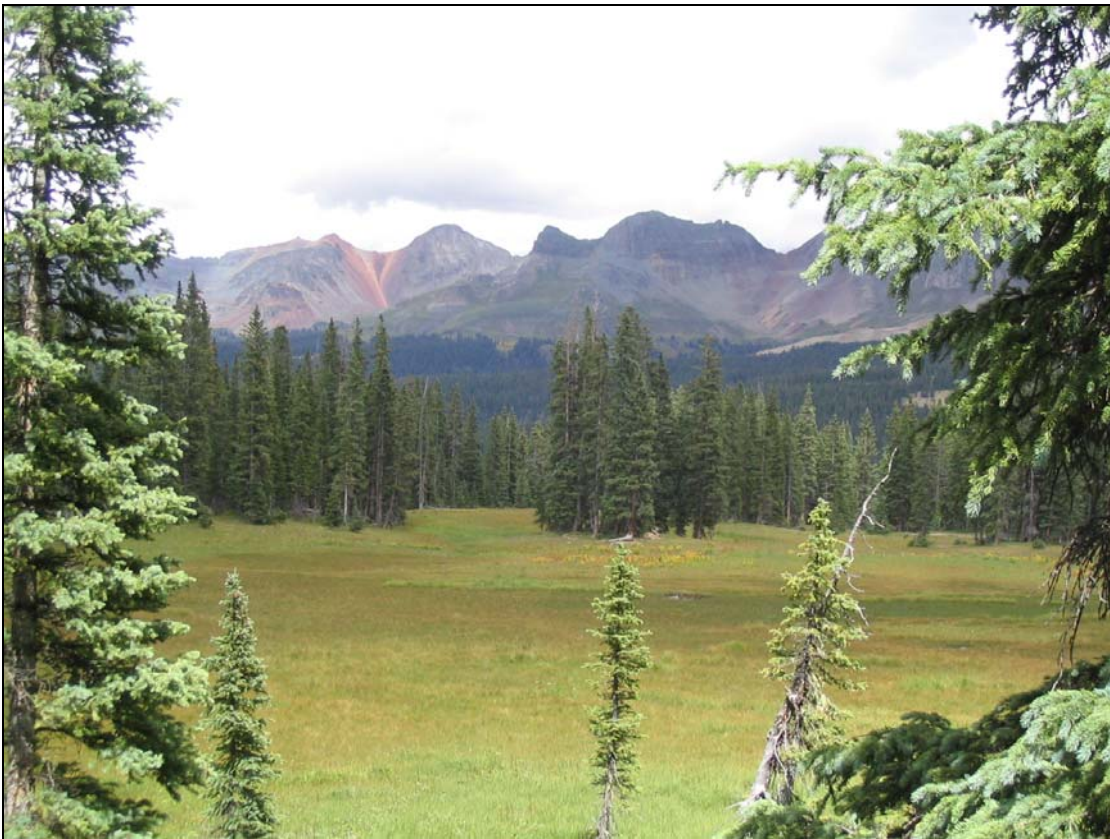
<i>Allium geyeri</i>	<i>Eleocharis quinqueflora</i>
<i>Bistorta bistortoides</i>	<i>Packera dimorphylla</i>
<i>Calamagrostis canadensis</i>	<i>Pedicularis groenlandica</i>
<i>Carex aquatilis</i>	<i>Phleum commutatum</i>
<i>Carex atosquama</i>	<i>Podistera eastwoodiae</i>
<i>Carex illota</i>	<i>Psychrophila leptosepala</i>
<i>Carex magellanica</i>	<i>Salix planifolia</i>
<i>Carex nova</i>	<i>Spiranthes romanzoffiana</i>
<i>Carex saxatilis</i>	<i>Swertia perennis</i>
<i>Clementsia rhodantha</i>	<i>Veratrum tenuipetalum</i>
<i>Conioselinum scopulorum</i>	<i>Viola</i> sp.
<i>Deschampsia cespitosa</i>	

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**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D041
General area: Bolam Pass
Location: north of Barlow Creek Road (FS578), well west
and slightly north of Bolam Pass
Elevation: 11,239 feet
Date surveyed: 8-17-06
Surveyor: Marian Rohman



Fen D041: looking north-northeast with the San Miguel Mountains in the background.

Total number of species observed in the fen: 23

Dominant species: *Carex aquatilis*, *Eleocharis quinqueflora*, especially in the flarks

Comments: Fen D041 is a large fen with a small area of open water with a muddy border in the center. The terraces are well-developed with flooded flarks.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*I was unable to differentiate between *Podagrostis thurberiana* and *Agrostis scabra* in the field. Specimens collected at other fens in the Bolam Pass area keyed to *Podagrostis thurberiana* in the lab.

Allium geyeri
Bistorta bistortoides
Calamagrostis canadensis
Carex aquatilis
Carex atosquama
Carex illota
Carex nova
Carex saxatilis
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora

Epilobium hornemannii
Eriophorum angustifolium
Packera dimorphylla
Pedicularis groenlandica
Phleum commutatum
prob. *Podagrostis thurberiana* *
Psychrophila leptosepala
Salix planifolia
Spiranthes romanzoffiana
Swertia perennis
Viola sp.



Fen D041: looking west showing well-developed terraces.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D045
General area: Bolam Pass
Location: south of Barlow Creek Road (FS578),
well west and slightly north of Bolam Pass, west of Fen D046
Elevation: 11,320 feet
Date surveyed: 8-17-06
Surveyor: Marian Rohman

Total number of species observed in the fen: 19

Dominant species: *Eleocharis quinqueflora*, *Carex aquatilis*, *Carex saxatilis*

Comments: D045 is a small fen with well-developed terraces. *Salix planifolia* is present both on the edges and along the strings. (No photograph was taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*Collected specimens keyed to *Carex atosquama*, a sedge quite similar in appearance to *Carex nova*. Some of the sedges that I called *Carex nova* in the field probably are this more common sedge.

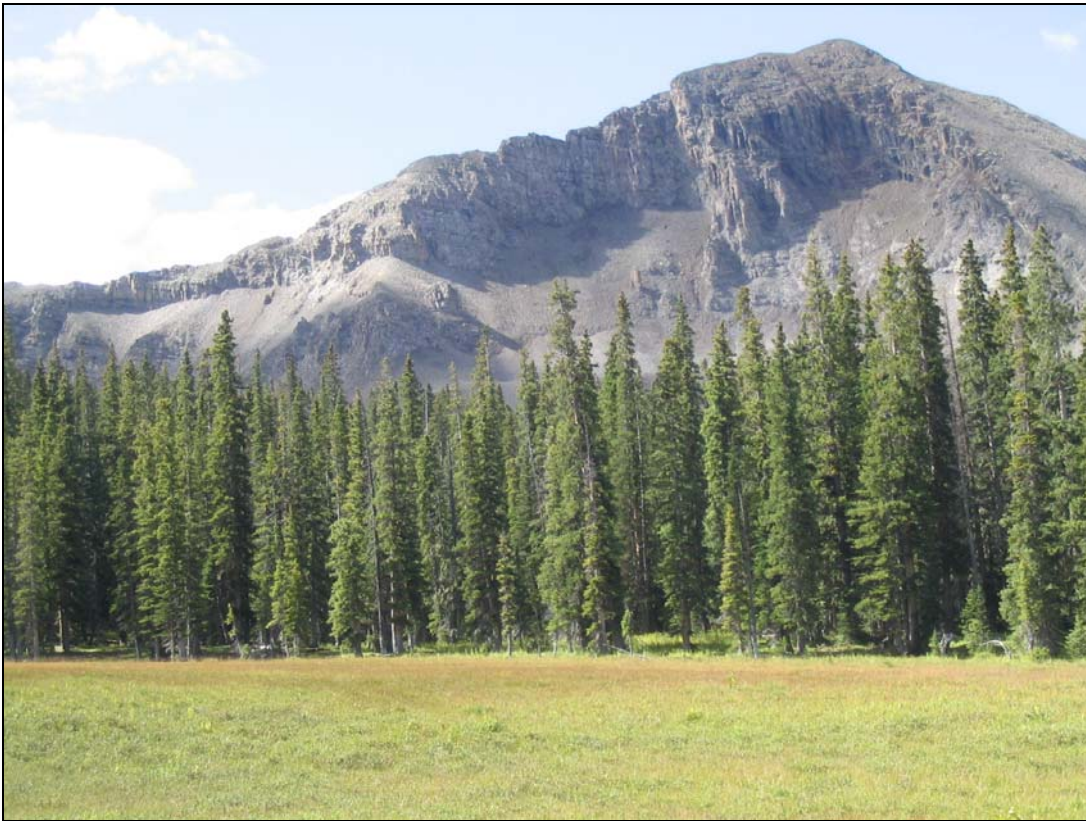
**I was unable to differentiate between *Podagrostis thurberiana* and *Agrostis scabra* in the field. Specimens collected at other fens in the Bolam Pass area keyed to *Podagrostis thurberiana* in the lab.

Calamagrostis canadensis
Carex aquatilis
Carex atosquama
Carex illota
Carex prob. *nova* *
Carex praeceptorum
Carex saxatilis
Carex utriculata
Conioselinum scopulorum
Deschampsia cespitosa

Eleocharis quinqueflora
Gentianopsis thermalis
Oxypolis fendleri
Parnassia fimbriata
Pedicularis groenlandica
prob. *Podagrostis thurberiana* **
Psychrophila leptosepala
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Swe

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D046
General area: Bolam Pass
Location: south of Barlow Creek Road (FS578),
well west and slightly north of Bolam Pass, east of Fen D045
Centerpoint: 13 S, 242123E, 4178989N
Elevation: 11,382 feet
Date surveyed: 8-17-06
Surveyor: Marian Rohman



Fen D046: looking south with Hermosa Peak in background.

Total number of species observed in the fen: 28

Dominant species: *Carex aquatilis*, *Eleocharis quinqueflora* especially in flarks

Comments: Fen D046 is a small fen with low terracing along the north and west sides. Almost all of the fen is flooded. There is an area of subsidence at the west end approx.

25 feet in diameter. The *Salix planifolia* is around the edges and the *Veratrum tenuipetalum* is on the northwest edge.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*Collected specimens keyed to *Carex atosquama*, a sedge quite similar in appearance to *Carex nova*. Some of the sedges that I called *Carex nova* in the field probably are this more common sedge.

The probable *Carex saxatilis* and *C. utriculata* in this fen do not fit completely within their defined limits. They appear to have a varying mix of characteristics of the two species. I am currently waiting to verify these identifications with a *Carex* authority and to discuss the possibility of *Carex saxatilis* x *utriculata* hybrids.

**I was unable to differentiate between *Podagrostis thurberiana* and *Agrostis scabra* in the field. Specimens collected at other fens in the Bolam Pass area keyed to *Podagrostis thurberiana* in the lab.

Allium geyeri
Bistorta vivipara
Calamagrostis canadensis
Carex aquatilis
Carex atosquama
Carex ebenea
Carex illota
Carex microglochin
Carex prob. *nova* *
Carex prob. *saxatilis*
Carex prob. *utriculata*
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora

Eriophorum angustifolium
prob. *Gentianopsis thermalis*
Oxyopolis fendleri
Packera dimorphylla
Parnassia fimbriata
Pedicularis groenlandica
Phleum commutatum
prob. *Podagrostis thurberiana* **
Podistera eastwoodiae
Psychrophila leptosepala
Salix planifolia
Spiranthes romanzoffiana
Swertia perennis
Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D101

General area: Lizard Head Pass

Location: north of Hwy 145, west of Lizard Head Pass, northwest of Fen D102

Centerpoint: 13 S, 242049E, 4180410N

Elevation: 10,900 feet

Date surveyed: 7-30-06

Surveyor: Marian Rohman



Fen D101: looking northwest.

Total number of species observed in the fen: 29

Dominant species: *Salix planifolia* and *Deschampsia cespitosa* in east end; *Eleocharis quinqueflora* and *Deschampsia cespitosa* with *Salix planifolia* and *Carex aquatilis* in some areas in west end.

Species of particular interest: *Utricularia intermedia*

Comments: Fen D101 is a large fen. It is somewhat divided into an east half and a west half by an area of denser *Salix planifolia*. The east half is drier and has very few sedges. The moister west half has some minimal terracing with many plants of *Utricularia intermedia* in the wetter areas. *Utricularia intermedia* is new to the West Slope and is probably new to Colorado. There is at least one earlier collection of *Utricularia ochroleuca* on the East Slope that could be this species. It is also found in Fens D102 and D127.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Aconitum columbianum
Allium geyeri
Calamagrostis canadensis
Carex aquatilis
Carex ebenea
Carex norvegica
Carex nova
Carex saxatilis
***Castilleja* sp.**
Castilleja rhexifolia
Clementsia rhodantha
Deschampsia cespitosa
Eleocharis quinqueflora
Epilobium prob. *hornemannii*
Eriophorum angustifolium

Fragaria sp.
Luzula parviflora
Packera dimorphophylla
Pedicularis groenlandica
Phleum commutatum
Podistera eastwoodiae
Potentilla sp.
Psychrophila leptosepala
Salix planifolia
Senecio triangularis
Swertia perennis
Utricularia intermedia
Veratrum tenuipetalum
Veronica nutans



Fen D101: *Utricularia intermedia*.



Fen D101: *Eriophorum angustifolium*.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D102

General area: Lizard Head Pass

Location: north of Hwy 145, northwest of Lizard Head Pass, southeast of Fen D101

Centerpoint: 13 S, 242369E, 4189250N

Elevation: 10,900 feet

Date surveyed: 7-30-06

Surveyor: Marian Rohman



Fen D102: looking east across northeast portion of fen with *Eriophorum angustifolium*.

Total number of species observed in the fen: 47

Species of particular interest: *Utricularia intermedia*

Dominant species: *Carex aquatilis* and *Eleocharis quinqueflora* in general; *Carex utriculata* around the edge of the pool; *Deschampsia cespitosa*, *Eleocharis quinqueflora*, *Salix planifolia*, *Carex microptera*, *Clementsia rhodantha*, and *Swertia perennis* in the drier west end; several microhabitats across the fen with different dominants: *Carex aquatilis* with *Eriophorum angustifolium* in some areas; *Eleocharis quinqueflora* with

Carex aquatilis in some areas; just *Carex aquatilis* in some areas, *Eleocharis quinqueflora* with *Carex nova* in some areas, *Carex praeceptorum* in some areas

Comments: Fen D102 is a large fen with many microhabitats. The west end is drier and supports the species adapted to drier habitats, such as *Aconitum columbianum* and *Achillea lanulosa*. The north side of the fen supports thousands of *Eriophorum angustifolium*. There is a large pool on the south side west of the center that is circled by *Carex utriculata* and supports *Sparganium angustifolium*. But the most interesting species is the thousands of *Utricularia intermedia* plants growing in every large and small water-filled indentation in the north third of the fen, including the elk and cow tracks. *Utricularia intermedia* is new to the West Slope and probably new to Colorado. There is at least one earlier collection of *Utricularia ochroleuca* on the East Slope that could be this species. It is also found in Fens D101 and D127. *Triglochin palustris* was only growing in the areas where the *Utricularia* was concentrated. There are poorly developed terraces at the east end.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Achillea lanulosa
Aconitum columbianum
Agoseris aurantiacus
Allium geyeri
Alopecurus aequalis
Bistorta bistortoides
Bistorta vivipara
Calamagrostis canadensis
Carex sp. (single spike)
Carex aquatilis
Carex canescens
Carex buxbaumii
Carex illota
Carex microptera
Carex migroclochin
Carex norvegica
Carex nova
Carex praeceptorum
Carex saxatilis
Carex utriculata
Castilleja rhexifolia
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa

Dugaldia hoopesii
Eleocharis quinqueflora
Epilobium prob. *hornemannii*
Eriophorum angustifolium
Limnorchis prob. *hyperborea*
Micranthes odontoloma
Packera dimorphophylla
Pedicularis groenlandica
Phleum commutatum
Pneumonanthe parryi
Podistera eastwoodiae
Polemonium sp.
Potentilla sp.
Psychrophila leptosepala
Salix planifolia
Senecio triangularis
Sparganium angustifolium
Spiranthes romanzoffiana
Swertia perennis
Triglochin palustris
Utricularia intermedia
Veratrum tenuipetalum
Veronica nutans



Fen D102: looking north across pool and fen to Black Face.



Fen D102: *Utricularia intermedia*.



Fen D102: *Utricularia intermedia* specimen.



Fen D102: *Carex norvegica*.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D123
General area: Cross Mountain Trail, Lizard Head Pass
Elevation: 11,007 feet
Date surveyed: 9-18-06
Surveyor: P. Lyon



Total number of species observed: 13

Dominant species: *Deschampsia cespitosa*

Comments: Late season, after frost, many species no longer identifiable

Species list:

Calamagrostis canadensis
Psychrophila leptosepala
Cardamine cordifolia
Carex aquatilis
Carex ebenea
Carex nova
Clementsia rhodantha
,

Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora
Epilobium hornemannii
Moss
Pedicularis groenlandica
Salix planifolia



Fen Botanical Survey San Juan National Forest

District: Dolores
Fen number: D124
General area: Lizard Head
Elevation: 10,953 feet
Date surveyed: 9-17-06
Surveyor: P. Lyon



Total number of species observed: 15
Dominant species: *Carex aquatilis*

Additional photos: Lizard Head 5,6

Comments: Late season after frost, many species not identifiable. Elk wallow (photo above) very liquid, to about 3 ft.

Species list:

Calamagrostis canadensis
Psychrophila leptosepala
Carex aquatilis
Carex magellanica
Carex utriculata
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa

Eleocharis quinqueflora
Epilobium hornemannii
Eriophorum angustifolium
Moss
Pedicularis groenlandica
Phleum commutatum
Salix planifolia



**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D125
General area: Lizard Head
Elevation: 10,906 feet
Date surveyed: 9-17-06
Surveyor: P. Lyon



Total number of species observed: 16

Dominant species: *Carex aquatilis*

Comments: Late season after frost, many species not identifiable.

Species list:

Calamagrostis canadensis
Psychrophila leptosepala
Carex aquatilis
Carex utriculata
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa

Eleocharis quinqueflora
Epilobium hornemannii
Eriophorum angustifolium
Pedicularis groenlandica
Phleum commutatum
Salix planifolia
Trollius albiflorus
Veronica nutans

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D127

General area: Lizard Head Pass

Location: north of Hwy 145, west of Lizard Head Pass, west of Fen D101

Size: approx. 150 feet east/west x 80 feet north/south

Centerpoint: could not get new GPS for center due to cloud cover

Date surveyed: 7-30-06

Surveyor: Marian Rohman



Fen D127: looking north-northwest.

Total number of species observed in the fen: 17

Dominant species: *Carex aquatilis*, *Psychrophila leptosepala*, *Salix planifoli*, *Eleocharis quinqueflora* in the flarks

Species of particular interest: *Utricularia intermedia*

Comments: Fen D127 is a moderate size fen with well-developed terraces. There is a small pool northwest of the center of the fen with salamanders. There are a small number of plants of *Utricularia intermedia* in the flarks. *Utricularia intermedia* is new to the West Slope and probably new to Colorado. There is at least one earlier collection of

Utricularia ochroleuca on the East Slope that could be this species. It is also found in Fens D101 and D102.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Note: this survey was done very quickly due to severe weather moving into the area.

Carex aquatilis
Carex praeceptorum
Castilleja rhexifolia
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora
Epilobium prob. *hornemannii*
Luzula parviflora

Packera dimorphophylla
Pedicularis groenlandica
Polemonium sp.
Psychrophila leptosepala
Salix planifolia
Senecio triangularis
Swertia perennis
Utricularia intermedia

**Fen Botanical Survey
San Juan National Forest**

District: Columbine

Fen number: D128

General area: Lizard Head Pass

Location: north of Hwy 145, west of Lizard Head Pass, west of Fen D129

Size: approx. 300 feet north/south x 70 feet east/west

Centerpoint: 13 S, 241424E, 4189202N

Elevation: 10,929 feet

Date surveyed: 7-30-06

Surveyor: Marian Rohman



Fen D128: looking north with Lizard Head in the background.

Total number of species observed in the fen: 14

Dominant species: *Carex aquatilis*

Comments: Fen D128 is a long, relatively narrow fen with no open water or terraces.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Note: this survey was done very quickly due to severe weather moving into the area.

Calamagrostis canadensis

Carex aquatilis

Carex utriculata

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Epilobium prob. *hornemannii*

Equisetum pratense

Hierochloa hirta

Pedicularis groenlandica

Psychrophila leptosepala

Salix planifolia

Swertia perennis

Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D129
General area: Lizard Head Pass
Location: north of Hwy 145, west and a little north of
Lizard Head Pass, west of Fen D102
Date surveyed: 7-30-06
Surveyor: Marian Rohman

Total number of species observed in the fen: 31

Dominant species: *Carex aquatilis*, *Deschampsia cespitosa*, *Veratrum tenuipetalum*, especially at the north end

Comments: D129 is a small wetland, probably a fen. It appears to be a sloping meadow with a few small drainages, but there does appear to be peat accumulation in some areas. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Achillea lanulosa
Aconitum columbianum
Agoseris aurantiacus
Allium geyeri
Calamagrostis canadensis
Carex aquatilis
Carex ebenea
Carex illota
Carex norvegica
Carex utriculata
Castilleja rhexifolia
Conioselinum scopulorum
Deschampsia cespitosa
Epilobium prob. *hornemannii*
Gentianella acuta
Juncus drummondii

Limnorchis saccata
Mimulus guttatus
Packera dimorphophylla
Pedicularis groenlandica
Phleum commutatum
Pneumonanthe parryi
Polemonium sp.
Potentilla sp.
Psychrophila leptosepala
Salix planifolia
Senecio triangularis
Spiranthes romanzoffiana
Swertia perennis
Veratrum tenuipetalum
Veronica nutans

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D163

General area: Highline Trail

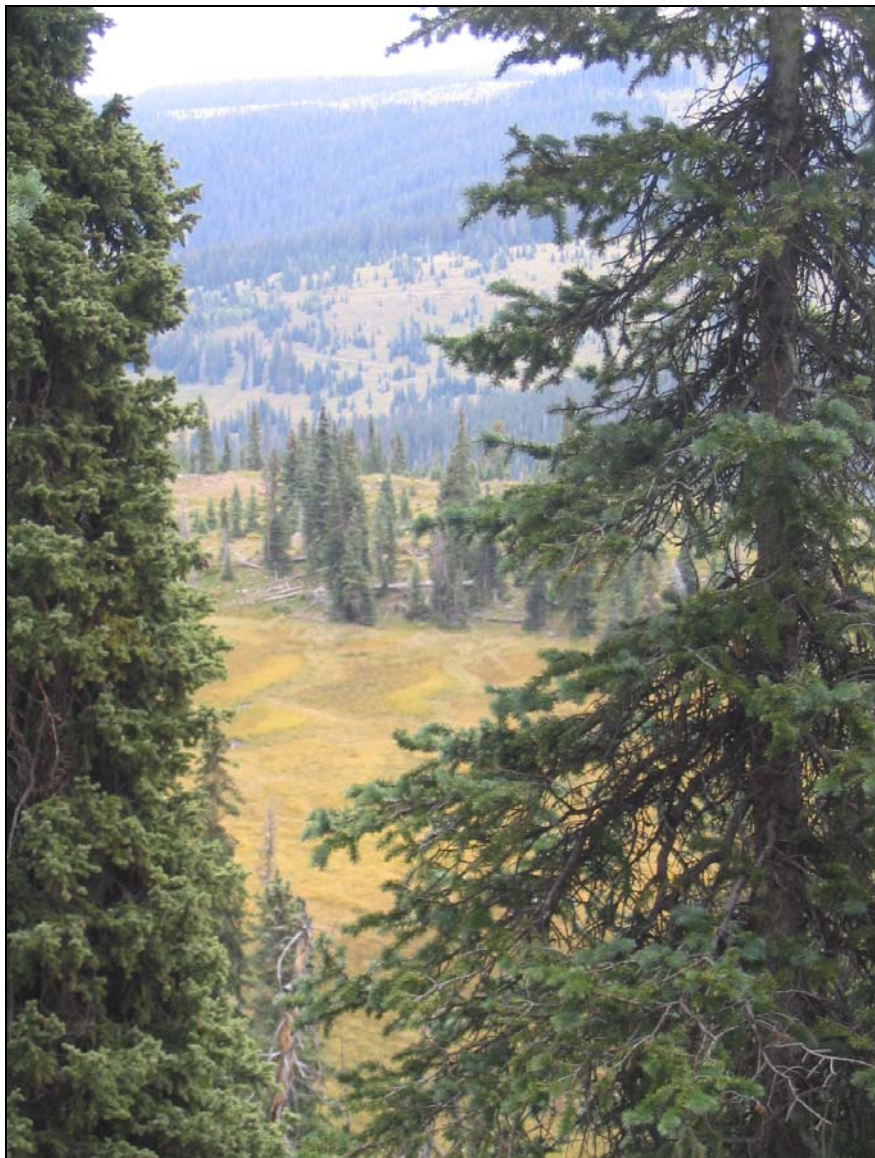
Location: northwest of the Highline Trail, north of the Cape of Good Hope, on bench
below and northeast of Fen D164

Elevation: approx. 11,015 feet

Date photographed: 9-5-06

Surveyor: Marian Rohman

Comments: Fen D163 is a large fen with well-developed terraces. There is at least one area of open water. The fen was photographed from above from the north end of Fen D164. It was not surveyed due to time and weather constraints.



Fen D163: looking north and down from the northeast corner of Fen D164.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D164

General area: Highline Trail

Location: northwest of the Highline Trail, north of the Cape of Good Hope, on bench
above and southwest of Fen D163

Size: approx. 90 feet north/south x 50 feet east/west

Centerpoint: 12 S, 7611960E, 4158490N

Elevation: 11,190 feet

Date surveyed: 9-5-06

Surveyor: Marian Rohman



Fen D164: looking south

Total number of species observed in the fen: 18

Dominant species: *Carex aquatilis*, *Carex utriculata*, *Carex nova* in some areas, *Salix planifolia* at the south end

Comments: Fen Dd164 is a small fen with a few low terraces at the lower north end. The flarks are damp, but not flooded.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Carex prob. aquatilis

Carex nova

Carex saxatilis

Carex utriculata

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Eleocharis quinqueflora

Epilobium sp.

Eriophorum angustifolium

prob. *Gentianopsis thermalis*

Oxypolis fendleri

Packera dimorphophylla

Pedicularis groenlandica

Psychrophila leptosepala

Salix planifolia

Senecio triangularis

Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Number: D170

General area: Highline Trail

Location: west of the Highline Trail, southwest of the Cape of Good Hope

Date inspected: 9-05-06

Surveyor: Marian Rohman

Comments: D170 is a boulder field with pika in residence. It is located approximately 200 feet northwest of MR14, a small fen.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Number: D173

General area: Highline Trail

Location: on the west side of Indian Trail Ridge, southeast of Fen D022

Date observed: 8-6-06

Surveyor: Marian Rohman

Comments: D173 is a large meadow on a relatively steep slope. The dominant plants are *Phleum pratense*, *Acomastylis rossii*, and *Packera dimorphophylla*.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D175

Previous fen number: PL25 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: north of Hillside Drive, northwest of Fen D001/Grindstone Lake and east-southeast of Fen D176

Date surveyed: 11-16-99 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 21

Additional species observed: 4

Dominant species: not noted

Comments: Fen D175 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL25. It has been assigned D175 for the current fen survey. It is a medium size fen with no terracing. There is a small discontinuous stream running lengthwise through the fen. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

Bistorta vivipara

Calamagrostis canadensis

Carex aquatilis

Carex illota

Carex nigricans

Carex nova

Carex poss. saxatilis

Carex poss. utriculata

Clementsia rhodantha

Deschampsia cespitosa

(*Dugaldia hoopesii*)

Epilobium hornemanii

Eriophorum angustifolium

Juncus mertensianus

Luzula parviflora

(*Maianthemum stellatum*)

(prob. *Mitella stauiopetala*)

Oxypolis fendleri

Pedicularis groenlandica

Psychrophila leptosepala

(*Pyrola minor*)

Salix planifolia

Senecio triangularis

Swertia perennis

Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D176

Previous fen number: PL9 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: east of Hillside Drive, northwest of D001/Grindstone Lake and southeast of
Fen D177

Date surveyed: 7-25-99, 7-22-01, 9-1-01

Surveyor: Marian Rohman

Total number of species observed in the fen: 34

Additional species observed: 11

Plants of particular interest: *Lysiella obtusata* (just into the woods on northwest side of fen)

Dominant species: not noted

Comments: Fen D176 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL9. It has been assigned D176 for the current fen survey. It is a medium – large size fen. There were 20 – 25 plants of *Lysiella obtusata* on the northwest side of the fen. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and also in parentheses may not have been growing on the peat, but my notes are incomplete.

(*Aconitum columbianum*)

Anticlea elegans

Bistorta bistortoides

Calamagrostis canadensis

Cardamine cordifolia

Carex aquatilis

Carex canescens

Carex illota

Carex magellanica

Carex norvegica

Carex utriculata

Castilleja rhexifolia

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Epilobium hornemanii

Equisetum arvense

(*Erigeron peregrinus*)

Eriophorum angustifolium

(*Fragaria virginiana*)

Hierochloa hirta

Juncus drummondii

Limnorchis saccata

Luzula parviflora

Lysiella obtusata

(*Micranthes odontoloma*)

(*Mitella pentandra*)

(*Orthilia secunda*)

Oxyopolis fendleri

Packera dimorphophylla

Pedicularis groenlandica

Pedicularis groenlandica – *albino*

Pedicularis racemosa

Phleum commutatum

Pseudocymopterus montanus

Psychrophila leptosepala

Ranunculus alismifolius

Salix planifolia

Senecio triangularis

(*Streptopus fassettii*)

Swertia perennis

(*Vaccinium myrtillus*)

(*Valeriana capitata*)

Veratrum tenuipetalum

Veronica nutans



Fen D176: *Pedicularis groenlandica* with white flowers.



Lysiella obtusata

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D177

Previous fen number: PL26 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: north of Hillside Drive, north of mile marker 14, northwest of Fen
D001/Grindstone Lake and north-northwest of Fen D176

Date surveyed: 7-2-00 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 26

Additional species observed: 10

Plants of particular interest: *Lysiella obtusata*

Dominant species: not noted

Comments: Fen D177 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL26. It has been assigned D177 for the current fen survey. It is a medium size fen with no terracing. It is set in a basin. There were 12 plants of **Lysiella obtusata** growing on the southeast side of the fen near the inlet with *Listera cordata*. There were many plants of *Hierochloe hirta* in the fen. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and also in **bold type** may not have been growing on the peat, but my notes are incomplete

(*Aconitum columbianum*)

Cardamine cordifolia

Carex prob. *aquatilis*

Carex canescens

Carex illota

Castilleja rhexifolia

Clementsia rhodantha

Deschampsia cespitosa

Distegia involucrata

Epilobium sp.

Equisetum arvense

(*Erigeron* sp.)

Eriophorum angustifolium

Hierochloe hirta

Juncus drummondii

Limnorchis saccata

Listera cordata
Luzula parviflora
Lysiella obtusata
(Micranthes odontoloma)
(Mitella pentandra)
Oxypolis fendleri
Packera dimorphophylla
Pedicularis groenlandica
Primula parryi
Psychrophila leptosepala

(Pyrola prob. minor)
Ranunculus alismifolius
Salix planifolia
Senecio triangularis
(Streptopus fassettii)
(Vaccinium myrtillus)
Veratrum tenuipetalum
Veronica nutans
Viola adunca
Viola macloskeyi ssp. *pallens*

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Number: D178
General area: Hillside Drive below Grindstone Lake area
Date observed: 8-6-06
Surveyor: Marian Rohman

Comments: The coordinates for this "fen" are on a dry slope approx. 100 feet above an extensive wetland along flowing water.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D179
General area: Hillside Drive below Grindstone Lake area
Location: south of Hillside Drive, southeast of Fen D180
Size: approx. 60 feet diameter
Centerpoint: 12 S, 757256E, 4159389N
Elevation: 10,420 feet
Date surveyed: 8-6-06
Surveyor: Marian Rohman

Total number of species observed in the fen: 2

Dominant species: *Carex aquatilis*

Comments: Fen D179 is a small flooded basin of almost pure *Carex aquatilis* with a narrow band of *Deschampsia cespitosa* around the edge. There is a very small pool of open water approx. 4 feet in diameter at the south side. There is a log fence to the north of the fen.. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Carex aquatilis
Deschampsia cespitosa

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D180

General area: Hillside Drive below Grindstone Lake area

Location: south of Hillside Drive, northwest of Fen D179

Centerpoint: 12 S, 757162E, 4159588N

Elevation: 10,446 feet

Date surveyed: 8-6-06

Surveyor: Marian Rohman

Total number of species observed in the fen: 3

Dominant species: *Carex canescens*, *Carex aquatilis*

Comments: Fen D180 is a small basin of a mix of *Carex canescens* and *Carex aquatilis* with some *Calamagrostis canadensis* around the edge. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Calamagrostis canadensis

Carex aquatilis

Carex canescens

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: D182

Previous fen number: PL10 (assigned during 1999 – 2000 fen study)

General area: Hillside Drive

Location: along east side of Hillside Drive, southeast of mile marker 12

Date surveyed: 7-25-99, 8-21-99, 8-18-01 (not visited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 15

Additional species observed: 4

Dominant species: not noted

Comments: Fen D182 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL10. It has been assigned D182 for the current fen survey. It is a very extensive area with minimal terracing. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) are in the immediate area of the fen, but not growing on the peat. Species listed in plain type and also in parentheses were probably not growing on the peat, but my notes are incomplete.

(*Achillea lanulosa*)
Bistorta bistortoides
Campanula rotundifolia
Carex aquatilis
Carex canescens
Carex magellanica
Clementsia rhodantha
Deschampsia cespitosa
Gentianella acuta
prob. *Gentianopsis thermalis*

Pedicularis groenlandica
Phleum commutatum
Psychrophila leptosepala
Ranunculus alismifolius
Spiranthes romanzoffiana
(*Streptopus fassettii*)
(*Vaccinium myrtillus*)
Veratrum tenuipetalum
Veronica nutan

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D223
General area: Taylor Mesa
Elevation: 10,750 feet
Date surveyed: 6-30-06
Surveyor: P. Lyon and M. Rohman



Total number of species observed: 22

Dominant species: Flarks dominated by *Carex aquatilis* and *Eleocharis quinqueflora*.
Strings dominated by *Deschampsia cespitosa* and *Senecio dimorphophyllus*

Comments: drains to north; open water at north end

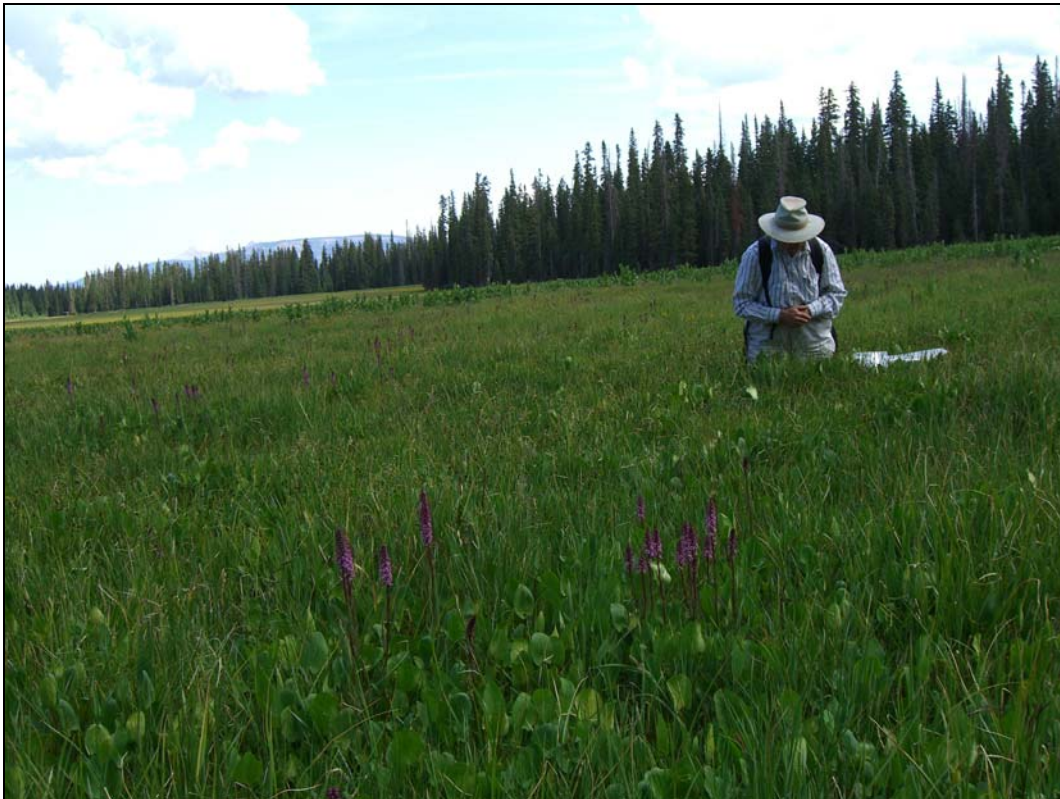
Species list:

Allium geyeri
Bistorta bistortoides
Psychrophila leptosepala
Carex aquatilis
Carex microptera
Carex nova
Carex praeceptorum
Carex saxatilis
Carex utriculata
Castilleja rhexifolia
Clementsia rhodantha
Deschampsia cespitosa

Eleocharis quinqueflora
Epilobium hornemannii
Erigeron perigrinus
Juncus drummondii
Pedicularis groenlandica
Phleum commutatum
Podistera eastwoodiae
Senecio dimorphophyllus
Senecio triangularis
Trollius albiflorus
Viola labradorica

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D233
General area: Taylor Mesa
Elevation: 10,629 feet
Date surveyed: 6-3-06
Surveyor: P. Lyon and M. Rohman



Total number of species observed: 43

Dominant species: in various patches: *Psychrophila leptosepala*, *Carex aquatilis*, *Carex saxatilis*, *Ranunculus alismifolius*, *Carex illota*, *Senecio dimorphophyllus*, *Veratrum tenuipetalum*, *Deschampsia cespitosa*, *Eleocharis quinqueflora*

Comments: Terraced fen with strings and flarks. North end of northeast side has some dried up flarks. Fen slopes downhill to northwest. There is a spring at the southwest edge at waypoint 45. Communities include *Deschampsia cespitosa* Herbaceous vegetation, G4S4; *Carex aquatilis* Herbaceous vegetation, G5S4; *Psychrophila leptosepala* Herbaceous Vegetation, G4S4; *Eleocharis quinqueflora* Herbaceous Vegetation, G4 S3S4.

Species list:

Achillea lanulosa
Allium geyeri
Bistorta bistortoides
Psychrophila leptosepala
Cardamine cordifolia
Carex aquatilis
Carex ebenea
Carex microptera
Carex nova
Carex praeceptorum
Carex saxatilis
Carex utriculata
Castilleja rhexifolia
Clementsia rhodantha
Deschampsia cespitosa
Draba spectabilis
Dugaldia hoopsii
Eleocharis quinqueflora
Epilobium hornemannii
Erigeron perigrinus
Eriophorum angustifolium
Habenaria hyperborea

Hierochloe hirta
Juncus drummondii
Ligusticum porteri
Noccaea montana
Pedicularis bracteosa
Pedicularis groenlandica
Phleum commutatum
Pneumonanthe parryi
Poa reflexa
Podistera eastwoodiae
Polygonum douglassii
Potentilla diversifolia
Ranunculus alismifolius
Salix planifolia
Senecio dimorphophyllus
Senecio triangularis
Sibbaldia procumbens
Stellaria umbellata
Taraxacum officinalis
Veratrum tenuipetalum
Veronica nutans
Viola labradorica

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: D234
General area: Taylor Mesa
Elevation: 10,645 ft.
Date surveyed: 6-30-06
Surveyor: P. Lyon and M. Rohman



Photos: Taylor Mesa 113-116; Marian's 2050, 2052, 2053, 2056, 2057.

Total number of species observed: 38

Dominant species: Carex aquatilis-Carex magellanica, Deschampsia cespitosa, Senecio dimorphophyllus, Pedicularis groenlandica, in alternating strips

Comments: Small area of open water on top of low rise, about halfway between north and south ends, closer to west side. Elk wallows. *Senecio dimorphophyllus* and *Pedicularis groenlandica* dominant. Open water on top of mound with floating mat of *Carex aquatilis*, about a quarter way north of south end on west side (caused by spring?)

Species list:

<i>Achillea lanulosa</i>	<i>Eriophorum angustifolium</i>
<i>Allium geyeri</i>	<i>Juncus drummondii</i>
<i>Bistorta bistortoides</i>	<i>Juncus mertensianus</i>
<i>Psychrophila leptosepala</i>	<i>Pedicularis bracteosa</i>
<i>Carex aquatilis</i>	<i>Pedicularis groenlandica</i>
<i>Carex ebenea</i>	<i>Phleum commutatum</i>
<i>Carex magellanica</i>	<i>Pneumonanthe parryi</i>
<i>Carex microptera</i>	<i>Podistera eastwoodiae</i>
<i>Carex nova</i>	<i>Potentilla diversifolia</i>
<i>Carex praeceptorum</i>	<i>Ranunculus alismifolius</i>
<i>Carex saxatilis</i>	<i>Senecio dimorphophyllus</i>
<i>Carex utriculata</i>	<i>Senecio triangularis</i>
<i>Castilleja rhexifolia</i>	<i>Sibbaldia procumbens</i>
<i>Clementsia rhodantha</i>	<i>Taraxacum officinalis</i>
<i>Deschampsia cespitosa</i>	<i>Trollius albiflorus</i>
<i>Dugaldia hoopsii</i>	<i>Vaccinium myrtillus</i>
<i>Eleocharis quinqueflora</i>	<i>Veratrum tenuipetalum</i>
<i>Epilobium hornemannii</i>	<i>Veronica nutans</i>
<i>Erigeron perigrinus</i>	<i>Viola labradorica</i>



**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: LK012
General area: Mineral Point
Date surveyed: 8-25-06
Surveyor: P. Lyon



Total number of species observed: 27

Dominant species: *Carex aquatilis*

Comments: Ground very squishy. *Carex aquatilis* in wettest area in center, *Calamagrostis canadensis* scattered throughout.

Species list:

Agrostis thurberiana
Arnica mollis
Bistorta vivipara

Calamagrostis canadensis
Psychrophila leptosepala
Carex aquatilis

Carex microptera
Clementsia rhodantha
Deschampsia cespitosa
Epilobium hornemannii
Erigeron coulteri
Erigeron perigrinus
Eriophorum angustifolium
Juncus drummondii
Juncus mertensianus
Moss
Pedicularis groenlandica

Carex nova
Phleum commutatum
Podistera eastwoodiae
Salix planifolia
Senecio dimorphophyllus
Senecio triangularis
Swertia perennis
Trisetum spicatum
Trollius albiflorus
Veronica nutans



**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: LK13
General area: Mineral Point
Date surveyed: 8-25-06
Surveyor: P. Lyon



Total number of species observed: 23

Dominant species: *Carex aquatilis*

Comments: Very small area. Small ponds with *Eriophorum angustifolium* on edge.

Species list:

Allium geyeri
Arnica mollis
Bistorta vivipara
Calamagrostis canadensis
Psychrophila leptosepala
Carex aquatilis
Carex canescens
Carex microptera
Carex nova
Castilleja rhexifolia
Clementsia rhodantha
Conioselinum scopulorum

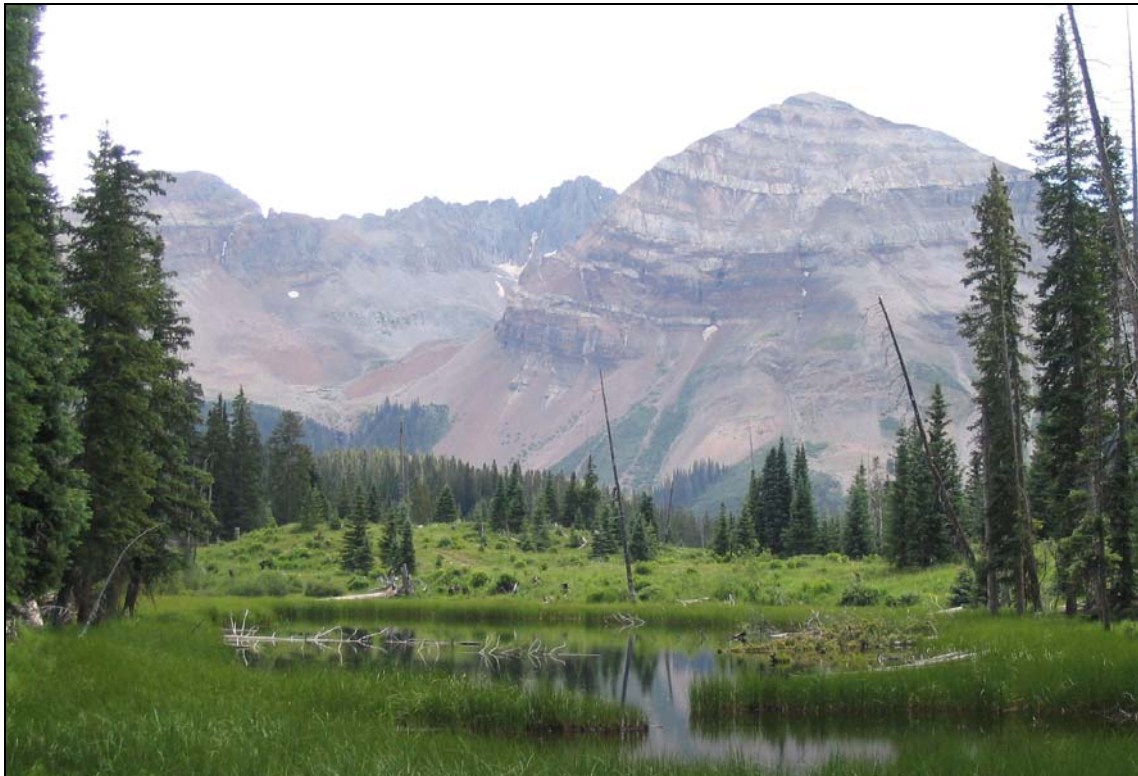
Deschampsia cespitosa
Eleocharis quinqueflora
Eriophorum angustifolium
Habenaria hyperborea
Juncus mertensianus
Moss
Pedicularis groenlandica
Podistera eastwoodiae
Salix planifolia
Swertia perennis
Trollius albiflorus





**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: MA001 – Twin Lakes
General area: Twin Lakes
Location: east side of the Sharkstooth Trailhead Road
Approx. centerpoint: 12 S, 756286E, 4150654N (taken from map)
Approx. elevation: 10,790 feet (taken from map)
Date surveyed: 7-16-06
Surveyor: Marian Rohman



Fen MA001: looking southeast across the first of the Twin Lakes, the west lake, with Hesperus Mountain in the background.

Total number of species observed in the fen: 23

Dominant species: *Carex utriculata* and *Calamagrostis canadensis* around west lake, *Carex aquatilis* and *Carex praeceptorum* around central lake, *Carex aquatilis*, *Carex saxatilis*, and *Psychrophila leptosepala* in east fen

Comments: MA001, Twin Lakes, is a series of three wetlands, each progressively more fen-like. The west lake consists of a moderate size body of water with wetland vegetation in a band averaging 12 foot wide around the edges. Some of this band may grade into a fen. The central lake is a small fen with a large pool at the south side. The east fen is a small flooded fen with no open water. All three areas are contiguous, although fairly well-defined.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Calamagrostis canadensis

Carex aquatilis

Carex canescens

Carex praeceptorum

Carex saxatilis

Carex utriculata

Clementsia rhodantha

Distegia involucrata

Eleocharis quinqueflora

Epilobium prob. *hornemannii*

Galium sp.

Luzula parviflora

Maianthemum stellatum

Mertensia ciliata

Pedicularis groenlandica

Phleum commutatum

Psychrophila leptosepala

Rorippa alpina

Salix planifolia

Senecio triangularis

***Stellaria* sp.**

Veratrum tenuipetalum

Viola macloskeyi* ssp. *pallens



Fen MA001: looking south across the second of the Twin Lakes, the central lake.

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR01

Previous fen number: PL24 (assigned during 1999 – 2001 fen study)

General area: Grindstone Lake

Location: southwest of Hillside Drive, east of the south end of Fen D001/Grindstone Lake, north of the west end of Fen D002

Size: approx. 300 feet east/west x 125 feet north/south

Approx. centerpoint: 12 S, 760656E, 4156098N (taken from map)

Approx. elevation: 11,160 feet (taken from map)

Date surveyed: 7-12-06; also 11-16-99, 8-26-00, 9-1-01

Surveyor: Marian Rohman



Fen MR01: looking west-northwest.

Total number of species observed in the fen: 9

Dominant species: none noted

Comments: Fen MR01 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL24. It has been assigned MR01 for

the current fen survey. It is a medium size with well-developed terraces. There is a small pool at the north end.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Note: this list is not complete

poss. *Agrostis scabra*

Calamagrostis canadensis

Clementsia rhodantha

prob. *Deschampsia cespitosa*

Gentianella acuta

Pedicularis groenlandica

Phleum commutatum

Psychrophila leptophylla

Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR02

Previous fen number: PL15 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: northeast of Hillside Drive, northeast of Fen D001/Grindstone Lake and north
of Fen MR01

Size: approx 150 feet east/west x 75 feet north/south

Approx. centerpoint: 12 S, 760669E, 4156494N (taken from map)

Approx. elevation: 11,040 feet (taken from map)

Date surveyed: 7-12-06; also 8-21-99

Surveyor: Marian Rohman

Total number of species observed in the fen: 28

Additional species observed: 5

Dominant species: *Carex illota*

Comments: Fen MR02 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL15. It has been assigned MR02 for the current fen survey. It is a small flooded fen with *Eriophorum angustifolium* around the southeast, south, and southwest edges. There are no terraces. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

Bistorta bistortoides

Carex aquatilis

Carex ebenea

Carex illota

Carex nova

Carex praeceptorum

Carex saxatilis

Castilleja rhexifolia

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

prob. *Dugaldia hoopesii*

Epilobium anagallidifolium

Erigeron sp.

Eriophorum angustifolium

Listera cordata

Luzula parviflora

(*Micranthes odontoloma*)

(*Mitella pentandra*)

Oxyopolis fendleri

Packera dimorphophylla
Pedicularis groenlandica
Phleum commutatum
Primula parryi
Psychrophila leptosepalaa
(*Pyrola minor*)
Salix planifolia

Senecio triangularis
(*Streptopus fassetti*)
Swertia perennis
Taraxacum officinalis
(*Vaccinium myrtillus*)
Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Columbine

Fen number: MR03

General area: Lizard Head Pass

Location: north of Hwy 145, west of Lizard Head Pass,
between Fens D101 and D127

Size: approx. 100 feet east/west x 70 feet north/south

Centerpoint: 13 S, 241713E, 4189430N

Elevation: 10,880 feet

Date surveyed: 7-30-06

Surveyor: Marian Rohman



Fen MR03: looking west.

Total number of species observed in the fen: 13

Dominant species: *Carex aquatilis*, *Deschampsia cespitosa*

Comments: MR03 is a small wetland, probably a flooded fen.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Note: this survey was done very quickly due to severe weather moving into the area.

Calamagrostis canadensis
Cardamine cordifolia
Carex aquatilis
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Epilobium prob. hornemannii

Pedicularis groenlandica
Phleum commutatum
poss. *Pneumonanthe parryi*
Psychrophila leptosepala
Senecio triangularis
Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Wetland number: MR04
General area: Highline Trail
Location: at junction of Grindstone Trail and Hillside Connection
Size: approx. 50 feet diameter
Centerpoint: 12 S, 761393E, 4155084N
Elevation: 11,515 feet
Date surveyed: 8-6-06
Surveyor: Marian Rohman

Total number of species observed in the fen: 13

Dominant species: *Carex ebenea*, *Deschampsia cespitosa*, *Bistorta bistortoides*,
Pedicularis groenlandica

Comments: MR04 is a small wetland at the junction of two trails. It consists of two permanent "puddles" surrounded by wetland vegetation. There does not appear to be any peat accumulation. (No photo taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Bistorta bistortoides
Carex aquatilis
Carex ebenea
Carex microptera
Carex nova
Carex praeceptorum
Deschampsia dcespitosa

Dugaldia hoopesii
Pedicularis groenlandica
Phleum commutatum
Psychrophila leptosepala
Ranunculus alismifolius
Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR05

General area: Hillside Drive below Grindstone Lake area

Location: south and west of loop in Hillside Drive, southeast of Mile Marker 12

Size: approx. 80 feet diameter

Centerpoint: 12 S, 757978E, 4159340N

Elevation: 10,582 feet

Date surveyed: 8-6-06

Surveyor: Marian Rohman

Total number of species observed in the fen: 15

Dominant species: *Carex aquatilis*

Comments: MR05 is a small fen along the side of Hillside Drive. It does appear to have peat accumulation. There are a lot of downed cut trees within the fen and well-buried in it. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Achillea lanulosa

Bistorta bistortoides

Carex aquatilis

Carex microptera

Carex pachystachya

Carex utriculata

Clementsia rhodantha

Deschampsia cespitosa

Epilobium prob. *hornemannii*

Geum macrophyllum

Packera dimorphophylla

Phleum commutatum

Potentilla sp.

Psychrophila leptosepala

Veronica nutans

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: MR06
General area: Hillside Drive below Grindstone Lake area
Location: south of Hillside Drive, east of Fen D179
Size: approx. 70 feet north/south x 20 feet east/west
Centerpoint: 12 S, 757256E, 4159389N
Elevation: 10,420 feet
Date surveyed: 8-6-06
Surveyor: Marian Rohman

Total number of species observed in the fen: 3

Dominant species: *Carex aquatilis*

Comments: Fen MR06 is a small basin of almost pure *Carex aquatilis* with some *Deschampsia cespitosa* around the edge. There is a very small pool of open water approx. 4 feet in diameter at the north end. There is a low ridge between MR06 and Fen D179. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Carex aquatilis

Carex microptera

Deschampsia cespitosa

**Fen Botanical Survey
San Juan National Forest**

District: Dolores
Fen number: MR07
General area: Hillside Drive below Grindstone Lake area
Location: south of Hillside Drive, east of Fen MR06
Size: approx. 50 feet north/south x 50 feet east/west
Centerpoint: 12 S, 757422E, 4159363N
Elevation: 10,437 feet
Date surveyed: 8-6-06
Surveyor: Marian Rohman

Total number of species observed in the fen: 4

Dominant species: *Carex canescens*

Comments: Fen MR07 is a small basin of almost pure *Carex canescens* with some *Deschampsia cespitosa* and *Calamagrostis canadensis* around the edge. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Calamagrostis canadensis

Carex canescens

Carex prob. *microptera*

Deschampsia cespitosa

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR08

General area: Hillside Drive below Grindstone Lake area

Location: south of Hillside Drive, northeast of Fen MR007

Size: approx. 80 feet east/west x 50 feet north/south

Centerpoint: was unable to GPS due to heavy cloud cover

Approx. centerpoint: 12 S, 757702E, 4159219N (taken from map)

Approx. elevation: 10,440 feet (taken from map)

Date surveyed: 8-6-06

Surveyor: Marian Rohman

Total number of species observed in the fen: 5

Dominant species: *Carex aquatilis*

Comments: Fen MR08 is a small basin of almost pure *Carex aquatilis*, with a small amount of the other species. The *Carex utriculata* was around a small pool of open water. (No photograph taken).

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Calamagrostis canadensis

Carex aquatilis

Carex utriculata

Deschampsia cespitosa

Psychrophila leptalea

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: MR09
General area: Bolam Pass
Location: southwest of Bolam Pass,
between Fens C0902 and C0906
Size: 80 feet north/south x 50 feet east/west
Centerpoint: 13 S, 243933E, 4178102N
Elevation: 11,177 feet
Date surveyed: 8-11-06
Surveyor: Marian Rohman



Fen MR09: looking south, showing ATV tracks going across the fen

Total number of species observed in the fen: 23

Dominant species: *Carex aquatilis*, *Carex praeceptorum*, *Eleocharis quinqueflora*, *Carex paupercula* in the flarks.

Comments: Fen MR09 is a small fen with a pool of open water at the south end with salamanders. There is minimal terracing. This fen is not far from the Barlow Creek Road (FS578) and there was a relatively fresh set of ATV tracks going through it.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*I was unable to differentiate between *Podagrostis thurberiana* and *Agrostis scabra* in the field. Specimens collected at other fens in the Bolam Pass area keyed to *Podagrostis thurberiana* in the lab.

Bistorta bistortoides
Calamagrostis canadensis
Carex aquatilis
Carex illota
Carex magellanica
Carex nigricans
Carex praeceptorum
Carex saxatilis
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora

Eriophorum angustifolium
Ligularia bigelovii
Luzula parviflora
Packera dimorphylla
Pedicularis groenlandica
prob. *Podagrostis thurberiana* *
Psychrophila leptalea
Ranunculus alismifolius
Salix planifolia
Swertia perennis
Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Columbine
Fen number: MR10
General area: Bolam Pass
Location: south of Fen C0904, southwest of Bolam Pass
Size: 80 feet north/south x 90 feet east/west
Centerpoint: 13 S, 243685E, 4177967N
Elevation: 11,172 feet
Date surveyed: 8-11-06
Surveyor: Marian Rohman



Fen MR10: looking northwest

Total number of species observed in the fen: 17

Dominant species: *Deschampsia cespitosa*, especially on the strings, *Eleocharis quinqueflora* in the flarks

Comments: Fen MR10 is a small fen with many well-developed, closely spaced terraces across the whole fen. There is very little *Carex* in this fen. There is a small rock pile near the southwest end that has been there for many years – a possible land marker?

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*I was unable to differentiate between *Podagrostis thurberiana* and *Agrostis scabra* in the field. Specimens collected at other fens in the Bolam Pass area keyed to *Podagrostis thurberiana* in the lab.

Allium geyeri
Calamagrostis canadensis
Carex aquatilis
Carex nova
Carex saxatilis
Clementsia rhodantha
Conioselinum scopulorum
Deschampsia cespitosa
Eleocharis quinqueflora

Eriophorum angustifolium
Pedicularis groenlandica
prob. *Podagrostis thurberiana* *
Psychrophila leptosepala
Salix planifolia
Spiranthes romanzoffiana
Swertia perennis
Veratrum tenuipetalum



Fen MR10: showing closely spaced strings and flarks

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR11

General area: Bolam Pass

Location: south of Barlow Creek Road (FS578),
well west and slightly north of Bolam Pass, north of Fen D046

Size: 80 feet north/south x 70 feet east/west

Centerpoint: 13 S, 242134E, 4179198N

Elevation: 11,305 feet

Date surveyed: 8-17-06

Surveyor: Marian Rohman



Fen MR11: looking south-southwest with Hermosa Peak in the background.

Total number of species observed in the fen: 13

Dominant species: *Carex aquatilis*, *Eleocharis quinqueflora*

Comments: Fen MR11 is a small fen with a flowing spring in its' southeast end measuring approximately 8 feet in diameter. The whole fen is flooded. The *Salix planifolia* is at the west and north edges

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Calamagrostis canadensis

Carex aquatilis

Carex praeceptorum

Carex utriculata

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Eleocharis quinqueflora

Gentianopsis thermalis

Pedicularis groenlandica

Psychrophila leptosepala

Salix planifolia

Swertia perennis



Fen MR11: small spring at southeast end of the fen

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR12

General area: Bolam Pass

Location: immediately south of the Barlow Creek Road (FS578)
and north of MR11, well west and slightly north of Bolam Pass

Size: approx. 60 feet diameter

Centerpoint: 13 S, 242175E, 4179282N

Elevation: 11,341 feet

Date surveyed: 8-17-06

Surveyor: Marian Rohman



Fen MR12: looking southeast, with pool of open water in the foreground; note Fen MR11 in the background.

Total number of species observed in the fen: 12

Dominant species: *Carex praeceptorum*, *Carex aquatilis*

Comments: Fen MR12 is a small fen near but well-separated from Fen MR11. It has a small pool of open water at the north end measuring approx. 10 feet in diameter and edged with *Carex utriculata*.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*I was unable to differentiate between *Podagrostis thurberiana* and *Agrostis scabra* in the field. Specimens collected at other fens in the Bolam Pass area keyed to *Podagrostis thurberiana* in the lab.

Calamagrostis canadensis

Carex aquatilis

Carex illota

Carex praeceptorum

Carex utriculata

Clementsia rhodantha

prob. *Gentianopsis thermalis*

Pedicularis groenlandica

Phleum commutatum

prob. *Podagrostis thurberiana* *

Psychrophila leptosepala

Salix planifolia

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR13

General area: Bolam Pass

Location: south of the Barlow Creek Road (FS 578),
well west and slightly north of Bolam Pass, east of Fen D040

Size: 190 feet northwest/southeast x 100 feet northeast/southwest

Centerpoint: 13 S, 242678E, 4179017N

Elevation: 11,359 feet

Date surveyed: 8-17-06

Surveyor: Marian Rohman



Fen MR13: looking north-northwest

Total number of species observed in the fen: 21

Dominant species: *Carex aquatilis*, *Eleocharis quinqueflora*, especially in the flarks

Comments: MR13 is a large terraced fen on the side of Barlow Creek Road. It looks like a meadow from the road, but the northwest half has well-developed terraces with deep flooded flarks.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

*Collected specimens keyed to *Carex atosquama*, a sedge quite similar in appearance to *Carex nova*. Some of the sedges that I called *Carex nova* in the field probably are this more common sedge.

**I was unable to differentiate between *Podagrostis thurberiana* and *Agrostis scabra* in the field. Specimens collected at other fens in the Bolam Pass area keyed to *Podagrostis thurberiana* in the lab.

Allium geyeri

Bistorta bistortoides

Calamagrostis canadensis

Carex aquatilis

Carex atosquama

Carex ebenea

Carex prob. *nova* *

Carex saxatilis

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia cespitosa

Eleocharis quinqueflora

Packera dimorphylla

Pedicularis groenlandica

Phleum commutatum

prob. *Podagrostis thurberiana* **

Psychrophila leptosepala

Salix planifolia

Spiranthes romanzoffiana

Swertia perennis

Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR14

General area: Highline Trail

Location: west of the Highline Trail, southwest of the Cape of Good Hope

Size: approx. 90 feet north/south x 50 feet east/west

Centerpoint: 12 S, 761816E, 4156910N

Elevation: 11,298 feet

Date surveyed: 9-5-06

Surveyor: Marian Rohman



Fen MR14: looking south, note deep pools at left and center of photo surrounded by *Carex utriculata*.

Total number of species observed in the fen: 20

Dominant species: *Carex aquatilis*, *Deschampsia cespitosa*, *Psychrophila leptosepala*, *Carex utriculata* around the edges of the pools

Comments: Small flooded fen. There are no terraces. There are three areas of open water; the one at the northeast end measures 50 x 20 feet, the one on the west side is 30 x 30 feet, and the one at the south end is 20 x 40 feet.

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Agrostis scabra

Cardamine cordifolia

Carex aquatilis

Carex ebenea

Carex illota

Carex nova

Carex utriculata

Clementsia rhodantha

Conioselinum scopulorum

Deschampsia dcespitosa

Dugaldia hoopesii

Epilobium anagallidifolium

Epilobium hornemannii

Oxypolis fendleri

Pedicularis groenlandica

Phleum commutatum

Psychrophila leptosepala

Salix planifolia

Senecio triangularis

Swertia perennis

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR15

Previous fen number: PL18 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: southwest of Hillside Drive, northwest of Fen D001/Grindstone Lake and
southwest of Fen D004

Approx. centerpoint: 12 S, 759526E, 4156818N (taken from map)

Approx. elevation: 11,190 feet (taken from the map)

Date surveyed: 11-16-99

Surveyor: Marian Rohman

Total number of species observed in the fen: 12

Dominant species: not noted

Comments: Fen MR15 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL18. It has been assigned MR15 for the current fen survey. This is a small fen with minimal terracing. There is a small stream that runs across the center of the fen. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. All identifications were done in the field.

Carex aquatilis

Carex nigricans

Clementsia rhodantha

Deschampsia cespitosa

Eriophorum angustifolium

Juncus mertensianus

Oxyopolis fendleri

Pedicularis groenlandica

Psychrophila leptosepala

Ranunculus alismifolius

Senecio triangularis

Swertia perennis

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR16

Previous fen number: PL20 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: southwest of Hillside Drive, northwest of Fen D001/Grindstone Lake and
between Fens D010 and D003

Approx. centerpoint: 12 S, 760049E, 4156503N (taken from map)

Approx. elevation: 11,170 feet (taken from map)

Date surveyed: 11-16-99 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 5

Dominant species: not noted

Comments: Fen MR16 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL20. It has been assigned MR16 for the current fen survey. This is a small fen with minimal terracing at the northwest end. Fens MR16 and D010 are separated by a poorly defined wetland with scattered spruce. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. All identifications were done in the field.

Bistorta vivipara

Carex prob. *nigricans*

Clementsia rhodantha

prob. *Deschampsia cespitosa*

Pedicularis groenlandica

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR17

Previous fen number: PL29 (assigned during the 1999 – 2001 fen study)

General area: Grindstone Lake

Location: east of Hillside Drive, north-northwest of Fen D001/Grindstone Lake and
northwest of Fen D025

Approx. centerpoint: 12 S, 760013E, 4157301N (taken from map)

Approx. elevation: 10,910 feet (taken from map)

Date surveyed: 7-2-00 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 25

Additional species observed: 10

Dominant species: not noted

Comments: Fen MR17 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL29. It has been assigned MR17 for the current fen survey. It is a small fen with minimal terracing at the north end.. There is a stream along the east and southeast sides. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. All identifications were done in the field.

Species listed in plain type (i.e. not *italicized* and parentheses may not have been growing on the peat, but my notes are incomplete.

(*Aconitum columbianum*)

Allium geyeri

(*Anticlea elegans*)

(*Aquilegia coerulea*)

Bistorta bistortoides

Cardamine cordifolia

Carex nova

Castilleja rhexifolia

Clementsia rhodantha

prob. *Deschampsia cespitosa*

Distegia involucrata

(*Dugaldia hoopesii*)

Eleocharis quinqueflora

Epilobium sp.

Equisetum arvense

Eriophorum angustifolium

(*Fragaria virginiana*)

(*Micranthes odontoloma*)

Oxypolis fendleri

Packera dimorphophylla

Pedicularis groenlandica

Phleum commutatum

Primula parryi

Psychrophila leptosepala

(*Pyrola* prob. *minor*)
Ranunculus alismifolius
Salix planifolia
Senecio triangularis
(*Streptopus fassettii*)
(*Vaccinium myrtillus*)

(*Valeriana capitata*)
Veratrum tenuipetalum
Veronica nutans
Viola adunca
Viola macloskeyi ssp. *pallens*

**Fen Botanical Survey
San Juan National Forest**

District: Dolores

Fen number: MR18

Previous fen number: PL31 (assigned during 1999 – 2001 fen study)

General area: Grindstone Lake

Location: south of Hillside Drive, northwest of Fen D001/Grindstone Lake and north of
the west end of Fen D017

Approx. centerpoint: 12 S, 759221E, 4157535N (taken from map)

Approx. elevation: 11,050 feet (taken from map)

Date surveyed: 7-26-00 (not revisited in 2006)

Surveyor: Marian Rohman

Total number of species observed in the fen: 13

Additional species observed: 4

Dominant species: not noted

Comments: Fen MR18 was originally surveyed in the 1999 – 2001 fen survey of the Grindstone Lake area. At that time it was assigned PL31. It has been assigned MR18 for the current fen survey. It is a small circular fen. (No photograph taken)

Species list

Scientific names are based on Colorado Flora: Western Slope by William A. Weber and Ronald C. Wittman. Identifications for species listed in **bold type** are based on collections. All others are based on field identifications.

Species listed in plain type (i.e. not *italicized*) and parentheses may not have been growing on the peat, but my notes are incomplete.

Calamagrostis canadensis

Carex limosa

Carex nigricans

Carex praeceptorum

Castilleja rhexifolia

Epilobium anagallidifolium

(*Erigeron peregrinus*)

Eriophorum angustifolium

Juncus mertensianus

(*Ligularia amplexans*)

(*Maianthemum stellatum*)

Oxyopis fendleri

Pedicularis groenlandica

Psychrophila leptosepala

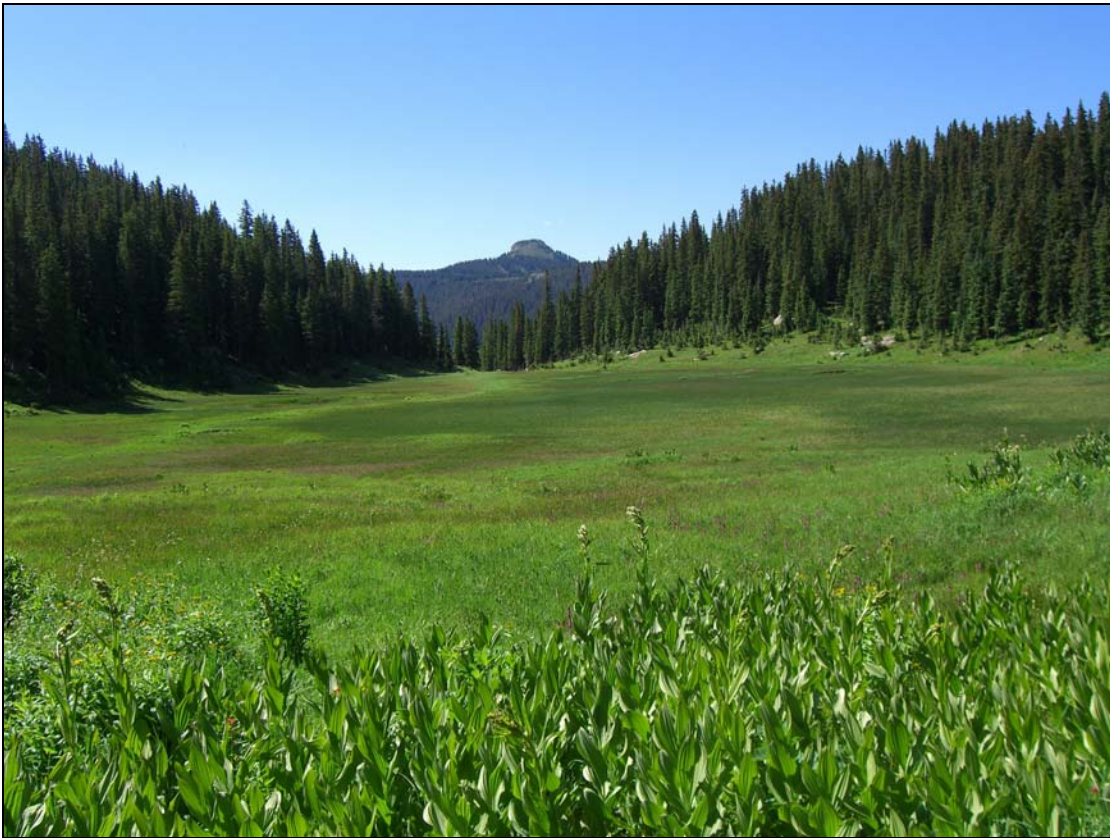
Torreyochloa pauciflora

(*Vaccinium myrtillus*)

Veratrum tenuipetalum

**Fen Botanical Survey
San Juan National Forest**

District: Pagosa
Fen number: P047
General area: Wolf Creek Pass
Elevation: 10,953 feet
Date surveyed: 7-12-06
Surveyor: P. Lyon



Total number of species observed: 42

Dominant species: *Carex aquatilis* (25%) and *Eleocharis quinqueflora* (75%) dominant in wet areas

Comments: Fen is evenly sloped, not terraced. Surrounded by Spruce-fir forest with *Vaccinium myrtillus*. Ankle deep water. Occasional clumps of *Carex canescens* on hummocks. Slightly higher areas have *Carex aquatilis* and no *Eleocharis*. Stream downcut about 6 ft. About 5 small areas of open water. *Sphagnum* in water. Also algae, and white decomposing roots. Much lower diversity than in V rock or Andrews Lake.

Salix planifolia is less than 1 ft. tall. Bottom part of fen is spongy, floating mat? Last pond about 5 ft. deep.

Species list:

Allium geyeri
Bistorta vivipara
Psychrophila leptosepala
Cardamine cordifolia
Carex aquatilis
Carex canescens
Carex ebenea
Carex illota
Carex lanuginosa
Carex magellanica
Carex microptera
Cerastium strictum
Clementsia rhodantha
Deschampsia cespitosa
Dugaldia hoopsii
Eleocharis quinqueflora
Elymus trachycaulus
Erigeron coulteri
Heracleum lanatum
Hierochloe hirta
Ligularia bigelovii

Ligularia pudica
Ligusticum porteri
Luzula parviflora
Mertensia ciliata
Oxypolis fendleri
Pedicularis groenlandica
Penstemon whipplanus
Phleum commutatum
Poa fendleriana?
Potentilla pulcherrima
Ranunculus alismifolius
Rhodiola integrifolia
Salix planifolia
Senecio crassulus
Senecio triangularis
Sibbaldia procumbens
Sphagnum sp.
Stellaria umbellata
Veratrum tenuipetalum
Veronica nutans
Viola adunca



**Fen Botanical Survey
San Juan National Forest**

District: Pagosa
Fen number: P048
General area: Wolf Creek Pass
Elevation: 11,130 ft.
Date surveyed: 7-12-06
Surveyor: P. Lyon



Total number of species observed: 20

Dominant species: *Carex aquatilis*, *Eleocharis quinqueflora*

Comments: Center of fen, with stream, is better drained although lower.

Stream goes underground in some places.

Wettest places have *Eleocharis quinqueflora*.

Small areas with open water, about 10 ft wide. *Carex aquatilis* around edge, *Carex utriculata* in standing water.

Species list:

Achillea lanulosa
Agoseris aurantiaca
Bistorta bistortoides
Psychrophila leptosepala
Carex aquatilis
Carex canescens
Carex ebenea
Carex illota
Carex lanuginosa
Carex microptera
Carex saxatilis
Castilleja occidentalis

Deschampsia cespitosa
Eleocharis quinqueflora
Epilobium hornemannii
Juncus drummondii
Pedicularis groenlandica
Phleum commutatum
Ranunculus alismifolius
Senecio dimorphophyllus
Senecio triangularis
Veratrum tenuipetalum
Veronica nutans



**Fen Botanical Survey
San Juan National Forest**

District: Pagosa
Fen number: P185, P186
General area: V Rock
Elevation: 10,486 feet
Date surveyed: 7-11-06
Surveyor: P. Lyon



Total number of species observed: 38

Dominant species: *Carex aquatilis*, *Eleocharis quinqueflora*

Additional Photos: SJNF fens 2006/V Rock, Wolf Creek, Vallecito/ 1 to 11

Comments: Fens are connected, and very similar, so species list combined. Ankle-deep standing water throughout most of first fen. Grazed throughout. Cows, tracks, cowpies. V Rock Trail goes through nice patch of aspen/thimbleberry near bottom. Mostly aspen/lathyrus. Openings of *Festuca thurberi*. Some white fir. Lot of cows, use trails, lots of excrement. Large areas of trail eroded, multiple routes, braided, large boulders exposed. More work done on trail at upper parts, switchbacks.

Species list:

Achillea lanulosa
Aconitum columbianum
Agoseris aurantiaca
Allium geyeri
Antennaria umbrinella
Bistorta bistortoides
Psychrophila leptosepala
Carex aquatilis
Carex brunescens
Carex canescens
Carex echinata
Carex illota
Carex microptera
Carex nebraskensis
Carex saxatilis
Carex utriculata
Castilleja occidentalis
Clementsia rhodantha
Deschampsia cespitosa
Eleocharis palustris
Eleocharis quinqueflora

Epilobium hornemannii
Erigeron coulteri
Eriophorum angustifolium
Geum macrophyllum
Habenaria hyperborea
Hierochloa hirta
Micranthes rhomboidea
Oxyopsis fendleri
Pedicularis groenlandica
Phleum commutatum
Podistera eastwoodiae
Potentilla fruticosa
Ranunculus alismifolius
Rhodiola integrifolia
Salix planifolia
Senecio dimorphophyllus
Senecio triangularis
Solidago multiradiata
Veratrum tenuipetalum
Veronica nutans
Viola sororia