J. SUBALPINE SAGEBRUSH SHRUBLANDS (SU)

SU1. MOUNTAIN SAGEBRUSH/THURBER-ARIZONA FESCUES–DEEP COLD CLAY SOILS

(ARTRV/FETH-FEAR2). Mountain big sagebrush/Thurber fescue-Arizona fescue–Deep Argic Cryoborolls–Moderate slopes, 8,500-10,300 ft

NUMBER OF SAMPLES	45, soil descriptions from 16 (total 45)
ELEVATION	9,422 ft (8,560-10,220 ft); 2,872 m (2,600-3,120 m)
ASPECT	Various, usually not northerly
LITHOLOGY	Primarily clay-producing sedimentaries and soft igneous: Shale [28%], sandstone [15%], Soft Tuff [15%], Breccia and Basalt [15%], Mudstone [9%]. Some harder rocks: Granite [11%], Gneiss and Schist [7%]
FORMATIONS[1]	A wide variety of formations.
LANDFORMS	Mostly soil creep slopes [81%], some mesas and ridges [13%]
SLOPE POSITIONS	Mostly backslopes [50%], footslopes and lower backslopes [22%]; the rest upper backslopes to summits
SLOPE SHAPES	Mostly linear [72%] horizontally, Mostly linear [72%] vertically
SLOPE ANGLE	17% (0-45%)
SOIL PARENT MATERIAL	Mostly colluvium [77%], some residuum [10%]
COARSE FRAGMENTS	4% (0-14%) on surface, mostly the surface has no coarse fragments. Coarse fragments are 42% (15-78%) by volume in soil
SOIL DEPTH	71 cm (33-137 cm); 28 in (13-54 in)
MOLLIC THICKNESS	35 cm (17-62 cm); 14 in (6.5-25 in)
TEXTURE	*surface:* Mostly loamy (loam-silt loam-clay loam [83%]); *subsurface:* Mostly clay-loamy (clay loam-clay-silty clay loam-sandy clay loam [82%]
SOIL CLASSIFICATION	Predominantly Argic Cryoborolls [94%]
TOTAL LIVE COVER	193.5% (120-340%)
NUMBER OF SPECIES	26 (10-46)
TOTAL LIVE COVER/NO. SPECIES	9.1% (3.1-26.2%)
CLIMATE	Usually outside deep rainshadow. Subalpine climate, cool to cold, moist, exposed to sun, slightly exposed to wind
WATER	No permanent water on sites, but sites are often adjacent to willow riparian areas. Soils may be seasonally wet, and often have a few redoximorphic mottles.

Key to Community Types

1. Bitterbrush (PUTR2) present, 0.5-45% cover, often >5%..... (2)
1. Bitterbrush absent..... (3)

2. Total graminoid cover >90%. Bitterbrush <30% cover, subordinate to mountain sagebrush **B**
2. Total graminoid cover <90%. Bitterbrush 25-50% cover, codominant with mountain sagebrush .....**F**

3. Total graminoid cover >90%..... (4)
4. Total graminoid cover <90%..... (7)

4. Parry oatgrass present, T-95% cover ..... (5)
4. Parry oatgrass absent ..... (6)

5. Bitterbrush present, 0.5-30% cover ..... **B**
5. Bitterbrush absent ..... **A**

6. Thurber fescue >35% cover ..... **C**
6. Thurber fescue <35% cover ..... **D**

7. Parry oatgrass present, T-40% cover ..... (8)
7. Parry oatgrass absent ..... (9)

8. Bitterbrush >15% cover, codominant with sagebrush ..... **F**
8. Bitterbrush usually absent ..... **E**

9. Bitterbrush >15% cover, codominant with sagebrush ..... **F**
9. Bitterbrush usually absent ..... (10)

10. Total graminoid cover 70-90% ..... **G**
10. Total graminoid cover <70% ..... **H**

Description of Community Types

A *Mountain sagebrush-Parry oatgrass* Mountain sagebrush is dominant with 12-45% cover. There is no bitterbrush. Parry oatgrass dominates the understory, usually >20% cover. Thurber fescue is usually present, ranging from 0 to 65% cover. Total graminoid cover ranges from 96 to 160%. Graminoid production is 2,000-3,000 lb/ac/yr.

B *Mountain sagebrush-bitterbrush-Thurber fescue* Mountain sagebrush is dominant, with 30-50% cover. Bitterbrush is always present, ranging from 0.5 to 30% cover. Parry oatgrass is sometimes present, with up to 40% cover. Thurber fescue is always present but sometimes sparse, ranging from 0.5 to 25% cover. Total graminoid cover ranges from 100 to 170%. Graminoid production is 2,200-3,200 lb/ac/yr.

C *Mountain sagebrush-Thurber fescue* Mountain sagebrush is dominant, with 10-45% cover. Bitterbrush and Parry oatgrass are absent. Thurber fescue is codominant, with 40-90% cover. Total graminoid cover ranges from 90 to 160%. Graminoid production is 1,700-3,000 lb/ac/yr.

D *Mountain sagebrush-sparse Thurber fescue* Mountain sagebrush is dominant, with 10-65% cover. Bitterbrush and Parry oatgrass are absent. Thurber fescue is present in small amounts, 5-25% cover. Total graminoid cover ranges from 90 to 180%. Graminoid production is 1,800-3,200 lb/ac/yr.

E *Mountain sagebrush-Parry oatgrass-Thurber fescue* Mountain sagebrush is dominant, with 25-45% cover. Bitterbrush is absent. Parry oatgrass is present, T-35% cover. Thurber fescue is present, T-25% cover. Total graminoid cover ranges from 70 to 90% Graminoid production is 1,400-2,000 lb/ac/yr.

F *Mountain sagebrush-bitterbrush* is dominated by bitterbrush, with 15-45% cover, and mountain sagebrush, with 15-55% cover. Bitterbrush is absent. Parry oatgrass is usually absent, but may be present up to 2% cover. Thurber fescue is usually absent, but may have as much as 10% cover. Elk sedge (CAGE2) or Kentucky bluegrass (POPR) are prominent, usually at least one of these is >20% cover. Total graminoid cover ranges from 60 to 100%. Graminoid production is 750-2,200 lb/ac/yr.

G *Mountain sagebrush-rabbitbrush-forbs* Mountain sagebrush is dominant, with 20-40% cover. Bitterbrush and Parry oatgrass are absent. Thurber fescue is absent or present up to 35% cover. Total graminoid cover ranges from 60 to 75%. Graminoid production is 1,200-2,000 lb/ac/yr.

H *Mountain sagebrush-sparse Thurber fescue-forbs* is dominated by mountain sagebrush, with 10-45% cover, and Douglas rabbitbrush (CHVI8), with 0-35% cover. Bitterbrush and Parry oatgrass are absent. Thurber fescue is present, sometimes in smaller amounts, T-30% cover. Total graminoid cover is <50%, and graminoid production is 750-1,400 lb/ac/yr.

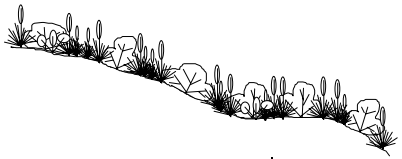
Community Type	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs
A. Mountain sagebrush-Parry oatgrass	9,638 (9,140-10,220) 11.0 (4-21)	46 (15-78) 50 (46-53) 26 (17-34)	1 (1-48) 7 (0-32) PN	0 (0-2) 43 (20-80) 124 (98-150) 49 (15-110)	22 (12-35) 216 (149-282) 11.3 (6.0-18.8)	484-1582 2149-2959 51-1174
B. Mountain sagebrush-bitterbrush-Thurber fescue	9,350 (9,120-9,480) 19.7 (14-25)	* * *	* 5 (0-32) LS	2 (0-7) 60 (47-70) 129 (106-162) 41 (25-51)	15 (13-19) 231 (201-257) 15.3 (13.4-16.3)	1121-1478 2313-3047 114-458
C. Mountain sagebrush-Thurber fescue	9,461 (8,560-9,800) 12.7 (0-28)	41 (23-59) 103 (60-137) 35 (18-49)	2 (0-6) 1 (1-3) LM	0 (0-0) 33 (10-47) 117 (91-150) 55 (20-85)	27 (13-34) 205 (121-266) 8.2 (4.5-16.2)	257-1119 1977-2963 69-929
D. Mountain sagebrush-sparse Thurber fescue	9,427 (9,020-9,960) 20.3 (9-45)	30 (20-45) 75 (62-89) 53 (45-62)	6 (0-14) 12 (2-25) MS	0 (0-2) 59 (12-135) 118 (92-170) 45 (17-75)	24 (13-36) 222 (159-340) 11.2 (4.8-26.2)	284-1790 2012-3096 59-803
E. Mountain sagebrush-Parry oatgrass-Thurber fescue	9,437 (9,120-9,870) 14.0 (4-32)	67 58 22	8 (3-13) 16 (8-23) LM	0 (0-0) 40 (34-45) 77 (75-81) 30 (19-35)	24 (10-31) 147 (128-157) 8.3 (4.3-15.6)	840-1083 1573-1731 65-233
F. Mountain sagebrush-bitterbrush	9,298 (8,960-9,640) 24.0 (6-30)	41 (21-61) 70 (38-108) 35 (17-51)	10 (1-17) 4 (0-11) MS	1 (0-8) 71 (52-106) 71 (52-95) 28 (3-90)	27 (14-45) 171 (141-237) 8.1 (3.1-16.9)	1214-1740 899-2082 9-987
G. Mountain sagebrush-rabbitbrush-forbs	9,577 (9,400-9,720) 14.7 (7-21)	38 (35-40) 70 (62-78) 37 (28-45)	3 (3-4) 10 (5-17) EM	0 (0-0) 38 (32-42) 74 (65-85) 57 (26-82)	39 (36-43) 169 (151-187) 4.4 (3.9-5.2)	798-1026 1297-1842 126-896
H. Mountain sagebrush-sparse Thurber fescue-forbs	9,259 (8,840-9,810) 15.6 (7-22)	45 (20-70) 38 (33-46) 33 (24-41)	4 (0-13) 9 (0-21) EM-ES	0 (0-0) 46 (26-61) 57 (50-65) 59 (14-110)	32 (17-46) 162 (129-227) 5.4 (4.0-7.6)	648-1358 843-1278 50-1172

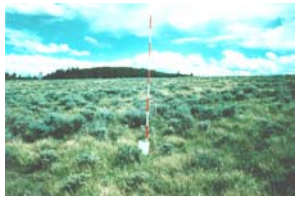
*. Unknown: measurements were not taken in this CT.

	SHRUBS	
ARAR8	Artemisia arbuscula	low sagebrush
ARTRV	Artemisia tridentata ssp. vaseyana	mountain big sagebrush
CEFE	Ceanothus fendleri	buckbrush
CHNA2	Chrysothamnus nauseosus	rubber rabbitbrush
CHVI8	Chrysothamnus viscidiflorus	Douglas rabbitbrush
SYRO	Symphoricarpos rotundifolius	mountain snowberry
	GRAMINOIDS	
ACHY	Achnatherum hymenoides	Indian ricegrass
ACLE9	Achnatherum lettermanii	Letterman needlegrass
ACNE9	Achnatherum nelsonii	Nelson's needlegrass
ACPI2	Achnatherum pinetorum	pine needlegrass
CAGE	Carex geophila	dryland sedge
CAGE2	Carex geyeri	elk sedge
CAOB4	Carex obtusata	blunt sedge
CASTE3	Carex stenophylla ssp. eleocharis	needleleaf sedge
DAPA2	Danthonia parryi	Parry oatgrass
ELEL5	Elymus elymoides	bottlebrush squirreltail
ELTR7	Elymus trachycaulus	slender wheatgrass
FEAR2	Festuca arizonica	Arizona fescue
FETH	Festuca thurberi	Thurber fescue
HECO26	Hesperostipa comata	needle-and-thread
KOMA	Koeleria macrantha	prairie junegrass
PASM	Pascopyrum smithii	western wheatgrass
POA	Poa	bluegrass
POFE	Poa fendleriana	muttongrass
PONEI2	Poa nemoralis ssp. interior	interior bluegrass
POPR	Poa pratensis	Kentucky bluegrass
POTR	Poa tracyi	Tracy bluegrass
	FORBS	
ACLA5	Achillea lanulosa	western yarrow
ADLE	Adenolinum lewisii	blue flax
ANPA4	Antennaria parvifolia	smallleaf pussytoes
ANEL5	Anticlea elegans	mountain death camas
CALI4	Castilleja linariifolia	Wyoming paintbrush
COLI2	Collomia linearis	slender-leaf collomia
ERCO24	Eremogone congesta	desert sandwort
ERFE3	Eremogone fendleri	desert sandwort
ERIGE2	Erigeron	fleabane
ERSP4	Erigeron speciosus	Oregon fleabane
ERSU2	Erigeron subtrinervis	threenerve fleabane
ERSU11	Eriogonum subalpinum	sulfurflower
ERUM	Eriogonum umbellatum	sulfur buckwheat
GASE6	Galium septentrionale	northern bedstraw
HEMU3	Heliomeris multiflora	showy goldeneye
LALE2	Lathyrus leucanthus	aspen peavine
LUAR3	Lupinus argenteus	silvery lupine
PHMU3	Phlox multiflora	flowery phlox
POHI6	Potentilla hippiana	horse cinquefoil
VIAM	Vicia americana	American vetch
WYMA	Wyethia x magna	mule's ears

SU2. **MOUNTAIN SAGEBRUSH/THURBER-IDAHO FESCUES–DEEP LOAMY CLAY SOILS**

(ARTRV/FETH-FEID). Mountain big sagebrush/Thurber fescue-Idaho fescue–Deep Argic Cryoborolls–Slopes and mesas, 8,800-10,400 ft





NUMBER OF SAMPLES	15, soil descriptions from 6 (total 15)
ELEVATION	9,585 ft (8,820-10,400 ft); 2,921 m (2,688-3,170 m)
AVERAGE ASPECT	328°M (r = 0.28)
LITHOLOGY	Sandstone-mudstone-shale [55%], Tuff-granite [30%], Conglomerate [15%]
FORMATIONS[1]	A wide variety
LANDFORMS	Soil creep slopes [58%], mesas and benches [33%]
SLOPE POSITIONS	Footslopes, lower backslopes, toeslopes [77%]
SLOPE SHAPES	Mostly linear both horizontally and vertically
SLOPE ANGLE	12.3% (4-26%)
SOIL PARENT MATERIAL	Colluvium [64%] or residuum [27%]
COARSE FRAGMENTS	3.2% (0-11%) cover on surface, 31.5% (7-59%) by volume in soil
SOIL DEPTH	85 cm (63-98 cm); 33.6 in (25-39 in)
MOLLIC THICKNESS	26 cm (15-46 cm); 10.1 in (6-18 in)
TEXTURE	surface: Loam [63%], silty clay loam, sandy loam; subsurface: Clay, sandy clay loam, or clay loam
SOIL CLASSIFICATION	All Cryoborolls, mostly Argic [75%]
TOTAL LIVE COVER	174.4% (78.8-311.0%)
NUMBER OF SPECIES	25.4 (12-46)
TOTAL LIVE COVER/NO. SPECIES	9.4% (3.1-25.9%)
CLIMATE	Usually outside deep rainshadow. Subalpine climate, cool to cold, moist, exposed to sun, slightly exposed to wind
WATER	No permanent water on sites, but sites are often adjacent to willow riparian areas. Soils may be seasonally wet, and often have a few redoximorphic mottles.

Key to Community Types

1. Thurber fescue >30% cover ..... **A**
1. Thurber fescue <30% cover ..... (2)

2. Parry oatgrass >10% cover, often >30% ..... (3)
2. Parry oatgrass absent or rarely <5% cover ..... (4)

3. Thurber fescue present, >5% cover. Idaho fescue >5% cover, often >10% ..... **B**
3. Thurber fescue absent or <5% cover. Idaho fescue <10% cover ..... **C**

4. Total graminoid cover >60% ..... **D**
4. Total graminoid cover <60% ..... **E**

Description of Community Types

A *Parry oatgrass-Thurber fescue-mountain sagebrush-Idaho fescue* is dominated by Parry oatgrass, 40-80% cover. Mountain sagebrush cover is 10-20%, and is being outcompeted by oatgrass. Thurber fescue cover is 30-50%. Total graminoid cover ranges from 100 to 150%. Graminoid production is 2,300-3,000 lb/ac/yr.

B *Parry oatgrass-Idaho fescue-mountain sagebrush* is dominated by a mix of Parry oatgrass, with 10-80% cover, Idaho fescue, with 5-45% cover, mountain sagebrush, with 1-40% cover, and Thurber fescue, with 5-30% cover. Kentucky bluegrass (POPR) or slender wheatgrass (ELTR7) may be prominent in some sites. Total graminoid cover ranges from 80 to 230%. Graminoid production is 1,500-3,400 lb/ac/yr.

C *Parry oatgrass-mountain sagebrush-muttongrass-sparse Idaho fescue* is dominated by Parry oatgrass, with 40-60% cover. Mountain sagebrush, with 10-30% cover, is being outcompeted by oatgrass. Thurber fescue is absent or very minor. Total graminoid cover ranges from 80 to 95%. Graminoid production is 1,600-2,000 lb/ac/yr.

D *Mountain sagebrush-yarrow-sparse Thurber fescue-sparse Idaho fescue* is dominated by mountain sagebrush, with 15-45% cover. Parry oatgrass is absent. Idaho fescue and Thurber fescue cover each range from 1-15%. Total graminoid cover ranges from 60 to 100%. Graminoid production is 1,200-2,200 lb/ac/yr.

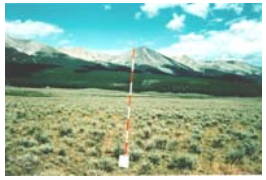
E *Mountain sagebrush-sparse Thurber fescue-sparse Idaho fescue* is dominated by mountain sagebrush, with 10-55% cover. Parry oatgrass is absent. Idaho fescue is always present, T-10% cover. Thurber fescue is always present at 2-15% cover. Total graminoid cover ranges from 10 to 40%. Graminoid production is 150-600 lb/ac/yr.

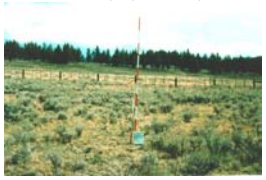
Community Type	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Cover, %: Trees Shrubs Gramin. Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs
A. Parry oatgrass-Thurber fescue-mountain sagebrush-Idaho fescue	9,760 (9,450-9,920) 11.7 (6-20)	23 (7-38) 94 (89-98) 24 (21-27)	* 3 (1-5) PN-LS	0 (0-0) 21 (15-31) 120 (106-142) 54 (25-105)	24 (13-34) 195 (153-246) 10.3 (4.5-18.9)	360-766 2331-2885 116-1132
B. Parry oatgrass-Idaho fescue-mountain sagebrush	9,455 (9,080-9,910) 10.5 (6-21)	36 (14-59) 81 (63-98) 34 (27-40)	2 (1-3) 6 (5-6) LS	0 (0-0) 21 (6-41) 139 (82-225) 53 (35-80)	20 (12-36) 214 (143-311) 14.0 (4.0-25.9)	148-999 1768-3219 231-868
C. Parry oatgrass-mountain sagebrush-muttongrass-sparse Idaho fescue	9,440 (9,440-9,440) 13.5 (13-14)	34 (27-41) 83 (83-83) 15 (15-15)	9 (7-11) 6 (6-7) LM-MS	0 (0-0) 27 (26-27) 86 (82-91) 34 (32-36)	31 (30-31) 147 (144-150) 4.8 (4.8-4.8)	644-672 1752-1981 189-250
D. Mountain sagebrush-yarrow-sparse Thurber fescue-sparse Idaho fescue	9,310 (8,820-9,670) 12.0 (4-16)	26 98 46	2 (2-2) 14 (14-14) MS-EM	0 (0-0) 42 (20-65) 87 (69-96) 64 (53-73)	24 (13-45) 192 (142-234) 11.8 (3.2-16.7)	489-1414 1408-2094 490-777
E. Mountain sagebrush-sparse Thurber fescue-sparse Idaho fescue	9,957 (9,690-10,400) 14.7 (4-26)	41 70 15	2 (1-4) 24 (21-30) MS	0 (0-0) 32 (11-50) 27 (14-38) 43 (16-91)	32 (23-46) 101 (79-140) 3.3 (3.1-3.4)	281-1178 163-530 56-997

*. Unknown: measurements were not taken in this CT.

	SHRUBS	
ARTRV	Artemisia tridentata ssp. vaseyana	mountain big sagebrush
CHVI8	Chrysothamnus viscidiflorus	Douglas rabbitbrush
ROWO	Rosa woodsii	Woods rose
	GRAMINOIDS	
ACNE9	Achnatherum nelsonii	Nelson's needlegrass
BRCA10	Bromopsis canadensis	fringed brome
BRPO5	Bromopsis porteri	nodding brome
CAOB4	Carex obtusata	blunt sedge
CASTE3	Carex stenophylla ssp. eleocharis	needleleaf sedge
DAPA2	Danthonia parryi	Parry oatgrass
ELTR7	Elymus trachycaulus	slender wheatgrass
FEAR2	Festuca arizonica	Arizona fescue
FEID	Festuca idahoensis	Idaho fescue
FETH	Festuca thurberi	Thurber fescue
HECO26	Hesperostipa comata	needle-and-thread
KOMA	Koeleria macrantha	prairie junegrass
MUFI	Muhlenbergia filiculmis	slimstem muhly
POFE	Poa fendleriana	muttongrass
PONEI2	Poa nemoralis ssp. interior	interior bluegrass
POPR	Poa pratensis	Kentucky bluegrass
	FORBS	
ACLA5	Achillea lanulosa	western yarrow
ANRO2	Antennaria rosea	rose pussytoes
DENU2	Delphinium nuttallianum	pine larkspur
ERCO24	Eremogone congesta	desert sandwort
ERFE3	Eremogone fendleri	desert sandwort
EREA	Erigeron eatonii	Eaton fleabane
ERSP4	Erigeron speciosus	Oregon fleabane
ERSU11	Eriogonum subalpinum	sulfurflower
HEVI4	Heterotheca villosa	hairy golden aster
LALE2	Lathyrus leucanthus	aspen peavine
LUAR3	Lupinus argenteus	silvery lupine
LUSE4	Lupinus sericeus	silky lupine
ORLU2	Orthocarpus luteus	yellow owl-clover
PHMU3	Phlox multiflora	flowery phlox
POFO	Polemonium foliosissimum	sky pilot
POCO13	Potentilla concinna	elegant cinquefoil
SEDE2	Selaginella densa	little club-moss
TAOF	Taraxacum officinale	common dandelion
VIAM	Vicia americana	American vetch

SU3. **MOUNTAIN SAGEBRUSH/IDAHO FESCUE–SANDY SOILS–GLACIAL** (ARTRV/FEID). Mountain big sagebrush/Idaho fescue–Deep, sandy Cryic soils–Glacial outwash terraces and moraines, 9,400-10,000 ft





NUMBER OF SAMPLES	14, soil descriptions from 10; 2 not assigned to a CT (total 16)
ELEVATION	9,666 ft (9,440-9,940 ft); 2,946 m (2,877-3,030 m)
AVERAGE ASPECT	283°M (r = 0.09)
LITHOLOGY	Predominantly granite [94%]
FORMATIONS[1]	Predominantly Xg [94%]
LANDFORMS	Glacial outwash terraces [73%] and end moraines [27%]
SLOPE SHAPES	Linear [53%] to undulating [47%] horizontally, Mostly linear [67%] vertically
SLOPE ANGLE	7.3% (1-26%)
SOIL PARENT MATERIAL	Glacial
COARSE FRAGMENTS	13.9% (1-42%) cover on surface, 43.4% (21-72%) by volume in soil
SOIL DEPTH	62 cm (50-79 cm); 24.5 in (20-31 in)
MOLLIC THICKNESS	7 cm (0-25 cm); 2.9 in (0-10 in)
TEXTURE	A wide variety of surface textures; subsurface is usually sandy (loamy sand-sandy clay loam-sandy loam-sand [83%]
SOIL CLASSIFICATION	Cryoborolls [64%] or Cryochrepts [36%], all deep
TOTAL LIVE COVER	131.5% (90.0-157.3%)
NUMBER OF SPECIES	30.5 (25-36)
TOTAL LIVE COVER/NO. SPECIES	4.3% (3.5-5.6%)
CLIMATE	Cold to very cold partial rainshadow Subalpine climates. Sites are characterized by cold-air drainage year-round.
WATER	Soils are well-drained. Precipitation is low during the growing season, but significant moisture accompanies cold-air drainage daily. No open water in or near sites, but sites are sometimes adjacent to broad short-willow riparian areas.

Key to Community Types

1. Total graminoid cover >85%. Slimstem muhly >20% cover, often >25% ..... **A**
1. Total graminoid cover <85%. Slimstem muhly <25% cover, often <20% ..... (2)

2. Total graminoid cover 70-85% ..... **B**
2. Total graminoid cover <70% ..... (3)

3. Total graminoid cover 50-70% ..... **C**
3. Total graminoid cover <50% ..... **D**

Description of Community Types

A *Mountain sagebrush-Idaho fescue-slimstem muhly-prairie smoke* is dominated by mountain sagebrush, 15-35% cover, slimstem muhly, 20-40% cover, blunt sedge (CAOB4), 15-40% cover, and Idaho fescue, 15-40% cover. Total graminoid cover is 85-110%, and graminoid production is 1,750-2,400 lb/ac/yr.

B *Idaho fescue-mountain sagebrush-slimstem muhly* is dominated by mountain sagebrush, 10-25% cover, slimstem muhly, 5-25% cover, and Idaho fescue, 20-45% cover. Total graminoid cover is 70-85%, and graminoid production is 1,400-2,000 lb/ac/yr.

C *Mountain sagebrush-blunt sedge-Idaho fescue-slimstem muhly-horse cinquefoil* is dominated by a mix of mountain sagebrush, blunt sedge, Idaho fescue, and slimstem muhly. Total graminoid cover is 55-70%, and graminoid production is 800-1,400 lb/ac/yr.

D *Mountain sagebrush-Idaho fescue-desert sandwort* is dominated by mountain sagebrush and Idaho fescue. Total graminoid cover is <50%, and graminoid production is 400-900 lb/ac/yr.

Communities Not Assigned to a Community Type

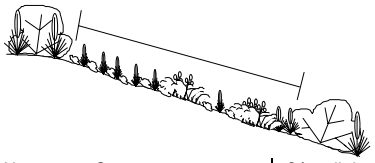
- A community with small amounts of mountain sagebrush and Idaho fescue, but dominated by forbs such as sulfurflower (ERSU11), rose pussytoes (ANRO2), or prairie smoke (ERTR19). This is a community where the sagebrush was removed (mechanically or chemically), after which the site was grazed heavily.
- A community dominated by mountain sagebrush, prairie junegrass (KOMA), and blunt sedge (CAOB4). Slimstem muhly is present in small amounts, but Idaho fescue is absent. This is a heavily-grazed community.

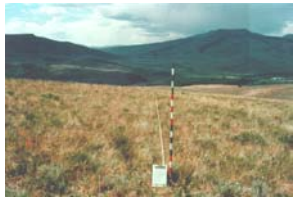
Community Type	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs
A. Mountain sagebrush-Idaho fescue-slimstem muhly-prairie smoke	9,760 (9,700-9,820) 4.6 (1-12)	38 (21-59) 61 (50-64) 4 (0-12)	9 (1-22) 6 (3-11) LS-LM	0 (0-0) 24 (20-35) 94 (87-103) 31 (24-43)	31 (25-36) 150 (139-157) 4.9 (4.4-5.6)	486-871 1877-2257 102-334
B. Idaho fescue-mountain sagebrush-slimstem muhly	9,630 (9,490-9,700) 5.5 (3-10)	44 (30-58) 55 (50-64) 5 (0-12)	16 (1-34) 9 (7-10) LM	0 (0-0) 20 (14-25) 79 (74-84) 40 (38-42)	31 (28-33) 139 (127-147) 4.5 (4.4-4.5)	358-607 1551-1822 274-326
C. Mountain sagebrush-blunt sedge-Idaho fescue-slimstem muhly-horse cinquefoil	9,518 (9,440-9,700) 9.9 (2-13)	48 (22-72) 63 (52-79) 13 (0-25)	8 (2-20) 17 (10-25) LM	0 (0-0) 24 (21-30) 61 (55-65) 31 (17-42)	32 (27-35) 121 (102-133) 3.7 (3.6-3.8)	528-749 999-1294 58-323
D. Mountain sagebrush-Idaho fescue-desert sandwort	9,773 (9,440-9,940) 9.3 (1-26)	44 (25-64) 70 (67-72) 8 (0-23)	27 (17-42) 13 (9-20) MS	0 (0-0) 27 (14-39) 45 (38-50) 43 (13-67)	27 (26-28) 114 (90-127) 4.2 (3.5-4.5)	357-952 528-842 46-687

*. Unknown: measurements were not taken in this CT.

	SHRUBS	
ARTRV	Artemisia tridentata ssp. vaseyana	mountain big sagebrush
	GRAMINOIDS	
CAOB4	Carex obtusata	blunt sedge
FEID	Festuca idahoensis	Idaho fescue
FESA	Festuca saximontana	Rocky Mountain fescue
KOMA	Koeleria macrantha	prairie junegrass
MUFI	Muhlenbergia filiculmis	slimstem muhly
	FORBS	
AGGL	Agoseris glauca	false-dandelion
ANRO2	Antennaria rosea	rose pussytoes
ERCO24	Eremogone congesta	desert sandwort
ERSU11	Eriogonum subalpinum	sulfurflower
ERTR19	Erythrocoma triflora	prairie smoke
HEVI4	Heterotheca villosa	hairy golden aster
HEPA11	Heuchera parvifolia	littleleaf alumroot
PHMU3	Phlox multiflora	flowery phlox
PSJA2	Pseudostellaria jamesiana	tuber starwort
SOMU	Solidago multiradiata	mountain goldenrod
	FERNS & FERN-ALLIES	
LYAN2	Lycopodium annotinum	stiff clubmoss

SU4. **LOW SAGEBRUSH/IDAHO FESCUE–HEAVY CLAY SOILS** (ARAR8/DAPA2-FEID). Low sagebrush/Parry oatgrass-Idaho fescue–Smectitic Cryoboralfs–Exposed Subalpine slopes and ridges, 9,210-10,490 ft





NUMBER OF SAMPLES	24, soil descriptions from 19; 4 not assigned to a CT (total 28)
ELEVATION	9,620 ft (9,210-10,490 ft); 2,932 m (2,807-3,197 m)
AVERAGE ASPECT	255°M (r = 0.58)
LITHOLOGY	Mostly sedimentary: shale-sandstone-mudstone [68%]; some igneous: gneiss-granite-schist-breccia-tuff-basalt [27%]
FORMATIONS[1]	Km-Jm-KJdm-Kd [64%]; Tos-Tpl-Tbb-Tmi [21%]
LANDFORMS	Soil creep slopes [43%], ridges [30%], benches and mesas [13%], slump-earthflows [9%]
SLOPE POSITIONS	Backslopes [42%], summits and shoulders [46%]
SLOPE SHAPES	Convex [52%] to linear [35%] horizontally, Linear [78%] vertically
SLOPE ANGLE	13.8% (8-31%)
SOIL PARENT MATERIAL	Residuum [35%], Colluvium [26%], Colluvium over Residuum [17%]
COARSE FRAGMENTS	8.7% (0-41%) cover on surface, 33.8% (0-66%) by volume in soil
SOIL DEPTH	86 cm (47-140 cm); 34.0 in (19-55 in)
MOLLIC THICKNESS	25 cm (0-87 cm); 9.7 in (0-34 in)
TEXTURE	On the surface, a wide variety, led by clay loam [35%] and loam [26%]; subsurface clay [74%]
SOIL CLASSIFICATION	All Cryoboralfs, mostly deep [76%]
TOTAL LIVE COVER	163.1% (109.0-241.1%)
NUMBER OF SPECIES	33.0 (12-49)
TOTAL LIVE COVER/NO. SPECIES	5.2% (2.7-9.1%)
CLIMATE	Cool to cold, dry in summer. The local distribution of this type indicates that may be the product of its unique soils.
WATER	Soils are impermeable, so most water runs off.

Key to Community Types

1. Parry oatgrass >30% cover ..... **A**
1. Parry oatgrass usually absent, sometimes <30% cover ..... (2)

2. Thurber fescue >10% cover. Total graminoid cover 65-110% ..... (3)
2. Thurber fescue usually absent, rarely <5% cover. Total graminoid cover 30-70% ..... (4)

3. Thurber fescue >30% cover. Junegrass (KOMA) absent or <2% cover ..... **B**
3. Thurber fescue 10-30% cover. Junegrass >5% cover, often >10% ..... **C**

4. Parry oatgrass 10-30% cover ..... **D**
4. Parry oatgrass absent or <5% cover ..... **E**

Description of Community Types

A *Parry oatgrass-low sagebrush-Idaho fescue-desert sandwort* is dominated by Parry oatgrass, with 35-75% cover. Low sagebrush is conspicuous, 10-40% cover. Idaho fescue is sometimes prominent, 2-40% cover. Junegrass (KOMA), and ballhead desert sandwort (ERCO24) are both constant. Total graminoid cover ranges from 75 to 110%. Graminoid production is 600-800 lb/ac/yr.

B *Thurber fescue-low sagebrush* is dominated by Thurber fescue, with 35-90% cover. Low sagebrush is subdominant, 10-50% cover. Parry oatgrass is usually absent, sometimes present up to 2% cover. Idaho fescue is absent or <15% cover. Total graminoid cover ranges from 70 to 120%. Graminoid production is 600-800 lb/ac/yr.

C *Low sagebrush-Idaho fescue-Thurber fescue-sulfurflower* is dominated by low sagebrush, at 20-60% cover, and Thurber fescue, 10-25% cover. Parry oatgrass is absent or <5%. Idaho fescue is always present, 1-30% cover. Sulfurflower (ERSU11) is a constant. Total graminoid cover ranges from 40 to 110%. Graminoid production is 250-750 lb/ac/yr.

D *Low sagebrush-Parry oatgrass-prairie junegrass* is dominated by low sagebrush, 5-35% cover, Parry oatgrass, 10-30% cover, or junegrass, 3-20% cover. Thurber fescue is absent. Idaho fescue is cover varies from 0 to 15%. Total graminoid cover ranges from 40 to 60%. Graminoid production is 300-500 lb/ac/yr.

E *Low sagebrush* is dominated by low sagebrush, 5-50% cover, with a variety of grasses, different in each plot. Total graminoid cover ranges from 35 to 70%. Graminoid production is 200-500 lb/ac/yr.

Communities Not Assigned to a Community Type

- One community was dominated by Idaho fescue, with lesser amounts of low sagebrush, false-dandelion (AGGL), and bluegrass (POA). This may be a separate community type that is under-represented in our sample.
- One community was dominated by almost complete cover of smooth brome (BRIN7), with lesser amounts of Kentucky bluegrass (POPR), low sagebrush, Parry oatgrass, and Idaho fescue. Smooth brome, an exotic, invaded this sites from a nearby site artificially seeded for revegetation. The natives sagebrush, oatgrass, and fescue may have declined because of shade and other competitive effects from the smooth brome. Smooth brome is not very palatable to herbivores, rendering the site useless to livestock and game. Smooth brome behaves as a weed, and should not be for revegetation.
- One community was dominated by abundant Parry oatgrass (>50% cover), and lesser amounts of low sagebrush, Idaho fescue, Thurber fescue, and other grasses. This may also be a separate community type which is under-represented in our sample.

Community Type	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs
A. Parry oatgrass-low sagebrush-Idaho fescue-desert sandwort	9,663 (9,380-9,900) 11.0 (8-14)	46 (21-66) 78 (47-116) 25 (14-36)	7 (4-15) 7 (1-18) PN-LS	0 (0-0) 23 (13-35) 90 (77-102) 51 (25-85)	30 (19-43) 164 (127-211) 5.8 (3.9-7.5)	124-364 679-738 71-768
B. Thurber fescue-low sagebrush	9,745 (9,210-10,490) 22.2 (15-31)	39 (0-62) 94 (63-117) 50 (31-87)	7 (0-17) 11 (1-31) LM	0 (0-0) 34 (16-52) 100 (73-116) 49 (8-127)	34 (26-44) 183 (114-241) 5.6 (2.7-8.0)	154-597 652-738 15-967
C. Low sagebrush-Idaho fescue-Thurber fescue-sulfurflower	9,653 (9,510-9,780) 11.5 (10-14)	16 (11-21) 109 (46-140) 5 (0-14)	6 (1-15) 10 (4-15) LM-MS	0 (0-0) 44 (28-55) 74 (40-105) 55 (24-71)	36 (33-40) 173 (125-223) 4.9 (3.1-6.7)	263-631 290-738 64-619
D. Low sagebrush-Parry oatgrass-prairie junegrass	9,650 (9,600-9,700) 9.5 (9-10)	29 (29-29) 84 (54-113) 11 (3-18)	24 (6-41) 14 (10-19) MS	0 (0-0) 21 (5-36) 49 (45-54) 48 (43-53)	32 (28-36) 118 (112-124) 3.8 (3.1-4.4)	49-377 357-477 262-382
E. Low sagebrush	9,412 (9,220-9,750) 11.3 (9-14)	24 (8-44) 72 (49-84) 16 (6-36)	9 (2-19) 15 (4-25) EM-ES	0 (0-1) 34 (11-61) 52 (38-68) 61 (40-94)	34 (12-49) 147 (109-214) 4.8 (3.0-9.1)	104-687 260-616 221-843

*. Unknown: measurements were not taken in this CT.

	SHRUBS	
CHPA13	Chrysothamnus parryi	Parry rabbitbrush
CHVI8	Chrysothamnus viscidiflorus	Douglas rabbitbrush
CHVIP5	Chrysothamnus viscidiflorus ssp. pumilus	green rabbitbrush
	GRAMINOIDS	
ACLE9	Achnatherum lettermanii	Letterman needlegrass
ACPI2	Achnatherum pinetorum	pine needlegrass
BRPO5	Bromopsis porteri	nodding brome
CAREX	Carex	sedge
CAFO3	Carex foenea	silvertop sedge
CAGE2	Carex geyeri	elk sedge
CAOB4	Carex obtusata	blunt sedge
DAPA2	Danthonia parryi	Parry oatgrass
FEID	Festuca idahoensis	Idaho fescue
FETH	Festuca thurberi	Thurber fescue
HECO26	Hesperostipa comata	needle-and-thread
KOMA	Koeleria macrantha	prairie junegrass
POA	Poa	bluegrass
POFE	Poa fendleriana	muttongrass
PONEI2	Poa nemoralis ssp. interior	interior bluegrass
POPR	Poa pratensis	Kentucky bluegrass
POSE	Poa secunda	Sandberg bluegrass
	FORBS	
ACLA5	Achillea lanulosa	western yarrow
ADLE	Adenolinum lewisii	blue flax
AGGL	Agoseris glauca	false-dandelion
ANCY	Anemone cylindrica	anemone thimbleweed
ASFO	Aster foliaceus	leafybract aster
ASMIO	Astragalus miser var. oblongifolius	weedy milkvetch
ERCO24	Eremogone congesta	desert sandwort
ERFE3	Eremogone fendleri	desert sandwort
EREL9	Erigeron elatior	tall fleabane
ERSP4	Erigeron speciosus	Oregon fleabane
ERSU11	Eriogonum subalpinum	sulfurflower
ERUM	Eriogonum umbellatum	sulfur buckwheat
GASE6	Galium septentrionale	northern bedstraw
LALE2	Lathyrus leucanthus	aspen peavine
LUAR3	Lupinus argenteus	silvery lupine
PECA4	Penstemon caespitosus	beardtongue
PHMU3	Phlox multiflora	flowery phlox
POPU9	Potentilla pulcherrima	beauty cinquefoil
TAOF	Taraxacum officinale	common dandelion
VIAM	Vicia americana	American vetch
WYMA	Wyethia x magna	mule's ears

SU5. **LOW-MOUNTAIN SAGEBRUSHES/IDAHO FESCUE–HEAVY CLAY SOILS** (ARAR8-ARTRV/DAPA2-FEID). Low sagebrush-Mountain big sagebrush/Parry oatgrass-Idaho fescue–Smectitic Cryoboralfs–Exposed Subalpine ridges, 9,000-10,000 ft

NUMBER OF SAMPLES	5, soil descriptions from 2 (total 5)
ELEVATION	9,460 ft (9,000-9,920 ft); 2,883 m (2,743-3,023 m)
AVERAGE ASPECT	255°M (r = 0.58)
LITHOLOGY	Mudstone, sandstone, granite, gneiss
FORMATIONS[1]	Jm, Tos
LANDFORMS	Ridges
SLOPE POSITIONS	Summits and shoulders
SLOPE SHAPES	Linear to convex horizontally, Convex to concave vertically
SLOPE ANGLE	10.0%
SOIL PARENT MATERIAL	Residuum or old Alluvium
COARSE FRAGMENTS	0.9% (1-1%) cover on surface, 19.3% (19-20%) by volume in soil
SOIL DEPTH	73 cm (26-120 cm); 28.7 in (10-47 in)
MOLLIC THICKNESS	27 cm (3-51 cm); 10.6 in (1-20 in)
TEXTURE	surface: Clay loam, subsurface: Clay
SOIL CLASSIFICATION	Cryoboralfs, very deep
TOTAL LIVE COVER	182.4% (128.5-236.0%)
NUMBER OF SPECIES	22.2 (12-40)
TOTAL LIVE COVER/NO. SPECIES	10.7% (5.0-19.7%)
CLIMATE	Cool to cold, dry in summer. The local distribution of this type indicates that it results from the unique soil situation.
WATER	Soils are impermeable so most water runs off.

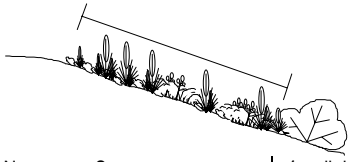
Community Type

A *Mountain sagebrush-low sagebrush* is dominated by mountain sagebrush, with 20-40% cover, and low sagebrush, with 10-45% cover. Parry oatgrass is usually prominent, but may be absent, with cover ranging from 0 to 75%. Idaho fescue is usually prominent but may be absent, with cover ranging from 0 to 35% cover. Thurber fescue (FETH) was prominent in one plot.

Community Type	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs
A. Mountain sagebrush-low sagebrush	9,460 (9,000-9,920) 10.0 (10-10)	19 (19-20) 73 (26-120) 27 (3-51)	1 (1-1) 4 (2-5)	0 (0-0) 52 (31-66) 83 (37-150) 47 (19-109)	22 (12-40) 182 (129-236) 10.7 (5.0-19.7)	753-1428 512-2959 66-1167

	SHRUBS	
ARTRV	Artemisia tridentata ssp. vaseyana	mountain big sagebrush
CHVI8	Chrysothamnus viscidiflorus	Douglas rabbitbrush
SYRO	Symphoricarpos rotundifolius	mountain snowberry
	GRAMINOIDS	
ACLE9	Achnatherum lettermanii	Letterman needlegrass
CAGE2	Carex geyeri	elk sedge
CAOB4	Carex obtusata	blunt sedge
DAPA2	Danthonia parryi	Parry oatgrass
ELEL5	Elymus elymoides	bottlebrush squirreltail
FEID	Festuca idahoensis	Idaho fescue
FETH	Festuca thurberi	Thurber fescue
POA	Poa	bluegrass
POFE	Poa fendleriana	muttongrass
POJU	Poa juncifolia	alkali bluegrass
POPR	Poa pratensis	Kentucky bluegrass
	FORBS	
ACLA5	Achillea lanulosa	western yarrow
AGGL	Agoseris glauca	false-dandelion
ANRO2	Antennaria rosea	rose pussytoes
ASTER	Aster	aster
DENU2	Delphinium nuttallianum	pine larkspur
ERCO24	Eremogone congesta	desert sandwort
ERSU2	Erigeron subtrinervis	threenerve fleabane
ERSU11	Eriogonum subalpinum	sulfurflower
LALE2	Lathyrus leucanthus	aspen peavine
PHMU3	Phlox multiflora	flowery phlox
PODO4	Polygonum douglasii	Douglas knotweed
RANUN	Ranunculus	buttercup
TRGY	Trifolium gymnocarpum	holly-leaf clover
WYMA	Wyethia x magna	mule's ears

SU6. **LOW SAGEBRUSH/THURBER-IDAHO FESCUES–COLD DARK CLAY SOILS** (ARAR8/DAPA2-FETH-FEID). Low sagebrush/Parry oatgrass-Thurber fescue-Idaho fescue–Argic Cryoborolls–Subalpine slopes, 8,900-10,600 ft



NUMBER OF SAMPLES	4, soil descriptions from 4 (total 4)
ELEVATION	9,753 ft (8,980-10,530 ft); 2,972 m (2,737-3,209 m)
AVERAGE ASPECT	89°M (r = 0.24)
LITHOLOGY	Various
FORMATIONS[1]	Various
LANDFORMS	Soil creep slopes, debris flows, and lateral moraines
SLOPE POSITIONS	Upper backslopes, toeslopes, and summits
SLOPE SHAPES	Linear to convex horizontally, Linear vertically
SLOPE ANGLE	18.5% (8-40%)
SOIL PARENT MATERIAL	Colluvial, old alluvial, or glacial
COARSE FRAGMENTS	12.6% (3-32%) cover on surface, 53.9% (30-77%) by volume in soil
SOIL DEPTH	93 cm (56-139 cm); 36.6 in (22-55 in)
MOLLIC THICKNESS	48 cm (24-106 cm); 18.7 in (9-42 in)
TEXTURE	Various
SOIL CLASSIFICATION	Argic Cryoborolls, very deep to deep
TOTAL LIVE COVER	153.2% (134.4-164.1%)
NUMBER OF SPECIES	29.5 (19-36)
TOTAL LIVE COVER/NO. SPECIES	5.6% (4.1-8.6%)
CLIMATE	Cool to cold, dry in summer. The local distribution of this type indicates that it is responding primarily to the unique soil situation.
WATER	These soils are very impermeable, hence most water runs off.

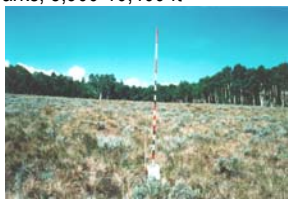
Community Type

A *Thurber fescue-low fescue-blunt sedge-aspen peavine* is dominated by Thurber fescue, 2-80% cover, and low sagebrush, 15-40% cover. Blunt sedge is a conspicuous understory plant, 3-35% cover. Total graminoid cover is 40-130%, and graminoid production is 300-800 lb/ac/yr.

Community Type	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs
A. Thurber fescue-low sagebrush-blunt sedge-aspen peavine	9,753 (8,980-10,530) 18.5 (8-40)	54 (30-77) 93 (56-139) 48 (24-106)	13 (3-32) 15 (13-19)	0 (0-0) 26 (18-34) 87 (44-126) 40 (21-65)	30 (19-36) 153 (134-164) 5.6 (4.1-8.6)	168-346 348-737 42-550

	SHRUBS	
ARAR8	Artemisia arbuscula	low sagebrush
	GRAMINOIDS	
ACLE9	Achnatherum lettermanii	Letterman needlegrass
ACPI2	Achnatherum pinetorum	pine needlegrass
BRCA10	Bromopsis canadensis	fringed brome
CAOB4	Carex obtusata	blunt sedge
CASTE3	Carex stenophylla ssp. eleocharis	needleleaf sedge
DAPA2	Danthonia parryi	Parry oatgrass
ELEL5	Elymus elymoides	bottlebrush squirreltail
FEAR2	Festuca arizonica	Arizona fescue
FETH	Festuca thurberi	Thurber fescue
KOMA	Koeleria macrantha	prairie junegrass
MUMO	Muhlenbergia montana	mountain muhly
POFE	Poa fendleriana	muttongrass
POPR	Poa pratensis	Kentucky bluegrass
	FORBS	
ACLA5	Achillea lanulosa	western yarrow
ANRO2	Antennaria rosea	rose pussytoes
ERCO24	Eremogone congesta	desert sandwort
EREA	Erigeron eatonii	Eaton fleabane
ERUM	Eriogonum umbellatum	sulfur buckwheat
LALE2	Lathyrus leucanthus	aspen peavine
LUAR3	Lupinus argenteus	silvery lupine
POHI6	Potentilla hippiana	horse cinquefoil
SOSI3	Solidago simplex	Mt. Albert goldenrod
WYMA	Wyethia x magna	mule's ears

SU7. **SILVER SAGEBRUSH/FESCUE–COLD DARK SOILS** (ARCA13/FETH-FEID). Silver sagebrush/Thurber fescue-Idaho fescue–Cryoborolls–Benches, mesas, and parks, 8,900-10,400 ft



NUMBER OF SAMPLES	10, soil descriptions from 6 of these (total 10)
ELEVATION	9,822 ft (8,900-10,390 ft) = 2,994 m (2,713-3,167 m)
AVERAGE ASPECT	4°M (r = 0.42)
LITHOLOGY	Mostly soft sedimentaries: mudstone and sandstone [67%]; some igneous: Tuff-gneiss-granite [33%]
FORMATIONS[1]	Various
LANDFORMS	Soil creep slopes [45%], mesas [18%], swales [18%]
SLOPE POSITIONS	Toeslopes and footslopes [83%]
SLOPE SHAPES	Concave [56%] to convex [22%] horizontally, Linear [67%] to concave [33%] vertically
SLOPE ANGLE	7.9% (4-15%)
SOIL PARENT MATERIAL	Various, mostly Slope Alluvium [78%] over something
COARSE FRAGMENTS	1.8% (0-5%) cover on surface, 18.9% (11-42%) by volume in soil
SOIL DEPTH	96 cm (44-154 cm) = 37.9 in (17-61 in)
MOLLIC THICKNESS	25 cm (20-30 cm) = 9.8 in (8-12 in)
TEXTURE	Surface is silty loam-silty clay loam [80%]; Subsurface is Clay-silty clay-sandy clay loam-clay loam
SOIL CLASSIFICATION	Argic Cryoborolls [75%] or Argic Cryaquolls [25%]; Deep to very deep
TOTAL LIVE COVER	198.4% (128.1-355.0%)
NUMBER OF SPECIES	26.8 (14-40)
TOTAL LIVE COVER/NO. SPECIES	8.4% (4.3-25.4%)
CLIMATE	Cool to cold, moist Subalpine climate, usually in partial rainshadow.
WATER	There is deep snow here most of the winter. Groundwater stays charged most of the season from adjacent aquifers and good ground cover.

Key to Community Types

1. Parry oatgrass >30% cover .....A
1. Parry oatgrass usually absent, sometimes <15% cover..... (2)

2. Thurber fescue dominant, >50% cover. Idaho fescue 0-10% cover .....B
2. Thurber fescue <35% cover, rarely absent. Idaho fescue 0-70% cover C

Description of Community Types

A *Parry oatgrass-silver sagebrush-Kentucky bluegrass-desert sandwort* is dominated by Parry oatgrass, 30-75% cover. Silver sagebrush is subdominant, 20-40% cover. Thurber fescue is 5-15% cover. Other constants include ballhead desert sandwort (ERCO24) and yarrow (ACLA5). Total graminoid cover is 110-130%, and graminoid production is 2,200-2,700 lb/ac/yr.

B *Thurber fescue-silver sagebrush-shrubby cinquefoil* is dominated by Thurber fescue, 35-75% cover, with silver sagebrush subdominant, 15-35% cover. Total graminoid cover is 70-150%, and graminoid production is 1,500-3,000 lb/ac/yr.

C *Silver sagebrush-yarrow* is dominated by Idaho fescue, 0-70% cover, or Thurber fescue, 0-30% cover. Silver sagebrush is subdominant or codominant, 15-40% cover. Total graminoid cover is 60-130%, and graminoid production is 1,200-2,750 lb/ac/yr.

Community Type	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod.[1], lb/ac/yr Shrubs Gramin. Forbs
A. Parry oatgrass-silver sagebrush-Kentucky bluegrass-desert sandwort	9,990 4	13 85 20	1 (1-1) 7 (5-8) LM	0 (0-0) 29 (24-35) 120 (115-125) 114 (32-195)	21 (14-27) 263 (170-355) 15.8 (6.3-25.4)	583-864 2488-2662 196-1361
B. Thurber fescue-silver sagebrush-shrubby cinquefoil	10,098 (9,450-10,390) 7.1 (5-10)	22 (11-42) 117 (44-154) 25 (21-27)	2 (1-3) 20 (6-34) LS	0 (0-0) 26 (17-34) 100 (77-148) 40 (21-66)	31 (26-40) 166 (128-248) 5.4 (4.3-6.2)	411-838 1626-2945 77-678
C. Silver sagebrush-yarrow	9,505 (8,900-10,140) 9.7 (5-15)	18 (17-18) 70 (66-74) 27 (24-30)	3 (1-5) 14 (1-25) EM-ES	0 (0-0) 37 (31-45) 96 (62-127) 66 (23-102)	26 (20-30) 199 (140-268) 7.6 (5.9-9.9)	772-1082 1212-2690 94-1107

	SHRUBS	
ARCA13	Artemisia cana	silver sagebrush
	GRAMINOIDS	
ACLE9	Achnatherum lettermanii	Letterman needlegrass
ACNE9	Achnatherum nelsonii	Nelson's needlegrass
ACPI2	Achnatherum pinetorum	pine needlegrass
BRPO5	Bromopsis porteri	nodding brome
CAFO3	Carex foenea	silvertop sedge
CAOB4	Carex obtusata	blunt sedge
DAIN	Danthonia intermedia	timber oatgrass
DAPA2	Danthonia parryi	Parry oatgrass
FEAR2	Festuca arizonica	Arizona fescue
FEID	Festuca idahoensis	Idaho fescue
FETH	Festuca thurberi	Thurber fescue
KOMA	Koeleria macrantha	prairie junegrass
MUMO	Muhlenbergia montana	mountain muhly
POA	Poa	bluegrass
POFE	Poa fendleriana	muttongrass
PONEI2	Poa nemoralis ssp. interior	interior bluegrass
POPA2	Poa palustris	swamp bluegrass
POPR	Poa pratensis	Kentucky bluegrass
POSE	Poa secunda	Sandberg bluegrass
	FORBS	
ACLA5	Achillea lanulosa	western yarrow
AGGL	Agoseris glauca	false-dandelion
ASTER	Aster	aster
ASSP16	Aster spathulatus	western aster
ERCO24	Eremogone congesta	desert sandwort
ERSP4	Erigeron speciosus	Oregon fleabane
ERSU2	Erigeron subtrinervis	threenerve fleabane
ERTR19	Erythrocoma triflora	prairie smoke
FRVI	Fragaria virginiana	Virginia strawberry
GASE6	Galium septentrionale	northern bedstraw
IRMI	Iris missouriensis	wild iris
LALE2	Lathyrus leucanthus	aspen peavine
LUAR3	Lupinus argenteus	silvery lupine
ORLU2	Orthocarpus luteus	yellow owl-clover
OXDE2	Oxytropis deflexa	stemless-loco
POVI	Polemonium viscosum	sky pilot
POHI6	Potentilla hippiana	horse cinquefoil
POPU9	Potentilla pulcherrima	beauty cinquefoil
TAOF	Taraxacum officinale	common dandelion
TRIFO	Trifolium	clover
TRGY	Trifolium gymnocarpum	holly-leaf clover
TRRE3	Trifolium repens	white Dutch clover