

## 24. Purple Pinegrass Ecological Series

Table 24-1. Full and short names for the ecological types in the Purple Pinegrass Ecological Series.

Ecological Type		Plant Association	
Code	Name	Code	Short Name
GA10	Purple pinegrass/Scribner wheatgrass—Moderately deep, gravelly and rocky residual Cryoborolls—Windward, exposed shoulders and summits of ridges, > 11,200 ft	CAPU/ELSC4	Purple pinegrass—Shallow rocky soils—Exposed high ridges

This is the *Calamagrostis purpurascens* Series of Komárková (1986). It may in fact be an early stage of the *Pinus flexilis/Calamagrostis purpurascens* type of Hess (1981) and Hess and Alexander (1986), to which the birds or bears have not yet brought *Pinus flexilis* seed. However, there is no *Pinus flexilis* near any of the sampled stands in the UGB.

Stands occupy small sites that are usually isodiametric in shape and easy to distinguish on aerial photos. Revegetation is likely to be difficult in these cold, windswept sites.

These sites are not often grazed by livestock because of their exposed positions. Elk, and less often deer, use them sparingly for standing, as the sites often have spectacular views.

Sites are not suitable for roads and trails, but it is usually easy to locate them in other, less-exposed sites nearby. Though this series is rated as very resistant to trampling damage by humans (Cole 1985), the sites are probably not suitable for developed recreation. They are too windy for camping, but they make good, stable viewpoints for dispersed recreation.

Table 24-2. Characteristics of Ecological Types within Ecological Series 24 in the Upper Gunnison Basin. Numbers are shown in form Average (Minimum-Maximum)

Code Short Name	No. Samples	Elevation, ft	Avg. Aspect, °M (r) Slope, %	Soil Coarse, %	Depth, cm Mollic, cm	Surface: Coarse, % Bare, %	Cover, %: Trees Shrubs Graminoids Forbs	Total Live Cover, % No. Species TLC/NS, %
GA10 Purple pinegrass— Shallow rocky soils— Exposed high ridges	3	11,813 (11,200-12,380)	214 (0.51) 22 (11-41)	79	35 (10-57) 22 (10-38)	42 (18-63) 5 (4-5)	0 (0-0) 0 (0-0) 65 (43-90) 29 (24-34)	94.1 (71.0-124.6) 28 (25-30) 3.4 (2.4-5.0)

### PURPLE PINEGRASS–SHALLOW ROCKY SOILS–EXPOSED HIGH RIDGES

Purple pinegrass/Scribner wheatgrass–Moderately deep, gravelly and rocky residual Cryoborolls–  
Windward, exposed shoulders and summits of ridges, > 11,200 ft

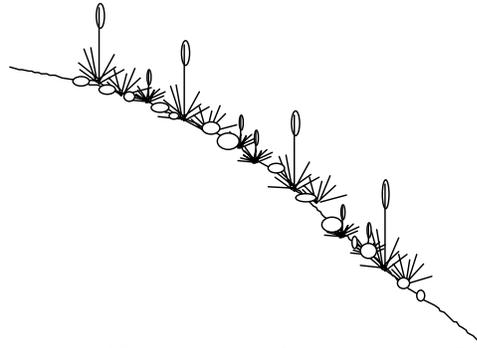


Figure 24-1. Cross-section of vegetation structure of *Purple pinegrass–Shallow rocky soils–Exposed high ridges*. Aspects are windward (westerly), and slope angles average 22%.

*Purple pinegrass–Shallow rocky soils–Exposed high ridges* is an uncommon type outside the deep rainshadows. In the Gunnison Basin, it occurs on high ridges on both the eastern and southern slopes of the West Elk Mountains. This type is apparently known in central Colorado from a few sites. *Purple pinegrass–Shallow rocky soils–Exposed high ridges* is characterized by purple pinegrass (CAPU), Scribner wheatgrass (ELSC4), and alpine fescue (FEBC). See Table 24-5 for common species names and codes. Other distinguishing features include shallow, cold Cryoborolls which are very well-drained, and location on high, very windy, exposed ridgetops and shoulders in the Subalpine zone and lower Alpine zone.

*Purple pinegrass–Shallow rocky soils–Exposed high ridges* is related to *Timber oatgrass–Shallow soils–Exposed high ridges*, which occurs on less-exposed ridges at lower elevations, on less-coarse soils, and lacks purple pinegrass. *Purple pinegrass–Shallow rocky soils–Exposed high ridges* is also related to *Bellard’s kobresia-curlly sedge-little club-moss* (Alpine type B), which

occurs at higher elevations on gentler slopes. *Purple pinegrass–Shallow rocky soils–Exposed high ridges* may be related to *Pinus flexilis/Calamagrostis purpurascens*, found on the eastern slope of the Rocky Mountains in Colorado.

*Purple pinegrass–Shallow rocky soils–Exposed high ridges* is the only grassland dominated by *Calamagrostis purpurascens* known from the western United States. The plant association *Calamagrostis purpurascens/Elymus scribneri* is described as new here, based on two *Calamagrostis purpurascens* communities documented in Komárková (1986).

Very little is known about succession in this unusual type. Moderately-heavy to heavy grazing by cattle, sheep, deer, or elk probably decreases graminoid cover and increases bare soil. Cold spruce-fir forests adjoin this type on steeper, more protected slopes. Thurber fescue grasslands occur on adjacent deeper soils and more protected sites. Horizontal obstruction is probably very low to low. Elk may use these sites as lookouts, but deer rarely use them.

## Summary of Ecological Type Characteristics

1. Explanation of symbols in Appendix A. Percentages in [brackets] indicate the percentage of plots sampled that have that characteristic.

NUMBER OF SAMPLES	3, soil descriptions from 1 of these (total 3)
ELEVATION	11,813 ft (11,200-12,380 ft); 3,601 m (3,414-3,773 m)
AVERAGE ASPECT	214°M (r = 0.51)
LITHOLOGY	Andesitic breccia and granite
FORMATIONS <sup>1</sup>	Tpl and Xg
LANDFORMS	Ridges
SLOPE POSITIONS	Shoulders and summits
SLOPE SHAPES	Convex to linear horizontally, Convex vertically
SLOPE ANGLE	21.8% (11-41%)
SOIL PARENT MATERIAL	Residuum
COARSE FRAGMENTS	42.0% (18-63%) cover on surface, 79% by volume in soil
SOIL DEPTH	35 cm (10-57 cm) = 13.8 in (4-22 in)
MOLLIC THICKNESS	22 cm (10-38 cm) = 8.7 in (4-15 in)
TEXTURE	Sandy loam-sandy clay loam on surface, subsurface is loamy sand
SOIL CLASSIFICATION	Cryoborolls, moderately deep
TOTAL LIVE COVER	94.1% (71.0-124.6%). No. Species = 28.3 (25-30)
TOTAL LIVE COVER/NO. SPECIES	3.4% (2.4-5.0%)
CLIMATE	Cold to very cold, wind-exposed, upper Subalpine to lower Alpine.
WATER	Snow blows off these sites continually through the winter and early in the spring. The ground cover retains a little moisture through the growing season.

## Community Type

**A** *Purple pinegrass-alpine fescue-tufted hairgrass* is dominated by purple pinegrass, a large grass in this environment. Other constant species include Scribner wheatgrass, alpine fescue, and desert sandwort (ERFE3).

Table 24-3. Community types within *Purple pinegrass-Shallow rocky soils-Exposed high ridges*.

Community Type	No. samples	Elevation, ft Slope, %	Coarseness, % Depth, cm Mollic Depth, cm	Surface Coarse, % Bare, % Seral Stage	Layer Height, m	Avg Layr Cvr %	Cover, %: Trees Shrubs Graminoids Forbs	No. Species Total Live Cover, % TLC/NS, %	Prod. <sup>1</sup> , lb/ac/yr Shrubs Gramin. Forbs	Obstruct'n %:	
										1.5-2.0 m	0.0-0.5 m
A. Purple pinegrass- sparse alpine fescue-sparse tufted hairgrass	3	11,813 (11,200-12,380) 21.8 (11-41)	79 (79-79) 35 (10-57) 22 (10-38)	42 (18-63) 5 (4-5)	GF 0.1 (0.0-0.5) M 0.0 L 0.0	62 8 5	0 (0-0) 0 (0-0) 65 (43-90) 29 (24-34)	28 (25-30) 94 (71-125) 3.4 (2.4-5.0)	0-0 757-2464 80-205	0 0 15	0
											0
											4

Table 24-4. Resource Values for *Purple pinegrass-Shallow rocky soils-Exposed high ridges*. Resource values were calculated from the numbers in Table 24-3, relative to the whole UGB.

The numbers in this table can be translated: 0 = Very Low, 1 = Low, 2 = Moderately Low, 3 = Moderate, 4 = Moderately High, 5 = High, and 6 = Very High.			
Community Type		Community Type	
Resource Value	A	Resource Value	A
Potential Cattle Forage Production	3-5	Deer & Elk Forage & Browse	0-1
Grazing Suitability	0-1 <sup>1</sup>	Need for Watershed Protection	1
Wetland	No	Soil Stability	4-5
Riparian Area	No	Risk of Soil Loss-Natural	0-1
Developed Recreation	ns <sup>1</sup>	Risk of Soil Loss-Management	3-4
Dispersed Recreation	2-3	Risk of Permanent Depletion-Range	0-1
Scenic	5-6	Risk of Permanent Depletion-Wildlife	3-4
Road & Trail Stability	5	Resource Cost of Management	3-4
Construction Suitability	2 <sup>1</sup>	Cost of Rehabilitation	4-5
Deer & Elk Hiding Cover	0-1		

1. Not suitable, too windy and exposed.



A purple pinegrass grassland along a windswept ridge in the high subalpine. Purple pinegrass is the larger visible tufts. Purple pinegrass 30%, Fendler sandwort 15%, alpine fescue 14%. Coarse Fragments Cover = 63%, Total Live Cover = 87%, Coarse Fragments in Soil = 77. Soil sampled as a Typic Cryoboroll, Loamy-Skeletal, Mixed, Shallow. Squirrel Creek Quadrangle, elevation 11,200 ft, 41% 240° (WSW) slope. August 2, 1995.



Upper East Elk Creek, West Elk Wilderness, looking northwest, the opposite direction from the above photo. Purple pinegrass/tufted hairgrass in the foreground, the boreal spruce-fir (*Abies bifolia*-*Picea engelmannii*) forest on the ridge background. August 2, 1995.

Table 24-5. Common Species in *Purple pinegrass–Shallow rocky soils–Exposed high ridges*, where Characteristic cover > 10% or Constancy > 20%. "-" means that the species is not found. Dead cover is not listed. Ccv = Characteristic Cover, Con = Constancy. If Avc = Average Cover, then these are related using the formula  $Avc = Ccv \cdot 100\% / Con$ .

Code	Community Type Species	A		Common Name
		Ccv (Con)	N = 3	
GRAMINOIDS				
CAPU	Calamagrostis purpurascens	41 (100)		purple pinegrass
CACH21	Carex chalciolepis	1 (33)		Holm sedge
CAEL3	Carex elynoides	2 (67)		Kobresia-like sedge
CAFO3	Carex foenea	3 (33)		silvertop sedge
CAPE7	Carex petasata	6 (33)		Liddon sedge
ELSC4	Elymus scribneri	3 (100)		Scribner wheatgrass
FEBRC	Festuca brachyphylla ssp. coloradensis	6 (100)		alpine fescue
FEID	Festuca idahoensis	1 (33)		Idaho fescue
HEMO3	Helictotrichon mortonianum	10 (33)		alpine oat
POARG	Poa arctica ssp. grayana	2 (33)		arctic bluegrass
POCU3	Poa cusickii	3 (33)		bluegrass
POFE	Poa fendleriana	1 (33)		muttongrass
POGL	Poa glauca	6 (67)		Greenland bluegrass
POJU	Poa juncifolia	6 (33)		alkali bluegrass
TRSP2	Trisetum spicatum	T (33)		spike trisetum
FORBS				
ACLA5	Achillea lanulosa	7 (67)		western yarrow
ACROT	Acomastylis rossii ssp. turbinata	T (33)		alpine avens
AMLA6	Amerosedum lanceolatum	2 (67)		yellow stonecrop
ANNAZ3	Anemonastrum narcissiflorum ssp. zephyrum	T (33)		narcissus anemone
ANRO2	Antennaria rosea	T (67)		rose pussytoes
ARSC	Artemisia scopulorum	3 (33)		alpine sagebrush
BEAL	Besseyia alpina	T (33)		alpine kittentails
BOECH	Boechera	T (33)		rock-cress
BODR	Boechera drummondii	T (33)		false-arabis
CARH4	Castilleja rhexifolia	T (33)		splitleaf paintbrush
DRABA	Draba	1 (33)		whitlow wort
DRAU	Draba aurea	1 (33)		golden whitlow-wort
DRBRC	Draba breweri var. cana	T (33)		whitlow-wort
ERFE3	Eremogone fendleri	6 (100)		desert sandwort
ERCO4	Erigeron compositus	3 (33)		fernleaf fleabane
ERPI6	Erigeron pinnatisectus	2 (67)		pinnate fleabane
ERAR10	Eritrichum aretioides	T (33)		alpine forget-me-not
GEAC2	Gentianella acuta	T (33)		little gentian
HEPA11	Heuchera parvifolia	3 (33)		littleleaf alumroot
LIOB4	Lidia obtusiloba	2 (67)		alpine sandwort
MIRH	Micranthes rhomboidea	T (33)		diamond-leaf saxifrage
NOMO2	Noccaea montana	T (33)		candytuft
PACA15	Packera cana	T (33)		woolly groundsel
PAWE4	Packera wernerifolia	T (33)		groundsel
PAPU2	Paronychia pulvinata	3 (33)		Rocky Mountain nailwort
PEPA3	Pedicularis parryi	T (33)		Parry lousewort
PONI2	Potentilla nivea	3 (33)		snow cinquefoil
POPU9	Potentilla pulcherrima	2 (67)		beauty cinquefoil
PORU3	Potentilla rubricaulis	2 (33)		snow cinquefoil
SEDE2	Selaginella densa	3 (67)		little club-moss
SMCA	Smelowskia calycina	T (33)		alpine smelowskia
SOSI3	Solidago simplex	1 (33)		Mt. Albert goldenrod
STLO2	Stellaria longipes	T (33)		long-stalked stitchwort
TAOF	Taraxacum officinale	T (33)		common dandelion
TRDA2	Trifolium dasyphyllum	3 (33)		whiproot clover
TRNA2	Trifolium nanum	5 (33)		dwarf clover
GROUND COVER				
.BARESO	bare soil	5 (100)		
.LITTER	litter and duff	53 (100)		
GRAVEL	gravel 0.2-10 cm	16		
.COBBLE	cobble 10-25 cm	26 (33)		
.STONES	stone > 25 cm	6 (33)		
.MOSSON	moss on soil	8 (33)		
LICHENS	lichens on soil	7		