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Introduction

This non-technical reference was created to assist land owners and more specifically range users in identifying key grass species in the 10-14 inch precipitation zone of the Bighorn Basin in Wyoming. This project was funded as a part of the 1997 USDA—Environmental Quality Incentive Program. This guide will be used in conjunction with range monitoring worksheets and other tools to help range users estimate annual utilization levels and long term trends.

Special thanks go to the team members who provided the technical expertise to produce and assemble this reference, the plant keys, the monitoring techniques and worksheets, the field instruction for participating EQIP range users, the plant slides for key species identification, and the funding for this educational effort. It is the hope of each team member that these materials will assist land owners and range users so that they are able to make good range resource management decisions.
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Needle and thread

*Stipa comata* STCO 4

**Type:** native, perennial bunchgrass

**Height:** short to medium

**Ligule:** prominent, two pointed

**Awn:** to 18 cm. long, twisted & tapered

**Blade (leaf):** narrow, flat or inrolled, slightly rough, mostly basal.

**Inflorescence (seed head):** narrow panicle

**Distribution:** on sandy to medium fine textured soils from the Great Plains throughout the western states and Canada

**Discussion:** The forage value of this plant varies throughout the growing season. It is good before the awns develop, and again after the seeds have dropped. If mature plants are grazed before the seeds drop, the awns may cause mechanical injury to sheep. This plant is a decreaser on most range sites with less than 14 inches of precipitation.
Green Needlegrass

*Stipa viridula* STVI 4

**Type:** native, perennial bunchgrass

**Height:** medium to tall

**Sheath:** hairy at the throat

**Awn:** 2 to 3 cm. long, twice bent

**Blade (leaf):** up to 5 mm. wide, flat waxy appearing on back. Leaves mostly basal

**Inflorescence (seed head):** erect, narrow panicle

**Distribution:** most common in the northern Great Plains and on the east slope of the Rocky Mountains. It inhabits plains, slopes and mountain meadows; preferring slightly moist, medium to fine textured soils

**Discussion:** Green needlegrass is one of the most preferred forage grasses for all classes of livestock and big game animals. It remains green and palatable until late into the fall. Although awned, little mechanical injury to livestock has been reported
Columbia Needlegrass

*Stipa nelsonii*  STNE 3

**Type:** perennial, native bunchgrass

**Height:** medium

**Blade (leaf):** 1 to 3 mm. wide, usually rolled

**Inflorescence (seed head):** narrow, spikelike panicle

**Awn:** 2 to 2.5 cm. long, twice bent

**Distribution:** dry plains, meadows, and open woods of medium to high altitudes of the western United States.

**Discussion:** Columbia needlegrass is usually good forage for all classes of livestock and wildlife. It begins growth in midspring and remains green throughout the summer. The leaves are mostly basal and the plant is usually able to withstand heavy grazing use by sheep as they avoid the flowering stems allowing them to make seed. Columbia needlegrass is often confused with green needlegrass, which has many fine hairs at the throat of the sheath. *(Synonym: *S. columbiana*.)
Western Wheatgrass

*Agropyron smithii*  AGSM

**Type:** native, rhizomatous perennial

**Height:** medium

**Auricle:** clawlike and clasping

**Blade (leaf):** flat, prominently veined, very rough on the upper surface and margins, greenish-blue

**Inflorescence (seed head):** a spike

**Distribution:** on moist to dry, sometimes alkaline, medium to fine textured soils throughout the central and western United States and Canada

**Discussion:** Western wheatgrass is one of the more common and abundant wheatgrasses in the west, and is the Wyoming state grass. In Wyoming, this species is often the first perennial grass to reappear on abandoned, dry farmland. It has good palatability for all classes of livestock and wildlife, and makes very good winter forage. “Rosana” western wheatgrass is the variety most used in range seedings.
Bluebunch Wheatgrass

*Agropyron spicatum* AGSP

**Type:** native, perennial bunchgrass

**Height:** medium

**Blade (leaf):** flat to loosely rolled, slightly rough

**Inflorescence (seed head):** a spike, with awns

**Distribution:** throughout the western United States to Alaska, on plains and dry slopes, in coarse to fine textured soils

**Discussion:** Bluebunch wheatgrass is one of the leading native western forage plants and is a key species on many ranges. It is highly palatable, remaining green throughout the growing season if moisture conditions are favorable. Reproduction is entirely from seed. “Secar” is the recommended cultivated variety for rangeland seedings in Wyoming.
Thickspike Wheatgrass

*Agropyron dasystachyum AGDA*

**Type:** native, rhizomatous perennial

**Height:** medium

**Sheath:** smooth to slightly rough

**Auricle:** clawlike and clasping

**Blade (leaf):** flat, ridged, slightly rough, bluish-green

**Inflorescence (seed head):** a spike

**Distribution:** throughout the northwestern USA to Michigan and Illinois. It prefers sandy to medium soils.

**Discussion:** Thickspike wheatgrass is a good forage species for all classes of livestock. The long creeping rhizomes of this plant enable it to withstand heavy grazing and considerable trampling. This plant is easily confused with western wheatgrass. The lemmas of thickspike wheatgrass are hairy, while those of western wheatgrass are without hairs. Seed is available for a variety known as “Critana” thickspike wheatgrass.
Idaho Fescue

*Festuca idahoensis*  FEID

**Type:** native, erect, densely tufted, perennial bunchgrass

**Height:** short to medium

**Roots:** usually black

**Blades (leaves):** numerous, basal tightly inrolled, fine, silver-green

**Inflorescence (seed head):** narrow, dense panicle

**Distribution:** one of the most common grasses in the northwestern U.S. It is the dominant plant in many foothill and open wooded areas, growing on all exposures and under a wide variety of soil and moisture conditions. Idaho fescue is most common in fairly dry, well-drained, moderately deep, sandy or gravelly loams.

**Discussion:** Idaho fescue has fair to good palatability and will withstand excessive grazing. It will commonly replace rough fescue or blue-bunch wheatgrass on overgrazed ranges. Wildlife and all classes of livestock relish the early spring growth.
King Spikefescue
*Leucopoa kingii*  LEKI 2

**Type:** native, perennial bunchgrass

**Height:** medium

**Blade (leaf):** firm, flat, sometimes rolling, rough on the margins, 3 to 5 mm. wide

**Inflorescence (seed head):** panicle, somewhat narrow

**Distribution:** on dry mountain soils, 6000' to 10,000' elevation, Oregon and California, east to Montana, Nebraska, and Colorado.

**Discussion:** Spikefescue is a highly nutritious, productive and palatable grass. It prefers well drained, moderately deep soils of medium texture, but also occurs on rocky slopes. Spikefescue occasionally has short rhizomes. It is a decreaser under grazing misuse. Spikefescue appears much like rough fescue. Rough fescue is purple at the base of the culm and spikefescue is brown.
Indian Ricegrass

*Oryzopsis hymenoides* ORHY

**Type:** native perennial, densely tufted bunchgrass

**Height:** medium

**Ligule:** conspicuous, 5 to 7 mm. long, gradually tapering to a sharp point

**Awn:** about 4 mm. long

**Blade (leaf):** slender, inrolled, smooth to touch

**Inflorescence (seed head):** open, few-flowered panicle, with branching in twos (dichotomous)

**Distribution:** throughout the western United States extending from Canada to Mexico. It favors dry, sandy or coarse textured soils.

**Discussion:** Indian ricegrass is one of the most important grasses on desert and semi-desert ranges. It provides excellent winter grazing to all classes of livestock. The seeds resemble those of common rice and were a staple food of many western Indian tribes.
Alkali Sacaton  
*Sporobolus airoides*  SPAI

**Type:** native, perennial bunchgrass

**Height:** medium, 50 to 100 cm. tall

**Blade (leaf):** flat, becoming rolled at maturity, long, usually less than 4 mm.

**Inflorescence (seed head):** large open panicle, nearly half the height of the entire plant

**Distribution:** on moderately alkaline soils of meadows and valleys from the Dakotas throughout the western states.

**Discussion:** This warm season grass provides fair to good forage for all classes of livestock. It is quite palatable when growing, becoming unpalatable with maturity. Abundance decreases with heavy grazing.
Mountain Brome
*Bromus carinatus*  BRCA 5

**Type:** native, short-lived, perennial bunchgrass

**Height:** medium to tall

**Ligule:** conspicuous, less than 3 mm. long

**Blade (leaf):** hairy on the back, 6 to 12 mm. wide

**Inflorescence (seed head):** an erect panicle

**Distribution:** on both slopes of the Rocky Mountains from Canada to New Mexico, introduced into the east

**Discussion:** Mountain brome prefers deep, rich, moderately moist soils, but will occur on fairly dry sites. These plants produce an abundance of forage that is utilized by all classes of livestock and big game animals. Mountain brome has been used for revegetation of logged areas and other disturbed mountain sites. (*Synonym:* *B. marginatus.*)
**Basin Wildrye**  
*Elymus cinereus*  ELCI 2

**Type:** native, perennial bunchgrass, often with short rhizomes

**Height:** tall

**Ligule:** very prominent, 3 to 7 mm long

**Blade (leaf):** long, flat, strongly nerved, as much as 2 cm. wide

**Inflorescence (seed head):** compact spike with 2 to 4 spikelets per node

**Distribution:** on moist to dry, light textured soils of slopes and ravines from Minnesota to British Columbia, Colorado, and California

**Discussion:** Basin wildrye is fairly abundant on Wyoming ranges and is readily grazed while young. It is usually not grazed in the summer. The plants produce an enormous amount of foliage and are important as winter feed. It does not tolerate close grazing, especially in the spring months. The seeds of this plant were used as food by many bands of Indians.
Type: native, perennial bunchgrass

Height: short

Blade (leaf): flat or inrolled, soft

Inflorescence (seed head): panicle, narrow and spikelike

Distribution: throughout the United States, except for the southeastern section. It is one of the most common and widely distributed range grasses.

Discussion: Prairie junegrass is considered good forage for all classes of livestock, but does not produce large amounts of forage. It is a low growing plant with mostly basal leaves, and is an increaser with overgrazing. Prairie junegrass initiates growth early in the spring and greens up with fall rains.
Nebraska Sedge
Carex nebraskensis  CANE 2

Type: native, perennial, sod-forming, grasslike

Height: medium to tall

Rhizome: stout, long, sometimes acting as a stolon

Stem: solid, three-sided

Blades (leaves): flat, three-ranked

Inflorescence (seed head): a panacle of spike-like heads, male flower heads above the female

Distribution: on wet meadows and swamps of the foothills and mountains of the western states

Discussion: Nebraska sedge is one of the most common sedges in the west and often makes up a major part of the hay harvested from native mountain meadows. The palatability of Nebraska sedge is usually good for cattle, but only fair for sheep. This could be because the sites where it grows are too wet for sheep to graze.
Glossary

Awn: A slender bristle at the end or on the back or edge of an organ. In grasses, the awn is a continuation of the glume or lemma, from the midnerve.

Blade: In grasses, the part of the leaf above the sheath.

Culm: The jointed stem of grasses.

Floret(s): The lemma and palea with the included flower parts.

Glume(s): The pair of bracts or scales at the base of a spikelet.

Inflorescence: The flowering part of a plant.

Lemma: One of the scales next to the flower or seed in grasses.

Ligule: The thin appendage or ring of hairs on the inside of a leaf at the junction of the sheath and blade.

Palea: The inner bract or scale of a floret, sometimes partly enclosed by the lemma.

Panicle: An inflorescence with a main axis and subdivided branches.

Rhizome: An underground stem or rootstock.

Sheath: The lower part of a leaf that encloses the stem (grasses).

Sod former: Perennial plants which form a mass of individuals by means of rhizomes or stolons. Compare to bunchgrasses.

Spikelet: The basic unit of the inflorescence in grasses, consisting of two glumes and one or more florets.
Flowers in spikes, attached directly to stem
Plants over 4 ft. tall, leaves flat and over 1/2 inch wide, 3 or more spikelets per node, awnless to awn tipped......................

_Elymus cinereus_
“Basin wildrye”
Plants under 4 ft. tall, leaves mostly curled or if flat not over 1/4 inch wide, 1 spikelet per node some with 2 in the middle.

Bunchgrass, no rhizomes
Leaves mostly curled, rarely flat, auricles present.................................

*Agropyron spicatum*
“Bluebunch wheatgrass”

Rhizomatous, leaves curled
Lemmas not hairy..............................

*Agropyron smithii*
“Western wheatgrass”

Lemmas hairy.................................

*Agropyron dasystachyum*
“Thickspike wheatgrass”

1. Flowers not in spikes (may look like it but flowers not directly attached to the stem)
   Flowers compact and compressed to the stem so it looks like a spike, very hairy plant, usually awnless.................................

*Koeleria nitida*
“Prairie junegrass”

Rhizomatous
1. **Flowers loosely spread out on stem 1-10 flowers (florets) per spikelet**

2. **One-flowered**

3. **Awnless**
   - *Sporobolus airoides*
   - “Alkali sacaton”

3. **Awns up to 1/4 inch long**
   - *Oryzopsis hymenoides*
   - “Indian ricegrass”

3. **Awns 1/4 to 2 inches long**
   - Lemma hairs all about the same length
   - *Stipa nelsonii*
   - “Columbia needlegrass”
   - Lemma hairs much longer at the tip
   - *Stipa viridula*
   - “Green needlegrass”

3. **Awns over 3 inches long**
   - *Stipa comata*
   - “Needleandthread”

2. **More than one-flowered**

   - Awned with auricles, large spikelets
   - *Bromus carinatus*
   - “Mountain brome”
Awned with no auricles, smaller spikelets.................................

*Festuca idahoensis*
“Idaho fescue”

Awnless....................................................

*Leucopoa kingii*
“King spikefescue”

Other plants looking like grasses but with the following characteristics. Leaves 3-sided and only 1 leaf per stem. Flowers very compact and often dark colored.

The one very good species with a wider leaf most is *Carex nebraskensis* or Nebraska sedge. Sedges, in general, are all palatable and reasonable forage.
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