Graminoids

American Pronghorn | *Antilocapra americana*

What is a Graminoid?

Grasses, sedges, and rushes are collectively referred to as graminoids. They have long flat blades with parallel veins and cryptic flowers.

Grasses are the most abundant and widespread of the graminoids on the INL Site. Sedges and rushes tend to be restricted to specific and limited habitats, generally associated with increased soil moisture availability. These major graminoid groups can be distinguished from one another by their stem characteristics. Rushes have round pith-filled stems, sedges have triangular pith-filled stems, grasses have round hollow stems.

Some of the characteristics most useful for identifying grasses include the length of their lifecycle, their growth form, and the structure of their flower heads. Annual grasses have delicate root structures and occur with just one or a few flower stalks per individual. Perennial grasses have more robust root structures, and their growth form may be rhizomatous or in bunches. Rhizomatous grasses occur with one or a few flower stalks per individual and individuals are connected by an extensive underground root system. Bunchgrasses occur with many flower stalks emerging from a compact base with an extensive root system. Unique characteristics of the flowers, like awns, a nerve that extends past the flower, are also useful for grass identification.

Field Notes

Achnatherum hymenoides ACHY (NP)

COMMON NAME
Indian ricegrass

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) that is sac-shaped, has an elongated nerve (awn) that is 3-6 mm long, bent once, coarse, and deciduous. There is 1 floret per group (spikelet) that is subtended by a pair of highly modified bracts (glumes) which are 6.5-9 mm long. Spikelets are attached to distinct stalks (pedicels) on flowering stalks to form solitary terminal blooms on laterally branching stems in a panicle arrangement with spreading branches.

Blades: Are < 1 mm wide and have inwardly rolled edges (involute).

Stems: Are stalks (culms) that are round and hollow with an outer covering (sheath). The structure jutting from the blade and sheath junction (ligule) is 2.5-7.5 mm tall.

Plants: Are 25-70 cm tall, are a bunchgrass, and bloom from April to July.

SITE AND HABITAT

Found scattered across the INL Site on sandy or gravely soils.

NOT TO BE MISTAKEN FOR

HECO: Lemma awns are 6.5-22.5 cm long, are bent twice, and twisted, glumes are 16-35 mm long, and leaf blades are 0.5-4 mm wide. **ACOC:** Lemma awns are 1.5-5.5 cm long, are bent twice, twisted, and fluffy. **SPCR:** Sheaths are fluffy.

AKA: *Oryzopsis hymenoides, Eriocoma hymenoides*

Fun Facts: A. hymenoides is used to stabilize soils in sandy areas, for decorative nativescaping, to provide habitat and forage for animals, and the seeds have been harvested by Native American tribes.

NATIVE

AGCR (IP) *Agropyron cristatum*

COMMON NAME
crested wheatgrass

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) with an elongated nerve (awn) that is 1-6 mm long. There are 3-6 florets per group (spikelet) that are subtended by a pair of highly modified bracts (glumes) which are offset, 3-6 mm long, and have a 3 mm long awn. The spikelets attach directly to the flowering stalk in a spike arrangement, overlap like roof shingles, and are acutely bent more than 40°.

Blades: Are 1.5-6 mm wide, are flat, distinctly nerved, and have rough edges.

Stems: Are stalks (culms) that are round and hollow with an outer covering (sheath) that is open and hairless. The structure jutting from the blade and sheath junction (ligule) is 1.5 mm tall, is transparent, and has jagged edges.

Plants: Are 25-90 cm tall, are a bunchgrass, and bloom from April to October.

SITE AND HABITAT

Found across the INL Site and was historically planted at disturbed sites.

NOT TO BE MISTAKEN FOR

AGDE: Spikelets lie flat along the stem or, if bent, are < 35°.

AKA: None

Fun Facts: Small animals eat and cache the seeds, which is thought to be an important dispersal agent for this species. It out competes less desirable species like cheatgrass but it can form monocultures precluding the return of native flora and fauna diversity.

INTRODUCED



COMMON NAME
cheatgrass

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) that is fuzzy, two lobed, and straight, with an elongated nerve (awn) that is 12-20 mm long at its tip and becomes barbed with age. There are 3-8 florets per group (spikelet) that are subtended by a pair of highly modified bracts (glumes) which are uneven, thin, and fluffy. Each spikelet is attached to a distinct stalk (pedicel) on the flowering stalk to form solitary terminal blooms on laterally branching stems in a panicle arrangement with drooping, spreading branches that are 5-20 cm long.

Blades: Are 2-6 mm wide, are flat, and have soft hairs on both sides.

Stems: Are stalks (culms) that are round and hollow with an outer covering (sheath), and are solitary or clustered. The sheath is covered in soft hairs and is closed. The structure jutting from the blade and sheath junction (ligule) is more than 3 mm tall, transparent, and has jagged edges.

Plants: Are 5-50 cm tall, are winter annuals, and bloom from March to August.

SITE AND HABITAT

Scattered across the INL Site, especially in disturbed soils or recently burned areas.

NOT TO BE MISTAKEN FOR

BRAR: Lemma awns are attached below the tip, reflexed, and twisted.

AKA: *Anisantha bromus*

Fun Facts: Cheatgrass became established by the 1930s after it arrived in North America from the Mediterranean.

INTRODUCED

CADO (NP) *Carex douglasii*



COMMON NAME
Douglas' sedge

FAMILY
Sedge (*Cyperaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: The flowers (florets) are grouped together (spikelet) and bear either oval shaped female florets (pistillate) or lance shaped male florets (staminate). The spikelets are tan, densely crowd the flowering stalk apex, are 3.5 cm long, and are attached directly to the stem in a spike arrangement.

Fruits: Have hard sealed hulls with one seed (achene), are wrapped in a sac (perigynium), are brown, and are 3-5 mm long by 2 mm wide.

Blades: Are 3 mm wide, are flat, and grow in groups of 3-8 basal clusters. When viewed from above, leaves often appear to be arranged like a propeller blade.

Stems: Creep underground (rhizomatous), send up stalks (culms) that are pith filled and triangular in cross section, and have an outer covering (sheath). The structure jutting from the blade and sheath junction (ligule) is 3 mm tall.

Plants: Are 10-30 cm tall, form rhizomatous colonies, bear either pistillate or staminate florets (dioecious) and bloom from April to July.

SITE AND HABITAT

Found across the INL Site in a wide range of soil textures, often in alkaline areas.

NOT TO BE MISTAKEN FOR

CAAU: Plants bear both pistillate and staminate florets (monoecious).

AKA: None

Fun Facts: A common mnemonic to remember differences among graminoids is "Sedges have Edges, Rushes are Round, and Grasses are hollow from their knees to the Ground".

NATIVE

COMMON NAME
bottlebrush squirreltail

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) that is rough, is 8-10 mm long, and has an elongated nerve (awn) that is 20-70 mm long and bent once. There are 2-4 florets per group (spikelet) that are subtended by a pair of highly modified bracts (glumes) which are offset, reflexed, and have 1-3 awns that are up to 80 mm long. Each attachment point (node) has a pair of spikelets that are attached directly to the flowering stalk in a spike arrangement and fade from green to red.

Blades: Are 1-5 mm wide, are flat or have inwardly rolled edges (involute), are coarsely veined, and coil into spirals as they dry.

Stems: Are stalks (culms) that are round and hollow with an outer covering (sheath) that is open. The structure jutting from the blade and sheath junction (ligule) is transparent, purple, and 1 mm tall. The sheath top has a pair of claws (auricles) that are < 1 mm long.

Plants: Are 10-45 cm tall, are a bunchgrass, and bloom from April to August.

SITE AND HABITAT

Common to the INL Site in fine to medium textured and sometimes gravelly soils.

NOT TO BE MISTAKEN FOR

HOJU: Auricles are absent. **ACTH:** Lemma awns are bent twice and auricles are absent.

AKA: *Sitanion hystrix*

Fun Facts: The spikelets fall off the seed head (disarticulate) quickly after maturing.

NATIVE

ELLA (NP) *Elymus lanceolatus*



COMMON NAME
thickspike wheatgrass

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) that rarely has an elongated nerve (awn). There are 3-11 florets per group (spikelet) that are subtended by a pair of highly modified bracts (glumes) which are 0.4-1.6 mm wide, broadly taper to an acute blunt point, and may be hairy. There is 1 spikelet per attachment point (node) and spikelets attached directly to the flowering stalk in a spike arrangement.

Blades: Are 2-6 mm wide, are flat or have inwardly rolled edges (involute), and have stiff, prominent veins.

Stems: Creep underground (rhizomatous) and send up stalks (culms) that are round and hollow with an outer covering (sheath) that is open and may have a white waxy coating (glaucous). The structure jutting from the blade and sheath junction (ligule) is 0.5 mm tall, transparent, and has a jagged edge. The sheath top has a pair of claws (auricles) that are 1.5 mm long and only present on lower culm leaves.

Plants: Are 30-80 cm tall, are rhizomatous, and bloom from late May to August.

SITE AND HABITAT

Abundantly found throughout the INL Site on medium to coarse-textured soils.

NOT TO BE MISTAKEN FOR

PASM: Glumes are 0.2-0.8 mm wide and narrowly taper to a thin, awn-like tip.
ELTR: Plants are bunchgrasses and have 2 spikelets per node.

AKA: *Agropyron dasystachyum*

Fun Facts: This grass is a good source of forage for both wild and domestic herbivores.

NATIVE

COMMON NAME
needle-and-thread

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) that is hairy, with an elongated nerve (awn) that is 6-23 cm long, twisted, bent twice, and has short, stiff hairs (hispid). There is 1 floret per group (spikelet) that is subtended by a pair of highly modified bracts (glumes) that are 16-35 mm long. Spikelets are attached to distinct stalks (pedicels) on flowering stalks to form solitary terminal blooms on laterally branching stems in a panicle arrangement with narrow, spreading, drooping branches.

Blades: Are 0.5-4 mm wide and are flat or have inwardly rolled edges (involute).

Stems: Are stalks (culms) that are round and hollow with an outer covering (sheath) that is open, hairy or hairless, and strongly ribbed. The structure jutting from the blade and sheath junction (ligule) is 1-7 mm tall, translucent, and has a frayed edge.

Plants: Are 10-90 cm tall, are a bunchgrass, and bloom from May to August.

SITE AND HABITAT

Found across the INL Site in sandy soils, alluvial fans, dry hills, and foothills.

NOT TO BE MISTAKEN FOR

ACHY: Blades are < 1 mm wide, lemma awns are 3-6 mm long, and glumes are 6.5-9 mm long. **ACOC:** Blades are involute, < 2 mm wide, and the ligules are 0.2-1.5 mm tall. **SPCR:** Sheaths are fluffy.

AKA: *Stipa comata*

Fun Facts: The seeds are tipped with a sharp barbed point that stabs into the soil crust. As the tissues respond to changes in moisture content (hygroscopic), the drying awns mechanically self-drill into the soil by twisting.

NATIVE

LECI (NP) *Leymus cinereus*

COMMON NAME
Great Basin wildrye

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) that is 7-12 mm long and either has an acute point or an elongated nerve (awn) that is up to 3 mm long. There are 3-7 florets per group (spikelet) that are subtended by a pair of highly modified bracts (glumes) that are stiff and lack an awn. There are 2-7 spikelets per attachment point (node) that are attached directly to the flowering stalk in a spike arrangement.

Blades: Are 8-20 mm wide, are flat or have inwardly rolled edges (involute), are firm, and narrow toward the tip.

Stems: Are stalks (culms) that are round and hollow with an outer covering (sheath) that is open. The structure jutting from the blade and sheath junction (ligule) is 2-8 mm tall and is acutely tipped.

Plants: Are 50-110 cm tall, are a bunchgrass, and bloom from May to August.

SITE AND HABITAT

Occurs across the INL Site, often in low-lying playas, roadsides, and dry slopes.

NOT TO BE MISTAKEN FOR

***Elymus canadensis*:** Lemma awns are 15-40 mm long and glume awns are 10-25 mm long. **PHAR:** Spikelets are attached to a distinct stalk (pedicel) on the flowering stalk to form solitary terminal blooms on laterally branching stems (panicle).

AKA: *Elymus cinerus*

Fun Facts: Wildryes have multiple spikelets per node while wheatgrasses have one. Native Americans used the roots as medicine, the stems and leaves for bedding, and even crafted arrow shafts from stems.

NATIVE



COMMON NAME
western wheatgrass

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) that is hairy to hairless, is 3-5 nerved, with an elongated central nerve (awn) that is 0.5-5 mm long. There are 2-12 florets per group (spikelet) that are subtended by a pair of highly modified bracts (glumes) that are 0.15-0.8 mm wide and narrowly taper to a thin, awn-like tip. The spikelets are attached directly to the flowering stalk in a spike arrangement and overlap each other.

Blades: Are 1-4.5 mm wide, are flat or have inwardly rolled edges (involute), are stiff, rough, and prominently veined.

Stems: Creep underground (rhizomatous) and send up stalks (culms) that are round and hollow with an outer covering (sheath) that is open, rarely hairy, or may have a white waxy coating (glaucous). The structure jutting from the blade and sheath junction (ligule) is 0.5 mm tall and transparent. The sheath top has a pair of claws (auricles) that are 0.2-1 mm long and often purple.

Plants: Are 20-60 cm tall, are rhizomatous, and bloom from late May to August.

SITE AND HABITAT

Found near the Big Lost River and riparian areas on fine to medium textured soils.

NOT TO BE MISTAKEN FOR

ELLA: Glumes are 0.4-1.6 mm wide and quickly taper to an acute, blunt point.
ELTR: Plants are bunchgrasses and attachment points (nodes) have 2 spikelets.

AKA: *Agropyron smithii, Elymus smithii*

Fun Facts: This is Wyoming's state grass.

NATIVE

POSE (NP) *Poa secunda*



COMMON NAME
Sandberg bluegrass

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) that is purple, 5-nerved, has an acute tip, has a hairless base, has very small crisp hairs, and lacks an elongated nerve (awn). There are 2-5 florets per group (spikelet) that are lance-shaped and are attached to distinct stalks (pedicels) along the flowering stalk to form solitary terminal blooms on laterally branching stems in a panicle arrangement with narrowly constricted to open spreading branches.

Blades: Are narrow, have a double mid-rib, and are flat, folded, or have curled edges.

Stems: Are stalks (culms) that are round and hollow with an outer covering (sheath) that is partially closed and is smooth to rough. The structure jutting from the blade and sheath junction (ligule) is 2.5-6 mm tall.

Plants: Are 15-75 cm tall, are a bunchgrass, and bloom from March to July.

SITE AND HABITAT

Found across the INL Site in a wide range of soil textures.

NOT TO BE MISTAKEN FOR

POFE: Lemmas have soft, silky hairs (sericeous). **POPR:** Stems creep underground (rhizomatous), and lemmas have webbed bases. **SPCR:** Sheaths are fluffy.

AKA: *Poa nevadensis, P. scabrella, P. sandbergii*

Fun Facts: Formerly independent species have been grouped into Poa secunda based on recent genetic analysis. However, best management practices often encourage the selection of locally adapted or site-specific plant materials because these are the most likely to reestablish and achieve long-term restoration success.

NATIVE

Pseudoroegneria spicata PSSP (NP)




COMMON NAME
bluebunch wheatgrass

FAMILY
Grass (*Poaceae*)

IDENTIFYING CHARACTERISTICS

Flowers: Each flower (floret) has an outer bract (lemma) that often has an elongated nerve (awn) that is up to 25 mm long and is bent at 90°, but they can be awnless. There are 4-9 florets per group (spikelet) that are subtended by a pair of highly modified bracts (glumes) which are 6-13 mm long. The spikelets are attached directly to the stem in a spike arrangement, are uncrowded, and are 8-22 mm long.

Blades: Are 2-6 mm wide, have upper surfaces with soft hairs and under surfaces with coarse hairs, have inwardly rolled edges (involute), and dry into spirals.

Stems: Are stalks (culms) that are round and hollow with an outer covering (sheath) that is open. The structure jutting from the blade and sheath junction (ligule) is 0.1-0.5 mm tall. The sheath top has a pair of claws (auricles) that are 1 mm long, clasping, and reddish-purple.

Plants: Are 30-80 cm tall, are a bunchgrass, and bloom from May to August.

SITE AND HABITAT

Found near the buttes and foothills on medium to coarse-textured soils.

NOT TO BE MISTAKEN FOR

ACTH: Lemma awns are twice bent and 32-56 mm long, ligules are 1.5-8 mm tall, and auricles are absent. **SPCR:** Sheaths are fluffy.

AKA: *Agropyron spicatum, Elymus spicatus*

Fun Facts: Bluebunch wheatgrass is an important year-round forage for many different animals but, heavy grazing can damage individuals.

NATIVE

Indian ricegrass | *Achnatherum hymenoides*