

An Introduction to Colorado Grasses



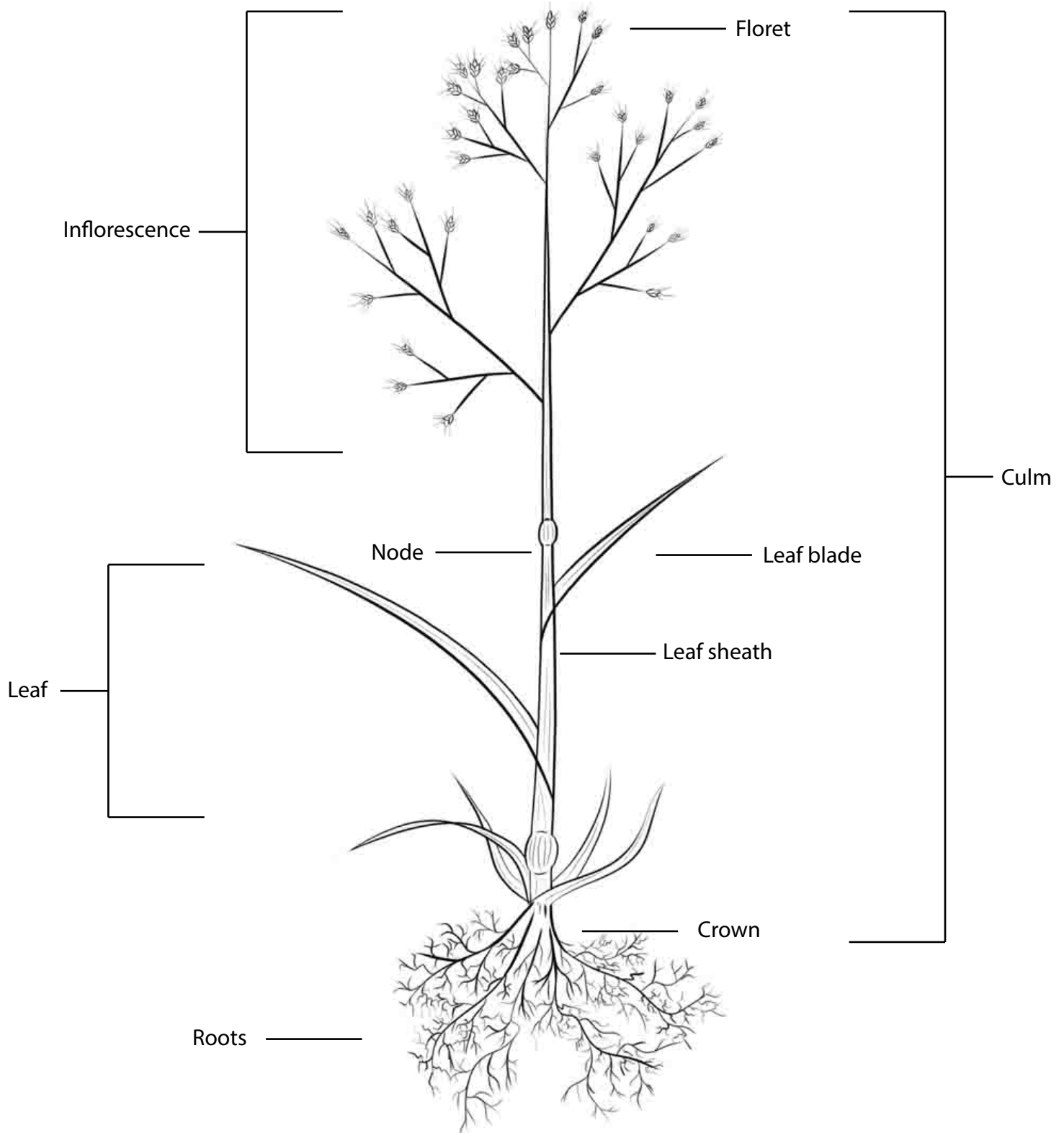
Compiled and illustrated
by Daniel Barcelon

The grasses, Family Poaceae, are one of the most prevalent plants upon Earth's surface. The family consists of 785 genera and about 10,000 species throughout the world. Grasses are the third largest family in number of genera, and fifth largest in number of species. They cover about a third of the land's surface as well. Many grasses are eaten by animals, and others are also used by humans. This guide is created with the intent of helping people in Colorado gain a better understanding of grasses on a basic level, as well as how to identify important, common varieties.

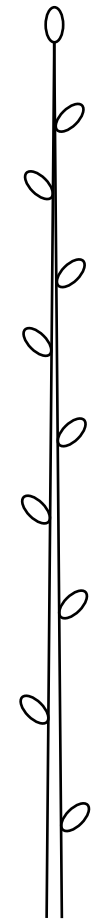
Grasses in Colorado consist of 7 Subfamilies, which are broken down into 14 Tribes. There are 113 genera, which include about 335 species. This booklet contains information on species present on the Butterfly Pavilion property.

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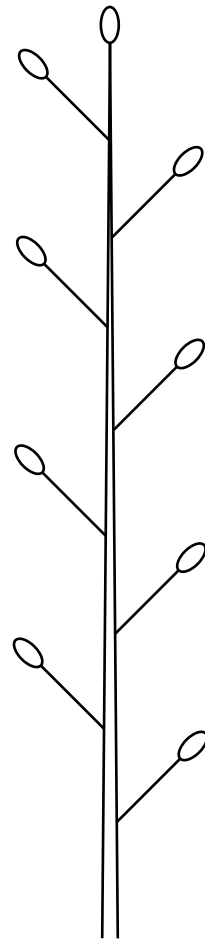
Grass plant anatomy



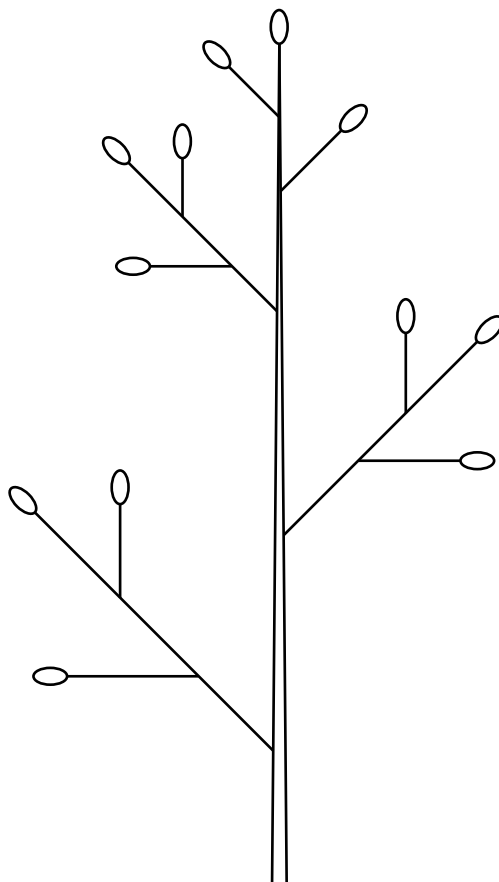
Inflorescence types



Spike

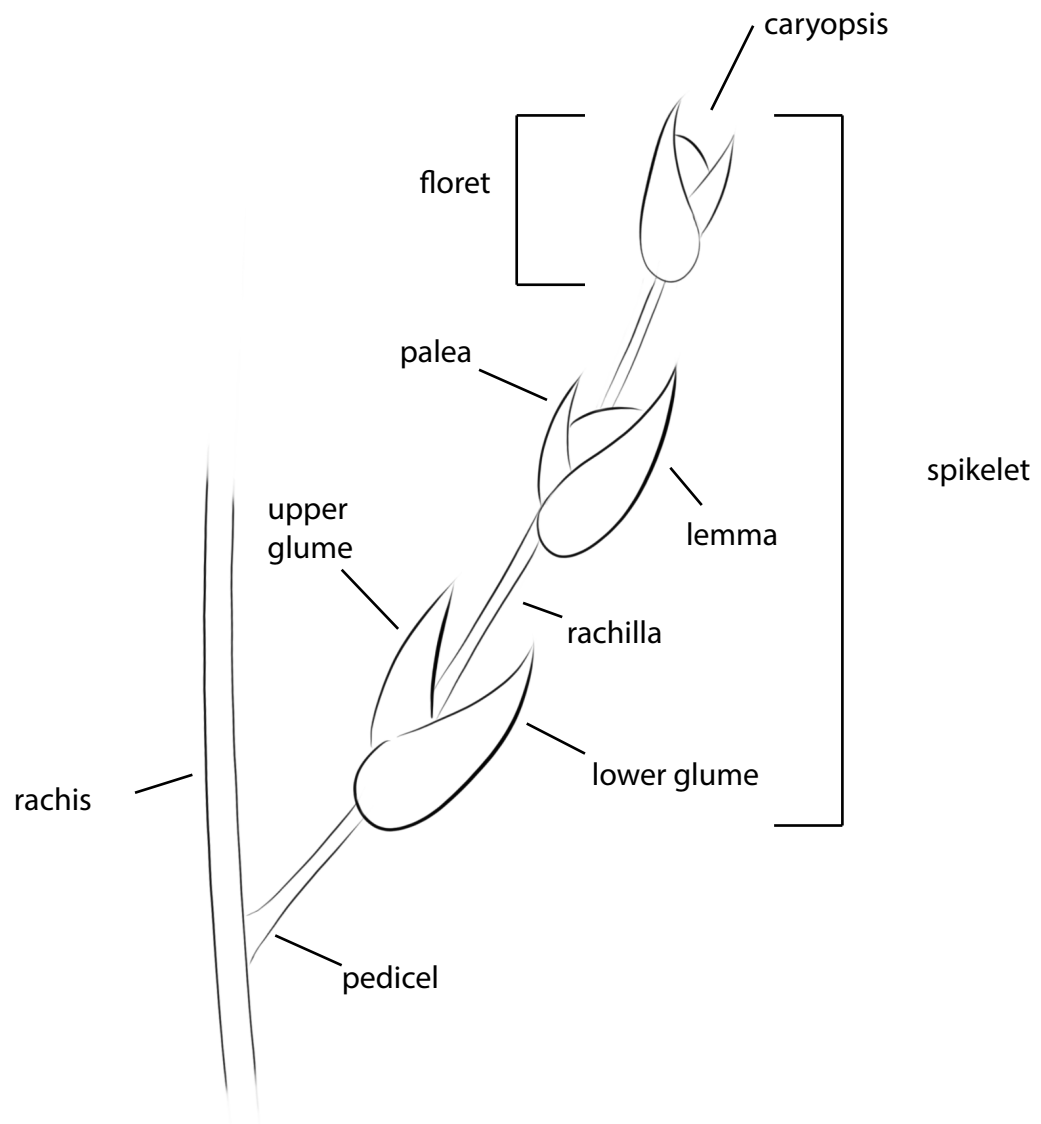
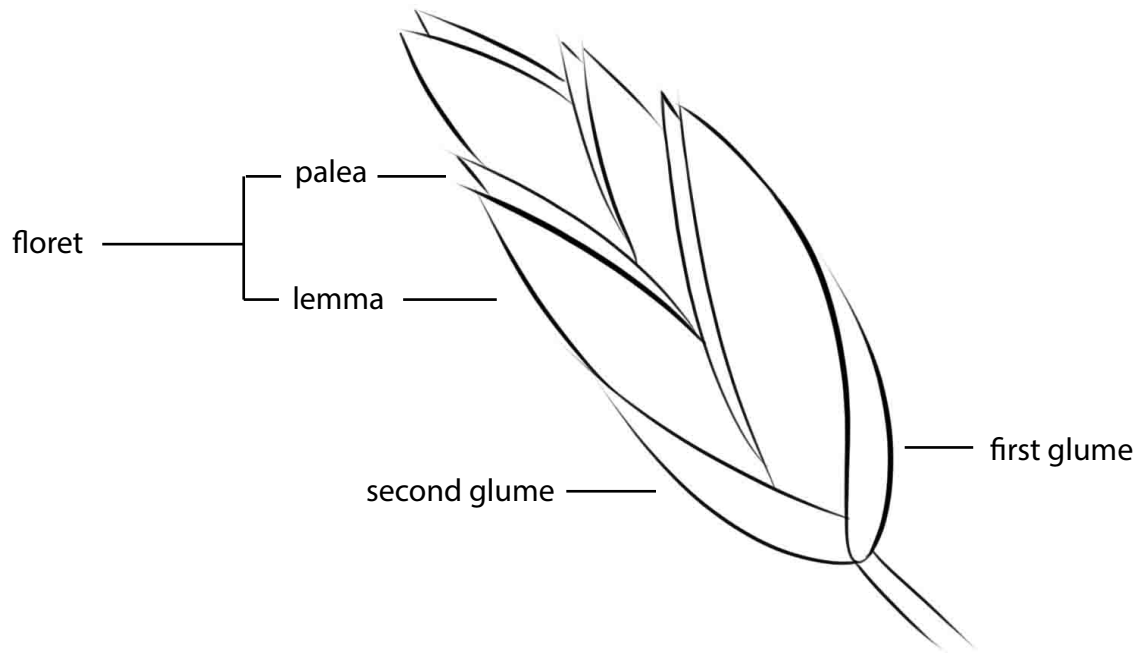


Raceme

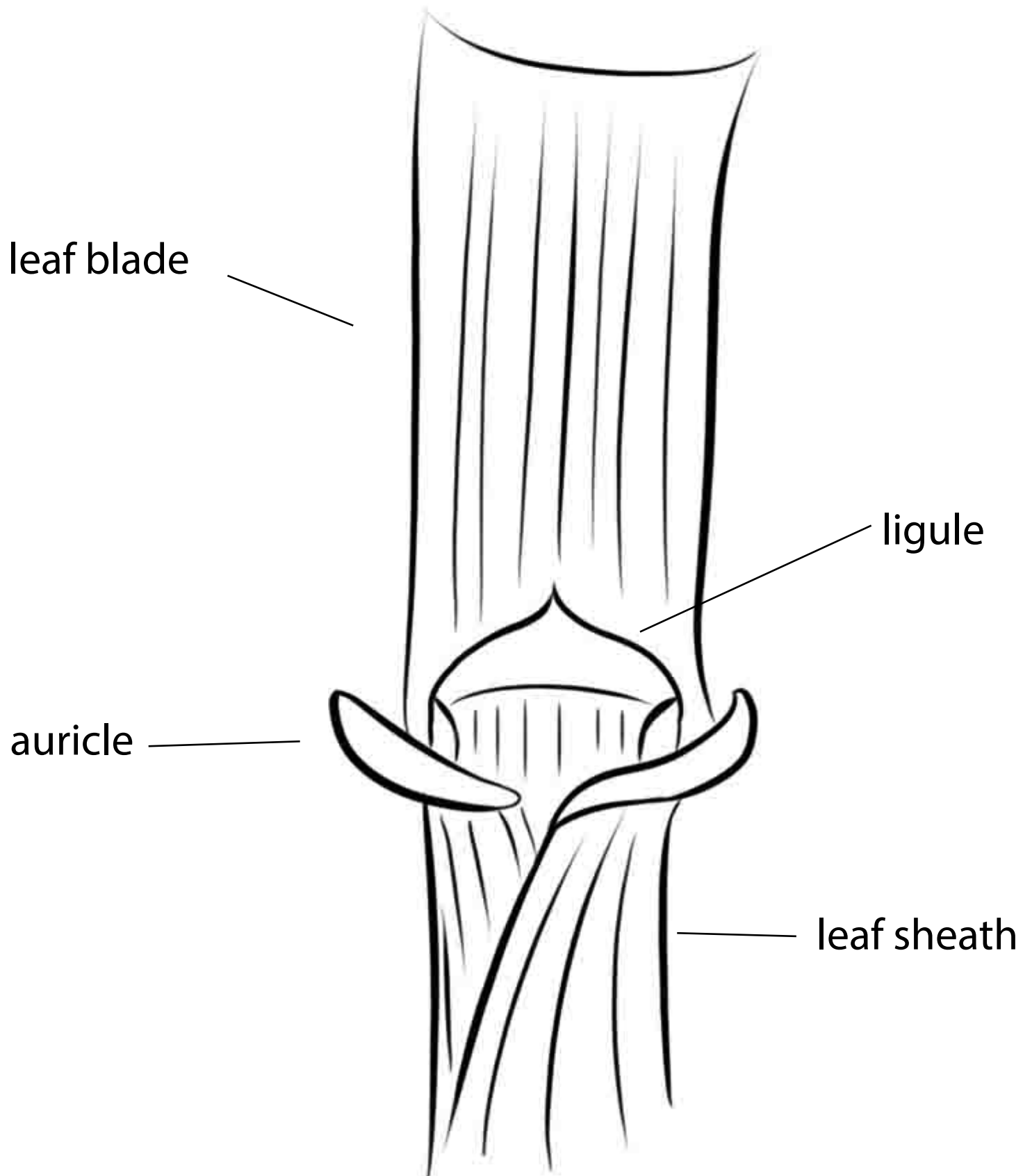


Panicle

Anatomy of two grass spikelets



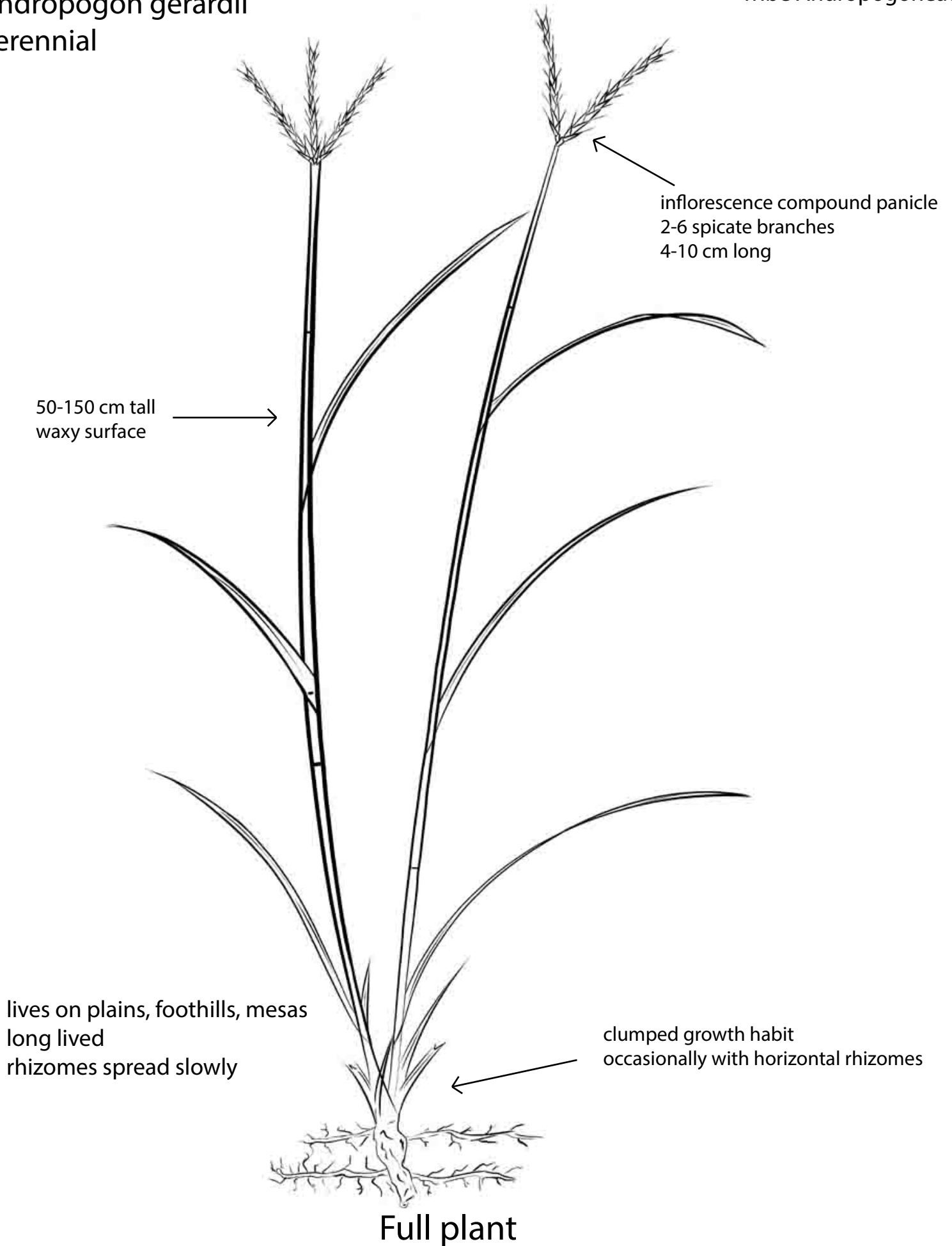
Grass leaf anatomy

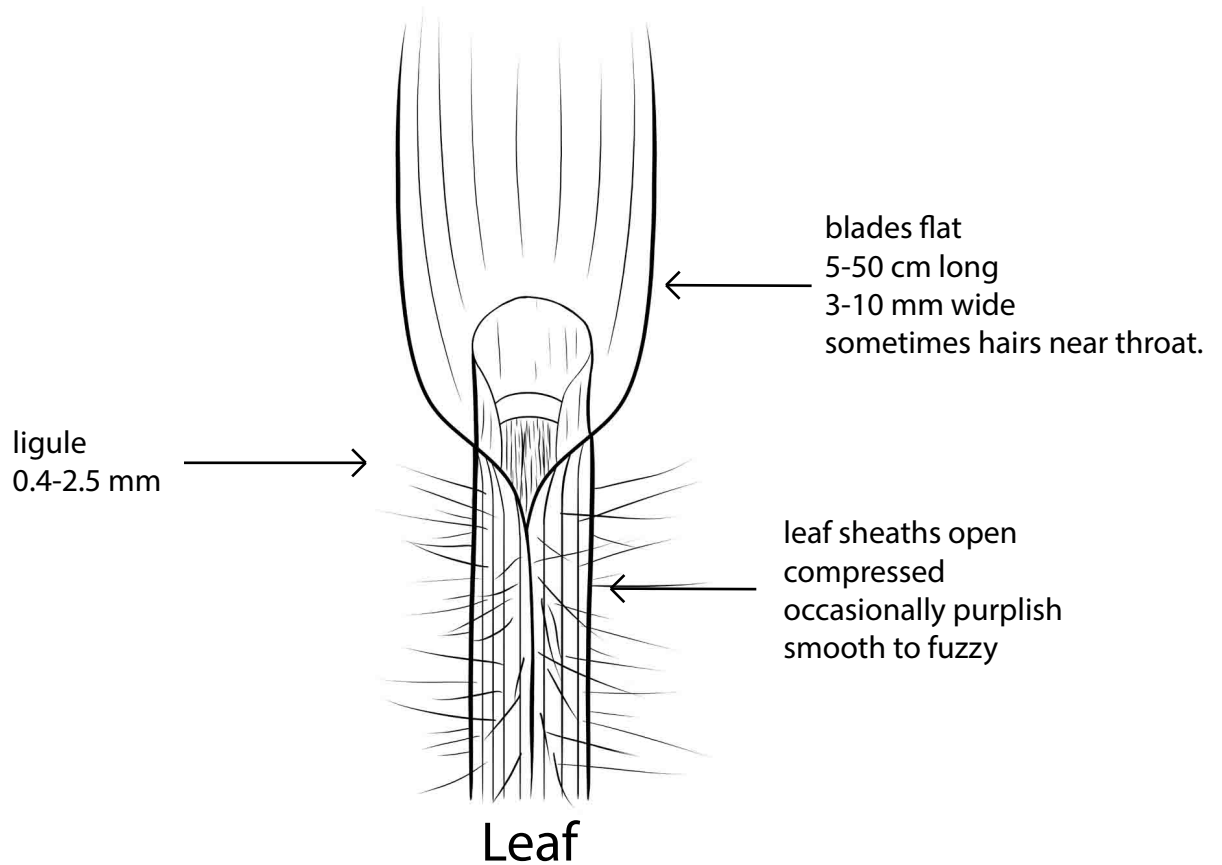
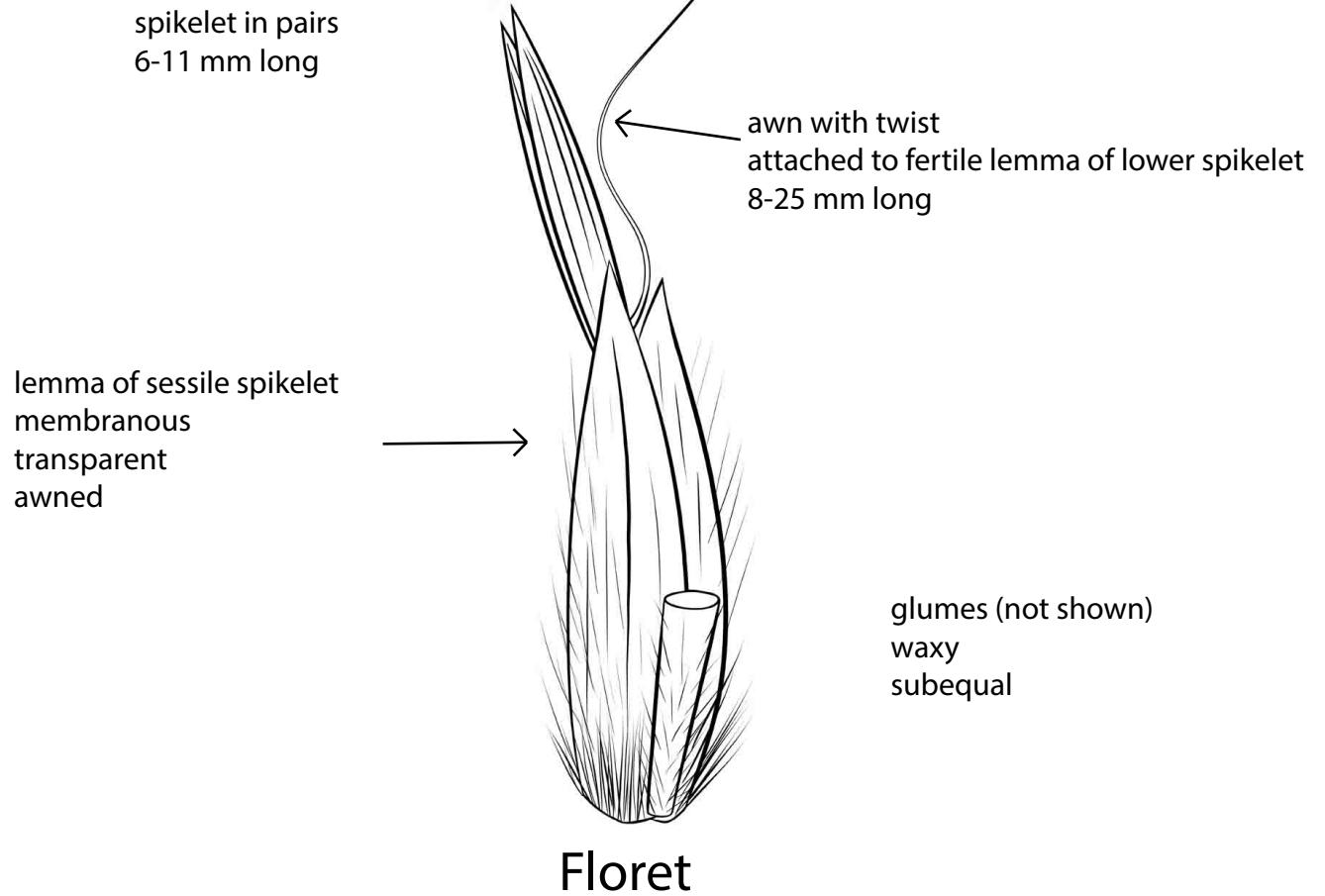


Big Bluestem
Andropogon gerardii
Perennial

6

Subfamily Panicoideae
Tribe Andropogoneae





Blue Grama

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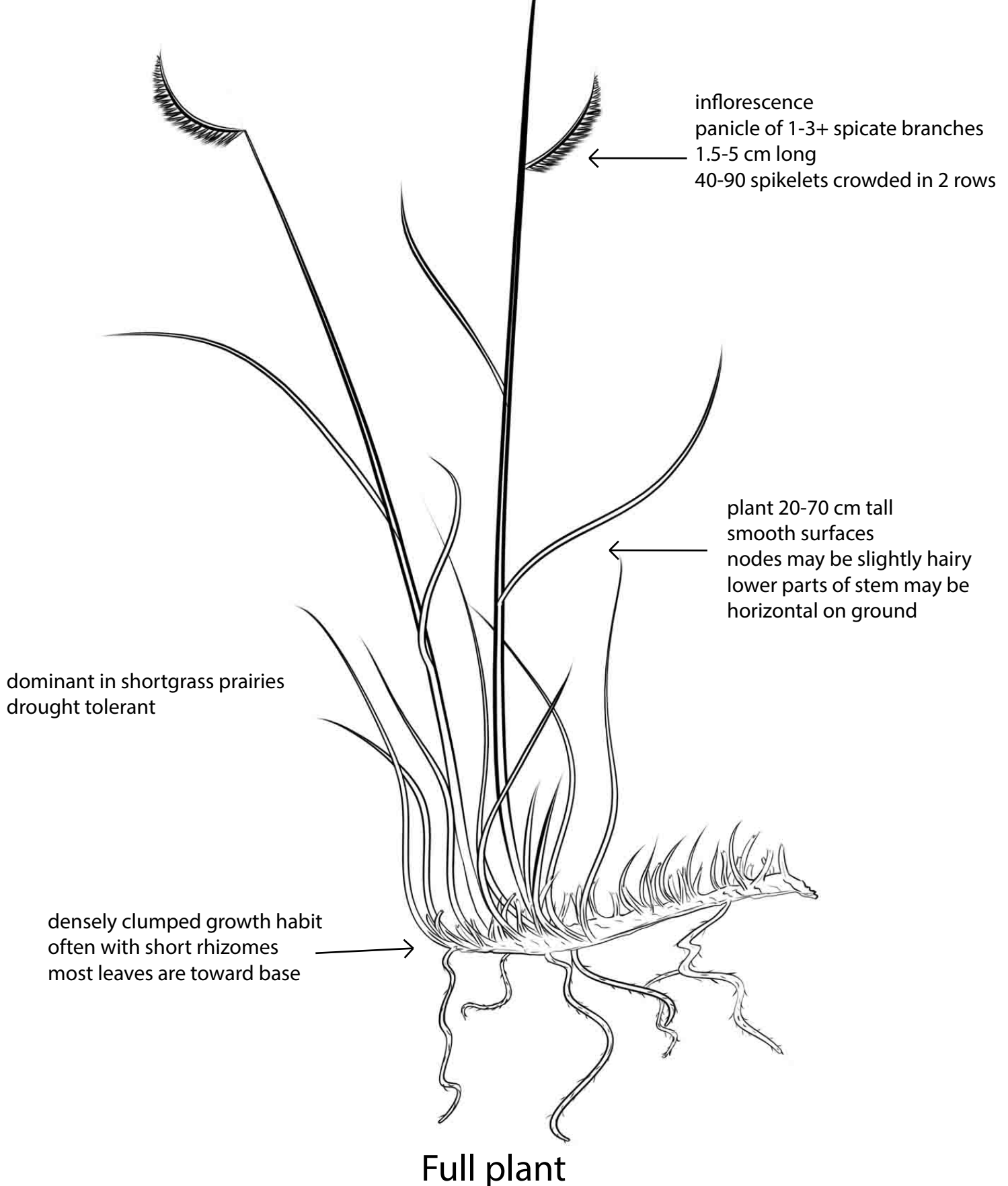
Subfamily Chloridoideae

Chondrosum gracile/ *Bouteloua gracilis*

Tribe Cynodonteae

Native

Perennial



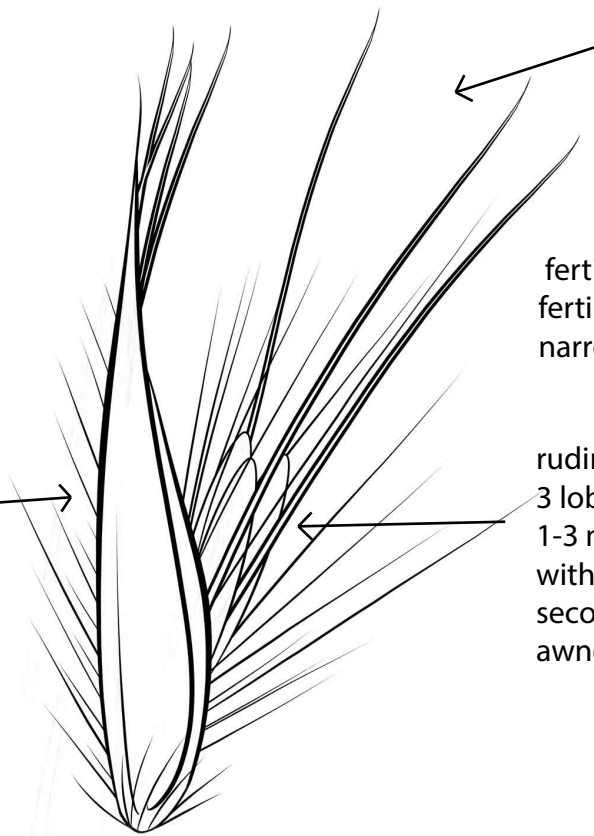
spikelets 2-3 flowered
1 fertile floret
1-2 sterile florets

awns
3 on fertile lemma
terminal 0.5-1.5 mm long
lateral 1-2 mm long

fertile lemmas (not shown)
fertile 3.5-6 mm long
narrow

glumes
unequal
lower 1.5-3.5 mm long
upper 3.5-6 mm long
pale to purple
hairs on nerves

rudimentary lemmas
3 lobed
1-3 mm
with hairs
second, when present
awneless

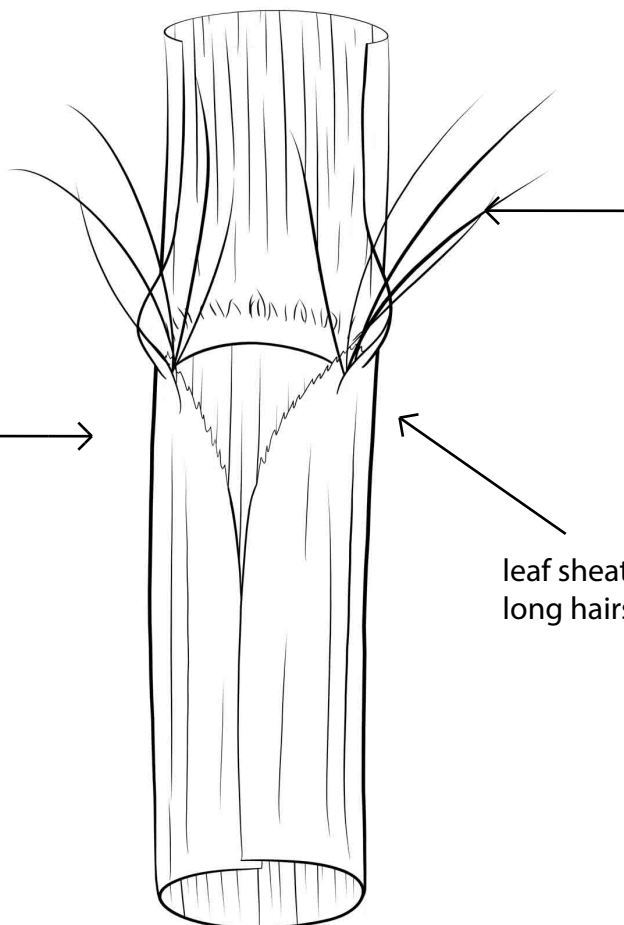


Spikelet

ligule
0.1-0.5 mm
tiny hairs

blades flat or loosely rolled
2-25 cm long
0.5-4 mm wide
often curly
rough above
smooth below

leaf sheaths smooth or sparsely hairy
long hairs at collar



Leaf

Cheatgrass

Anisantha tectorum/*Bromus tectorum*

Introduced

Annual

10

Subfamily Pooideae

Tribe Brachypodieae

inflorescence
open panicle
5-20 cm long
droop with age
densely branched
branches 1-4 cm long
4-8 spikelets on branch

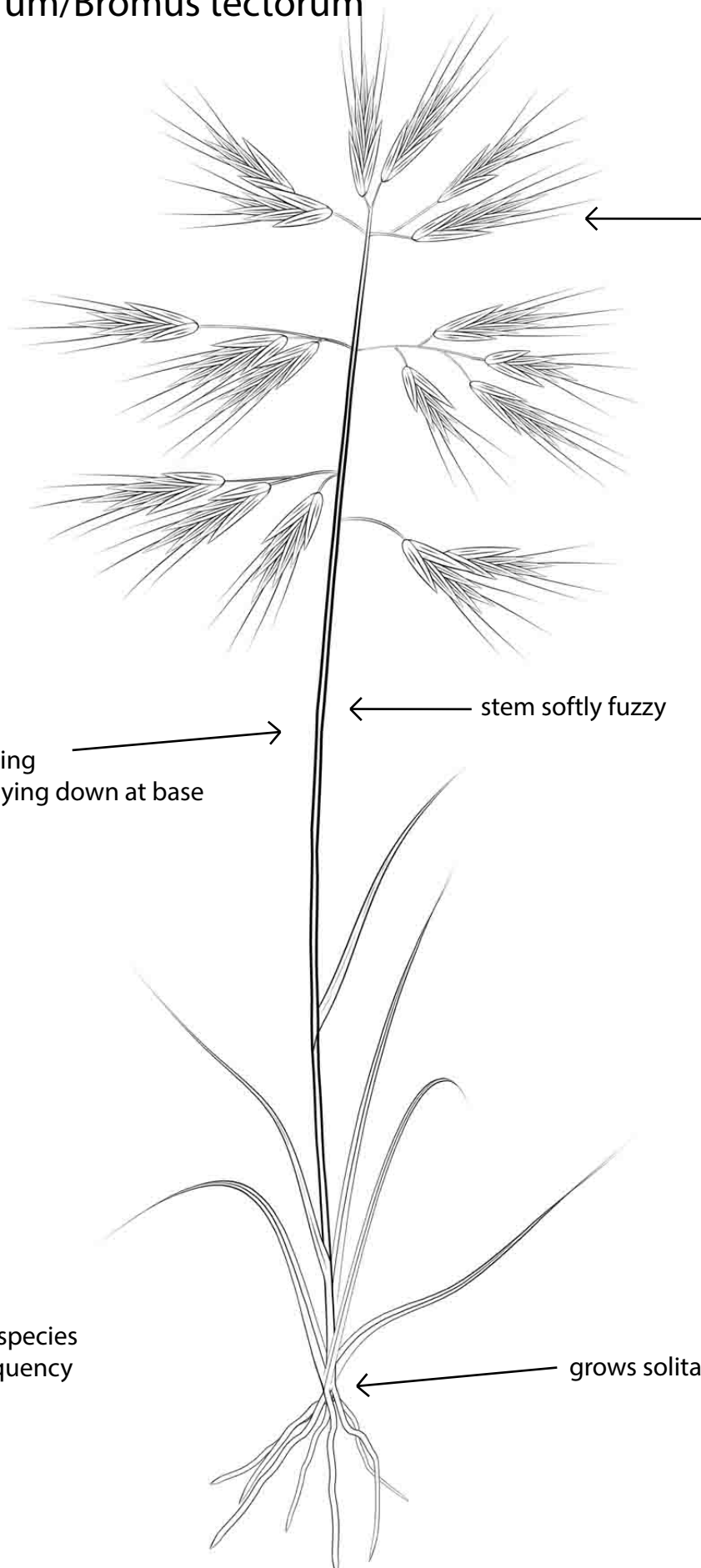
50-90 cm tall
usually standing
sometimes laying down at base

stem softly fuzzy

common weedy species
increases fire frequency

grows solitary or clustered

Full plant



spikelets 10-24 mm long
greenish to purplish
4-8 flowered

awns
on lemma
10-18 mm long

glumes (not shown)
long and thin
unequal
lower 4-8 mm long
upper 8-11 mm long

lemmas
long and thin
back rounded
9-12 mm long
apex with 2 teeth
1-3 mm long

Floret

ligule
irregularly torn
1-3.5 mm long

leaf blade flat to slightly rolled
4-16 cm long
2-7 mm wide
usually with soft hairs on both
surfaces

leaf sheath softly hairy

Leaf

Indian Ricegrass

Achnatherum hymenoides/*Oryzopsis hymenoides*

Perennial

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Subfamily Pooideae

Tribe Stipeae

open panicle
5-20+ cm long
8-14 cm wide

spikelets large
1 flowered

30-90 cm tall
erect
hollow stem
waxy surface

drought tolerant
good for restoration
seeds sought by birds and small mammals

densley clumped growth habit



Full plant

13

awn
6-10 mm long
straight

florets 3-4.5 mm long

lemmas (not shown)
3-5 mm long
dark brown
shiny
densely hairy
long whitish hairs

paleas (not shown)
3 mm long
3/4 to as long as lemma
smooth

glumes
subequal
5-9 mm long
lightly fuzzy to smooth
lower slightly longer than upper
can have long pointed tips

Spikelet

blades usually rolled
0.1 - 1 mm wide

sheaths
smooth to lightly fuzzy
open
becoming fibrous in older plants
collars can have tufts of hairs on sides

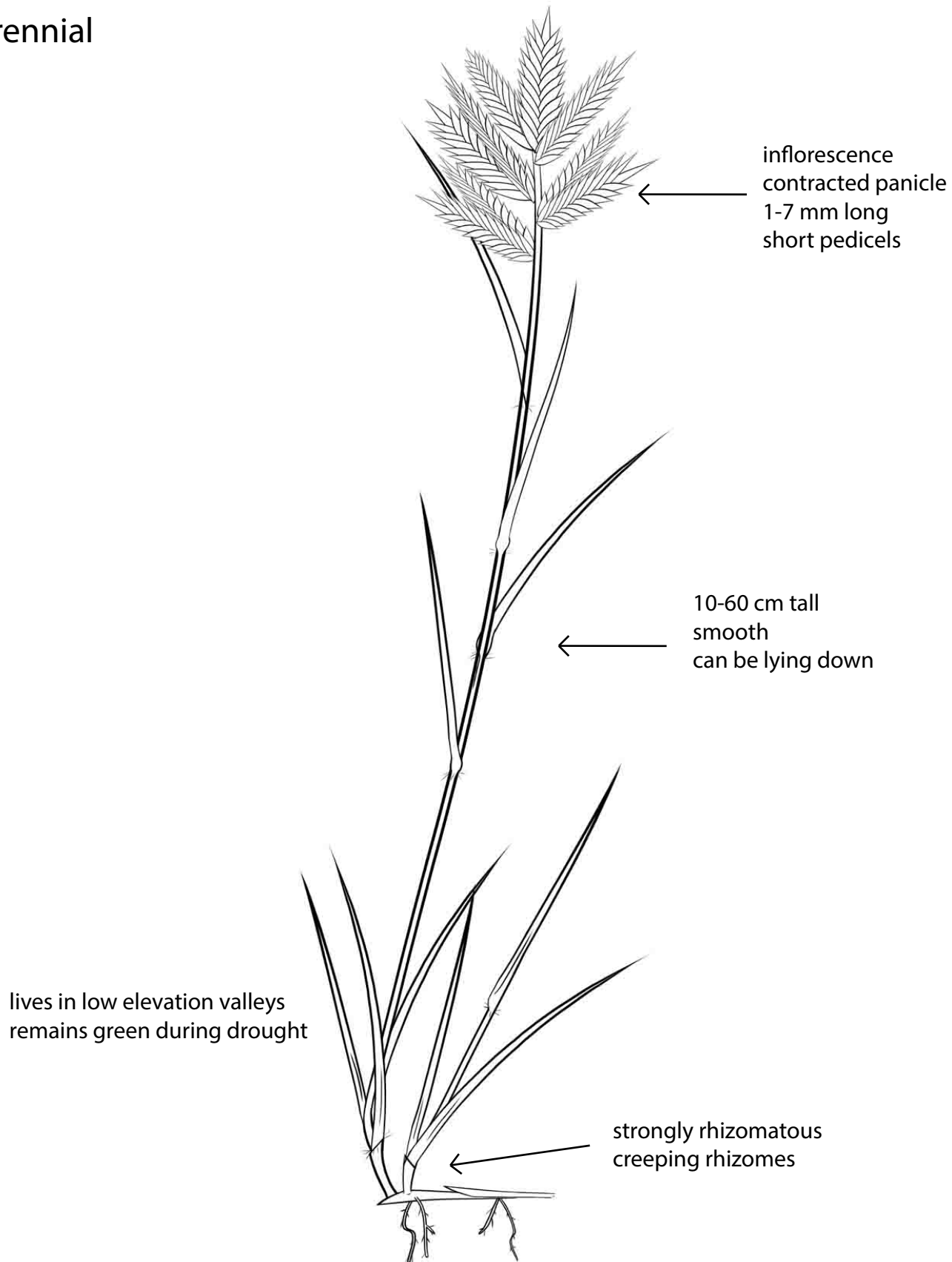
ligule
2-8 mm
acuminate
frays with age

Leaf

Inland Saltgrass
Distichlis stricta
Native
Perennial

14

Subfamily Chloridoideae
Tribe Cynodonteae



Full Plant

spikelets
male or female
5-20 florets
5-20 mm long
pistillate spikelets green
staminate spikelets tan

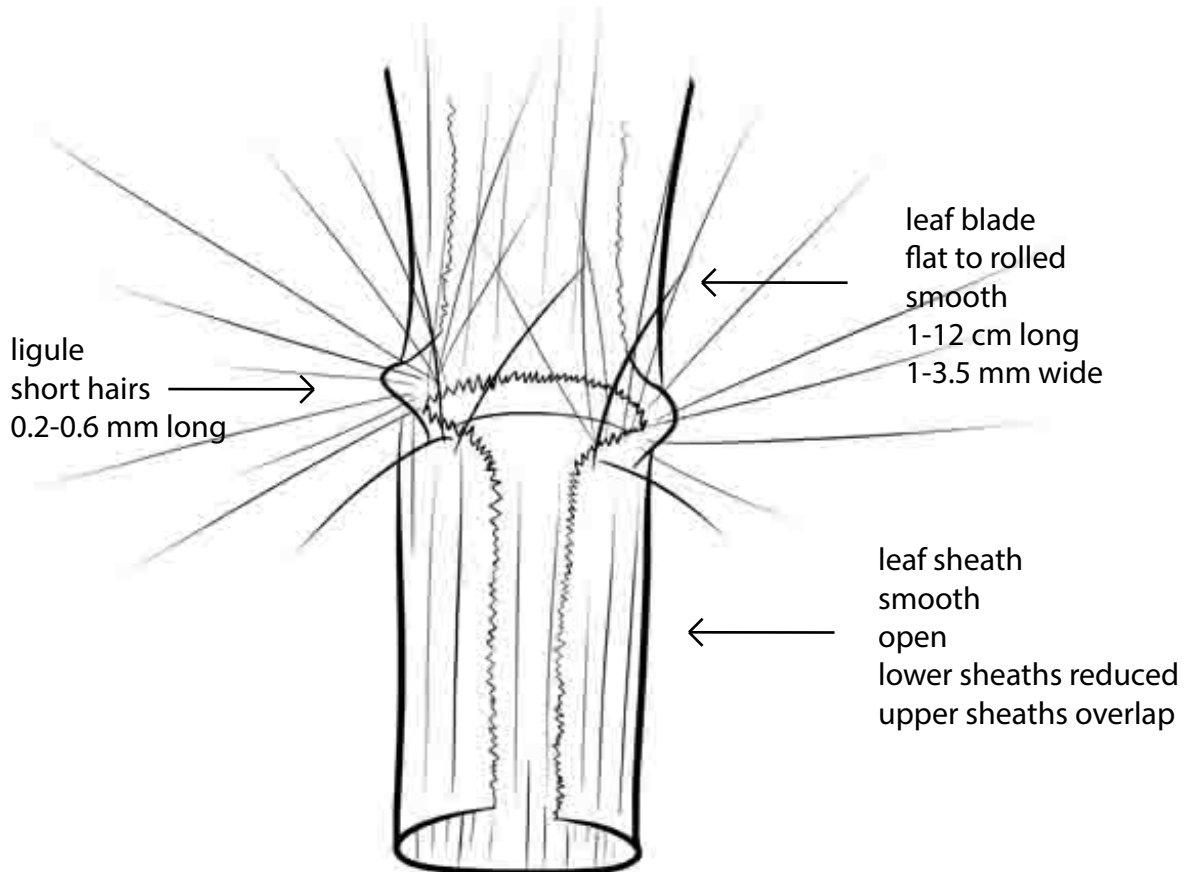
glumes (not shown)
unequal
smooth
lower 2-3 mm long
upper 3-4 mm long



lemmas
3-6 mm long
yellow, coarse margin



Floret



ligule
short hairs
0.2-0.6 mm long

leaf blade
flat to rolled
smooth
1-12 cm long
1-3.5 mm wide

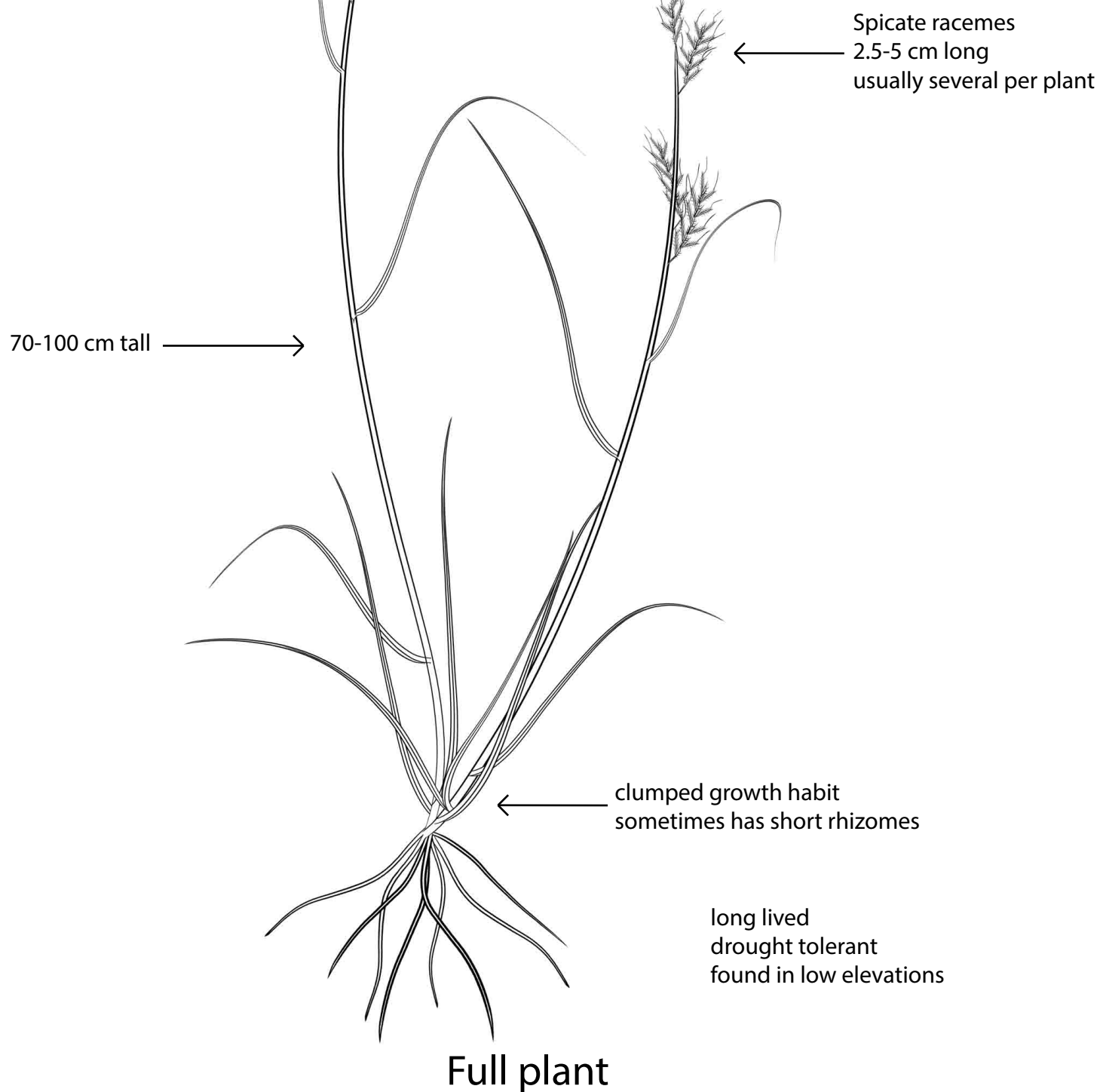
leaf sheath
smooth
open
lower sheaths reduced
upper sheaths overlap

Leaf

Little Bluestem
Schizachyrium scoparium
Native
Perennial

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Subfamily Panicoideae
Tribe Andropogoneae



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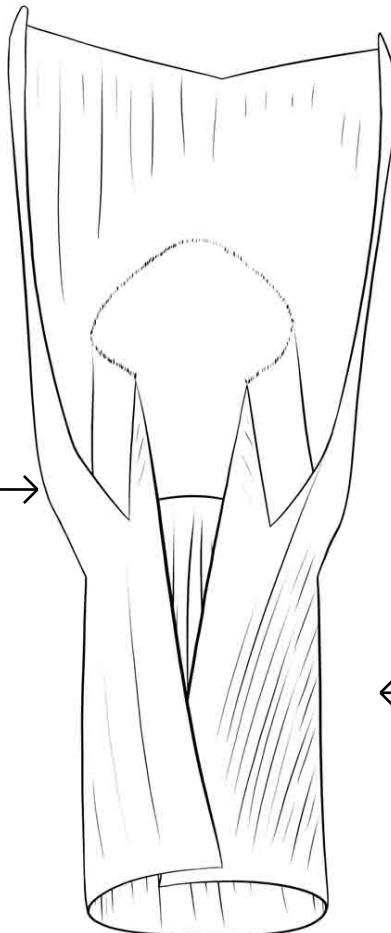
spikelets paired
2 flowered
fertile spikelet 6-8 mm long
lower spikelet reduced and sterile
sterile spikelet 4-5 mm long

awn
2.5-1.7 mm long
bent
attached to fertile spikelet
occasionally awn on sterile spikelet
up to 4 mm long

lemma of fertile spikelet
4.2-6.5 mm long
bearing a bent awn

glumes
of sessile spikelet subequal
2.5-4 mm long

Spikelet



blades flat to folded
7-25+ cm long
1.5-9 mm wide
upper surface smooth
lower surface rough

ligule
0.5-2.8 mm long
has tiny hairs

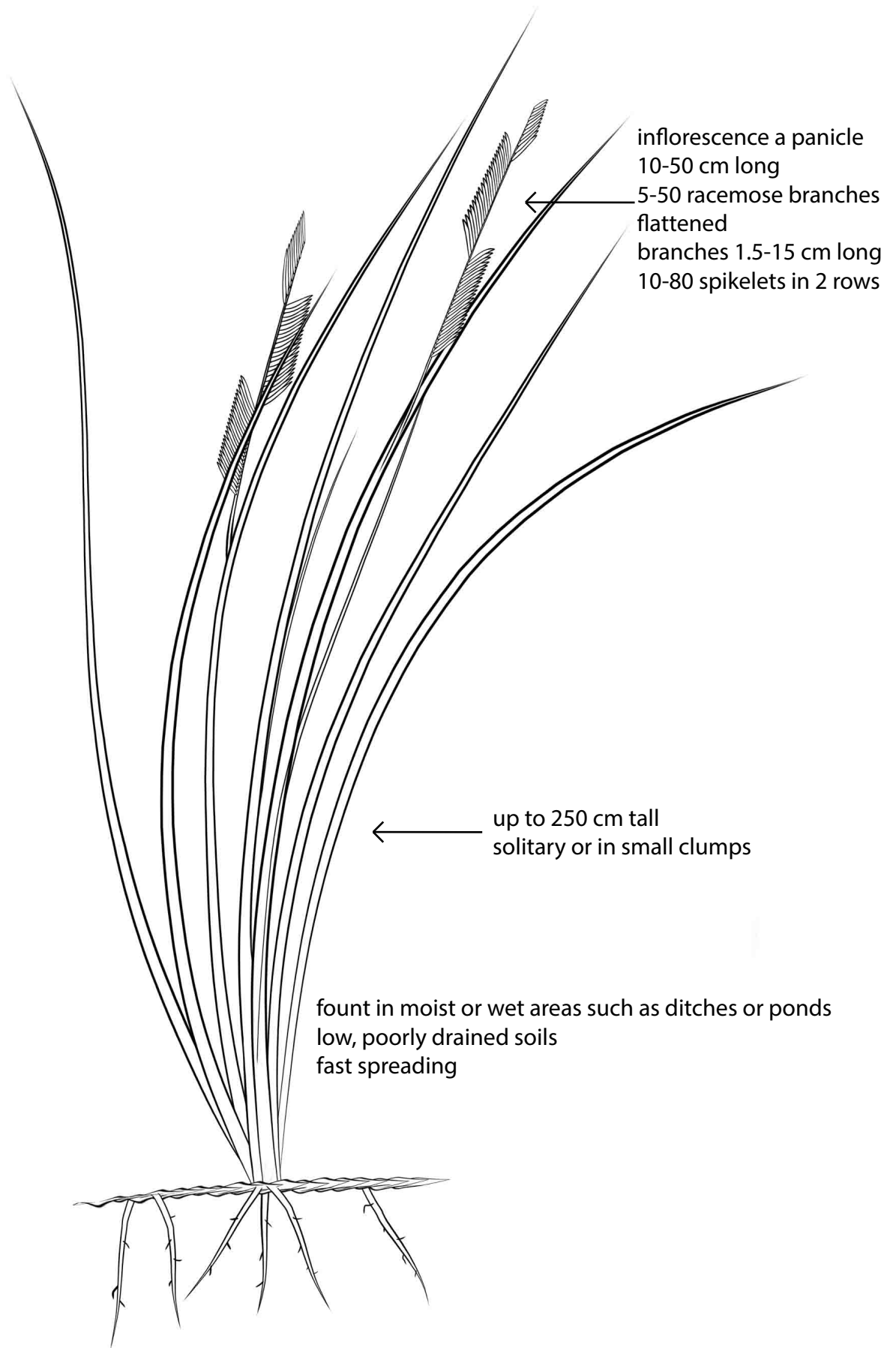
leaf sheaths open
rounded
usually smooth

Leaf

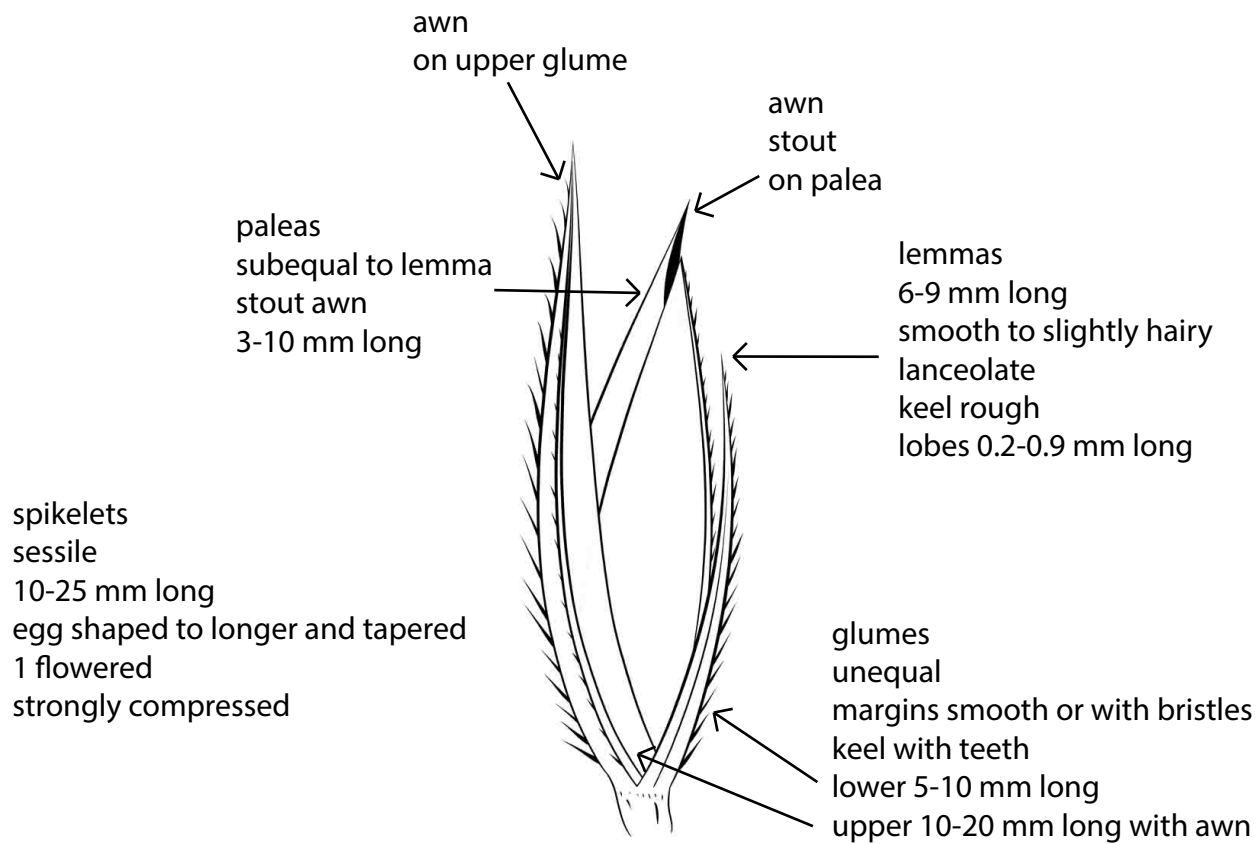
Prairie Cordgrass
Spartina pectinata
Native
Perennial

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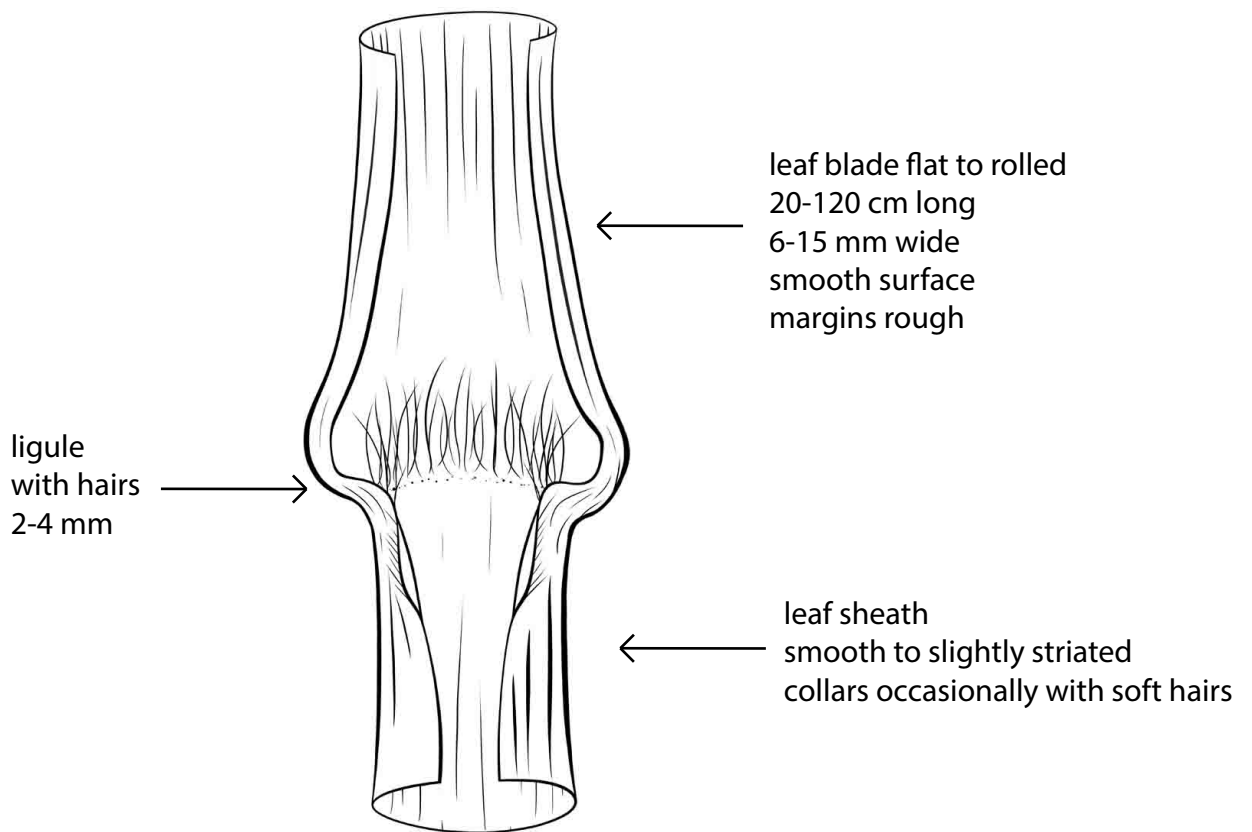
Subfamily Chloridoideae
Tribe Cynodonteae



Full plant



Spikelet

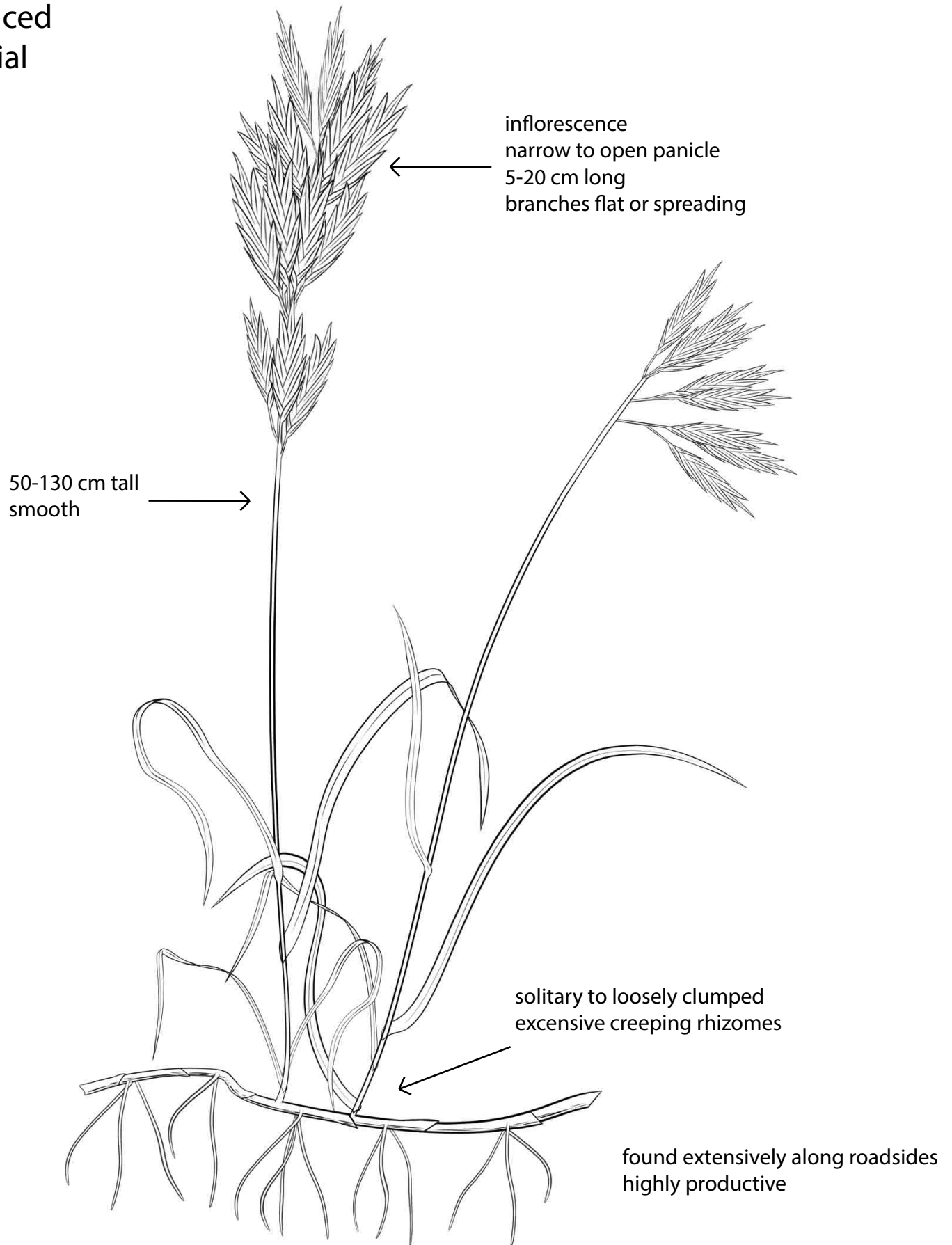


Leaf

Smooth Brome
Bromopsis inermis
Introduced
Perennial

20

Subfamily Pooideae
Tribe Brachypodeae



Full plant

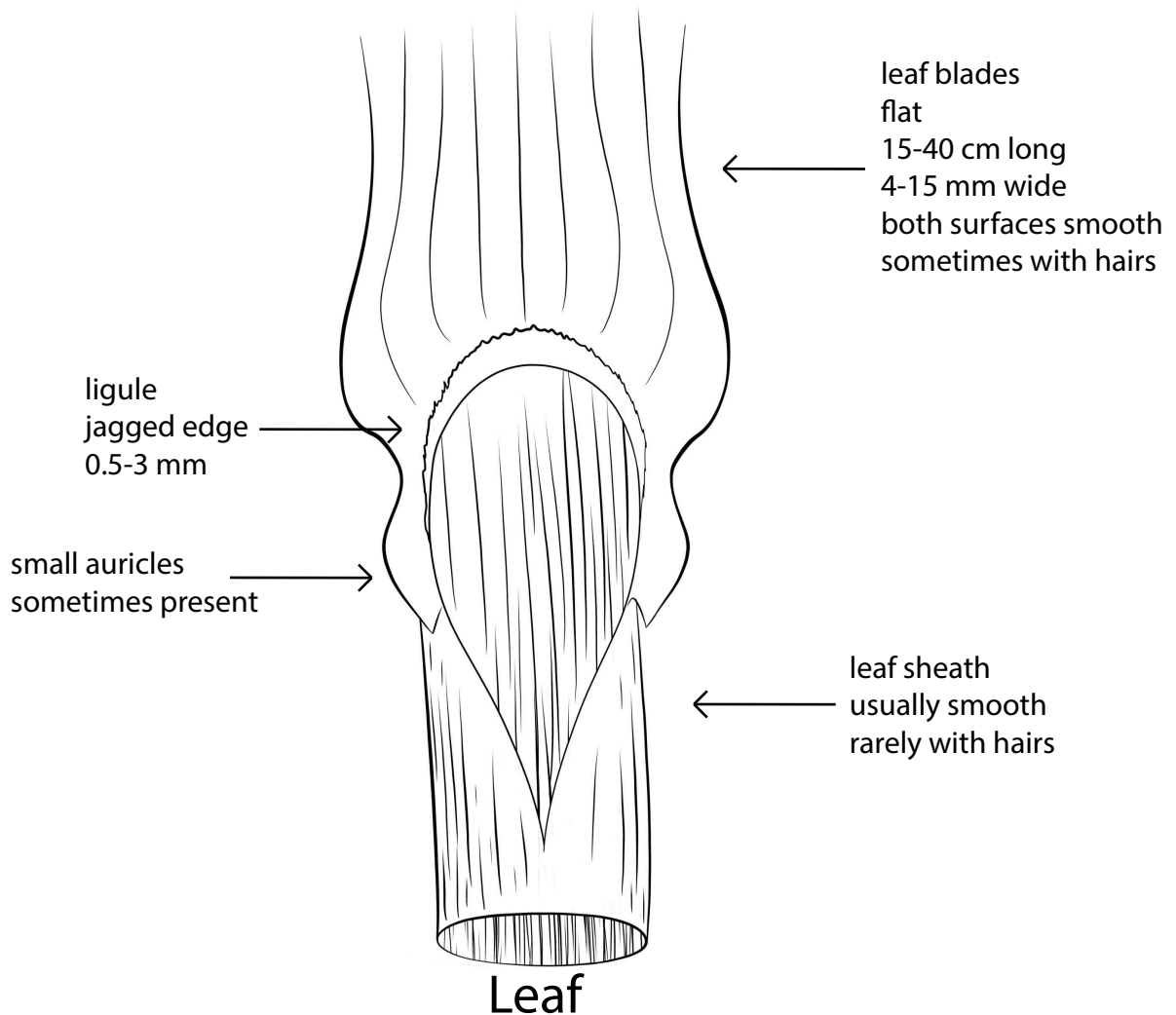
spikelets
cylindrical or slightly compressed
15-40 mm long
5-13 flowered

glumes (not shown)
unequal
narrow and long
lower 5-8 mm long

awn
lemma with or without
up to 3.5 mm long

lemmas
usually smooth
occasionally with tiny hairs
9-13 mm long

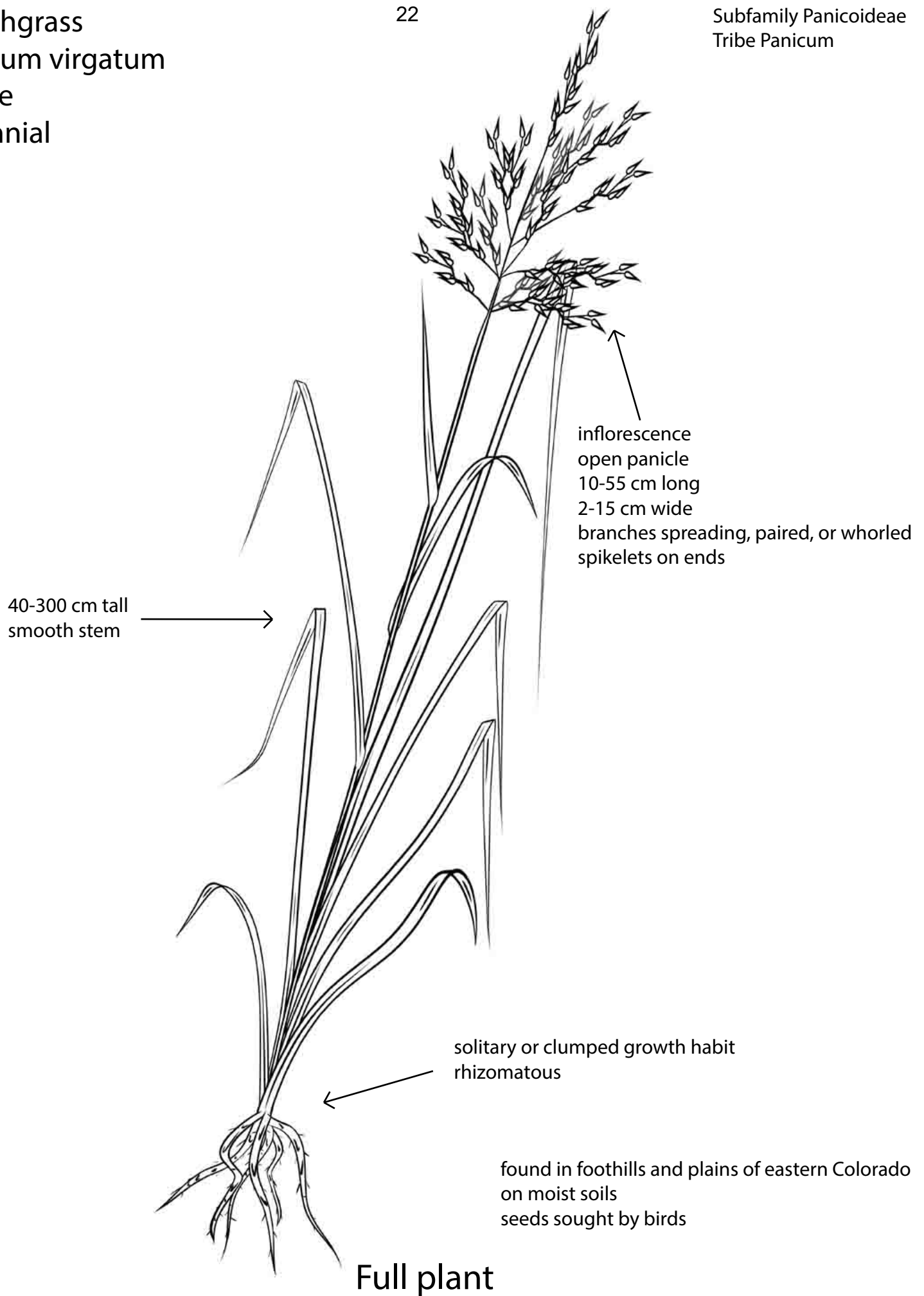
Floret



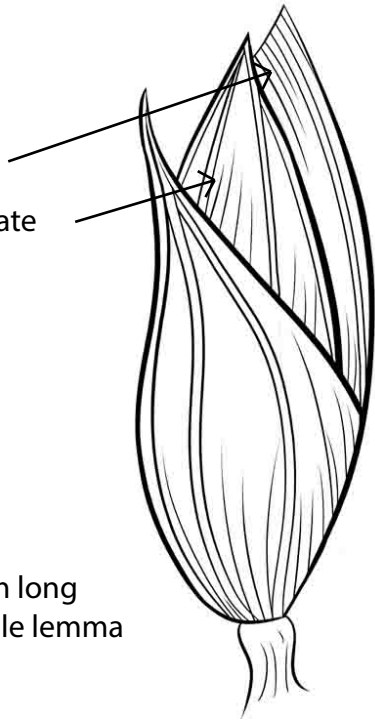
Switchgrass
Panicum virgatum
Native
Perennial

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Subfamily Panicoideae
Tribe Panicum



spikelets
 elliptic to ovate
 smooth surface
 2.5-8 mm long
 1.2-2.5 mm wide
 2 flowered
 upper floret fertile
 lower floret staminate



paleas (not shown)
 sterile palea 3-3.5 mm long
 nearly as long as sterile lemma

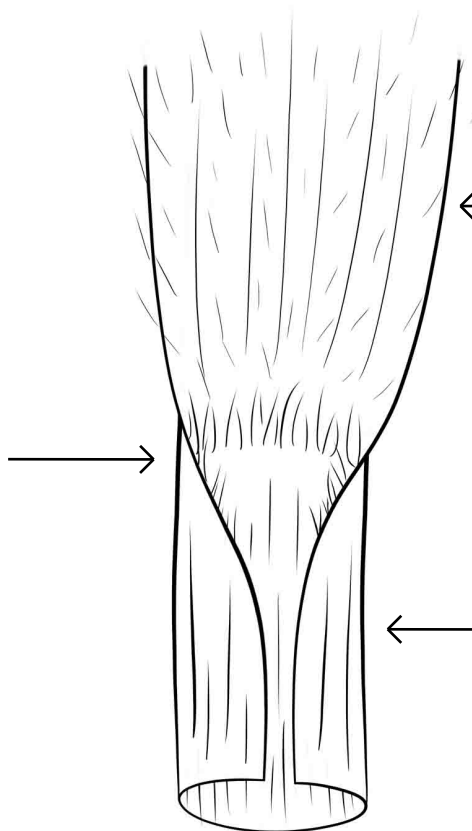
lemmas
 sterile 3.3-8 mm long
 space at apex between it
 and upper glume
 fertile lemma hard, shiny



glumes
 unequal
 upper 3.3-8.8 mm long
 lower 1.8-3.2 mm long

Floret

ligule
 hairs of various lengths
 2-6 mm long



leaf blade
 flat
 10-60 cm long
 2-15 mm wide
 smooth to hairy

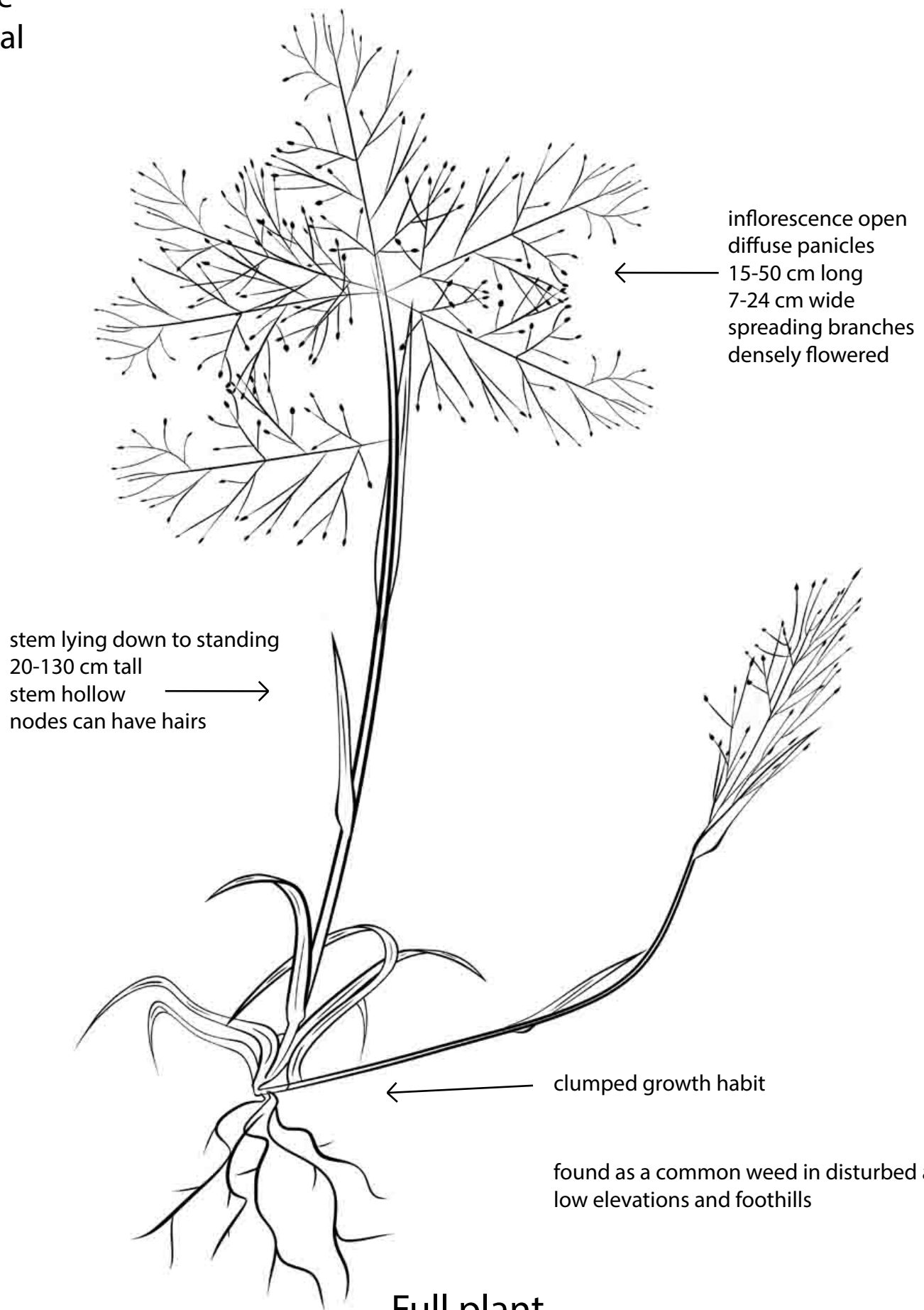
leaf sheath
 smooth to hairy
 margins hairy
 base can be purple or reddish

Leaf

Witchgrass
Panicum capillare
Native
Annual

24

Subfamily Panicoideae
Tribe Paniceae

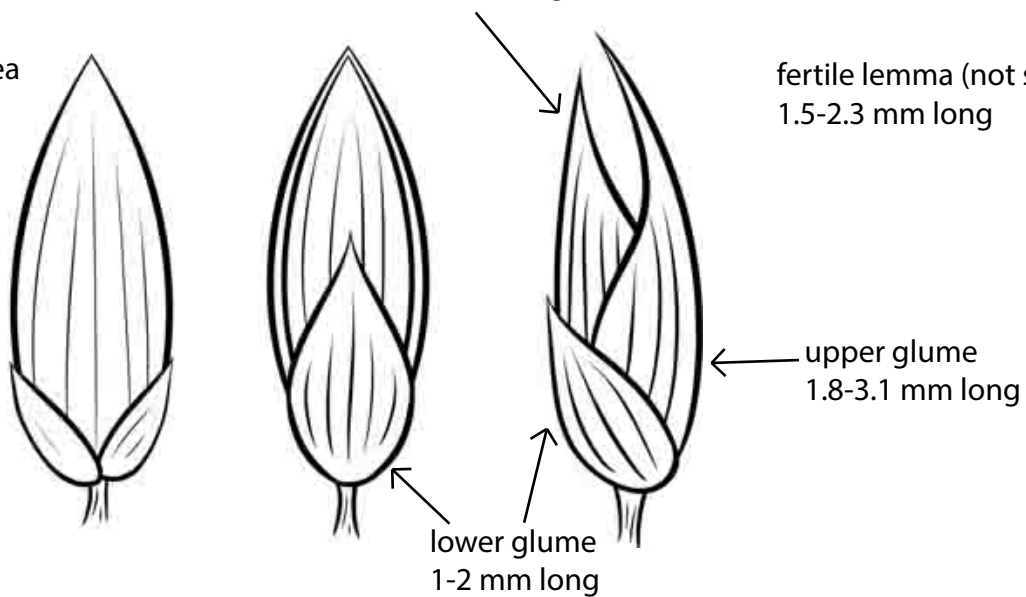


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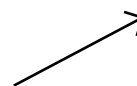
spikelets
1.9-4 mm long,
2 flowered
lower floret sterile- without palea
upper floret fertile (not shown)

sterile lemma
1.9-3 mm long

fertile lemma (not shown)
1.5-2.3 mm long

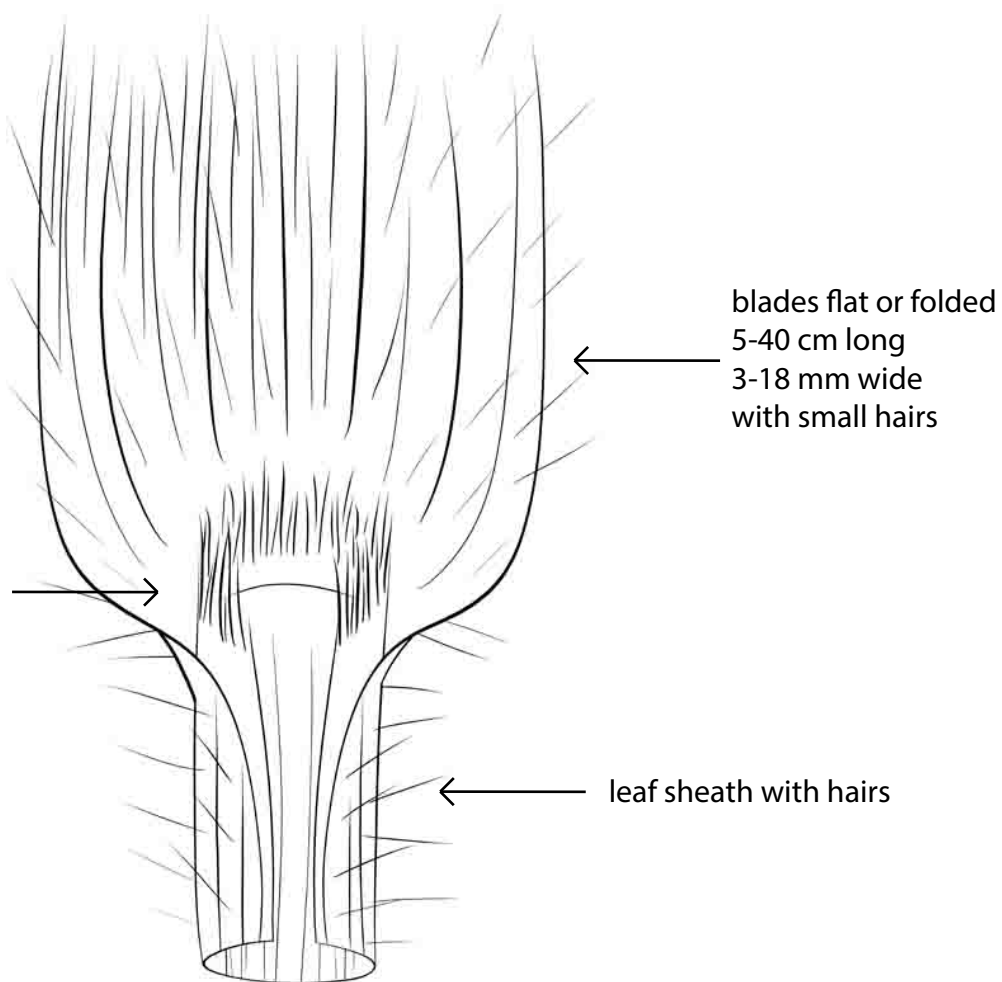


Spikelet



ligule
0.5-1.5 mm long
with hairs

blades flat or folded
5-40 cm long
3-18 mm wide
with small hairs



Leaf



Glossary

Abaxial: The side away from the axis. Usually the “bottom” of a leaf.

Acuminate: Gradually tapering to a point.

Acute: Sharp-pointed, with an angle less than 90 degrees.

Adaxial: The side toward the axis. Usually the “top” of a leaf.

Alkaline: Having a pH greater than 7. Opposite of acidic.

Annual: A life cycle of 1 season or year, from seed to maturity and death.

Awn: A stiff, hairlike projection, usually the prolongation of the midnerve or lateral nerves of glume, lemma, or palea.

Bisexual: Flower having both stamens and carpels.

Callus: A hard, usually pointed base of a spikelet or floret, just above point of disarticulation.

Carpel: Unit of the pistil.

Cespitose: In dense clumps or tufts.

Ciliate: With a marginal fringe of hairs.

Coriaceous: A leathery texture.

Culm: The stem of a grass.

Dioecious: Unisexual, with male and female flowers on separate plants.

Disarticulation: The separation at joints or nodes at maturity.

Distal: The end opposite of the point of attachment.

Fascicle: A cluster or close brunch, usually refering to culms, leaves, or branches of an inflorescence.

Floret: The lemma and palea with enclosed flower.

Glaucous: Covered in a waxy bloom, usually whitish or bluish.

Glume: One of the pair of bracts typically present at the base of a grass spikelet.

Hispidulous: Covered in short, stiff hairs.

Inflorescence: The flowering portion of a shoot.

Lanceolate: Narrow and tapering

Lemma: Lowermost of the two bracts enclosing the flower of a grass floret.

Ligule: Membranous or hairy appendage on the adaxial surface of a grass leaf at the junction of blade and sheath.

Membranous: With the character of a membrane. Thin, pliable, and soft.

Monoecious: Flowers unisexual, with male and female flowers on the same plant.

Obtuse: Blunt or rounded at apex, with an angle greater than 90 degrees.

Palea: Uppermost of the two bracts enclosing the grass flower in a floret, usually with 2 nerves and often closed by lemma.

Panicle/paniculate: In grasses, all inflorescences in which spikelets are not sessile or individually pediceled on main axis.

Pedicel: Stalk of a single flower. In grasses, applied to stalk of a single spikelet.

Perennial: Living year after year.

Plumose: Feathery, with fine, elongate hairs on either side.

Prostrate: Lying flat on the ground.

Rachilla: Axis of a grass spikelet.

Rachis: Main axis of an inflorescence.

Rhizome/rhizomatous: And underground stem.

Serrate: Saw-toothed, with teeth pointing forward.

Sessile: Attached directly at base, without stalk.

Sheath: Tubular basal portion of a leaf that encloses the stem.

Spikelet: Basic unit of a grass inflorescence. Typically consists of a short axis (rachilla), with two "empty" bracts (glumes), and one or more florets above. Staminate: Having stamens but no pistils.

Stigma: The part of ovary or style that receives pollen.

Stolon: A modified stem, running along the surface of ground.

Subulate: Awl-Shaped.

Terete: Cylindrical, cross section round.

Truncate: Terminating abruptly.

Sources

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