

Guide to Key Exotic Grasses on Southern Utah Public Lands

Emily Bishop
Grand Canyon Trust
June 2017

Compiled largely from: **Grasses and Grasslike Plants of Utah: A Field Guide**

Importance of Knowing Exotic Grasses On Your Southern Utah Public Lands

The lands you own include over 60 percent of Utah. These include national parks and monuments, Bureau of Land Management (BLM) lands and U.S. Forest Service national forests, state parks, and others. These are places where you can walk, run, fish, hunt, camp, backpack, or simply drive through. This is where you can watch stars, butterflies, dragonflies, birds, lizards, coyotes, bears or toads, or simply listen. And, if you are grateful for these lands, you can help defend them. But in order to defend your public lands in southern Utah, you need to recognize when they are in trouble. Exotic, invasive grasses pose serious threats to native plants and wildlife on our southern Utah public lands, and so those who can recognize exotic grasses are in a much better position to urge the managers of our public lands to safeguard and restore the health of our shared lands.

Some exotic, invasive grasses can crowd out native plants (both forbs and native bunchgrasses), or compete with plants upon which particular wildlife (e.g., birds, insects, pollinators) depend. Some can cover streambanks so densely that willows and cottonwoods can't find a place to sprout. The weak roots of Kentucky bluegrass often cannot hold a streambank together during a flood. The adaptable, aggressive, annual cheatgrass is flammable, setting up lands for frequent fires that many shrubs and trees cannot survive. Each exotic grass takes up a spot where a native grass or wildflower might have once flourished.

This booklet draws much of its text (but not illustrations) from the useful, compact *Grasses and Grasslike Plants of Utah* (Utah State

University). We highlight those exotic grasses most commonly seen on the public lands of southern and central Utah and offer identification tips. This booklet will likely make you realize some of your favorite spots aren't doing well, but then you're in a great position to take your concerns to the managers of those lands. Too many of these species (especially crested wheatgrass, smooth brome, Russian wildrye, timothy, and orchard grass) have been systematically seeded by the managers of these lands as food for livestock, but that amounts to transforming our public lands into farms for private use.

None of these species should be in seed mixes sown on our public lands in the future, and your help with conveying your concerns to our public lands managers is crucial to the efforts of Grand Canyon Trust and other organizations to restore native plant and animal diversity on the public lands you own.

--Mary O'Brien

Utah Forests Program Director
Grand Canyon Trust

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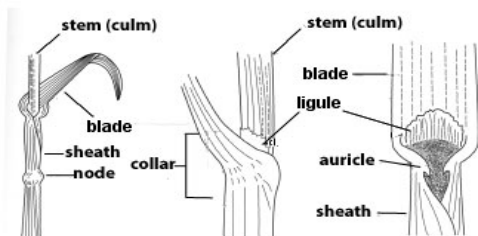
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Illustrations of Key Terms

Inflorescence: Flower structure of a grass plant.

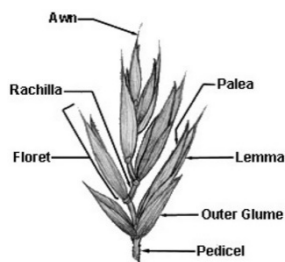


Marvin Hall



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California Statewide IPM

from the University of
Program



Spikelet

Jon Cook and David Hannaway, Forage Information System Oregon State University

Cheatgrass

Bromus tectorum



N.L. Britton and A. Brown



Photo by Richard G. www.richardg.com



Matt Lavine



D.L. Nickrent

Cheatgrass is a small (2-24") annual plant and is usually a purplish color at maturity. It is native to the Mediterranean and thrives in disturbed communities. It can be found at elevations from 2,500 to 13,000' and is very widely adapted. It catches and carries fire readily and frequently, thereby leading to loss of woody shrubs that cannot recover quickly before a cheatgrass fire returns. Its life cycle is completed in approximately 6 weeks, after which it is not eaten as forage, thereby being able to seed and reproduce itself.

ID Tips: Seedhead is an open and drooping panicle that has spikelets containing 5-8 florets. It has hairy or downy glumes and lemmas. Leaf blades and sheaths are also hairy and the blades are flat. Lemmas have awns that are 5/8" long and ligules are up to 1/8" long, membranous to collar shaped, and have pointed teeth.

Crested Wheatgrass

Agropyron cristatum



A. Schmidt



Sheri Hagwood



Matt Lavin

Crested Wheatgrass can be found in elevations from 4,000-8,000' where precipitation is greater than or equal to 8". It is a perennial and will grow to a height of 1.5 – 2.5'. It has been widely seeded at lower elevations on public lands. Though a bunchgrass, it often forms monocultures, with ungulates selectively preferring whatever native bunchgrasses or forbs may grow between.

ID Tips: It has dense spikes with flattened heads that are usually 1.5-3" long and taper toward the tip. There are many rigidly arranged spikelets that each contain 4-8 florets. These spikelets are placed flat on the rachis. Leaf blades are flat and usually smooth. Sheaths are smooth but can be pubescent on the lower leaves. Ligules are short and membranous and auricles are short and clasp the stem.

Smooth Brome

Bromus inermis



Andrey Zharkikh



Wehrlofer Trefg



Matt Lavin



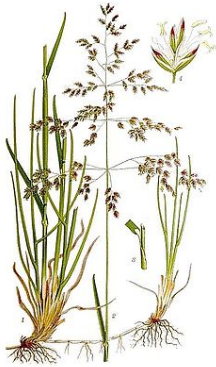
Matt Lavin

Smooth Brome was introduced to the US from Hungary for cattle forage and hay production. This species can be found at elevations between 3,000 to 12,000' where precipitation is greater than or equal to 16". It is a rhizomatous perennial grass (up to 3' tall) that can form extensive monocultures with little or no open space for forbs or bunchgrasses.

ID Tips: The seedhead is a large, compact to open panicle 4-8" long with branches in whorls. Slender spikelets (3/4-1" long) contain 5-10 florets and are cylindrical to somewhat compressed. Lemmas are awnless or awn tipped. Leaf blades are 8-15" long and 1/4 to 1/2" wide and have a raised midrib. Sheaths are closed, except near the collar. A "W" can be seen imprinted midway up most fully-mature leaves. Ligules are rounded and membranous, and less than 1/8" long.

Kentucky Bluegrass

Poa pratensis



C.A.M. Lindmans



Forest & Kim Starr



Forest & Kim Starr



Doug Goldman

Kentucky Bluegrass can be found from valleys to high mountain areas in places where precipitation ranges from 14-28". It is a rhizomatous perennial (6-36" tall), often densely covering riparian and other moist areas.

ID Tips: Seedheads have pyramidal panicles with panicle branches whorled in groups of 3-5. Spikelets contain 3-5 florets, lemmas are awnless, with cobweb-like hairs at the base. Leaves are mostly basal, 1-7" long, with narrow, mostly smooth, and have boat shaped tips. Two prominent veins run along the center of the upper surface of the leaf and look like railroad tracks. Ligules are short and collar shaped, and auricles are absent.

Bulbous Bluegrass

Poa bulbosa



Kurt Stueber



Tela botanica



Matt Lavin



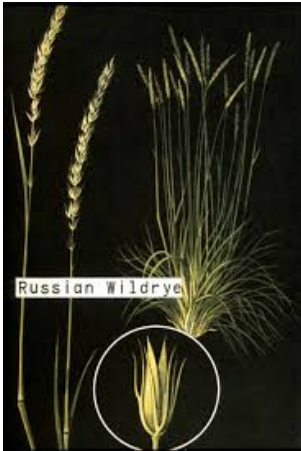
Dr. Billy E. Warrick

Bulbous Bluegrass has been seeded for erosion control and can be found in disturbed areas, especially along roads and trails, at elevations from 3,900 to 9,800'. It is a perennial that grows 6-24" tall. It can reproduce vegetatively from its bulblets (see below).

ID Tips: Spikelets contain 3-6 florets which form into distinctive bulblets with dark purple bases. Glumes extend into slender green tips, 1/8-5/8" long. Leaves are flat or loosely rolled and have arrow-shaped tips. Ligule is very long and membranous.

Russian Wildrye

Psathyrostachys juncea



Strand Memorial Herbarium



Matt Lavin

Russian Wildrye was originally introduced from Siberia to be seeded for livestock forage. It is a densely tufted bunchgrass that grows 16-44" tall. This species can be found at elevations from 4,000-9,300' where precipitation is greater than or equal to 8".

ID Tips: It has a spike 1-6" long with 3 strongly overlapping spikelets per node. Leaves are mostly basal and leaf blades are flat to boat shaped (about 1/4" wide) with short ligules. Sheaths are smooth with well-developed auricles.

Intermediate Wheatgrass

Thinopyrum intermedium



Barkworth & D. R. Dewey



Matt Lavin



Barkworth & D. R. Dewey



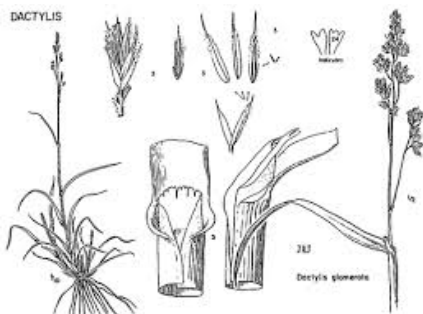
Barkworth & D. R. Dewey

Intermediate wheatgrass can be found on upland and mountain sites at elevations from 4,000 – 10,000' in areas that receive greater than or equal to 14" of rain. It is a perennial sod-forming grass with abundant rhizomes. It grows 2.5 – 4' tall and can be bluish, blue-green, or dark green in color. It remains green longer than most introduced species.

ID Tips: Seedheads are erect spikes (4-8" long) with spikelets that are slightly overlapping and contain 4-8 florets. Leaf blades and sheaths are smooth or somewhat pubescent and blades are flat and veined, less than 3/8" wide and 2-6" long. Glumes are slightly shorter than the lowest floret and blunt. Ligules are short, membranous, and auricles are well developed and clasping.

Orchardgrass

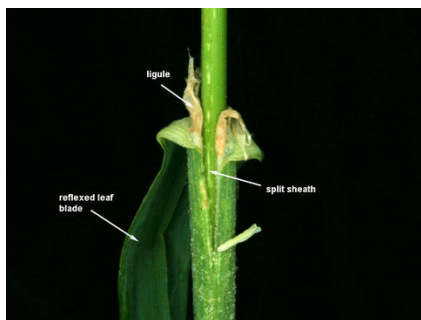
Dactylis glomerata



A.Cronquist et al



A.Mascief



S. A. Mori



Javier Martin

Orchardgrass can be found at intermediate elevations where precipitation is greater than or equal to 18". It is a non-native perennial bunchgrass that has been widely seeded as forage and commonly grows in clumps 18-42" tall.

ID Tips: The seedhead is a panicle with spikelets grouped together in dense, one-sided clusters at the end of the panicle branches. Lemmas have short awns. Leaf blades are long, less than 1/2" wide and folded when immature but V shaped at the base when the plant is mature. Blades have a prominent white midrib underneath and blades and sheaths are both rough and hairless. Ligules are 1/8 to 1/4" long and are collar shaped with split margins. Auricles are absent.

Timothy

Phleum pratense



Carl Axel Magnus Lindman



A.S. Hitchcock



APHOTOFLORA



Hugo

Timothy can be found at elevations from 5,200 – 10,400' where precipitation is greater than 18". It is a non-native perennial bunchgrass with a bulblike base and grows 2-3 1/2' tall. It has been widely seeded as forage for cattle.

ID Tips: Seedhead is a dense, cylindrical, spike-like panicle, several times longer than wide. Spikelets are flattened and contain a single floret. The glumes are hairy and have a short, bristle awn. Leaves are smooth and distinctly veined on the blade and the sheath. Blades are flat and have a prominent midrib on the upper surface. Ligules are short, rounded, and have finely toothed margins.

Redtop

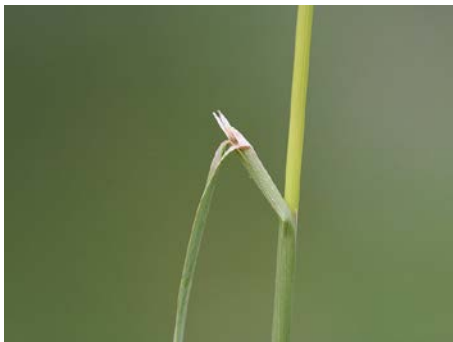
Agrostis gigantea



A.S. Hitchcock



Giorgio Faggi



Kristian Peters



Rasbak

Redtop can be found in wet and semi-wet meadows, riparian areas, and irrigated pastures at elevations from 3,500 – 8,500 with precipitation greater than or equal to 18". It is a strongly rhizomatous, perennial grass 8-60" tall. Stems often lie along the ground at the base turning upward.

ID Tips: Seedheads are upright pyramidal panicles 4-8" long that are purplish-red when blossoming. Spikelets are very small and numerous and contain one floret. Leaves are smooth and basal with leaf blades 1/8 – 3/8" wide and 2-7" long. They are stiff, pointed at the tip and have distinct veins on top. Leaf margins are finely barbed. Ligules are 1/8 – 1/4" long, membranous, rounded, and have toothed or split margins. Auricles are absent.

Reed Canarygrass

Phalaris arundinacea



Hippolyte Coste



Franz Xaver



Rasbak



Michael Becker

Reed Canarygrass is found in disturbed riparian areas and wetlands at elevations from 4,200-9,000'. It is an aggressively invasive, perennial, rhizomatous grass that grows from 2-8' tall. It reproduces both vegetatively and with rhizomes. Reed Canarygrass can grow in dense stands and has a high tolerance of fire.

ID Tips: Seedheads are narrow, somewhat lobed panicles that are 2 3/4-12" long and have branches that are strictly erect. Spikelets are pale green or tinged pinkish purple but will be straw colored at maturity. Leaf blades are flat, 1/2-1" wide with a long tapered tip. Sheaths are open. Ligules are less than 3/8" long, entire or torn, and auricles are absent.

Exotic Phragmites

Phragmites australis



Otto Wilhelm Thome



Villiam Morelli



Jancke



Le Loup Gris

Phragmites australis is a species that has both a native and exotic lineage. It is found in riparian areas, and the exotic Phragmites is more often found in disturbed areas. Both lineages will be 6-15' tall and have distinct plume like inflorescences (6-14" long and 3-8" wide).

ID Tips: It is very difficult to tell the difference between native and exotic Phragmites. The key differences are: the sheaths of exotic Phragmites stay attached to the culm while the sheaths of native Phragmites will fall off once the leaf dies. The lower glume of both exotic and native Phragmites is much smaller than the upper. Exotic Phragmites has smaller glumes than native Phragmites. Both lineages have membranous ligules with tiny hairs. There is very little red on the culms of exotic Phragmites compared to native Phragmites.

Tall Oatgrass

Arrhenatherum elatius



A. Mascief



P. Beauv



M. Doring



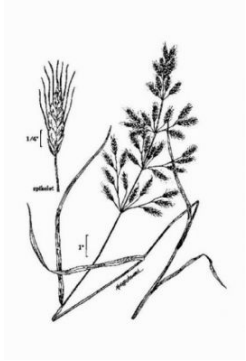
Burkhard Biel

Tall oatgrass is found along roadsides and streambanks at elevations from 4,300-10,200' where precipitation is greater than or equal to 16". It is a perennial, loosely tufted bunchgrass and grows 3-5 5/8' tall.

ID Tips: Culms are sometimes hairy at the nodes and the base is sometimes enlarged into bulbs. The inflorescence is a narrowly oblong, 4-12" long panicle. Spikelets are narrowly lance shaped, less than 1/2" long, 2 flowered, and glisten. Glumes are unequal. The awn of the first lemma is 1/2" long, attached at midlength, with an elbow-like bend, and twisted below the bend. The awn of the second lemma is small and straight, attached just below the tip of the lemma. Leaf blades are 1/2" wide and smooth to slightly rough. Ligules are less than 1/8" long, blunt or rounded, and have irregularly toothed margins that could have a fringe of hairs.

Japanese Brome

Bromus japonicus



USDA-NRCS



Jacopo Werther



Jim Pisarowicz

Japanese Brome can be found in disturbed areas that usually have fine-textured soils. It is a winter annual and will grow from 8-28" tall.

ID Tips: The inflorescence is a loosely spreading panicle, 4-8" long with 3-5 lower branches that are usually drooping. The pedicels are longer than the spikelets. Spikelets have 7-12 flowers and are about 1/2" long. One glume will be longer and broader than the other. Lemmas are oblong with blunt tips splitting to an awn (1/4-3/4") long attached below the tip, and somewhat twisted and spread widely at maturity. Leaf blades and sheaths are covered in soft hairs that are directed downward. Leaf blades are flat or curled inward about 1/4" wide and 4-8" long.

Red Brome

Bromus rubens



Alexandre Blondeau



Matt Lavin



Matt Lavin



Zoya Alkulova

Red Brome can be found mostly in desert and semi-desert areas where precipitation is 6-10" and elevation is 2,500-5,500'. It is an annual grass and grows stems from a spreading base. It will grow to 4-24" tall.

ID Tips: Seedhead is an erect, dense, and spike-like panicle that is 2-3" long and will be reddish-purple when mature. Spikelets are 2/3-1 1/8" long and contain 3-8 florets. Glumes are unequal, narrow, and tapered to a sharp point. Lemmas are lanceolate, slightly rough to hairy, splitting to straight or slightly bent awns that are 3/8-1" long. Leaf blades are hairy, narrow, and flat or boat-shaped. Sheaths are hairy and papery. Ligules are less than 1/8" long and auricles are absent.

Bermudagrass

Cynodon dactylon



Christiaan Sepp



Otto Wilhelm



Forest and Kim Starr



Matt Lavin

Bermudagrass is found in areas with greater than 16" of precipitation and at elevations under 6,000'. It is a warm season perennial grass that is strongly rhizomatous or stoloniferous. Stems are 8-24" long. Stems lie along the ground with roots at the nodes which rise at their tips.

ID Tips: The inflorescence is a panicle and contains 3-6 spikes that are 1-2" long and digitately arranged (i.e., like fingers on a hand). Leaf blades are flat, rigid, may be hairy or smooth, and are slightly rough to the touch. They will be 1-2" long and up to 1/6" wide. Ligules are circles of white hairs.

Annual Wheatgrass

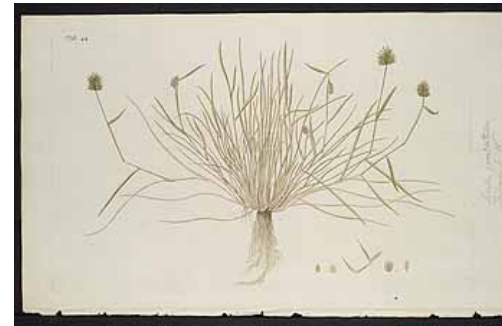
Eremopyrum triticeum



Matt Lavin



Matt Lavin



N.J. von Jacquin



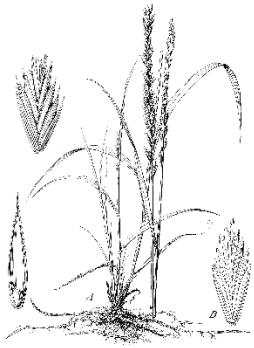
Cassandra Skinner

Annual Wheatgrass is an annual that grows in small tufts 5-16" tall. It is found in sagebrush and juniper communities at elevations below 5,500' and precipitation up to 10".

ID Tips: Seedheads resemble a small crested wheatgrass seedhead that is up to 1" long and 5/8" wide. They break loose at their base at maturity. Spikelets are 1/4-3/8" long, protrude from the rachis outward. Glumes and lemmas are awn tipped. Leaf blades are soft, flat, and up to 1/8" wide. Ligules and auricles are small.

Quackgrass

Elymus repens



A.S. Hitchcock



Matt Lavin



Matt Lavin



Matt Lavin

Quackgrass is a perennial sod forming grass that is aggressively rhizomatous. It will rapidly invade ditches, water courses, and semi-wet meadows at elevations from 4,000-9,000' with precipitation of 10-22". It is 1-3' tall and has erect stems.

ID Tips: The seedhead is a spike 1 1/2-7 1/2" long with one spikelet per node. Spikelets have 3-5 florets and sharply tipped glumes that are 1/4-3/8" long. Lemmas may have awns up to 1/4" long. Leaves are flat, dark green, 3-12" long and 2-3 1/2" wide. They are often constricted near the leaf tips. Sheaths are often hairy, ligules are absent, and auricles are clasping.

Medusahead

Taeniatherum caput-medusae



Steve Dewey



Steve Dewey



A.S. Hitchcock

Medusahead is an annual grass with tufted culms (6-24" tall) coming from a decumbent base. It grows in areas with 10-40" of precipitation. It is a very competitive species, often dominating disturbed areas.

ID Tips: Inflorescence is a dense, short spike less than 1 1/2" long, nearly as wide and it is long. Lemmas have a stiff, minutely barbed awn (1-3" long), and glumes are shorter than this. The awns become twisted with maturity, looking like the mythic Medusa. Leaf sheaths are smooth, rolled inward, and less than 1/8" wide. The ligule is very short and auricles are slender.

Mouse Barley

Hordeum murinum



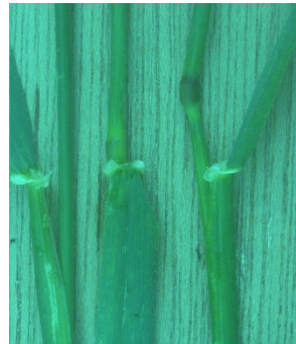
Christiaan Sepp



Andrea Moro



Stefan Lefnaer



Rasbak

Mouse Barley is an annual 2-31" tall with loosely to densely tufted culms that bend at sharp angles at the nodes. It is often found in disturbed areas at elevations of 2,600-6,000'.

ID Tips: The inflorescence is an erect spike 1/2-4 1/2" long and 1" wide (including awns). Lemmas have awns that are 1/4-2" long. Leaf blades are flat or folded (up to 2/5" wide), glabrous or with short hairs. Ligules and short and auricles are slender.

Jointed Goatgrass

Aegilops cylindrical



Jan Kops



Steve Dewey



Matt Lavin



Matt Lavin

Jointed Goatgrass is an annual with many erect stems growing up to 4' tall. It is found in rangelands, roadsides, and other areas where disturbance often occurs at elevations up to 6,000' where precipitation ranges from 10-20".

ID Tips: The inflorescence is a slender, cylindrical spike that appears to have a series of joints stacked on top of each other. The uppermost spikelets have straight awns. Glumes have a single, shorter awn. Leaves are alternate and up to 1/2" wide. Seeds turn reddish or tan with maturity. Evenly spaced hairs are found along leaf margins and down the sheath opening. Ligules are short and membranous and auricles are short and hairy.

Acknowledgements

A majority of the information about these grasses was taken from the field guide “Grasses and Grasslike Plants of Utah” put out by Utah State University. Information was also taken from “Phragmites field guide: Distinguishing native and exotic forms of Common Reed (*Phragmites australis*) in the United States” put out by the USDA, and from Mary O’Brien, Director of the Grand Canyon Trust’s Utah Forest Program.

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