

**A KEY FOR IDENTIFYING GRASSES (POACEAE)
OF THE BALCONES CANYONLANDS OF TEXAS
BY VEGETATIVE CHARACTERS**

THESIS

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Master of SCIENCE

By

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May the user be blessed with more than normal intuition.

C. L. Hitchcock, 1969

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INTRODUCTION

There are nearly 10,000 species of grasses (Poaceae) throughout the world today (Walters and Keil 1996). The ancestors of modern grasses first appeared during the Upper Cretaceous more than 66 million years ago. Initially restricted to tropical forests, these early plants eventually diversified and adapted to all but the most extreme climatic conditions (Clark and Pohl 1996). Today the family Poaceae is the most widely distributed of the families of flowering plants. Grasses not only dominate the great grasslands, but are found on all parts of the earth, from dry deserts to freshwater marshes, from seashores to the slopes of the highest mountains (Hitchcock 1971).

The principal economic importance of grasses is as food for human consumption. Roughly 70 percent of the earth's farmland is planted with crop grasses and more than 50 percent of the world's calories come from grasses (Judd et al. 1999). Grasses are also the primary food source for domestic livestock that provide meat and milk (Clark and Pohl 1996). Furthermore, grasses are important in erosion control, turf production and as a source of sugar (Judd et al. 1999).

Because of its size and extreme variation in environmental conditions, Texas provides a habitat for well over 500 species of grasses (Gould 1975). Of all the taxonomic work done on grasses in Texas, the works of Gould (1975) and Correll and Johnston (1970) are considered the most important. In addition to these comprehensive works, regional taxonomic treatments have been done for the grasses of the Gulf Prairies and Marshes (Hatch et al. 1999), the Cross Timbers and Prairies (Hignight et al. 1988) and the Trans-Pecos (Powell 1994) natural regions. In these, as well as numerous other manuals and keys, accurate identification of grass species relies on the availability of reproductive material. No current treatment provides any

useful measures for identifying grasses by vegetative characters. Identification of grass species, however, must often be attempted at times when flowers or fruits are unavailable (i.e., the specimens were collected prior to the flowering/fruiting period or the flowers or fruits were lost to mowing or grazing).

A reliable system to accurately identify grasses in a vegetative state has been addressed, but only in a limited number of works. Most notable are Hitchcock's treatment of the grasses of the Pacific Northwest (1969) and Barnard and Potter's work on the grasses of New Mexico (1985). The small number of additional works includes Sexton's vegetative treatment of Texas grasses (2000). His work includes vegetative descriptions for approximately 31 species; however, it does not yet include a key and covers a very limited area.

The treatment presented here is exclusive and presents the only comprehensive key and set of descriptions for the identification of Texas grasses based on their vegetative characteristics. This work allows for the identification of grass species at such times when a key based on reproductive material/characteristics is useless. It is restricted to the grass species that occur within the Balcones Canyonlands (figure 1), a subregion of the Edwards Plateau Natural Region of Texas.

This treatment will be an indispensable tool for botanists, ecologists, wildlife managers and environmental consultants. It will also serve as the framework for future work on vegetative keys for the grasses of the remaining natural regions of Texas.

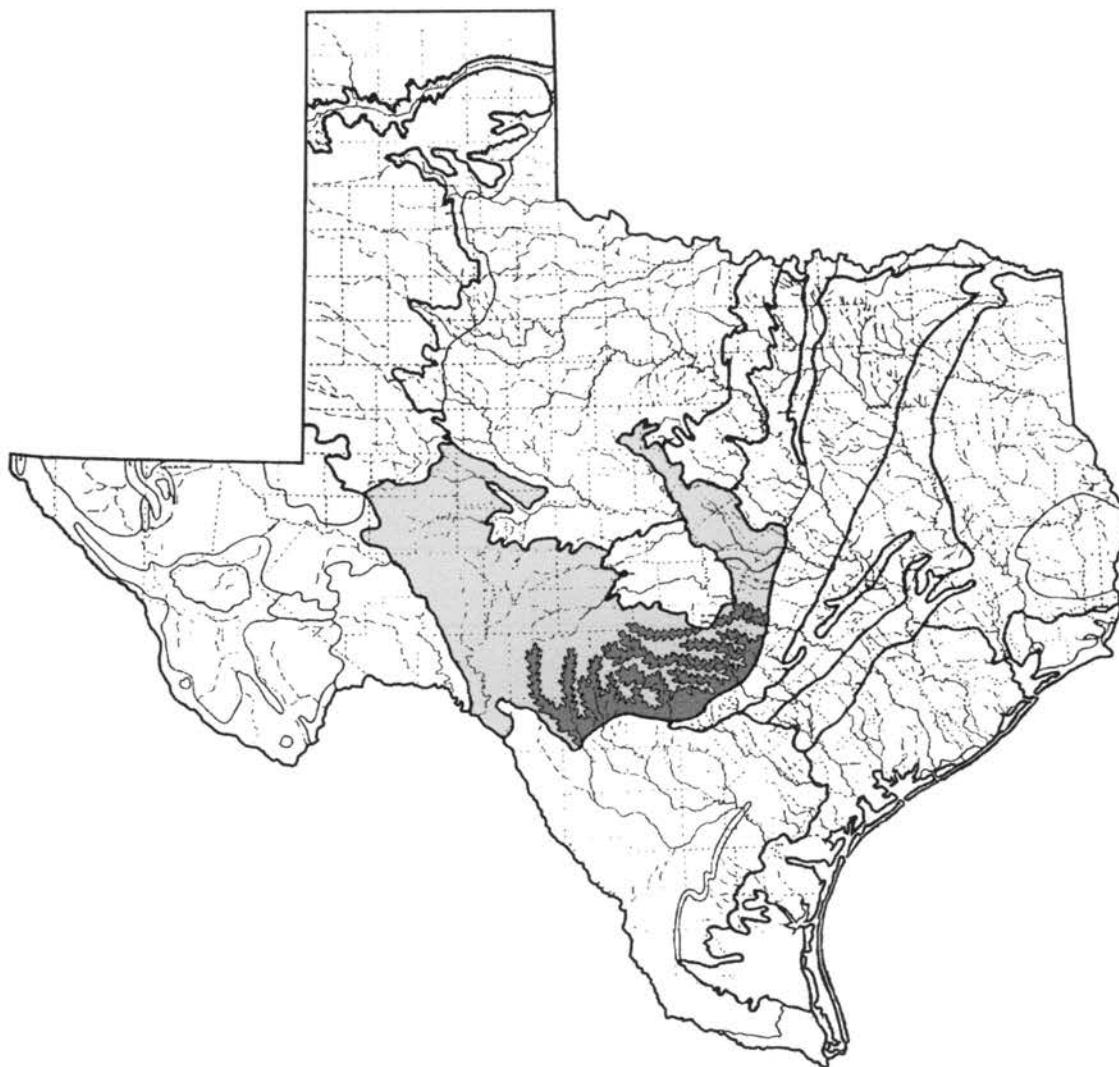


Figure 1. The Balcones Canyonlands subregion (dark gray) within the Edwards Plateau Natural Region (gray). Redrawn from LBJ School of Public Affairs (1978).

MATERIALS & METHODS

A list of grass species occurring within the Balcones Canyonlands was compiled prior to beginning the construction of the key in this work. A map of the natural subregions of Texas (Texas Parks and Wildlife Dept. 1979) was consulted and compared with a Texas state map (U.S.G.S. 1972) to determine those counties that occur wholly or partially in the Balcones Canyonlands. The resulting list included fifteen counties: Bandera, Bexar, Blanco, Comal, Edwards, Gillespie, Hays, Kendall, Kerr, Kinney, Medina, Real, Travis, Uvalde and Williamson (figure 2).

A list of grass species from these counties was compiled using the internet herbarium database system and herbarium specimen browser provided by the Texas A & M University Bioinformatics Working Group (1999). The browser currently provides specimen label data from collections housed at the following institutions: Angelo State University, Botanical Research Institute of Texas, Lundell Herbarium, S. M. Tracy Herbarium, Sam Houston State University, Stephen F. Austin State University, Southwest Texas State University, Texas A & M University, Texas Tech University, University of Texas at Austin, Rob and Bessie Welder Wildlife Foundation and West Texas A & M University. Taxa on the list were compared with the species distributions set forth in the works of Correll and Johnston (1970), Gould (1975) and Hatch and Dawson (2000). Those species determined to occur outside the Balcones Canyonlands were removed. The final list of grass species included in this work is presented in a phylogenetic format at the end of this section.

Both living plants and herbarium specimens were examined to collect descriptive data relative to vegetative morphology. Specimens were examined with a dissecting microscope. Work was done in the Southwest Texas State University (SWT)

herbarium based on the collections therein and supplemented by specimens from the herbarium at the University of Texas at Austin (TEX-LL) and the S. M. Tracy Herbarium (TAES) at Texas A & M University. Acronyms follow those established by Index Herbariorum (Holmgren et al. 1990).

Data collected were used in key construction and writing the species descriptions. Vegetative grass keys such as those published for Nebraska (Sutherland 1975) and New Mexico (Barnard & Potter 1984) were consulted to aid in the selection of important vegetative characteristics. At times when information was unapparent from the available specimens necessary data were gleaned from the works of Gould (1975), Correll and Johnston (1970), Silveus (1933) or the World Grasses Database (1999).

Species data collected were coded and entered into a computer spreadsheet program for examination. Grass species exhibiting multiple states within a single character were entered as multiple species. A superscript number was placed after the scientific name to differentiate. A sort procedure was used to group species based on similar characteristics. This process was repeated several times using different characteristics and various combinations of characteristics to generate a series of smaller, more manageable spreadsheets. Further sorting of these spreadsheets resulted in the first draft of the key. A specimen from each grass species was examined in conjunction with the key to determine its efficacy. Modifications were implemented as necessary to produce the final draft of the key.

The key presented in this work follows a dichotomous format and requires the use of nothing more than a millimeter scale and 10-power hand lens. Descriptions of the vegetative characteristics used in the key as well as general information on the characteristics are included. A description of each grass species is provided to give supportive information and to aid in identification. Nomenclature follows Jones et al. (1997).

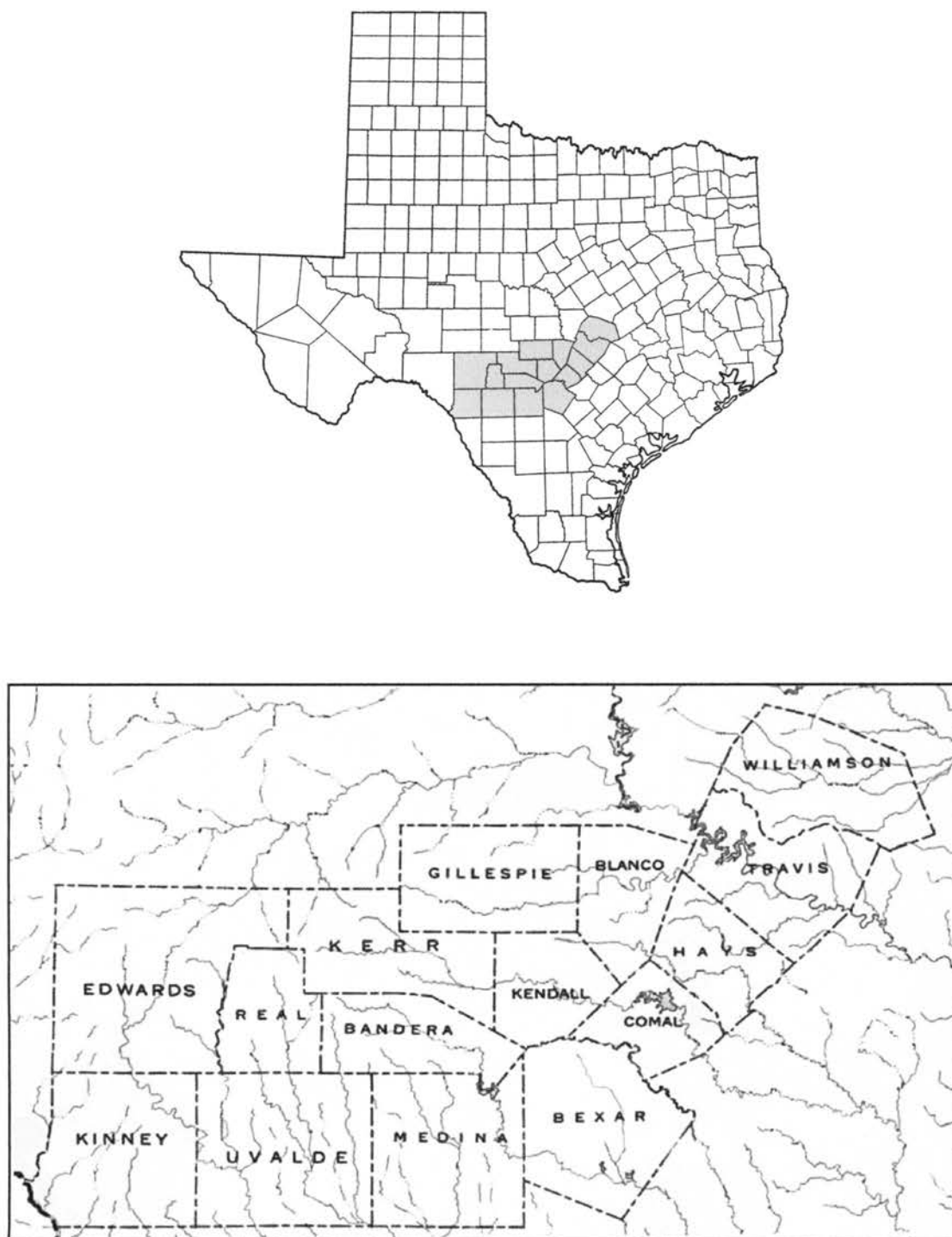


Figure 2. Counties (gray) partially or wholly included in the Balcones Canyonlands. Top redrawn from U.S. Department of Commerce (1990); bottom redrawn from U. S. Geological Survey (1972).

Phylogenetic List of Grass Species

Family: Poaceae

Subfamily I: Pooideae

Tribe Bromeae

Bromus catharticus Vahl

Bromus japonicus Thunb. ex Murray

Bromus pubescens Muhl. ex Willd.

Bromus secalinus L.

Bromus tectorum L.

Bromus texensis (Shear) A. S. Hitchc.

Tribe Poeae

Desmazeria rigida (L.) T. Tutin

Festuca versuta Beal

Lolium perenne L.

Lolium temulentum L.

Poa annua L.

Poa arachnifera Torr.

Sclerochloa dura (L.) Beal

Vulpia octoflora (Walt.) Rydb.

Tribe Aveneae

Agrostis hyemalis (Walt.) B.S.P.

Agrostis perennans (Walt.) Tuckerm.

Avena fatua L.

Limnodea arkansana (Nutt.) L. H. Dewey

Phalaris caroliniana Walt.

Polypogon monspeliensis (L.) Desf.

Polypogon viridis (A. Gouan) M. Breistroffer

Sphenopholis interrupta (Buckl.) Scribn.

Sphenopholis obtusata (Michx.) Scribn.

Tribe Triticeae

Aegilops cylindrica Host

Elymus canadensis L.

Elymus virginicus L.

Hordeum murinum L.

Hordeum pusillum Nutt.

Hordeum vulgare L.

Secale cereale L.

Triticum aestivum L.

Tribe Meliceae

Glyceria striata (Lam.) A. S. Hitchc.

Melica nitens (Scribn.) Nutt. ex Piper

Tribe Stipeae

Nassella leucotricha (Trin. & Rupr.) Pohl

Subfamily II: Panicoideae

Tribe Paniceae

Cenchrus longispinus (Hack.) Fern.

Cenchrus myosuroides Kunth in H.B.K.

Cenchrus spinifex A. Cavanilles

Digitaria californica (Benth.) Henr.

Digitaria ciliaris (Retz.) Koel.

Digitaria cognata (Schult.) Pilger

Digitaria insularis (L.) Fedde

Digitaria patens (Swallen) Henr.

Digitaria sanguinalis (L.) Scop.

Echinochloa colona (L.) Link
Echinochloa crus-galli (L.) Beauv.
Echinochloa crus-pavonis (Kunth) Schult.
Echinochloa muricata (Beauv.) Fern.
Eriochloa contracta A. S. Hitchc.
Eriochloa sericea (Scheele) Munro ex Vasey
Panicum acuminatum Sw.
Panicum antidotale Retz.
Panicum capillare L.
Panicum coloratum L.
Panicum hallii Vasey
Panicum hians Ell.
Panicum obtusum Kunth in H.B.K.
Panicum oligosanthos Schult.
Panicum pedicellatum Vasey
Panicum sphaerocarpon Ell.
Panicum virgatum L.
Paspalum dilatatum Poir.
Paspalum distichum L.
Paspalum plicatulum Michx.
Paspalum pubiflorum Rupr.
Paspalum setaceum Michx.
Paspalum urvillei Steud.
Pennisetum ciliare (L.) Link
Setaria grisebachii Fourn.
Setaria leucopila (Scribn. & Merr.) K. Schum.
Setaria parviflora (Poir.) Kerguel.

Setaria pumila (Poir.) Roem. & Schult.
Setaria ramiseta (Scribn.) Pilger
Setaria reverchonii (Vasey) Pilger
Setaria scheelei (Steud.) A. S. Hitchc.
Setaria verticillata (L.) Beauv.
Setaria villosissima (Scribn. & Merr.) K. Schum.
Setaria viridis (L.) Beauv.
Stenotaphrum secundatum (Walt.) O. Ktze.
Urochloa ciliatissima (Buckl.) R. D. Webster
Urochloa fasciculata (Swartz) R. D. Webster
Urochloa platyphylla (Munro ex Wright) R. D. Webster
Urochloa texana (Buckl.) R. D. Webster

Tribe Andropogoneae

Andropogon gerardii Vitman
Andropogon glomeratus (Walt) B.S.P.
Andropogon virginicus L.
Bothriochloa barbinodis (Lag.) Herter
Bothriochloa edwardsiana (Gould) L. R. Parodi
Bothriochloa hybrida (Gould) Gould
Bothriochloa ischaemum (L.) Keng
Bothriochloa laguroides (DC.) Herter
Dichanthium annulatum (Forssk.) Stapf
Heteropogon contortus (L.) Beauv. ex Roem. & Schult.
Mnesithea cylindrica (Michx.) Koning & Sosef
Schizachyrium scoparium (Michx.) Nash
Sorghastrum elliottii (Mohr) Nash
Sorghastrum nutans (L.) Nash

Sorghum bicolor (L.) Moench

Sorghum halepense (L.) Pers.

Tripsacum dactyloides (L.) L.

Subfamily III: Chloridoideae

Tribe Eragrosteae

Dactyloctenium aegyptium (L.) Beauv.

Eleusine indica (L.) Gaertn.

Eragrostis barrelieri Daveau

Eragrostis cilianensis (All.) Janchen

Eragrostis curtipedicellata Buckl.

Eragrostis curvula (Schrad.) Nees

Eragrostis intermedia A. S. Hitchc.

Eragrostis lugens Nees

Eragrostis pectinacea (Michx.) Nees ex Steud.

Eragrostis reptans (Michx.) Nees

Eragrostis secundiflora Presl

Eragrostis spectabilis (Pursh) Steud.

Eragrostis superba Wawra & Peyr.

Eragrostis trichodes (Nutt.) Wood

Erioneuron pilosum (Buckl.) Nash

Leptochloa dubia (Kunth in H.B.K.) Nees

Leptochloa fascicularis (Lam.) Gray

Leptochloa mucronata (Michx.) Kunth

Leptochloa uninervia (Presl) A. S. Hitchc. & Chase

Muhlenbergia × *involuta* Swallen

Muhlenbergia arenacea (Buckl.) A. S. Hitchc.

Muhlenbergia lindheimeri A. S. Hitchc.

Muhlenbergia porteri Scribn. ex Beal
Muhlenbergia reverchonii Vasey & Scribn.
Muhlenbergia schreberi Gmel.
Muhlenbergia utilis (Torr.) A. S. Hitchc.
Sporobolus airoides (Torr.) Torr.
Sporobolus compositus (Poir.) Merr.
Sporobolus cryptandrus (Torr.) Gray
Sporobolus pyramidatus (Lam.) A. S. Hitchc.
Sporobolus vaginiflorus (Torr. ex Gray) Torr. ex Wood
Sporobolus wrightii Munro ex Scribn.
Tridens albescens (Vasey) Woot. & Standl.
Tridens buckleyanus (L. H. Dewey) Nash
Tridens eragrostoides (Vasey & Scribn.) Nash
Tridens flavus (L.) A. S. Hitchc.
Tridens muticus (Torr.) Nash
Tridens texanus (S. Wats.) Nash
Triplasis purpurea (Walt.) Chapm.
Tripogon spicatus (Nees) Ekman

Tribe Chlorideae

Bouteloua aristidoides (Kunth in H.B.K.) Griseb.
Bouteloua barbata Lag.
Bouteloua curtipendula (Michx.) Torr.
Bouteloua hirsuta Lag.
Bouteloua repens (Kunth in H.B.K.) Scribn. & Merr.
Bouteloua rigidiseta (Steud.) A. S. Hitchc.
Bouteloua trifida Thurb.
Bouteloua uniflora Vasey

Buchloë dactyloides (Nutt.) Engelm.

Chloris × *subdolichostachya* Muell.

Chloris andropogonoides Fourn.

Chloris ciliata Sw.

Chloris cucullata Bisch.

Chloris divaricata R. Br.

Chloris verticillata Nutt.

Chloris virgata Sw.

Cynodon dactylon (L.) Pers.

Hilaria belangeri (Steud.) Nash

Pleuraphis mutica Buckl.

Schedonnardus paniculatus (Nutt.) Trel.

Spartina pectinata Link

Tribe Zoysieae

Tragus berteronianus Schult.

Tribe Pappophoreae

Pappophorum bicolor Fourn.

Pappophorum vaginatum Buckl.

Subfamily IV: Bambusoideae

Tribe Oryzeae

Leersia oryzoides (L.) Sw.

Zizaniopsis miliacea (Michx.) Doell & Aschers.

Tribe Centotheceae

Chasmanthium latifolium (Michx.) Yates

Subfamily V: Arundinoideae

Tribe Arundineae

Arundo donax L.

Phragmites australis (Cav.) Trin. ex Steud.

Tribe Aristideae

Aristida adscensionis L.

Aristida desmantha Trin. & Rupr.

Aristida longespica Poir.

Aristida oligantha Michx.

Aristida purpurea Nutt.

VEGETATIVE CHARACTERS

The vegetative characteristics found most useful for identifications are discussed below. Included are descriptions and general information on the characteristics that appear in the key and the species descriptions. The illustrations provided at the end of this section are general representations designed to assist the user. They are not drawn to scale and do not represent any particular species.

Longevity

Plant longevity is either perennial, persisting for more than a single year, or annual, completing the growth cycle within a single year. Perennial grasses typically exhibit evidence of the previous year's growth near the base and typically have an extensive, well-developed root system that may include rhizomes. Annual grasses lack the remains of previous year's growth, have a shallow root system that is easily pulled up and are never rhizomatous.

Growth Form

Growth form is described as solitary, cespitose, or mat-forming (figure 4). Solitary plants can also occur in small clusters consisting of a few singly borne plants. Cespitose grasses are clusters or a tuft of shoots either arising directly from a single crown or from the nodes of often short or reduced rhizomes or stolons. Mat-forming grasses or sod-forming grasses entangle the uppermost layer of soil with rhizomes or stolons.

Roots

The rootstock of a grass plant is a fibrous network of slender, irregularly branched, adventitious roots. The roots develop from the lower nodes of the culm and quickly replaced the short-lived primary root system.

Rhizomes and Stolons

Rhizomes and stolons are horizontal stems involved in vegetative reproduction. Both structures consist of internodes, nodes and reduced leaves. The nodes of rhizomes and stolons typically give rise to roots and new shoots. Rhizomes run underground, often produce scale-like leaves, and are typically stout and usually obvious when the grass is removed from the soil. Stolons run along the top of the soil, lack scale-like leaves, are typically elongated, wiry, and more observable than rhizomes without digging.

In some species where rhizomes and the stolons are absent, the plant arises from a slightly swollen, hard and often knotty base (e.g. *Digitaria insularis* and *Muhlenbergia porteri*).

Culms

Culms, the jointed stems of a grass plant, are composed of internodes and nodes. Culms are described as erect or ascending, geniculate, decumbent, or prostrate according to their growth habit (figure 5). Geniculate culms are bent abruptly at a node, resembling a knee or elbow. Decumbent culms lie on the ground but have ascending tips. Prostrate stems lie flat on the ground. Culm internodes are typically cylindrical and elongate. Culm nodes are usually swollen.

The culms of *Eragrostis barrelieri* exhibit a pale yellow-colored band of glandular tissue just beneath the nodes.

The presence or absence of branching can also be used to classify culms.

Sheaths

The sheath is the lower portion of the grass leaf and encloses the culm or a developing leaf. Sheaths are classified as rounded or compressed (figure 6). Compressed sheaths show a degree of longitudinal flattening. Compressed or rounded sheaths may or may not be keeled. Keeled sheaths have a prominent lateral ridge along the midnerve.

Sheaths are also classified with respect to their margins as distinct or closed (figure 6). Distinct sheath margins are not connate and are further classified as open or overlapping. Distinct, open sheath margins do not completely enclose the culm. The effect is an observable gap between the margins. Distinct, overlapping sheath margins completely enclose the culm such that one margin overlies the other. Closed sheath margins are connate resulting in a sheath that is tubular. The degree of closure varies and often extends the entire length of the sheath. Closed sheaths often tear or split lengthwise upon drying making them appear open, but leaving a somewhat conspicuous ragged margin.

Collars

The collar is a band of tissue on the abaxial side of a grass leaf at the junction of the sheath and blade typically differentiated by color or texture. Collars are classified as continuous or divided and horizontal or oblique (figure 7). Continuous collars appear as an uninterrupted band. Divided collars are interrupted by the midrib. Horizontal collars are perpendicular to the midnerve. Oblique collars are higher on one side.

In some species (e.g. *Glyceria striata*) the collar is barely visible or cannot be differentiated by color or texture, consequently described as inconspicuous.

Auricles

Auricles are thin, membranous extensions of the collar margins (figure 7). Careful observations should be made to avoid mistaking auricles for ligule lobes, lateral extensions of the ligule that are typically erect. Auricles may or may not clasp the culm, are very fragile and wither with age. Care should be taken when inspecting them, particularly on dried specimens.

Ligules

The ligule is a small appendage of the leaf sheath on the adaxial side of a grass leaf at the junction of the sheath and blade. Ligules may be membranous, or a fringe of hairs. The shape of the ligule apex and the ligule margin further classify membranous

ligules. Ligule apex shapes are acute, obtuse or truncate (figure 8). Ligule margins can be entire, erose, lacerate, ciliate or ciliolate (figure 8).

Ligules may be decurrent and adnate with the sheath margins (figure 8).

Caution should be used when inspecting membranous ligules on dried specimens. Membranous ligules tend to shrivel and deform with age or drying resulting in an inaccurate determination when using the key. They are best observed on fresh specimens.

Blades

The blade is the flattened, expanded portion of the leaf above the sheath. Blades are classified by the following characteristics: shape, outline in cross section, texture, color, apex shape, margin features, and surface features. Blade outline shapes are linear, lanceolate, and filiform (figure 9). Cross sectional outlines can be plane (flat), U-shaped, V-shaped, conduplicate, convolute or involute (figure 9). Conduplicate blades are folded together lengthwise with the adaxial surface within. Convolute blades are rolled up longitudinally with one margin outside, the other inside and the adaxial surface within. Involute blades have margins rolled inward toward the adaxial surface. Textures are either firm or flaccid. Color is typically green or glaucous. Occasionally some type of distinct banding pattern or blotching may be present (e.g. *Echinochloa colona*). Apices can be obtuse, acute, acuminate, attenuate, mucronate or prow-shaped (figure 10). Blade margins can be entire, barbed, serrate, serrulate, undulate or exhibit some type of pubescence (figure 10). The blade margins on some species (e.g. *Erioneuron pilosum*) have a cartilaginous texture and appear white-colored.

The blades of some species (e.g. *Poa annua*) exhibit median lines. Median lines are two small, light-colored lines or grooves that run the length of the blade parallel with the midnerve on the adaxial side of the blade (figure 11).

The midnerve on the blades of some species is often conspicuous abaxially. This is due to either its protuberance, a color differentiation (e.g. *Eragrostis cilianensis* and *Muhlenbergia arenacea*) or the presence of vestitures (e.g. *Leersia oryzoides*).

Vernation

Vernation, the cross sectional appearance of the blade as it is developing, is either folded or rolled in grass plants (figure 11). In a folded vernation the young leaf is conduplicate. In a rolled vernation it is convolute. Vernation is best observed in an innovation, the basal shoot of a perennial grass plant. Slicing through a young sheath just below the collar and observing the enclosed blade can also determine vernation.

Vestiture

Vestiture is the collective term for the epidermal covering of a plant. Vestitures include, but are not limited to pubescence (trichomes).

Pubescence is the general term for any degree of plant hairiness and is the most common vestiture in grass plants. Pubescence can be present on culms, sheaths, collars and blades. Pubescence is classified as follows: hirsute, covered with long, straight, moderately stiff hairs; hispid, covered with long, straight, stiff, bristle-like hairs; pilose, covered with long, straight, soft hairs; pubescent, covered with fine, short, soft hairs; puberulent, minutely pubescent; scabrous, rough to the touch due to short, stiff hairs; strigose, covered with short, bent, stiff, sharp hairs; tomentose, covered with short, densely matted, soft hairs and villous, covered with long, curved or wavy, soft hairs (figure 12). Surfaces absent of hairs are referred to as glabrous.

The hairs present on some species (e.g. the sheaths of *Leptochloa mucronata*) are papillose. Pappillose hairs arise from papillae, minute, nipple-shaped projections on the epidermis (figure 12).

Habitat

The habitat of a grass is the place or places that provide the environmental conditions in which the plant exists. This can include, but is not limited to the topography of an area, intensity of sunlight, available moisture, and soil types.

Although not a true vegetative characteristic, habitat information can be an important trait when making a final determination.

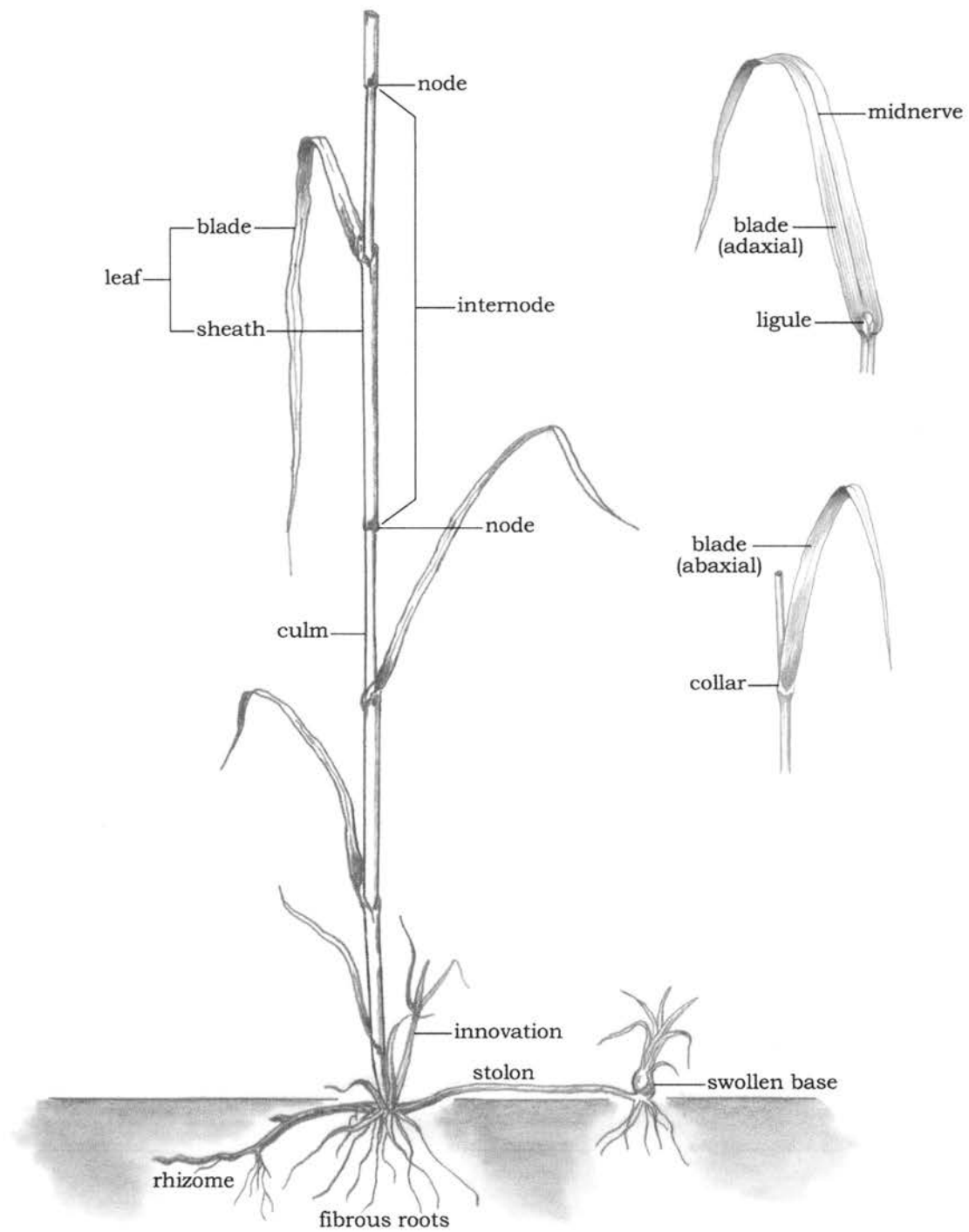


Figure 3. Vegetative morphology of the grass plant. Redrawn from Hitchcock (1969).

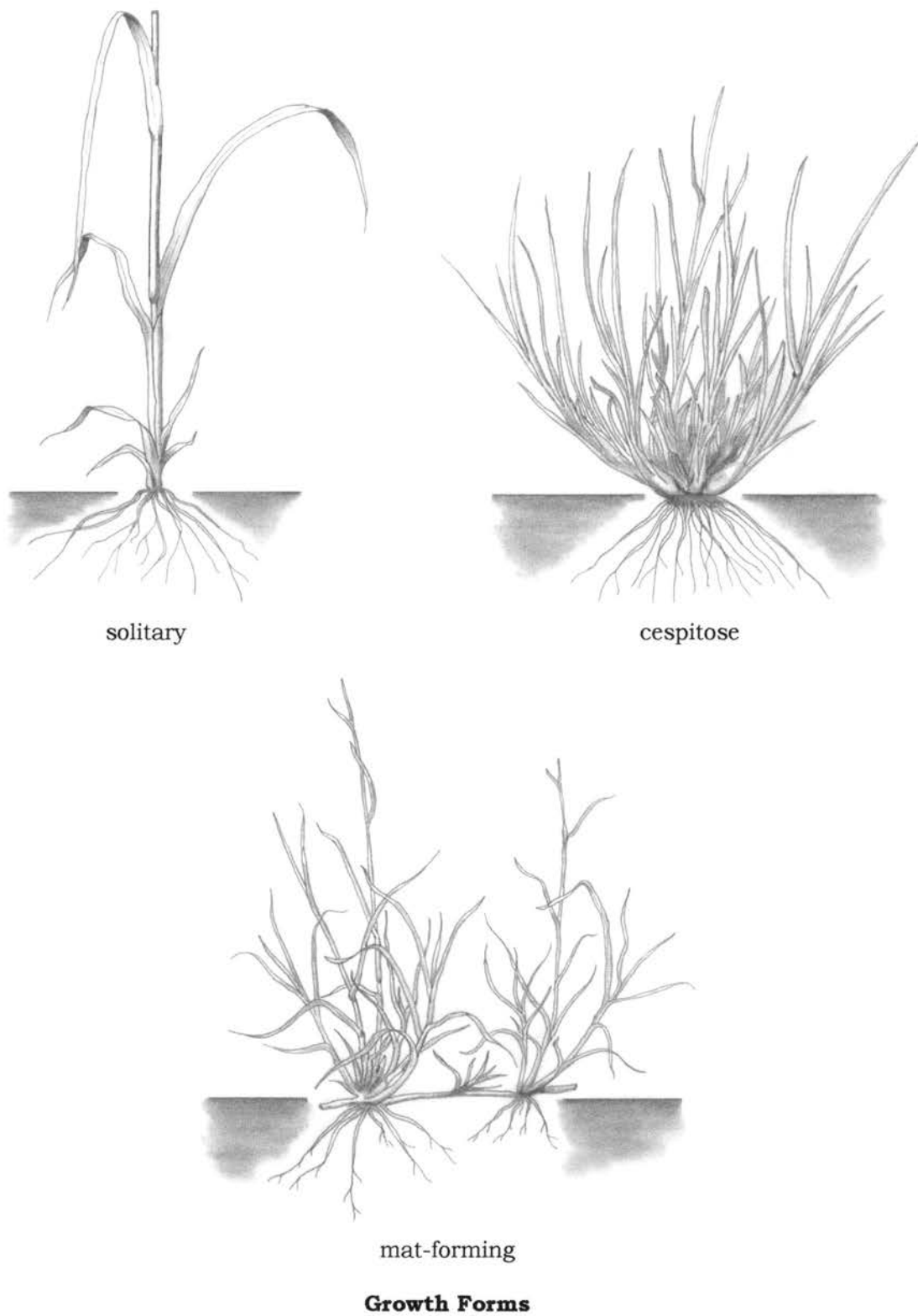
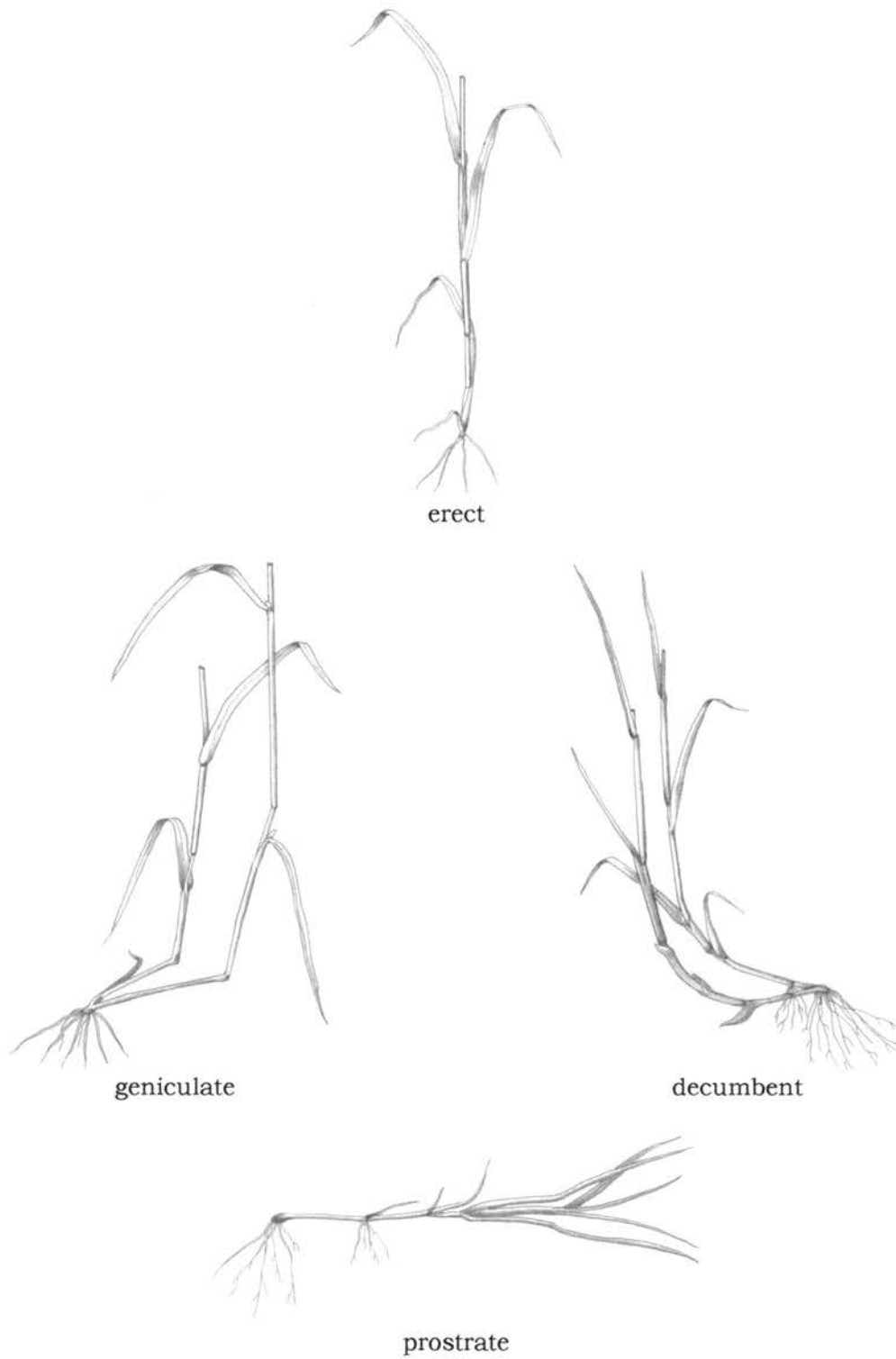
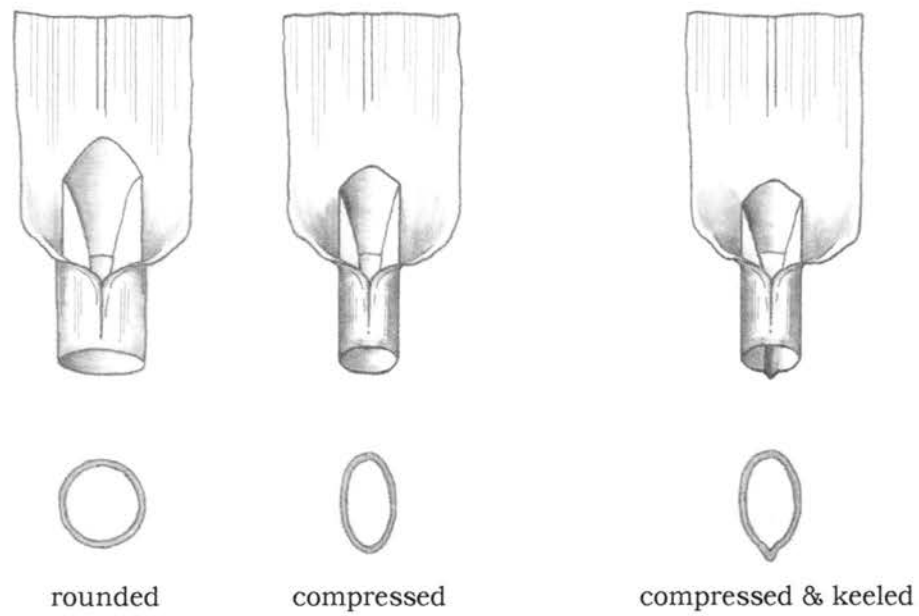


Figure 4. Growth forms of the grass plant. Redrawn from Hitchcock (1969).

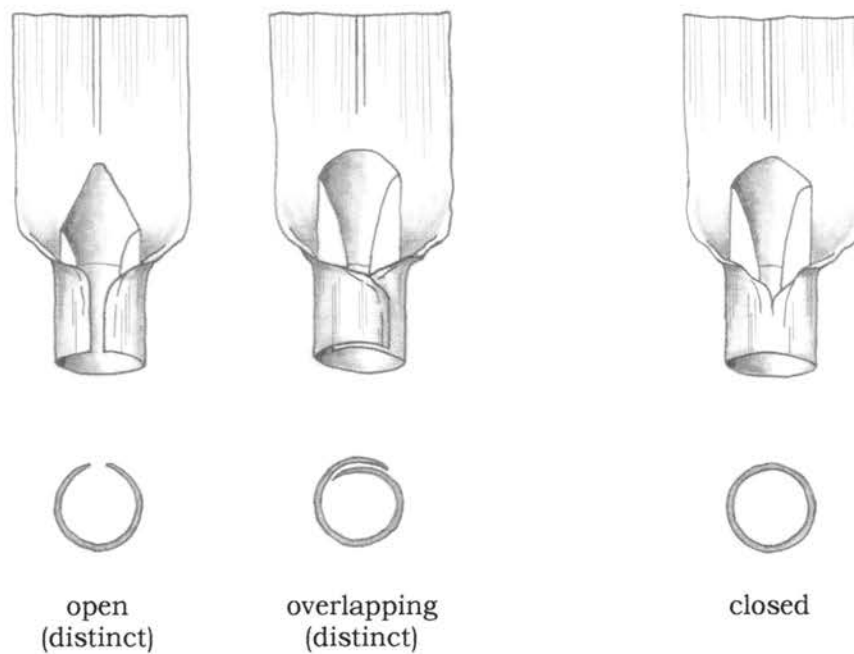


Culm Growth Habits

Figure 5. Culm growth habits of the grass plant. Redrawn from Hitchcock (1969).

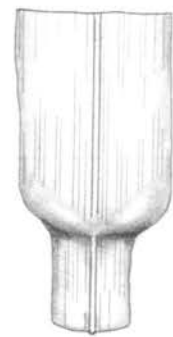


Sheath Types



Sheath Margins

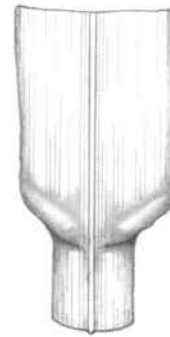
Figure 6. Sheath types (with cross-sectional outlines) and sheath margins (with cross sectional outlines) of the grass plant. Redrawn from Hitchcock (1969).



horizontal
(continuous)



oblique
(continuous)



divided



inconspicuous

Collar Types



Auricle Morphology

Figure 7. Collar types and auricle morphology of the grass plant. Redrawn from Hitchcock (1969).

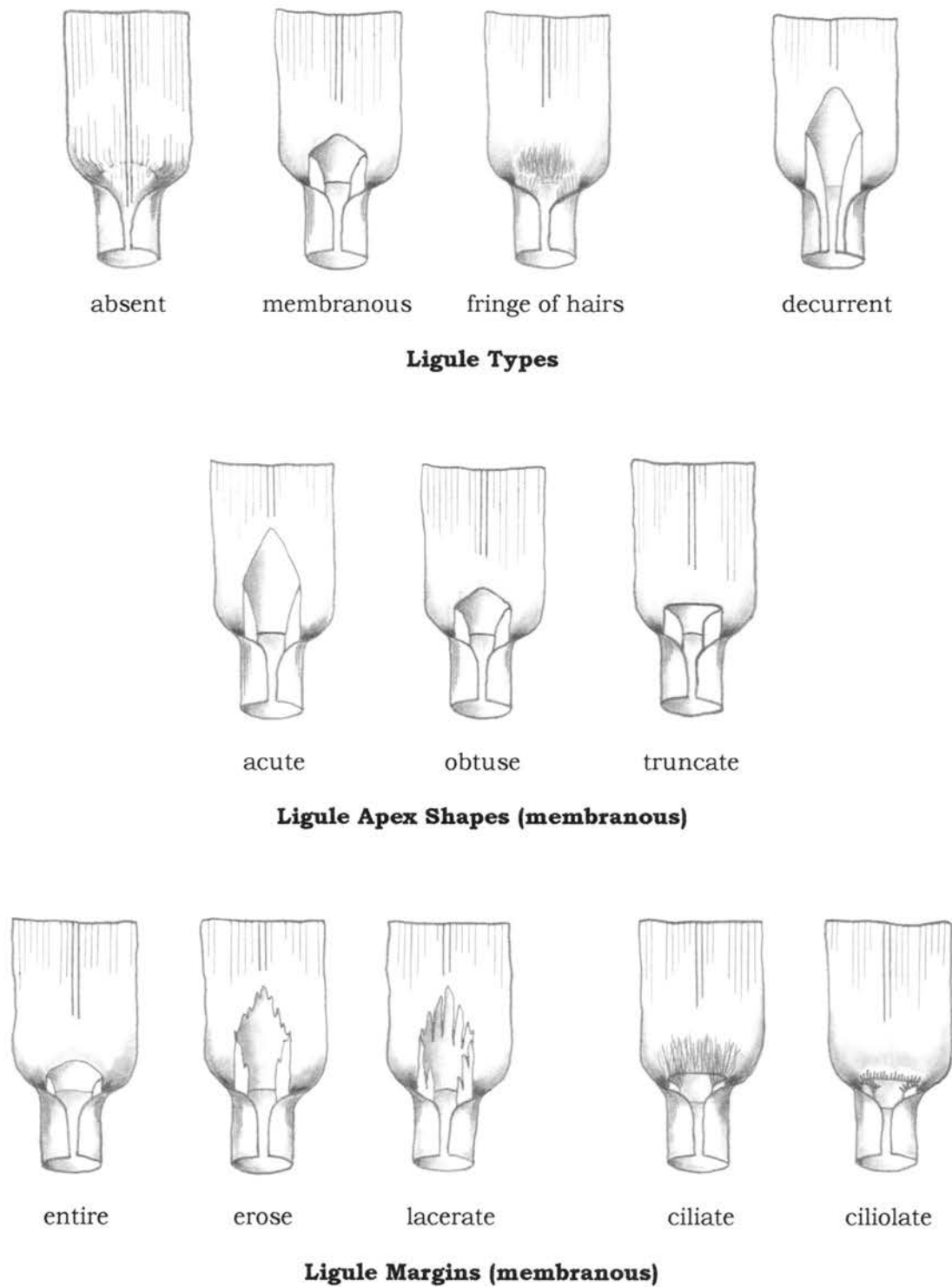
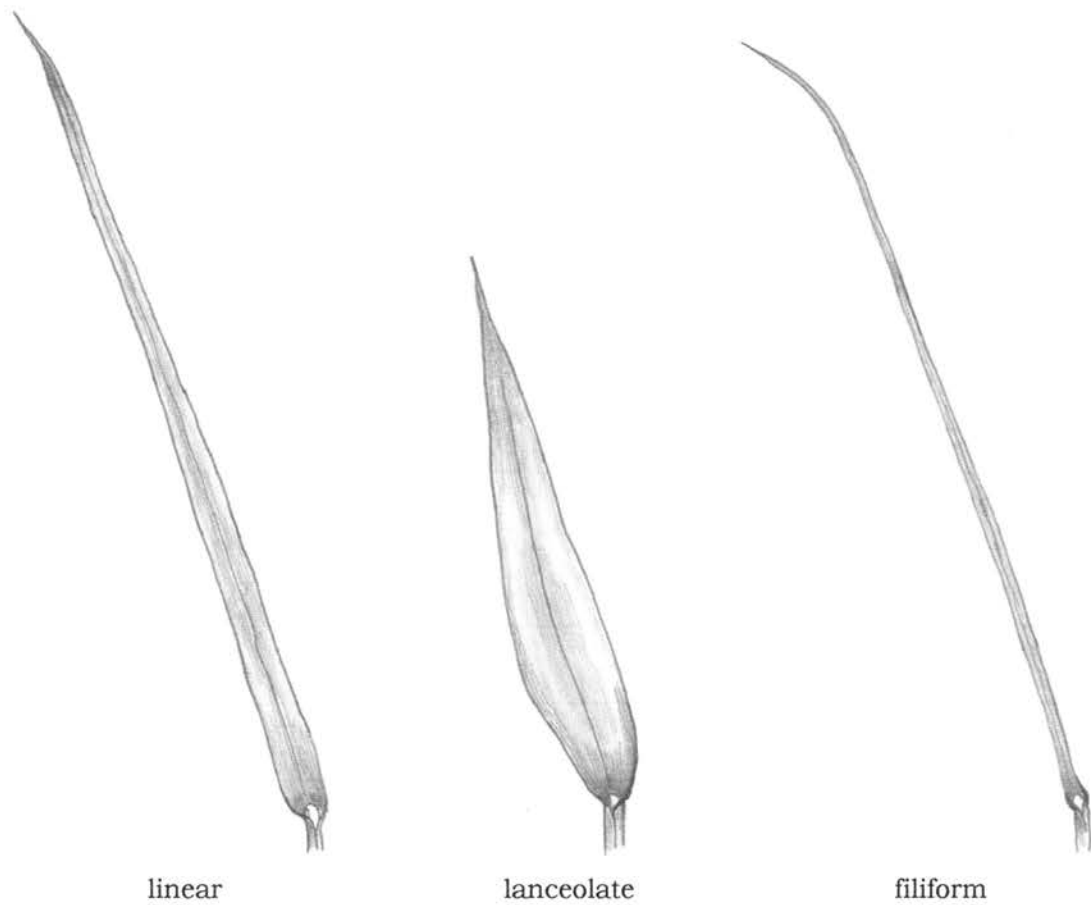
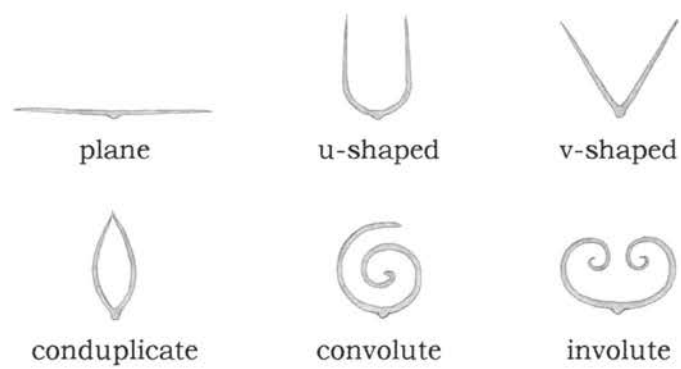


Figure 8. Ligule types, ligule apex shapes and ligule margins of the grass plant. Redrawn from Hitchcock (1969).

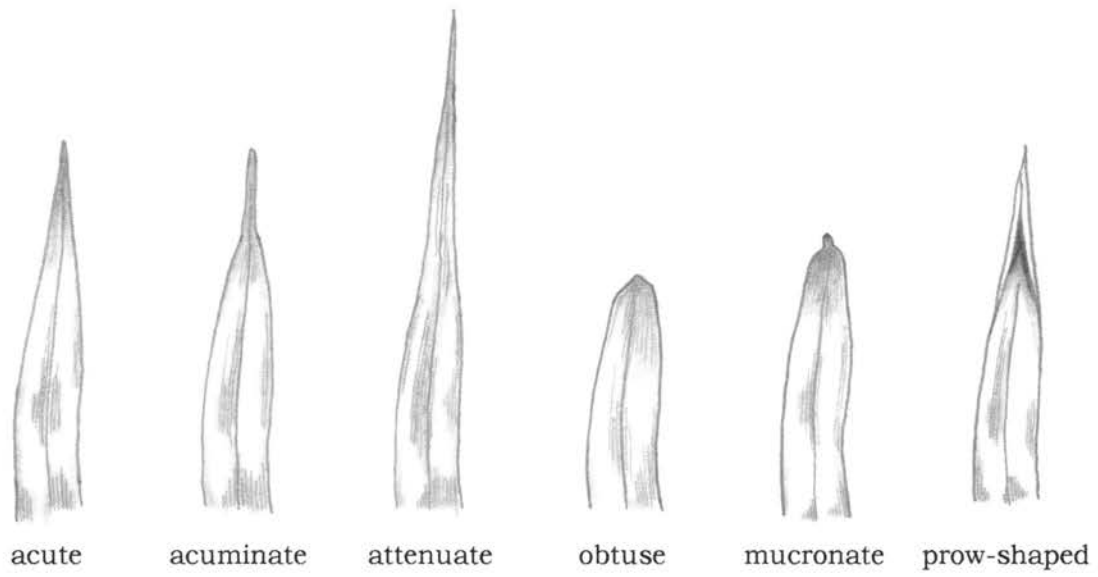


Blade Outline Shapes

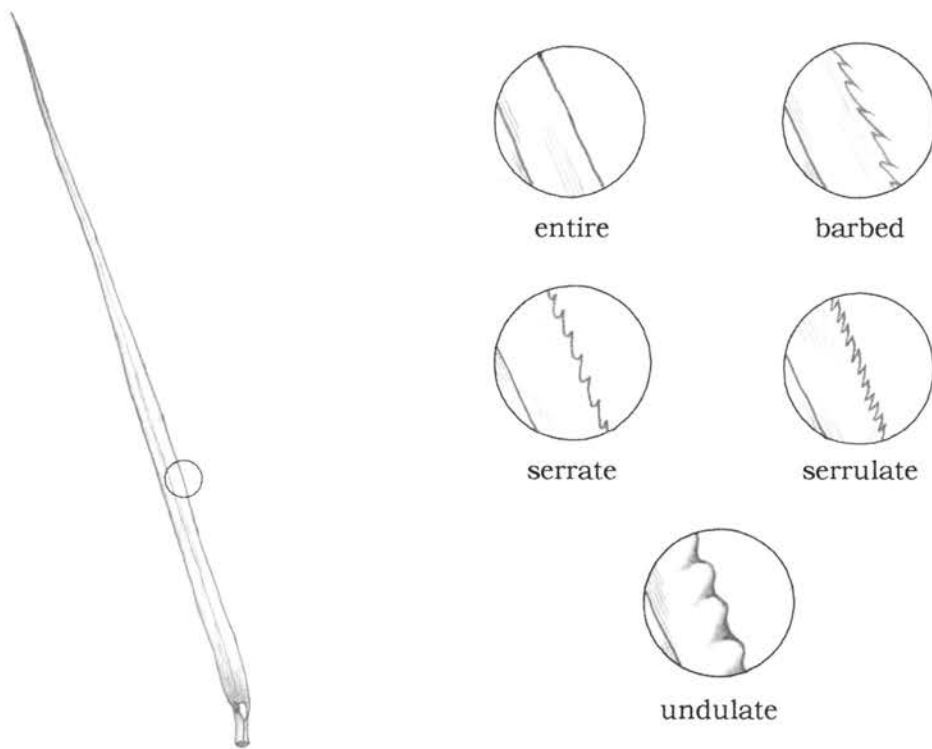


Blade Cross Sectional Outlines

Figure 9. Blade outline shapes [redrawn from Gould (1975) and Hitchcock (1969)] and blade cross sectional outlines [redrawn from Judd et al. (1999)] of the grass plant.

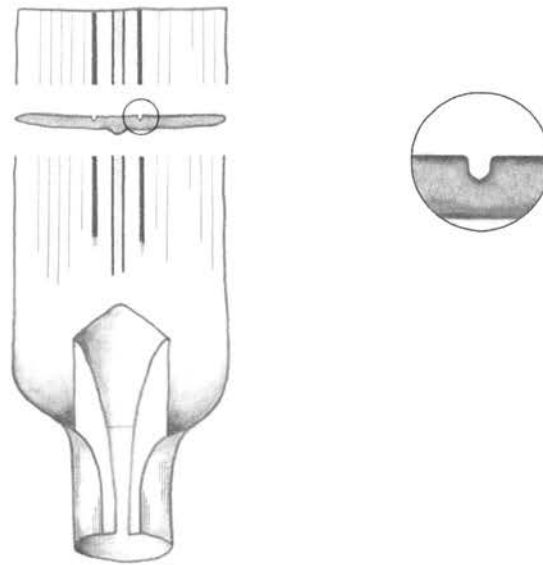


Blade Apices

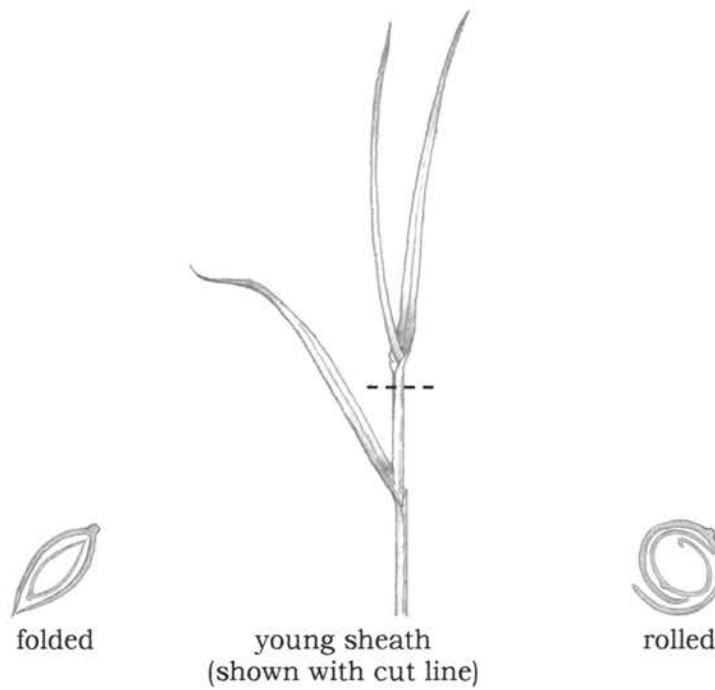


Blade Margins

Figure 10. Blade apices [redrawn from Hitchcock (1969)] and blade margins [redrawn from Hitchcock (1969) and Woodland (2000)] of the grass plant.



Median Lines



Vernation Types

Figure 11. Median lines and blade vernation types (shown in cross sectional outline) of the grass plant. Redrawn from Hitchcock (1969).

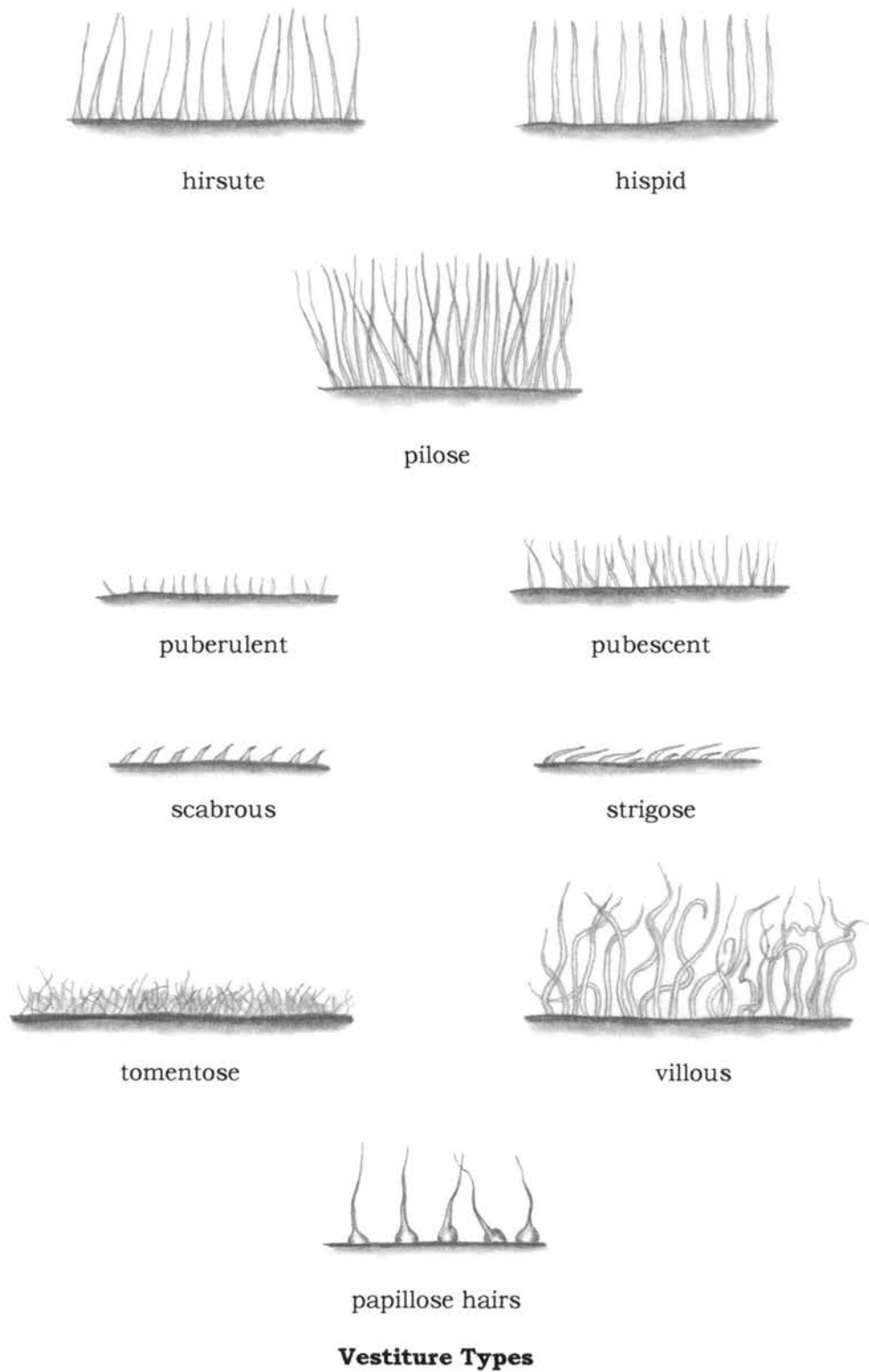


Figure 12. Vestiture types of the grass plant. Redrawn from Walters and Keil (1996).

KEY TO THE GRASS SPECIES OF THE BALCONES CANYONLANDS

The key follows a dichotomous format. It consists of a sequence of couplets (pairs of contrasting statements). The user should choose the lead (one of the contrasting statements) that better describes the grass part or species in question. Care should be taken to determine the exactness of both leads before proceeding. This selection process leads to the number of the next couplet to consider or the scientific name of the unknown grass. Occasionally the result is a small group of species that cannot be differentiated using vegetative characters. A final determination can often be made by a thorough comparison with the species descriptions section that immediately follow the key.

In addition to the key, a millimeter scale and 10-power hand lens will prove valuable and are often necessary to make an accurate determination.

Key to the Grass Species

1. Ligules absent	2
1. Ligules present	8
2(1). Culm nodes (at least some) antrorsely pubescent	3
2. Culm nodes (all) glabrous	4
3(2). Blades linear; collars pilose, margins pilose.....	101. <i>Nassella leucotricha</i>
3. Blades lanceolate; collars glabrous, margins glabrous.....	111. <i>Panicum sphaerocarpon</i>
4(2). Collars divided; blade apex attenuate	40. <i>Chloris ciliata</i>
4. Collars continuous; blade apex acute.....	5
5(4). Blade margins entire.....	6
5. Blade margins serrulate.....	7

- 6(5). Leaves typically marked with purple-colored bands, "V's", or blotches
 55. *Echinochloa colona*
6. Leaves green-colored or purplish, but without bands, "V's", or blotches
 57. *Echinochloa crus-pavonis*
- 7(5). Sheaths slightly laterally compressed; blades ≥ 5 mm wide; collar margins glabrous
 56. *Echinochloa crus-galli*
7. Sheaths rounded; blades < 5 mm wide; collar margins with 1 or 2 long, soft hairs on
 each side 58. *Echinochloa muricata*
- 8(1). Auricles present 9
8. Auricles absent 21
- 9(8). Sheath margins adnate with the auricles or ligule 10
9. Sheath margins free, not united with the auricles or ligule 13
- 10(9). Culm nodes glabrous 11
10. Culm nodes puberulent or hispid 12
- 11(10). Ligule margin entire; blade midnerve inconspicuous, green-colored
 90. *Lolium perenne*
11. Ligule margin erose to lacerate; blade midnerve conspicuous, white-colored
 95. *Muhlenbergia arenacea*
- 12(10). Rhizomes absent; ligule margin erose, glabrous 143. *Sorghastrum elliottii*
12. Rhizomes present; ligule margin erose, ciliolate 144. *Sorghastrum nutans*
- 13(9). Sheath margins ciliate along the entire length 14
13. Sheath margins glabrous along the entire length 15
- 14(13). Plants annual; culms erect or geniculate; blades < 4 mm wide, apex acute
 1. *Aegilops cylindrica*
14. Plants perennial; culms decumbent; blades ≥ 4 mm wide, apex attenuate
 60. *Elymus canadensis*

15(13). Culms branched basally; sheath margins becoming hyaline basally	
.....	132. <i>Secale cereale</i>
15. Culms unbranched; sheath margins not becoming hyaline basally.....	16
16(15). Ligules >1 mm long.....	17
16. Ligules ≤1 mm long.....	18
17(15). Lowermost sheaths glabrous externally; ligule margin entire; vernation rolled	
.....	83. <i>Hordeum vulgare</i>
17. Lowermost sheaths pubescent externally; ligule margin erose; vernation folded.....	
.....	167. <i>Triticum aestivum</i>
18(17). Sheaths pubescent externally; ligules <0.5 mm long, margin entire, glabrous	
.....	82. <i>Hordeum pusillum</i>
18. Sheaths glabrous, pilose or sparsely hispid externally; ligules ≥0.5 mm long, margin erose, erose and ciliolate or lacerate	19
19(17). Ligule margin lacerate, glabrous.....	91. <i>Lolium temulentum</i>
19. Ligule margin erose or erose and ciliolate.....	20
20(19). Plants perennial; culms >60 cm tall; collar often purplish; ligule margin erose, ciliolate	61. <i>Elymus virginicus</i>
20. Plants annual; culms ≤60 cm tall; collar not purplish; ligule margin erose, glabrous.....	81. <i>Hordeum murinum</i>
21(8). Culm nodes with hairs, the hairs occasionally restricted to the upper or lower nodes	22
21. Culm nodes glabrous.....	75
22(21). Ligules membranous, the margins entire, erose or lacerate.....	23
22. Ligules a fringe of hairs or membranous with a ciliate or ciliolate margin	42
23(22). Sheath margins with hairs, the hairs occasionally restricted to the outer margin	24
23. Sheath margins glabrous	27

24(23). Collars pilose	101. <i>Nassella leucotricha</i>
24. Collars glabrous.....	25
25(24). Culm nodes villous with hairs 1–3 mm long; collars divided	
.....	14. <i>Bothriochloa barbinodis</i>
25. Culm nodes pubescent; collars continuous	26
26(25). Blade apex attenuate, adaxial surface glabrous.....	18. <i>Bothriochloa laguroides</i>
26. Blade apex acute, adaxial surface mostly glabrous, but with a few long hairs immediately above the ligule.....	124. <i>Pleuraphis mutica</i>
27(23). Collars sparsely puberulent to pubescent.....	28
27. Collars glabrous.....	30
28(27). Blade margins serrate	84. <i>Leersia oryzoides</i>
28. Blade margins entire.....	29
29(28). Ligules ≤ 1 mm long, hyaline, margins erose; collars continuous	
.....	48. <i>Dichanthium annulatum</i>
29. Ligules > 1 mm long, brown-colored, margins entire; collars divided.....	
.....	117. <i>Paspalum plicatulum</i>
30(27). Stolons present.....	31
30. Stolons absent.....	32
31(30). Culms erect; sheath margins distinct, overlapping; blade margins scabrous.....	
.....	80. <i>Hilaria belangeri</i>
31. Culms decumbent; sheath margins distinct, open; blade margins entire	
.....	116. <i>Paspalum distichum</i>
32(30). Blade margins entire, ciliate basally	33
32. Blade margins entire or serrate, glabrous along the entire length	34
33(32). Upper culm nodes glabrous; branching absent; blades filiform	
.....	15. <i>Bothriochloa edwardsiana</i>
33. Upper culm nodes antrorsely pubescent; branching above base; blades linear	
.....	16. <i>Bothriochloa hybrida</i>

34(32). Blade margins serrate	84. <i>Leersia oryzoides</i>
34. Blade margins entire.....	35
35(34). Collars divided	14. <i>Bothriochloa barbinodis</i>
35. Collars continuous.....	36
36(35). Sheath margins closed to within a few centimeters of the throat.....	
.....	28. <i>Bromus japonicus</i>
36. Sheath margins distinct, open along the entire length.....	37
37(36). Culm nodes sparsely pilose; ligule margin lacerate	160. <i>Tridens eragrostoides</i>
37. Culm nodes pubescent; ligule margin erose	38
38(37). Abaxial surface of blades pubescent.....	32. <i>Bromus texensis</i>
38. Abaxial surface of blades glabrous or scabrous	39
39(38). Blades lanceolate	118. <i>Paspalum pubiflorum</i>
39. Blades linear.....	40
40(39). Adaxial surface of blades hispid with papillose hairs	
.....	17. <i>Bothriochloa ischaemum</i>
40. Adaxial surface of blades glabrous, scabrous, pillose or sparsely hirsute, the hairs, when present, not papillose	41
41(40). Plants perennial; culm nodes pubescent; sheaths glabrousexternally	
.....	29. <i>Bromus pubescens</i>
41. Plants annual; culm nodes retrorsely pubescent; sheaths glabrous or sparsely pilose externally	30. <i>Bromus secalinus</i>
42(22). Sheath margins with hairs, the hairs occasionally restricted to the outer margin	43
42. Sheath margins glabrous.....	56
43(42). Blades lanceolate	44
43. Blades linear.....	49
44(43). Collars glabrous.....	45
44. Collars pubescent	47

45(44). Blade margins entire, crispate, cartilaginous, white-colored	
.....	111. <i>Panicum sphaerocarpon</i>
45. Blade margins entire, plane, not cartilaginous, not white-colored.....	46
46(45). Sheaths pilose externally with papillose hairs, margins ciliate along their entire length.....	109. <i>Panicum oligosanthos</i>
46. Sheaths glabrous or pilose externally, the hairs, when present, not papillose, margins ciliate only near the throat	110. <i>Panicum pedicellatum</i>
47(44). Adaxial surface of lowermost blades glabrous.....	109. <i>Panicum oligosanthos</i>
47. Adaxial surface of lowermost blades hispid or hirsute	48
48(47). Collars perpendicular, margins pubescent.....	104. <i>Panicum capillare</i>
48. Collars oblique, margins glabrous.....	169. <i>Urochloa fasciculata</i>
49(43). Ligules ciliate with a mixture of short and long hairs.....	50
49. Ligules ciliate with hairs of a uniform length	51
50(49). Culm internodes distally pubescent; sheath margins ciliate along the entire length.....	102. <i>Panicum acuminatum</i>
50. Culm internodes glabrous; sheath margins ciliate only near the throat	
.....	112. <i>Panicum virgatum</i>
51(49). Collars glabrous.....	52
51. Collars pubescent or pilose	54
52(51). Ligules ≤ 1 mm long; blade margins with papillose hairs	
.....	164. <i>Triplasis purpurea</i>
52. Ligules > 1 mm long; blade margins glabrous.....	53
53(52). Plants perennial; collar margins pilose	141. <i>Setaria villosissima</i>
53. Plants annual; collar margins glabrous	141. <i>Setaria viridis</i>
54(51). Sheaths hispid externally with papillose hairs.....	104. <i>Panicum capillare</i>
54. Sheaths glabrous or pilose externally, the hairs, when present, not papillose	55

55(54). Plants annual; culm nodes hirsute; blades hispid.....	133. <i>Setaria grisebachii</i>
55. Plants perennial; culm nodes antrorsely puberulent; blades scabrous and finely pubescent	139. <i>Setaria scheelei</i>
56(42). Collars pubescent	57
56. Collars glabrous.....	60
57(56). Blades linear	58
57. Blades lanceolate	59
58(57). Ligules >1 mm long; blade margins hyaline or white-colored; midnerve conspicuous, often white-colored.....	146. <i>Sorghum halepense</i>
58. Ligules ≤1 mm long; blade margins opaque, green-colored; midnerve inconspicuous, green-colored.....	162. <i>Tridens muticus</i>
59(57). Sheath margins distinct, overlapping; collars oblique; blade margins entire, plane.....	169. <i>Urochloa fasciculata</i>
59. Sheath margins distinct, open; collars perpendicular; blade margins serrate, crispate	171. <i>Urochloa texana</i>
60(56). Abaxial surface of blades with hairs	61
60. Abaxial surface of blades glabrous or scabrous	65
61(60). Sheath margins closed to within a few centimeters of the throat.....	28. <i>Bromus japonicus</i>
61. Sheath margins distinct, open along the entire length	62
62(61). Plants mat-forming; culms decumbent or prostrate, <20 cm tall.....	69. <i>Eragrostis reptans</i>
62. Plants cespitose; culms erect or geniculate, ≥20 cm tall.....	63
63(62). Sheaths glabrous or hispid externally with papillose hairs.....	105. <i>Panicum coloratum</i>
63. Sheaths puberulent or pubescent externally, the hairs, when present, not papillose	64

64(63). Plants annual; culm internodes glabrous or puberulent, nodes puberulent	
.....	74. <i>Eriochloa contracta</i>
64. Plants perennial; culm internodes pubescent, nodes antrorsely pubescent.....	
.....	75. <i>Eriochloa sericea</i>
65(60). Culm internodes pubescent.....	66
65. Culm internodes glabrous.....	67
66(65). Plants annual, mat-forming; culms decumbent or prostrate, <20 cm tall; ligules <0.5 mm long	69. <i>Eragrostis reptans</i>
66. Plants perennial, cespitose; culms erect, ≥20 cm tall; ligules ≥0.5 mm long	
.....	75. <i>Eriochloa sericea</i>
67(65). Sheaths scabrous externally; blades scabrous.....	159. <i>Tridens buckleyanus</i>
67. Sheaths glabrous or with hairs externally; blades glabrous or with hairs, but not scabrous	68
68(67). Blade margins scabrous or barbed	69
68. Blade margins entire.....	70
69(68). Ligules ciliate with both short and long hairs; blade margins scabrous.....	
.....	112. <i>Panicum virgatum</i>
69. Ligules ciliate with hairs of a consistent length; blade margins barbed	
.....	158. <i>Tridens albescens</i>
70(68). Rhizomes elongate; sheaths occasionally purplish; blade margins hyaline or white-colored.....	146. <i>Sorghum halepense</i>
70. Rhizomes short or absent; sheaths green-colored; blade margins opaque, not white- colored	71
71(70). Collar margins puberulent or pilose	72
71. Collar margins glabrous or sparsely villous	73

- 72(71). Culm nodes antrorsely pubescent; sheaths laterally compressed and keeled
 103. *Panicum antidotale*
72. Culm nodes puberulent; sheaths rounded, not keeled.....121. *Pennisetum ciliare*
- 73(71). Collar margins glabrous 105. *Panicum coloratum*
73. Collar margins sparsely villous74
- 74(73). Lower sheaths pilose externally, upper sheaths pubescent externally, the hairs
 not papillose; ligules sparsely ciliate; blades green-colored.....
 29. *Bromus pubescens*
74. Lower sheaths and upper sheaths glabrous or pilose externally with papillose hairs;
 ligule ciliate; blades glaucous 106. *Panicum hallii*
- 75(21). Ligules membranous, the margins entire, erose or lacerate.....76
75. Ligules a fringe of hairs or membranous with a ciliate or ciliolate margin 134
- 76(75). Sheaths with hairs externally, the hairs occasionally restricted to the upper or
 lower sheaths77
76. Sheaths glabrous or scabrous externally96
- 77(76). Collar margins pilose78
77. Collar margins entire81
- 78(77). Sheaths pilose externally with papillose hairs; blade margins undulate and
 white-colored..... 50. *Digitaria ciliaris*/54. *Digitaria sanguinalis*
78. Sheaths pubescent, sparsely pilose or sparsely villous externally, the hairs not
 papillose; blade margins plane, not white colored79
- 79(78). Collars pubescent 119. *Paspalum setaceum*
79. Collars glabrous.....80
- 80(79). Plants perennial; culms ≥ 80 cm tall, rounded; blade apex acute, adaxial surface
 pilose behind and immediately above the ligule with hairs to 5 mm long.....
 4. *Andropogon gerardii*
80. Plants annual; culms < 80 cm tall, slightly laterally compressed; blade apex obtuse,
 adaxial surface glabrous, occasionally villous basally 59. *Eleusine indica*

81(77). Sheath margins closed to within a few cm of the throat	82
81. Sheath margins distinct, open along the entire length	83
82(81). Young shoots laterally compressed; collars glabrous; blades glabrous or hirsute	27. <i>Bromus catharticus</i>
82. Young shoots rounded; collars pubescent; blades pubescent.....	31. <i>Bromus tectorum</i>
83(81). Ligules obtuse or acute	84
83. Ligules truncate.....	90
84(83). Sheaths laterally compressed	85
84. Sheaths rounded	86
85(84). Culms ≤ 20 cm tall; ligule margin entire; blade margins entire, adaxial surface glabrous with a few long, soft hairs at the base.....	115. <i>Paspalum dilitatum</i>
85. Culms > 20 cm tall; ligule margin erose; blade margins scabrous, adaxial surface glabrous or scabrous, occasionally hispid	130. <i>Schizachyrium scoparium</i>
86(84). Ligules decurrent, adnate with the sheath margins, margins erose	13. <i>Avena fatua</i>
86. Ligules free, not united with the sheath margins, margins entire or lacerate.....	87
87(86). Stolons present, elongate, wiry; blades glaucous	108. <i>Panicum obtusum</i>
87. Stolons absent; blades green-colored	88
88(87). Plants annual; collars oblique; blades hispid	90. <i>Lolium perenne</i>
88. Plants perennial; collars perpendicular; blades glabrous or scabrous	89
89(88). Pubescence restricted to the lower sheaths, the upper sheaths glabrous; blade apex acute, adaxial surface glabrous with a fringe of long, soft hairs immediately above the ligule	120. <i>Paspalum urvillei</i>
89. Pubescence present on both the upper and lower sheaths; blade apex attenuate, adaxial surface scabrous or sparsely pilose.....	160. <i>Tridens eragrostoides</i>
90(83). Collars pubescent	117. <i>Paspalum setaceum</i>
90. Collars glabrous.....	91

91(90). Blades ≤ 1 mm wide, involute.....	172. <i>Vulpia octoflora</i>
91. Blades > 1 mm wide, flat or u-shaped	92
92(91). Ligules ≤ 0.5 mm long	93
92. Ligules > 0.5 mm long.....	94
93(92). Culm branching basal; sheaths pilose; blade margins undulate, adaxial surface sparsely pubescent, sparsely pilose basally.....	51. <i>Digitaria cognata</i>
93. Culm branching absent; sheaths pubescent; blade margins plane; adaxial surface pubescent or glabrous	82. <i>Hordeum pusillum</i>
94(92). Culms erect, arising from a hard, knotty base	
..... 49. <i>Digitaria californica</i> /52. <i>Digitaria insularis</i> /53. <i>Digitaria patens</i>	
94. Culms decumbent, arising from typical rootstock.....	95
95(94). Plants annual; ligule margin erose; blade apex attenuate, adaxial surface pilose, the basal hairs papillose	87. <i>Leptochloa mucronata</i>
95. Plants perennial; ligule margin entire; blade apex acute, adaxial surface mostly glabrous, but sparsely hisute basally, the hairs not papillose.....	
..... 118. <i>Paspalum pubiflorum</i>	
96(76). Ligules truncate	97
96. Ligules obtuse or acute	110
97(96). Collar margins pilose or sparsely villous.....	98
97. Collar margins glabrous.....	100
98(97). Sheath margins villous.....	18. <i>Bothriochloa laguroides</i>
98. Sheath margins glabrous	99
99(98). Plants perennial; culms > 70 cm tall; sheaths often purplish at the base; blade apex a sharp point; midnerve conspicuous	4. <i>Andropogon gerardii</i>
99. Plants annual; culms ≤ 70 cm tall; sheaths green-colored; blade apex obtuse; midnerve inconspicuous.....	59. <i>Eleusine indica</i>

100(97). Ligules decurrent, adnate with the sheath margins	101
100. Ligules free, not united with the sheath margins	103
101(100). Sheath margins closed along the entire length.....	92. <i>Melica nitens</i>
101. Sheath margins distinct, open along the entire length	102
102(101). Culms striate; ligules ≤ 1 mm long; blades glabrous, margins cartilaginous, white-colored; midnerve conspicuous, white-colored.....	95. <i>Muhlenbergia arenacea</i>
102. Culms without striations; ligules > 1 mm long; blades scabrous, margins not cartilaginous, green-colored; midnerve inconspicuous, green-colored.....	97. <i>Muhlenbergia porteri</i>
103(100). Blades ≤ 1 mm wide, involute or plane	104
103. Blades > 1 mm wide, plane or slightly conduplicate.....	105
104(103). Plants perennial; rhizomes present, slender and scaly; culms erect	100. <i>Muhlenbergia utilis</i>
104. Plants annual; rhizomes absent; culms geniculate or decumbent	172. <i>Vulpia octoflora</i>
105(103). Sheath margins closed to within a few centimeters of throat; blade apex obtuse, often prow-shaped; median lines present.....	78. <i>Glyceria striata</i>
105. Sheath margins distinct, open along the entire length; blade apex acute, not prow-shaped; median lines absent.....	106
106(105). Plants annual; collars divided, often oblique.....	149. <i>Sphenopholis obtusata</i>
106. Plants perennial; collars continuous, linear.....	107
107(106). Sheath margins villous; blade apex attenuate.....	18. <i>Bothriochloa laguroides</i>
107. Sheath margins glabrous; blade apex acute or mucronate.....	108
108(107). Culms > 40 cm tall.....	77. <i>Festuca versuta</i>
108. Culms ≤ 40 cm tall.....	109

- 109(108). Sheaths slightly laterally compressed, weakly keeled; blade apex mucronate,
 adaxial surface glabrous or scabrous, sparsely pilose at the base
39. *Chloris andropogonoides*
109. Sheaths rounded, not keeled; blade apex acute, adaxial surface pubescent
 occasionally glabrous 82. *Hordeum pusillum*
- 110(96). Ligules obtuse..... 111
110. Ligules acute 123
- 111(110). Collars divided149. *Sphenopholis obtusata*
111. Collars continuous..... 112
- 112(111). Ligules decurrent, adnate with the sheath margins 113
112. Ligules free, not united with the sheath margins..... 115
- 113(112). Blade apex obtuse, often prow-shaped; median lines present... 125. *Poa annua*
113. Blade apex acute, not prow-shaped; median lines absent..... 114
- 114(113). Culms ≥ 30 cm tall, thick; ligule margins erose; blades > 3 mm wide
13. *Avena fatua*
114. Culms < 30 cm tall, slender; ligule margins lacerate; blades ≤ 3 mm wide
 47. *Desmazeria rigida*
- 115(112). Blades filiform, margins ciliate basally..... 15. *Bothriochloa edwardsiana*
115. Blades linear, margins glabrous or scabrous..... 116
- 116(115). Stolons present 117
116. Stolons absent 118
- 117(116). Stolon nodes villous, swollen; culms erect; blades glaucous, apex attenuate....
 108. *Panicum obtusum*
117. Stolon nodes glabrous, not swollen; culms geniculate or decumbent; blades green-
 colored, apex acute..... 128. *Polypogon viridis*
- 118(116). Sheath margins villous.....18. *Bothriochloa laguroides*
118. Sheath margins glabrous or pilose near the throat 119

119(118). Collars oblique	90. <i>Lolium perenne</i>
119. Collars perpendicular.....	120
120(119). Culms branched; sheaths laterally compressed and keeled; blade margins scabrous	130. <i>Schizachyrium scoparium</i>
120. Culm unbranched; sheaths rounded, not keeled; blade margins entire.....	121
121(120). Blades scabrous or sparsely pilose, apex attenuate	160. <i>Tridens eragrostoides</i>
121. Blades glabrous, apex acute.....	122
122(121). Plants perennial; lowermost culm internode erect or reclined; blades ≤ 3 mm wide	2. <i>Agrostis hyemalis</i>
122. Plants annual; lowermost culm internode erect; blades > 3 mm wide.....	122. <i>Phalaris caroliniana</i>
123(110). Lower sheaths laterally compressed	124
123. Lower sheaths rounded.....	126
124(123). Blades spirally twisted upon drying, margins scabrous, undulate, white-colored.....	129. <i>Schedonnardus paniculatus</i>
124. Blades plane or involute upon drying, margins entire, plane, not white colored	125
125(124). Ligules free, not united with the sheath margins; blades green-colored.....	94. <i>Muhlenbergia</i> $\times$ <i>involuta</i>
125. Ligules decurrent, adnate with the sheath margins; blades pale green-colored to glaucous	96. <i>Muhlenbergia lindheimeri</i>
126(123). Rhizomes present, elongate	127
126. Rhizomes absent.....	128

- 127(126). Culms ≤ 50 cm tall; ligules ≤ 4 mm long, nerves absent; blades ≤ 15 cm long, ≤ 5 mm wide, margins entire 126. *Poa arachnifera*
127. Culms > 50 cm tall; ligules > 4 mm long with numerous fine nerves apparent;
 blades > 15 cm long, > 5 mm wide, margins serrate 173. *Zizaniopsis miliacea*
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Species Descriptions

1. *Aegilops cylindrica* Host

JOINTED GOATGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 20–80 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, ciliate; collar continuous, glabrous, margins ciliate; auricles <1 mm long; ligules 0.5 mm long, membranous, truncate, margins entire to slightly erose; leaf blades linear, 4–12 cm long, 1–3(–4) mm wide, plane but often conduplicate when dry, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces sparsely hirsute to glabrous; vernation folded; an occasional grass of open roadsides and waste places.

2. *Agrostis hyemalis* (Walt.) B.S.P.

WINTER BENTGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 15–70 cm tall, erect with the lowermost internode reclined, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1.5–4 mm long, membranous, obtuse, margins erose or lacerate; leaf blades linear, 3–9 cm long, 0.5–3 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; frequent in pastures, on roadbanks and ditchbanks and in open woodlands, usually in moist, sandy soil.

3. *Agrostis perennans* (Walt.) Tuckerm.

AUTUMN BENTGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 30–80(–100) cm tall, erect with the lowermost internode recumbent, firm, glabrous, not

swollen at the base; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 2–6 mm long, membranous, acute, margins erose or lacerate; leaf blades linear, 5–22 cm long, 1–6 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; occasional along shaded streambanks and woods borders, usually in moist, sandy soil.

4. *Andropogon gerardii* Vitman

BIG BLUESTEM

Plants perennial, cespitose; rhizomes absent or short when present, stolons absent; culms 80–200 cm tall, erect, stout, glabrous, not swollen at the base, lateral branching sparse; culm nodes glabrous; leaf sheaths laterally compressed, pubescent or glabrous externally, usually purplish at base, margins distinct, open, entire; collar continuous, often inconspicuous, glabrous, margins pilose; auricles absent; ligules 1–2.5 mm long, membranous, truncate, margins erose, occasionally sparsely ciliate; leaf blades linear, 8–50 cm long, 2–10 mm wide, plane or v-shaped, firm-textured, green-colored or glaucous, apex acuminate, margins entire, adaxial surface glabrous, pilose at base behind and above ligules, hairs to 5 mm long, abaxial surface glabrous; midnerve conspicuous abaxially; vernation rolled; usually associated with other tall-grass species in prairies and woods openings in sandy or loamy soils.

5. *Andropogon glomeratus* (Walt) B.S.P.

BUSHY BLUESTEM

Plants perennial, cespitose; rhizomes and stolons absent; culms 75–150 cm tall, erect, stout, compressed, glabrous, not swollen at the base, lateral branching sparse; culm nodes glabrous; leaf sheaths laterally compressed, keeled, broader than the blades, glabrous externally, margins distinct, open,

pilose; collar continuous, glabrous, margins entire or sparsely pilose; auricles absent; ligules 1–2 mm long, membranous, truncate, margins ciliate with occasional long, fine hairs present; leaf blades linear, 5–30 cm long, 3–6(–8) mm wide, plane to conduplicate, firm-textured, apex tapering to a sharp point, margins entire, adaxial and abaxial surfaces glabrous; vernation folded; usually present in low, moist sites with moderate disturbance, in relatively sterile soils.

6. *Andropogon virginicus* L.

BROOMSEDGE BLUESTEM

Plants perennial, cespitose; rhizomes and stolons absent; culms 50–100 cm tall, erect, stout, glabrous, not swollen at the base, lateral branching sparse; culm nodes glabrous; leaf sheaths rounded, keeled just below the collar, the lowermost sheaths compressed and keeled, broader than the blades, glabrous externally, margins distinct, open, entire, occasionally the outer margins ciliate; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, truncate, margins ciliate with both long and short hairs; leaf blades linear, 10–20 cm long, 2–5 mm wide, plane or conduplicate, firm-textured, apex acute, margins entire, adaxial surface glabrous or pilose basally, abaxial surface glabrous; vernation folded; mostly on loose, sandy and moist soils.

7. *Aristida adscensionis* L.

SIXWEEKS THREEAWN

Plants annual or occasionally appears perennial, cespitose; rhizomes and stolons absent; culms 10–50(–80) cm tall, erect or geniculate, the outermost culms of a tuft decumbent, firm, glabrous, not swollen at the base, freely branched at the base; culm nodes glabrous; leaf sheath rounded, often much shorter than the adjacent culm internodes, scabrous externally, margins distinct, open, hyaline; collar continuous, glabrous, margins entire; auricles

absent; ligules 0.5 mm long, a fringe or hairs; leaf blades linear, 5–20 cm long, 1–3 mm wide, plane to involute, firm-textured, apex acute, margins entire, adaxial surface scabrous to finely hispid, abaxial surface glabrous; vernation rolled; on dry, clayey or rocky slopes and planes.

8. *Aristida desmantha* Trin. & Rupr.

CURLY THREEAWN

Plants annual, cespitose; rhizomes and stolons absent; culms 45–100 cm tall, erect, wiry, glabrous, not swollen at the base, freely branched above the base; culm nodes glabrous; leaf sheaths rounded, shorter than the adjacent culm internodes, glabrous or pubescent externally, often pilose or wooly externally, margins distinct, open, entire; collar continuous, narrow, glabrous, margins entire; auricles absent; ligules <0.5 mm long, ciliate with a minute, membranous base; leaf blades linear, 25–40 cm long, 2–4.5 mm wide, plane or involute, firm-textured, apex attenuate, margins entire, adaxial surface scabrous, abaxial surface glabrous; vernation rolled; mostly in open woods or woods borders in sandy soil.

9. *Aristida longespica* Poir.

SLIMESPIKE THREEAWN

Plants annual, cespitose; rhizomes and stolons absent; culms 20–60(–80) cm tall, erect or geniculate, wiry, glabrous, not swollen at the base, freely branched at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, the lowermost sheaths often hispid externally, margins distinct, open, entire; collar continuous, glabrous, margins entire or with a few long, soft hairs; auricles absent; ligules <0.5 mm long, ciliate with a minute, membranous base; leaf blades filiform, 5–12 cm long, 0.5–1 mm wide, plane or involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces scabrous; vernation rolled; often in woods clearings and along woods borders in loose, sandy soils.

10. *Aristida oligantha* Michx.

OLDFIELD THREEAWN

Plants annual, cespitose; rhizomes and stolons absent; culms 15–80 cm tall, erect or geniculate, wiry, glabrous, not swollen at the base, freely branched at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, sparsely hirsute; collar continuous, glabrous, margins entire or with a few long, soft hairs; auricles absent; ligules <0.5 mm long, ciliate with a minute, membranous base; leaf blades filiform, 10–25 cm long, 1–2 mm wide, plane, firm-textured, apex attenuate, involute, margins entire, adaxial and abaxial surfaces scabrous; vernation rolled; common and abundant in the prairie regions in sandy soils and dense, clayey soils.

11. *Aristida purpurea* Nutt.

PURPLE THREEAWN

Plants perennial, cespitose; rhizomes and stolons absent; culms 25–70(–90) cm tall, erect, slender, glabrous, not swollen at the base, sparsely branched at the base; culm nodes glabrous; leaves mostly basal; leaf sheaths rounded, glabrous or scabrous or puberulent externally, margins distinct, open, entire; collar continuous, glabrous, margins villous; auricles absent; ligules 0.5 mm long, a fringe of hairs; leaf blades linear, 3–18 cm long, 1–2 mm wide, involute, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous or scabrous; vernation folded; frequent in nearly solid stands on road right-of-ways in sandy or clayey soils.

12. *Arundo donax* L.

GIANT CANE

Plants perennial, forming large clusters; rhizomes short, thick, knotty, stolons absent; culms 2–6 m tall, erect, reed-like, robust, tough, glabrous, not swollen at the base; culm nodes glabrous; leaves distichous on the culm; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous,

glabrous, margins entire; auricles absent, ligules to 1 mm long, ciliate with a minute, membranous base; leaf blades linear, 30–60 cm long, 40–70 mm wide, plane, firm-textured, apex acuminate, margins scabrous, adaxial and abaxial surfaces glabrous; vernation rolled; along ditches, culverts, drainage sites and other moist sites.

13. *Avena fatua* L.

WILD OATS

Plant annual, caespitose; rhizomes and stolons absent; culms 30–150 cm tall, erect or geniculate, firm, thick, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous, occasionally sparsely hispid externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 2–5 mm long, membranous, whitish, decurrent on either side as sheath margins, obtuse to acute, margins erose; leaf blades linear, 10–45 cm long, 3–15 mm wide, plane, firm-textured, apex acute, margins entire, occasionally sparsely hispid, adaxial and abaxial surfaces glabrous or scabrous; vernation rolled; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites.

14. *Bothriochloa barbinodis* (Lag.) Herter

CANE BLUESTEM

Plants perennial, caespitose; rhizomes and stolons absent; culms 60–120 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes villous with hairs 1–3 mm long; leaf sheaths rounded, glabrous or sparsely pilose externally, margins distinct, open, entire, occasionally the outer margins ciliate; collar divided, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, obtuse, margins erose or lacerate; leaf blades linear, 25–30 cm long, 2–7 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; midnerve conspicuous abaxially; vernation rolled; mostly on loose, limey soils.

15. *Bothriochloa edwardsiana* (Gould) L. R. Parodi

MERRILL BLUESTEM

Plants perennial cespitose; rhizomes and stolons absent; culms 35–65 cm tall, erect or geniculate, slender, glabrous, not swollen at the base; lower culm nodes glabrous or densely pubescent upper culm nodes glabrous; leaves mostly basal; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–1.5 mm long, membranous, obtuse, margins erose; leaf blades filiform, 10–25 cm long, 1–2(–3.5) mm wide, plane, firm-textured, pruinose, apex acute, margins entire distally, ciliate basally, adaxial and abaxial surfaces glabrous; vernation rolled; in fertile, rocky soils over limestone, rare.

16. *Bothriochloa hybrida* (Gould) Gould

HYBRID BLUESTEM

Plants perennial, forming small clusters; rhizomes and stolons absent; culms 30–80 cm tall, erect, firm, glabrous, not swollen at the base, freely branched above the base; culm nodes antrorsely pubescent; leaf sheaths rounded, glabrous externally, green-colored or glaucous, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, truncate, margins fimbriate; leaf blades linear, 8–25(–30) cm long, 2–4(–5) mm wide, plane, firm-textured, apex acute, margins entire, sparsely ciliate basally, adaxial surface glabrous, sparsely hirsute basally, abaxial surface glabrous; vernation rolled; often abundant along mowed road ditches and other moderately disturbed sites.

17. *Bothriochloa ischaemum* (L.) Keng

KING RANCH BLUESTEM

Plants perennial, cespitose; rhizomes and stolons absent; culms 30–50 (–100) cm tall, erect or decumbent, firm, glabrous, not swollen at the base; culm nodes antrorsely pubescent, glabrate with age; leaves mostly basal; leaf

sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules to 1 mm long, membranous, truncate, margins erose; leaf blades linear, 10–20 cm long, 2–5 mm wide, plane, firm-textured, apex attenuate, margins entire, adaxial surface sparsely hispid with papillose hairs, abaxial surface glabrous; vernation folded; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common roadside grass.

18. *Bothriochloa laguroides* (DC.) Herter

SILVER BLUESTEM

Plants perennial, cespitose; rhizomes and stolons absent; culms 35–120 cm tall, erect or somewhat geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous or pubescent; leaf sheaths slightly laterally compressed, keeled near collar, glabrous externally, margins distinct, open, villous; collar continuous, glabrous, margins entire or sparsely villous; auricles absent; ligules 1–3 mm long, membranous, obtuse to truncate, margins erose; leaf blades linear, 8–25 cm long, 3–6(–8) mm wide, plane or weakly keeled, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common roadside grass.

19. *Bouteloua aristidoides* (Kunth in H.B.K.) Griseb.

NEEDLE GRAMA

Plants annual, cespitose; rhizomes and stolons absent; culms 6–50 cm tall, geniculate, the outermost culms of a tuft decumbent, weak, slender, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, usually much shorter than the adjacent culm internodes, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins sparsely villous; auricles absent; ligules <0.5 mm long, a fringe of hairs; leaf blades linear, 2–7 cm long, 1–2 mm wide, plane or conduplicate or involute, thin, apex acute,

margins entire, adaxial surface glabrous often sparsely hirsute basally of the blade, abaxial surface glabrous; vernation folded; on dry, open slopes and along washes, often on graded roadsides.

20. *Bouteloua barbata* Lag.

SIXWEEKS GRAMA

Plants annual, cespitose; rhizomes and stolons absent; culms 6–50 cm tall, erect or geniculate, the outermost culms of a tuft decumbent, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins sparsely villous; auricles absent; ligules 0.5–1 mm long, membranous, truncate, margins ciliate; leaf blades linear, 2–7 cm long, 1(–3) mm wide, plane or involute, thin, apex acute, margins entire with some papillose hairs basally of the blade, adaxial surface scabrous or sparsely strigose, sparsely hirsute just above ligules, abaxial surface glabrous; vernation folded; in dry grasslands, roadsides and waste places, usually in sandy soils.

21. *Bouteloua curtipendula* (Michx.) Torr.

SIDEOATS GRAMA

Plants perennial, cespitose; rhizomes short occasionally scaly, stolons absent; culms 50–100 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous or hirsute externally, margins distinct, open, entire, hyaline; collar continuous, glabrous, margins entire with very few papillose hairs; auricles absent; ligules <0.5 mm long, membranous, truncate, margins ciliate; leaf blades linear, 5–30 cm long, 2–7 mm wide, plane, firm-textured, apex attenuate, margins entire with some papillose hairs basally, adaxial and abaxial surfaces glabrous; vernation rolled; in open grasslands, woods borders, road right-of-ways and little disturbed sites in loose, limey soils.

22. *Bouteloua hirsuta* Lag.

HAIRY GRAMA

Plants perennial, cespitose; rhizomes and stolons absent; culms 15–40 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally or glabrous with the lowermost sheath sparsely pilose, margins distinct, open, entire; collar continuous, glabrous, margins pilose; auricles absent; ligules 0.5–1 mm long, membranous, truncate, margins ciliate; leaf blades linear, 5–12 cm long, 1–2 mm wide, plane or slightly involute, thin, apex attenuate, margins entire with some papillose hairs basally of the blade, adaxial surface glabrous, abaxial surface glabrous with very few papillose hairs basally along the midnerve; vernation rolled; in forested sites only in grassy openings and woods borders in a wide variety of soils.

23. *Bouteloua repens* (Kunth in H.B.K.) Scribn. & Merr.

SLENDER GRAMA

Plants perennial, cespitose, rhizomes and stolons absent; culms 20–45 cm tall, erect or geniculate, weak, slender, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins entire; collar continuous, glabrous, margins distinct, open, entire; auricles absent; ligules <0.5 mm long, membranous, truncate, margins ciliate; leaf blades linear, 5–16 cm long, 1–3 mm wide, plane, thin, apex acute, folded, margins entire distally, sparsely pilose with papillose hairs basally, adaxial and abaxial surfaces glabrous; vernation rolled; in open or brushy pastures and road right-of-ways and along streambanks.

24. *Bouteloua rigidiseta* (Steud.) A. S. Hitchc.

TEXAS GRAMA

Plants perennial, cespitose; rhizomes and stolons absent; culms 10–50 cm tall, erect, weak, slender, glabrous, not swollen at the base; culm nodes glabrous;

leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins ciliate; auricles absent; ligules <0.5 mm long, a fringe or hairs; leaf blades linear, 4–12(–17) cm long, 1–2 mm wide, plane or slightly involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces sparsely pilose; vernation rolled; in grasslands, grassy woods openings, road right-of-ways and moist slopes.

25. *Bouteloua trifida* Thurb.

RED GRAMA

Plants perennial, cespitose; rhizomes short, stolons absent; culms 10–30(–40) cm tall, erect, wiry, often with a reddish tint, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, often with a reddish tint, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules < 0.5 mm long, a fringe or hairs; leaf blades linear, 4–8 cm long, 1–1.5 mm wide, plane or conduplicate or convolute, thin, apex acute, margins entire with one or two long hairs basally of the blade, these occasionally papillose, adaxial surface glabrous with very few long hairs basally, abaxial surface glabrous; vernation folded; on dry, often rocky sites.

26. *Bouteloua uniflora* Vasey

NEALLEY GRAMA

Plants perennial, cespitose; rhizomes and stolons absent; culms 35–50 cm tall, erect, slender, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent, ligules <0.5 mm long, a fringe or hairs; leaf blades linear, 2–10 cm long, 1–2 mm wide, plane or involute, firm-textured, apex acute, margins entire with a few long, soft hairs,

adaxial surface glabrous with a few long, soft hairs basally, abaxial surface glabrous; vernation folded; frequent in rocky, limey soils.

27. *Bromus catharticus* Vahl

RESCUEGRASS

Plants perennial, caespitose; rhizomes and stolons absent; culms 50–80 cm tall, erect or geniculate, firm, glabrous, not swollen at the base, young shoots soft, succulent and laterally compressed; culm nodes glabrous; leaf sheaths rounded, pilose or densely puberulent externally, rarely glabrous, margins closed to within a few centimeters of the ligules, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 2–5 mm long, membranous, acute, margins erose; leaf blades linear, 10–30 cm long, 5–12 mm wide, plane, firm-textured, often with a yellowish band immediately above the ligules, apex acute, margins entire, adaxial and abaxial surfaces glabrous or hirsute; midnerve conspicuous abaxially; vernation folded; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common grass of roadsides.

28. *Bromus japonicus* Thunb. ex Murray

JAPANESE BROME

Plants annual, caespitose; rhizomes and stolons absent; culms 30–60 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes retrorsely pubescent; leaf sheaths rounded, retrorsely pilose externally, margins entire; collar continuous, glabrous, margins closed to within a few centimeters of the throat, entire; auricles absent; ligules 0.5–1.5 mm long, membranous, obtuse, margins erose or ciliate; leaf blades linear, 5–15 cm long, 2–7 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces pilose or puberulent; vernation rolled; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common grass of roadsides.

29. *Bromus pubescens* Muhl. ex. Willd.

CANADA BROME

Plants perennial, cespitose; rhizomes and stolons absent; culms 70–140 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes pubescent; leaf sheaths rounded, open, lower sheaths pilose externally, upper sheaths pubescent, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 0.5–2 mm long, membranous, truncate, margins erose, occasionally sparsely ciliate; leaf blades linear, 10–30 cm long, 5–10 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous, less frequently sparsely hirsute, abaxial surface glabrous; vernation rolled; in moist woodlands, often along streambanks.

30. *Bromus secalinus* L.

RYE BROME

Plants annual, solitary or cespitose; rhizomes and stolons absent; culms 30–90 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes retrorsely pubescent; leaf sheaths rounded, glabrous or sparsely pilose externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, truncate, margins erose; leaf blades linear, 10–25 cm long, 3–8 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous or scabrous, occasionally pilose; vernation rolled; along roadsides, ditches and disturbed sites.

31. *Bromus tectorum* L.

DOWNY BROME

Plants annual, cespitose; rhizomes and stolons absent; culms 25–60 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, pubescent externally, margins entire; collar continuous, narrow, pubescent, margins closed to within a few centimeters of

the ligules, entire; auricles absent; ligules 1–2.5 mm long, membranous, acute, margins erose or lacerate; leaf blades linear, 5–12 cm long, 2–6 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces pubescent; vernation rolled; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common grass of roadsides.

32. *Bromus texensis* (Shear) A. S. Hitchc.

TEXAS BROME

Plants annual, solitary or cespitose; rhizomes and stolons absent; culms 40–75 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes pubescent; leaf sheaths rounded, pubescent externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, truncate, margins erose; leaf blades linear, 10–40 cm long, 3–7 mm wide, plane, thin, soft, apex acute, margins entire, adaxial and abaxial surfaces pubescent; vernation rolled; mainly in the shade of thickets and oak motts.

33. *Buchloë dactyloides* (Nutt.) Engelm.

BUFFALOGRASS

Plants perennial, mat-forming; rhizomes absent, stolons with alternating elongated and bunched internodes; culms 5–10 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire, hyaline; collar continuous, glabrous, margins pilose; auricles absent; ligules 0.5 mm long, a fringe or hairs; leaf blades linear, 2–12 (rarely -20) cm long, 1–2.5 mm wide, plane, firm-textured, apex attenuate, margins entire, occasionally with papillose hairs, adaxial surface glabrous or sparsely hispid, occasionally with papillose hairs, abaxial surfaces glabrous or sparsely hispid; vernation folded; frequent in the short-grass prairies and heavily grazed tall-grass regions and on mowed roadsides.

34. *Cenchrus longispinus* (Hack.) Fern.

LONGSPINE SANDBUR

Plants annual, cespitose; rhizomes and stolons absent; culms 10–90 cm tall, geniculate or decumbent, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous externally, margins distinct, open, pilose; collar continuous, glabrous, margins ciliate; auricles absent; ligules 0.5–2 mm long, ciliate with a minute, membranous base; leaf blades linear, 6–20 cm long, 3–7 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces scabrous; vernation folded; infrequent on disturbed sites.

35. *Cenchrus myosuroides* Kunth in H.B.K.

BIG SANDBUR

Plants perennial, solitary or forming large clusters; rhizomes and stolons absent; culms 70–200 cm tall, erect, firm, stout, glabrous, arising from a hard, knotty, subrhizomatous base; culm nodes glabrous, slightly swollen; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 0.5–1 mm long, membranous, truncate, margins ciliate with hairs 1–2 mm long; leaf blades linear, 12–40 cm long, 4–13 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface scabrous, occasionally sparsely pilose, abaxial surface glabrous; vernation folded; frequent in brushy ravines, ditches and along stream courses.

36. *Cenchrus spinifex* A. Cavanilles

COMMON SANDBUR

Plants annual, solitary or forming small clusters; rhizomes and stolons absent; culms 8–80 cm tall, erect or geniculate, the outermost culms of a tuft decumbent, firm, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths laterally compressed, glabrous or

sparsely pilose externally, margins distinct, open, entire, hyaline; collar continuous, glabrous, margins sparsely ciliate; auricles absent; ligules <0.5 mm long, membranous, truncate, margins ciliate with hairs 0.5–1 mm long; leaf blades linear, 2–18 cm long, 2–6 mm wide, plane, firm-textured, apex acute, margins entire or scaberulous, adaxial surface glabrous with a few long, soft hairs behind the ligules, abaxial surface glabrous; vernation folded; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common grass of roadsides and pastures.

37. *Chasmanthium latifolium* (Michx.) Yates

BROADLEAF WOODOATS

Plants perennial, cespitose; rhizomes short, hard, knotty, stolons absent; culms 50–150 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous, often reddish-purple-colored; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 0.5–1 mm long, ciliate with a minute, membranous base; leaf blades lanceolate, 9–20 cm long, 10–20 mm wide, plane, firm-textured, apex acuminate, margins entire, adaxial surface glabrous, sparsely pilose basally, abaxial surface glabrous; vernation rolled; along streambanks and in moist woodlands.

38. *Chloris* × *subdolichostachya* Muell.

SHORTSPIKE WINDMILLGRASS

Plants perennial, cespitose, rhizomes absent, stolons present; culms 30–70(–90) cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaves mostly basal; leaf sheaths laterally compressed, keeled, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 0.5–1 mm long, ciliate with a minute, membranous base; leaf blades linear, 10–20(–30) cm long, 1.5–3 mm wide, plane, firm-textured, apex mucronate, margins entire, adaxial and

abaxial surfaces glabrous or scabrous; vernation folded; on sand, clay and disturbed sandy sites.

39. *Chloris andropogonoides* Fourn.

SLIMSPIKE WINDMILLGRASS

Plants perennial, cespitose; rhizomes and stolons absent or short if present; culms 10–40 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths slightly laterally compressed laterally, weakly keeled, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules to 1 mm long, membranous, truncate, margins erose, occasionally sparsely ciliate; leaf blades linear, 5–20 cm long, 2–4 mm wide, plane, firm-textured, apex mucronate, margins entire, adaxial surface glabrous or scabrous, sparsely pilose basally, abaxial surface glabrous or scabrous; vernation folded; in open pastures, lawns and along roadsides.

40. *Chloris ciliata* Sw.

FRINGED CHLORIS

Plants perennial, cespitose; rhizomes and stolons absent; culms 25–60 cm tall, erect, slender, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar divided, glabrous, margins entire; auricles absent; ligules <0.5 mm long, membranous, truncate, margins ciliate, ligules occasionally absent; leaf blades linear, 10–20 cm long, 3–5 mm wide, plane, firm-textured, apex attenuate, margins entire, adaxial surface glabrous or scabrous, occasionally sparsely hirsute basally, abaxial surface glabrous or scabrous; vernation folded; on heavy loam, often along road right-of-ways, sometimes in silty or sandy soils.

41. *Chloris cucullata* Bisch.

HOODED WINDMILLGRASS

Plants perennial, cespitose; rhizomes and stolons absent or short if present;

culms 15–60 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous externally, margins distinct, open, entire, wide, papery; collar continuous, glabrous, yellowish, margins entire; auricles absent; ligules 0.5–1 mm long, membranous, truncate, margins ciliate; leaf blades linear, 3–20 cm long, 2–4 mm wide, tightly conduplicate, firm-textured, apex obtuse, margins entire, adaxial and abaxial surfaces glabrous or scabrous; vernation folded; in pastures and along roadsides and in lawns, parks and waste sites.

42. *Chloris divaricata* R. Br.

Plants perennial, solitary or occasionally mat-forming; rhizomes absent, stolons short; culms 30–50 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins hirsute; auricles absent; ligules <0.5 mm long, membranous, truncate, margins ciliate; leaf blades linear, 5–10 cm long, 1–1.5 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous or scabrous, often with a few long, soft hairs immediately above the ligules, abaxial surface glabrous or scabrous; vernation rolled; on open, dry sites, infrequent.

43. *Chloris verticillata* Nutt.

WINDMILLGRASS

Plants perennial, caespitose; rhizomes and stolons absent; culms 14–50 cm tall, erect or geniculate or decumbent; firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous externally, margins distinct, open, entire, hyaline; collar divided, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, truncate, margins ciliate, often with a few long hairs at the edges; leaf blades linear, 2–15 cm long, 1–3 mm wide, conduplicate, firm-textured, apex obtuse or mucronate, margins entire, often whitish, adaxial and abaxial surfaces glabrous or

scabrous; vernation folded; along roadsides, lawns, parks and disturbed sites in heavy sand or gravelly soils.

44. *Chloris virgata* Sw.

SHOWY CHLORIS

Plants annual, cespitose; rhizomes and stolons absent, short if present; culms 50–100 cm tall, geniculate or decumbent, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheath rounded, keeled, glabrous externally, occasionally pilose near the throat, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 0.5–1 mm long, membranous, truncate, margins ciliate; leaf blades linear, 10–30 cm long, 2–6 mm wide, plane or conduplicate, firm-textured, apex obtuse or mucronate, margins entire, sparsely villous basally, adaxial surface glabrous, sparsely villous basally, abaxial surface glabrous; vernation folded; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common grass of roadsides.

45. *Cynodon dactylon* (L.) Pers.

BERMUDAGRASS

Plants annual, more often perennial, mat-forming; rhizomes elongate, stolons present; culms 10–50 cm tall, geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaves distichous on the culm; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, narrow, glabrous, margins entire with a few long hairs; auricles absent; ligules < 0.5 mm long, membranous, truncate, margins ciliate; leaf blades linear, 3–8(–14) cm long, 1–3(–4) mm wide, plane or conduplicate, firm-textured, often glaucous, apex obtuse, margins entire, adaxial surface glabrous or scabrous, abaxial surface glabrous; vernation rolled; common lawn or pasture grass, frequently along roadsides, in ditches, vacant lots and along streams and lakes.

46. *Dactyloctenium aegyptium* (L.) Beauv.

DURBAN CROWFOOTGRASS

Plants annual, caespitose or mat-forming, rhizomes and stolons absent; culms 10–60 cm tall, erect or geniculate, the outermost culms of a tuft decumbent, weak, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous externally, occasionally with a few papillose hairs on the keel just below the collar, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules ± 0.5 mm long, membranous, truncate, margins sparsely ciliate; leaf blades linear, 3–25 cm long, 2–8 mm wide, plane or conduplicate, firm-textured, apex acuminate, margins pilose with papillose hairs, adaxial and abaxial surfaces glabrous; vernation folded; often along intermittent creek beds and moist ravines in sandy soils.

47. *Desmazeria rigida* (L.) T. Tutin

STIFFGRASS

Plants annual, caespitose; rhizomes and stolons absent; culms 4–10(–18) cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire, upper margins thin, hyaline; collar continuous, glabrous, margins entire; auricles absent; ligules 1.5–4 mm long, membranous, decurrent on either side as sheath margins, obtuse, margins lacerate; leaf blades linear, 2–8(–12) cm long, 1–3(–4) mm wide, plane, soft, apex acute, margins entire, adaxial surface glabrous or scabrous, abaxial surface glabrous; vernation folded; along roadsides, field borders, ditches and disturbed sites.

48. *Dichanthium annulatum* (Forssk.) Stapf

KLEBERG BLUESTEM

Plants perennial, caespitose; rhizomes and stolons absent, elongate if present; culms 70–100 cm tall, erect or decumbent, firm, glabrous, not swollen at the

base; culm nodes pubescent; leaf sheaths rounded, shorter than the adjacent culm internodes, glabrous externally, margins distinct, open, entire; collar continuous, sparsely pubescent, margins entire; auricles absent; ligules ± 1 mm long, membranous, hyaline, margins, margins erose; leaf blades linear, 6–25 cm long, 3–6 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous or sparsely hispid with papillose hairs, abaxial surface glabrous; vernation rolled; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common grass of roadsides and pastures.

49. *Digitaria californica* (Benth.) Henr.

CALIFORNIA COTTONTOP

Plants perennial, cespitose; rhizomes and stolons absent; culms 50–100 cm tall, erect, firm, glabrous, arising from a hard, knotty, subrhizomatous base covered with densely pubescent, scale-like leaves; culm nodes glabrous; leaf sheaths rounded, lower sheaths pubescent externally, upper sheaths glabrous or sparsely pubescent externally, margins distinct, open, lower sheath margins entire, upper sheath margins sparsely ciliate; collar continuous, glabrous, margins entire; auricles absent; ligules 1–3 mm long, membranous, truncate, margins erose; leaf blades linear, 2–12 cm long, 2–5 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation folded; on open, well-drained soils.

50. *Digitaria ciliaris* (Retz.) Koel.

SOUTHERN CRABGRASS

Plants annual, mat-forming; rhizomes and stolons absent; culms 10–30 cm tall, decumbent or prostrate, weak, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths rounded, keeled, pilose externally with papillose hairs, margins distinct, open, entire; collar continuous, occasionally divided, glabrous, margins pilose; auricles absent;

ligules 0.5–2.5 mm long, membranous, truncate, margins erose; leaf blades linear, 3–10 cm long, 5–10 mm wide, plane, firm-textured, apex acute, margins entire, undulate, white-colored, adaxial and abaxial surfaces glabrous or sparsely pilose with papillose hairs; vernation rolled; frequent along road right-of-ways and field borders and in lawns and gardens.

51. *Digitaria cognata* (Schult.) Pilger

FALL WITCHGRASS

Plants perennial, solitary or forming small clusters; rhizomes absent or elongate if present, stolons absent; culms 30–80 cm tall, erect, firm, glabrous, arising from a hard, knotty, subrhizomatous base if not rhizomatous, freely branched at the base; culm nodes glabrous; leaf sheaths rounded, pilose externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules ± 0.5 mm long, membranous, truncate, margins erose; leaf blades linear, 2–8 cm long, 2–6 mm wide, plane, firm-textured, apex acute, margins entire, undulate; adaxial surface sparsely pubescent, sparsely pilose basally, abaxial surface, sparsely pubescent; vernation rolled; on loose sandy prairies.

52. *Digitaria insularis* (L.) Fedde

SOURGRASS

Plants perennial, cespitose; rhizome absent, stolons absent; culms 70–150 cm tall, erect, firm, glabrous, arising from a hard, knotty base; culm nodes glabrous, leaf sheaths rounded, lower sheaths pubescent externally, upper sheaths glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–3 mm long, membranous, truncate, margins erose; leaf blades linear, 12–40 cm long, 4–10 mm wide, plane, firm-textured, apex acuminate, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; frequent in ditches and moist or wet depressions.

53. *Digitaria patens* (Swallen) Henr.

TEXAS COTTONTOP

Plants perennial, cespitose; rhizomes and stolons absent; culms 40–90 cm tall, erect, firm, glabrous, arising from a hard, knotty base covered with densely pubescent, scale-like leaves; culm nodes glabrous; leaf sheaths rounded, pubescent externally, margins distinct, open, entire or sparsely ciliate; collar continuous, glabrous, margins entire; auricles absent; ligules 1–4 mm long, membranous, truncate, margins erose; leaf blades linear, 4–12 cm long, 2–3 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation folded; in well-drained, usually sandy soils.

54. *Digitaria sanguinalis* (L.) Scop.

HAIRY CRABGRASS

Plants annual, mat-forming; rhizomes and stolons absent; culms 10–30 cm tall, decumbent or prostrate, weak, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths rounded, keeled, pilose externally with papillose hairs, margins distinct, open, entire; collar continuous, occasionally divided, glabrous, margins pilose; auricles absent; ligules 0.5–2.5 mm long, membranous, truncate, margins erose; leaf blades linear, 3–10 cm long, 5–10 mm wide, plane, firm-textured, apex acute, margins entire, undulate, white-colored, adaxial and abaxial surfaces glabrous with a few papillose hairs concentrated basally or wholly pilose with papillose hairs; vernation rolled; frequent along road right-of-ways and field borders and in lawns and gardens.

55. *Echinochloa colona* (L.) Link

JUNGLE RICE

Plants annual, cespitose; rhizomes and stolons absent; culms 10–70 cm tall, erect or geniculate; or decumbent, weak, glabrous, not swollen at the base;

culm nodes glabrous; leaf sheaths slightly laterally compressed laterally, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules absent; leaf blades linear, 5–30 cm long, 3–6(–9) mm wide, plane, thin, often colored with purple bands, “V’s” or blotches, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; common grass of ditches, lawns, gardens and other disturbed sites.

56. *Echinochloa crus-galli* (L.) Beauv.

BARNYARDGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 30–100(–200) cm tall, erect or geniculate, the outermost culms of a tuft decumbent, firm, glabrous, not swollen at the base; culm nodes glabrous, slightly swollen; leaf sheaths slightly laterally compressed laterally, glabrous externally, margins distinct, open, entire; collar continuous, wide, glabrous, margins entire; auricles absent; ligules absent; leaf blades linear, 10–40 cm long, 5–25 mm wide, plane or v-shaped, firm-textured, apex acute, margins serrulate, sparsely pilose near base, often undulate, adaxial surface glabrous, occasionally sparsely hirsute, abaxial surface glabrous; vernation rolled; occasionally along roadsides, ditchbanks and field borders.

57. *Echinochloa crus-pavonis* (Kunth) Schult.

Plants annual, solitary or forming small clusters; rhizomes and stolons absent; culms 30–100(–200) cm tall, geniculate or decumbent, firm, stout, glabrous, not swollen at the base; culm nodes glabrous, slightly swollen; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules absent; leaf blades linear, 15–40 cm long, 7–20 mm wide, plane, firm-textured, green-colored or purplish, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; along roadsides, ditches, field borders and moderately disturbed sites.

58. *Echinochloa muricata* (Beauv.) Fern.

Plants annual, solitary or forming small clusters; rhizomes and stolons absent; culms 80–150 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous, slightly swollen; leaf sheaths rounded, the lower sheaths distichous, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire, often with 1–2 long, soft hairs on each side; auricles absent; ligules absent; leaf blades linear, 10–40 cm long, 1–2.5 mm wide, plane, firm-textured, apex acute, margins serrulate, adaxial and abaxial surfaces glabrous; vernation rolled; in moist, open sites, usually along ditches and ponds.

59. *Eleusine indica* (L.) Gaertn.

GOOSEGRASS

Plants annual, cespitose; rhizomes absent, stolons occasionally present; culms 15–70 cm tall, erect or geniculate, the outermost culms of a tuft decumbent, firm, slightly compressed, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous or sparsely villous externally, margins distinct, open, entire, often sparsely hispid basally; collar continuous, glabrous, margins pilose; auricles absent; ligules 0.5–1 mm long, membranous, truncate, margins entire or lacerate; leaf blades linear, 5–35 cm long, 3–8 mm wide, plane or conduplicate, keeled at the base, firm-textured, apex obtuse, margins entire, occasionally sparsely villous, adaxial surface glabrous, occasionally sparsely villous basally, abaxial surface glabrous; vernation rolled; common grass of ditches, lawns, gardens and other disturbed sites.

60. *Elymus canadensis* L.

CANADA WILDRYE

Plants perennial, cespitose; rhizomes and stolons absent; culms 80–150 cm tall, typically decumbent, firm, tough, glabrous, not swollen at the base; culm

nodes glabrous; leaf sheaths rounded, glabrous externally, occasionally pilose, margins distinct, open, antrorsely ciliate; collar continuous, broad, glabrous, margins entire; auricles present, to 2.5 mm long, present on both sides; ligules 0.5–1 mm long, membranous, truncate, margins entire; leaf blades linear, 15–40 cm long, 4–12 mm wide, plane or conduplicate, firm-textured, apex attenuate, margins entire, adaxial surface glabrous, scabrous, or pubescent, abaxial surface glabrous; vernation rolled; mostly in shaded sites, along fence rows, woods borders and in moist ravines.

61. *Elymus virginicus* L.

VIRGINIA WILDRYE

Plants perennial, cespitose; rhizomes and stolons absent; culms 60–120 cm tall, erect or geniculate, occasionally decumbent, firm, tough, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, occasionally pilose, margins distinct, open, entire; collar continuous, broad, glabrous, often purplish, margins entire; auricles present, to 3.0 mm long; ligules 0.5–1 mm long, membranous, margins truncate, erose, ciliolate; leaf blades linear, 10–30 cm long, 5–15 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous, scabrous, or pubescent, abaxial surface glabrous; vernation rolled; mostly in shaded banks, along fence rows, and open woodlands.

62. *Eragrostis barrelieri* Daveau

MEDITERRANEAN LOVEGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 25–55 cm tall, geniculate or decumbent, firm, glabrous, usually with a yellowish band of glandular tissue just below each node, not swollen at the base; culm nodes glabrous, branched at the lower nodes; leaf sheaths rounded, shorter than the adjacent culm internodes, glabrous externally, margins distinct, open, entire; collar continuous, pilose, margins pilose; auricles absent, ligules <0.5 mm

long, a fringe or hairs; leaf blades linear, 3–10 cm long, 1–5 mm wide, plane, firm-textured, apex acute, involute, margins entire, adaxial and abaxial surfaces glabrous or sparsely pilose; vernation folded; along roadsides and on disturbed sites.

63. *Eragrostis cilianensis* (All.) Janchen

STINKGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 10–60 cm tall, erect or geniculate, firm, glabrous, usually with a ring of glands just below each node, not swollen at the base, freely branched at the base; culm nodes glabrous; leaf sheaths rounded, weakly keeled, shorter than the adjacent culm nodes, glabrous externally, usually with glands on the keel and some of the other nerves, margins distinct, open, entire; collar continuous, glabrous, margins pilose; auricles absent; ligules to 1 mm long, a fringe or hairs; leaf blades linear, 10–20 cm long, 2.5–7 mm wide, plane or V-shaped, firm-textured, apex acute, margins entire or pilose with papillose hairs, adaxial surface glabrous with glands on the midnerve, abaxial surface glabrous, midnerve conspicuous, white-colored; vernation rolled; mostly on disturbed sites.

64. *Eragrostis curtispedicellata* Buckl.

GUMMY LOVEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 20–60 cm tall, erect or geniculate, firm, glabrous, viscid, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous or pilose externally, often viscid, margins distinct, overlapping, entire, occasionally one or both margins ciliate; collar continuous, glabrous, margins pilose; auricles absent; ligules <0.5 mm long, a fringe or hairs; leaf blades linear, 5–10 cm long, 2–4 mm wide, plane or involute, typically bending sharply ($\pm 90^\circ$) away from the culm, firm-textured, apex attenuate, margins entire, adaxial surface glabrous, sparsely villous

immediately above the ligules, abaxial surface glabrous; vernation rolled; in sandy and clay soil.

65. *Eragrostis curvula* (Schrad.) Nees

WEeping LOVEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 75–150 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, keeled, shorter than the adjacent culm internodes, glabrous externally, the lowest sheaths hispid; margins distinct, open, entire; collar continuous, glabrous, margins pilose; auricles absent; ligules 0.5–1 mm long, a fringe or hairs; leaf blades linear or filiform, 20–30 cm long, 1–1.5 mm wide, involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces scabrous; vernation rolled; along roadsides, in fields and in sandy sites.

66. *Eragrostis intermedia* A. S. Hitchc.

PLAINS LOVEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 55–90 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, inner margins entire, outer margins ciliate, occasionally both margins ciliate; collar continuous, pilose, margins pilose; auricles absent; ligules <0.5 mm long, a fringe or hairs; leaf blades linear, 15–20 cm long, 2–3 mm wide, plane, firm-textured, apex attenuate, margins entire, adaxial surface glabrous, sparsely hirsute at the base and behind the ligules, abaxial surface glabrous; vernation rolled; on sand, clay and rocky sites.

67. *Eragrostis lugens* Nees

MOURNING LOVEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 35–70 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes

glabrous; leaf sheaths rounded, glabrous externally, margins distinct, overlapping, entire; collar continuous, glabrous, margins hirsute; auricles absent; ligules ± 1 mm long, a fringe or hairs; leaf blades linear, 8–20 cm long, 1–2 mm wide, involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; on sandy sites.

68. *Eragrostis pectinacea* (Michx.) Nees ex Steud.

SPREADING LOVEGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 30–55 cm tall, erect or geniculate, the outermost culms of a tuft decumbent, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, weakly keeled, shorter than the adjacent culm internodes, glabrous externally, margins entire; collar continuous, glabrous, margins distinct, open, pilose; auricles absent; ligules < 0.5 mm, ciliate; leaf blades linear or lanceolate, 8–18 cm long, 3–7 mm wide, plane or conduplicate, firm-textured, apex acute, margins entire, adaxial surface scabrous, abaxial surface glabrous; vernation rolled; along roadsides and field borders, on disturbed sites.

69. *Eragrostis reptans* (Michx.) Nees

CREEPING LOVEGRASS

Plant annual, mat-forming; rhizomes and stolons absent; culms 5–10(–20) cm tall, decumbent or prostrate, wiry, pubescent, less frequently glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes pubescent; leaf sheaths rounded, shorter than the adjacent culm internodes, pubescent externally, less frequently glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules < 0.5 mm long, a fringe or hairs; leaf blades linear, 1–4 cm long, 1–2 mm wide, plane or conduplicate, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces pubescent, less frequently glabrous; vernation rolled; along the

shores of lakes, streams and marshy sites, frequent and abundant on the exposed beds of lakes and streams following periods of drought, usually in dense, clayey soils.

70. *Eragrostis secundiflora* Presl

RED LOVEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 30–75 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, overlapping, entire, occasionally the outer margins or both margins pilose; collar continuous, glabrous, margins pilose; auricles absent; ligules <0.5 mm long, a fringe or hairs; leaf blades linear, 10–15 cm long, 2–2.5 mm wide, plane or involute, firm-textured, apex acute, margins entire, adaxial surface glabrous with a few long, soft hairs basally, abaxial surface glabrous; vernation rolled; on prairies and in woods openings in sandy soil.

71. *Eragrostis spectabilis* (Pursh) Steud.

PURPLE LOVEGRASS

Plants perennial, cespitose; rhizomes short, knotty, stolons absent; culms 40–75 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, pilose externally, margins distinct, overlapping, entire, occasionally the outer margins or both margins pilose; collar continuous, pilose, margins pilose; auricles absent; ligules <0.5 mm long, a fringe or hairs; leaf blades linear, 15–40 cm long, 3–7 mm wide, plane, firm-textured, apex attenuate, margins entire, adaxial surface glabrous or pilose, often glabrous, pilose basally, abaxial surface glabrous or pilose; vernation rolled; in sandy and disturbed soil.

72. *Eragrostis superba* Wawra & Peyr.

WILLMANN LOVEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 20–120 cm

tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, pilose; collar continuous, glabrous, margins entire; auricles absent; ligules to 1 mm long, a fringe or hairs; leaf blades linear, 10–40 cm long, 2–10 mm wide, plane or involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; on open, dry sites, infrequent.

73. *Eragrostis trichodes* (Nutt.) Wood

SAND LOVEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 70–110 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, occasionally hirsute, margins distinct, overlapping, entire, occasionally villous; collar continuous, glabrous, margins pilose; auricles absent; ligules <0.5 mm long, a fringe or hairs; leaf blades linear, 15–40 cm long, 1–8 mm wide, plane with an involute tip, firm-textured, apex acute, margins entire, adaxial surface glabrous, sparsely hirsute at the base, abaxial surface glabrous; vernation rolled; on sandy prairies and in open woods.

74. *Eriochloa contracta* A. S. Hitchc.

PRAIRIE CUPGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 30–70 cm tall, erect or geniculate, firm, glabrous or puberulent, not swollen at the base; culm nodes puberulent; leaf sheaths rounded, puberulent externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules to 1 mm long, ciliate with a minute, membranous base; leaf blades linear, 3–20 cm long, 2–7 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces puberulent; vernation rolled; often occurring along ditches, low field borders, swales and water courses in moist soils.

75. *Eriochloa sericea* (Scheele) Munro ex Vasey

TEXAS CUPGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 50–100 cm tall, erect, firm, pubescent, not swollen at the base; culm nodes antrorsely pubescent with very short hairs; leaf sheaths rounded, pubescent externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules to 1 mm long, ciliate with a minute, membranous base; leaf blades linear, 10–30 cm long, 2–3 mm wide, plane or involute, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces pubescent, less frequently glabrous; vernation rolled; on prairies and in grassy openings.

76. *Erioneuron pilosum* (Buckl.) Nash

HAIRY TRIDENS

Plants perennial, cespitose; rhizomes and stolons absent; culms 10–30 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, keeled, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins pilose; auricles absent; ligules <0.5 mm long, a fringe of hairs; leaf blades linear, 2–8(–11) cm long, 1–2 mm wide, plane, often conduplicate, firm-textured, apex abruptly acute, hardened, margins entire, cartilaginous, white-colored, adaxial surface glabrous, occasionally antrorsely pilose, abaxial surface glabrous; midnerve conspicuous abaxially, white-colored; vernation folded; frequent along road right-of-ways, occasional on open rangelands and in pastures.

77. *Festuca versuta* Beal

TEXAS FESCUE

Plants perennial, cespitose; rhizomes and stolons absent; culms 50–100 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 0.5–1 mm long,

membranous, truncate, margins entire; leaf blades linear, 10–40 long, 2–5 mm wide, plane or loosely folded, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; on moist, partially shaded sites, infrequent.

78. *Glyceria striata* (Lam.) A. S. Hitchc.

FOWL MANNAGRASS

Plants perennial, cespitose; rhizomes absent or short when present, stolons absent; culms 40–90 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous or scaberulous externally, margins closed to within a few centimeters of the ligules, entire; collar continuous, often inconspicuous, glabrous, margins entire; auricles absent; ligules 1.5–4 mm long, membranous, truncate, margins erose; leaf blades linear, 5–25 cm long, 2–8 mm wide, plane or V-shaped, firm-textured, apex obtuse, often prow-shaped, margins entire, adaxial surface glabrous, often scaberulous, median lines present, abaxial surface glabrous; vernation folded; along streams and moist woods borders, infrequent.

79. *Heteropogon contortus* (L.) Beauv. ex Roem. & Schult.

TANGLEHEAD

Plants perennial, cespitose; rhizomes and stolons absent; culms 20–80 cm tall, erect, firm, glabrous, not swollen at the base, lateral branches basally fastigiate, few branches at the upper nodes; culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous externally, occasionally sparsely villous, margins distinct, open, entire; collar continuous, glabrous, margins sparsely villous; auricles absent; ligules to 1 mm long, membranous, often brown-colored, truncate, margins ciliate; leaf blades linear, 6–20 cm long, 4–6(–10) mm wide, plane, occasionally conduplicate, firm-textured, apex acute, margins entire, often sparsely pilose basally with papillose hairs, adaxial and abaxial

surfaces glabrous; vernation folded; frequent in grasslands, usually in sandy soil.

80. *Hilaria belangeri* (Steud.) Nash

COMMON CURLYMESQUITE

Plants perennial, cespitose; rhizomes absent, stolons wiry; culms 10–30 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes villous, the lower nodes densely so; leaf sheaths rounded, glabrous externally, margins distinct, overlapping, entire; collar continuous, glabrous, margins entire, often with 1 or 2 long hairs on both sides; auricles absent; ligules 0.5–1 mm long, membranous, obtuse or truncate, margins lacerate; leaf blades linear, 5–20 cm long, 1–2(–3) mm wide, plane or arcuate, firm-textured, apex acuminate, margins entire, adaxial and abaxial surfaces glabrous or sparsely pilose with papillose hairs; vernation rolled; on rocky slopes, dry hillsides and grassy or brushy plains.

81. *Hordeum murinum* Cory & Parks

HARE BARLEY

Plants annual, cespitose; rhizomes and stolons absent; culms 15–60 cm tall, erect or geniculate, thick, succulent, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous or sparsely hispid externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles present, to 2 mm long; ligules 0.5–1 mm long, membranous, truncate, margins erose; leaf blades linear, 6–15 cm long, 3–8 mm wide, plane, weak, apex acute, margins entire, adaxial surface glabrous or hispid, abaxial surface glabrous; vernation folded; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common grass of roadsides.

82. *Hordeum pusillum* Nutt.

LITTLE BARLEY

Plants annual, cespitose; rhizomes and stolons absent; culms 10–40 cm tall,

erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, pubescent externally, less frequently glabrous, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent or, when present, minute, <1 mm long; ligules <0.5 mm long, membranous, truncate, margins entire; leaf blades linear, 3–12 cm long, 2–4(–5) mm wide, plane or U-shaped, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces pubescent, occasionally glabrous; vernation rolled; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common grass of roadsides.

83. *Hordeum vulgare* L.

BARLEY

Plants annual, cespitose; rhizomes and stolons absent; culms 50–120 cm tall, erect, thick, succulent, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles present, ±2 mm long; ligules 1–3 mm long, membranous, truncate, margins entire; leaf blades linear, 10–45 cm long, 5–15 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface scabrous, abaxial surface glabrous; vernation rolled; occasionally along roadsides and field borders.

84. *Leersia oryzoides* (L.) Sw.

RICE CUTGRASS

Plants perennial, cespitose; rhizomes slender, stolons absent; culms 80–150 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes retrorsely pubescent; leaf sheaths rounded, retrorsely scabrous externally, margins distinct, open, entire; collar continuous, glabrous or sparsely pubescent, margins entire, occasionally sparsely pubescent; auricles absent; ligules 0.5–2 mm long, membranous, firm-textured, truncate, margins erose; leaf blades linear; 8–30 cm long, 7–10 mm wide, plane, firm-textured,

apex acute, margins serrate, adaxial and abaxial surfaces retrorsely scabrous; midnerve serrate abaxially; vernation rolled; mostly along lakes, rivers, marshes and wet ditches in saturated soils.

85. *Leptochloa dubia* (Kunth in H.B.K.) Nees

GREEN SPRANGLETOP

Plants perennial, cespitose; rhizomes and stolons absent; culms 30–110 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, the lowermost sheaths compressed, keeled and pilose externally, margins distinct, open, entire; collar continuous, glabrous, occasionally sparsely pubescent, margins entire; auricles absent; ligules <0.5 mm long, membranous, truncate, margins ciliate; leaf blades linear, 5–30 cm long, 2–6(–8) mm wide, plane, becoming involute upon drying, firm-textured, glaucous, apex acute, margins entire, adaxial and abaxial surfaces glabrous or scabrous or sparsely pilose; vernation folded; on dry, rocky slopes, dry hillsides and grassy or brushy plains.

86. *Leptochloa fascicularis* (Lam.) Gray

BEARDED SPRANGLETOP

Plants annual, cespitose; rhizomes and stolons absent; culms 50–100 cm tall, erect or geniculate, the outermost culms of a tuft decumbent, firm, somewhat succulent, glabrous, not swollen at the base, lateral branching moderate; culm nodes glabrous; leaf sheaths rounded, the lowermost sheaths weakly keeled, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 2–6 mm long, membranous, hyaline, acute, margins lacerate, with lateral lobes resembling erect leaf sheath auricles; leaf blades linear, 5–35 cm long, 2–7 mm wide, plane or involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces glabrous or sparsely hispid; vernation rolled; along lakes, ponds, swales and the banks of sluggish streams in muddy or wet, clayey soils.

87. *Leptochloa mucronata* (Michx.) Kunth

RED SPRANGLETOP

Plants annual, cespitose; rhizomes and stolons absent; culms 10–80 cm tall, decumbent, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, pilose externally with papillose hairs, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, truncate, margins erose, occasionally sparsely ciliate; leaf blades linear, 2–20 cm long, 1–10 mm wide, plane, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces pilose, often with papillose hairs basally; vernation rolled; along road right-of-ways and ditches, in pastures and gardens.

88. *Leptochloa uninervia* (Presl) A. S. Hitchc. & Chase

MEXICAN SPRANGLETOP

Plants annual, cespitose; rhizomes and stolons absent; culms 75–130 cm tall, erect or geniculate, firm, somewhat succulent, glabrous, not swollen at the base, lateral branching moderate; culm nodes glabrous; leaf sheaths rounded, the lowermost sheaths weakly keeled, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 2–4 mm long, membranous, hyaline, acute, margins lacerate, with lateral lobes resembling erect leaf sheath auricles; leaf blades linear, 5–35 cm long, 3–6 mm wide, plane or involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces scaberulous; vernation rolled; along streams, ditches, swales and muddy ponds.

89. *Limnodea arkansana* (Nutt.) L. H. Dewey

OZARKGRASS

Plants annual, solitary or forming small clusters; rhizomes and stolons absent; culms 20–60 cm tall, erect, weak, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous or hispid externally, margins

distinct, open, entire; collar continuous, oblique, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, obtuse, margins lacerate; leaf blades linear, 3–12 cm long, 2–8 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces hispid, less frequently glabrous; vernation folded; common grass of open woodlands, streambanks, ditchbanks and brushy grasslands.

90. *Lolium perenne* L.

RYEGRASS

Plants annual or short-lived perennial, caespitose; rhizomes and stolons absent; culms 25–70 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, reddish at the base, glabrous externally, margins distinct, open, entire, upper margins thin, hyaline; collar continuous, narrow, glabrous, margins entire; auricles present, to 5 mm long; ligules 0.5–1.5 mm long, membranous, decurrent on either side as sheath margins, obtuse, margins entire; leaf blades linear, 5–20 cm long, 2–10 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation folded; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common grass of roadsides.

91. *Lolium temulentum* L.

DARNEL RYEGRASS

Plants annual, solitary or caespitose; rhizomes and stolons absent, culms 30–70 cm tall, erect or decumbent, weak, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, narrow, glabrous, margins entire; auricles present, to 1 mm long; ligules 0.5–1 mm long, membranous, truncate, margins lacerate; leaf blades linear, 6–40 cm long, 2–8 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; along roadsides, fields and waste places.

92. *Melica nitens* (Scribn.) Nutt. *ex* Piper

THREE-FLOWER MELIC

Plants perennial, caespitose; rhizomes and stolons absent; culms 50–120 cm tall, erect, firm, glabrous, arising from a hard, subrhizomatous base; culm nodes glabrous; leaf sheaths rounded, glabrous or scabrous externally, occasionally puberulent externally, margins closed to within a few mm of the throat, entire, upper margins thin, hyaline; collar continuous, glabrous, margins entire; auricles absent; ligules 3–6 mm long, membranous, decurrent on either side as sheath margins, truncate, margins erose or lacerate; leaf blades linear, 10–30 cm long, 3–10(–15) mm wide, plane, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces glabrous or scabrous, occasionally puberulent; vernation rolled; on relatively undisturbed sites in open woodlands, moist canyon slopes and bottoms and rocky grasslands.

93. *Mnesithea cylindrica* (Michx.) Koning & Sosef

CAROLINA JOINT-TAIL

Plants perennial, solitary or forming small clusters; rhizomes short, knotty; stolons absent; culms 30–100 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, weakly keeled, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 0.5–1 mm long, membranous, truncate, margins erose, ciliate; leaf blades linear, 8–30 cm long, 1.5–4 mm wide, plane or conduplicate, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; midnerve and some secondary nerves conspicuous, scabrous; vernation folded; on tall-grass prairies and along woods borders, infrequent.

94. *Muhlenbergia* × *involuta* Swallen

CANYON MUHLY

Plants perennial, caespitose; rhizomes and stolons absent; culms 60–140 cm

tall, erect, firm, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, the lower sheaths laterally compressed and weakly keeled, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 3–12 mm long, membranous, firm and brown at the base, acute, margins entire or lacerate; leaf blades linear, 10–40(–45) cm long, 2–5 mm wide, conduplicate, firm-textured, apes acute, margins entire, adaxial and abaxial surfaces glabrous; vernation folded; in rocky prairie openings and along canyons.

95. *Muhlenbergia arenacea* (Buckl.) A. S. Hitchc.

EAR MUHLY

Plants perennial, mat-forming; rhizomes slender, stolons absent; culms 10–20(–40) cm tall, decumbent, firm, glabrous, striate, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, shorter than the adjacent culm internodes, glabrous externally, margins distinct, open, entire, upper margins thin, hyaline; collar continuous, glabrous, margins entire; auricles absent; ligules to 1 mm long with lateral points 1–2 mm long appearing as erect auricles, membranous, decurrent on either side as sheath margins, truncate, margins erose or lacerate; leaf blades linear, 1–3(–6) cm long, 0.5–1.5 mm wide, plane or conduplicate or involute, often twisted, firm-textured, apex attenuate, margins entire or scabrous, cartilaginous, white-colored, adaxial and abaxial surfaces glabrous; midnerve conspicuous, white-colored; vernation folded; on sandy plains valleys, planes and along washes.

96. *Muhlenbergia lindheimeri* A. S. Hitchc.

LINDHEIMER MUHLY

Plants perennial, caespitose; rhizomes and stolons absent; culms 50–100(–150) cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, the lower sheaths laterally compressed and keeled, glabrous externally, margins distinct, open, entire, upper margins thin,

hyaline; collar continuous, glabrous, margins entire; auricles absent; ligules 8–15 mm long, membranous, firm and brown at the base, decurrent on either side as sheath margins, acute, margins lacerate; leaf blades linear, 10–45(–50) cm long, 2–3(–5) mm wide, conduplicate, firm-textured, pale green-colored or glaucous, apex acute, involute upon drying, margins entire, adaxial surface glabrous or scabrous, occasionally sparsely pubescent, abaxial surface glabrous or scabrous; vernation folded; in canyons and open sites in limestone soils.

97. *Muhlenbergia porteri* Scribn. ex Beal

BUSH MUHLY

Plants perennial, solitary or forming small clusters; rhizomes and stolons absent; culms 30–100 cm tall, decumbent, wiry, glabrous, occasionally puberulent just below the nodes, arising from a hard, knotty base; culm nodes numerous, glabrous; leaf sheaths rounded, shorter than the adjacent internodes, glabrous externally, margins distinct, open, entire, upper margins thin, hyaline; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2.5 mm long, membranous, decurrent on either side as sheath margins, truncate, margins lacerate; leaf blades linear, 2–5 cm long, 0.5–2 mm wide, plane or involute, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces scabrous; vernation folded; on dry, rocky slopes, brushy planes and along dry arroyos, usually in the protection of shrubs or cacti.

98. *Muhlenbergia reverchonii* Vasey & Scribn.

SEEP MUHLY

Plants perennial, caespitose; rhizomes and stolons absent; culms 40–80 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, scaberulous externally, margins distinct, open, entire; collar continuous, often inconspicuous, glabrous, margins entire; auricles absent; ligules 2–9 mm long, membranous, firm at the base, hyaline distally, acute,

margins lacerate; leaf blades filiform, arcuate, 8–35 cm long, 1–2 mm wide, involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces scaberulous; vernation folded; in calcareous soils.

99. *Muhlenbergia schreberi* Gmel.

NIMBLE-WILL MUHLY

Plants perennial, solitary or forming small clusters; rhizomes and stolons absent or short if present; culms 10–40(–60) cm tall, decumbent, firm, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths rounded, shorter than the adjacent internodes, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire, sparsely ciliate; auricles absent; ligules <0.5 mm long, membranous, truncate, margins erose or lacerate, ciliate; leaf blades linear, 3–8 cm long, 1–3(–4) mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous, sparsely pubescent basally, abaxial surface glabrous; vernation rolled; occasional along shaded streambanks and marshy sites, usually in moist, sandy soil.

100. *Muhlenbergia utilis* (Torr.) A. S. Hitchc.

APAREJOGRASS

Plants perennial, solitary or forming small clusters; rhizomes slender, scaly, stolons absent; culms 20–40 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules ± 0.5 mm long, membranous, truncate, margins entire or slightly erose; leaf blades filiform, 5–20 cm long, ± 0.5 (–1) mm wide, involute, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation folded; occasionally along streams and in marshy meadows in calcareous or alkaline soils.

101. *Nassella leucotricha* (Trin. & Rupr.) Pohl

TEXAS WINTERGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 30–70(–90) cm tall, geniculate, firm, glabrous, not swollen at the base; culm nodes antrorsely pubescent; leaf sheaths rounded, glabrous or pubescent externally, margins distinct, open, pilose or pubescent; collar continuous, pilose, margins pilose; auricles absent; ligules absent or if present to 1 mm long, membranous, truncate, margins entire; leaf blades linear, 10–30(–40) cm long, 2–4(–5) mm wide, plane or involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces strigose; vernation rolled; frequently on open grasslands in sandy and clayey soils.

102. *Panicum acuminatum* Sw.

WOOLLY ROSETTEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 20–70(–90) cm tall, erect, firm, distally pubescent, not swollen at the base, lateral branching sparse or ample above the base; culm nodes pubescent; leaf sheaths rounded, glabrous or pilose externally, margins distinct, open, pubescent or ciliate; collar continuous, glabrous, margins entire; auricles absent; ligules 2–4(–6) mm long, a fringe or hairs, typically with a band of short hairs below a band of long hairs or the long hairs restricted to the sides of the band of short hairs; leaf blades linear, 3–9(–15) cm long, 5–12 mm wide, plane, firm-textured, apex acute, margins entire, glabrous or ciliate, adaxial and abaxial surfaces pilose or hispid, less frequently glabrous; vernation rolled; on sandy prairies and in woodlands in sandy soil.

103. *Panicum antidotale* Retz.

BLUE PANICUM

Plants perennial, solitary or forming small clusters; rhizomes absent or short when present, stolons absent; culms 50–200(–300) cm tall, erect or geniculate,

firm, glabrous, glaucous, arising from a hard, knotty base, lateral branching sparse; culm nodes antrorsely pubescent, swollen; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins puberulent; auricles absent; ligules 0.5–1 mm long, ciliate with a minute, membranous base; leaf blades linear, 6–30 cm long, 4–12 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous, puberulent basally, abaxial surface glabrous; midnerve conspicuous; vernation rolled; along roadsides and on disturbed sites.

104. *Panicum capillare* L.

COMMON WITCHGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 20–80 cm tall, erect or geniculate, firm, glabrous, often antrorsely pubescent toward the nodes, not swollen at the base; culm nodes antrorsely pubescent; leaf sheaths rounded, hispid externally with papillose hairs, margins distinct, open, hispid, often with papillose hairs; collar continuous, broad, pubescent, margins pubescent; auricles absent; ligules 0.5–1 mm long, membranous, truncate, margins ciliate with hairs 0.5–1 mm long; leaf blades linear or lanceolate, 10–25 cm long, 5–15(–25) mm wide, plane, firm-textured, apex acute, margins entire, occasionally pilose with papillose hairs or ciliate, adaxial surface hispid or hirsute, often with papillose hairs present on the lower half of the blade, abaxial surface hispid or hirsute or glabrous; midnerve conspicuous; vernation rolled; common grass of ditches, lawns, gardens and other disturbed sites.

105. *Panicum coloratum* L.

KLEINGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 60–135 cm tall, erect or decumbent, firm, glabrous, not swollen at the base, arising from a hard, knotty base; culm nodes glabrous or puberulent; leaf sheaths rounded, glabrous or hispid externally with papillose hairs, margins distinct, open,

entire; collar continuous, glabrous, margins entire; auricles absent; ligules 0.5–2 mm long, ciliate with a minute, membranous base; leaf blades linear, 3–30 cm long, 2–6(–8) mm wide, plane, firm-textured, apex acute or acuminate, margins entire, adaxial and abaxial surfaces glabrous or hirsute; vernation rolled; in moist lowlands.

106. *Panicum hallii* Vasey

HALLS PANICUM

Plants perennial, cespitose; rhizomes and stolons absent; culms 20–80 cm tall, erect or geniculate, firm, glabrous, glaucous, not swollen at the base; culm nodes antrorsely pubescent or glabrous; leaf sheaths rounded, glabrous externally or sparsely pilose with papillose hairs, margins distinct, open, entire; collar continuous, glabrous, margins entire, occasionally sparsely villous; auricles absent; ligules <0.5 mm long, membranous, truncate, margins ciliate with hairs 1–1.5 mm long; leaf blades linear, 4–30 cm long, 2–10 mm wide, plane, firm-textured, glaucous, apex acute, margins entire, occasionally with very few papillose hairs basally, adaxial surface glabrous or sparsely pilose, abaxial surface glabrous; vernation rolled; scattered to abundant in sandy to clayey, calcareous soils.

107. *Panicum hians* Ell.

GAPING PANICUM

Plants perennial, cespitose; rhizomes and stolons absent; culms 20–75 cm tall, erect or decumbent, firm, glaucous, not swollen at the base; culm nodes glabrous; leaf sheaths slightly laterally compressed, glabrous externally, margins distinct, open, entire, ciliate near the throat; collar continuous, glabrous, margins entire; auricles absent; ligules to 0.5 mm long, ciliate with a minute, membranous base; leaf blades linear, 6–18 cm long, 2–5 mm wide, plane or conduplicate, firm-textured, apex acute, margins entire, adaxial

surface glabrous, pilose basally, abaxial surface glabrous; vernation rolled, in low, moist, often shaded sites.

108. *Panicum obtusum* Kunth in H.B.K.

VINE MESQUITE

Plants perennial, rhizomes absent, stolons elongate, wiry with swollen, villous nodes; culms 20–60 cm tall, erect, firm, glabrous, arising from a hard, knotty base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, occasionally hispid, margins distinct, open, entire; collar continuous, glabrous, margins entire, occasionally sparsely pilose; auricles absent; ligules 1–2 mm long, membranous, obtuse, margins entire or lacerate; leaf blades linear, 5–20 cm long, 2–7 mm wide, plane or involute, firm-textured, glaucous, apex attenuate, margins entire, adaxial surface glabrous, often sparsely pilose basally, abaxial surface glabrous; vernation rolled; mostly in clayey lowland pastures, swales and ditches that periodically dry out.

109. *Panicum oligosanthos* Schult.

Plants perennial, cespitose; rhizomes and stolons absent; culms 15–84 cm tall, erect, firm, glabrous to densely puberulent, not swollen at the base, lateral branching ample above the base; culm nodes pubescent; leaf sheaths rounded, pilose with papillose hairs, occasionally glabrous, margins distinct, open, ciliate; collar continuous, glabrous, less frequently pubescent, margins entire, occasionally sparsely villous; auricles absent; ligules 1–4 mm long, a fringe or hairs; leaf blades lanceolate, 3–14 cm long, 3–12(–15) mm wide, plane, firm-textured, apex acute, margins entire with few papillose hairs; adaxial surface glabrous, abaxial surface glabrous or puberulent, occasionally tomentose; vernation rolled; in sandy, well-drained but moist areas of woodlands and brushy sites.

110. *Panicum pedicellatum* Vasey

CEDAR ROSETTEGRASS

Plant perennial, cespitose; rhizomes and stolons absent; culms 20–70 cm tall, erect or geniculate, firm, distally puberulent, arising from a hard, knotty base, lateral branching ample above the base; culm nodes pubescent; leaf sheaths rounded, glabrous or pilose externally, margins distinct, open, entire, ciliate near the throat; collar continuous, glabrous, margins entire; auricles absent; ligules to 1 mm long, ciliate with a minute, membranous base; leaf blades lanceolate, 4–12 cm long, 3–8 mm wide, plane, firm-textured, apex acuminate, margins entire, adaxial surface glabrous or sparsely pilose with appressed hairs, typically with a few papillose hairs basally, abaxial surface glabrous or sparsely pilose with appressed hairs; vernation rolled; on limestone outcrops and well-drained, rocky sites in limey soils.

111. *Panicum sphaerocarpon* Ell.

ROUND-SEED ROSETTEGRASS

Plants perennial, solitary or forming small clusters; rhizomes and stolons absent; culms 20–80 cm tall, geniculate or decumbent, firm, glabrous, not swollen at the base, lateral branching sparse; culm nodes antrorsely pubescent; leaf sheaths rounded, glabrous externally, margins distinct, open, pubescent; collar continuous, glabrous, margins entire; auricles absent; ligules absent or if present, to 1 mm long and ciliate; leaf blades lanceolate, cordate at the base, 3–7 cm long, 7–14 mm wide, plane, firm-textured, apex acute, margins entire, undulate, cartilaginous, white-colored, ciliate basally; adaxial and abaxial surfaces glabrous; vernation rolled; usually in shaded sites in sandy soil.

112. *Panicum virgatum* L.

SWITCHGRASS

Plants perennial, cespitose; rhizomes scaly, stolons absent; culms 60–200(–

300) cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous or pubescent; leaf sheaths rounded, glabrous externally, margins distinct, open, entire, often ciliate near the throat; collar continuous, broad, glabrous, margins ciliate, often entire; auricles absent; ligules $\pm$ 1 mm long, a fringe or hairs, interspersed with long, soft hairs 3–5 mm long; leaf blades linear, 10–60 cm long, 3–15 mm wide, plane, firm-textured, apex acute, margins scabrous, adaxial surface glabrous, often pilose basally, abaxial surface glabrous; vernation rolled; in moist lowlands.

113. *Pappophorum bicolor* Fourn.

PINK PAPPUSGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 30–80(–100) cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths, rounded, glabrous externally, margins distinct, overlapping, entire; collar continuous, hirsute, margins pubescent; auricles absent; ligules $\pm$ 1 mm long, a fringe or hairs; leaf blades linear, 10–20(–30) cm long, 1.5–5 mm wide, plane or involute, firm-textured, apex acute, margins entire, adaxial surface scabrous with a fringe of long, soft hairs immediately above the ligules, abaxial surface glabrous; vernation rolled; on grassy plains, along moist road right-of-ways and in open valleys.

114. *Pappophorum vaginatum* Buckl.

WHIPLASH PAPPUSGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 25–90 cm tall, erect or geniculate, firm, glabrous, not swollen at the base, culm nodes glabrous; leaf sheaths, rounded, glabrous externally, margins distinct, overlapping, entire; collar continuous, glabrous, margins entire, glabrous or ciliate; auricles absent; ligules $\pm$ 1 mm long, a fringe or hairs; leaf blades linear, 10–20(–30) cm long, 2–5 mm wide, plane or involute, firm-textured, apex

acuminate, margins entire, adaxial surface scabrous with a fringe of long, soft hairs immediately above the ligules, abaxial surface glabrous; vernation rolled; on grassy plains, along moist road right-of-ways and in open valleys, infrequent.

115. *Paspalum dilatatum* Poir.

DALLISGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 15–20 cm tall, erect, firm, glabrous, arising from a hard, knotty base; culm nodes glabrous; leaf sheaths laterally compressed, glabrous externally, the lowermost sheaths hirsute externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 2–4 mm long, membranous, obtuse, margins entire; leaf blades linear, 6–45 cm long, 3–12 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous with a few long, soft hairs basally, abaxial surface glabrous; vernation rolled; along roadsides, in pastures, lawns and waste places.

116. *Paspalum distichum* L.

KNOTGRASS

Plants perennial, mat-forming; rhizomes absent, stolons elongate; culms 8–60 cm tall, decumbent, firm, glabrous, not swollen at the base; culm nodes pubescent; leaf sheaths rounded, weakly keeled, glabrous or pilose externally, margins distinct, open, entire; collar continuous, glabrous, margins entire with a few soft hairs; auricles absent; ligules 1–2.5 mm long, membranous, obtuse or truncate, margins entire to slightly erose; leaf blades linear, 3–12 cm long, 2–6 mm wide, plane, occasionally folded or convolute, firm-textured, apex acute, margins scabrous, adaxial and abaxial surfaces glabrous; vernation rolled; along ponds, lakes and rivers in moist or wet soil.

117. *Paspalum plicatulum* Michx.

BROWN-SEED PASPALUM

Plants perennial, cespitose; rhizomes short, stolons absent; culms 50–100 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous, the lower nodes puberulent; leaf sheaths rounded, keeled, glabrous externally, margins distinct, open, entire; collar divided, sparsely puberulent, margins entire; auricles absent; ligules 2–3 mm long, membranous, brown, truncate, margins entire; leaf blades linear, 15–30 cm long, 2–7 mm wide, plane or conduplicate, firm-textured, apex acuminate, margins entire, adaxial surface glabrous, pilose with papillose hairs basally, abaxial surface glabrous or pilose; vernation rolled; frequently in open oak woodlands, often in partial shade in sand or in sandy, loam soils.

118. *Paspalum pubiflorum* Rupr.

HAIRY-SEED PASPALUM

Plants perennial, solitary or forming small clusters; rhizomes and stolons absent; culms 40–80 cm tall, decumbent, firm, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous, often tomentose; leaf sheaths rounded, glabrous externally, the lower sheaths pilose externally with papillose hairs, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–3 mm long, membranous, often brownish, truncate, margins entire; leaf blades lanceolate, 6–30 cm long, 6–15 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous, sparsely hirsute basally, abaxial surface glabrous; vernation rolled; in ditches and along swales and other low, moist sites, occasionally in partial shade of forest trees.

119. *Paspalum setaceum* Michx.

THIN PASPALUM

Plant perennial, cespitose; rhizomes short, stolons absent; culms 30–80 cm

tall, erect, firm, glabrous, arising from a hard, knotty base; culm nodes glabrous, leaf sheaths rounded, sparsely pilose or pubescent externally, margins distinct, open, entire or pilose; collar continuous, pubescent, margins entire or pilose; auricles absent; ligules to 0.5 mm long, membranous, truncate, margins entire; leaf blades linear, 5–35 cm long, 2–20 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous with a fringe of long, soft hairs immediately above the ligules, occasionally pubescent, abaxial surface glabrous, occasionally pubescent; vernation folded; usually in moist ditches, woods borders or sandy pastures.

120. *Paspalum urvillei* Steud.

VASEYGRASS

Plant perennial, cespitose; rhizomes and stolons absent; culms 100–200 cm tall, erect, firm, arising from a hard, subrhizomatous base; culm nodes glabrous; leaf sheaths rounded, the lower sheaths hirsute externally, the upper sheaths glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 3–6 mm long, membranous, obtuse, margins lacerate; leaf blades linear, 10–40 cm long, 4–15 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface glabrous with a fringe of long, soft hairs immediately above the ligules; abaxial surface glabrous; vernation rolled; usually along moist roadsides, lakes, swales and other moist places.

121. *Pennisetum ciliare* (L.) Link

BUFFELGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 25–50(–100) cm tall, geniculate, wiry, glabrous, arising from a hard, knotty, subrhizomatous base; culm nodes glabrous, occasionally puberulent; leaf sheaths laterally compressed, keeled, glabrous or sparsely pilose externally, margins distinct, open, entire; collar continuous, glabrous, margins pilose;

auricles absent; ligules 0.5–2 mm long, ciliate with a minute, membranous base; leaf blades linear, 8–30 cm long, 2.5–8 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface sparsely pilose or pubescent basally, otherwise glabrous, abaxial surface glabrous; vernation rolled; common on rangelands and semi-disturbed sites in sandy soils.

122. *Phalaris caroliniana* Walt.

CANARYGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 25–70 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, narrow, glabrous, margins entire; auricles absent; ligules 2–6 mm long, membranous, obtuse, margins erose often appearing dentate; leaf blades linear, 5–15(–20) cm long, 3–7 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; abundant on roadsides, ditchbanks, streambanks and along fencerows, occasionally in grasslands and open woodlands.

123. *Phragmites australis* (Cav.) Trin. ex Steud.

COMMON REED

Plants perennial, solitary or forming large clusters; rhizomes thick, stolons absent; culms 2–4 m tall, erect, reed-like, tough, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous margins entire; auricles absent; ligules to 0.5 mm long, ciliate with a minute, membranous base; leaf blades linear, 20–60 cm long, 15–50 mm wide, plane, firm-textured, apex attenuate, often involute, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; along stream and lake borders and in marshes, infrequent.

124. *Pleuraphis mutica* Buckl.

TOBOSA

Plants perennial, cespitose; rhizomes short, thick, scaly, stolons absent; culms 30–75 cm tall, erect, wiry, glabrous, not swollen at the base; culm nodes pubescent; leaf sheaths rounded, glabrous externally, margins distinct, open, ciliate toward the ligule; collar continuous, glabrous, margins villous; auricles absent; ligules 1–2 mm long, membranous, obtuse or truncate, margins lacerate; leaf blades linear, 5–10 cm long, 2–4(–5) mm wide, plane or involute, firm-textured to somewhat stiff, apex acute, margins entire, adaxial surface glabrous or scabrous, typically with a few long hairs at the base immediately above the ligules, abaxial surface glabrous or scabrous; vernation rolled; on dry, rocky slopes, level plains and plateaus.

125. *Poa annua* L.

ANNUAL BLUEGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 6–30 cm tall, erect or geniculate, the outermost culms of a tuft decumbent, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, the lowermost sheaths membranous, margins distinct, open, entire, upper margins thin, hyaline; collar continuous, glabrous, margins entire; auricles absent; ligules 1.5–4 mm long, membranous, decurrent on either side as sheath margins, obtuse, margins entire or erose; leaf blades linear, 2–14 cm long, 1.5–4 mm wide, plane, firm-textured, apex obtuse, prow-shaped, margins entire, adaxial surface glabrous, median lines present, abaxial surface glabrous; vernation folded; mostly in lawns and lawn borders.

126. *Poa arachnifera* Torr.

TEXAS BLUEGRASS

Plants perennial, cespitose; rhizomes elongate, stolons absent; culms 35–50 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous;

leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–4 mm long, membranous, acute, margins entire; leaf blades linear, 7.5–15 long, 1–4(–5) mm wide, plane, less frequently conduplicate, firm-textured, apex acute, margins entire, adaxial surface glabrous, abaxial surface glabrous, scabrous on the midnerve; vernation folded; in grasslands and woods borders.

127. *Polypogon monspeliensis* (L.) Desf.

RABBITFOOTGRASS

Plant annual, cespitose; rhizomes and stolons absent; culms 8–70 cm tall, erect or geniculate, the outermost culms of a tuft decumbent, weak, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths rounded, glabrous or scabrous externally, margins distinct, open, entire, upper margins thin, hyaline; collar continuous, glabrous, margins entire; auricles absent; ligules 3–15 mm long, membranous, decurrent on either side as sheath margins, acute, margins lacerate; leaf blades linear, 4–16 cm long, 2–8 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces scabrous; vernation rolled; usually along streams, swales, moist ditches and waste sites in sandy soils.

128. *Polypogon viridis* (A. Gouan) M. Breistroffer

WATER BENTGRASS

Plants perennial, cespitose; rhizomes absent, stolons present; culms 10–50(–70) cm tall, geniculate or decumbent, succulent, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths rounded, glabrous or scabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 2–7 mm long, membranous, obtuse, margins lacerate; leaf blades linear, 4–14 cm long, 2–8 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and

abaxial surfaces glabrous or scabrous; vernation rolled; in low, moist sites, especially streambanks and along swales.

129. *Schedonnardus paniculatus* (Nutt.) Trel.

TUMBLEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 8–50(–70) cm tall, decumbent, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous externally, margins distinct, open, entire, upper margins thin, hyaline; collar continuous or divided, glabrous, margins entire; auricles absent; ligules 1–3.5 mm long, membranous, decurrent on either side as sheath margins, acute, margins entire; leaf blades linear, 2–12 cm long, 0.5–2(–3) mm wide, plane or conduplicate becoming spirally twisted upon drying, firm-textured, apex acute, margins scabrous, slightly undulate, white-colored, adaxial and abaxial surfaces glabrous; midnerve strongly conspicuous abaxially; vernation folded; in clay or clay, loam soils.

130. *Schizachyrium scoparium* (Michx.) Nash

LITTLE BLUESTEM

Plants perennial, cespitose; rhizomes absent or short when present, stolons absent; culms 50–200 cm tall, erect, firm, glabrous, often glaucous, not swollen at the base, lateral branching ample above base; culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous or pubescent or pilose or hirsute externally, margins distinct, open, entire, occasionally pilose near the throat; collar continuous, broad, glabrous, margins entire; auricles absent; ligules 1–3 mm long, membranous, firm-textured, obtuse, margins erose, often appearing dentate; leaf blades linear, 15–30 cm long, 1.5–4 (rarely –6) mm wide, plane, firm-textured, apex acute, margins scabrous, adaxial surface glabrous or scabrous, occasionally hispid, abaxial surface glabrous; vernation

folded; frequent in tall-grass prairies, woods openings and on rocky slopes of light to moderately grazed pastures and rangelands.

131. *Sclerochloa dura* (L.) Beauv.

HARDGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 4–10(–18) cm tall, erect, firm, glabrous, not swollen at the base, freely branched at the base; culm nodes glabrous; leaf sheaths rounded, open, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, acute, margins entire; leaf blades linear, 2–7 cm long, 1–3 mm wide, plane, firm-textured, apex abruptly acute, margins entire, adaxial and abaxial surfaces glabrous; vernation folded; in lawns, golf courses, ditches and other moist sites in moist soils.

132. *Secale cereale* L.

RYE

Plants annual, solitary or forming small clusters; rhizomes and stolons absent; culms 50–120 cm tall, erect, firm, glabrous, not swollen at the base, branched at the base; culm nodes glabrous; leaf sheaths rounded, glabrous or occasionally hirsute externally, margins distinct, open, entire becoming hyaline basally; collar continuous, glabrous, margins entire; auricles present, minute, to 1 mm; ligules 0.5–1.5 mm long, membranous, truncate, margins erose, ciliolate; leaf blades linear, 10–30 cm long, 6–13 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous occasionally pilose; vernation rolled; occasionally on roadsides and waste places.

133. *Setaria grisebachii* Fourn.

GRISEBACH BRISTLEGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 40–80(–100) cm tall, erect or geniculate, slender, glabrous, not swollen at the base, culm nodes

hirsute; leaf sheaths rounded, pilose externally, margins distinct, open, pilose; collar continuous, pilose, margins ciliate; auricles absent; ligules ± 1 mm long, a fringe or hairs; leaf blades linear, 6–20 cm long, 5–13 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces hispid; vernation rolled; on dry, rocky slopes, level plains and plateaus, usually at elevations above 750 m, rare.

134. *Setaria leucopila* (Scribn. & Merr.) K. Schum.

PLAINS BRISTLEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 25–100 cm tall, erect or geniculate, firm, glabrous, occasionally distally pubescent, not swollen at the base, lateral branching sparse above base; culm nodes glabrous; leaf sheaths rounded, glabrous externally with a fringe of long hairs just below the collar, margins distinct, open, entire, villous near the throat; collar continuous, glabrous, margins entire; auricles absent; ligules ± 0.5 mm long, membranous, truncate, margins ciliate with hairs 1–2 mm long; leaf blades linear, 8–25 cm long, 2–5 mm wide, plane or conduplicate, firm-textured, pale green-colored or glaucous, apex acute, margins entire, adaxial and abaxial surfaces glabrous or scabrous; vernation rolled; frequent on well-drained soils along gullies, stream courses and other sites with abundant moisture, occasionally on open sites.

135. *Setaria parviflora* (Poir.) Kerguel.

KNOTROOT BRISTLEGRASS

Plants perennial, cespitose; rhizomes short, knotty, stolons absent; culms 30–100 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, the lowermost sheaths keeled just below the collar, glabrous or scabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules

± 1 mm long, a fringe or hairs; leaf blades linear, 6–25 cm long, 2–8 mm wide, plane, firm-textured, apex acuminate, margins entire or scaberulous, adaxial surface glabrous or scaberulous, occasionally with a few long, coarse hairs basally, abaxial surface glabrous or scabrous; vernation rolled; usually along streams, ditches and lake borders and other moist places.

136. *Setaria pumila* (Poir.) Roem. & Schult.

YELLOW BRISTLEGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 20–120 cm tall, geniculate, firm, glabrous, not swollen at the base, culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous externally, margins distinct, open, entire, ciliate near the throat; collar continuous, glabrous, margins entire; auricles absent; ligules ± 1 mm long, ciliate with a minute, membranous base; leaf blades linear, 3–30 cm long, 4–10 mm wide, loosely twisted, firm-textured, apex acute, margins entire, adaxial surface scabrous with long, soft hairs basally, abaxial surface glabrous; vernation rolled; in disturbed soils.

137. *Setaria ramiseta* (Scribn.) Pilger

Plants perennial, cespitose; rhizomes short, scaly, pubescent, stolons absent; culms 30–60 cm tall, erect, firm, arising from a hard, knotty base covered with densely pubescent, scale-like leaves; culm nodes glabrous; leaf sheaths rounded, the lower sheaths sparsely hirsute externally, the upper sheaths glabrous externally, margins distinct, open, entire; collar continuous, the lower collars pubescent, the upper collars glabrous, margins entire; auricles absent; ligules ± 0.5 mm long, membranous, truncate, margins ciliate with hairs 1–2 mm long, often with longer hairs at the edges; leaf blades linear, 4–10(–13) cm long, 2–4 mm wide, plane, firm-textured, apex acute, margins entire with a few long, soft hairs basally, adaxial surface scabrous, abaxial

surface glabrous; vernation rolled; dry hillsides and grassy or brushy plains in sandy, loam soils.

138. *Setaria reverchonii* (Vasey) Pilger

REVERCHON BRISTLEGRASS

Plants perennial, cespitose; rhizomes short, scaly, pubescent, stolons absent; culms 35–70 cm tall, erect, firm, arising from a hard, knotty base covered with densely pubescent, scale-like leaves; culm nodes glabrous; leaf sheaths rounded, the lower sheaths sparsely hirsute externally, the upper sheaths glabrous externally, margins distinct, open, entire; collar continuous, the lower collars pubescent, the upper collars glabrous, margins entire; auricles absent; ligules ± 0.5 mm long, membranous, truncate, margins ciliate with hairs 1–2 mm long, often with longer hairs at the edges; leaf blades linear, 4–10(–20) cm long, 2–3 mm wide, plane, involute upon drying, firm-textured, apex acute, margins entire with a few long, soft hairs basally, adaxial surface scabrous, abaxial surface glabrous; vernation rolled; frequent in rocky, well-drained limestone soils.

139. *Setaria scheelei* (Steud.) A. S. Hitchc.

SOUTHWESTERN BRISTLEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 70–130 cm tall, geniculate, firm, glabrous, not swollen at the base; culm nodes antrorsely puberulent; leaf sheaths rounded, glabrous externally, distally pilose, margins distinct, open, entire, pilose near the throat; collar continuous, pubescent, margins entire, glabrous or ciliate; auricles absent; ligules ± 0.5 mm long, membranous, truncate, margins ciliate with hairs 1–2 mm long; leaf blades linear, 15–30(–50) cm long, 5–18 mm wide, plane or conduplicate, firm-textured, apex acute, margins entire, adaxial surface scabrous and finely pubescent, pilose basally, abaxial surface scabrous and finely pubescent; vernation folded; usually in shady canyons and open woodlands.

140. *Setaria verticillata* (L.) Beauv.

HOOKED BRISTLEGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 25–70 cm tall, decumbent, weak, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths laterally compressed, keeled, glabrous externally, margins distinct, open, inner margins entire, outer margins distally ciliate; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2 mm long, a fringe or hairs; leaf blades linear, 5–30 cm long, 4–16 mm wide, plane, flaccid, apex acute, margins entire, adaxial and abaxial surfaces glabrous or sparsely hispid; vernation rolled; on disturbed sites, often present in the shade of tall weeds or trees.

141. *Setaria villosissima* (Scribn. & Merr.) K. Schum.

HAIRY-LEAF BRISTLEGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 50–100 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous or sparsely pubescent; leaf sheaths rounded, glabrous or hirsute externally, margins distinct, open, entire, hirsute near the throat; collar continuous, glabrous, margins pilose; auricles absent; ligules 1–2 mm long, a fringe or hairs; leaf blades linear, 10–25 cm long, 6–14 mm wide, plane, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces pilose or sparsely pilose; midnerve conspicuous abaxially; vernation rolled; restricted to soils derived from granitic rocks, infrequent.

142. *Setaria viridis* (L.) Beauv.

GREEN BRISTLEGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 25–100 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous, the lowermost nodes often hirsute; leaf sheaths slightly laterally compressed laterally, keeled, glabrous externally, margins distinct, open, inner

margins entire, outer margins ciliate or pilose; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2 mm long, a fringe of hairs; leaf blades linear, 8–20 cm long, 3–10 mm wide, plane, firm-textured, apex acute, margins entire, undulate, adaxial surface scabrous, abaxial surface glabrous; vernation rolled; in fields and waste places, infrequent.

143. *Sorghastrum elliotii* (Mohr) Nash

SLENDER INDIANGRASS

Plants perennial, cespitose; rhizomes and stolons absent; culms 80–180 cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes antrorsely puberulent; leaf sheaths rounded, glabrous or scaberulous externally, margins distinct, open, entire, upper margins membranous, continuous with the auricles and the ligule; collar continuous, glabrous, margins entire; auricles present, ± 2 mm longer than the ligules, stiff, erect; ligules 2–4 mm long, membranous, indurate when dry, truncate, margins erose; leaf blades linear, 20–50 cm long, 3–8 mm wide, plane or conduplicate, firm-textured, tapered to a narrow base, apex attenuate, margins scabrous, adaxial surface scabrous or scaberulous, abaxial surface glabrous; midnerve conspicuous; vernation rolled; usually in sandy soil in or along the margins of woodlands.

144. *Sorghastrum nutans* (L.) Nash

INDIANGRASS

Plants perennial, solitary or forming small clusters; rhizomes short, stout, scaly, stolons absent; culms 80–230 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes hispid; leaf sheaths rounded, glabrous or sparsely pilose externally, margins distinct, open, entire, upper margins membranous, continuous with the auricles and the ligules; collar continuous, glabrous, margins entire with a few long, soft hairs; auricles present, ± 2 mm longer than the ligules, stiff, erect; ligules 2–6 mm long, membranous, indurate when dry,

truncate, margins erose, ciliolate; leaf blades linear, 10–50 cm long, 5–10 mm wide, plane, firm-textured, tapered to a narrow base, apex attenuate, margins scabrous, adaxial surface scabrous, abaxial surface glabrous; midnerve conspicuous; vernation rolled; in the tall-grass prairie regions.

145. *Sorghum bicolor* (L.) Moench

SORGHUM

Plants annual, solitary or in large clusters; rhizomes and stolons absent; culms 80–250 cm tall, erect, stout, succulent, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–3 mm long, membranous, truncate, margins ciliate; leaf blades linear, 30–100 cm long, 10–50 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; midnerve conspicuous abaxially; vernation folded; on roadsides and disturbed sites.

146. *Sorghum halepense* (L.) Pers.

JOHNSONGRASS

Plants perennial, caespitose; rhizomes elongate, scaly, stolons absent; culms 100–200 cm tall, erect or geniculate, the outermost culms of a tuft decumbent, firm, glabrous, not swollen at the base; culm nodes pubescent, less frequently glabrous; leaf sheaths rounded, glabrous externally, occasionally purplish, margins distinct, open, entire; collar continuous, glabrous or pubescent, margins entire, glabrous or ciliate; auricles absent; ligules 1.5–4 mm long, membranous, truncate, margins ciliate; leaf blades linear, 20–90 cm long, 8–20 mm wide, plane, firm-textured, apex acuminate, margins entire, hyaline or white-colored, adaxial surface glabrous, pubescent at the base just behind the ligules, abaxial surface glabrous; midnerve conspicuous, often white-colored; vernation rolled; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common roadside grass.

147. *Spartina pectinata* Link

PRAIRIE CORDGRASS

Plants perennial, solitary or forming small clusters; rhizomes stout, scaly, stolons absent; culms 100–250 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, often keeled just below the collar, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire, glabrous or ciliate; auricles absent; ligules 1–3 mm long ciliate; leaf blades linear, 20–60 cm long, 5–15 mm wide, plane, becoming involute upon drying, firm-textured, apex acute, margins scabrous, adaxial and abaxial surfaces glabrous; vernation rolled; in marshy meadows and along swales and ditches.

148. *Sphenopholis interrupta* (Buckl.) Scribn.

PRAIRIE WEDGESCALE

Plants annual, cespitose; rhizomes and stolons absent; culms 10–50(–60) cm tall, erect or geniculate, weak, glabrous or distally puberulent, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, hispid externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–2 mm long, membranous, obtuse, margins lacerate, ciliate; leaf blades linear, 2–10(–15) cm long, 1–4 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces sparsely hispid or hispid; vernation rolled; on open, dry sites, infrequent.

149. *Sphenopholis obtusata* (Michx.) Scribn.

PRAIRIE WEDGESCALE

Plants annual, cespitose; rhizomes and stolons absent; culms 20–70(–120) cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous or scabrous externally, margins distinct, open, entire; collar divided, often oblique, glabrous, margins entire; auricles absent; ligules 1.5–3 mm long, membranous, obtuse or truncate, margins lacerate;

leaf blades linear 4–10(–15) cm long, 2–8 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous or scabrous; vernation rolled; on moist prairies, along open streambanks and in swales.

150. *Sporobolus airoides* (Torr.) Torr.

ALKALI SACATON

Plants perennial, cespitose; rhizomes and stolons absent; culms 50–150 cm tall, erect, firm, glabrous, arising from a hard, subrhizomatous base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins sparsely pilose; auricles absent; ligules <0.5 mm long, a fringe or hairs; leaf blades linear, 15–45 cm long, 2–6 mm wide, plane or involute, firm-textured, apex acute, margins entire, adaxial surface scabrous, occasionally glabrous, abaxial surface glabrous; vernation folded; on dry, sandy or gravelly slopes and along saline or alkaline planes.

151. *Sporobolus compositus* (Poir.) Merr.

TALL DROPSEED

Plants perennial, solitary or forming small clusters; rhizomes and stolons absent; culms 60–120 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, overlapping, glabrous externally, the lower sheaths pilose near the throat, margins distinct, overlapping, entire; collar continuous, glabrous, margins pilose; auricles absent; ligules <0.5 mm long, ciliate with a minute, membranous base; leaf blades linear, 10–30 cm long, 1–4 mm wide, plane or involute, firm-textured, apex acute, margins entire, adaxial surface glabrous, pilose basally, abaxial surface glabrous; vernation rolled; frequent on grasslands, along borders of woods and road right-of-ways.

152. *Sporobolus cryptandrus* (Torr.) Gray

SAND DROPSEED

Plants perennial, cespitose; rhizomes and stolons absent; culms 35–120 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, overlapping, inner margins entire, outer margins ciliate; collar continuous, glabrous, margins pilose; auricles absent; ligules 0.5–1 mm long, a fringe or hairs; leaf blades linear, 8–25 cm long, 2–5 mm wide, plane or conduplicate, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous or scabrous; vernation rolled; often along roadsides, field borders, vacant lots, ditchbanks and disturbed sites, a common roadside grass in sandy soil.

153. *Sporobolus pyramidatus* (Lam.) A. S. Hitchc.

WHORLED DROPSEED

Plants perennial, cespitose; rhizomes and stolons absent; culms 10–50 cm tall, erect or geniculate, firm, glabrous, not swollen at the base, freely branched at the base; culm nodes glabrous; leaf sheaths rounded, shorter than the adjacent internodes, glabrous externally, margins distinct, open, inner margins entire, outer margins ciliate distally; collar continuous, glabrous, margins sparsely pilose; auricles absent; ligules <1 mm long, ciliate with a minute, membranous base; leaf blades linear, 3–12(–20) cm long, 2–4 mm wide, apex acute often involute, margins strigose, adaxial surface basally hispid otherwise glabrous, abaxial surface glabrous; vernation rolled; frequent in alkaline soils, occasionally in various soils on open, disturbed sites.

154. *Sporobolus vaginiflorus* (Torr. ex Gray) Torr. ex Wood

POVERTY DROPSEED

Plants annual, cespitose; rhizomes and stolons absent; culms 15–55(–70) cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, shorter than the adjacent internodes, glabrous or sparsely

pilose externally, margins distinct, open, entire; collar continuous, glabrous, margins entire with 1 or 2 long, soft hairs; auricles absent; ligules <0.5 mm long, a fringe of hairs; leaf blades linear, basal blades 4–13 cm long, 1–2 mm wide, upper blades 1–5 cm long, 1–2 mm wide, plane or involute, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous, occasionally hispid or pilose; vernation rolled; frequently in sandy, clay soils on limestone outcrops, occasionally in various soils on a variety of habitats.

155. *Sporobolus wrightii* Munro ex Scribn.

BIG SACATON

Plants perennial, cespitose; rhizomes and stolons absent; culms 90–250 cm tall, erect, stout, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire with a few long, soft hairs near the throat; collar continuous, glabrous, margins entire with a few long, soft hairs on both sides; auricles absent; ligules 1–2 mm long, a fringe of hairs; leaf blades linear, 20–70 cm long, 3–6(–8) mm wide, plane, involute upon drying, firm-textured, apex acute, margins entire, adaxial surface glabrous, sparsely pilose basally, abaxial surface glabrous; midnerve conspicuous; vernation rolled; on moist clay planes, on borders of alkaline or saline sites or on rocky slopes.

156. *Stenotaphrum secundatum* (Walt.) O. Ktze.

ST. AUGUSTINEGRASS

Plants perennial, mat-forming; rhizomes absent, stolons present; culms 10–30 cm tall, prostrate or decumbent, firm, glabrous, not swollen at the base; culm nodes glabrous; leaves distichous; leaf sheaths compressed, occasionally weakly keeled, glabrous externally, margins distinct, open, entire, ciliate near the throat; collar continuous, glabrous, margins ciliate; auricles absent; ligules <0.5 mm long, membranous, minute, margins ciliate with stiff hairs; leaf blades linear, 3–15 cm long, 4–10 mm wide, conduplicate, firm-textured, apex

obtuse, margins entire, adaxial and abaxial surfaces glabrous; vernation folded, usually in lawns, occasionally in moist soil along stream courses, lake shores and swales.

157. *Tragus berteronianus* Schult.

SPIKE BURGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 5–30(–40) cm tall, erect or geniculate, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, shorter than the adjacent culm internodes, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins sparsely ciliate; auricles absent; ligules to 1 mm long, ciliate with a minute, membranous base; leaf blades linear, 1–6 cm long, 2–5 mm wide, plane or loosely folded, firm-textured, apex acute, margins hispid, cartilaginous, white-colored; adaxial and abaxial surfaces glabrous; vernation rolled; usually in loose, sandy soil on disturbed sites.

158. *Tridens albescens* (Vasey) Woot. & Standl.

WHITE TRIDENS

Plants perennial, cespitose; rhizomes short, knotty, stolons absent; culms 30–90 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes mostly glabrous, the lowermost sparsely pubescent; leaf sheaths mostly rounded, the lowermost weakly keeled, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules <0.5 mm long, ciliate with a minute, membranous base; leaf blades linear, 8–25 cm long, 1–4 mm wide, plane, firm-textured, glaucous, apex attenuate, involute, margins barbed, adaxial and abaxial surfaces glabrous; vernation rolled; usually along ditches, swales and other sites that periodically receive an abundance of drainage water, in clayey soils.

159. *Tridens buckleyanus* (L. H. Dewey) Nash

BUCKLEY TRIDENS

Plants perennial, cespitose; rhizomes and stolons absent; culms 40–80 cm tall, erect, firm, glabrous, not swollen at the base; lower culm nodes antrorsely hispid, upper culm nodes glabrous; leaf sheaths rounded, scabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules to 0.5 mm long, membranous, margins truncate, ciliate with hairs to 0.5 mm long; leaf blades linear, 7.5–25 long, 1–4 mm wide, plane, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces scabrous, less frequently glabrous; vernation rolled; along shaded streambanks and woods borders, uncommon.

160. *Tridens eragrostoides* (Vasey & Scribn.) Nash

LOVEGRASS TRIDENS

Plants perennial, cespitose; rhizomes and stolons absent; culms 50–100 cm tall, erect, firm, slender, glabrous, not swollen at the base; culm nodes glabrous or sparsely pilose; leaf sheaths rounded, glabrous or sparsely pilose externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules 1–3 mm long, membranous, obtuse or acute, margins lacerate; leaf blades linear, 10–30 long, 1.5–5 mm wide, plane, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces scabrous, less frequently sparsely pilose; vernation rolled; frequent in brushy grasslands, usually in partial shade.

161. *Tridens flavus* (L.) A. S. Hitchc.

PURPLETOP

Plants perennial, cespitose; rhizomes short, knotty, stolons absent; culms 60–180 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, the lowermost sheaths compressed and keeled, glabrous externally, margins distinct, open, entire; collar continuous,

pubescent, margins pubescent; auricles absent; ligules <0.5 mm long, ciliate with a minute, membranous base; leaf blades linear, 10–50 cm long, 3–10 mm wide, plane, firm-textured, apex attenuate, involute, margins entire, adaxial surface with sparse, matted pubescence behind the ligules otherwise glabrous or hispid, abaxial surface glabrous or hispid; vernation rolled; frequent in open woods and along roadsides.

162. *Tridens muticus* (Torr.) Nash

SLIM TRIDENS

Plants perennial, cespitose; rhizomes and stolons absent; culms 20–80 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes pubescent or villous; leaf sheaths rounded, glabrous or scabrous externally, the lowermost sheaths pilose, margins distinct, open, entire; collar continuous, pubescent, margins pubescent or villous; auricles absent; ligules 0.5–1 mm long, ciliate with a minute, membranous base; leaf blades linear, 6–25 cm long, 1–4 mm wide, involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces glabrous or sparsely pilose; vernation rolled; frequent on dry, open slopes in sandy or clayey soils.

163. *Tridens texanus* (S. Wats.) Nash

TEXAS TRIDENS

Plants perennial, cespitose; rhizomes and stolons absent; culms 20–75 cm tall, erect, firm, slender, pilose, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous or pilose externally, margins distinct, overlapping, entire; collar continuous, pubescent, margins pubescent; auricles absent; ligules $\pm$ 1 mm long, ciliate with a minute, membranous base; leaf blades linear, 7–20 cm long, 1–5 mm wide, plane or involute, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces hispid; vernation rolled; along fenced road right-of-ways, often in the protection of shrubs, in clayey and sandy loam soils, infrequent.

164. *Triplasis purpurea* (Walt.) Chapm.

PURPLE SANDGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 45–80 cm tall, geniculate, the outermost culms of a tuft decumbent, firm, glabrous, not swollen at the base; culm nodes hirsute; leaf sheaths rounded, glabrous or hispid externally, margins ciliolate; collar continuous, glabrous, margins distinct, open, entire; auricles absent; ligules to 1 mm long, a fringe of hairs; leaf blades linear, 4–8 cm long, 1–3 mm wide, plane or involute, firm-textured, apex attenuate, margins with a few papillose hairs, adaxial and abaxial surfaces glabrous or sparsely pilose with papillose hairs; vernation rolled; occasionally along woods borders, moist streambanks and open sandy sites in sandy soils.

165. *Tripogon spicatus* (Nees) Ekman

AMERICAN TRIPOGON

Plants perennial, cespitose; rhizomes and stolons absent; culms 10–30 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaves mostly basal; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, glabrous, margins ciliate; auricles absent; ligules <0.5 mm long, membranous, truncate, margins erose, ciliate; leaf blades filiform, 3–10 cm long, ± 1 mm wide, plane, becoming involute upon drying, firm-textured, apex attenuate, margins entire, adaxial and abaxial surfaces glabrous or sparsely hirsute; vernation rolled; usually on granitic rocks in shallow pockets of soil.

166. *Tripsacum dactyloides* (L.) L.

EASTERN GAMMAGRASS

Plants perennial, cespitose; rhizomes thick, knotty, stolons absent; culms 150–300 cm tall, erect or geniculate, firm, stout, glabrous, not swollen at the base, occasionally producing prop roots; culm nodes glabrous; leaf sheaths

rounded, glabrous externally, shiny, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules to 0.5 mm long, membranous, truncate, margins erose, ciliate; leaf blades linear, 30–75 cm long, 10–25 mm wide, plane, firm-textured, apex attenuate, margins scabrous, adaxial and abaxial surfaces glabrous; vernation rolled; in low, moist, little-disturbed grassland sites.

167. *Triticum aestivum* L.

WHEAT

Plants annual, caespitose; rhizomes and stolons absent; culms 60–100 cm tall, erect, firm, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, the lower sheaths pubescent externally, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles present, to 2.5 mm long; ligules 1–3 mm long, membranous, truncate, margins erose; leaf blades linear, 10–60 cm long, 7–20 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous or scabrous; vernation folded; along roadsides and waste places, infrequent.

168. *Urochloa ciliatissima* (Buckl.) R. D. Webster

FRINGED SIGNALGRASS

Plants perennial, solitary or forming small clusters; rhizomes absent, stolons elongate; culms 15–40 cm tall, erect, firm, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths rounded, hirsute externally with both long and short hairs, margins distinct, open, entire; collar continuous, glabrous, margins entire; auricles absent; ligules <0.5 mm long, ciliate with a minute, membranous base; leaf blades linear, 3–8 cm long, 2–7 mm wide, plane, firm-textured, apex acuminate, margins pilose with papillose hairs, cartilaginous, undulate, white-colored, adaxial and abaxial surfaces scabrous; vernation rolled; in sandy soils.

169. *Urochloa fasciculata* (Swartz) R. D. Webster

BROWN-TOP SIGNALGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 30–120 cm tall, decumbent, firm, glabrous, the upper internodes puberulent, not swollen at the base, often rooting at the lower nodes, culm nodes antrorsely pubescent; leaf sheaths rounded, glabrous or hispid externally, margins distinct, overlapping, entire, occasionally the outer margins ciliate; collar continuous, oblique, pubescent, margins entire; auricles absent; ligules 0.5–1.5 mm long, ciliate with a minute, membranous base; leaf blades lanceolate, 4–20(–30) cm long, 5–15 mm wide, plane, firm-textured, apex acute, margins entire, adaxial surface hispid with papillose hairs on the lower blades, glabrous on the upper blades, abaxial surface glabrous; vernation rolled; on low, moist sites, often in ditches and along graded field borders.

170. *Urochloa platyphylla* (Munro ex Wright) R. D. Webster

BROADLEAF SIGNALGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 30–80 cm tall, decumbent, firm, glabrous, not swollen at the base, often rooting at the lower nodes; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire, occasionally ciliate near the throat; collar continuous, glabrous, margins ciliate; auricles absent; ligules <0.5 mm long, ciliate with a minute, membranous base; leaf blades linear, 4–12 cm long, 6–13 mm wide, plane, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous; vernation rolled; along woods openings, ditches, field borders and disturbed sites, in moist soils.

171. *Urochloa texana* (Buckl.) R. D. Webster

TEXAS SIGNALGRASS

Plants annual, cespitose; rhizomes and stolons absent; culms 40–120 cm tall, decumbent, firm, glabrous or distally puberulent, not swollen at the base,

often rooting at the lower nodes; culm nodes pubescent; leaf sheaths rounded, pubescent externally, margins distinct, open, entire; collar continuous, pubescent, margins entire, glabrous or ciliate; auricles absent; ligules $\pm$ 0.5 mm long, membranous, truncate, margins ciliate with hairs 1–1.5 mm long; leaf blades lanceolate, 8–20 cm long, 7–20 mm wide, plane or conduplicate, firm-textured, apex acute, margins undulate, serrate, adaxial and abaxial surfaces pubescent; vernation rolled; in ditches and vacant lots and along field borders, in moist, disturbed soils.

172. *Vulpia octoflora* (Walt.) Rydb.

COMMON SIXWEEKSGRASS

Plants annual, solitary or forming small clusters; rhizomes and stolons absent; culms 10–60 cm tall, geniculate or decumbent, weak, slender, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, occasionally pubescent externally, margins distinct, open, entire; collar continuous, narrow, glabrous, margins entire; auricles absent; ligules 0.5–1 mm long, slightly longer on the sides, membranous, truncate, margins erose; leaf blades linear, 2–10 cm long, 0.5–1 mm wide, involute, firm-textured, apex acute, margins entire, adaxial and abaxial surfaces glabrous or pubescent; vernation folded; on open, dry sites, infrequent.

173. *Zizaniopsis miliacea* (Michx) Doell & Aschers.

SOUTHERN WILDRICE

Plants perennial, forming large clusters; rhizomes elongated, stolons absent; culms 2–3 m tall, erect, firm, thick, glabrous, not swollen at the base; culm nodes glabrous; leaf sheaths rounded, glabrous externally, margins distinct, open, entire; collar continuous, wide, glabrous, margins entire; auricles absent; ligules 6–20 mm long, membranous, with numerous fine nerves, acute, margins erose; leaf blades linear, 50–100(–150) cm long, 8–22 mm wide, plane, firm-textured, apex acute, margins serrate, adaxial and abaxial

surfaces glabrous; vernation rolled; in shallow water along streams, lakes and marshes.

DISCUSSION

Reasonable success can be achieved in identifying grasses in a vegetative state. However, poorly collected or preserved specimens, inadequate observations and insufficient field notes result in unidentifiable material. Even with excellent specimens, careful observations, and accurate field notes some authors believe that determinations made with vegetative material should be considered tentative until comparisons can be made with specimens bearing reproductive parts and known to be accurately identified (Hitchcock 1969).

The vegetative characteristics employed in this work are typically easily detected. Many, but not all, exhibit comparatively good diagnostic qualities. Some characteristics, such as blade surface features, can vary dramatically within a single species. Due allowance was made for this when necessary. Consequently, many species appear more than once in the key. Most of the vegetative characteristics used throughout the key demonstrate an acceptable level of consistency suitable for making a determination.

As the construction of the key progressed it became apparent that certain vegetative features demonstrated a greater degree of diagnostic importance. Others warranted special consideration and some showed limited or no usefulness. Those characteristics are briefly discussed below.

Growth habits such as plant density and duration are best observed and recorded in the field. Their use in this key is limited due to the relatively small number of habits exhibited. Some authors use plant duration early in their keys to distinguish annuals from perennials. This work avoids this early introduction to prevent the possible confusion of a first-year perennial with an annual plant.

Ligules are one of the better diagnostic features. Ligule presence or absence is generally consistent within a species as is whether the ligule is a membrane or a fringe of hair. These features are used as major separators in this work. Ligule size, however, is not as reliable. The ligules of basal leaves on young plants are occasionally smaller than those found higher on the culm. On older plants the membranous ligules on the basal leaves are often withered due to age or desiccation and may appear smaller or distorted compared to those found higher on the culm. Ligule sizes are given in ranges in the key in an attempt to contend with these apparent problems and prevent an incorrect determination.

Vernation is considered either folded or rolled in this work. Bernard and Potter (1984) recognize a third vernation type, clasping, in their treatment of New Mexico grasses. In practice it is very difficult to differentiate between clasping and folded vernation. Clasping vernation is treated as folded in this work. Vernation is often difficult to determine even with ideal specimens and is used sparingly in the key.

Habitat has a limited diagnostic value for most of the grasses considered in this work. They frequently occur throughout the various habitats found in the Balcones Canyonlands subregion. Habitat, for this group is rarely distinct enough to be of any use in making a determination. There are, however, a small number of grasses (e.g. *Zizaniopsis miliacea*) that occur in very specific habitats and for which habitat is a good diagnostic character. Although not used in the key, habitat type is good supplementary information and is included in the individual species descriptions.

The key in this work uses a bracket format similar to that used by Barnard and Potter (1984). Hitchcock (1969) and Sutherland (1975) used an indented format in their treatments. Indented keys are confusing because the leads of a single couplet are often separated by several couplets. The separation prohibits side-by-side comparison of the leads. Indented keys also appear disjointed and progression through them is often confusing to an inexperienced person.

The key in this work is composed of a sequence of uninterrupted couplets similar to the key constructed by Barnard and Potter (1984). The result is a single, large, continuous key. Hitchcock (1969) and Sutherland (1975) utilize a system of smaller keys. Their treatment begins with a leading key that directs the user to a series of smaller, group keys. Group keys can erroneously lead to the assumption that a natural relationship exists between the grasses included within the key. The single, unbroken key in this work is completely artificial and does not suggest any natural relationship between grass species.

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APPENDIX A

Glossary

This glossary contains entries modified after Correll and Johnston (1979), Gould (1975), Lawrence (1951) and Radford et al. (1974).

Abaxial. Located on the surface away from the axis; (e.g., the lower surface of a grass leaf).

Acuminate. Gradually tapering to a long point; longer tapering than acute.

Acute. Tapering to a sharp point; the sides forming a sharp angle of less than 90°; less tapering than acuminate.

Adaxial. Located on the surface toward the axis; (e.g., the upper surface of a grass leaf).

Adnate. Fused together partially or wholly with an unlike part or organ.

Adventitious roots. Roots not developed from the primary root system.

Annual. Completion of the growth cycle within a single year.

Antrorse. Directed upward or forward or toward the apex.

Apex (pl. apices). The tip of an organ.

Appressed. Pressed flat against a surface.

Arcuate. Bent or curved like a bow; moderately curved.

Ascending. Rising or curving upward.

Attenuate. Gradually tapering to a long, fine point; more gradually tapering than acuminate.

- Auricle.** An ear-shaped appendage; applied to the small, pointed appendages that occur at the base of the blade in some grasses.
- Barbed.** Bearing short hairs pointed basally.
- Basal.** Positioned at or arising from the base.
- Blade.** The flattened, expanded portion of the leaf above the sheath.
- Cartilaginous.** Firm and tough, but flexible; like cartilage.
- Cauline.** Of, on, or pertaining to the stem.
- Cespitose.** Growing in tufts or dense clumps
- Ciliate.** With a marginal fringe of hairs.
- Ciliolate.** With a marginal fringe of minute hairs.
- Collar.** The adaxial of a grass leaf at the junction of the sheath and blade.
- Conduplicate.** Folded lengthwise with the adaxial surface within.
- Connate.** Fused together partially or wholly with a like part or organ.
- Convolute.** Rolled up longitudinally with one edge outside and the other inside and the adaxial surface within.
- Cordate.** Heart-shaped; with a broad, notched base and a pointed tip.
- Crown.** The persistent base of an herbaceous perennial.
- Culm.** The stem of a grass.
- Decumbent.** Lying flat or reclining but with the terminal shoots or stem tips ascending.
- Decurrent.** Extending downward from the point of insertion.
- Dentate.** Having tooth-like projections pointed perpendicular to the margins.
- Distal.** Toward or at the tip; opposite the point of attachment.
- Distichous.** Distinctly two-ranked; in two vertical rows.
- Distinct.** Separate, not united with a like part or organ.
- Entire.** Undivided; the margin continuous, not toothed or incised.
- Erect.** Upright; perpendicular to the ground.
- Erose.** Ragged; irregular or uneven, as if gnawed or chewed.

Fastigiate. Clustered close together, nearly parallel; broom-like.

Filiform. Slender; thread-like.

Fimbriate. With a marginal fringe of narrow or filiform segments or tissue.

Free. Separate, not united with an unlike part or organ.

Geniculate. Bent abruptly, like a knee or elbow.

Glabrate (glabrescent). Somewhat glabrous; becoming glabrous.

Glabrous. Without hairs.

Glaucous. Covered or whitened with a waxy bloom; bluish-white or bluish-gray.

Hirsute. Covered with long, straight, usually erect, moderately stiff hairs.

Hispid. Covered with long, straight, erect, stiff, bristly hairs.

Hyaline. Thin, transparent or translucent, and membranous.

Indurate. Hardened.

Innovation. The basal shoots of a perennial grass plant; an offshoot of the stem.

Internode. The portion of a stem between two nodes.

Involute. With the edges or margins rolled inward toward the adaxial surface.

Keel. A prominent lateral ridge.

Lacerate. Irregularly torn.

Lanceolate. Lance-shaped; much longer than broad, tapering at both ends from a point below the middle.

Ligule. A membranous or hairy or membranous and hairy appendage on the adaxial side of a grass leaf at the junction of the sheath and blade.

Linear. Long and narrow with the margins parallel to one another.

Membranous. Thin, soft and pliable.

Midnerve. The central or main vein of a leaf.

Mucronate. With a short and small abrupt tip.

Nerve. A simple vein or slender rib of a leaf.

Node. The joint of a culm; the region of a culm or branch at which leaves or branches are produced.

Obtuse. Blunt; the sides forming an angle greater than 90°.

Papilla (pl. papillae). A minute, nipple-shaped projection.

Papillose. Bearing papillae.

Perennial. Living from year to year.

Pilose. Covered with long, straight, soft hairs.

Plane. Flat.

Prostrate. Lying flat along the ground.

Prow-shaped. Resembling the front of a boat.

Proximal. Toward the base or point of attachment.

Pruinose. Covered or whitened with a coarse waxy bloom; more prominent than glaucous.

Puberulent. Minutely pubescent.

Pubescence. General term for a covering of hairs.

Pubescent. Covered with fine, short, soft, slender hairs; downy.

Reclined. Bending or curving downward; lying upon or being supported by something.

Retorse. Directed downward, backward, toward the base.

Rhizome. A modified horizontal stem that runs underground, typically with scaly leaves, producing adventitious roots and upright shoots at regularly spaced nodes.

Scaberulous. Minutely scabrous.

Scabrous. Rough to the touch due to short, stiff hairs or the structure of the epidermis growing at an angle.

Serrate. Saw-toothed, the sharp teeth pointed apically.

Serrulate. Finely serrate.

Sheath. The basal portion of the grass leaf that encloses the culm.

Stolon. A modified horizontal stem that runs or loops above the ground producing roots and upright shoots at regularly spaced nodes.

Striate. Marked with fine lines or furrows.

Strigose. Covered with short, bent (at the base), stiff, sharp hairs usually with a bulbous base.

Sub- (prefix). Somewhat or almost.

Succulent. Fleshy or juicy.

Throat. The adaxial portion of a grass leaf at the junction of the sheath and blade.

Tomentose. Covered with short, densely matted, soft hairs; wooly.

Trichome. A hair.

Truncate. Ending abruptly as if cut off squarely at the end.

Undulate. Gently wavy in the vertical plane.

Vernation. The arrangement of leaves within the unopened bud.

Vestiture. Collective term for the epidermal coverings of a plant.

Villous. Covered with long, curved or wavy, soft hairs; shaggy.

Viscid. Sticky.

APPENDIX B

List of Specimens Examined

Aegilops cylindrica Host

TEXAS: BLANCO CO. *Wipff, Jensen & Wipff* 77 (TAES). EASTLAND CO. *Gould* 7589 (TEX-LL). HEMPHILL CO. *Reeder & Reeder* 5313 (TEX-LL). KERR CO. *Sanchez* 1254 (SWT). LLANO CO. *S. & G. Jones* 6616 (SWT). RANDALL CO. *Hatch* 6310 (TAES). TOM GREEN CO. *Hatch & Gandhi* 5410 (SWT). TRAVIS CO. *Tharp* 53-822 (TEX-LL), *Tharp s.n.* (TEX-LL).

Agrostis hyemalis (Walt.) B.S.P.

TEXAS: BOWIE CO. *Gould* 14278 (TAES). BRAZOS CO. *Aljoe* 36 (SWT), *Gould* 15405 (SWT). BURLESON CO. *Snow* 230 (SWT), *Toledo* 26 (SWT). FORT BEND CO. *Knight* 138 (SWT). GRIMES CO. *Lemke* 224 (SWT). HOUSTON CO. *S. & G. Jones* 1037 (TAES). JACKSON CO. *Cosper* 67 (SWT). LEON CO. *Nixon* 17892 (TAES).

Agrostis perennans (Walt.) Tuckerm.

TEXAS: ANDERSON CO. *Orzell & Bridges* 8634 (TEX-LL), *Spoons* 83016 (TAES). HARDEN CO. *Morton* 108AM (TAES). HENDERSON CO. *Shinners* 25372 (TEX-LL). HOUSTON CO. *Hatch* 6167 (SWT). MORRIS CO. *Correll* 26324 (TEX-LL). SAN JACINTO CO. *McClain* 57 (TAES). SMITH CO. *Bent* 807 (TEX-LL). WOOD CO. *Orzell & Bridges* 8713 (SWT).

Andropogon gerardii Vitman

TEXAS: ANGELINA CO. *Johnston, Flyr & Phillips* 7131 (SWT). BLANCO CO. *Sanchez* 953 (SWT). CORYELL CO. *Sanchez* 1428 (SWT). DALLAM CO. *Johnston & Walker* 6838 (SWT). DONLEY CO. *Johnston & Walker* 6797 (SWT). HARRIS CO. *Nixon* 5995

(SWT). HARTLEY CO. *Johnston & Walker* 6853 (SWT). HUNT CO. *Lemke* 2714

(SWT). HAYS CO. *Lyday* 290 (SWT). KENDALL CO. *Breckenridge* 577 (SWT).

Andropogon glomeratus (Walt.) Tuckerm.

TEXAS: ARANSAS CO. *Lemke* 734 (SWT). BANDERA/MEDINA CO. *Lackey* 329

(SWT). BLANCO CO. *Ramirez* 7 (SWT), *Sanchez* 894 (SWT). COMAL CO. *Schoolcraft*

48 (SWT). CAMERON CO. *Boylan* 426 (SWT). HARRIS CO. *Nixon* 16075 (SWT).

HAYS CO. *Litchfield* s.n. (SWT). NUECES CO. *Lemke* 2066 (SWT). VAL VERDE CO.

Labus 64 (SWT).

Andropogon virginicus L.

TEXAS: ANDERSON CO. *Hatch* 5072 (SWT). BASTROP CO. *Carr* 9425 (SWT).

GALVESTON CO. *Hatch* 5759 (SWT), *Newcomb* 35 (SWT), *Waller* 3272 (SWT), *Waller*

& *Bauml* 3324 (SWT). NOCOGDOCHES CO. *Brooks* 15 (TAES). SAN AUGUSTINE

CO. *George & Nixon* 161 (SWT). TARRANT CO. *Snowden* 915361 (TAES). TYLER

CO. *Johnston, Flyr & Phillips* 7014 (SWT).

Aristida adscensions L.

TEXAS: ANGELINA CO. *McCall* 64-30 (TAES). BRAZOS CO. *Redder* 53 (TAES),

Morden 128 (TAES). CROCKETT CO. *Lemke* 2617 (SWT). DALLAM CO. *Johnston &*

Walker 6827 (SWT). EDWARDS CO. *Cory* s.n. (TEX-LL). HILDAGO CO. *S. & G.*

Jones 6122 (SWT). LAMB CO. *Johnston & Walker* 6897 (SWT). OLDHAM CO.

Johnston & Walker 6864 (SWT). VAL VERDE CO. *Tharp* 56-21 (TEX-LL).

Aristida desmantha Trin. & Rupr.

TEXAS: ANDERSON CO. *Hatch* 5069 (SWT), *Orzell & Bridges* 8639 (SWT). BASTROP

CO. *S. & G. Jones* 5708 (TEX-LL). FREESTONE CO. *Holmes* 7520 (TEX-LL). LEON

CO. *Clark* 701 (TAES), *Lonard, Waller & Bacon* 2446 (TAES), *McCasland et al.* 11

(SWT). ROBERTSON CO. *Orzell & Bridges* 8624 (SWT). SAN AUGUSTINE CO. *Rosen*

& *Jones* 695 (SWT). TARRANT CO. *Snowden* 915388 (TAES). UPSHUR CO.

Shinners 30736 (TEX-LL).

***Aristida longespica* Poir.**

TEXAS: BASTROP CO. *Carr & Kutac* 9262 (TEX-LL), *Carr & Kutac* 9265 (TEX-LL).
 BRAZORIA CO. *Hatch* 1119 (TAES). ERATH CO. *Hancock* 64-9 (TAES).
 GALVESTON CO. *Hatch* 1794 (TAES), *Waller & Bauml* 3217 (SWT). HOUSTON CO.
Rosen & Jones 648 (SWT). LAMPASAS CO. *Hatch* 5819 (TEX-LL). LEON CO. *Daniel*
et al. 16 (SWT). TARRANT CO. *Carr* 13159 (TEX-LL).

***Aristida oligantha* Michx.**

TEXAS: ANDERSON CO. *Hatch* 5081 (SWT). CALDWELL CO. *Breckenridge* 548
 (SWT). COMAL CO. *Neely* 18 (SWT), *Stapper* 49 (SWT). GALVESTON CO. *Waller &*
Bauml 3189 (SWT). HAYS CO. *Ruisecco* 21 (SWT). OLDHAM CO. *Johnston & Walker*
 6874 (SWT). SAN AUGUSTINE CO. *George & Nixon* 76 (SWT). ZAVALA CO. *Dingee*
 45 (SWT).

***Aristida purpurea* Nutt.**

TEXAS: BEE CO. *Lemke* 2256 (SWT). BLANCO CO. *Sanchez* 828 (SWT).
 GUADALUPE CO. *Roberts* 169 (SWT). HAYS CO. *Lemke* 414 (SWT), *Lemke* 485
 (SWT), *Lemke* 801 (SWT). KENEDY CO. *Lemke* 311 (SWT). KERR CO. *Sanchez* 1067
 (SWT). LIVE OAK CO. *Mittelhauser* 176 (SWT). UVALDE CO. *Lemke* 944 (SWT). VAL
 VERDE CO. *Labus* 126 (SWT). ZAPATA CO. *Lemke* 1526 (SWT). ZAVALA CO.
Shepard 37 (SWT).

***Arundo donax* L.**

TEXAS: BEXAR CO. *Bruno* 37 (SWT). BLANCO CO. *Hutzler* 44 (SWT), *Sanchez* 829
 (SWT). CALHOUN CO. *Harvey* 7580 (TAES). COMAL CO. *Leister* 53 (TAES).
 FAYETTE CO. *Mikesky* 46 (TAES). GALVESTON CO. *Waller* 3280 (SWT).
 GUADALUPE CO. *Jefferies* 22 (SWT), *Smith* 41 (SWT). HAYS CO. *Litchfield s.n.*
 (SWT). TITUS CO. *Lemke* 1297 (SWT). TRAVIS CO. *Thomas* 70 (SWT).

***Avena fatua* L.**

TEXAS: BLANCO CO. *Ramirez* 193 (SWT). BEXAR CO. *Hagenbuch* 27 (SWT).

CALDWELL CO. *Lemke* 463 (SWT). COMAL CO. *Morris* 62 (SWT). GILLESPIE CO. *Behrends* 54 (SWT). GUADALUPE CO. *Shipman* 35 (SWT). MEDINA CO. *Lemke* 1747 (SWT). TRAVIS CO. *Jones* 14 (SWT). WHARTON CO. *Blecha* 19 (SWT).

Bothriochloa barbinodis (Lag.) Herter

TEXAS: BEXAR CO. *Silveus* 7576 (TEX-LL). BROWN CO. *Carr* 9665 (TEX-LL). GAINES CO. *Johnston & Walker* 6360 (SWT). HAYS CO. *Gould* 6692 (TEX-LL), *Liang* 115 (SWT). KENDALL CO. *Carr* 9386 (TEX-LL). KERR CO. *Brown s.n.* (TEX-LL). LAMPASAS CO. *Hatch* 5822 (TEX-LL). REAL CO. *Smith & Butterwick* 288 (TEX-LL). TRAVIS CO. *Brown s.n.* (TEX-LL). VAL VERDE CO. *Labus* 156 (SWT).

Bothriochloa edwardsiana (Gould) L. R. Parodi

TEXAS: EDWARDS CO. *Gould & Merrill* 5763 (TAES), *Gould & Merrill* 5971 (TAES). KERR CO. *Brown s.n.* (TEX-LL), *Gould* 8241 (TAES). MENARD CO. *Landers* 5229 (TAES). SUTTON CO. *Gould & Merrill* 5763 (TEX-LL).

Bothriochloa hybrida (Gould) Gould

TEXAS: ATASCOSA CO. *Gould* 6223 (TEX-LL). BASTROP CO. *Oakley* 354 (SWT). BURNET CO. *Lemke* 2040 (SWT). DUVAL CO. *Hatch* 5263 (SWT). GALVESTON CO. *Waller & Brauml* 2920 (SWT). GUADALUPE CO. *Gould* 6940 (TEX-LL). REAL CO. *Gould* 6482 (TEX-LL). TRAVIS CO. *Brown s.n.* (TEX-LL). UVALDE CO. *Gould* 6948 (TEX-LL), *Gould* 6950 (TEX-LL). WILLIAMSON CO. *Mears* 638 (TEX-LL).

Bothriochloa ischaemum (L.) Keng

TEXAS: BANDERA/MEDINA CO. *Lackey* 254 (SWT). BLANCO CO. *Lemke* 705 (SWT), *Sanchez* 772 (SWT), *Sanchez* 938 (SWT). FORT BEND CO. *Knight* 142 (SWT). HAYS CO. *Bierner* 90-210 (SWT), *Breckenridge* 449 (SWT), *Breckenridge* 512 (SWT), *Lyday* 143 (SWT), *Ruiseco* 29 (SWT). KERR CO. *Sanchez* 1065 (SWT). LAMPASAS CO. *Colquitt* 16 (SWT), *Robinson* 10 (SWT). VAL VERDE CO. *Labus* 338 (SWT).

Bothriochloa laguroides (DC.) Herter

TEXAS: BANDERA/MEDINA CO. *Sanchez* 562 (SWT). BURNET CO. *Breckenridge*

613 (SWT). CROCKETT CO. *Lemke* 2596 (SWT). GILLESPIE CO. *Sanchez* 969 (SWT). HAYS CO. *Burleson* 18 (SWT), *Lyday* 247 (SWT), *Monahan* 20 (SWT). SAN PATRICIO CO. *Aljoe* 32 (SWT). VAL VERDE CO. *Labus* 298 (SWT).

Bouteloua aristidoides (Kunth in H.B.K.) Griseb.

TEXAS: BURNET CO. *Carr, Kutac, Lynch & Brown* 9143 (TEX-LL), *S. & G. Jones* 1903 (TAES), *Powell & Powell* 4110 (TAES). HILDAGO CO. *Carr* 14327 (TEX-LL). LLANO CO. *Lemke* s.n. (SWT). MASON CO. *Emery* 815 (TEX-LL). STARR CO. *Butterwick & Strong* 1403 (TEX-LL). TRAVIS CO. *Carr & Bergquist* 11381 (TEX-LL). WEBB CO. *Saenz* 1 (TEX-LL). WINKLER CO. *Warnock* 18545 (TEX-LL).

Bouteloua barbata Lag.

TEXAS: BROOKS CO. *Jones* 6078 (SWT). DUVAL CO. *Ramirez, Alva & McCart* 8710 (TEX-LL). EL PASO CO. *Hatch* 5854 (SWT). JEFF DAVIS CO. *Warnock & Johnston* 16880 (SWT). PRESIDIO CO. *Warnock* 14173 (SWT). SCURRY CO. *Johnston* 6528 (SWT). WEBB CO. *Baird* 60-61-15 (TEX-LL), *McCart, Barreda & Garcia* 6 (TEX-LL), *Perez* 94 (TEX-LL).

Bouteloua curtipendula (Michx.) Torr.

TEXAS: BANDERA/MEDINA CO. *Lackey* 279 (SWT). BLANCO CO. *Sanchez* 776 (SWT). BRAZOS CO. *Kastan* 73 (SWT). BROWN CO. *Black* 207a (SWT), *Sumrall* 25 (SWT). BURNET CO. *Oakley* 295 (SWT), *Reid* 2 (SWT). COMAL CO. *Breckenridge* 495 (SWT). GRIMES CO. *Lemke* 1933 (SWT). KIMBLE CO. *Sanchez* 1023 (SWT). LLANO CO. *Lemke* 2054 (SWT). WILLIAMSON CO. *Carr* 3225 (SWT).

Bouteloua hirsuta Lag.

TEXAS: ANDERSON CO. *Orzell & Bridges* 7977 (SWT). BANDERA/MEDINA CO. *Lackey* 247 (SWT). BURNET CO. *Lemke* 721 (SWT). COMAL CO. *Breckenridge* 492 (SWT), *Schoolcraft* 60 (SWT). GILLESPIE CO. *Boylan* 315 (SWT), *Sanchez* 988 (SWT). KENDALL CO. *Breckenridge* 574 (SWT). HAYS CO. *Breckenridge* 517 (SWT), *Jessup* 31 (SWT), *Lemke* 673 (SWT), *Lyday* 135 (SWT). LLANO CO. *Wallace* 96 (SWT).

Bouteloua repens (Kunth in H.B.K.) Scribn. & Merr.

TEXAS: BEXAR CO. *Diaz & Higdon H17* (TEX-LL), *Miller s.n.* (TAES). HILDAGO CO. *Gould 9667* (TEX-LL), *Carr, Wolfe & Liu 14312* (TEX-LL), *Lonard 5009* (SWT). JIM HOGG CO. *Carr & Whitling 13204* (TEX-LL), *S. & G. Jones 7849* (SWT). LASALLE CO. *Cocke 18* (TAES). WEBB CO. *Gould 11094* (TAES).

Bouteloua rigidisetata (Steud.) A. S. Hitchc.

TEXAS: BANDERA/MEDINA CO. *Lackey 446* (SWT). BLANCO CO. *Sanchez 907* (SWT). BURLESON CO. *Toledo 25* (SWT). COMAL CO. *Breckenridge 494* (SWT). GILLESPIE CO. *Sanchez 959* (SWT). HAYS CO. *Lemke 390* (SWT), *Lemke 440* (SWT), *Lemke 799* (SWT), *Lemke 1566* (SWT), *Liang 101* (SWT), *Lyday 150* (SWT), *Rockett 78* (SWT), *Ruiseco 20* (SWT). JIM HOGG CO. *Lemke 1566* (SWT). KERR CO. *Sanchez 1060* (SWT). KIMBLE CO. *Sanchez 1354* (SWT). KLEBERG CO. *Cresson 71* (SWT). MCLENNAN CO. *Holmes 5035* (SWT). WILLIAMSON CO. *Carr 3216* (SWT). ZAVALA CO. *Casey 65* (SWT).

Bouteloua trifida Thurb.

TEXAS: BLANCO CO. *Launchbaugh 387* (TAES). COMAL CO. *West 35* (TAES). EDWARDS CO. *Gibbens 37* (TAES), *Hyman 62* (TAES). GILLESPIE CO. *Sanchez 1057* (SWT). HAYS CO. *Breckenridge 609* (SWT), *Jessup 64* (SWT), *Lemke 796* (SWT). KIMBLE CO. *Sanchez 1034* (SWT). LLANO CO. *Lemke 695* (SWT). UVALDE CO. *Shepard 73* (SWT). VAL VERDE CO. *Labus 127* (SWT), *Labus 305* (SWT), *Labus 339* (SWT).

Bouteloua uniflora Vasey

TEXAS: BANDERA CO. *Silveus 7207* (TEX-LL). BREWSTER CO. *Warnock 6932* (TEX-LL), *Warnock 23239* (TEX-LL). EDWARDS CO. *Brown & Freter s.n.* (TEX-LL). KERR CO. *Gould 9751* (TEX-LL), *May 5520* (TEX-LL). KIMBLE CO. *Gould 96836* (TEX-LL). TOM GREEN CO. *Gould 7802* (TEX-LL). UVALDE CO. *Silveus 319* (TEX-LL).

***Bromus catharticus* Vahl**

TEXAS: BASTROP CO. *Ursin* 28 (SWT). BEXAR CO. *Hagenbuch* 8 (SWT), *Mayo* 51 (SWT). GILLESPIE CO. *Weidenfeller* 5 (SWT). LUBBOCK CO. *Steed & Crumley* 64 (SWT). MCMULLEN CO. *Lemke* 1599 (SWT). MEDINA CO. *Lemke* 1755 (SWT). SAN PATRICIO CO. *Lemke* 835 (SWT). TOM GREEN CO. *Lemke* 1630 (SWT). UVALDE CO. *Lemke* 935 (SWT). WILSON CO. *Mills* 21 (SWT).

***Bromus japonicus* Thunb. ex Murray**

TEXAS: BANDERA/MEDINA CO. *Lackey* 547 (SWT). BASTROP CO. *Jones* 89 (SWT). COMAL CO. *Lemke* 521 (SWT). CONCHO CO. *Hatch & Gandhi* 5411 (SWT). CORYELL CO. *Coffey* 1628 (SWT). HAYS CO. *Blecha* 11 (SWT), *Lackey* 91 (SWT), *Ruiseco* 37 (SWT). SABINE CO. *Lemke* 1006 (SWT).

***Bromus pubescens* Muhl. ex Willd.**

TEXAS: BELL CO. *Carr & Sanchez* 17395 (TEX-LL), *Carr & Sanchez* 17397 (TEX-LL). BEXAR CO. *Tharp* s.n. (TEX-LL). BLANCO CO. *Tharp* 43246 (TEX-LL). GOLIAD CO. *Carr* 9505 (TEX-LL). HAYS CO. *Carr & Johnson* 18089 (TEX-LL). PARKER CO. *Carr* 13931 (TEX-LL). TARRANT CO. *Carr* 12821 (TEX-LL). TRAVIS CO. *Carr* 18893 (TEX-LL), *Carr* 18904 (TEX-LL), *Lemke* 3657 (SWT). WILLIAMSON CO. *Carr* 18827 (TEX-LL).

***Bromus secalinus* L.**

TEXAS: BRAZOS CO. *Knight* 163 (SWT), *Toledo* 18 (SWT). CALDWELL CO. *Lemke* 457 (SWT). COMAL CO. *Lemke* 399 (SWT). CROCKETT CO. *Lemke* 2569 (SWT). GRIMES CO. *Lemke* 188 (SWT). GUADALUPE CO. *Braswell* 94 (SWT). LLANO CO. *Hatch, Jones & Wipff* 6243 (SWT). TITUS CO. *Lemke* 1791 (SWT).

***Bromus tectorum* L.**

TEXAS: BLANCO CO. *Sanchez* 1213 (SWT), *Wipff, Jensen & Wipff* 106 (TAES). KERR CO. *Hardy* 144 (TAES), *McMahan* 156 (TAES), *Sanchez* 1253 (SWT), *Sanchez*

1279 (SWT). LIPSCOMB CO. *Wallis* 8436 (TEX-LL). OCHILTREE CO. *Gould* 9864 (TEX-LL). ROBERTS CO. *Wallis* 8520 (TEX-LL).

Bromus texensis (Shear) A. S. Hitchc.

TEXAS: BEXAR CO. *Carr & Diamond* 14633 (TEX-LL), *Silveus* 3911 (TEX-LL), *Silveus* 7 (TAES), *Silveus* 615 (TAES), *Silveus* 5915 (TAES). REFUGIO CO. *Hill* 6839 (TAES), *Osborn* 53 (TAES). SAN PATRICIO CO. *Aljoe* 15 (SWT), *Anderson* 25 (SWT), *Gould* 11093 (TEX-LL), *Hatch* 4785 (SWT), *Ramu et al.* 54 (SWT), *Snow* 258 (TEX-LL), *Toledo* 38 (SWT).

Buchloë dactyloides (Nutt.) Engelm.

TEXAS: BANDERA/MEDINA CO. *Lackey* 381 (SWT). CROCKETT CO. *Lemke* 2626 (SWT). FAYETTE CO. *Aljoe* 3 (SWT). GILLESPIE CO. *Kast* 8 (TAES). JIM HOGG CO. *S. & G. Jones* 824 (SWT). KERR CO. *Coffey* 45 (TAES). KIMBLE CO. *Sanchez* 1301 (SWT). SCURRY CO. *Johnston* 6530 (SWT). UVALDE CO. *Shepard* 65 (SWT). ZAVALA CO. *Casey* 71 (SWT).

Cenchrus longispinus (Hack.) Fern.

OKLAHOMA: HARPER CO. *Nighswenger* 2331 (TAES). TEXAS: BREWSTER CO. *Warnock & Johnston* 16844 (SWT). CARSON CO. *Johnston & Walker* 6803 (TEX-LL). COLLINGSWORTH CO. *Gould & Thomas* 7731 (TEX-LL). LAMB CO. *Gould* 7739 (TAES). LUBBOCK CO. *Gould* 7786 (TEX-LL), *Gould* 7793 (TAES). PRESIDIO CO. *Correll & Johnston* 24375 (TEX-LL), *Morden* 413 (TAES).

Cenchrus myosuroides Kunth in H.B.K.

TEXAS: BEXAR CO. *Tharp* s.n. (SWT). BRAZOS CO. *Hatch* 1140 (TAES). HILDAGO CO. *Fleetwood* 10978 (TEX-LL). PRESIDIO CO. *Butterwick & Strong* B-1057 (TEX-LL). SAN PATRICIO CO. *Gould* 11956 (TEX-LL), *Gould* 13992 (TAES), *Hatch* 4456 (TAES). TRAVIS CO. *DeLisle* 973 (TEX-LL). VAL VERDE CO. *Eggert* s.n. (TEX-LL), *Warnock & Parks* s.n. (TEX-LL). WEBB CO. *Chamberlain* 18 (TEX-LL).

Cenchrus spinifex A. Cavanilles

TEXAS: BAILEY CO. *Johnston & Walker 6901* (SWT). BANDERA/MEDINA CO. *Sanchez 629* (SWT). BLANCO CO. *Sanchez 775* (SWT), *Sanchez 935* (SWT). BRAZOS CO. *Redder 11* (SWT), *Windham 27* (SWT). CROCKETT CO. *Lemke 2620* (SWT). DEWITT CO. *Logeman 97* (SWT). GLASSCOCK CO. *Johnston & Walker 6963* (SWT). HAYS CO. *Breckenridge 456* (SWT). HILDAGO CO. *Hook 8* (SWT). KAUFMAN CO. *Lemke 2920* (SWT). KINNEY CO. *Rosen 242* (SWT). KLEBERG CO. *Lemke 3004* (SWT). SUTTON CO. *Mitchell 55* (SWT). TITUS CO. *Lemke 1244* (SWT).

Chasmanthium latifolium (Michx.) Yates

TEXAS: ANDERSON CO. *Daniel et al. 41* (SWT). BEXAR CO. *Morris 43* (SWT). BRAZOS CO. *McGuyer 3* (SWT), *Perry 9* (SWT). DENTON CO. *Boylan 200* (SWT). GALVESTON CO. *Waller & Bauml 2990* (SWT). GUADALUPE CO. *Brainard 5* (SWT). HOUSTON CO. *S. & G. Jones 3418* (SWT). KIMBLE CO. *Sanchez 1051* (SWT). ROBERTSON CO. *Lemke 3360* (SWT). TRAVIS CO. *Bierner 90-138* (SWT), *Lemke 1950* (SWT), *Lemke 3828* (SWT). VAN ZANDT CO. *Johnston 6641* (SWT).

Chloris* × *subdolichostachya Muell.

TEXAS: BEE CO. *Lemke 2231* (SWT). BLANCO CO. *Lemke 712* (SWT). CALDWELL CO. *Breckenridge 547* (SWT), *Lemke 2021* (SWT), *Oxley 1* (SWT). FALLS CO. *Trahan 18* (SWT). HAYS CO. *Breckenridge 511* (SWT), *Lemke 793* (SWT). KERR CO. *Sanchez 1078* (SWT). LAMPASAS CO. *Colquitt 15* (SWT), *Pate 2* (SWT).

Chloris andropogonoides Fourn.

TEXAS: ATASCOSA CO. *Johnston 6197* (TEX-LL). BEXAR CO. *Freeborn 208* (TEX-LL), *Higdon 22* (TEX-LL), *Johnston 2409* (TEX-LL), *Silveus 2332* (TEX-LL). HAYS CO. *Emery 835* (TEX-LL). SAN PATRICIO CO. *Aljoe 30* (SWT), *Gould & Hycka 8027* (TEX-LL). TRAVIS CO. *Brown E-3* (TEX-LL), *Brown E-6* (TEX-LL).

Chloris ciliata Sw.

TEXAS: BEE CO. *Gould 9511* (TEX-LL), *Tharp 43071* (TEX-LL). BEXAR CO. *Silveus*

137 (TEX-LL). BRAZORIA CO. *Carr, Teague & Bruce* 18029 (TEX-LL), *Carr & Williams* 17866 (TEX-LL). GALVESTON CO. *Rosen* 527 (SWT). KARNES CO. *Emery* 773 (TEX-LL). SAN PATRICIO CO. *Gould* 9903 (TEX-LL). TRAVIS CO. *Brown E-7* (TEX-LL)

Chloris cucullata Bisch.

TEXAS: ATASCOSA CO. *Hurley* 5 (SWT). BEXAR CO. *Garcia* 109 (SWT). CALDWELL CO. *Marr* 11 (SWT). EDWARDS CO. *Evans* 28 (SWT). FRIO CO. *Blecha* 37 (SWT). GILLESPIE CO. *Boylan* 320 (SWT), *Sanchez* 966 (SWT). GONZALES CO. *Lemke* 2698 (SWT). GUADALUPE CO. *Roberts* 168 (SWT). LASALLE CO. *Lake* 19 (SWT). LLANO CO. *Wallace* 97 (SWT). REFUGIO CO. *Jenkins* 13 (SWT). UVALDE CO. *Shepard* 81 (SWT).

Chloris divaricata R. Br.

TEXAS: BEXAR CO. *Silveus* 2564 (TAES). JIM WELLS CO. *Coffey* 501 (TAES). KLEBERG CO. *Lundell* 14014 (TEX-LL). WHARTON CO. *Losack* 84 (SWT). AUSTRALIA: QUEENSLAND *Clemmens s.n.* (TEX-LL), *Clemmens s.n.* (TEX-LL), *Clemmens s.n.* (TEX-LL).

Chloris verticillata Nutt.

TEXAS: BEXAR CO. *Freeborn* 208 (TEX-LL), *Rutledge* 3 (TEX-LL). BANDERA/MEDINA CO. *Sanchez* 626 (SWT). BLANCO CO. *Sanchez* 781 (SWT). DALLAM CO. *Johnston & Walker* 6835 (SWT). HAYS CO. *Heidemeyer* 30 (SWT), *Johnson* 258 (TEX-LL). LLANO CO. *Emery* 817 (TEX-LL). SCURRY CO. *Johnston* 6533 (SWT). TRAVIS CO. *Dunlap* 96 (TEX-LL), *Oefinger* 306 (TEX-LL).

Chloris virgata Sw.

TEXAS: BAYLOR CO. *Shinners* 20764 (TEX-LL). EL PASO CO. *Hatch* 5863 (SWT), *Worthington* 17190 (SWT). HARRIS CO. *Ward* 1353 (SWT). KIMBLE CO. *Sanchez* 1036 (SWT). TRAVIS CO. *Brown* 3273 (TEX-LL), *Brown* 20529 (TEX-LL), *Brown s.n.* (TEX-LL). PRESIDIO CO. *Foster* 428 (SWT).

Cynodon dactylon (L.) Pers.

TEXAS: BLANCO CO. *Margo* 23 (TAES). BRAZOS CO. *Knight* 148 (SWT), *Snow* 181 (SWT). CAMERON CO. *Lemke* 574 (SWT). CULBERSON CO. *Bierner* 91-46 (SWT). GILLESPIE CO. *Sanchez* 995 (SWT). GONZALES CO. *Keeble* 16 (SWT). GUADALUPE CO. *Balcer* 82 (SWT). TOM GREEN CO. *Landers s.n.* (TAES). TRAVIS CO. *Ruiseco* 209 (SWT). WASHINGTON CO. *Polley* 66, (TAES). WILLIAMSON CO. *Sutton* 39 (TAES). WILSON CO. *Smith* 69 (SWT). ZAVALA CO. *Dingee* 51 (SWT).

Dactyloctenium aegyptium (L.) Beauv.

TEXAS: BRAZOS CO. *Donges et al.* 9 (SWT), *Webster* 1697 (TAES). BROWN CO. *Barton* 34 (TAES). CALDWELL CO. *Lemke* 790 (SWT). GALVESTON CO. *Hatch* 5755 (SWT). JIM WELLS CO. *Coffey* 635 (TAES). KLEBERG CO. *Lemke* 3005 (SWT). NUECES CO. *Lemke* 3331 (SWT). WILSON CO. *Smith* 71 (SWT).

Desmazeria rigida (L.) T. Tutin

TEXAS: BRAZOS CO. *Gould* 8643 (TAES), *Hatch* 1663 (TEX-LL), *Knight* 164 (SWT), *S. & G. Jones* 1016 (TAES). HARRIS CO. *Brown* 20230 (TEX-LL). HAYS CO. *Hendrick* 86 (SWT), *Ruiseco* 50 (SWT), *Ruiseco* 122 (SWT). TRAVIS CO. *Snow* 219 (SWT). WASHINGTON CO. *Lonard* 2013 (TAES).

Dichanthium annulatum (Forssk.) Stapf

TEXAS: BRAZOS CO. *Troland* 5 (SWT). CAMERON CO. *Lemke & Roberts* 3034 (SWT). CORYELL CO. *Sanchez* 1379 (SWT). HILDAGO CO. *Lonard* 4935 (SWT). KENEDY CO. *Gould* 11460 (TEX-LL). NUECES CO. *Snow* 189 (SWT). SAN PATRICIO CO. *Lievens & Lievens* 2909 (TEX-LL). TRAVIS CO. *Carr* 17897 (TEX-LL). VAL VERDE CO. *Carr, McNeal & Westlund* 12442 (TEX-LL).

Digitaria californica (Benth.) Henr.

TEXAS: ANDREWS CO. *Scudday s.n.* (SWT). ARCHER CO. *Gould* 9771 (TAES). BREWSTER CO. *Warnock s.n.* (SWT). CRANE CO. *McBryde* 14956 (SWT). GILLESPIE CO. *Epps* 22 (TAES), *Snyder* 29 (TAES). HILDAGO CO. *Lonard* 4977

(SWT). KERR CO. *Gould* 8305 (TAES). PRESIDIO CO. *Warnock* 14165 (SWT). VAL VERDE CO. *Labus* 346 (SWT), *Labus* 363 (SWT).

Digitaria ciliaris (Retz.) Koel.

TEXAS: BASTROP CO. *Carr* 9402 (TEX-LL), *Carr, Lui & Wolfe* 14938 (TEX-LL). CALDWELL CO. *Lemke* 2677 (SWT). COTTLE CO. *Shinners* 30357 (TEX-LL). ERATH CO. *Gould* 10279 (TEX-LL). GRIMES CO. *Lemke* 1941 (SWT). HAYS CO. *Breckenridge* 513 (SWT). HEMPHILL CO. *Rowell* 4324 (TEX-LL). MCLENNAN CO. *S. & G. Jones* 3217 (SWT). PARKER CO. *Lipscomb* 2394 (TEX-LL). ROBERTSON CO. *Lemke* 258 (SWT).

Digitaria cognata (Schult.) Pilger

TEXAS: BANDERA/MEDINA CO. *Sanchez* 648 (SWT). BURNET CO. *Boylan* 2 (SWT). CROCKETT CO. *Warnock & McBryde* 15282 (SWT). FAYETTE CO. *Shepard* 100 (SWT). GILLESPIE CO. *Sanchez* 1058 (SWT). HAYS CO. *Lyday* 142 (SWT), *Lyday* 148 (SWT), *Ruiseco* 28 (SWT). KAUFMAN CO. *Lemke* 2524 (SWT). KERR CO. *Sanchez* 1080 (SWT). KINNEY CO. *Rosen* 224 (SWT). RUSK CO. *Rosen & Jones* 676 (SWT). TITUS CO. *Lemke* 1246 (SWT).

Digitaria insularis (L.) Fedde

TEXAS: CAMERON CO. *Runyon* 5969 (TEX-LL). DIMMIT CO. *Gould* 5798 (TAES), *Schroeder* 40 (TAES). HILDAGO CO. *Fleetwood* 3137 (TEX-LL), *Fleetwood* 3309 (TEX-LL), *Fleetwood* 7066 (TEX-LL), *Lonard* 4977 (TAES), *Tidwell* 67 (TEX-LL). KLEBERG CO. *Johnston* 541659 (TEX-LL). TRAVIS CO. *Brown F-2* (TEX-LL).

Digitaria patens (Swallen) Henr.

TEXAS: BEXAR CO. *Parks s.n.* (TAES), *Silveus* 2415 (TEX-LL). JIM WELLS CO. *Coffey* 236 (TAES), *Coffey* 1207 (TAES). KLEBERG CO. *Gould* 11450 (TAES), *Lundell* 14870 (TEX-LL), *Lundell* 14952 (TEX-LL), *Lundell* 15006 (TEX-LL). LLANO CO. *Brown & Higdon s.n.* (TEX-LL), *Gould* 8430 (TEX-LL). TRAVIS CO. *Brown* 3520 (TEX-LL). VAL VERDE CO. *Warnock & McBryde* 15049 (SWT).

***Digitaria sanguinalis* (L.) Scop.**

TEXAS: AUSTIN CO. *Galle* 12 (TAES). BEXAR CO. *Silveus* 2246 (TEX-LL).
 BRAZORIA CO. *Huett* 39 (TAES). COLLINGSWORTH CO. *Tharp & Miller* 51-355
 (TEX-LL). HAYS CO. *Bailey* 92 (SWT). JACK CO. *Gould* 10283 (TEX-LL). JEFF
 DAVIS CO. *Keough* 16 (TEX-LL), *Warnock* 6688 (TEX-LL), *Warnock* 7471 (TEX-LL).
 SMITH CO. *Johnston* 6618 (SWT).

***Echinochloa colona* (L.) Link**

TEXAS: BEXAR CO. *Freeborn* 205 (TEX-LL), *Hutzler* 20 (SWT). BLANCO CO. *Baird*
s.n. (TEX-LL). CROCKETT CO. *Lemke* 2623 (SWT). EL PASO CO. *Worthington* 17187
 (SWT). HAYS CO. *Breckenridge* 441 (SWT). HILL CO. *Gereau* 25 (TEX-LL). HUNT
 CO. *Lemke* 2742 (SWT). LEE CO. *Carr & Kutac* 8797 (TEX-LL). TRAVIS CO. *Mears*
 565 (TEX-LL), *Oefinger* 301 (TEX-LL), *Turner* 63 (TEX-LL). WALLER CO. *Ayers* 89
 (TEX-LL). WILLIAMSON CO. *Gordon* 51-1760 (TEX-LL).

***Echinochloa crus-galli* (L.) Beauv.**

TEXAS: BRAZOS CO. *Seidensticker* 116 (TAES). CARSON CO. *Johnston & Walker*
 6805 (SWT). CASTRO CO. *Johnston & Walker* 6886 (SWT). COMANCHE CO. *Anders*
 15 (TEX-LL). DALLAM CO. *Johnston & Walker* 6842 (SWT). EL PASO CO.
Worthington 17410 (TAES). LAMB CO. *Johnston & Walker* 6896 (SWT). TRAVIS CO.
Barrie 805 (TEX-LL), *Carr* 4171 (TAES), *Carr & Brown* 9234 (TEX-LL).

***Echinochloa crus-pavonis* (Kunth) Schult.**

TEXAS: BRAZORIA CO. *Rosen* 632 (SWT). BURNET CO. *Breckenridge* 567 (SWT).
 CALHOUN CO. *Gould* 11525a (TEX-LL). GALVESTON CO. *Waller & Bauml* 2827
 (TEX-LL), *Wortham* 44 (TEX-LL). HILDAGO CO. *Lonard* 5012 (SWT). HUNT CO.
Lemke 2752 (SWT). JEFFERSON CO. *Rosen* 359 (SWT), *Rosen* 380 (SWT). LLANO
 CO. *Butterwick & Lamb* 3276 (TEX-LL).

***Echinocloa muricata* (Beauv.) Fern.**

TEXAS: GALVESTON CO. *Rosen & Yeargan* 613 (SWT). HAYS CO. *Jessup* 164

(SWT). HUNT CO. *Sanders* 3831 (TEX-LL), *Sanders* 3844 (TEX-LL). JEFF DAVIS CO. *Warnock* 7469 (TEX-LL), *Warnock* 7947 (TEX-LL). POLK CO. *Jones & Wipff* 1472 (SWT). SHELBY CO. *Nixon & Jones* 15800 (SWT). TITUS CO. *Lemke* 1223 (SWT). VAL VERDE CO. *Henrickson, Webster & Westlund* 22620 (TEX-LL).

Eleusine indica (L.) Gaertn.

TEXAS: BEXAR CO. *Silveus* 179 (TAES), *Silveus* 2226 (TAES). BRAZOS CO. *Donges* 39 (SWT), *Miller* 54 (SWT). FAYETTE CO. *Mikesky* 7 (TAES). GALVESTON CO. *Newcomb* 14 (SWT). GILLESPIE CO. *Sanchez* 998 (SWT). GONZALES CO. *Staton* 36 (SWT). HAYS CO. *Alvarez* 16 (SWT), *Burleson* 25 (SWT), *Jessup* 113 (SWT). HILDAGO CO. *Lonard* 4928 (TAES). REFUGIO CO. *Lemke* 746 (SWT).

Elymus canadensis L.

TEXAS: BANDERA/MEDINA CO. *Lackey* 499 (SWT). COMAL CO. *Lemke* 527 (SWT). CROCKETT CO. *Lemke* 2568 (SWT). GALVESTON CO. *Rosen* 315 (SWT). GILLESPIE CO. *Kast* 51 (TAES). GRIMES CO. *S. & G. Jones* 1598 (TAES). HAYS CO. *Lemke* 441 (SWT). KERR CO. *Clarke* 2 (TAES), *May* 5513 (TAES). STONEWALL CO. *Johnston & Walker* 6775 (SWT). UVALDE CO. *Lemke* 2381 (SWT).

Elymus virginicus L.

TEXAS: BLANCO CO. *Sanchez* 1393 (SWT). BRAZORIA CO. *Dingee* 78 (SWT), *Rosen & Jones* 592 (SWT). DALLAS CO. *Nixon, Buradt & Barnett* 5550 (TAES). FAYETTE CO. *Ramu et.al.* (TAES). GRIMES CO. *S. & G. Jones* 1601 (SWT). GUADALUPE CO. *Bierner* 91-23 (SWT). HAYS CO. *Ruiseco* 69 (SWT). LIVE OAK CO. *Lemke* 2352 (SWT). SAN PATRICIO CO. *Toledo* 40 (SWT).

Eragrostis barrelieri Daveau

TEXAS: BLANCO CO. *Sanchez* 838 (SWT). BURNET CO. *Lemke* 2033 (SWT). COMAL CO. *Lemke* 757 (SWT). EL PASO CO. *Hatch* 5851 (SWT), *Worthington* 17595 (SWT). HAYS CO. *Alvarez* 55 (SWT), *Beard* 51 (SWT), *Breckenridge* 458 (SWT), *Jessup* 156 (SWT), *Thomas* 84 (SWT). HILDAGO CO. *Lemke* 855 (SWT), *Lonard* 4929

(SWT). KERR CO. *Sanchez 1077* (SWT). STERLING CO. *Johnston & Walker 6968* (SWT). VAL VERDE CO. *Labus 279* (SWT), *Labus 312* (SWT), *Warnock & McBryde 15134* (SWT).

Eragrostis cilianensis (All.) Janchen

TEXAS: HILDAGO CO. *Lonard 5017* (SWT). HUNT CO. *Lemke 2903* (SWT). KAUFMAN CO. *Lemke 2922* (SWT). KERR CO. *Gould 8309* (TAES), *Gould 8467* (TAES), *Hatch 5066a* (SWT), *May 5522* (TAES). KINNEY CO. *Rosen 245* (SWT). LAMPASAS CO. *Hamrick 70* (SWT). MCLENNAN CO. *S. & G. Jones 3216* (SWT). TRAVIS CO. *Snider 1* (TAES). WILLIAMSON CO. *Otto 41* (TAES).

Eragrostis curtispindicellata Buckl.

TEXAS: ARCHER CO. *Johnston 6587* (SWT). DUVALL CO. *S. & G. Jones 890* (TAES). ECTOR CO. *Warnock 15805* (SWT). FAYETTE CO. *Ripple 51-1040* (TEX-LL). GILLESPIE CO. *Nixon 28* (TEX-LL). HILDAGO CO. *Lonard 5029* (SWT). JIM WELLS CO. *Coffey 391* (TAES), *Coffey 607* (TAES), *Coffey 633* (TAES). KARNES CO. *Johnson 806* (TEX-LL). LAMPASAS CO. *Hatch et al. 5813* (TEX-LL). MEDINA CO. *Johnston, Tharp & Turner 3430* (TEX-LL).

Eragrostis curvula (Schrad.) Nees

TEXAS: BANDERA CO. *Brownlee 63-37* (TAES). BEXAR CO. *Diaz & Higdon H42* (TEX-LL), *Silveus 2156* (TEX-LL), *Silveus 4663* (TEX-LL), *Silveus 4683* (TEX-LL). BRAZOS CO. *Aljoe 39* (SWT). COMANCHE CO. *Gould 11434* (TEX-LL). GILLESPIE CO. *S. & G. Jones 1301* (TAES). HENDERSON CO. *Gould 10476* (TAES). LEON CO. *S. & G. Jones 1545* (SWT). MCLENNAN CO. *Henard 64-44* (TAES). PARKER CO. *Carr, Wolfe & Perry 14205* (TEX-LL).

Eragrostis intermedia A. S. Hitchc.

TEXAS: BANDERA/MEDINA CO. *Sanchez 645* (SWT). CULBERSON CO. *Warnock 15942* (SWT). GILLESPIE CO. *Sanchez 960* (SWT). HAYS CO. *Breckenridge 457* (SWT), *Jessup 57* (SWT), *Lemke 674* (SWT), *Lyday 281* (SWT), *Ruiseco 11* (SWT).

LAVACA CO. *Knight* 180 (SWT). VAL VERDE CO. *Labus* 129 (SWT), *Labus* 197 (SWT).

Eragrostis lugens Nees

TEXAS: ARANSAS CO. *Hays* 206 (TAES). BELL CO. *Wolff* 481 (TAES). HARRISON CO. *Correll* 35036 (TEX-LL). KARNES CO. *Johnson* 1287 (TAES). REFUGIO CO. *Tharp* s.n. (SWT). SMITH CO. *Correll & Correll* 32028 (TEX-LL). TAYLOR CO. *Tracy* 7928 (TEX-LL). WICHITA CO. *Mckee* s.n. (TEX-LL). ZAPATA CO. *Lemke* 1503 (SWT).

Eragrostis pectinacea (Michx.) Nees ex Steud.

TEXAS: BREWSTER CO. *Marsh* 257 (TAES). DE WITT CO. *Silveus* 7804 (TEX-LL), *Silveus* 7815 (TEX-LL). GALVESTON CO. *Waller & Bauml* 3003 (TAES). HARRIS CO. *Brown* 2404 (TAES). HUNT CO. *Lemke* 2899 (SWT). LLANO CO. *Gould* 8436 (TEX-LL), *Tharp* 43-23 (TEX-LL). TRAVIS CO. *Gould* 7623 (TEX-LL).

Eragrostis reptans (Michx.) Nees

TEXAS: ANDERSON CO. *Nixon, McCrary & Burandt* 3571 (TAES). BEXAR CO. *Silveus* 925 (TEX-LL), *Silveus* 2468 (TEX-LL). BRAZORIA CO. *Rosen & Jones* 638 (SWT). COLLIN CO. *Boylan* 234 (SWT). DENTON CO. *Boylan* 257 (SWT). ELLIS CO. *Green* s.n. (TAES). HILDAGO CO. *Lonard* 4971 (SWT). MCMULLEN CO. *Carr, Bergquist, McNeal & Westlund* 11314 (TEX-LL). TRAVIS CO. *Carr, Ladd & Siegenthaler* 15599 (TEX-LL).

Eragrostis secundiflora Presl

TEXAS: BASTROP CO. *Osborn* 70 (SWT). BLANCO CO. *Sanchez* 778 (SWT), *Sanchez* 933 (SWT). GUADALUPE CO. *Braswell* 98 (SWT). HAYS CO. *Heidemeyer* 29 (SWT). KAUFMAN CO. *Lemke* 2935 (SWT). KENEDY CO. *Lundell & Correll* 15236 (SWT). KLEBERG CO. *Barrientos* s.n. (SWT), *Lemke* 2985 (SWT). LEE CO. *Lemke* 2962 (SWT). LLANO CO. *Wallace* 98 (SWT). NUECES CO. *Baker* 4 (SWT), *Ruiseco* 93 (SWT), *Smith* 73 (SWT).

Eragrostis spectabilis (Pursh) Steud.

TEXAS: CAMERON CO. *S. & G. Jones* 6105 (SWT). GILLESPIE CO. *Sanchez* 962 (SWT). HUNT CO. *Lemke* 2908 (SWT). KENDALL CO. *Foster A-34* (TAES). KERR CO. *Sanchez* 1095 (SWT). LAMPASAS CO. *Colquitt et al.* 10 (SWT). MILAM CO. *Spoons* 82020 (TAES). ROBERTSON CO. *Gould* 7263 (TAES), *Gould* 11049 (TAES). RUSK CO. *Rosen & Jones* 680 (SWT).

Eragrostis superba Wawra & Peyr.

TEXAS: BASTROP CO. *Carr* 14720 (TEX-LL). BRAZOS CO. *Clark et al.* 28 (SWT), *Emery* 844 (TEX-LL), *Zieschang* 21 (TAES). LLANO CO. *Breckenridge* 561 (SWT), *S. & G. Jones & Wipff* 3328 (SWT), *Lemke s.n.* (SWT), *Wipff* 1384 (TEX-LL). MASON CO. *Doell* 24 (TAES). MENARD CO. *Crain* 19 (TAES).

Eragrostis trichodes (Nutt.) Wood

TEXAS: BEXAR CO. *Oakley* 1313 (SWT), *Silveus* 7326 (TEX-LL). BRAZOS CO. *Morden* 124 (TAES). LEON CO. *Jones & Wipff* 2147 (TAES), *McLeod s.n.* (TAES), *Ruiseco & Phillips s.n.* (SWT). LIPSCOMB CO. *Correll* 30249 (TEX-LL). RANDALL CO. *Higgins* 9781 (TEX-LL). TRAVIS CO. *Warnock* W1081 (TEX-LL).

Eriochloa contracta A. S. Hitchc.

TEXAS: BRAZORIA CO. *Rosen* 214 (SWT). BRAZOS CO. *Gould* 6141 (TEX-LL). DALLAS CO. *Galvan* 38 (TAES). GALVESTON CO. *Rosen* 506 (SWT). JIM WELLS CO. *Johnston* 542111 (TEX-LL). JONES CO. *Johnston & Walker* 6765 (SWT). KERR CO. *Gould* 3800 (TAES). NUECES CO. *Carr* 11480 (TEX-LL), *Carr* 11510 (TEX-LL). VICTORIA CO. *Bounds* 46 (TAES), *Hatch* 4147 (TAES).

Eriochloa sericea (Scheele) Munro ex Vasey

TEXAS: ARCHER CO. *Carr* 15769 (TEX-LL). BANDERA/MEDINA CO. *Lackey* 543 (SWT). BEE CO. *Mayfield* 2112 (TEX-LL). BELL CO. *Wipff* 208 (TAES). CAMERON CO. *Lonard* 4995 (SWT). HAYS CO. *Morris* 11 (SWT). HILDAGO CO. *Lonard* 4932

(SWT). KERR CO. *Drews 19* (TAES). LAMPASAS CO. *Hatch 5808* (TEX-LL). TAYLOR CO. *Johnston 6517* (SWT).

Erioneuron pilosum (Buckl.) Nash

TEXAS: BLANCO CO. *Sanchez 883* (SWT). EDWARDS CO. *Evans 20* (SWT). GILLESPIE CO. *Sanchez 1405* (SWT). HAYS CO. *Lemke 477* (SWT), *Lemke 680* (SWT), *Lyday 26* (SWT). KIMBLE CO. *Sanchez 1353* (SWT). KINNEY CO. *Rosen 217* (SWT). LLANO CO. *Lemke 694* (SWT). SUTTON CO. *Lemke 1677* (SWT). UVALDE CO. *Lemke 963* (SWT). VAL VERDE CO. *S. & G. Jones 8029* (SWT), *Labus 313* (SWT).

Festuca versuta Beal

TEXAS: BEXAR CO. *Carr 14571* (TEX-LL), *Carr & Diamond 14635* (TEX-LL). BLANCO CO. *Carr & Price 11088* (TEX-LL), *Sanchez 1392* (SWT). HAYS CO. *Carr 18869* (TEX-LL), *Carr 18871* (TEX-LL). KENDALL CO. *Carr & McNeal 11077* (TEX-LL). KIMBLE CO. *Sanchez 1351* (SWT), *Sanchez 1364* (SWT). TRAVIS CO. *Carr 18903* (TEX-LL), *Carr 18971* (TEX-LL).

Glyceria striata (Lam.) A. S. Hitchc.

TEXAS: BELL CO. *Carr & Sanchez 17540* (TEX-LL), *Wolff 3242* (TAES). BLANCO CO. *Cory 41377* (TAES). CULBERSON CO. *Lind s.n.* (TEX-LL), *Warnock 11927* (TEX-LL). KENDALL CO. *Breckenridge 581* (SWT), *Carr & McNeal 11080* (TEX-LL). KERR CO. *Parks & Cory* (TAES). LAMAR CO. *Carr & Wolfe 13692* (TEX-LL). TRAVIS CO. *Carr & Stone* (TEX-LL).

Heteropogon contortus (L.) Beauv. ex Roem. & Schult.

TEXAS: BREWSTER CO. *Warnock s.n.* (SWT), *Warnock s.n.* (SWT). BURNET CO. *Kutac & Lynch 7494* (TEX-LL). CAMERON CO. *Fleetwood 3679* (TEX-LL). EL PASO CO. *Warnock 14242* (SWT). STARR CO. *Butterwick & Strong 1329* (TEX-LL). UVALDE CO. *Carr & Mattiza 16769* (TEX-LL). VAL VERDE CO. *Labus 267* (SWT), *Labus 319* (SWT).

Hilaria belangeri (Steud.) Nash

TEXAS: BANDERA/MEDINA CO. *Sanchez* 649 (SWT). HAYS CO. *Breckenridge* 609 (SWT), *Lemke* 697 (SWT), *Liang* 108 (SWT). KENDALL CO. *Mattox* 33 (SWT), *Seidensticker* 141 (TAES). KERR CO. *Geier* 59 (TAES). KIMBLE CO. *Galle* 25 (TAES), *Sanchez* 1024 (SWT). KINNEY CO. *Rosen* 221 (SWT). MENARD CO. *Clark* 16 (TAES).

Hordeum murinum L.

TEXAS: BEXAR CO. *Silveus* 20 (TEX-LL). BLANCO CO. *Sanchez* 1176 (SWT), *Wipff, Jensen & Wipff* 80 (TAES). BREWSTER CO. *Powell* 6093 (TEX-LL), *Warnock* s.n. (SWT). COMAL CO. *Dodson* 16 (SWT). VAL VERDE *Turner & Warnock* 186 (TEX-LL). WILLIAMSON CO. *S. & G. Jones* 1231 (TAES), *Lonard* 1845 (TAES).

Hordeum pusillum Nutt.

TEXAS: BEXAR CO. *Mayo* 82 (SWT). BRAZOS CO. *Toledo* 5 (SWT). EDWARDS CO. *Evans* 27 (TAES), *Gould* 11375 (TAES). GILLESPIE CO. *Nixon & Brooks* 35 (TAES). GRIMES CO. *Lemke* 225 (SWT). GUADALUPE CO. *Shipman* 91 (SWT). HAYS CO. *Ruiseco* 55 (SWT). KAUFMAN CO. *Valle* 92 (SWT). TOM GREEN CO. *Lemke* 1631 (SWT). TRAVIS CO. *Queen* 47 (SWT). UVALDE CO. *Lemke* 952 (SWT), *Lemke* 2403 (SWT).

Hordeum vulgare L.

MASSACHUSETTS: NORFOLK CO. *Blake* 10788D (TEX-LL), *Blake* 11401 (TEX-LL). TEXAS: CULBERSON CO. *Gould* 12837 (TAES). FORT BEND CO. *Knight* 146 (SWT). HASKELL CO. *Cory* 37158 (TEX-LL). TOM GREEN CO. *Beede & Weatherwax* s.n. (TEX-LL). TRAVIS CO. *Pollock* 4 (TAES). WASHINGTON CO. *Carter* 19 (TAES), *Osborn* 41 (TAES). MEXICO: MEXICO *Pratt* 748 (TEX-LL).

Leersia oryzoides (L.) Sw.

TEXAS: FANNIN CO. *Correll* 37968 (TEX-LL). HAYS CO. *Bruchmiller* s.n. (SWT),

Litchfield s.n. (SWT). EL PASO CO. *Worthington* 18292 (SWT). JACK CO. *Carr* 12870 (TEX-LL). KERR CO. *Carr & Price* 15079 (TEX-LL). TRAVIS CO. *Brown* 332 (TEX-LL), *Carr* 15812 (TEX-LL), *Carr & Turner* 15035 (TEX-LL). WOOD CO. *Nixon* 14013 (SWT).

Leptochloa dubia (Kunth in H.B.K.) Nees

TEXAS: BANDERA/MEDINA CO. *Sanchez* 256 (SWT). CALDWELL CO. *Breckenridge* 549 (SWT). COMAL CO. *Breckenridge* 497 (SWT). EL PASO CO. *Worthington* 17922 (SWT). HAYS CO. *Breckenridge* 527 (SWT), *Breckenridge* 535 (SWT), *Liang* 71 (SWT), *Lyday* 137 (SWT). TRAVIS CO. *Warnock & Warnock* 5562 (SWT). VAL VERDE CO. *Labus* 347 (SWT).

Leptochloa fascicularis (Lam.) Gray

TEXAS: BURNET CO. *Carr, Kutac, Lynch & Brown* 9142 (TEX-LL). CASTRO CO. *Johnston & Walker* 6888 (SWT). EL PASO CO. *Worthington* 17425 (SWT). GALVESTON CO. *Rosen & Yeargan* 612 (SWT). KLEBERG CO. *Lemke* 2995 (SWT). LLANO CO. *Butterwick & Lamb* 2946 (TEX-LL). PECOS CO. *Kruse* 203-42 (TAES). RANDALL CO. *Carr* 18471 (TEX-LL). REFUGIO CO. *Hill* 7699 (TAES). SAN PATRICIO CO. *Mantique et al.* 1729 (TAES). ZAPATA CO. *Snow* 5901-D (TEX-LL).

Leptochloa mucronata (Michx.) Kunth

TEXAS: BASTROP CO. *Carr* 8739 (TEX-LL). BRAZOS CO. *S. & G. Jones* 3424 (SWT), *Rosen & Jones* 637 (SWT). COLEMAN CO. *Bible* 23 (TEX-LL). HAYS CO. *Breckenridge* 499 (SWT), *Breckenridge* 523 (SWT), *Mears* 608 (TEX-LL). JONES CO. *Johnston & Walker* 6769 (SWT). TAYLOR CO. *Tolstead* 7557 (SWT). TRAVIS CO. *Carr* 15589 (TEX-LL).

Leptochloa uninervia (Presl) A. S. Hitchc. & Chase

TEXAS: BREWSTER CO. *Correll* 30691 (TEX-LL). BRAZOS CO. *S. & G. Jones* 1541 (TAES), *Snow & Jensen* 184 (TEX-LL). CAMERON CO. *Carr, Ettel & Williams* 18149 (TEX-LL). GALVESTON CO. *Rosen* 522 (SWT). NUECES CO. *Carr & Wolfe* 16547

(TEX-LL), *Carr, Wolfe & Turner 16868* (TEX-LL). TRAVIS CO. *LaHue 49* (TAES).

WEBB CO. *Ramirez 2* (TEX-LL). WILLIAMSON CO. *Carr & Brown 9226* (TAES).

Limnodea arkansana (Nutt.) L. H. Dewey

TEXAS: ATASCOSA CO. *Lemke 142* (SWT). BANDERA/MEDINA CO. *Lackey 517*

(SWT). BRAZOS CO. *Gould 15406* (SWT), *Knight & Knight 152* (SWT). HAYS CO.

Lemke, Lynch & Kutac 2345 (SWT), *Ruiseco 49* (SWT). KINNEY CO. *Carr 10435*

(SWT). SAN AUGUSTINE CO. *Aljoe 19* (SWT), *George & Nixon 192* (SWT). TRAVIS

CO. *Snow 180* (SWT). UVALDE CO. *Lemke 1725* (SWT). WASHINGTON CO. *Toledo*

33 (SWT).

Lolium perenne L.

TEXAS: ANGELINA CO. *S. & G. Jones 808* (SWT). BANDERA/MEDINA CO. *Lackey*

523 (SWT). BEXAR CO. *Hagenbuch 29* (SWT), *Mayo 52* (SWT). BLANCO CO. *Atha*

488 (SWT). GRIMES CO. *Hall 112* (SWT). GUADALUPE CO. *Bierner 91-22* (SWT).

TRAVIS CO. *Queen 50* (SWT), *Suitt 60* (SWT), *Trevino 33* (SWT). SABINE CO. *Lemke*

995 (SWT). WASHINGTON CO. *Aljoe 5* (SWT).

Lolium temulentum L.

TEXAS: ANDERSON CO. *Gould 9521* (TEX-LL). BRAZOS CO. *Gould 15411* (TAES).

CALDWELL CO. *Lemke 452* (SWT), *Lemke 470* (SWT). EDWARDS CO. *Gould 11379*

(TEX-LL). JACK CO. *Gould 10289* (TAES). KIMBLE CO. *Lemke 2666* (SWT). LAMAR

CO. *Shinners 14829* (TAES). MCLENNAN CO. *Smith g1115* (TEX-LL). REFUGIO CO.

Gould 9891 (TEX-LL).

Melica nitens (Scribn.) Nutt. ex Piper

TEXAS: BANDERA/MEDINA CO. *Lackey 453* (SWT). BURNET CO. *Morden 265*

(SWT). GILLESPIE CO. *Wipff, Jensen & Wipff 112* (TAES). HAYS CO. *Dingee 89*

(SWT). KERR CO. *Sanchez 1282* (SWT). KIMBLE CO. *Sanchez 1054* (SWT).

MEDINA CO. *Barr 92-0011* (TAES). TRAVIS CO. *Lemke 3505* (SWT). UVALDE CO.

Lemke 973 (SWT). WILLIAMSON CO. *S. & G. Jones 1232* (TAES).

Mnesithea cylindrica (Michx.) Koning & Sosef

TEXAS: BASTROP CO. *Carr, Farquhar & Maresh* 14649 (TEX-LL). BEE CO. *Carr* 12038 (TEX-LL). HUNT CO. *Carr* 10681 (TEX-LL), *Sanders* 4100 (TEX-LL). KAUFMAN CO. *Bridges & Kindscher* 13675 (TEX-LL). LLANO CO. *S. & G. Jones* 3290 (SWT), *Wipff & Jones* 1348 (TEX-LL), *Wipff & Jones* 1380 (TEX-LL). PARKER CO. *Carr, Wolfe & Liu* 15451 (TEX-LL). TARRANT CO. *Carr* 12816 (TEX-LL). TRAVIS CO. *Carr* 18947 (TEX-LL).

Muhlenbergia* × *involuta Swallen

TEXAS: BANDERA CO. *Silveus* 7393 (TAES). BEXAR CO. *Carr* 18604 (TEX-LL), *Carr & Barwick* 18604 (TEX-LL). BLANCO CO. *Barnett* 1 (TEX-LL), *Breckenridge* 558 (SWT). HAYS CO. *Niemann* 38-62 (TAES). KENDALL CO. *Silveus* 780 (TAES). TRAVIS CO. *Brown* 50-323 (TEX-LL), *Moon* 167 (TEX-LL).

Muhlenbergia arenacea (Buckl.) A. S. Hitchc.

TEXAS: BREWSTER CO. *Warnock* W502 (TEX-LL). CULBERSON CO. *Correll & Johnston* 18543 (TEX-LL). HUDSPETH CO. *Butterwick & Lamb* 2787 (TEX-LL), *Warnock & Johnston* 16927 (TEX-LL). JEFF DAVIS CO. *Manning* 949 (TEX-LL), *Powell & Powell* 4152 (TAES). PECOS CO. *Tharp* 43-492 (TEX-LL), *Warnock* 13324 (TEX-LL), *Warnock* 46767 (TEX-LL). STERLING CO. *Liles* 29 (TAES). TERRELL CO. *Morden & Hatch* 52 (TAES).

Muhlenbergia lindheimeri A. S. Hitchc.

TEXAS: BANDERA/MEDINA CO. *Lackey* 275 (SWT). BEXAR CO. *Liles* 17 (TAES). BLANCO CO. *Margo* 21 (TAES), *Galvan* 52 (TAES). GILLESPIE CO. *Sanchez* 976 (SWT). HAYS CO. *Breckenridge* 538 (SWT), *Osborn* 20 (SWT). KENDALL CO. *Mattox* 37 (SWT). KERR CO. *Sanchez* 1071 (SWT). LAMPASAS CO. *Turner et al.* 25 (SWT). TRAVIS CO. *Carr* 3487 (SWT), *Dorr* 2624 (TAES). WILLIAMSON CO. *Otto* 52 (TAES).

Muhlenbergia porteri Scribn. ex Beal

TEXAS: BREWSTER CO. *Warnock* 12784 (TAES). EL PASO CO. *Silveus* 751 (TEX-LL), *Van Devender & McCarten s.n.* (TEX-LL). JEFF DAVIS CO. *Keough* 1212 (TEX-LL). KERR CO. *Cunningham* 63-53 (TAES). LOVING CO. *Warnock* 10689 (TEX-LL). TERRELL CO. *Johnston* 6479 (SWT). VAL VERDE CO. *Labus* 348 (SWT), *Warnock & McBryde* 15133 (SWT). WARD CO. *Warnock* 15783 (SWT).

Muhlenbergia reverchonii Vasey & Scribn.

TEXAS: BANDERA/MEDINA CO. *Sanchez* 308 (SWT), *Sanchez* 642 (SWT). BELL CO. *Sanchez* 1430 (SWT). BLANCO CO. *S. & G. Jones* 5993 (SWT), *S. & G. Jones* 5996 (SWT). HAYS CO. *Breckenridge* 516 (SWT), *Breckenridge* 532 (SWT), *Breckenridge* 537 (SWT), *S. & G. Jones* 5720 (SWT), *Lemke* 667 (SWT). KERR CO. *Sanchez* 1102 (SWT). TRAVIS CO. *Bierner* 90-213 (SWT), *Carr* 3289 (SWT).

Muhlenbergia schreberi Gmel.

TEXAS: ANDERSON CO. *Hatch* 5083 (SWT). GRIMES CO. *Jones* 3892 (SWT). HAYS CO. *Hatch* 4396 (TAES). HOUSTON CO. *Hatch* 6173 (SWT). KERR CO. *Clarke* 41 (TAES). KIMBLE CO. *Sanchez* 1044 (SWT). REAL CO. *Silveus* 633 (TAES). ROBERTSON CO. *Gould* 7613 (TAES), *Morden* 531 (SWT). TRAVIS CO. *Carr*, *Campbell & Gee* 9320 (SWT).

Muhlenbergia utilis (Torr.) A. S. Hitchc.

TEXAS: BANDERA CO. *Morden* 553 (TAES). BLANCO CO. *Brown* 2908 (TAES), *Carr & McNeal* 10911 (TEX-LL), *Sanchez* 917 (SWT), *Silveus* 5451 (TEX-LL). GILLESPIE CO. *Morden* 544 (TAES). KERR CO. *Higdon* 29 (TEX-LL). LLANO CO. *Poole* 2552 (TEX-LL). TERRELL CO. *Silveus* 659 (TEX-LL). TRAVIS CO. *Carr* 18653 (TEX-LL), *Carr & Maresh* 18646 (TEX-LL).

Nassella leucotricha (Trin. & Rupr.) Pohl

TEXAS: BANDERA/MEDINA CO. *Lackey* 427 (SWT), *Lackey* 491 (SWT). BEE CO. *Lemke* 2245 (SWT). BLANCO CO. *Ramirez* 194 (SWT). BRAZORIA CO. *Rosen* 566

(SWT). FORT BEND CO. *Knight* 141 (SWT). GILLESPIE CO. S. & G. Jones 6625 (SWT). HAYS CO. *Litchfield* s.n. (SWT), *Lyday* 312 (SWT). JEFF DAVIS CO. S. & G. Jones 6581 (SWT). KERR CO. *Sanchez* 1246 (SWT). LLANO CO. S. & G. Jones 6597 (SWT). MCMULLEN CO. *Lemke* 1600 (SWT). SUTTON CO. *Mitchell* 54 (SWT). TRAVIS CO. *Snow* 188 (SWT). UVALDE CO. *Lemke* 936 (SWT).

***Panicum acuminatum* Sw.**

TEXAS: BURNET CO. *Johnston* 6351 (SWT). GALVESTON CO. *Yeargan* 315 (SWT). JASPER CO. S. & G. Jones 2605 (SWT). POLK CO. *Jones & Wipff* 1469 (SWT), *Jones & Wipff* 1481 (SWT), *Jones & Wipff* 1496 (SWT). SAN JACINTO CO. *Jones & Wipff* 1446 (SWT). SHELBY CO. S. & G. Jones & Nixon 1333 (SWT). TRAVIS CO. *Lemke* 3636 (SWT).

***Panicum antidotale* Retz.**

TEXAS: BREWSTER CO. *Johnston, Wendt & Chiang* 10586 (TEX-LL), *Riskind* 1858 (TEX-LL). CAMERON CO. *Runyon* 5985 (TAES). DUVAL CO. *Hatch* 5267 (SWT). FRIO CO. S. & G. Jones 1693 (TAES). HILDAGO CO. *Correll* 36765 (TEX-LL), *Fleetwood* 3300 (TEX-LL). KERR CO. *Kast* 60 (TAES). UVALDE CO. *Breckenridge* 621 (SWT). WILLIAMSON CO. *Price* 6 (TAES). ZAPATA CO. *Shinners* 30854 (TEX-LL).

***Panicum capillare* L.**

TEXAS: ARCHER CO. *Johnston* 6586 (SWT). BOSQUE CO. S. & G. Jones 3243 (SWT). CASTRO CO. *Johnston & Walker* 6885 (SWT). DALLAM CO. *Johnston & Walker* 6831 (SWT). DONLEY CO. *Johnston & Walker* 6784 (SWT). HAYS CO. *Breckenridge* 518 (SWT). JONES CO. *Johnston & Walker* 6763 (SWT). LAMB CO. *Johnston & Walker* 6895 (SWT). STONEWALL CO. *Johnston & Walker* 6778 (SWT).

***Panicum coloratum* L.**

TEXAS: BANDERA/MEDINA CO. *Sanchez* 585 (SWT). BEXAR CO. *Silveus* 7203 (TEX-LL). GILLESPIE CO. *Kast* 52 (TAES). GUADALUPE CO. *Carr & Turner* 12979

(TEX-LL). HAYS CO. *Jessup* 53 (SWT), *Sanchez* 1410 (SWT). KLEBERG CO. *Perdue* 1891 (TEX-LL), *Perdue* 1895 (TEX-LL). LAMPASAS CO. *Hatch* 5847 (TEX-LL). MENARD CO. *Clark* 49 (TAES).

Panicum hallii Vasey

TEXAS: BLANCO CO. *Lackey* 777 (SWT). BREWSTER CO. *Johnston* 6426 (SWT). CROCKETT CO. *Lemke* 2549 (SWT). HAYS CO. *S. & G. Jones* 5710 (SWT), *Monahan* 25 (SWT), *Preistle* 7 (SWT). KIMBLE CO. *Sanchez* 1026 (SWT). LLANO CO. *Breckenridge* 560 (SWT). SAN AUGUSTINE CO. *George & Nixon* 100 (SWT). TOM GREEN CO. *Namken* 17 (SWT). VAL VERDE CO. *Labus* 301 (SWT), *Labus* 326 (SWT), *Labus* 352 (SWT).

Panicum hians Ell.

TEXAS: BRAZORIA CO. *Campbell* 22 (TAES), *Amestoy* 88 (TAES). BRAZOS CO. *Knight* 181 (SWT). FREESTONE CO. *Probst* 64 (TAES). GALVESTON CO. *Rosen* 574 (SWT), *Waller* 2680 (SWT). GRIMES CO. *Lemke* 172 (SWT), *Lemke* 221 (SWT). JEFFERSON CO. *Crockett* 6871 (SWT). LAMAR CO. *Johnston* 6277 (SWT). LAVACA CO. *Nuckels* 55 (TAES). LEON CO. *Nixon* 17911 (TAES), *Nixon* 17985 (TAES). SAN PATRICIO CO. *Aljoe* 22 (SWT). VICTORIA CO. *Budd* 44 (TAES), *Chandler* 50 (TAES).

Panicum obtusum Kunth in H.B.K.

TEXAS: BANDERA CO. *Smith* 663 (TEX-LL). BANDERA/MEDINA CO. *Sanchez* 646 (SWT). BLANCO CO. *Johnson* 286 (TEX-LL), *Sanchez* 852 (SWT). FREESTONE CO. *Probst* 64 (TAES). HAYS CO. *Jessup* 63 (SWT). KERR CO. *Sanchez* 1082 (SWT). LEON CO. *Nixon* 17985 (TAES). LIMESTONE CO. *S. & G. Jones* 1569 (TAES). MEDINA CO. *Campos* 16 (TAES). REAL CO. *Brown* s.n. (TEX-LL). TRAVIS CO. *Brown* 3364 (TEX-LL), *Brown* s.n. (TEX-LL), *Lynch & Kutac* 12110 (TEX-LL), *Tharp & York* 50-132 (TEX-LL).

Panicum oligosanthes Schult.

TEXAS: ANGELINA CO. *Johnston* 6671 (SWT). BANDERA/MEDINA *Lackey* 519

(SWT). BASTROP CO. *Carr* 6283 (SWT). BURLESON CO. *Toledo* 23 (SWT).
 CHEROKEE CO. *Johnston* 6650 (SWT). GUADALUPE CO. *Ruiseco* 141 (SWT). HAYS
 CO. *Pettingill* 63 (SWT). LEON CO. *Johnston* 6704 (SWT). REAL CO. *Warnock* 6811
 (SWT). SAN JACINTO CO. *S. & G. Jones* 2480 (SWT). SMITH CO. *Johnston* 6611
 (SWT). TRAVIS CO. *Ruiseco* 214 (SWT). VAN ZANDT CO. *Johnston* 6637 (SWT).
 WOOD CO. *S. & G. Jones* 2757 (SWT).

***Panicum pedicellatum* Vasey**

TEXAS: BANDERA CO. *Smith* 496 (TEX-LL). COMAL CO. *Correll & Smith* 29553
 (TEX-LL). KENDALL CO. *Correll & Smith* 29580 (TEX-LL). TRAVIS CO. *Carr* 4709
 (TEX-LL), *Mears* 999 (TEX-LL), *Rodgers* 6737 (TEX-LL), *Tharp* 43164 (TEX-LL),
Warnock W1029 (TEX-LL). UVALDE CO. *Gould* 7675 (TEX-LL). WILLIAMSON CO.
Carr 4032 (SWT).

***Panicum sphaerocarpon* Ell.**

TEXAS: ANDERSON CO. *Gould* 14314 (TAES). BRAZOS CO. *Northrup* 15 (SWT),
Toledo 9 (SWT). BURLESON CO. *Knight & Miller* 158 (SWT). CALDWELL CO.
Phillips 67 (SWT). CASS CO. *Carr* 9851 (SWT), *Johnston* 6312 (SWT). CORYELL CO.
Wipff 261 (TAES). FRANKLIN CO. *Gould* 14274 (TAES). GALVESTON CO. *Clark*
 3039 (TAES), *Clark* 3058 (TAES). HOUSTON CO. *Jones & Wipff* 1526 (SWT). VAN
 ZANDT CO. *Carr* 9768 (SWT).

***Panicum virgatum* L.**

TEXAS: BLANCO CO. *Breckenridge* 559 (SWT). COLORADO CO. *Breckenridge* 605
 (SWT). HARRIS CO. *Nixon* 16093 (SWT). KENDALL CO. *Breckenridge* 582 (SWT).
 HAYS CO. *Bierner* 90-208 (TEX-LL). HUNT CO. *Sanders* 3333 (TEX-LL), *Sanders*
 3377 (TEX-LL), *Sanders* 3718 (TEX-LL), *Sanders* 3744 (TEX-LL). KIMBLE CO. *Hatch*
 5060 (SWT). LAMPASAS CO. *Hatch* 5843 (TEX-LL). MENARD CO. *Simpson* s.n.
 (TEX-LL). VAL VERDE CO. *Smith & Butterwick* 202 (TEX-LL).

***Pappophorum bicolor* Fourn.**

TEXAS: CAMERON CO. *Lemke* 1485 (SWT). DUVAL CO. *Hatch* 5264 (SWT). KING CO. *Grayum* 16 (TAES). NUECES CO. *Gould* 10957 (TAES). REAGAN CO. *Lemke* 2580 (SWT). UVALDE CO. *Shepard* 79 (SWT). VAL VERDE CO. *Labus* 20 (SWT), *Labus* 196 (SWT), *Labus* 269 (SWT), *Lemke* 1682 (SWT). ZAPATA CO. *Lemke* 1525 (SWT). ZAVALA CO. *Adams* 59 (SWT), *Casey* 64 (SWT).

***Pappophorum vaginatum* Buckl.**

TEXAS: BREWSTER CO. *Bierner* 91-41 (TEX-LL), *Turner & Turner* 21-907 (TEX-LL). CAMERON CO. *Lonard* 5002 (SWT), *Van Fleet* 7002 (TEX-LL). KLEBERG CO. *Carr* 11453 (TEX-LL). REEVES CO. *Turner* 2974 (TEX-LL). WEBB CO. *Perez* 66 (TEX-LL), *Ramírez* 1 (TEX-LL).

***Paspalum dilatatum* Poir.**

TEXAS: BANDERA/MEDINA CO. *Lackey* 262 (SWT). BLANCO CO. *Sanchez* 774 (SWT). BRAZOS CO. *Snow* 185 (SWT). CALDWELL CO. *Lemke* 453 (SWT). CALHOUN CO. *Nuckels* 1 (TAES). FORT BEND CO. *Knight* 144 (TAES). GRIMES CO. *Lemke* 215 (SWT), *Lemke* 1934 (SWT). KIMBLE CO. *Sanchez* 1049 (SWT). MEDINA CO. *Gwaltney* 31 (TAES). POLK CO. *Hatch* 6546 (TAES), *Jones & Wipff* 1454 (SWT).

***Paspalum distichum* L.**

TEXAS: BRAZOS CO. *Shah* S-16 (TAES). GALVESTON CO. *Rosen* 539 (TAES), *Waller & Bauml* 3097 (SWT). EL PASO CO. *Worthington* 17318 (TAES). HAYS CO. *Jessup* 17 (SWT), *Johnson* 429 (TEX-LL). HEMPHILL CO. *Rowell* 4162 (TEX-LL). LLANO CO. S. & G. *Jones & Wipff* 3318 (SWT). MCMULLEN CO. *Carr, Bergquist, McNeal & Westlund* 11311 (TEX-LL). RANDALL CO. *Carr* 18468 (TEX-LL). TRAVIS CO. *Carr & McNeal* 12850 (TEX-LL).

***Paspalum plicatulum* Michx.**

TEXAS: BRAZOS CO. *Donges et al.* 23 (SWT), S. & G. *Jones* 1165 (SWT). BURLESON

CO. *Snow* 231 (SWT). CALDWELL CO. *Breckenridge* 553 (SWT), *Lemke* 645 (SWT), *Lemke* 2030 (SWT). GALVESTON CO. *Rosen* 573 (SWT). GONZALES CO. *Lemke* 2690 (SWT). LAVACA CO. *Knight* 179 (SWT).

***Paspalum pubiflorum* Rupr.**

TEXAS: BANDERA CO. *Smith* 634 (TEX-LL). HAYS CO. *Litchfield s.n.* (SWT), *Tharp s.n.* (SWT). HILDAGO. *Lonard* 4933 (SWT). KINNEY CO. *Correll & Ogden* 25090-A (TEX-LL). LLANO CO. *Butterwick & Lamb* 2912 (TEX-LL), *Butterwick & Lamb* 3331 (TEX-LL). TRAVIS CO. *Carr* 4333 (TEX-LL), *Nee & Whelan* (TEX-LL), *Wendt* 6990 (TEX-LL).

***Paspalum setaceum* Michx.**

TEXAS: GALVESTON CO. *Hatch* 5743 (SWT). GILLESPIE CO. *Nixon & Brooks* 105 (TAES). HAYS CO. *Ruiseco* 12 (SWT). KENEDY CO. *Lemke* 544 (SWT). KLEBERG CO. *Lemke* 3145 (SWT). SAN AUGUSTINE CO. *George & Nixon* 33 (SWT). SAN JACINTO CO. *Barbee* 33 (TAES). SAN PATRICIO CO. *Aljoe* 26 (SWT). STARR CO. *Margo* 18 (TAES).

***Paspalum urvillei* Steud.**

TEXAS: BANDERA/MEDINA CO. *Sanchez* 640 (SWT). BLANCO CO. *Sanchez* 887 (SWT). FORT BEND CO. *Breckenridge* 595 (SWT). GALVESTON CO. *Rosen* 293 (SWT). HARRIS CO. *Nixon* 16082 (SWT). HAYS CO. *Litchfield s.n.* (SWT). JEFFERSON CO. *Crockett* 8638 (SWT). KENDALL CO. *Breckenridge* 583 (SWT). LEON CO. *Daniel et al.* 9 (SWT). TITUS CO. *Lemke* 1290 (SWT).

***Pennisetum ciliare* (L.) Link**

TEXAS: CALDWELL CO. *Breckenridge* 555 (SWT). CAMERON CO. *Lemke* 575 (SWT). DIMMIT CO. *Lemke* 1893 (SWT). HILDAGO CO. *Hook* 16 (SWT), *S. & G. Jones* 864 (SWT), *Lemke* 853 (SWT), *Lemke* 888 (SWT). LIVE OAK CO. *Bohls* 25 (SWT). STARR CO. *Lemke* 861 (SWT). VAL VERDE CO. *Labus* 316 (SWT). ZAPATA CO. *Lemke* 1514 (SWT).

***Phalaris caroliniana* Walt.**

TEXAS: ATASCOSA CO. *Lemke 144* (SWT). BLANCO CO. *Wipff, Jensen & Wipff 73* (TAES). CHILDRESS CO. *Spoons 82013* (TAES). FAYETTE CO. *Ramu et al. 40* (TAES). FRIO CO. *Lemke 2370* (SWT). LAMPASAS CO. *S. & G. Jones 1246* (SWT). MCCULLOCK CO. *Hatch 6252* (TAES). SAN PATRICIO CO. *Lemke 834* (SWT). UVALDE CO. *Lemke 1818* (SWT). ZAVALA CO. *Shepard 47* (SWT).

***Phragmites australis* (Cav.) Trin. ex Steud.**

TEXAS: ARMSTRONG CO. *Rowell 5352* (TEX-LL). BRAZORIA CO. *Rosen & Hatch et al. 489* (SWT). BREWSTER CO. *Correll & Correll 35388* (TEX-LL). GALVESTON CO. *Breckenridge 598* (SWT), *Hatch 5753* (SWT), *Schmidt 45* (SWT). GRAYSON CO. *Nee & Diggs 43898* (TEX-LL). MCCULLOCH CO. *Hatch 6252* (TAES). OLDHAM CO. *Smith 125* (TEX-LL).

***Pleuraphis mutica* Buckl.**

TEXAS: BREWSTER CO. *S. & G. Jones & Manrique 4045* (SWT). CRANE CO. *Warnock 15511* (SWT). CROCKETT CO. *Warnock 15291* (SWT). EL PASO CO. *Worthington 17057* (SWT), *Worthington 18928* (SWT). PRESIDIO CO. *Morden 914* (TAES). SCHLEICHER CO. *Edmiston 14* (TAES). SCURRY CO. *Johnston 6525* (SWT). STERLING CO. *Stroman 2046* (TAES). VAL VERDE CO. *Labus 353* (SWT), *Warnock 15131* (SWT).

***Poa annua* L.**

TEXAS: BRAZORIA CO. *Dingee 34* (SWT). BRAZOS CO. *Toledo 4* (SWT). CALDWELL CO. *Lemke 2166* (SWT). COMAL CO. *Behrends 23* (SWT). DEWITT CO. *Logeman 7* (SWT). GALVESTON CO. *Rosen 524* (SWT). GILLESPIE CO. *Weidenfeller 96* (SWT). LAVACA CO. *Queen 30* (SWT). TRAVIS CO. *Snow 175* (SWT), *Stefani 49* (SWT), *Suitt 72* (SWT).

***Poa arachnifera* Torr.**

TEXAS: BLANCO CO. *Wipff 95* (TAES), *Wipff 105* (TAES). BURLESON CO. *Morden*

236 (SWT). CALDWELL CO. *Adair* 16 (TAES). CORYELL CO. *Sanchez* 1445 (SWT). GILLESPIE CO. *Correll & Johnston* 21174 (TEX-LL). LAMPASAS CO. *S. & G. Jones* 1265 (SWT). MCLENNAN CO. *Holmes* 5651 (SWT). TOM GREEN CO. *Namken* 29 (SWT). TRAVIS CO. *Carr* 6238 (TAES). WILLIAMSON CO. *Lonard* 2012 (TAES).

Polypogon monspeliensis (L.) Desf.

TEXAS: ATASCOSA CO. *Lemke* 170 (SWT). BANDERA/MEDINA *Lackey* 551 (SWT). BRAZOS CO. *Gould & Hycka* 7988 (TEX-LL), *Hatch* 4113 (TEX-LL), *S. & G. Jones* 1535 (SWT), *Snow* 183 (SWT). BURLESON CO. *Gould & Celerier* 5450 (TEX-LL), *Morden* 236 (TEX-LL). GALVESTON CO. *Toledo* 10 (SWT). JEFF DAVIS CO. *Bierner* 37 (SWT). MCLENNAN CO. *Holmes* 3651 (TEX-LL). MEDINA CO. *Lemke* 1737 (SWT). TRAVIS CO. *Brown s.n.* (TEX-LL), *Carr* 6238 (TEX-LL).

Polypogon viridis (A. Gouan) M. Breistroffer

TEXAS: BANDERA CO. *Smith* 554 (TEX-LL). BREWSTER CO. *Warnock* 776 (TEX-LL). CULBERSON CO. *Lind s.n.* (TEX-LL). EL PASO CO. *Worthington* 5421 (TEX-LL). FREESTONE CO. *Do* 543 (TEX-LL). GILLESPIE CO. *Nixon* 48 (TEX-LL). JEFF DAVIS CO. *Bierner* 91-38 (SWT). PRESIDIO CO. *Butterwick & Strong* 883a (TEX-LL). TRAVIS CO. *Nee & Whelan* 11823 (TEX-LL).

Schedonnardus paniculatus (Nutt.) Trel.

TEXAS: ARCHER CO. *Johnston* 6589 (SWT). BLANCO CO. *Kelley* 3 (TAES). CORYELL CO. *Sanchez* 1421 (SWT). HAYS CO. *Bailey* 94 (SWT), *Jessup* 124 (SWT). KENDALL CO. *Seidensticker* 127 (TAES). MEDINA CO. *S. & G. Jones* 1783 (TAES). RED RIVER CO. *S. & G. Jones* 2866 (SWT). SWISHER CO. *Johnston* 6572 (SWT).

Schizachyrium scoparium (Michx.) Nash

TEXAS: BANDERA/MEDINA CO. *Lackey* 323 (SWT). BLANCO CO. *Sanchez* 954 (SWT). BRAZORIA CO. *Rosen* 697 (SWT). CALDWELL CO. *Lemke* 769 (SWT). COMAL CO. *Breckenridge* 498 (SWT). EDWARDS CO. *Evans* 35 (SWT). HAYS CO.

Lyday 147 (SWT). KERR CO. *Sanchez* 1066 (SWT). ROBERTSON CO. *Lemke* 3343 (SWT). TRAVIS CO. *Bierner* 90-212 (SWT), *Warnock & Warnock* 5566 (SWT).

Sclerochloa dura (L.) Beauv.

ILLINOIS: CHAMPLAIN CO. *Hill* 27815 (TAES).

MISSOURI: ST. LOUIS CO. *Davidse* 26337 (TAES).

TEXAS: BELL CO. *Sanborn s.n.* (TAES). BEXAR CO. *Moncrief s.n.* (TAES). DALLAS CO. *Schinnners* 19751 (TEX-LL). TARRANT CO. *Wolff s.n.* (TAES).

WASHINGTON: PULLMAN CO. *Warren s.n.* (TEX-LL).

MEXICO: CASTELON *Güemes et al.* 2702 (TEX-LL).

Secale cereale L.

CALIFORNIA: LASSEN CO. *Wiggins & Wiggins* 16342 (TEX-LL), *Wiggins & Wiggins* 16344 (TEX-LL).

CONNECTICUT: HARTFORD CO. *Hill* 9027 (TAES).

LOUISIANA: OUACHITA PAR. *Thomas & Cascio* (TAES).

TEXAS: BRAZORIA CO. *Clark* 3208 (TAES). GALVESTON CO. *Rosen, Yeargan & Geary* 624 (SWT). MILAM CO. *S. & G. Jones* 1280 (TAES). WOOD CO. *S. & G. Jones & Powell* 2898 (SWT).

UTAH: CACHE CO. *Hatch* 1053 (TEX-LL), *Hatch* 4801 (TEX-LL).

Setaria grisebachii Fourn.

TEXAS: BREWSTER CO. *Hinkley & Hinkley* 226 (TEX-LL), *Powell & Powell* 6257 (TEX-LL). EDWARDS CO. *Correll* 31552 (TEX-LL). ELPASO CO. *Worthington* 17328 (TAES), *Worthington* 17376 (TAES). JEFF DAVIS CO. *Correll* 34991 (TEX-LL), *Keough* 38 (TEX-LL), *Warnock* 22593 (TEX-LL). SAN SABA CO. *Ellis* 218 (TAES). VAL VERDE CO. *Warnock* 11687 (TEX-LL), *Warnock & McBryde* 15151 (SWT).

Setaria leucopila (Scribn. & Merr.) K. Schum.

TEXAS: BREWSTER CO. *S. & G. Jones* 6541 (SWT). EL PASO CO. *Hatch* 5862 (SWT), *Worthington* 17058 (SWT). HARDEMAN CO. *Carr* 9811 (SWT). HAYS CO.

Breckenridge 490 (SWT), *Tabler s.n.* (SWT). HILDAGO CO. *Lonard* 4921 (SWT). MEDINA CO. *Gwaltney* 29 (TAES). PECOS CO. *Brown* 1253 (TAES). TOM GREEN CO. *Morgan* 56 (SWT). TRAVIS CO. *Allred* 1447 (TAES), *LaHue* 44 (TAES).

Setaria parviflora (Poir.) Kerguel.

TEXAS: ANDERSON CO. *Nixon* 14129 (SWT). BANDERA/MEDINA *Lackey* 281 (SWT). BLANCO CO. *Sanchez* 849 (SWT), *Sanchez* 897 (SWT). BRAZORIA CO. *Rosen* 205 (SWT). CALDWELL CO. *Breckenridge* 545 (SWT). FORT BEND CO. *Breckenridge* 596 (SWT). GALVESTON CO. *Rosen* 480 (SWT), *Rosen & Jones* 601 (SWT). GONZALES CO. *Lemke* 2687 (SWT). GRAYSON CO. *Boylan* 420 (SWT). HUNT CO. *Lemke* 2746 (SWT).

Setaria pumila (Poir.) Roem. & Schult.

TEXAS: BEXAR CO. *Morris* 44 (SWT). BROWN CO. *Hewitt* 1 (TEX-LL). GALVESTON CO. *Waller* 3798 (TEX-LL). HAYS CO. *Beard* 29 (SWT). REAL CO. *Smith & Butterwick* 290 (TEX-LL). SAN PATRICIO CO. *Hatch* 4136 (TEX-LL). SHELBY CO. *Rosen & Jones* 683 (SWT). WALKER CO. *Carr* 13268 (TEX-LL). WISE CO. *Lemke* 609 (SWT).

Setaria ramiseta (Scribn.) Pilger

TEXAS: ANDREWS CO. *Scudday s.n.* (SWT). HILDAGO CO. *Lonard* 4072 (TAES). JIM WELLS CO. *Coffey* 395 (TAES). KIMBLE CO. *Gould* 11389a (TAES). LAMPASAS CO. *S. & G. Jones* 1261 (TAES). MEDINA CO. *Barr* 92-0012 (TAES). VAL VERDE CO. *Patterson* 281 (TAES).
MEXICO: TAMAULIPAS. *de la Garza & de la Garza* 47 (TEX-LL), *Domingez & McCart* 8198 (TEX-LL).

Setaria reverchonii (Vasey) Pilger

TEXAS: BANDERA/MEDINA CO. *Lackey* 542 (SWT). BELL CO. *Coffey* 1726 (TAES). BEXAR CO. *Silveus* 7606 (TAES). BREWSTER CO. *S. & G. Jones & Manrique* 463 (SWT). BROWN CO. *Harris* 142 (SWT). COMAL CO. *Liles* 10 (TAES). CORYELL CO.

Wipff 226 (SWT). DONLEY CO. *Johnston & Walker* 6786 (SWT), *Johnston & Walker* 6795 (SWT). FRIO CO. *Gould* 11281 (TAES). LAMPASAS CO. *Jones* 40 (SWT). SHACKELFORD CO. *Johnston* 6602 (SWT).

Setaria schaelei (Steud.) A. S. Hitchc.

TEXAS: BANDERA/MEDINA CO. *Lackey* 324 (SWT). BEXAR CO. *Liles* 36 (TAES). BLANCO CO. *Sanchez* 822 (SWT), *Sanchez* 945 (SWT). HAYS *Neimann* 18-62 (TAES), *Priestle* 73 (SWT), *Reardon* 76 (TAES), *Thomas* 83 (SWT). KIMBLE CO. *Sanchez* 1039 (SWT). LLANO CO. *Gould* 8432 (TAES), *Heinemann* 63-25 (TAES), *Wallace* 12 (SWT). TRAVIS CO. *Carr* 3344 (TAES), *Elam* 38 (TAES). UVALDE CO. *Bownds* 8 (TAES).

Setaria verticillata (L.) Beauv.

TEXAS: BREWSTER CO. *Hatch & Morden* 4325A (TAES), *Morden & Hatch* 62 (TAES), *Warnock* 9120 (TEX-LL). CAMERON CO. *Carr, MacWhorter & Hernandez* 13328 (TEX-LL), *Fleetwood* 3744 (TEX-LL). EL PASO CO. *Worthington* 17416 (SWT). HILDAGO CO. *Lonard* 3289 (TAES), *Lonard* 5023 (SWT). NUECES CO. *Jones* 4229 (TEX-LL).

Setaria villosissima (Scribn. & Merr.) K. Schum.

TEXAS: GILLESPIE CO. *Emery* 444 (TEX-LL), *Emery* 445 (TEX-LL), *Emery* 447 (TEX-LL), *Emery* 448 (TEX-LL), *Emery* 455 (TEX-LL), *Emery* 458 (TEX-LL), *Emery* 464 (TEX-LL), *Emery* 465 (TEX-LL), *Silveus* 2337 (TAES). LLANO CO. *Emery* 475 (TEX-LL), *Emery* 591 (TEX-LL).

Setaria viridis (L.) Beauv.

TEXAS: CROCKETT CO. *Lemke* 2632 (SWT). EDWARDS CO. *Evans* 25 (TAES). HAYS CO. *Liang* 50 (SWT), *Osborn* 35 (SWT). JEFF DAVIS CO. *Morden & Hatch* 86 (TAES), *Worthington* 13760 (SWT). KINNEY CO. *Rosen* 233 (SWT), *Rosen* 253 (SWT). TYLER CO. *S. & G. Jones* 3691 (SWT). WILLIAMSON CO. *S. & G. Jones* 1831 (SWT), *S. & G. Jones* 3016 (TAES).

Sorghastrum elliottii (Mohr) Nash

TEXAS: ANDERSON CO. *Gardner et al.* 43 (SWT), *Singhurst* 7271 (TEX-LL).
 ANGELINA CO. *Gould* 12446 (TEX-LL), *Orzell & Bridges* 5936 (TEX-LL). BASTROP
 CO. *Carr, Wolfe & Liu* 14229 (TEX-LL) HAYS CO. *Niemann* 29-62 (TAES). HOUSTON
 CO. *Correll & Correll* 31788 (TEX-LL). JASPER CO. *Johnston, Flyrr & Phillips* 7045
 (SWT). LAMAR CO. *Carr* 13085 (TEX-LL). TYLER CO. *Johnston, Flyrr & Phillips*
 6997 (SWT).

Sorghastrum nutans (L.) Nash

TEXAS: ANDERSON CO. *Nixon* 14127 (SWT). BRAZORIA CO. *Rosen* 696 (SWT).
 FAYETTE CO. *Lemke* 2000 (SWT). HUNT CO. *Lemke* 2716 (SWT). KAUFMAN CO.
Lemke 2939 (SWT). KENDALL CO. *Breckenridge* 578 (SWT), *Breckenridge* 579
 (SWT). KERR CO. *Bownds* 16 (TAES). MCLENNAN CO. *Henard* 64-31 (TAES).
 ROBERTSON CO. *Lemke* 3345 (SWT). TRAVIS CO. *Carr* 4387 (TAES).

Sorghum bicolor (L.) Moench

TEXAS: BLANCO CO. *Sanchez* 908 (SWT). BRAZORIA CO. *Jordon s.n.* (TEX-LL).
 BRAZOS CO. *Morden* 1036 (TAES). DENTON CO. *Boylan* 264 (SWT). GALVESTON
 CO. *Morden* 114 (TAES). HARRIS CO. *Treverse* 1318 (TEX-LL). HILDAGO CO.
Crockett 8022 (SWT), *Leal* 27 (TAES). KIMBLE CO. *Turner* 97-500 (TEX-LL).
 PRESIDIO CO. *Correll & Rollins* 23690 (TEX-LL).

Sorghum halepense (L.) Pers.

TEXAS: BANDERA/MEDINA CO. *Lackey* 549 (SWT). BLANCO CO. *Sanchez* 789
 (SWT). BREWSTER CO. *Warnock s.n.* (SWT). BURNET CO. *Adams* 19 (SWT).
 COMAL CO. *Schoolcraft* 104 (SWT). CROCKETT CO. *Lemke* 2571 (SWT). FAYETTE
 CO. *Lemke* 1996 (SWT). HAYS CO. *Burleson* 19 (SWT). WHARTON CO. *Losack* 76
 (SWT).

Spartina pectinata Link

COLORADO: LARIMER CO. *Wasser s.n.* (TAES).

INDIANA: KOSCIUSKO CO. *Dirig* 2812 (TAES).

MASSACHUSETTS: FRANKLIN CO. *Ahles* 78583 (TAES).

TEXAS: HARRIS CO. *Brown s.n.* (TEX-LL), *Taylor s.n.* (TEX-LL). HEMPHILL CO.

Margo 28 (TAES), *Rowell* 4242 (TEX-LL). HOPKINS CO. *Whitehurst s.n.* (TEX-LL).

HUTCHINSON CO. *Crutchfield* 3553 (TEX-LL).

Sphenopholis interrupta (Buckl.) Scribn.

TEXAS: BLANCO CO. *Wipff, Jensen & Wipff* 109 (TAES). BRAZOS CO. *Hatch* 2151

(TAES). EDWARDS CO. *Evans* 43 (SWT). GALVESTON CO. *Waller & Bauml* 3492

(SWT). HARRIS CO. *Brown* 20327 (TEX-LL). KERR CO. *May* 5541 (TAES). SAN

AUGUSTINE CO. *George & Nixon* 211 (TAES). SAN PATRICIO CO. *Aljoe* 21 (SWT).

WASHINGTON CO. *Jones & Wipff* 1183 (SWT), *Toledo* 34 (SWT).

Sphenopholis obtusata (Michx.) Scribn.

TEXAS: ANGELINA CO. *Jones & Powell* (SWT). EL PASO CO. *Worthington* 14125

(SWT), *Worthington* 17954 (SWT). FORT BEND CO. *Knight* 140 (SWT). GONZALES

CO. *Carr* 7271 (SWT). LIBERTY CO. *Hatch* 4717 (SWT). POLK CO. *Jones & Wipff*

1467 (SWT). SAN PATRICIO CO. *Toledo* 54 (SWT). WOOD CO. *S. & G. Jones &*

Powell 2764 (SWT).

Sporobolus airoides (Torr.) Torr.

TEXAS: BREWSTER CO. *S. & G. Jones* 6542 (SWT). CRANE CO. *Powell* 2376

(TEX-LL). CULBERSON CO. *Burgess* 814 (TAES). DALLAM CO. *Gould & Thomas*

7137 (TEX-LL). EL PASO CO. *Walsh* 19a (TAES), *Worthington* 17180 (SWT). HARRIS

CO. *Brown* 9422 (TEX-LL). PRESIDIO CO. *McWilliams* 6 (TAES), *Ohlendorf* 773

(TAES), *York* 48261 (TEX-LL). TRAVIS CO. *Brown D-4* (TEX-LL).

Sporobolus compositus (Poir.) Merr.

TEXAS: BROWN CO. *Black* 229 (SWT). CORYELL CO. *Sanchez* 1420 (SWT).

GILLESPIE CO. *Sanchez* 990 (SWT), *Sanchez* 1604 (SWT). HAYS CO. *Breckenridge*

462 (SWT), *Breckenridge* 504 (SWT), *Breckenridge* 505 (SWT), *Breckenridge* 526 (SWT),

Breckenridge 533 (SWT), *S. & G. Jones 5713* (SWT), *Ruiseco 34* (SWT). HOUSTON CO. *S. & G. Jones & Wipff 5798* (SWT). RUSK CO. *Rosen & Jones 674* (SWT). SAN AUGUSTINE CO. *George & Nixon 165* (SWT). VAL VERDE CO. *Labus 300* (SWT).

Sporobolus cryptandrus (Torr.) Gray

TEXAS: CAMERON CO. *Lemke 573* (SWT). EL PASO CO. *Worthington 17419* (SWT). GLASSCOCK CO. *Johnston & Walker 6966* (SWT). JONES CO. *Johnston & Walker 6766* (SWT). KIMBLE CO. *Sanchez 1037* (SWT). KINNEY CO. *Rosen 223* (SWT). LAVACA CO. *Johnston 6729* (SWT). LEE CO. *S. & G. Jones 3351* (SWT). LIVE OAK CO. *Bohls 24* (SWT). WINKLER CO. *S. & G. Jones 7458* (SWT).

Sporobolus pyramidatus (Lam.) A. S. Hitchc.

TEXAS: ARANSAS CO. *Hays 151* (TAES). BRAZOS CO. *Fox 69* (SWT). CALHOUN CO. *Harvey 7585* (TAES). FAYETTE CO. *Knight 176* (SWT). HUNT CO. *Rosen, Jones & Combs 1172* (SWT). JACKSON CO. *Lemke 2898* (SWT). KARNES CO. *Davidson 12* (TAES). KLEBERG CO. *Lemke 3006* (SWT). NUECES CO. *Lemke 3333* (SWT). SAN PATRICIO CO. *Toledo 46* (SWT). VICTORIA CO. *Budd 54* (TAES).

Sporobolus vaginiflorus (Torr. ex Gray) Torr. ex Wood

TEXAS: BLANCO CO. *Sanchez 916* (SWT). CALDWELL CO. *Lemke 2019* (SWT). CARSON CO. *Johnston & Walker 6806* (SWT). COMAL CO. *Breckenridge 493* (SWT), *Lemke 755* (SWT). GILLESPIE CO. *Sanchez 957* (SWT). HAYS CO. *S. & G. Jones 5712* (SWT), *Lyday 291* (SWT). KERR CO. *Hatch 4712* (SWT), *Sanchez 1063* (SWT). KIMBLE CO. *Sanchez 1045* (SWT).

Sporobolus wrightii Munro ex Scribn.

TEXAS: BRAZORIA CO. *Brown 21530* (TEX-LL), *Carr & Teague 17651* (TEX-LL), *Carr & Zwartges 17865* (TEX-LL). BREWSTER CO. *Butterwick & Strong 665* (TEX-LL), *Turner & Turner 21-914* (TEX-LL). CAMERON CO. *Lonard 5004* (SWT). EL PASO CO. *Worthington 17600* (SWT). HILDAGO CO. *Gould 14009* (TAES). JEFF DAVIS CO. *Kolle 1167* (TAES). PRESIDIO CO. *Wagner s.n.* (TEX-LL).

Stenotaphrum secundatum (Walt.) O. Ktze.

TEXAS: BRAZOS CO. *Junkin* 75 (TAES). CALDWELL CO. *Lemke* 2678 (SWT).
 EDWARDS CO. *Butterwick & Smith* 459 (TEX-LL). GALVESTON CO. *Waller*,
Campbell & Bauml 2825 (TEX-LL). HAYS CO. *Litchfield s.n.* (SWT). HILDAGO CO.
Lonard 4916 (SWT). MATAGORDA CO. *Cecora* 16-C (TAES). NUECES CO. *Carr &*
Wolfe 16396 (TEX-LL). SAN PATRICIO CO. *Toledo* 52 (SWT). TRAVIS CO. *Henard*
 64-59 (TAES).

Tragus berteronianus Schult.

TEXAS: BROOKS CO. *Tharp s.n.* (TEX-LL). BURNET CO. *Breckenridge* 618 (SWT).
 CULBERSON CO. *Reeder & Reeder* 5932 (TEX-LL). GILLESPIE CO. *Parks s.n.*
 (TAES). JIM HOGG CO. *Tharp* 5237 (SWT). JIM WELLS CO. *Barton* 64 (TAES).
 LLANO CO. *Butterwick & Lamb* 3041 (TEX-LL), *Gould* 8435 (TEX-LL), *Wipff & Jones*
 1355 (TEX-LL). SAN PATRICIO CO. *Bownds* 41 (TAES). WEBB CO. *Trevino* 11
 (TEX-LL).

Tridens albescens (Vasey) Woot. & Standl.

TEXAS: BANDERA/MEDINA CO. *Lackey* 516 (SWT). BEE CO. *Lemke* 2243 (SWT).
 BLANCO CO. *Sanchez* 885 (SWT). BROWN CO. *Capo* 17 (SWT). CALDWELL CO.
Breckenridge 550 (SWT). DIMMIT CO. *Lemke* 1880 (SWT). FAYETTE CO. *Aljoe* 2
 (SWT). KENDALL CO. *Breckenridge* 575 (SWT). KERR CO. *Sanchez* 1094 (SWT).
 MCMULLEN CO. *Lemke* 1602 (SWT). TOM GREEN CO. *Lemke* 1632 (SWT). VAL
 VERDE CO. *Labus* 145 (SWT) *Labus* 253 (SWT).

Tridens buckleyanus (L. H. Dewey) Nash

TEXAS: BEXAR CO. *Carr & Price* 12370 (TEX-LL), *Carr & Price* 12376 (TEX-LL).
 HAYS CO. *Carr & Johnston* 17754 (TEX-LL). KENDALL CO. *Carr, Lockett & Lockett*
 12984 (TEX-LL). TRAVIS CO. *Carr* 6150 (SWT), *Carr* 6164 (SWT), *Carr* 9261 (SWT),
Carr 11121 (TEX-LL), *Carr* 18643 (TEX-LL), *Hatch* 5828 (TEX-LL), *Johnston s.n.*
 (TEX-LL).

Tridens eragrostoides (Vasey & Scribn.) Nash

TEXAS: CAMERON CO. *Carr 14411* (TEX-LL), *Correll & Rollins 20970* (TEX-LL), *Fleetwood 3508* (TEX-LL), *Fleetwood 3775* (TEX-LL). HAYS CO. *Tharp s.n.* (TEX-LL). KARNES CO. *Johnson 883* (TEX-LL). KINNEY CO. *Moore, Garza-Gongora, Lissner & McCart 8854* (TEX-LL). KLEBERG CO. *Carr 11562* (TEX-LL), *Johnston 54380* (TEX-LL). UVALDE CO. *Reverchon 1617* (TEX-LL). WEBB CO. *Martinez & Trevino 9* (TEX-LL).

Tridens flavus (L.) A. S. Hitchc.

TEXAS: DONLEY CO. *Johnston & Walker 6793* (SWT). GILLESPIE CO. *Sanchez 992* (SWT). HOUSTON CO. *Hatch 6165* (SWT), *Rosen & Jones 642* (SWT). KERR CO. *Sanchez 1085* (SWT). KIMBLE CO. *Sanchez 1047* (SWT). ROBERTSON CO. *Lemke 3351* (SWT). SAN AUGUSTINE CO. *George & Nixon 87* (SWT). TITUS CO. *Lemke 1248* (SWT).

Tridens muticus (Torr.) Nash

TEXAS: BANDERA/MEDINA CO. *Sanchez 647* (SWT). BURNET CO. *Lemke 2036* (SWT), *Pollok 8* (SWT). COMAL CO. *Breckenridge 496* (SWT). DUVAL CO. *S. & G. Jones 894* (SWT). HAYS CO. *Lemke 669* (SWT), *Lyday 300* (SWT), *Staton 20* (SWT). KENDALL CO. *Breckenridge 573* (SWT). TRAVIS CO. *Carr 6165* (SWT). VAL VERDE CO. *Labus 299* (SWT), *Labus 323* (SWT).

Tridens texanus (S. Wats.) Nash

TEXAS: BANDERA/MEDINA CO. *Lackey 486* (SWT), *Lackey 531* (SWT). BURNET CO. *Lemke 2032* (SWT). EDWARDS CO. *Evans 49* (SWT). HAYS CO. *Thomas 75* (SWT). KIMBLE CO. *Sanchez 1033* (SWT). LLANO CO. *Breckenridge 562* (SWT), *Gould 7530* (TAES). MEDINA CO. *Campos 24* (TAES). VAL VERDE CO. *Labus 214* (SWT). ZAVALA CO. *Casey 72* (SWT).

Triplasis purpurea (Walt.) Chapm.

TEXAS: ANDERSON CO. *Hatch 5071* (SWT). BAILEY CO. *Gould 7745* (TEX-LL).

BASTROP CO. *Carr & Kutac* 9264 (SWT). COCHRAN CO. *Johnston & Walker* 5431 (SWT). CRANE CO. *Warnock* 15495 (SWT). KERR CO. *Cunningham* 63-30 (TAES). HUTCHINSON CO. *Higgins* 9633 (TEX-LL). LIMESTONE CO. *Shinners* 30571 (TEX-LL). RUSK CO. *Rosen & Jones* 671 (SWT). TARRANT CO. *Fraser* 64-2 (TAES). TRAVIS CO. *Higdon s.n.* (TEX-LL).

Tripogon spicatus (Nees) Ekman

TEXAS: BURNET CO. *Breckenridge* 614 (SWT), *Lemke* 2046 (SWT). LLANO CO. *Gould* 7553 (TEX-LL), *Gould* 9966 (TEX-LL), *Jones & Wipff* 3343 (SWT), *Sestak* 63 (TAES), *Tharp s.n.* (TEX-LL). MASON CO. *Singhurst, Carr & Sanchez* 8206 (TEX-LL). TRAVIS CO. *Carr, Farquhar, Diamond & Maresh* 15096 (TEX-LL), *Carr & Turner* 15842 (TEX-LL).

Tripsacum dactyloides (L.) L.

TEXAS: BANDERA/MEDINA CO. *Lackey* 331 (SWT). BLANCO CO. *Sanchez* 813 (SWT). BRAZOS CO. *Rosen* 276 (SWT). FAYETTE CO. *Knight* 171 (SWT). GILLESPIE CO. *Allred* 1454 (TAES), *Kast* 20 (TAES), *Kast* 82 (TAES), *Sanchez* 1022 (SWT). HAYS CO. *Breckenridge* 587 (SWT). MEDINA CO. *Gwaltney* 30 (TAES). UVALDE CO. *Kellner s.n.* (TAES), *Lemke* 1805 (SWT). WASHINGTON CO. *Toledo* 35 (SWT)..

Triticum aestivum L.

TEXAS: BEXAR CO. *Hagenbuch* 30 (SWT). BREWSTER CO. *Morden* 433 (TAES). DALLAS CO. *Hynes s.n.* (TEX-LL), *Lundell & Lundell* 12837 (TEX-LL). GALVESTON CO. *Waller & Campbell* 2692 (TEX-LL). GARZA CO. *Hutchins* 465 (TEX-LL). HAYS CO. *Ruiseco* 128 (SWT). KARNES CO. *Lemke* 1696 (SWT). LIVE OAK CO. *S. & G. Jones* 821 (TAES). WILLIAMSON CO. *Swofford* 100 (SWT).

Urochloa ciliatissima (Buckl.) R. D. Webster

TEXAS: BEXAR CO. *Silveus* 125 (TEX-LL). CALDWELL CO. *Johnston* 6756 (SWT). GILLESPIE CO. *Nixon* 131 (TEX-LL). HILDAGO CO. *Johnston* 54536 (TEX-LL). LAVACA CO. *Johnston* 6746 (SWT). LEON CO. *Johnston* 6703 (SWT). LLANO CO.

Butterwick & Lamb 2931 (TEX-LL). MEDINA CO. *Johnston, Tharp & Turner* 3410 (TEX-LL). TRAVIS CO. *Carr & Price* 11410 (TEX-LL). WILLIAMSON CO. *Orzell & Bridges* 10576 (TEX-LL).

Urochloa fasciculata (Swartz) R. D. Webster

TEXAS: BASTROP CO. *Carr* 6073 (SWT). BEXAR CO. *Carr & Turner* 14010 (TEX-LL). BRAZORIA CO. *Rosen* 213 (SWT). DIMMIT CO. *S. & G. Jones* 1712 (SWT). FAYETTE CO. *Carr & Kutac* 7850 (TEX-LL). KLEBERG CO. *Carr* 11418 (TEX-LL). MCLENNAN CO. *S. & G. Jones* 3218 (SWT). NUECES CO. *Carr* 11518 (TEX-LL). TRAVIS CO. *Gould* 7621 (TEX-LL), *Turner* 64 (TEX-LL).

Urochloa platyphylla (Munro ex Wright) R. D. Webster

TEXAS: BRAZOS CO. *Gould* 7557 (TEX-LL), *Hatch & Morden* 4337 (TEX-LL), *Jeidson* 48 (TAES). CHEROKEE CO. *Nixon & Singhurst* 18652 (TAES). GALVESTON CO. *Waller & Bauml* 2835 (SWT). GREGG CO. *Nixon & Jones* 15818 (SWT). HARRIS CO. *Carr* 13021 (TEX-LL). HILDAGO CO. *Lonard* 5011 (SWT). LEON CO. *S. & G. Jones* 2047 (TAES). PARKER CO. *Lipscomb* 2450 (TEX-LL).

Urochloa texana (Buckl.) R. D. Webster

TEXAS: BROOKS CO. *Davis s.n.* (TEX-LL). BURNET CO. *Wooton* 65 (SWT). DUVAL CO. *Correll & Johnston* 25515 (TEX-LL), *Hatch* 5266 (SWT). EASTLAND CO. *Hill & McCart* 9246 (TEX-LL). GARZA CO. *Hutchins* 1369 (TEX-LL). GRAYSON CO. *Nee* 44003 (TEX-LL). ROBERTSON CO. *Lemke* 3368 (SWT). TRAVIS CO. *Carr & Turner* 15829 (TEX-LL). WEBB CO. *Baird* 61-60-24 (TEX-LL).

Vulpia octoflora (Walt.) Rydb.

TEXAS: ARANSAS CO. *Lemke* 1417 (SWT). BRAZOS CO. *Knight* 150 (SWT), *Toledo* 20 (SWT). COMAL CO. *Rakestraw* 39 (TAES). GALVESTON CO. *Rosen* 559 (SWT). GRIMES CO. *Lemke* 213 (SWT), *Lemke* 227 (SWT). KERR CO. *Cocke* 9 (TAES). KIMBLE CO. *Morden, Coffey, Hatch & Valdez* 699 (TAES). LEON CO. *Couch* 42

(SWT), *Snider* 26 (TAES). SAN PATRICIO CO. *Lyons* 25 (SWT). TRAVIS CO. *Lemke* 3511 (SWT).

Zizaniopsis miliacea (Michx.) Doell & Aschers.

TEXAS: BEXAR CO. *Doell & Aschers* 2249 (TEX-LL), *Doell & Aschers* 2676 (TEX-LL). BRAZOS CO. *Stewart s.n.* (TAES). CHAMBERS CO. *Rosen* 538 (SWT), *Whitbeck* 58 (TAES). HAYS CO. *Tharp s.n.* (SWT). LLANO CO. *Rodgers, Albers & Barksdale* 6887 (TEX-LL). SAN PATRICIO CO. *Toledo* 44 (SWT). TRAVIS CO. *Carr & Turner* 15285 (TEX-LL), *Barkley* 13464 (TEX-LL). TRINITY CO. *Marsh & McLeod s.n.* (TAES). WALKER CO. *S. & G. Jones* 640 (TAES).

VITA

Karl Hagenbuch was born in Waterloo, Iowa, on February 9, 1959, the son of Heinz and Patricia Hagenbuch. After completing his work at Mason City High School, Mason City, Iowa, in 1977, he entered the United States Army. He was honorably discharged from active duty in 1981. In August 1993 he began taking classes at San Antonio College, San Antonio, Texas, and transferred to Southwest Texas State University in June 1995. He received the degree of Bachelor of Science from Southwest Texas State University in May 1998. In June 1998, he entered the Graduate College of Southwest Texas State University.

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