

DESCRIPTIONS OF RANGE AND PASTURE PLANTS

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THE MOST pronounced identifying characteristics for the 122 plants listed in RS 1.044 *Master Plant List for Texas Range and Pasture Plant Identification Contests* are described in this publication. Other sources should be used to acquaint contestants with more detailed individual characteristics that you use when training plant identification teams.

GRASSES

1. Alkali sacaton (*Sporobolus airoides*) This coarse-stemmed bunchgrass, 12 to 36 inches tall, grows in tough clumps with no rhizomes. The long, slender blades have hairs at the throat. The loosely flowered panicle is pyramid shaped. Spikelets are one-flowered on short pedicels. It grows in meadows and valleys, especially in alkaline soil. This grass, desirable to seed in salted-out sites, is relished by jackrabbits. It is adapted for vegetational areas 2, 6, 7, 8, 9 and 10 and is a perennial, warm, native grass that provides poor grazing for wildlife; fair grazing for livestock.

2. Bahiagrass (*Paspalum notatum*) This 8- to 16-inch tall bunchgrass with erect stems often has thick, scaly rhizomes. Leaves generally are hairless. Inflorescence usually has two spike-like branches, 1½ to 4½ inches long, paired at the tip of the stem, one slightly below the other. This grass grows in vegetational areas 1 and 2 in sites with adequate moisture and is a perennial, warm, introduced forage and hay grass that provides fair grazing for livestock but poor grazing for wildlife.

3. Barnyardgrass (*Echinochloa crusgalli* var. *crusgalli*) This 12- to 48-inch grass has stout stems that grow from a somewhat decumbent base. Leaf sheaths are smooth with long, flat blades. The 2- to 5-inch long panicle usually is erect, but can be nodding. The racemes usually spread with maturity. Spikelets may have long awns with each floret covered with short spines. Seeds furnish some food for ground birds. This invading plant seldom is grazed by any animal and grows mostly in moist, poorly drained regions of areas 1 through 10. An annual, warm, introduced grass, Barnyardgrass provides poor grazing for wildlife and livestock.

4. Beaked panicum (*Panicum anceps*) This 18- to 48-inch tall bunchgrass has stems growing from numerous scaly rhizomes. Sheaths are slightly hairy, with long leaves that are hairy on the upper part near the base. The panicle is long and spreading, with spikelets slightly

curved and resembling a beak. This very palatable grass decreases with heavy grazing and grows mostly on sandy soils in areas 1, 2, 3 and 4. This perennial, warm native provides fair grazing for wildlife; good grazing for livestock.

5. Bermudagrass (*Cynodon dactylon*) This 4- to 12-inch tall, dark bluish-green sodgrass has rhizomes and stolons that take root at nodes. Internodes are flattened and the ligule is a conspicuous ring of white hairs. The inflorescence has three to six purple spikes, resembling a bird's foot. This common lawn and pasture grass of the South is adapted in areas 1 through 10 and is a perennial, warm, introduced grass that provides poor grazing for wildlife; good grazing for livestock.

6. Big bluestem (*Andropogon gerardii*) A 36- to 60-inch tall bunchgrass that grows from short rootstocks, big bluestem produces tall, slim culms. The lower sheaths and leaves usually are fuzzy and very hairy. Seedheads usually come out in three branches like a turkey foot. The ligule extends across the leaf collar. This grass, preferred by cattle, decreases with overgrazing, matures seed in fall and grows mostly in bottomland in areas 1 through 10. This perennial, warm native provides poor grazing for wildlife; good grazing for livestock.

7. Big cencrus (*Cenchrus myosuroides*) This 36- to 60-inch tall bunchgrass has smooth stout stems growing from a decumbent base. The inflorescence is 2½ to 6 inches long with each spikelet as a one-flowered bur with the bristle united at the base. The outer bristles are shorter, the inner as long as the spikelet. It grows on a variety of soils from sands to clays and decreases with heavy grazing. This is a good grass for seeding old fields and denuded rangelands where cattle are to be grazed. The spiny spikelets will cling to wool and mohair. This perennial, warm, native grass is adapted in areas 2 and 6 and provides fair grazing for wildlife; good grazing for livestock.

8. Black grama (*Bouteloua eriopoda*) This 12- to 24-inch tall grass has weak, crooked, slender, woolly stems which often take root at the swollen fuzzy joints. The internodes usually are green during winter. The seedhead contains three to eight narrow spikes. Black grama is a good source of vitamin A during winter. This grass decreases with heavy grazing, grows on gravelly uplands in areas 7, 8, 9 and 10 and is a perennial, warm native that provides good grazing for wildlife and livestock.

9. Blue grama (*Bouteloua gracilis*) A 12- to 24-inch tall, tufted and erect grass, blue grama sometimes forms a sod. The inflorescence usually has two rooster comb-like spikes that curve downward when mature, with no

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stinger. Blue grama decreases with heavy grazing, grows on plains and hills in areas 7, 8, 9 and 10 and is a perennial, warm native that provides good grazing for wildlife and livestock.

10. Blue panicum (*Panicum antidotale*) This 48-to 54-inch tall bunchgrass has coarse stems growing from a dense crown of thick, short, bulbous rhizomes. The lower part of the stem has large nodes and internodes with branches coming from the nodes. Leaves are abundant, 7 to 12 inches long and flat with a heavy midrib on the lower side. Terminal panicles are long, loose, open and usually erect, but slightly drooping at maturity. The spikelets are greenish-yellow, very slick and shiny in appearance and are borne on the tip end of rather long seed branches. Most forage production is obtained when blue panicum is managed as a pasture plant. It grows on clay loam soils in areas 2 through 10 and is a perennial, warm, introduced grass that provides good grazing for wildlife and livestock. It can cause prussic acid poisoning in livestock at certain stages of growth.

11. Broomsedge bluestem (*Andropogon virginicus*) This 24- to 48-inch tall bunchgrass grows in small tufts with overlapping flattened sheaths, hairy along the margin of the upper blade surface toward the base. The upper two-thirds of the plant freely branches. Foliage is straw yellow when mature. Seedheads are partly enclosed in a sheath (spathe). Broomsedge bluestem is seldom grazed by any kind of animal. It grows mostly on upland woodland and invades overgrazed ranges in areas 1, 2, 3 and 6. This perennial, warm native provides poor grazing for wildlife and livestock.

12. Brownseed paspalum (*Paspalum plicatulum*) This 18- to 36-inch tall bunchgrass has purplish, compressed culms and sheaths. Spikelets are graygreen, turning dark brown and shiny when ripe. It resembles dallisgrass, but blades are narrower, racemes are shorter and fruit is not covered with silky hairs. It grows in savannahs in moist, sandy or clay soils in areas 1, 2, 3, 4 and 6 and is a perennial, warm native that provides fair grazing for wildlife and livestock.

13. Buffalograss (*Buchloe dactyloides*) This sod-forming grass grows 4 to 12 inches tall and has creeping surface runners that take root at the leafy nodes. The nodes are smooth and internodes are 2 to 2½ inches long, flattened and shorter than in common curlymesquite. Foliage turns reddish brown when frosted. Male and female plants grow in separate patches or colonies. Female plants bear seed in bur-like clusters among the leaves, while the male plants have a 2- or 3-spiked flag-like seedhead. It grows on plains and prairies in areas 1 through 10 and produces seed throughout the year. This perennial, warm native provides fair grazing for wildlife; good grazing for livestock.

14. Buffelgrass (*Cenchrus ciliaris*) This tufted buchgrass grows 20 to 40 inches tall with stems erect or spreading. The inflorescence is a dense, cylindrical panicle, 2 to 2½ inches long. Bristles of the "burs" are purplish and fused together at the base. Buffelgrass grows in areas 2, 3, 6, 7 and 10. It is a perennial, warm, introduced grass that provides good grazing for livestock; poor grazing for wildlife.

15. Burrograss (*Scleropogon brevifolius*) This 6- to 12-inch sodgrass grows from fuzzy, scaly rhizomes, but also with stolons that take root at nodes. Male and female plants grow in patches. The female resembles a threeawn and varies from pale green to reddish purple. The male has pale, overlapping, awnless spikelets. This grass, which increases on overstocked ranges and sterile soil, grows in semi-arid plains and valleys in areas 7, 8, 9 and 10. A perennial, warm, native grass, burrograss provides poor grazing for wildlife and livestock.

16. Bush muhly (*Muhlenbergia porteri*) This grass grows 6 to 24 inches tall, forming large bunches of tangled stems and leaves and growing most commonly under the protection of thorny brush. The mass of growth often resembles a bird's nest. Blades and stems are short and fine with the blades falling from the sheath after maturity. The inflorescence is 2 to 4 inches long, purplish to white, with single, short-awned florets borne on short pedicels. It decreases with heavy grazing and grows on hills, mesas and plains under protection of brushy plants in areas 6, 7, 8, 9 and 10. This perennial, warm native provides poor grazing for wildlife; good grazing for livestock.

17. California cottontop (*Digitaria californica*) This bunchgrass grows 12 to 48 inches tall, with hard, round stems growing from a knotty, swollen, felty, hairy base. The leaves are 3 to 5 inches long and flat; they do not clasp the stem firmly. The panicle is 2 to 5 inches long with white, purplish hairs exceeding the spikelets in length, giving the entire seedhead a cottony appearance. This grass, palatable throughout the year, is frequently overgrazed but responds readily to deferment. It grows on a wide variety of soils in areas 4 through 10. This perennial, warm, native grass provides fair grazing for wildlife; good grazing for livestock.

18. Canada wildrye (*Elymus canadensis*) This 24- to 48-inch tall bunchgrass has wide blades and an awned spike seedhead resembling wheat or barley which drops or nods when mature. Spikelets are in pairs, glumes are straight at the base and awns are more than twice as long as the lemma. Leaves are held to the stem by auricles. This perennial, cool, native grass grows in areas 2, 3, 7, 8, 9 and 10 and provides fair grazing for wildlife; good grazing for livestock.

19. Cane bluestem (*Bothriochloa barbinodis* var. *barbinodis*) This coarse bunchgrass grows 23 to 52 inches tall with stems that are usually erect, but sometimes bent at the base. Stem nodes are bearded. Panicles are narrow, contracted, dense, mostly 2½ to 5 inches long, often partially enclosed and with numerous branches, mostly 1½ to 3½ inches long. The lemma awn is ¾ to 1¼ inches long. Cane bluestem grows in areas 2, 5, 6, 7, 8, 9 and 10 and is a perennial, warm native that provides poor grazing for wildlife; fair grazing for livestock.

20. Common carpetgrass (*Axonopus affinis*) This sodgrass grows 12 to 30 inches tall, with flat stems and stolons and bearing flat, short, rounded blades. Plants take root at nodes. Seedheads of 2 or 3 racemes are formed on long, slender stems. Spikelets are fuzzy and not over 1/10 inch long. It grows best on bottomland

soils and is managed as a pasture plant in areas 1, 2 and 3. It is a perennial, warm native which provides fair grazing for wildlife and livestock.

21. Common curlymesquite (*Hilaria belangeri*) This pale green, sodforming grass grows 4 to 10 inches tall with creeping surface runners which take root at the leafy nodes. The runners are long, wiry, rough-feeling and have hair at the nodes (buffalograss is smooth). Blades are densely tufted and curly. Foliage turns yellow when mature. The single spike-like seedhead is zig-zag when florets fall. It withstands heavy grazing but is not drought resistant. This perennial, warm native grows on plains and prairies in areas 2 through 10 and provides poor grazing for wildlife; fair grazing for livestock.

22. Dallisgrass (*Paspalum dilatatum*) This tall bunchgrass grows 12 to 48 inches tall, erect or widely spreading, from a decumbent base with short, knotted rhizomes. Culms are knee-like at the base; nodes usually are dark and swollen. Blades are more than ½ inch wide. The long, extended, nodding panicles have three to five racemes, with long hairs at the axils. Spikelets are in pairs on short pedicels and look like four rows of seed. Seeds are covered with fine, silky hairs and resemble tomato seeds. Dallisgrass grows most abundantly in bottomland pastures that are properly managed in areas 1 through 4. This perennial, warm, introduced grass provides fair grazing for wildlife; good grazing for livestock.

23. Eastern gamagrass (*Tripsacum dactyloides*) This 36- to 72-inch tall bunchgrass has robust stems, flattened at the purplish base and growing from stout, scaly rhizomes resembling white grubs. Blades are ½ to 1 inch wide with rough or sharp margins. The inflorescence has one to three spikes, sometimes a foot long with male spikelets above and female spikelets below. Male spikelets grow in pairs, fitting into the hollows of the rachis. Female spikelets are oval and hard, breaking into boney joints at maturity. This grass is closely kin to corn, but has both male and female parts in the same spike. It grows in fertile bottomland soil, in swamps and along stream banks in areas 1, 2, 3, 4, 5, 7, 8, 9 and 10. It is a perennial, warm native that provides fair grazing for wildlife; good grazing for livestock.

24. Fall witchgrass (*Leptoloma cognatum*) This bunchgrass grows 12 to 30 inches tall with freely branching stems and felty pubescence below. The short, rigid, flat blades have white edges with one edge often crinkled. The inflorescence resembles a lovegrass, but single, fuzzy seeds are borne at the end of short branches. The seedhead breaks off at maturity, forming tumbleweeds. It grows on dry, rocky or sandy soils in areas 1 through 10. It is a perennial, warm native that provides fair grazing for wildlife and livestock.

25. Green sprangletop (*Leptochloa dubia*) This bunchgrass grows 12 to 36 inches tall with flat base stems and flat sheaths. Stems are wiry with slightly rough leaves. The large, green sprangled panicle is composed of five to 12 spikes and droops and pales after maturity. Spikelets overlap on short pedicels and are 4- to 8-flowered. It is a good grass to include in native grass mixtures when seeding overused ranges, is a very palatable grass and grows on rocky hills and canyons in

areas 2 and 4 through 10. It is a perennial, warm native that provides fair grazing for wildlife; good grazing for livestock.

26. Gulf cordgrass (*Spartina spartinae*) This 36- to 72-inch tall bunchgrass has stout, coarse stems growing from a crown of dense tufts. Leaf blades are narrow and the edges roll inward, making them appear as a heavy cord. The inflorescence is short and compact, making it appear as a cylinder. Florets are closely fitted together on opposite sides of the axis. The glumes have short, bristly hairs on the margin. It grows abundantly on saline soils in areas 2 and 6 and is a perennial, warm native that provides poor grazing for wildlife; fair grazing for livestock.

27. Hairy grama (*Bouteloua hirsuta*) This tufted, erect bunchgrass grows 6 to 30 inches tall. It has hairy glumes with black awns. Leaf blades are hairy on the margins, especially at the base. The 2 to 4 rooster comb-like spikes have a stinger. Hairy grama grows on rocky hills and plains in areas 1 through 10 and is a perennial, warm native that provides fair grazing for wildlife and livestock.

28. Hairy tridens (*Erioneuron pilosum*) This low, tufted grass grows 4 to 12 inches tall and usually has only one node above the basal cluster of leaves. Leaves have whitish margins and are abruptly pointed at the tip. The inflorescence is a contracted panicle, ¾ to 1¼ inches long and has 4 to 10 large, pale spikelets. It is found in all vegetational areas except 1 and 3, is a perennial, warm native and is rated poor grazing for livestock and wildlife.

29. Hall panicum (*Panicum hallii* var. *hallii*) This 12- to 24-inch tall grass grows in small, erect tufts and has slick, flat, green blades. The basal blades are slick and flat and turn curly when dry, resembling pine shavings. The panicle ascends above ½- to 8-inch long leaves. The single-seeded spikelets are borne on very short pedicels. Seed turn dark brown and shiny when ripe. Hall panicum grows in all areas except 1 and is a perennial, warm native that provides fair grazing for livestock and wildlife.

30. Hooded windmillgrass (*Chloris cucullata*) This tufted, erect bunchgrass grows 12 to 24 inches tall with flat, bluish-green stems and sheaths. It sometimes has short stolons. The inflorescence has seven to 18 stout, purplish, terminal spikes which turn straw yellow or black when ripe. It increases on overgrazed ranges following deferment, but is replaced by better grasses. It grows on upland sandy soil in areas 2 and 5 through 10, is a perennial, warm native and provides fair grazing for wildlife; fair grazing for livestock.

31. Inland saltgrass (*Distichlis spicata* var. *stricta*) This 6- to 24-inch tall, erect, coarse sodgrass grows from creeping, scaly rootstocks. Blades are short, rigid and pointed. Male and female spikelets are borne separately. It grows in alkaline sites in areas 7 through 10 and is a perennial, warm native that provides poor grazing for wildlife; fair grazing for livestock.

32. Johnsongrass (*Sorghum halepense*) This 36- to 72-inch tall bunchgrass grows from extensively creeping, scaly rhizomes. Blades are flat, blue-green and often spotted with purple, which is caused by a bacterial

disease. The large, open panicles have branchlets, mostly in whorls of four. The awns soon fall, leaving shiny, fuzzy fruit. It grows in fields and waste places in areas 1 through 10. It is a perennial, warm, introduced grass that provides fair grazing for wildlife; good grazing for livestock. Under certain growth conditions, it produces prussic acid which is poisonous to livestock.

33. King Ranch bluestem (*Bothriochloa ischaemum* var. *songarica*) This 18- to 48-inch tall bunchgrass has stems growing from a flat crown. The stems turn upward and are freely branching. The leaves have long, silky hairs on the upper surface and are thicker near the collar. The top part of the stem is naked, producing a terminal, loose seedhead. Branches have fine, silky hairs with slender, twisted, bent awns. It grows in areas 1 through 10 and is a perennial, warm, introduced grass that provides fair grazing for wildlife and livestock.

34. Kleingrass (*Panicum coloratum*) This tufted grass grows 23 to 54 inches tall from firm, often knotty bases and has erect leaves. Stem nodes are hairless; sheaths and blades may be hairless or may have stiff, swollen-based hairs. The inflorescence is an open panicle. It is seeded in areas 5 through 8. It is a perennial, warm introduced grass that provides fair grazing for wildlife; good grazing for livestock. Under certain conditions, Kleingrass may cause photosensitization in sheep and goats.

35. Knotroot bristlegrass (*Setaria geniculata*) This 12- to 36-inch bunchgrass has erect or spreading stems growing from a bent, knee-like base. The stems arise from short, knotty, underground rootstocks. Blades and stems often have a purplish tinge. Blades are straight, flat and not twisted, longpointed at the tip and tapering toward the base. The seedhead is erect; 1 to 3 inches long; ¼ inch wide; rounded at the top; and green, yellowish or purple in color. There are five or more bristles below each egg-shaped spikelet. Yellow bristlegrass has the same general appearance except it is an annual with no rootstock and has twisted leaves. Knotroot bristlegrass grows on open ground, cultivated soil and moist places in areas 1 through 10. It is a perennial, warm native that provides fair grazing for wildlife and livestock.

36. Little barley (*Hordeum pusillum*) This 5- to 15-inch tall grass has stems growing from small tufts. Leaf blades are flat, erect and straight until near maturity. There are no auricles at the junction of the leaf blade and sheath as in other species of *Hordeum*. The inflorescence is a dense, bristly spike, ¾ to 2 inches long and usually yellowish in color. It invades rangeland rapidly when grasses are grazed short. It grows in areas 1 through 10 and is an annual, cool native that provides poor grazing for wildlife and livestock.

37. Little bluestem (*Schizachyrium scoparium* var. *frequens*) This bunchgrass grows 24 to 48 inches tall with flattened stems and sheaths. Blades and stems are purplish to bluish-green and turn leathery brown at maturity. Small, fuzzy seeds form a twisted awn seedhead, partially enclosed in a leaf sheath. It grows on upland and bottomland in areas 2 through 10 and decreases with heavy grazing. Little bluestem is grazed by all classes of livestock and matures seed in the fall. It is a perennial, warm native that provides poor grazing for wildlife; good grazing for livestock.

38. Longtom (*Paspalum lividum*) This tall, sod-forming grass grows 20 to 40 inches tall with smooth stems growing from a creeping base. The leaf blades are about 3 inches long and up to ¼ inch wide. The inflorescence has four to seven loosely attached racemes which grow parallel and close to the axis. Seeds are borne in straight rows along the side of each seed branch. Longtom grows abundantly on poorly drained soils in areas 1, 2 and 6 and is a perennial, warm native that provides fair grazing for wildlife and livestock.

39. Marshhay cordgrass (*Spartina patens*) This bunchgrass grows 12 to 50 inches tall with slender stems produced from rhizomes. Leaf blades usually roll inward. The inflorescence has two to several spikes spread along the axis. It grows in area 2, decreases with heavy grazing and is a perennial, warm native that provides poor grazing for wildlife; good grazing for livestock.

40. Meadow dropseed (*Sporobolus drummondii*) This bunchgrass grows 25 to 50 inches tall and is less robust than tall dropseed. Leaf blades normally are flat, but tend to roll inward with maturity, making them appear round and tapering to a point at the tip. The panicle is slender, somewhat compressed with the base enclosed in the upper leaf sheath. Meadow dropseed grows best on heavy soil that usually receives additional moisture in areas 1 through 8. It is a perennial, warm, native grass that provides poor grazing for wildlife; fair grazing for livestock.

41. Oldfield threeawn (*Aristida oligantha*) This tufted grass grows 1 to 2 feet tall and is branched at the base and nodes. It is woolly at the base with a smooth sheath and has spreading awns 2 to 3½ inches long. It grows on uplands in areas 1 through 10 and invades disturbed and overgrazed areas. It is an annual, warm native that provides poor grazing for wildlife and livestock.

42. Pink pappusgrass (*Pappophorum bicolor*) This 18- to 36-inch tall bunchgrass is erect with dark nodes and heavily veined leaves. The pinkish, narrow, loose panicle is 5 to 10 inches long. Each spikelet is borne on a footstalk and contains three to five pineapple shaped florets, each with about 12 unequal awns. It grows on sandy or gravelly soils in areas 2, 6, 7 and 10 and is a perennial, warm native that provides poor grazing for wildlife; fair grazing for livestock.

43. Plains bristlegrass (*Setaria leucopila*) This bunchgrass grows 12 to 48 inches tall and has pale green, flattened culms branching at the base and lower joints. Blades are 1/8 to 2/5 inch, often folded and rough on the back. The panicle is slim, bristly and narrowed at the top. Usually, one bristle grows below each spikelet. Plains bristlegrass grows on open, dry ground under the protection of brush in overgrazed pastures of areas 2 through 10. This is a good plant to include in a mixture to seed overgrazed ranges, particularly after mechanical brush control. It is a perennial, warm native that provides fair grazing for wildlife; good grazing for livestock.

44. Plains lovegrass (*Eragrostis intermedia*) This tufted, erect bunchgrass grows 15 to 36 inches tall. Sheaths are conspicuously hairy at the throat and across the collar. The panicle is large, open, erect and pyramid-shaped

with grayish or brownish-green, three- to eight-flowered spikelets, each borne on individual branchlets. There is a ring of hairs in the axil of the branch, along the panicle axis. Plains lovegrass grows in rich soil on rocky, gravelly or sandy land in areas 2 through 8 and 10. It decreases with overgrazing and is perennial, warm native that provides poor grazing for wildlife; good grazing for livestock.

45. Purpletop (*Tridens flavus*) This 36- to 60-inch tall bunchgrass is erect but droops at maturity. Sheaths are flattened and overlapping at the base. The panicle is open and spreading in a pyramid shape. Branchlets of the panicle give off a sticky juice and dirt clings to it. Spikelets are 5- to 7-flowered, green to purple and pale when ripe. At a glance, purpletop in winter resembles Johnsongrass. It prefers shady, woody and sandy soil in areas 1 through 5, 7 and 8 and is a perennial, warm native that provides fair grazing for wildlife and livestock.

46. Rattail smutgrass (*Sporobolus indicus*) This 18- to 42-inch tall bunchgrass has slender, erect stems with a rattail appearing seedhead, sometimes partly included in the sheath. The panicle often is infested with a black fungus, hence the name. The seed are reddish. Rattail smutgrass invades pastures, meadows, waste places and under the perimeter of trees—probably distributed by birds. It grows in areas 1 through 4 and is a perennial, warm, introduced grass that provides poor grazing for wildlife and livestock.

47. Red grama (*Bouteloua trifida*) This 5- to 10-inch tall, tufted bunchgrass grows erect or prostrate from short rootstock. The slim blades and stems have 3 to 7 red, purplish to pale spikes. The spikelets have three short, rough awns. It grows on upland hills and ridges and invades overgrazed ranges in areas 2, 3 and 5 through 10. It is a perennial, warm native that provides poor grazing for wildlife and livestock.

48. Red lovegrass (*Eragrostis secundiflora*) This 12- to 30-inch tall, tufted bunchgrass is branching and spindly. Blades are 3 to 12 inches long. The panicle is green to purplish, 8 to 18 inches long and becomes straw yellow when mature. Spikelets are crowded in clusters. Lemmas are $\frac{1}{8}$ inch long. It grows on upland, sandy soils and invades all overgrazed sites in areas 1 through 10. It is a perennial, warm native that provides poor grazing for wildlife and livestock.

49. Rescuegrass (*Bromus unioloides*) The lower sheaths and blades of this 12- to 36-inch tall bunchgrass are often fuzzy. The inflorescence is erect or drooping, flat and green, but turns straw yellow when ripe and dry. Spikelets are overlapping, forming v's with short or no awn. A papery ligule at the collar is split on top. It grows from seed in winter, providing early forage. Rescuegrass is managed as a cool season pasture plant and matures seed in early spring. It is adapted to areas 1 through 10 and is an annual, cool, introduced grass that provides fair grazing for wildlife and livestock.

50. Ryegrass (*Lolium perenne*) This 18- to 36-inch tall bunchgrass has erect, dark green stems with dark, swollen nodes. Spikelets are set edgewise and fit into the concave rachis. Lemmas are awned. It has prominent auricles at the top of the sheath. It grows in meadows

and improved pastures in areas 1 through 5 and 7 and is an annual, cool, introduced grass that provides fair grazing for wildlife; good grazing for livestock.

51. Sand dropseed (*Sporobolus cryptandrus*) This 18- to 42-inch tall bunchgrass is erect or spreading with the finally open panicle mostly included in the sheath. The sheath has a distinct tuft of hair at the throat. The panicle is lead colored to purplish with small, one-flavored spikelets borne on short pedicels. It invades sandy soil, overgrazed and blown-out areas in areas 2 through 10. Sand dropseed is a perennial, warm native that provides poor grazing for wildlife; fair grazing for livestock.

52. Sand lovegrass (*Eragrostis trichodes*) This 24- to 48-inch tall bunchgrass is tufted and erect with hairy sheaths at the throat. The long, open, oblong panicle (1 to 2 inches) has purplish to pale, 6- to 10-flowered spikelets borne in clusters at the tip end of seed branches. It is very palatable, grows on upland, sandy soils and is best managed in a pure stand. It is a perennial, warm native that provides poor grazing for wildlife; good grazing for livestock.

53. Scribner dichanthelium (*Dichanthelium oliogosanthes* var. *scribnerianum*) The 10- to 25-inch tall stems are smooth to harshly hairy, growing from a decumbent base. The leaf sheath has fine, parallel veins that are smooth to hairy. Leaf blades are erect, rather wide, rounded at the base and smooth on the upper surface and rough on the lower surface. An open, spreading panicle with a single spikelet is produced on each branch. This perennial, cool native grows in areas 1 through 10 and provides fair grazing for wildlife and livestock.

54. Sideoats grama (*Bouteloua curtipendula* var. *curtipendula*) This 12- to 42-inch tall bunchgrass grows from strong, scaly rootstocks. Hairs grow out of small, bulb-like spots on the blade edges. The seedhead is long and zig-zag with many spikes (20 to 50) twisting around on the side when ripe. Seeds resemble oats. Sideoats grama grows on a wide variety of range sites and is grazed by all kinds of animals, decreasing with heavy grazing. It matures seed in spring and fall and grows in areas 2 through 10. It is a perennial, warm native that provides good grazing for wildlife and livestock.

55. Silver bluestem (*Bothriochloa saccharoides* var. *torreyana*) This 18- to 42-inch tall bunchgrass usually grows from an inclined base with no rhizomes. The leafy, bent stems are smooth with white nodes and a fuzzy, white terminal panicle with short, awned spikelets. It grows on prairie and rocky slopes and increases in abundance when poor condition ranges are deferred; is replaced with better grasses as conditions improve. It is grazed heaviest during early fall and is adapted in areas 1 through 10. This perennial, warm native provides poor grazing for wildlife; fair grazing for livestock.

56. Switchgrass (*Panicum virgatum*) This 36- to 72-inch tall bunchgrass grows in small to large clumps with many scaly, creeping rhizomes. The large, robust plants have bluish blades up to 2 feet long. The ligule is a dense ring or cup of hairs on the upper leaf surface at the collar. Stems are hollow. Panicles are pyramid-shaped with many purplish spikelets. In winter, the

seedhead resembles branches of a seedling willow tree. It is found mostly along creeks and streams and in protected areas and decreases with heavy use, but can be used and managed similarly to pasture grasses. Switchgrass grows in areas 1 through 10 as a perennial, warm native that provides fair grazing for wildlife; good grazing for livestock.

57. Tall fescue (*Festuca arundinacea*) This 18- to 48-inch tall grass has slender stems produced from large crowns. Leaves have a rough upper surface. The panicle is erect, but nodding with maturity. It grows mostly in bottomlands in areas 2, 4 and 6 through 9 and is a perennial, cool, introduced grass that provides fair grazing for wildlife; good grazing for livestock.

58. Tanglehead (*Heteropogon contortus*) This 12- to 42-inch tall bunchgrass grows in tufts, erect, with flat overlapping sheaths. Foliage turns reddish brown with straw yellow stems on maturity and tastes like molasses. The 2- to 4-inch long, twisted, one-awned, fuzzy, brown florets fall, leaving overlapping florets which look like braid. Tanglehead grows on rocky hills and ridges in areas 2, 6, 7 and 10 and is a perennial, warm native that provides poor grazing for wildlife; good grazing for livestock.

59. Texas bluegrass (*Poa arachnifera*) This upright bunchgrass grows 12 to 36 inches tall with the plant arising from slender, creeping rootstocks. The flat, whitish to purplish base has long, overlapping sheaths. Blades are long, heavily veined and boat shaped at the tip. The seedhead is oblong and dense to open. Male and female flowers grow on different plants, often at widely separated locations. The male heads are smooth while those of the female appear fuzzy and cobwebby. Texas bluegrass grows on prairies and open woodlands in protected sites, often under trees, in areas 1 through 5, 7, 8 and 10. It decreases with heavy grazing and is a perennial, cool native that provides fair grazing for wildlife; good grazing for livestock.

60. Texas cupgrass (*Eriochloa sericea*) This bunchgrass grows 12 to 48 inches tall in large tufts. Stems have a feel similar to a lead pencil at the base. The blades are soft and lax; the ligule is a dense ring of straight hairs. The pale-colored seedheads have single fuzzy seed in rows, borne on very short, hairy stems. Seeds are set in a cup having a ring-like base and fall, leaving a fuzzy zig-zag stem. Texas cupgrass grows on hills and ridges, mostly in protected areas in areas 2 and 4 through 8, and decreases with heavy grazing but will increase with proper use. It contains some green vegetation during winter on properly stocked ranges, is a perennial, warm native and provides fair grazing for wildlife; good grazing for livestock.

61. Texas grama (*Bouteloua rigidiseta*) This tufted grass grows 5 to 12 inches tall with a few erect stems and smooth, dark nodes. Leaves are short and crowded at the base and often are wavy or curling when mature. Six to eight woolly-based, bell-shaped spikes are attached to each wavy seed stem; hence, the old name "bell grama." Three to five seeds are in each spike. Texas grama grows on dry plains, rocky hills and abused sites and invades overgrazed ranges in areas 2 through 10. It is a perennial, warm native that provides poor grazing for wildlife and livestock.

62. Texas wintergrass (*Stipa leucotricha*) This bunchgrass grows 12 to 24 inches tall, sometimes as tall as 42 inches. Stems usually are erect but sometimes are prostrate with short, hairy nodes. Dark green blades are beset with short, bristly, white hairs and are rough on both sides. The light brown seed has a single, twisted, bent awn, 2½ to 4 inches long, and a barbed callus in the base; hence, it is sometimes called speargrass. In late spring, the white, persistent glumes resemble oats after the awned seeds have fallen. A self-fertilized spikelet may be found at the base of the stem. It is the most abundant native winter grass in Texas and grows on bottomland soil and mesquite flats in areas 1 through 10. It is a perennial, cool native that provides fair grazing for wildlife and livestock.

63. Thin paspalum (*Paspalum setaceum*) This grass grows 15 to 40 inches tall with spreading stems growing from a small base. The sheaths usually are smooth but the lower ones can be hairy. Leaves are 5 to 15 inches long and ⅛ to ½ inch wide, with many hairs along the margin. The inflorescence usually has two racemes. Flat, round seeds appear in pairs, have a slightly pointed tip and are covered with short, sparse hairs. Thin paspalum grows on a variety of soils throughout the state but is adapted in areas 1, 2 and 3. It is grazed most often following rains as it greens up rapidly. Thin paspalum is a perennial, warm native that provides fair grazing for wildlife and livestock.

64. Tobosa (*Hilaria mutica*) This sod-forming grass grows 12 to 24 inches tall from a coarse, woody, scaly rootstock. Spikes are purplish to pale when ripe. Glumes are wedge-shaped, broad and hairy at the tip. It greens up readily after rain, turns ashy gray and coarse during drouth and grows in bunches in flats and heavy soils in areas 6 through 10. It is a perennial, warm native that provides poor grazing for wildlife; fair grazing for livestock.

65. Tumblegrass (*Schedonnardus paniculatus*) This low, tufted bunchgrass grows 8 to 25 inches tall with overlapping, flattened sheaths and spirally twisted blades with white margins. Scythe-shaped culms turn downward and the panicle breaks off and tumbles in the wind. The panicle is green to purple to pale with alternating 1- to 5-inch spikes. One-flowered spikelets grow in two rows on one side of the slender seed stem. Tumblegrass grows on sandy soil and invades overgrazed pastures in areas 1 through 10 and is a perennial, warm native that provides poor grazing for wildlife and livestock.

66. Tumble windmillgrass (*Chloris verticillata*) This erect grass grows 4 to 20 inches tall from a tufted, decumbent base. The lower nodes sometimes take root. Leaves are crowded at the base. Sheaths are compressed. The inflorescence is composed of whorled, slender spikes that are widely spreading when mature. It is an invading plant that grows in areas 1 through 10 and is a perennial, warm native that provides poor grazing for wildlife and livestock.

67. Vinemesquite (*Panicum obtusum*) This 12- to 30-inch tall grass produces long, tough stolons with swollen, woolly joints that take root at the nodes. The erect, flattened internodes are slick. The topmost blade clings closely to the narrow seedhead, with the seeds turning

from green to brown on maturity. It grows along banks of streams or ditches in bottomland in areas 2 through 10 and is a perennial, warm native that provides fair grazing for wildlife; good grazing for livestock.

68. Virginia wildrye (*Elymus virginicus*) This perennial with stems in small clusters grows from 23 to 48 inches tall. The leaves usually are hairless but sometimes have minute hairs. The inflorescence is a stiff, erect, bristly spike, usually 2 to 6 inches long and often partly enclosed by the upper sheath. The glumes are yellowish, hard and bowed out at the base. It is found in all vegetational areas except 9 and 10 and is a perennial, cool native that provides fair grazing for wildlife; good grazing for livestock.

69. Weeping lovegrass (*Eragrostis curvula*) This erect bunchgrass grows 24 to 48 inches tall with an erect seed stalk and narrow, drooping, coarse blades. The seedhead is a loose, open panicle with many seeded grayish-green spikelets. The panicle resembles lace when mature. Leaves are rough on the bottom and top surfaces, with hairy, basal sheaths. It is managed best in a pure stand and grows on sandy soils in areas 1, 3, 6, 8, 9 and 10. Weeping lovegrass is a perennial, warm, introduced grass that provides poor grazing for wildlife; fair grazing for livestock.

70. Western wheatgrass (*Agropyron smithii*) This 12- to 24-inch tall bunchgrass grows from gray, slender, creeping rootstocks with blue-green stems and leaves. Leaves are straight, broad, rough, strongly nerved on the upper surface and roll inward with maturity. The flat seedhead usually is awnless. Western wheatgrass grows most abundantly in moist bottomland in areas 8 and 9 and decreases with overgrazing. It is a perennial, cool native that provides fair grazing for wildlife; good grazing for livestock.

71. White tridens (*Tridens albescens*) This 12- to 36-inch tall bunchgrass has erect stems and a whitish to purplish base. The panicle is dense, greenish or purplish to white and narrow with 8 to 12 flowered spikelets. The glumes are nearly equal—5/32 inch. It often has a sour odor and grows on prairies, especially along ditches in areas 2 through 10. It is a perennial, warm native that provides fair grazing for wildlife and livestock.

72. Wright threeawn (*Aristida wrightii*) This densely tufted bunchgrass has 12- to 42-inch-tall, erect stems. There are hairs on the leaf collar. The seedhead is purplish at first and then straw yellow to ashy gray when dry. Clusters of 2 to 4 spikelets grow along the main seed stem and have 3 spreading awns up to 1 inch long, with two bending horizontally about midpoint. It grows on upland hills and plains in areas 4 through 10 and is a perennial, warm native that provides poor grazing for wildlife; fair grazing for livestock.

73. Yellow Indiangrass (*Sorghastrum nutans*) This 36- to 84-inch tall bunchgrass grows from short, scaly rhizomes. Nodes are fuzzy with the ligule long and appearing as rabbit ears when dry. The panicle is 8 to 12 inches long and bronze to yellowish with ½-inch awns, bent once and closely twisted to the bend. It decreases with heavy grazing but produces high yields when

managed in a pure stand. It is a heavy seed producer and grows in areas 1 through 5 and 7 through 10. Yellow Indiangrass is a perennial, warm native that provides fair grazing for wildlife; good grazing for livestock.

FORBS

1. Bitter sneezeweed (*Helenium amarum*) The plant is a bright green, leafy forb that reproduces by seeds and has smooth, erect stems 6 to 24 inches tall and branches toward the top. The plant has a bushy appearance and the lower leaves shed from the stems early. Leaves are alternate, coming directly out of the stems. The seedhead has many small, yellow flowers that are very showy in late summer. The flower petals tend to turn backward and have fewer bracts at the base of the flower. Bitter sneezeweed grows in areas 1 through 8 and when grazed causes a bitter taste to milk. It is an annual, warm season native that provides poor grazing for and is poisonous to wildlife and livestock.

2. Broadleaf milkweed (*Asclepias latifolia*) This plant has stout, simple stems 6 to 24 inches tall with four or more pairs of large, thick leaves more than 1½ times as long as wide. Flowers are greenish and give rise to two to four smooth pods about 1½ inches long. The plant is noted for its robust nature and large leaves, while other species of milkweed have narrower leaves. It grows in areas 7 through 10 and is a perennial, warm native that provides poor grazing for and is poisonous to wildlife and livestock.

3. Broom snakeweed (*Xanthocephalum Sarothrae*) This many-branched, semi-woody based plant has erect stems 9 to 18 inches tall. Leaves are alternate, simple and thread-like. Many small, yellow flowers appear in late summer. Each flower head is top-shaped. Broom snakeweed grows in areas 2, 5, 8, 9 and 10 and is a perennial, warm native that provides fair grazing for wildlife; poor grazing for and is poisonous to livestock.

4. Common broomweed (*Xanthocephalum dracunculoides*) This annual plant has a single stem 15 to 30 inches tall, branching near the top to form a uniform crown with small, yellow flowers. First leaves usually are lanceolate and form along the main stem, shedding when the crown begins to develop. Older leaves are fine and alternate along the branch stems. It grows most abundantly on heavy clay soils in areas 2 through 5 and 8 through 10. It is an annual, warm native that provides poor grazing for wildlife and livestock.

5. Engelmann daisy (*Engelmannia pinnatifida*) This light green, upright plant has alternate, scalloped or lobed leaves. Upper leaves are attached directly to the stem with short hairs covering the stems and leaves. Flower branches have yellow flowers. This palatable forb grows in areas 2 through 10 and is a perennial, cool native that provides good grazing for wildlife and livestock.

6. Field bindweed (*Convolvulus arvensis*) Slender, sometimes branching, stems grow 12 to 42 inches long and trail on the ground or climb on other plants. Leaves are arrow-shaped, slender, have short stems, are not scalloped on the margin and are pointed or nearly so at the tip. Flowers are like a morningglory except smaller—

about 1 inch across and white with a slightly pink cast, especially on the inside. Seeds are irregular in shape and dark brown to black. This troublesome pest can grow on all sites in areas 2, 4, 5, 7, 8, 9 and 10. This perennial, warm, introduced forb provides poor grazing for wildlife and livestock.

7. Maximilian sunflower (*Helianthus Maximiliani*) This upright plant, produced from seed or rhizomes, has bristly stems 36 to 72 inches tall and long, narrow, rough, scabrous leaves that taper at both ends. Leaves are alternate along the stems. A flower stalk is produced in the axis of the leaves and terminates into a large, yellow flower. Flowers may cover the upper third of the stems and are quite showy along the roadsides in early fall. This forb grows in areas 2 through 5 and 7 through 9. It is a perennial, warm native that provides fair grazing for wildlife and livestock.

8. Mexican sagewort (*Artemisia ludoviciana*) This upright plant, produced from rhizomes, has 12- to 26-inch tall stems that may branch along the main stem. Leaves are alternate and scalloped, with three to seven lobes per leaf. Leaves are light green to gray on the under side; dark green on the upper side. Upper leaves near the flower head are not lobed. Flowers are small, inconspicuous and produced in a panicle. This forb grows in areas 2 and 4 through 10 and is a perennial, warm native that provides poor grazing for wildlife; good grazing for livestock.

9. Nuttall deathcamas (*Zygadenus Nutallii*) This member of the lily family has 12- to 24-inch stems and is produced from an underground bulb. Growth begins 2 to 3 weeks before grass starts in the spring. The long leaves are dark green and grasslike. Flowers are greenish-white, grow in a dense cluster at the terminal of the main stem, soon die and the main stem remains above ground for a short period. All parts of the plant are poisonous to livestock and humans. It grows in areas 1, 3, 4, 5 and 7. This perennial, cool native provides poor grazing and is poisonous for all classes of animals.

10. Orange zexmenia (*Zexmenia hispida*) This shrubby plant grows 12 to 36 inches tall and has much-branched, round stems with distinct leaf bud scars covering half the diameter of the stem. Leaves are long, narrow and pointed with irregularly serrated margins. Leaf margins and stems have short, bristly hairs. Leaves are opposite and have short or no leaf stem. Seven to nine orange-yellow flowers are produced at the apex end of a long, slender stem. This perennial, warm native grows in areas 2, 6 and 7 and provides poor grazing for wildlife; good grazing for livestock.

11. Silverleaf nightshade (*Solanum eleagnifolium*) This plant has strong, creeping rootstocks that produce stems 10 to 24 inches tall. Leaves are silvery white, oblong to linear with wavy margins. Stems and leaves have thin to heavy, yellow spines. Flowers are violet, yellow or black. Fruits are light yellow with green stripes when mature. All parts of the plant are poisonous. The plant has a wide distribution, particularly in old, cultivated fields and overgrazed bottomland pastures. It grows in areas 1 through 10 and is a perennial, warm native that provides poor grazing for and is poisonous to wildlife and livestock.

12. Slim aster (*Aster subulatus* var. *ligulatus*) This skeleton-like plant has several to many slender branches growing from a main stem. Usually, the branches are from one side of the main stem, which is woody. Plants are dusty green and from 12 to 36 inches tall. Leaves are very slender, attached directly to the stem and pointed. Upper leaves often are folded against the stem, making the plant look like a skeleton plant. The tiny purple to white flowers are showy in the early fall. This annual, warm native grows in areas 1 through 10 and provides fair grazing for wildlife and livestock.

13. Texas croton (*Croton texensis*) This grayish-green plant grows 12 to 36 inches tall and its one main stem has 2 or 3 forked branches at the top. Leaves have smooth margins and are long and narrow, tapering to the end. The apex end is blunt or rounded. Flowers are inconspicuous and the fruit is a 3-lobed capsule covered with a grayish-white mat of hairs. It grows in areas 2 through 10 and is an annual, warm native that provides good grazing for wildlife and poor grazing for livestock.

14. Threadleaf groundsel (*Senecio longilobus*) This evergreen has many stems that grow from 12 to 36 inches tall from a central crown. Stems are herbaceous except at the base. Leaves are light green and divided into three to seven segments that may be hairy or nearly smooth. The yellow flowers bloom during mild winters and following summer rains. This perennial, warm native grows in areas 7 through 10 and provides poor grazing for and is poisonous to wildlife and livestock.

15. Upright prairie-coneflower (*Ratibida columnaris*) This hairy-stemmed plant reproduces from seed or short underground stems. Stems grow from 12 to 40 inches tall and branch near the top. Leaves are strongly lobed into distinct, long, narrow, pointed segments. Flowers with yellow to brownish petals and a dark brown center up to 1 inch long are borne at the terminal end of the slender stems. This perennial, warm native grows in areas 1 through 10 and provides good grazing for wildlife; poor grazing for livestock.

16. Western bitterweed (*Hymenoxys odorata*) This many-branched plant varies in height from 4 to 24 inches tall. Each branch produces a flower head. The alternate leaves are small and roll inward when mature. Flowers are small and yellow with six to eight petals. All plant parts are poisonous, both green and dry. This annual, cool native grows abundantly on ranges in poor condition in areas 6 through 10 and provides poor grazing for and is poisonous to wildlife and livestock.

17. Western ragweed (*Ambrosia psilostachya*) This plant grows from long rootstocks with many-branched stems that are stout and from 12 to 72 inches tall. Leaves are 2 to 5 inches long with deep serrations along the margins. Serrations are sometimes pointed and sometimes rounded. Leaves are thick, hairy or bristly and gray-green in color. Seed are borne along a central stem 2 to 6 inches long at the apex of the plant. Seed clusters are chaffy, becoming pointed and bristly with maturity. This perennial, warm native grows in areas 1 through 10 and provides good grazing for wildlife; poor grazing for livestock.

18. Yankeeweed (*Eupatorium compositifolium*) Plants are produced from strong underground rootstocks with stems 24 to 48 inches tall. Lower leaves are opposite, lobed and compound; upper leaves are less compound and often entire. Flowers are white and produced as a long head. This perennial, warm native grows in areas 1, 2, 3, 6 and 8 and provides poor grazing for wildlife and livestock.

LEGUMES AND RATANY (Herbaceous)

1. Alfalfa (*Medicago sativa*) Stems grow 16 to 30 inches tall from a crown. The plant produces leaf branches with three leaflets on the tip of a short, hairy leaf branch. Usually, there are two appendages at the base of each leaf branch. The middle leaflet has a slightly longer leaf stalk than the other two leaflets. The seed pod is coiled on itself several times. This perennial, warm, introduced legume grows in areas 1 through 5 and 7 through 10 and provides good grazing for wildlife and livestock.

2. Austrian winterpea (*Pisum arvense*) Leaves are borne throughout the length of slender, hollow stems that are 24 to 72 inches long. Each leaf bears three pairs of broad leaflets and is terminated by a slender tendril. Flowers are reddish-purple to white. This annual, cool introduced legume grows in areas 1 through 5, 7 and 8 and provides fair grazing for wildlife and livestock.

3. Bur-clover (*Medicago polymorpha* var. *vulgaris*) This low-growing plant has many-branched, spreading stems 6 to 30 inches tall. Leaves are produced along the stems with three leaflets at the end of the leaf branch. Small, yellow flowers are produced in clusters of five to 10 and the petals fall off soon after blooming. Pods usually grow in clusters and are tightly coiled and fringed with a double row of soft spines. This annual, cool, introduced legume grows in areas 2 through 7 and 10 and provides fair grazing for wildlife; good grazing for livestock.

4. Crimson clover (*Trifolium incarnatum*) This erect plant is covered with soft hairs. Few branches grow from the main stem which grows 6 to 36 inches high from a crown. Three leaflets come from the same point of the apex end of the leaf branch. A growth shaped like a fist and thumb and covered with soft hairs grows at the base of each leaf branch. Red flowers are sessile to the top of the central stem. This annual, cool, introduced legume grows in areas 1 and 3 and provides fair grazing for wildlife; good grazing for livestock.

5. Hairy vetch (*Vicia villosa*) This pea-green, viny plant is covered with fine hairs and has slender, weak stems. Leaves are compound; leaflets come from opposite sides of a central stem, are mostly alternate, entire and abruptly pointed on both ends and are not sessile. Leaf stems have tendrils at the apex end of the extended leaf stem. Flowers are bright purple and the fruit is borne on a slender, hairy seed branch. There are two leaf-like appendages at the base of seed branches. Seed are in small pods. This annual, cool, introduced legume grows in areas 3, 4, and 5 and provides fair grazing for wildlife; good grazing for livestock.

6. Nuttall milkvetch (*Astragalus Nuttallianus* var. *Nuttallianus*) Plant are 6 to 18 inches tall with several weak stems growing from a base. It has compound leaves, with 11 to 17 leaflets on a central leaf branch. Leaflets are small, narrow and may be rounded or notched at the tip end. The clustered flowers are violet and with age turn purple with a white spot at the base of the upper petal. Seed are in smooth pods that are slightly curved, about $\frac{3}{4}$ inch long and grooved on one side. This annual, cool native grows in areas 1 and 3 through 8 and provides poor grazing for wildlife; fair grazing for and is poisonous to livestock.

7. Singletary pea (*Lathyrus hirsutus*) This winter legume germinates in the fall, makes most of its growth in the spring and produces seed in May and June. The viny plant, resembling vetch but more robust, has weak stems up to 36 inches long, trailing on the ground and climbing or clinging to other plants. The reddish flowers are tinged with purple and the hairy leaves and seed pods give the plant a silvery appearance. Leaves are pinnate compound with long, narrow, pointed leaflets on each side of a common axis. The height or length of the viny stems depends on soil fertility. This annual, cool, introduced legume grows in areas 1, 3 and 4 and provides fair grazing for wildlife; good grazing for livestock.

8. Texas bluebonnet (*Lupinus subcarnosus*) This gray-green plant produces many stems from a main stem. Leaves are compound, usually with five leaflets which are long and narrow, tapering at both ends and with a midrib. Leaflets are sessile to the apex end of the leaf branch. Flowers are blue with a white spot in each. It grows in areas 2, 3 and 6 and is an annual, cool native that provides poor grazing for wildlife and livestock.

9. Trailing ratany (*Krameria lanceolata*) Thick, woody rootstocks produce stems that are ascending and erect or spreading and decumbent, usually 8 to 24 inches long. Stem length depends on growth conditions. Leaves are simple, oblong and spine-tipped. The red flowers have five petals and the round fruit, commonly referred to as a heel-bur, is $\frac{1}{4}$ to $\frac{1}{2}$ inch in diameter with very stout spines. Trailing ratany grows in areas 2 through 10 and is a perennial, warm native that provides fair grazing for wildlife and livestock.

10. White clover (*Trifolium repens*) Plants grow 4 to 12 inches tall with many branches from the base. Branches creep and often take root at nodes. Leaves are on long leaf branches having three leaflets, all being almost sessile. Leaflets are distinctly veined, rounded and slightly toothed around the entire margin. The length of the leaflets is $1\frac{1}{2}$ times the width. Small, pointed, leaf-like appendages are at the base of each leaf branch. Plants are free of hairs. Flowers are white and seed pods usually have four seeds. White clover grows in areas 1 through 7 and is a perennial, cool, introduced legume that provides fair grazing for wildlife; good grazing for livestock.

11. White sweetclover (*Melilotus alba*) This erect plant branches at the base with stems 24 to 96 inches tall and free of hairs. Leaves are made up of three leaflets on a short stalk or branch. The center leaflet is on the extended end of the branch and the other two are almost sessile. Leaflets, strongly veined and slightly toothed

on the margin, are long and narrow, rounded at the apex end and narrow at the base. Flowers are white. There are no appendages at the base of the leaf branches as there are with yellow sweetclover. This annual, introduced, warm legume grows in areas 2 through 10 and provides fair grazing for wildlife; good grazing for livestock.

12. Woolly loco (*Astragalus mollissimus*) This branched plant produces decumbent stems 6 to 18 inches long from a woody base. Leaves are composed of an odd number of leaflets, $\frac{1}{2}$ inch long and about $\frac{1}{8}$ inch thick. Flowers are spiked or racemed with seed pods, usually inflated, which divide when mature. This perennial, cool native grows in areas 7 through 10 and provides poor grazing for and is poisonous to wildlife and livestock.

13. Yellow neptunia (*Neptunia lutea*) This vine-like plant has creeping stems up to 48 inches long. The compound leaves have many small, paired leaflets that are sensitive, folding when touched. The round flower clusters have many tiny yellow blossoms. Seed pods are narrow and have four angles. This perennial, warm native grows in areas 2, 3, 4 and 5 and provides fair grazing for wildlife and livestock.

WOODY PLANTS

1. Ashe Juniper (*Juniperus ashei*) This evergreen tree produces limbs from the main trunk. The slender leaves are sharp pointed with a round or elliptical, pink or greenish gland on the back. On long leaves, these glands are elongated and tapering. The blue-black berry has a waxy, white bloom. The dark gray or brown bark breaks into long, pliable strips. This perennial, cool and warm native grows in areas 5 and 7 through 10 and provides fair grazing for wildlife; poor grazing for livestock.

2. Black brush (*Acacia rigidula*) This shrubby tree grows up to 12 feet tall and produces limbs from a central trunk. The zig-zag branches have short, straight thorns in pairs. Leaves are twice compounded, with both divisions having one to eight small leaflets. Flowers are white and the 2- to 4-inch-long seed pods are narrow, curved and flat. Pods have divisions between the seeds and are reddish brown when ripe. This perennial, warm native grows in areas 2, 6, 7 and 10 and provides fair grazing for wildlife; poor grazing for livestock.

3. Blackjack oak (*Quercus marilandica*) This large hardwood tree has bark that is nearly black, very rough and in ridges on the trunk. Leaves are scalloped with short, white hairs on top and brownish fuzz on the under side. Leaves are 3- to 5-lobed, with a bristle tip on each lobe. This perennial, warm native grows in areas 1, 2, 3, 7 and 8 and provides fair grazing for wildlife; poor grazing for and is poisonous to livestock.

4. Coyotillo (*Karwinskia Humboldtiana*) Branches grow from a central crown of this spineless, bushy shrub, with stems up to 8 feet tall. Leaves are opposite with veins that end in the untoothed margins. Small, greenish flowers and brownish-black fruits are borne in the axils

of the leaves. This perennial, warm and cool native grows in areas 2, 6, 7 and 10 and provides poor grazing for and is poisonous to wildlife and livestock.

5. Guajillo (*Acacia Berlandieri*) Stems up to 8 feet tall, with short thorns, grow from a crown on this shrubby plant. Leaves are twice pinnate and flowers are produced in heads. Seed pods are flattened, four to six times as long as wide and have thickened margins. This perennial, warm native grows in areas 2, 6 and 7 and provides fair grazing for and is poisonous to wildlife and livestock.

6. Honey mesquite (*Prosopis glandulosa*) This small tree has a central stem or many branches produced from a crown. Stems bearing the leaves tend to zig-zag with a pair of short spines at each leaf bud and at other points on stems. Leaves are twice compound on a single leaf branch. Each section has a number of sessile leaflets that are entire. The yellow flowers are borne on a raceme 2 to 4 inches long. Seed pods are 4 to 8 inches long, usually curved and constricted between each seed in the pod. This perennial, warm native grows in areas 2 through 10 and provides fair grazing for wildlife; poor grazing for livestock.

7. Huisache (*Acacia farnesiana*) This small tree or bush-topped shrub has stems up to 15 feet tall. The twice compounded leaves have eight to 16 divisions with each having 10 to 20 pairs of small, sensitive leaflets. Flowers are produced on a fragrant, yellow, fluffy ball with many clusters of yellow stamens. Seed pods are cylindrical, $1\frac{1}{2}$ to 3 inches long and turn dark brown or black when mature. This perennial, warm native grows in areas 2, 3, 4, 6 and 7 and provides poor grazing for wildlife and livestock.

8. Live oak (*Quercus virginiana*) This 30- to 50-foot tall evergreen has many branches along its strong, central trunk. The wide crown is dense. Leaves are elliptical to oblong, 2 to 5 inches long, rounded on the tip, dark green and somewhat hairy on the under surface. This perennial, cool and warm native grows in areas 2, 3, 5, 6, 7 and 8 and provides good grazing for wildlife; fair grazing for and is poisonous to livestock.

9. Loblolly pine (*Pinus taeda*) This 50- to 110-foot-tall evergreen has a rounded, dense crown. The scaly bark is nearly black on young trees, turning to reddish brown on old trees. Leaves are in fascicles of three and are slender, 6 to 9 inches long and yellow green. Flowers are yellow. The cone is $2\frac{1}{2}$ to 6 inches long. This perennial, cool and warm native grows in areas 1, 2 and 3 and provides poor grazing for wildlife and livestock.

10. Lotebush (*Ziziphus obtusifolia*) This rigid, intricately branched, thorny shrub grows up to 6 feet tall and is greenish gray. The oval to oblong shaped leaves are $\frac{1}{2}$ to $1\frac{1}{2}$ inches long, are entire or shallow toothed. The flowers are inconspicuous. The fruit is black, mealy and stone-like, about the size of a pea. Sharp, straight thorns are numerous along the stems. This perennial, warm native grows in areas 2, 5, 6, 7, 8 and 10. It provides good grazing for wildlife; poor grazing for livestock.

11. Post oak (*Quercus stellata*) This 30- to 60-foot-tall tree has a few large branches and a rounded crown. The bark is reddish brown. Leaves are oblong, about 4 to 6 inches long, deeply five-lobed with the rounded middle lobes opposite, giving a cross-like appearance. The dark green leaves have hairy under surfaces. This perennial, warm native grows in areas 1 through 8 and provides fair grazing for wildlife; poor grazing for and is poisonous to livestock.

12. Redberry juniper (*Juniperus pinchoti*) This spreading, bushy tree grows up to 10 feet tall with no central stem developed. Leaves have resin producing glands, grow in dark green masses and are very slender, thin and sharp pointed. The fruit is red or reddish brown. The bark is gray, quite thin, appears in scale like form and peels off in narrow strips. This perennial, cool and warm native grows in areas 5, 7, 8, 9 and 10 and provides poor grazing for wildlife and livestock.

13. Sand sage (*Artemisia filifolia*) This low growing shrub is silvery green. Stems are branched and from 1 to 3 feet tall. Branches are rigid and rather brittle, especially with age. Nearly all of the 1- to 2-inch-long leaves are separated into 3 slender parts, all about the same length. The fruiting head is a central stem with many shorter, fruit-bearing stems. The flower and seed receptacle has a scale-like covering over the bowl; there usually are three to five of these in a cluster. Sand sage is a perennial, warm native that grows in areas 8, 9 and 10 and provides poor grazing for wildlife and livestock.

14. Shortleaf pine (*Pinus echinata*) This evergreen tree grows 70 to 100 feet tall with a narrow pyramid crown. The bark is scaly plated and reddish brown on mature trees. Leaves are in fascicles of two to three, mostly twos, and 3 to 5 inches long, slender and yellow green. Flowers vary in color, with the male purple and the female a pale rose. Cones are nearly sessile and 1½ to 5 inches long. The shortleaf pine is a perennial, cool and warm season native that grows in areas 1, 2 and 3 and provides poor grazing for wildlife and livestock.

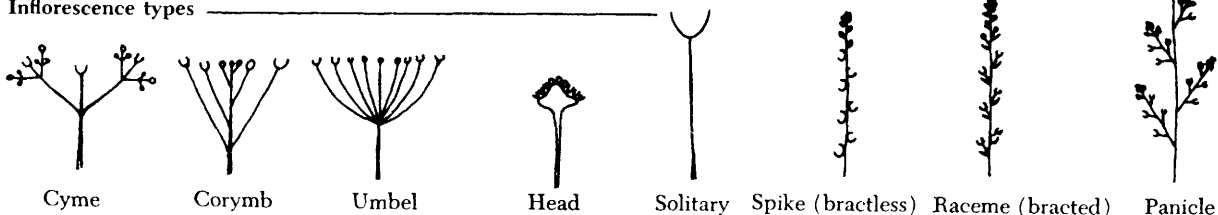
15. Skunkbush (*Rhus aromatica* var. *flabelliformis*) This low growing shrub, up to 10 feet tall, has many branches. Leaves are in 3 leaflets with scented foliage. Flowers are yellow and fruits are red. Skunkbush is a perennial, warm native that grows in areas 4, 5, 7, 8 and 10 and provides fair grazing for wildlife and livestock.

16. White brush (*Aloysia gratissima*) This low growing, shrubby plant has many branches growing from a central crown. The pale, brittle branches may extend to a height of 8 feet. Leaves are dull green, opposite, less than 1 inch long, slender and quite fragrant. The small, white or bluish flowers are in open, leafy panicles of elongated spikes or spikelike racemes. Whitebrush blooms every time effective rainfall is received, grows in areas 2, 4, 5, 6, 7, 8 and 10 and is a perennial, warm native that provides poor grazing for and is poisonous to wildlife and livestock.

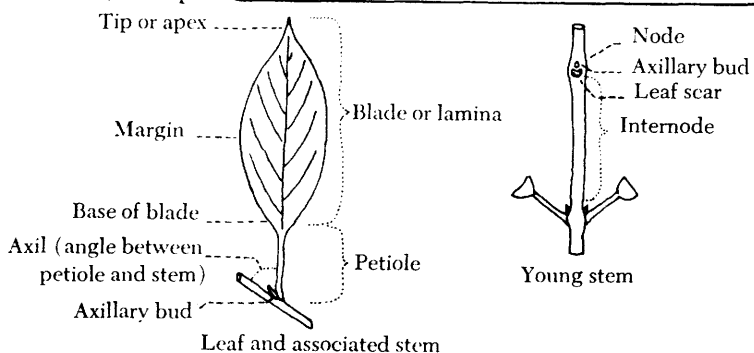
17. Willow baccharis (*Baccharis salicina*) This smooth shrub has many branches and grows 3 feet or more high. Leaves are alternate, long and narrow, are entire or sparingly indented on the margin, taper at the base and are fairly pointed at the tip. Leaves are dotted with resin. Flowers are in clusters on short flower stalks and form a single series of dull white bristles. Willow baccharia blooms in late summer and fall, grows in areas 2, 4, 5, 6, 7, 8, 9 and 10 and is a perennial, warm native that provides poor grazing for and is poisonous to livestock and wildlife.

18. Yaupon (*Ilex vomitoria*) This low growing, evergreen shrub has branches up to 20 feet tall. Yaupon will form a trunk when trimmed. Leaves are oval, 2 to 4 inches long, entire with smooth margins. Flowers are white and fruits are bright red. Yaupon grows in areas 1, 2, 3, 6 and 7 and is a perennial, cool and warm native that provides good grazing for wildlife; fair grazing for livestock.

Inflorescence types



Leaf and stem parts



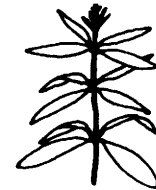
Leaf arrangement _____



Alternate



Opposite



Whorled

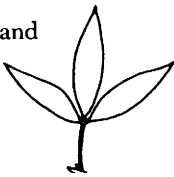
Blade complexity _____



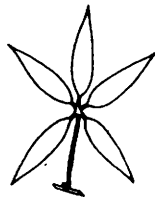
Simple and entire



Simple and toothed



Trifoliolate



Palmately compound



Simple and pinnately lobed



Pinnately compound



Simple and palmately lobed



Pinnately bicompond

Blade shape of leaves and petals _____



Filiform



Linear



Lanceolate



Oblanceolate



Spatulate



Ovate



Elliptic



Oblong



Obovate



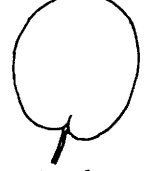
Deltoid



Rhombic



Reniform



Orbicular

Blade margins of leaves and petals _____



Entire



Undulate



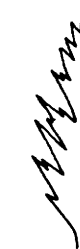
Crenate



Serrate



Serrulate



Incised or cleft



Lobed



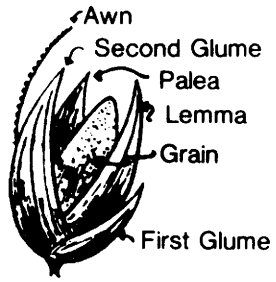
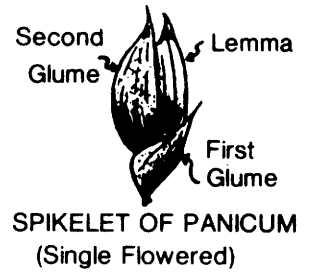
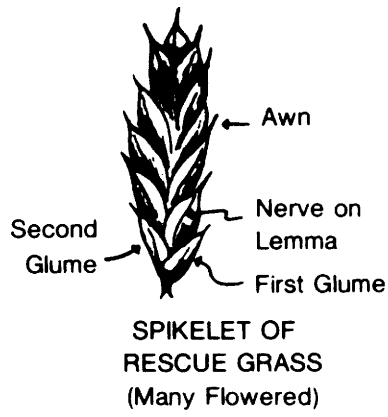
Parted



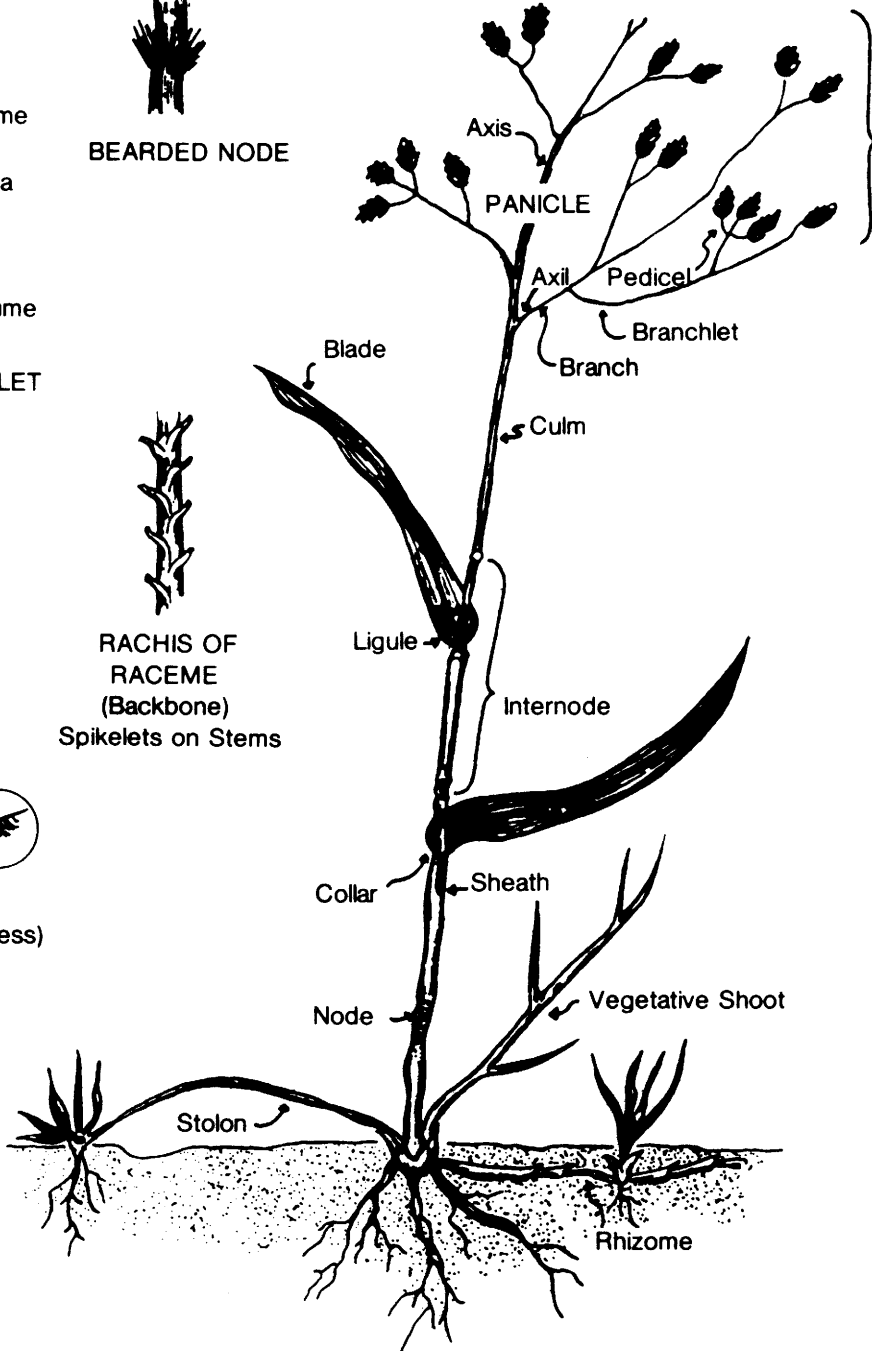
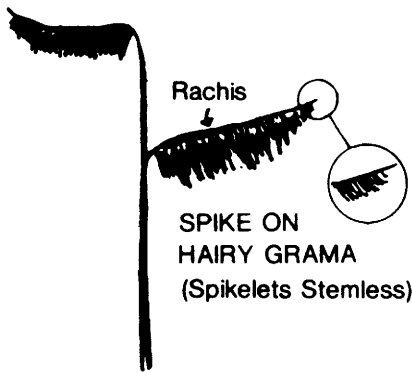
Pinnatifid

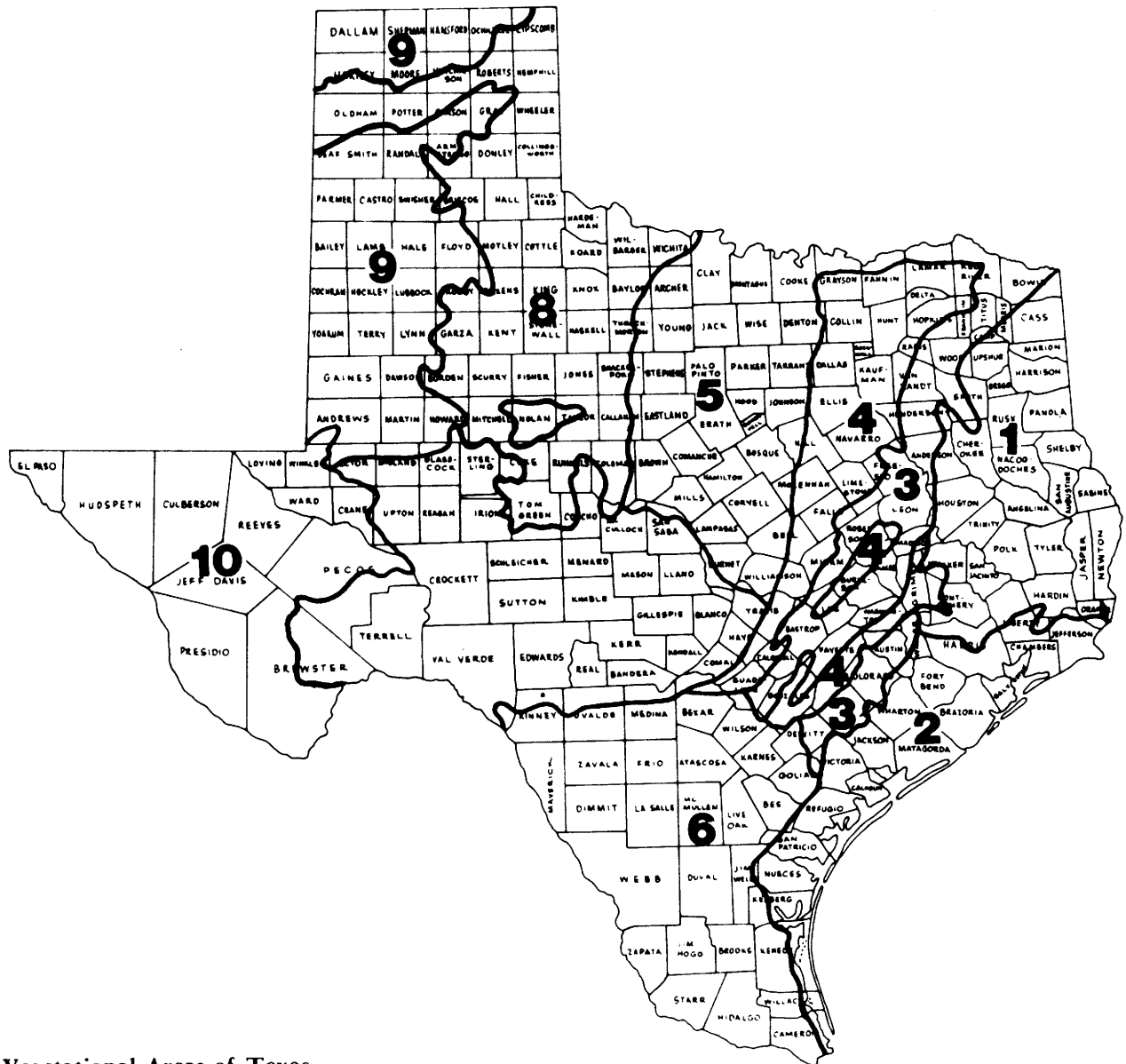


Palmate or palmatifid



PARTS OF COMPLETE SPIKELET





Vegetational Areas of Texas

1. Pineywoods
2. Gulf Prairies and Marshes
3. Post Oak Savannah
4. Blackland Prairies
5. Cross Timbers and Prairies
6. South Texas Plains
7. Edwards Plateau
8. Rolling Plains
9. High Plains
10. Trans-Pecos, Mountains and Basins

Adapted from TAES L-492, "Vegetational Areas of Texas."

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