

vegetation of the kerr wildlife management area and its preference by white-tailed deer

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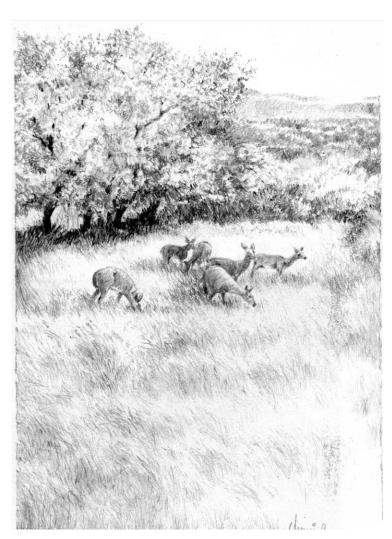
The common and scientific names used in this publication are taken from *Texas Plants-A Checklist and Ecological Summary* by Frank W. Gould and published by the Texas Agricultural Experiment Station, Texas A&M University.

a brief **Introduction**

the hill country was settled by european man in the 1800's. at this time, the country was a grassland with scattered stands of oaks and junipers (cedars).

> t was maintained as a grassland savannah largely by grazing habits of bison and antelope as well as by frequent natural and man-made fires. The land supported a rich diversity of forbs and grasses. White-tailed deer were rarely found in the grasslands. With European settlement came fences, cows, sheep, goats and the control of fire. Livestock were continuously grazed in fenced pastures which disrupted the natural movement patterns of grazing animals. Plants were not allowed to rest and recover from grazing. By 1900, continuous overgrazing and control of fire had taken its toll. The land began to change from a grassland to a brushland. Many of the woody brush species were readily grazed by sheep, goats, cattle, and an increasing deer herd. These animals have selective eating habits and eat the more desirable plants first and leave the less desirable plants for last. By the 1940's, many of the good quality plant species were highly depleted and not readily found on most ranges. The Hill Country was now dominated by poor quality browse, forb, and grass plants. Ashe juniper (commonly called cedar) is a highly undesirable forage plant avoided by both domestic livestock and deer. In much of the Hill Country, cedar became the dominate plant species causing a once diverse and healthy landscape to become a "cedar brake" with very little plant diversity or vigor.

> he Kerr Wildlife Management Area was purchased in the early 1950's. At the time of purchase it was a mature "cedar brake" which exhibited the effects of many years of overgrazing and range abuse. Soon after its purchase, range and wildlife scientists began studying ways to improve conditions for white-tailed deer



Introduction continued

and other related wildlife species. It soon became evident that the proper way to manage a deer herd was to manage its food supply. Since 1954, wildlife biologists have been learning how to manage the range to produce a diverse and healthy plant community. Through the control of animal numbers, use of controlled livestock grazing systems, controlling the kinds of livestock grazed, and the re-establishment of fire into the ecosystem, the Kerr Wildlife Management Area is now producing a wider variety of plant species than at any time in its recent history. Each year new forb species are being found. Many species that were once considered unusual are now common on the Area.

White-tailed Deer Food Habits

The plants that deer eat can be divided into 3 broad categories — browse (leaves of woody plants), forbs (broad leaf herbaceous plants), and grasses (including sedges). Several studies have been conducted on deer food habits and they have indicated similar results. Deer prefer forbs when they are available and as they become unavailable deer shift their diets to browse plants. This usually occurs in the summer and fall period. During the late summer and fall, mast (acorns, berries, and fruits) from browse plants can play an important role in deer diets. Grasses do not play a major role in deer diet and generally comprise only a small percent of their annual diet. When deer do utilize grass, the plant is in a young and succulent growth stage, and forbs and browse plants are not readily available.

Species Usage By White-tailed Deer

The plant list in this pamphlet is a tentative list. The degree of food preference by deer for many plant species has yet to be determined. Those plant species that occur in large enough numbers to be of value, and where their importance to white-tailed deer has been determined, are rated from 1 to 4 depending on deer preference. A rating of 1 is a preferred species, a rating of 2 is a moderately preferred species, a rating of 3 indicates that the item is utilized but not desirable, and a rating of 4 indicates that the item is little utilized by deer. When no rating is given, the status of the plant as a deer food is unknown.

Because each category of plant is utilized at different periods of the year, the ratings of species preference by deer refers to preferences within that category of plants. Forbs are rated against forbs, browse against browse, and grass against grass. Ratings are based on data and observations made on the Kerr Wildlife Management Area and reflect the food habits of deer on the Area. Food habits of deer may vary in other ecological regions of Texas.



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forbs



Erect dayflower

Vegetative Ratings as to Deer Preference:

- (1) Preferred species
- (2) Moderately preferred species
- (3) Utilized but not desirable
- (4) Little utilized species

Acanthaceae Dyschoriste linearis

Amaranthaceae Alternanthera peploides Amaranthus graecizans Amaranthus retroflexus

Amaryllidaceae Zephyranthes drummondi

Apocynaceae Amosonia ciliata Apocynum sp.

Aristolochiaceae Aristolochia coryi

Asclepiadaceae Asclepias verticillata Matelea bifora Matelea reticulata Sarcostemma crispum

Boraginaceae Heliotropium tenellum Lithospermum incisum

Bromeliaceae Tillandsia recurvata

Campanulaceae Triodanis coloradoensis Triodanis leptocarpa Triodanis perfoliata

Capparidaceae Polanisia dodecandra var. trachysperma

Caryophyllaceae Paronychia sp. Silene antirrhina Stellaria media

Chenopodiaceae Chenopodium gigantospermum Chenopodium leptophyllum

Commelinaceae Commelina erecta var. angustifolia Commelina erecta var. erecta Tradescantia gigantea Tradescantia occidentalis

Compositae

Achillea millefolium Ambrosia psilostachya Aphanostephus ramossissimus Artemisia ludoviciana Carduus nutans Centaurea melitensis Chaetopappa bellidifolia Chaetopappa belloides Acanthaceae Family Narrowleaf dyschoriste Pigweed Family

Mat chaff-flower (1) Tumbleweed (1) Redroot amaranth (1)

Amaryllis Family Eveningstar rainlily (1)

Dogbane Family Texas slimpod Dogbane

Dutchmanspipe Family Cory dutchmanspipe

Milkweed Family Whorled milkweed (4) Twoflower milkvine (3) Milkvine (4) Waveleaf twinevine

Borage Family Pasture heliotrope Narrowleaf gromwell

Pineapple Family Small ballmoss (3)

Bluebell Family Colorado venuslookingglass (1) Slimpod venuslookingglass (1) Clasping venuslookingglass (2)

Caper Family Roughseed clammyweed (3)

Chickweed Family Nailwort Sleepy catchfly Chickweed starwort

Goosefoot Family Bigseed goosefoot (3) Slimleaf goosefoot (3)

Spiderwort Family Erect dayflower (1)

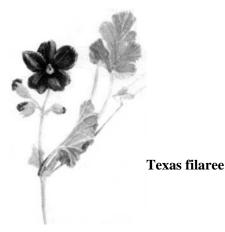
> Erect dayflower (1) Giant spiderwort (1) Prairie spiderwort (1)

Sunflower Family Western yarrow Western ragweed Plains dosedaisy (4) Mexican sagewort Muskthistle (3) Malta centaurea (4) Hairy leastdaisy (4) Manyflower leastdaisy (4)

forbs continued



Rosering gaillardia



Compositae (continued)

Ĉirsium texanum var. texanum Conyza canadensis var. glabrata Conyza coulteri Conyza ramosissima Coreopsis basalis var. wrightii *Coreopsis tinctoria* Engelmannia pinnatifida Erigeron modestus *Eupatorium perfoliatum* Evax prolifera Gaillardia pulchella Gaillardia suavis Gnaphalium obtusifolium Helianthus annuus Heterotheca subaxillaris var. subaxillaris Hymenopappus tenuifolius

Hymenoxys odorata Krigia oppositifolia Lactuca canadensis var. latifolia Lactuca serriola Lindheimera texana Melampodium leucanthus Parthenium hispidum Pinaropappus roseus Pyrrhopappus multicaulis Ratibida columnaris Rudbeckia sp. Senecio ampullaceus Senecio plattensis Simsia calva Sonchus asper Tetragonotheca texana Tetraneuris linearifolia Tetraneuris scaposa var. scaposa Thelesperma sp. Verbesina virginica Xanthisma texanum var. drummondii Xanthium spinosum Xanthocephalum sarothrae Xanthocephalum texanum Ximenesía encelioides Zexmenia hispida

Convolvulaceae

Convolvulus incanus Cuscuta sp. Evolvu l u sericeus Dichondra sp. Ipomoea coccinea Ipomoea lindheimeri

Crassulaceae Sedum nuttallianum

Cruciferae

Draba cuneifolia Draba platycarpa Lepidum virginicum Lesquerella argyraea Lesquerella densifora Southern thistle (3) Horsetail conyza (1) Coulter conyza Low conyza (4) Rock coreopsis Plains coreopsis (3) Engelmann-daisy (2) Plains fleabane (4) Boneset Bighead evax (4) Rosering gaillardia (2) Sweet gaillardia (1) Fragrant cudweed (4) Common sunflower (3) Camphorweed

Chalkhill woolywhite (2) Western bitterweed (4) Weedy dwarf dandelion Wild lettuce (2) Prickly lettuce (2) Texasstar Plains blackfoot Ragweed parthenium White rocklettuce (3) Manystem false-dandelion Upright prairie-coneflower(3) Coneflower sp. Texas groundsel Prairie groundsel Awnless bushsunflower Prickly sowthistle Plateau nerveray (2) Fineleaf tetraneuris (4) Plains tetraneuris (4) Greenthread (4) White crownbeard (4) Sleepy daisy

Spiny cocklebur (4) Broom snakeweed (4) Texas broomweed Golden crownbeard (4) Orange zexmenia (3)

Morningglory Family Gray bindweed Dodder Silky evolvulus Poneyfoot Scarlet morningglory Blue morningglory (2)

Stonecrop Family Yellow stonecrop (3)

Mustard Family Wedgeleaf draba (1) Broadpod draba (1) Virgina pepperweed (2) Silvery bladderpod (3) Denseflower bladderpod (3)

Cucurbitaceae

Cucurbita foetidissima

Euphorbiaceae

Acalypha lindheirneri Argythamnia humilis Argythamnia mercurialina Bernardia myricaefolia Bernardia sp. Croton monanthogynus Croton texensis Euphorbia angusta Euphorbia cyathophora Euphorbia serpens Euphorbia spathulata Phyllanthus polygonoides Stillingia texana Tragia nepetaefolia

Gentianaceae

Centaurium beyrichii

Geraniaceae

Erodium cicutarium Erodium texanum Geranium carolinanum

Guttiferae Hypericum drummondii

Hydrophyllaceae Phacelia congesta

Iridaceae

Sisyrinchium ensigerum

Labiatae

Brazoria scutellarioides Hedeoma acinoides Hedeoma drummondii var. drummondii Lamium amplexicaule Marrubium vulgare Monarda citriodora Monarda punctata Salviafarinacea Scutellaria drummondii Salvia reflexa

Leguminosae

Astragalus crassicarpus Astragalus nuttallianus Cassia roemeriana Dalea aurea Desmanthus velutinus Lespedeza stuevei Lupinus texensis Medicago hispida Rhynchosia texana Schrankia roemeriana Vicia leavenworthii yar. leavenworthii

Liliaceae

Allium canadense Allium drummondi Anthericum torreyi Gourd Family Buffalogourd(4)

Spurge Family Lindheimer copperleaf (3) Low wildmercury (3) Tall wildmercury (3) Brush myrtlecroton Myrtlecroton Oneseed croton (4) Texas croton (4) Blackfoot euphorbia Wild poinsettia Mat euphorbia (1) Warty euphorbia Knotweed leafflower (2) Texas stillingia (4) Catnip noseburn (3)

Gentain Family Rock centaury (3)

Geranium Family Alfilaria (2) Texas filaree (2) Carolina geranium

St. Johnswort Family Drummond St. Johnswort (3)

Waterleaf Family Spike phacelia

Iris Family Swordleaf blue-eyegrass Mint Family Prairie brazoria

Slender hedeoma Drummond hedeoma (3)

Henbit deadnettle Common horehound (3) Lemon beebalm Spotted beebalm (3) Mealycup sage (4) Drummond skullcap Lanceleaf sage

Legume Family Groundplum milkvetch Nuttall milkvetch Twoleaf senna Golden dalea Velvet bundleflower (2) Stueve lespedeza (3) Texas bluebonnet (3) Burclover (2) Texas snoutbean (2) Roemer sensitivebriar Leavenworth vetch (2)

Lily Family Canada garlic (1) Drummond onion (1) Torrey anthericum Liliaceae (continued) Nothoscordum bivalve Schoenocaulon drummondii

Linaceae Linum sp.

Krameria ceae Krameria lanceolata

Loasaceae Eucnide bartonioides Mentzelia oligosperma

Loranthaceae Phoradendron bolleanum Phoradendron serotinum var. pubescens

Malpighiaceae Thryallis angustifolia

Malvaceae Abutilon incanum Callirhoe digitata Pavonia lasiopetala Sidafilicaulis Sphaeralcea angustifolia

Martyniaceae Martynia louisianica

Menispermaceae Cocculus carolinus

Nyctaginaceae Boerhaavia sp. Mirabilis albida

Onagraceae Gaura sp. Oenothera engelmanni Oenothera triloba

Oxalidaceae Oxalis dillenii Oxalis drummondii

Papavesaceae Argemone sp. Corydalis aurea

Passifloraceae Passiflora lutea Passiflora tenuiloba

Phytolaccaceae Phytolacca americana

Plantaginaceae Plantago purshii Plantago rhodosperma

Polemoniaceae Gilia rigidula Phlox roemeriana

Polygonaceae Eriogonum havardii Yellow falsegarlic Drummond sabadilla

Flax Family Flax sp.

Ratany Family Trailing ratany

Loasa Family Yellow rocknettle Chickenthief mentzelia (3)

Mistletoe Family Rough mistletoe (1) Christmas mistletoe (1)

Malpighia Family Narrowleaf thryallis

Mallow Family Indianmallow (3) Finger poppymallow Wright pavonia (1) Spreading sida (3) Narrowleaf globemallow

Martynia Family Common devilclaws

Moonseed Family Carolina snailseed (2)

Four-o'clock Family Spiderling White four-o'clock (1)

Evening primrose Family Gaura Engelmann eveningprimrose (1) Stemless eveningprimrose (1)

Wood sorrel Family Yellow woodsorrel (2) Drummond oxalis (2)

Poppy Family Pricklepoppy Golden coryadalis (3)

Passionflower Family Yellow passionflower Spreadinglobe passionflower

Pokeweed Family Common pokeberry (2)

Plantain Family Woolly plantain (2) Redseed plantain (2)

Phlox Family Prickleaf gilia Roemer phlox

WildbuckwheatFamily Havard wildbuckwheat (3)

forbs continued



Southwestern carrot



Stemless eveningprimrose

Portulacaceae

Portulaca pilosa Portulaca retusa Talinum aurantiacum

Ranunculaceae

Anemone caroliniana Anemone decapetala Delphinium carolinianum Clematis drummondii

Rubiaceae

Galium aparine Galium texense Galium virgatum Hedyotis nigricans

Scrophulariaceae

Ĝerardia edwardsiana Linaria texana Maurandia antirrhiniflora Penstemon cobaea Penstemon jamesii Verbascum thapsus

Solonaceae

Chamaesaracha coronopus Datura stramonium var. stramonium Physalis sp. Solanum americanum Solanum elaeagnifolium Solanum rostratum Typhaceae iypha sp.

Umbelliferae

Bifora americana Chaerophyllum tainturieri var. dasycarpum Daucosma laciniatum Daucus pusillus Eryngo Ieavenworthii Parietaria pennsylvanica var. pennsylvanica

Valerianaceae Valerianella stenocarpa

var. stenocarpa

Verbenaceae

Phyla sp. Verbena bipinnatifida var. bipinnatifida Verbena canadensis Verbena canescens var. roemeriana Verbena pumila

Violaceae Hybanthus verticillatus

Zygophyllaceae

Kallstroemia hirsutissima Tribulus terrestris Moss Rose Family Shaggy purslane Roughseed purslane (1) Orange flameflower

Buttercup Family Carolina anemone (3) Tenpetal anemone (3) Carolina larkspur Texas virgins bower (3)

Madder Family Catchweed bedstraw (3) Texas bedstraw (3) Southwest bedstraw (3) Prairie bluets (2)

Figwort Family Plateau gerardia Texas toadflax Snapdragon maurandia Foxglove James penstemon Flannel mullein (4)

Nightshade Family Green false-nightshade Jimsonweed

> Groundcherry (2) Blueflower buffalobur (2) Silverleaf nightshade Buffalobur Cattail

Celery Family Prairie bishop (2) Hairyfruit chervil (3)

> Meadow daucosma Southwestern carrot (2) Leavenworth eryngo (4) Pennsylvania pellitory (2)

Valerian Family Narrowcell cornsalad

Verbena Family Frogfruit (4) Dakota verbena (3)

> Rose verbena Roemer verbena (3)

Pink vervain

Violet Family Whorled nodviolet (1)

Caltrop Family Hairy caltrop Puncturevine

rowse plants are rated by deer preference for leaf forage — not for preference for mast. Deer readily eat acorns, persimmon fruits, mesquite beans, and cedar berries. Because of erratic rainfall patterns, mast is not always produced by the various browse species and is not considered a reliable food source for white-tailed deer.

browse

Possumhaw

Anacardiaceae S Rhus aromatica var.flabelliformis Rhus copallina Rhus virens Rhus toxicodendron var. vulgaris

Aquifoliaceae Ilex decidua

Berberidaceae Berberis trifoliolata

Cactaceae Echinocactus texensis Echinocereus reichenbachii Mammillaria heyderi , Opuntia leptocaulis Opuntia lindheimeri var. lindheimeri Opuntia sp.

Caprifoliaceae Lonicera albiflora var. albifora Viburnum rufidulum

Sumac Family Skunkbush (2)

> Flameleaf sumac (2) Evergreen sumac (2) Poisonivy (2)

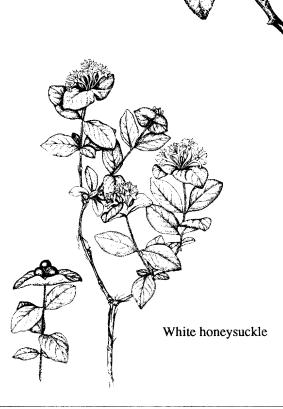
Holly Family Possumhaw (2)

Barberry Family Agarito (3)

Cactus Family Devils pincushion (4) Lace echinocereus (4) Heyder mammallaria (4) Pencil cactus (4) Texas prickypear (4)

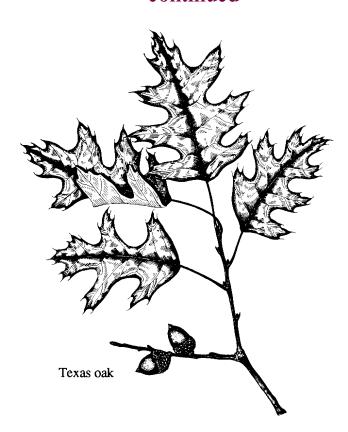
Cholla(4)

Honeysuckle Family White honeysuckle (1) Downy viburnum (1)





browse



Chenopodiaceae Atriplex canescens

Compositae Baccharis salicina

Cornaceae Cornus drummondii Garrya lindheimeri Garrya ovata

Ebenaceae Diospyros texana

Ericaceae Arbutus texana

Euphorbiaceae Croton fruticulosus

Fagaceae

Quercus durandii var. breviloba Quercus laceyi Quercus marilandica Quercus muehlenbergii Quercus shumardii var. texana Quercus stellata var. stellata Quercus virginiana var. virginiana

Goosefoot Family Fourwing saltbush (3)

Sunflower Family Willow baccharis (4)

Dogwood Family Roughleaf dogwood Lindheimer silktassel Eggleaf silktassel (4)

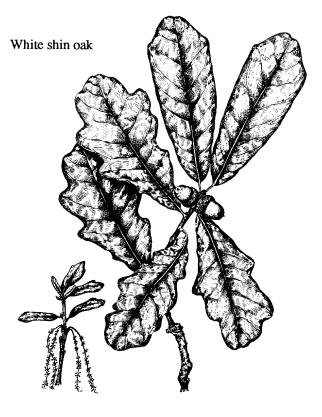
Persimmon Family Texas persimmon (3)

Heath Family Texas madrone (1)

Spurge Family Bush croton

Beech Family White shin oak (2) Lacey oak (2) Blackjack oak (2) Chinkapin oak (2) Texas oak (1) Post oak (2) Live oak (3)





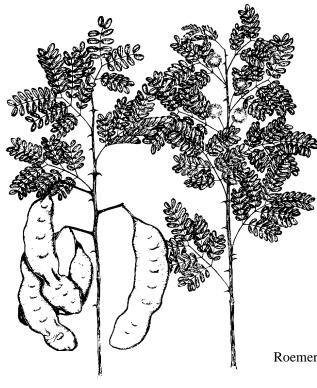


Much of Texas' deer habitat is of poor quality, primarily a result of overgrazing by domestic livestock, exotics and native wildlife. Overgrazed pastures have few preferred forage species and trees are uniformly browsed to a height of about 4 feet.



Good deer habitat is characterized by an abundance of weeds and shrubs of highly preferred species. Trees have low branches that show little evidence of browsing.

browse continued



Hippocastanaceae Aesculus glabra var. arguta

Juglandaceae

Carya illinoensis Juglans microcarpa

Leguminosae

Acacia greggi Acacia roemeriana Cercis canadensis var. texensis Dalea frutescens var. frutescens Eysenhardtia texana Leucaena retusa Mimosa borealis Prosopis glandulosa var. glandulosa Sophora affinis

Liliaceae

Smilax bona-nox Smilax rotundifolia Yucca rupicola Yucca sp.

Meliaceae Melia azedarach

Roemer acacia

10

Buckeye Family Texas buckeye

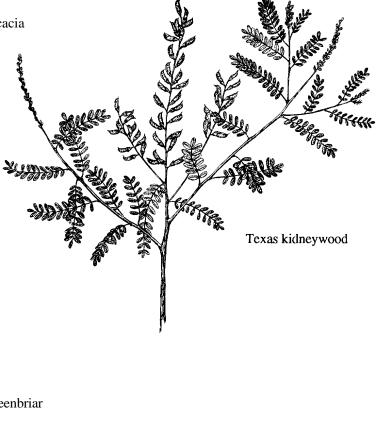
Walnut Family Pecan (3) Texas black walnut (3)

Pea Family Catclaw acacia Roemer acacia (2) Texas redbud (2) Black dalea (3) Texas kidneywood (1) Littleleaf leadtree (1) Fragrant mimosa (3) Honey mesquite (4)

Texas sophora (1)

Lily Family Saw greenbriar (2) Common greenbriar (2) Texas yucca (4) Yucca (4)

Mahogany Family Chinaberry (1)





Moraceae

Morus nigra Morus microphylla

Oleaceae

Forestiera neomexicana Forestiera pubescens var. pubescens Forestiera reticulata

Pinaceae Juniperus ashei

Rhamnaceae

Colubrina texensis Condalia obtusifolia Condalia viridis Rhamnus caroliniana var. caroliniana

Rosaceae

Cercocarpusmontanus Crataegus crusgalli Prunus gracilis Prunus serotina var. eximia

Rubiaceae

 $Cephalanthus \, occidental is$

Mulberry Family Black mulberry (1) Texas mulberry

Olive Family New Mexico forestiera Elbowbush (3)

Netleaf forestiera (3)

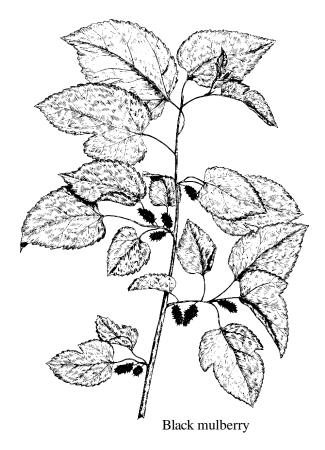
Pine Family Ashe juniper (4)

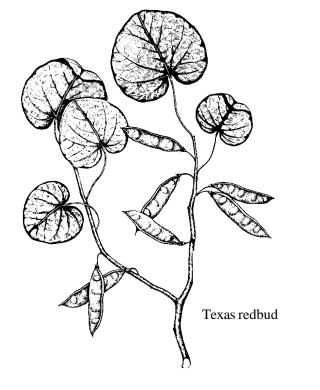
Buckthorn Family Texas colubrina (2) Lotebush (4) Green condalia Carolina buckthorn (1)

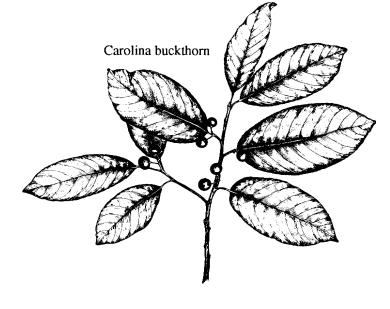
Rose Family

True mountainmahogany (1) Cockspur hawthorne (1) Oklahoma plum (1) Escarpment blackcherry (2)

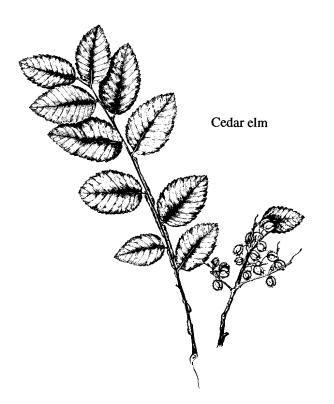
Madder Family Common buttonbush (3)







browse continued



Rutaceae Zanthoxylum clava-herculis var. fruticosum

Sapindaceae Sapindus drummondii Ungnadia speciosa

Sapotaceae Bumelia lanuginosa var. oblongifolia

Ulmaceae Celtis laevigata Celtis reticulata Ulmus crassifolia Ulmus rubra

Verbenaceae Aloysia lycioides

Vitaceae

Ampelopsis cordata Cissus incisa Parthenocissus heptaphylla Parthenocissus quinquefolia Vitis Rue Family Herculesclub pricklyash (3)

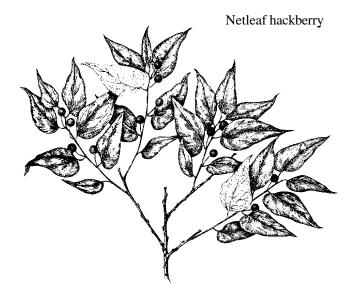
Soapberry Family Western soapberry (3) Mexicanbuckeye (4)

SapodillaFamily Woollybucket bumelia (2)

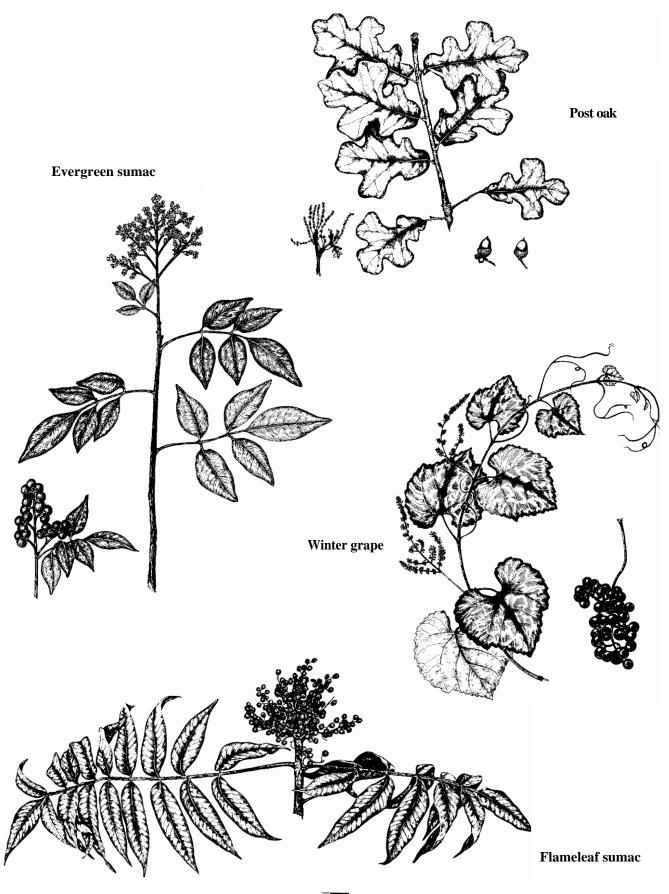
Elm Family Sugar hackberry (1) Netleaf hackberry (2) Cedar elm (1) Slippery elm (1)

Vervain Family Whitebrush (4)

Grape Family Heartleaf ampelopsis (2) Ivy treebine (2) Sevenleaf creeper (2) Virginia creeper (2) Sweet Mountain Grape (2)



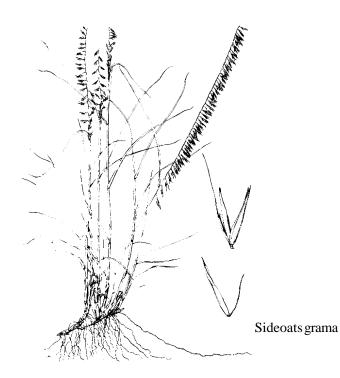




grasses sedges



Big bluestem



Cyperaceae Carex planostachys

Gramineae

Andropogon gerardii var. gerardii Andropogon glomeratus Aristida glauca Aristida oligantha Aristida purpurea Aristida wrightii Avena fatua var. sativa Bothriochloa barbinodis var. barbinodis Bothriochloa barbinodis var. perforata Bothriochloa edwardsiana Bothriochloa ischaemum var. songarica Bothriochloa saccharoides var. torreyana Bouteloua curtipendula Bouteloua hirsuta Bouteloua rigidiseta Bouteloua trifida Bouteloua uniflora Bromus japonicus Bromus tectorum var. tectorum Bromus unioloides Buchloe dactyloides Cenchrus incertus Chloris and ropogonoides Chloris cucullata Chloris verticillata Cynodon dactylon Dicanthelium oligosanthes Dicanthelium pedicillatum Digitaria californica Echinochloa colonum Elymus canadensis Eragrostis cilianensis Eragrostis curtipedicillata Eragrostis intermedia Eragrostis lugens Eragrostis trichodes Eriochloa sericea Eriochloa contracta Erioneuron pilosum Hilaria belangeri Hordeum jubatum Hordeum pusillum Leptochloa dubia Leptochloa filiformis

Sedge Family Cedar sedge (3)

Grass Family Big bluestem (4) Bushy bluestem (4) Blue threeawn (4) Oldfield threeawn (4) Purple threeawn (4) Wright threeawn (4) Common oats (1) Cane bluestem (4) Pinhole bluestem (4) Merrill bluestem (4) King ranch bluestem (4) Silver bluestem (4) Sideoats grama (2) Hairy grama (4) Texas grama (4) Red grama (4) Nealley grama (4) Japanese brome Downy brome Rescuegrass (1) Buffalograss (4) Common sandbur (4) Slimspike windmill grass Hooded windmillgrass (4) Tumble windmillgrass (4) Bermudagrass(4) Cedar dicanthelium (4)

Scribners dicanthelium (1) Arizona cottontop (4) Jungle rice Canada wildrye (4) Stinkgrass (4) Gummy lovegrass (4) Plains lovcgrass (2) Mourning lovegrass (4) Sand lovegrass (4) Texas cupgrass (4) Prairie cupgrass (4) Hairy tridens (4) Common curleymesquite (3) Foxtail barley Little barley Green spranglctop (2) Red sprangletop

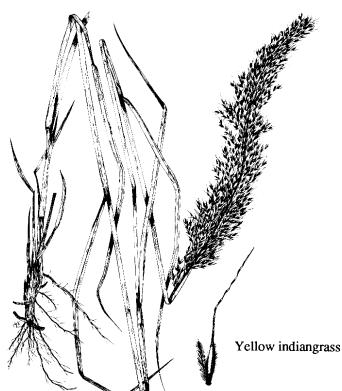
Gramineae(continued) Limnodea arkansana Melica nitens Muhlenbergia reverchonii Panicum coloratum Panicum fasciculatum Panicum hallii Panicum obtusum Panicum virgatum Paspalum dilatatum Schedonnardus paniculatus Schizachyrium scoparium var. frequens Setaria glauca Setaria scheelei Sorghastrum nutans Sorghum halepense Sporobulus asper var. asper Sporobolus asper var. drummondii Sporobulus cryptandrus Sporobolus vaginiflorus *Stipa leucotricha* Tridens albescens Tridens muticus var. muticus Tridens muticus var. elongatus Tripsacum dactyloides *Trisetum interruptum* Triticum aestivum Vulpia octoflora var. hirtella

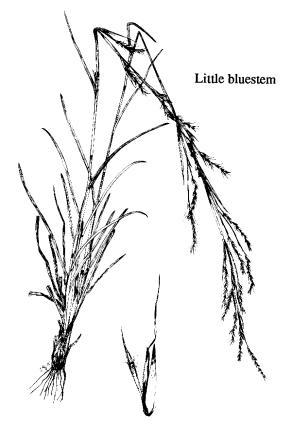
Ozarkgrass Threeflower melic Seep muhly (4) Kleingrass (3)

Halls panic (3) Vine mesquite (4) Switchgrass (4) Dallisgrass (4) Tumblegrass (3) Little bluestem (3)

Yellow bristlegrass (4) Southwestern bristlegrass (4) Yellow indiangrass (4) Johnsongrass (2) Tall dropseed (4) Meadow dropseed (4)

Sand dropseed (4) Poverty dropseed (4) Texas wintergrass (3) White tridens (4) Slim tridens (4) Rough tridens Eastern gamagrass Prairie trisetum Wheat (1) Hair sixweeksgrass (4)





Fall witchgrass



references

- Ajilvsgi, G., 1984. Wildflowers of Texas. Shearer Publishing, Bryan Tx. 414 pp.
- Bryant, F. C., C. A. Taylor, L. B. Merrill. 1981. White-tailed deer diets from excellent and poor range conditions. J. Range Manage. 34(3): 193-199.
- Cross, D. C. 1984. The food habits of white-tailed deer on the Kerr Wildlife Management Area in conjunction with prescribed burning and rotational livestock grazing systems. M. S. Thesis. Southwest Texas State University. San Marcos. 134 pp.
- Gould, F. W. 1975. Texas Plants A checklist and ecological summary. Tex. Agri. Exp. Sta. Texas A&M University. Bull MP-595 Revised . 121 pp.
- Halls, L. K. 1984. What do deer eat and why. Proceedings of the 1984 International Ranchers Roundup. pp 266-276.
- Hitchcock, A. S., 1950. Manual of the grasses of the United States. Misc. Publ. No 200., Washington, D.C. 1051 pp.
- Irwin, H. S., Wills, M. M., 1960. Roadside flowers of Texas. University of Texas Press, Austin Tx., 295 pp.
- McMahan, C. A., 1964. Comparative food habits of deer and three classes of livestock. Journ. Wildlife Manage. 28(4):798-808.
- Ricket, H. W., 1969. Wildflowers of the United States-Texas. Vol. 3. McGraw-Hill, N.Y., New York Botanical Garden. 553 pp.
- Vines, R. A., 1960. Trees, shrubs, and woody vines of the southwest. University of Texas Press, Austin Tx., 1104 pp.
- Whisenhunt, M. H., Jr. 1949. The flora of two experimental plots in Mason County, Texas, with special reference to its utilization by white-tailed deer. M. S. Thesis. Texas Agr. and Mech. College, College Station Texas. 88 pp.



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