

Black Mesa Flora Study

James K. McPherson, Ph.D.

Department of Botany
Oklahoma State University
22 February 1993

Summary of season's work

The following constitutes a report on field, laboratory, and library work done in 1992 on the flora of the State Parks-The Nature Conservancy preserve property at Black Mesa. This property is north of the town of Kenton; R1E, T6N, sections 28-33 (portions), and R1E, T5N, S6 (portion), Cimarron County, Oklahoma.

I spent 14 full days collecting plants on the preserve, each time camping at the state park a few miles away the nights before and after, so very little travel time was used on collecting days. Collecting dates in the 1992 growing season were 2-3 March, 6-7 April, 30 April-1 May, 14-16 May, 26 June, 2-3 September, and 21-22 September. During each trip an effort was made to visit and collect in as many different types of sites as possible.

Collections of 199 species were made. These were handled in the conventional way, with duplicate specimens being made. One set is deposited in the Oklahoma State University Herbarium, and the other in the Bebb herbarium at the University of Oklahoma.

Interpretation of findings

Flora. The families Compositae, Leguminosae, and Gramineae are represented by the largest numbers of species. However, 47 other families are present. Members of the Gramineae

(grass) family clearly dominate most of the landscape. The Pinaceae (in the inclusive sense) is the other dominant family, due to the numerous members of the genus *Juniperus* in some areas.

Two species that are endemic were collected. The shrub *Glossopetalon planitierum* (= *Forsellesia* p.), Celastraceae, which is known only from a few adjacent counties in the Texas panhandle, one nearby county in New Mexico and the Black Mesa area of Cimarron County, OK. The type locality is "near the top of Black Mesa, Cimarron Co." It is possible that the type locality is now on the preserve, though it probably is not possible to know with certainty. The other endemic collected was the perennial herb *Astragalus puniceus*, Leguminosae. It is known only from the Mesa de Maya area (Las Animas County, Colorado; Union County, New Mexico; and Cimarron County, Oklahoma) and Deaf Smith County, Texas. Both species are fairly common locally, but can be considered rare in a general sense.

Four other species are worth mentioning in this context. I did not collect them, but know about them from the literature (Rogers, 1953; Harrington 1964; Waterfall 1969; McGregor et al. 1977; McGregor et al. 1986, Correll and Johnston 1970). *Sarcostemma lobata*, Asclepiadaceae, is apparently known only from Black Mesa. It is likely that this species will be found on the preserve, and

seems to be a legitimate rare species. *Lesquerella calcicola*, Cruciferae, *Palafoxia macrolepis*, Compositae, and *Swertia coloradensis*, Gentianaceae, are all endemic in southeastern Colorado, but are at higher elevations and/or on soil types that are not found in Oklahoma, so probably are not on the preserve.

Finally, *Pericome glandulosa*, Compositae, was collected and is described by Rogers (1953) as being an endemic, but has been reduced to varietal status by Harrington. Thus it is now *Pericome caudata* var. *glandulosa*. The reduction appears legitimate. The type locality for it is also Black Mesa. In my opinion, var. *glandulosa* is only a local variant of a widespread species. It occurs on sandstone hills which are common in the region and there does not seem to be any substantial distinct feature about it. Concern about it is probably not justified.

I collected 199 species. Rogers' (1953) list contains 578 species and 11 varieties, a total of 589 taxa. There are some caveats to be mentioned about the comparison of numbers, however. First, Rogers collected from a much larger area. Second, he included types of sites that are not on the preserve (elevations up to 6850 ft., Cimarron River bed and floodplain, sand dunes, and a salt-pan). Finally, some of his species seem questionable in view of present knowledge.

The following is a list of species I collected that Rogers (1953) did not. Identifications will be rechecked.

Selaginellaceae

Selaginella underwoodii^[1]

Polypodiaceae

Cheilanthes lanosa

Asplenium serpentrionale^[1]

Gramineae

Bromus unioloides

Eragrostis trichodes var. *trichodes*^[1]

Cyperaceae

Scirpus validus (*S. lacustris* in Waterfall 1969)

Lemnaceae

Lemna minor

Liliaceae

Allium canadense var. *fraseri*

Salicaceae

Salix interior forma *wheeleri*

S. nigra (possibly Rogers' "Salix species")

Moraceae

Morus alba^[1]

Chenopodiaceae

Suckleya suckleyana

Ranunculaceae

Clematis hirsutissima var. *scottii*^[1]

Cruciferae

Arabis fendleri

Saxifragaceae

Ribes odoratum^[1]

Leguminosae

Petalostemon tenuifolium

Linaceae

Linum rigidum var. *rigidum*

Vitaceae

Parthenocissus quinquefolia (ident. should be checked)

Vitis vulpina

Onagraceae

Oenothera triloba

Asclepiadaceae

Asclepias arenaria^[1]

Sarcostemma crispum^[1]

Boraginaceae

Cryptantha minima

Labiatae

Salvia azurea var. *grandiflora*

Rubiaceae

Galium texense

Compositae

Ambrosia linearis^[1] (tentative)

Aster fendleri

A. leucelene

Hymenoxys acaulis

Kuhnia chlorolepis

Solidago mollis

Most of these species are permanent resident, "climax" types. They probably would not have immigrated into the area since Rogers made his collections in the late 1940's. The most likely explanation is that Rogers simply missed seeing them.

Vegetation. This is not a formal study of the vegetation or plant communities of the preserve, but I made observations on these attributes of the site on which I can report. Two vegetation types, in the conventional sense of Barbour and Billings, 1988, are present on the preserve. These are Juniper-Pinyon Woodland, which is on the steeper slopes of the mesa and rock outcrops, and Shortgrass Prairie, on level to gently sloping sites with deeper soil.

Within this general picture are some smaller-scale patterns. The most obvious is the presence of Cooper's Arroyo, a stream with rare-intermittent flow. It does have a pool that contains water most of the time, and its bed provides conditions that support typical moist-soil plant species such as *Salix* spp., *Tamarix gallica*, and *Carex gravida*. This can be termed a riparian community.

Two variants of shortgrass prairie are present. On the Berthoud loam and portions of the Travessilla stony loam (USDA, 1960) in the low-lying parts of the preserve is a prairie with many weeds, especially *Erioneuron pilosum*, *Bothriochloa saccharioides*, and *Ambrosia psilostachya*. There is also a substantial amount of the cactus *Opuntia imbricata* which here is associated with disturbance. This portion of the preserve was the most accessible to cattle when the land was ranched, and was where most of the water was provided. It appears that overgrazing is the main cause of the abundance of weedy species and partial loss of the

dominants, *Buchloe dactyloides* and *Bouteloua gracilis*.

On the Apache stony clay loam (USDA, 1960), which is found only on the basalt rock forming the top of the mesa, is a slightly different version of shortgrass prairie. The dominant grasses, *Buchloe dactyloides* and *Bouteloua gracilis*, are the same, but they are more dominant and there are fewer weeds. More of the native forbs such as *Castilleja sessiliflora*, *Oenothera lavendulaeflora*, and several Compositae are present. In my judgment, the difference is caused by a history of less disturbance, and by the soil's higher clay content. The contrast between the two variants of short grass prairie will probably diminish with time and the cessation of grazing, but differences due to the contrasting soils are likely to remain. The mesa-top community probably will have a higher diversity of climax species.

On the sides of the mesa the soils are mapped as Rough stony land and the higher parts of the Travessilla stony loam (USDA, 1960). This is where the Juniper-Pinyon woodland is found. *Juniperus monosperma* is the strong dominant here, with only a few *Pinus edulis* trees, despite the traditional name of the vegetation type. There are differing communities within this area, but they are not as clearly separated as is the case with the prairie communities. The most noteworthy group of species here, after *J. monosperma*, is the shrubs. On the drier, open slopes are *Rhus aromatica*, *Cercocarpus montanus*, *Brickellia brachyphylla*, and *B. californica*. Also, *Opuntia imbricata* is here, appearing less weedy than it does in the prairies. In one area near the east end of the preserve the endemic *Glossopetalon planitierrum* is a component of the shrub flora. All are fairly widely spaced so that walking among them is easy.

In the canyons where more moisture accumulates and there is some shelter from the wind is a denser shrub community. Near the bottoms of the deeper canyons it is dense indeed, becoming impenetrable in places. Most of the species just listed are present, and they are joined by *Prunus americana*, *P. virginiana*, *Rubus deliciosus*, *Ptelea trifoliata*, and *Celtis reticulata*. Here also is *Juniperus scopulorum*, a Rocky Mountain species, which is quite uncommon and is very close to the extreme edge of its range.

Throughout the Juniper-Pinyon vegetation is an array of grasses, mostly of different species from the prairie. Very common are *Poa fendleriana* and *Eragrostis cilianensis*. In pockets of deep soil, often only a meter or two across, are *Andropogon gerardii*, *Sorghastrum nutans*, and *Schizachyrium scoparium*. These are dominants of the tallgrass prairie 150 and more miles east, but grow well here in small, favorable sites. The Juniper-Pinyon woodlands are the least disturbed communities on the preserve.

The only other local community that should be noted is the very weedy one that develops in and around the usually-dry, man-made "tanks" or stock-watering ponds. These ponds contain water so seldom that its main effect is to drown any climax species that invade the bed. The original construction work left a massive scar, and trampling by cattle has perpetuated the disturbance. Species commonly found in and around the ponds include *Probooscidea louisianica*,

Xanthium strumarium, *Cenchrus pauciflorus*, and *Suckleya suckleyana*. If left alone, without cattle trampling, the dams and margins of these ponds will slowly revert to shortgrass prairie. The beds will be weedy as long as the dams occasionally retain water.

References Cited

- Barbour, M.C. and W.D. Billings (eds.). 1988. North American terrestrial vegetation. Cambridge, MA: Cambridge Univ. Press.
- Correll, D.S. and M.C. Johnston. 1970. Manual of the vascular plants of Texas. Renner, TX: Texas Research Foundation.
- Harrington, H.D. 1964. Manual of the plants of Colorado. Athens, OH: Sage Books/Swallow Press.
- McGregor, R.L. et al. 1977. Atlas of the flora of the Great Plains. Ames, IA: Iowa State University Press.
- McGregor, R.L. et al. 1986. Flora of the Great Plains. Lawrence, KS: University Press of Kansas.
- Rogers, C.M. 1953. The vegetation of the Mesa de Maya Region of Colorado, New Mexico, and Oklahoma. *Lloydia*:257-290.
- United States Department of Agriculture. Soil Conservation Service; Soil survey: Cimarron County, Oklahoma. U.S. Government Printing Office. 1960.
- Waterfall, U.T. 1969. Keys to the flora of Oklahoma. 4th ed. Stillwater, OK: [Published by the author]

BLACK MESA FLORA STUDY**Year Two Supplement****James K. McPherson****20 January 1994****INTRODUCTION**

This is a supplement to my report on the same subject of last year. It is assumed that the present readers have that report and can refer to it. This paper is organized the same way and is in the same sequence as last year's.

SUMMARY OF 1993 WORK

I spent seven full days collecting, using the same plans & format as in 1992. The dates were; 25-26 April, 9-10 May, 31 May, and 6-7 October.

Collections of 30 species new for this project were made, bringing the total to date to 229. They were handled and distributed as before.

INTERPRETATION OF FINDINGS

The count of families has risen to 53 from 50, because of collection of single members of the Selaginellaceae, Sapindaceae, and Polemoniaceae.

Two species should be mentioned.
(1) The *Parthenocissus* at the Mesa may

be *P. vitacea*, the "western" species. It is known from a few places in the state, but on most herbarium specimens it cannot be distinguished from *P. quinquefolia* so it is hard to know how common it is. Waterfall did not realize *P. vitacea* was in Okla. (or did not accept it), so most people have assumed that it was all *P. quinquefolia*. It will be next season before I will know which we have at the Mesa. (2) There is an *Ambrosia* there that keys to *A. linearis*, which is "Apparently restricted to a few localities in the open high plains of eastern Colorado; rarely collected." There are no specimens in OU's or our herbaria, so Ron Tyrl and I sent it off to University of Colorado for identification. We haven't heard back from them yet. It looks very much like *A. psilostachya*, which is abundant that area; this may be why it is overlooked.

My 1993 estimate of 250-260 species being present on the Preserve still seems reasonable. Since 229 have been collected, about 20-30 remain to be found.

Editors' Notes:

This paper is published with the courteous agreement of The Nature Conservancy for whom it was prepared. The approximate GPS location of Black Mesa State Park is between latitudes 36.833 and 36.861 and longitudes 102.862 and 102.900. The elevation of the mesa ranges from 4960 ft (1512 m) to 4973 ft (1516 m). It is now contained within Black Mesa State Park which contains approximately 349 acres of land.

The original species list has been updated as follows:

[1] On July 1, 1994, ten days before his death, Jim McPherson generated plant labels for 15 additional specimens he had collected on June 7 at Black Mesa on his way to California. With the generous assistance of Iris McPherson, his wife, they are included in the flora and the taxa summary table below.

Families	55
Genera	172
Species	244
Infraspecific taxa	41
Exotic species	16

Folley's "Additions to Black Mesa Flora Study", which follows McPherson's flora in this volume, includes areas of Black Mesa State Park not included in his study and lists only species that are not included here.

[2] The International Code of Botanical Nomenclature "conserved" several traditional family names when they standardized the family nomenclature. McPherson used some of these traditional names in the Black Mesa

report, but since they are falling into disuse standardized names are provided here. Current species' names have also been provided. Name changes are updates only. No specimens were reexamined for this publication.

Kartesz, J.R. (1994). A synonymized checklist of the vascular flora of the United States, Canada, and Greenland. Portland, OR: Timber Press.

Voss, E. G., H.M. Burdet, W.G. Chaloner, V. Demoulin, P. Hiepko, J. McNeill, R.D. Meikle, D.H. Nicolson, R.C. Rollins, P.C. Silva, & W. Greuter, 1983. International code of botanical nomenclature, adopted by the Thirteenth International Botanical Congress, Sydney, August 1981).

[3] Introduced species are indicated in this list.

Correll & Johnston. 1970. Manual of the vascular plants of Texas. Renner, TX: Texas Research Foundation.

Taylor, R.J. & C.E.S. Taylor. 1991. An annotated list of the ferns, fern allies, gymnosperms and flowering plants of Oklahoma. [Published by the authors at Southeastern Oklahoma State University].

Tyrl, R.J., Susan Barber, Paul Buck, Wayne Elisens, James Estes, Patricia Folley, Lawrence Magrath, Constance Taylor, and Rahmona Thompson. The flora of Oklahoma. The Flora of Oklahoma Editorial Board. Forthcoming.

USDA-NRCS 2003. The PLANTS database. (<http://plants.usda.gov/plants>.)

SPECIES BY FAMILY OF THE BLACK MESA RESERVE, CIMARRON COUNTY**James K. McPherson, 1992****(93) = species added in 1993 (94) = species added in 1994^[1]**

Division/Class/Family	Common Family Name	Standardized Name ^[2]
Selaginellaceae <i>Selaginella underwoodii</i> (93)	spikemoss family spikemoss	
Polypodiaceae <i>Cheilanthes eatoni</i> <i>Cheilanthes feei</i> (93) <i>Cheilanthes lanosa</i> <i>Notholena standleyi</i> <i>Pellaea atropurpurea</i> var. <i>purpurea</i> (93) <i>Woodsia oregan</i> (94) <i>Asplenium septentrionale</i> (94)	true fern family Eaton's lip fern slender lip fern hairy lip fern star cloak-fern cliff-brake Oregon woodsia forked spleenwort	Pteridaceae Dryopteridaceae Aspleniaceae
Pinaceae <i>Juniperus monosperma</i> <i>Juniperus scopulorum</i> <i>Pinus edulis</i>	pine family one-seed juniper Rocky Mtn. Juniper pinyon pine	
Gramineae <i>Agropyron smithii</i> var. <i>smithii</i> <i>Andropogon gerardii</i> <i>Aristida longiseta</i> <i>Aristida purpurea</i> <i>Aristida wrightii</i> <i>Bothriochloa saccharoides</i> <i>Bouteloua curtispindula</i> <i>Bouteloua eriopoda</i> <i>Bouteloua gracilis</i> <i>Bouteloua hirsuta</i> var. <i>hirsutea</i> <i>Bromus anomalus</i> var. <i>lanatipes</i> <i>Bromus tectorum</i> <i>Bromus unioloides</i> <i>Buchloe dactyloides</i> <i>Cenchrus carolinianus</i> <i>Chloris verticillata</i> <i>Echinochloa cruzgalli</i> <i>Elymus virginicus</i> var. <i>jejunus</i> <i>Elymus canadensis</i> (94) <i>Eragrostis cilianensis</i>	grass family western wheatgrass ^[3] big bluestem Fendler three-awn purple three-awn Wright three-awn silver bluestem side-oats grama black grama blue grama hairy grama noddling brome cheat ^[3] rescue grass ^[3] buffalo grass sandbur windmill grass barnyard grass ^[3] Virginia wildrye Canadian wild rye stinkgrass ^[3]	Poaceae

<i>Eragrostis trichodes</i> var. var. <i>trichodes</i> (94)	sand love grass	
<i>Erioneuron pilosum</i>	fluffgrass ^[3]	
<i>Hilaria jamesii</i>	galleta	
<i>Hordeum pusillum</i>	little barley	
<i>Lycurus phleoides</i> <i>Muhlenbergia</i>	wolftail	
<i>torreyi</i> <i>Oryzopsis hymenoides</i>	ring muhly	
<i>Oryzopsis micrantha</i>	Indian ricegrass	
<i>Panicum capillare</i> var. <i>capillare</i>	little-seed ricegrass	
<i>Panicum hallii</i> (93)	common witchgrass	
<i>Panicum obtusum</i>	Hall panic grass	
<i>Poa fendleriana</i> <i>Schedonnardus</i>	vine-mesquite	
<i>paniculatus</i> <i>Schizachyrium</i>	muttongrass	
<i>scoparium</i> <i>Setaria leucopila</i>	tumblegrass	
<i>Sitanion hystrix</i>	little bluestem	
<i>Sorghastrum nutans</i> <i>Sporobolus</i>	plains bristlegrass	
<i>cryptandrus</i>	squirreltail	<i>Elymus elymoides</i>
<i>Stipa comata</i>	Indian grass	
<i>Stipa scribneri</i>	sand dropseed	
<i>Vulpia octoflora</i>	thread-and-needle	
	Scribner needlegrass	
	six-weeks fescue	
Cyperaceae	sedge family	
<i>Carex gravida</i>	sedge	
<i>Cyperus schweinitzii</i> (93)	umbrella sedge	
<i>Scirpus americanus</i> var. <i>polphyllus</i>	bulrush	
<i>Scirpus validus</i>	bulrush	<i>Scirpus tabernaemontanus</i>
Commelinaceae	spiderwort family	
<i>Commelina erecta</i>	erect dayflower	
var. <i>angustifolia</i> (94)		
<i>Tradescantia occidentalis</i>	western spiderwort	
Lemnaceae	duckweed family	
<i>Lemna minor</i>	duckweed	
Liliaceae	lily family	
<i>Allium canadense</i> var. <i>fraseri</i>	wild onion	
<i>Yucca glauca</i>	plains yucca	
Salicaceae	willow family	
<i>Populus deltoids</i>	cottonwood	
<i>Salix amygdaloides</i>	peach-leaf willow	
<i>Salix interior</i> forma <i>wheeleri</i>	sandbar willow	<i>Salix exigua</i>
<i>Salix nigra</i>	black willow	

Ulmaceae <i>Celtis reticulata</i>	elm family hackberry	
Santalaceae <i>Commandra pallida</i>	sandalwood family bastard toad-flax	<i>Commandra umbellata</i> ssp. <i>pallida</i>
Urticaceae <i>Parietaria pennsylvanica</i>	nettle family Pennsylvania pellitory	
Polygonaceae <i>Eriogonum jamesii</i> <i>Eriogonum lachnogynum</i> <i>Polygonum lapathifolium</i> <i>Polygonum ramosissimum</i> <i>Rumex crispus</i>	buckwheat family James wild buckwheat wild buckwheat pale smartweed knotweed curly dock	
Chenopodiaceae <i>Ceratoides lanata</i> <i>Chenopodium album</i> (93) <i>Chenopodium incanum</i> (93) <i>Kochia scoparia</i> <i>Salsola kali</i> var. <i>tenuifolia</i> <i>Suckleya suckleana</i>	goosefoot family winterfat lamb's quarters goosefoot kochia Russian thistle poison suckleya	<i>Salsola kali</i> var. <i>tragus</i>
Amaranthaceae <i>Amaranthus retroflexus</i>	pigweed family rough pigweed ^[3]	
Nyctaginaceae <i>Mirabilis carletonii</i> (93) <i>Mirabilis linearis</i> var. <i>subhispida</i>	four-o'clock family Carleton's four-o'clock narrowleaf four-o'clock	
Portulacaceae <i>Portulaca retusa</i>	purslane family purslane	<i>Portulaca oleracea</i> ssp. <i>oleracea</i>
Ranunculaceae <i>Clematis hirsutissima</i> var. <i>scottii</i> (93) <i>Delphinium virescens</i> var. <i>penardi</i> <i>Ranunculus sceleratus</i>	buttercup family virgin's bower prairie larkspur cursed crowfoot	<i>Delphinium carolinianum</i> var. <i>virescens</i> (93)
Fumariaceae <i>Corydalis aurea</i>	fumitory family golden corydalis	
Capparidaceae <i>Polanisia dodecandra</i>	caper family clammy-weed	

Cruciferae

Arabis fendleri
Descurania pinnata
 var. *intermedia*
Erysimum capitatum
Lepidium densiflorum
Lesquerella ovalifolia

Saxifragaceae

Ribes cereum
Ribes odoratum

Rosaceae

Cercocarpus montanus var. *argenteus* mountain mahogany
Physocarpus monogynus (93) mountain ninebark
Prunus americana var. *americana* wild plum
Prunus virginiana choke cherry
Rubus deliciosus boulder raspberry

Leguminosae

Amorpha canescens
 forma *canescens* (94)
Astragalus crassicaarpus
 var. *paysoni* (93)
Astragalus gracilis
Astragalus lotiflorus
Astragalus missouriensis
Astragalus mollissimus
Astragalus puniceus
Dalea aurea
Dalea candida
 var. *oligophylla*
Dalea enneandra
Dalea formosa (93)
Dalea jamesii
Glycyrrhiza lepidota (93)
Hoffmannseggia drepanocarpa (93)
Hoffmannseggia jamesii
Krameria lanceolata
Melilotus officinalis
Mimosa borealis
Petalostemum tenuifolia
Psoralea argophylla (93)
Psoralea tenuiflorum
Vicia americana

mustard family

rock cress
tansy mustard

wallflower
peppergrass^[3]
bladderpod

saxifrage family

western red currant
buffalo currant

rose family

mountain mahogany
mountain ninebark
wild plum
choke cherry
boulder raspberry

pea family

lead plant

ground-plum

slender milk-vetch
lotus milk-vetch
Missouri milk-vetch
wooly locoweed
Trinidad milk-vetch
golden prairie-clover
white prairie-clover

nine-anther prairie-clover
feather plume
James dalea
wild licorice^[3]
sicklepod rush-pea
James rush-pea
ratany
yellow sweet clover^[3]
pink mimosa
slimleaf prairie-clover
silver-leaf scurf pea
scurf pea
American vetch

Brassicaceae

Grossulariaceae

Ribes aureum
 var. *villosum* (93)

Fabaceae

Caesalpinia drepanocarpa
Caesalpinia jamesii
Krameriaceae

Dalea tenuifolia
Pediomelum argophylla
Psoralidium tenuiflorum

Linaceae

Linum lewisii
Linum rigidum var. *rigidum*

Zygophyllaceae

Tribulus terrestris

Rutaceae

Ptelea trifoliata

Polygalaceae

Polygala alba

Euphorbiaceae

Argythamnia humilis
Argythamnia mercurialina
Croton texensis
Euphorbia fendleri
Euphorbia lata
Euphorbia dentata
 forma *cuphosperma*
Euphorbia marginata
Tragia ramosa

Anacardiaceae

Rhus aromatica var. *pilosissima*
Toxicodendron radicans

Celastraceae

Glossopetalon planitierum

Sapindaceae

Sapindus drummondii (93)

Vitaceae

Parthenocissus quinquefolia
Vitis vulpina

Malvaceae

Sphaeralcea angustifolia
Sphaeralcea coccinea

Tamaricaceae

Tamarix gallica

Violaceae

Hybanthus verticillatus

flax family

blue flax
stiff flax

caltrop family

goat head^[3]

citrus family

wafer-ash

milkwort family

milkwort

spurge family

wild mercury
wild mercury
Texas croton
Fendler spurge
hoary spurge
toothed spurge

Chamaesyce fendleri
Chamaesyce lata

snow-on-the-mountain
noseburn

sumac family

lemon sumac
poison ivy

staff-tree family

grease-bush

soap-berry family

soap-berry

grape family

Virginia creeper
fox grape

mallow family

globe mallow
scarlet globe mallow

tamarisk family

salt cedar^[3]

violet family

green violet

Crossosomataceae

Sapindus saponaria
 var. *drummondii*

Vitis riparia

Loasaceae

Mentzelia decapetala

Cactaceae

Echinocereus viridiflorus

Mammillaria vivipara (93)

Opuntia imbricata

Opuntia phaeacantha var. *major*

Opuntia trichophora (93)

Onagraceae

Gaura coccinea var. *coccinea*

Oenothera serrulata

Oenothera albicaulis (93)

Oenothera lavandulaefolia

Oenothera triloba

Umbelliferae

Cymopterus acaulis (93)

Cymopterus montanus

Asclepiadaceae

Asclepias arenaria (94)

Asclepias asperula

var. *decumbens*

Asclepias macrotis (94)

Asclepias pumila

Asclepias uncialis (93)

Sarcostemma crispum (94)

Convolvulaceae

Convolvulus incanus

Evolvulus nuttallianus

Ipomoea leptophylla (94)

Polemoniaceae

Gilia laxiflora (93)

Boraginaceae

Cryptantha jamesii

Cryptantha minima

Cryptantha thyrsoiflora

stick-leaf family

blazing star

cactus family

green-flowered hedgehog

pincushion cactus

cholla

prickly pear

prickly pear

evening primrose family

scarlet butterfly flower

evening primrose

evening primrose

evening primrose

stemless evening primrose

parsley family

(no common name)

(no common name)

milkweed family

sand milkweed

low milkweed

longhood milkweed

threadleaf milkweed

dwarf milkweed

morning glory family

field bindweed^[3]

Nuttall evolvulus

bush morning-glory

phlox family

gilia

borage family

popcorn flower

small popcorn flower

popcorn flower

Escobaria vivipara

var. *vivipara*

Opuntia polyacantha

var. *trichophora*

Calyophus serrulatus

Calyophus lavandulifolius

Apiaceae

Convolvulus arvensis

Ipomopsis laxiflora

Cryptantha cineria

var. *jamesii*

<i>Lappula redowskii</i> var. <i>occidentalis</i>	stickseed	<i>Lappula occidentalis</i> var. <i>occidentalis</i>
<i>Lithospermum incisum</i>	cutleaf puccoon	
<i>Onosmodium molle</i> var. <i>occidentale</i>	false gromwell	
Verbenaceae	vervain family	
<i>Verbena canadensis</i>	rose vervain	<i>Glandularia canadensis</i>
<i>Verbena bracteata</i>	prostrate vervain	
Labiatae	mint family	Lamiaceae
<i>Monarda pectinata</i>	spotted beebalm	
<i>Salvia azurea</i> var. <i>grandiflora</i>	pitcher sage	
Solanaceae	nightshade family	
<i>Chamaesaracha conioides</i>	false nightshade	
<i>Physalis virginiana</i> var. <i>sonorae</i> (94)	Virginia ground cherry	
<i>Physalis lobata</i>	ground cherry	<i>Quincula lobata</i>
<i>Solanum elaeagnifolium</i>	silverleaf nightshade	
<i>Solanum rostratum</i> (93)	buffalo bur	
Scrophulariaceae	figwort family	
<i>Castilleja sessiliflora</i>	downy indianpaintbrush	
<i>Penstemon albidus</i>	white beardtongue	
<i>Penstemon ambiguous</i> (94)		
<i>Veronica anagallis-aquatica</i>	water speedwell ^[3]	
Martyniaceae	unicorn-plant family	
<i>Proboscidea louisianica</i>	devil's claw	
Plantaginaceae	plantain family	
<i>Plantago purshii</i> var. <i>purshii</i>	wooly plantain	
<i>Plantago purshii</i> var. <i>spinulosa</i> (93)	wooly plantain	
Rubiaceae	madder family	
<i>Galium texense</i>	Texas bedstraw	
Cucurbitaceae	cucumber family	
<i>Cucurbita foetidissima</i>	buffalo gourd	
Compositae	sunflower family	Asteraceae
<i>Agoseris cuspidate</i>	false dandelion	<i>Nothocalais cuspidata</i>
<i>Ambrosia</i> sp. (93)	ragweed	
<i>Ambrosia psilostachya</i>	western ragweed	
<i>Artemisia filifolia</i>	sandsage	
<i>Artemisia glauca</i>	silky wormwood	<i>Artemisia dracunculus</i>

		<i>ssp. glauca</i>
<i>Artemisia ludoviciana</i>	Louisiana sagewort	
<i>Aster ericoides</i>	heather aster	
<i>Aster fendleri</i>	Fendler's aster	
<i>Aster leucelene</i>	white aster	<i>Chaetoppa ericoides</i>
<i>Aster oblongifolius</i>	aromatic aster	
<i>Berlandiera lyrata</i>	green eyes	
<i>Brickellia brachyphylla</i>	(no common name)	
<i>Brickellia californica</i>	(no common name)	
<i>Chrysopsis villosa</i> var. <i>villosa</i>	golden aster	<i>Heterotheca villosa</i> var. <i>villosa</i>
<i>Chrysothamnus nauseosus</i>	rabbit brush	
<i>Cirsium undulatum</i>	wavy-leaf thistle	
<i>Conyza canadensis</i> var. <i>canadensis</i>	horseweed	
<i>Dyssodia papposa</i>	fetid marigold	
<i>Engelmannia pinnatifida</i>	Engelmann's daisy	
<i>Erigeron divergens</i> var. <i>cinereus</i>	fleabane	<i>Erigeron colomexicanus</i>
<i>Evax prolifera</i>	rabbit-tobacco	
<i>Gaillardia pinnatifida</i>	blanket flower	
<i>Grindelia squarrosa</i> var. <i>nuda</i>	curly-top gumweed	
<i>Gutierrezia sarothrae</i>	snakeweed	
<i>Haplopappus spinulosus</i>	cutleaf ironplant	<i>Machaeranthera pinnatifida</i>
<i>Helianthus annuus</i>	annual sunflower	
<i>Hymenopappus flavescens</i>	yellow plainsman	
<i>Hymenopappus tenuifolius</i>	white plainsman	
<i>Hymenoxys acaulis</i>	stemless bitterweed	<i>Tetraneuris acaulis</i>
<i>Hymenoxys scaposa</i> var. <i>linearis</i>	bitterweed	<i>Tetraneuris scaposa</i>
<i>Kuhnia chlorolepis</i>	false boneset	<i>Brickellia eupatorioides</i> var. <i>chlorolepis</i>
<i>Liatris punctata</i> var. <i>punctata</i>	dotted gayfeather	
<i>Lygodesmia juncea</i> (94)	skeleton plant	
<i>Lygodesmia pauciflora</i>	skeletonweed	<i>Stephanomeria pauciflora</i>
<i>Machaeranthera tanacetifolia</i> (93)	tansy aster	
<i>Melampodium leucanthemum</i>	black-foot daisy	
<i>Pericome caudate</i>	(no common name)	
<i>Ratibida columnifera</i>	Mexican hat	
<i>Ratibida tagetes</i> (94)	prairie coneflower	
<i>Senecio douglasii</i> var. <i>longilobus</i>	shrub groundsel	<i>Senecio flaccidus</i>
<i>Senecio plattensis</i>	prairie ragwort	
<i>Senecio tridenticulatus</i>	ragwort	
<i>Solidago mollis</i>	soft goldenrod	
<i>Solidago petiolaris</i> (93)	downy goldenrod	
<i>Thelesperma megapotamicum</i>	greenthread	
<i>Townsendia exscapa</i>	Easter daisy	

Tragopogon major (93)
Verbesina encelioides
Xanthium strumarium
Zinnia grandiflora

Moraceae

Morus alba (94)

goatbeard^[3]
golden crownbeard
cocklebur
wild zinnia

white mulberry^[3]

Tragopogon dubius