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**DOLAN FALLS RANCH
REPORT ON A BRIEF BOTANICAL SURVEY
15 October 1992**

At the invitation of The Nature Conservancy, the botanical resources of the Dolan Falls Ranch were examined during the week of 28 September through 2 October 1992. Populations of two listed endangered species were discovered and mapped, representatives of various plant communities were examined, and a preliminary plant checklist was prepared.

INTRODUCTION

Dolan Falls Ranch occupies more than 18000 acres in Val Verde County, Texas, stretching from the scenic Devils River-Dolan Creek juncture eastward several miles into the drainage of the Dry Devils River, on portions of the Dolan Springs, Clark Waterhole, Carruthers Draw, and Telephone Canyon 7.5' quadrangles (Figure 1). Elevation in this rather rugged terrain ranges from between 1800 and 1900 feet above sea level on higher ridgetops down to about 1300 feet along the Devils River. Val Verde County is described as having a subtropical steppe climate, with mean annual precipitation of 17.2 inches (National Fibers Information Center, 1987).

GEOLOGY

Like much of the Edwards Plateau, the Dolan Falls Ranch is underlain entirely by Cretaceous limestones and dolomites of the Edwards Group. In the northern half of the tract this underlying formation is called the Fort Terrett Member; in the southern half it is referred to as the Devils River Limestone (Waechter et al., 1977). Along drainages this bedrock is mantled by Quaternary alluvial terraces deposits, but on slopes the varied facies of these formations are readily observed, where not obscured by colluvium.

SOILS

The soils of Dolan Falls Ranch are mapped on sheets 27, 28, 37, and 38 of the Val Verde County soil survey (Golden et al, 1982). Only four mapping units are distinguished. Soils of level to gently sloping ridgetops are mapped as Ector-Rock outcrop association, hilly. These Lithic Calciustolls are very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loams with rapid surface runoff, moderate permeability, and very low available water capacity. Soils of most slopes are mapped as Ector-Rock outcrop association, very steep. Soils of some colluvial terraces are mapped as Olmos very gravelly loam. These Petrocalcic Calciustolls are very shallow to shallow, well drained, moderately alkaline, brown very gravelly loams with medium surface runoff and permeability and very low available water capacity. Olmos soils developed on old outwash deposits. Soils on nearly level terraces

along major streams are mapped as Dev soils, frequently flooded. These Cumulic Haplustolls are deep, well drained, moderately alkaline, dark brown very gravelly clay loams with slow to medium surface runoff, moderately rapid permeability, and low available water capacity.

PLANT COMMUNITIES

Several very general topographic/edaphic habitat types might be recognized at Dolan Falls Ranch, including (from top to bottom) 1) level to gently rolling uplands or ridgetops; 2) dry rocky slopes; 3) gentle colluvial slopes and flats 4) mesic canyon bottoms; 5) mesic cliffs and slopes along streams and around springs 6) alluvial terraces; and 7) streambeds and creekbanks. The vegetation of readily accessible representatives (Figure 2) of each of these general habitat types was qualitatively examined, albeit briefly, during this survey, and a discussion follows.

1. Level to gently rolling uplands or ridgetops

These areas lie above a usually well defined contour, often near 1800 feet above sea level, where slope is minimal or less than 5 percent. Soils are very shallow stony loams, often with considerable bedrock exposure and large flags on the surface. Deeper (but still shallow) clay soils are found in small depressional areas. The vegetation consists of shortgrass grassland with some shrub invasion (Table 1). Threeawns (*Aristida* spp.) and hairy tridens (*Erioneuron pilosum*) are perhaps the most important grasses in the shallowest soils, while in pockets of deeper soil curlymesquite (*Hilaria belangeri*) and buffalograss (*Buchloe dactyloides*) are common. Midgrasses such as sideoats grama (*Bouteloua curtipendula*) and green sprangletop (*Leptochloa dubia*) are present but less important, often around shrub thickets where protected from grazing. Mat-forming spikemosses (*Selaginella* spp.) occasionally cover bedrock outcrops, and areas of bare soil are considerable. Most of the shrubs in this site are low in stature, patchily distributed, and provide probably less than 10 percent cover. Huisache (*Acacia berlandieri*), coyotillo (*Karwinskia humboldtiana*), squawbush (*Condalia viridis* and *Condalia spathulata*) are frequent and usually 3 to 4 feet in height. Thickets of Catclaw mimosa (*Mimosa biuncifera*) usually about 2 feet in height and succulents such as leatherstem (*Jatropha dioica*), yucca (*Yucca* spp.), and various cacti are also conspicuous. A federally listed endangered species, Tobusch fishhook cactus (*Ancistrocactus tobuschii*) is scattered in such shortgrass grasslands. A former candidate for the endangered species list, yellow show (*Amoreuxia wrightii*), is another notable member of this flora.

2. Dry rocky slopes

This habitat type is abundantly represented on Dolan Falls Ranch, extending from nearly level ridgetops down usually steep slopes to the more moderate colluvial slopes below. The present vegetation of these slopes is at least visually dominated by shrubs, although in most cases cover by low shrubs (under 3-4 feet tall) is less than 30 percent. Perhaps the most common shrub is guajillo, but cenizo (Leucophyllum frutescens) and coyotillo are also widespread. In many places on the adjacent Devils River State Natural Area, composition of this shrubland is strongly influenced by exposure; drier south-facing slopes tend to support shrublands composed mostly of desert succulents such as lechuguilla (Agave lechuguilla), sotol (Dasyliirion texanum), ocotillo (Fouquieria splendens), and yucca, while less xeric north-facing slopes tend to support open shrublands or woodlands in which larger (6-9 feet) leafy species such as Ashe juniper (Juniperus ashei) and Vasey scrub oak (Quercus pungens var. vaseyana) are more conspicuous. This dichotomy is not so obvious on the slopes at Dolan Falls Ranch, although all of these species are important. However, a few shrub species, such as cliff fendlerbush (Fendlera rupicola), Texas almond (Prunus minutiflora), and mountain mahogany (Cercocarpus montanus) seem to be restricted to less exposed north-facing slopes. Mountain mahogany is apparently rare on the ranch, and only one or two shrubs were encountered at the base of a northeast-facing low bluff on an upper slope. Abundant by comparison is groovestem bouchea (Bouchea linifolia), a shrublet which is perhaps nowhere in Texas more common than in the Devils River area.

Herbaceous cover is generally sparse, limited by rock outcrops and boulders. On narrow level benches where some soil accumulates, a grassland flora similar to that of the uplands is often present. In steeper rockier areas cover by grasses is generally sparse and dominated by threeawns, although sideoats grama, Nealley grama (Bouteloua uniflora), green sprangletop, and tanglehead (Heteropogon contortus) are also common. Little bluestem (Schizachyrium scoparium), the dominant midgrass over the heart of the Edwards Plateau, is at present relatively unimportant. It is most frequently encountered on scoured limestone ledges along Dolan Creek and Devils River, but a few large stands can be found in scattered areas on slopes of various exposure.

3. Gentle colluvial slopes and flats

This habitat type is patchily distributed along the base of steep slopes where not preempted by cliffs or alluvial terraces. Soils are better developed than on slopes, but remain very stony or gravelly. Much of the surface is cover with broken rock, which decreases in size with distance from adjacent slopes. The vegetation in such areas is a shrubland in which cenizo and guajillo are abundant. Quite characteristic is broom snakeweed (Gutierrezia microcephala), which is more common here than in other

habitats. Cover by shrubs 3 to 4 feet in height is generally between 25 and 50 percent. Cover in the ground layer is sparse, limited by stones on the surface and by the effects of past grazing. Threeawns and hairy tridens may be the most important grasses. A federally listed endangered plant species, Tobusch fishhook cactus, is perhaps more common in this habitat zone than elsewhere in the area. Although not listed in Table 3, many of the herbaceous plant species found on adjacent slopes can be found on these sites.

4. Mesic canyon bottoms

In a few canyon bottoms enough moisture is available to support small patches of mostly evergreen woodland. One such area lies at the mouth of the unnamed canyon on the east side of Devils River just south of Grass Patch Springs, about 1 mile south of Dolan Falls. This particular woodland is of interest in that it is the only known location in the United States for polymorphic white oak (Quercus polymorpha), which was only recently discovered (Simpson et al., 1992). This oak is common in the canopy, with some trees reaching 40 feet in height. Plateau live oak (Quercus fusiformis) and pecan (Carya illinoensis) are also important. Texas mountain laurel (Sophora secundiflora), Mexican buckeye (Ungnadia speciosa), and goldenball leadtree (Leucaena retusa) are common or characteristic shrubs on rocky shaded banks of the canyon. Steep slopes, rock outcrop, deep alluvial gravel, and periodic flooding restrict development of a ground layer, and few herbaceous plants were seen (Table 4).

5. Mesic cliffs and slopes along streams and around springs

Similarly dependent upon moisture are mostly evergreen woodlands found in narrow bands on steep cliffs and talus slopes along streams and in the vicinity of springs. The vegetation of these woodlands is typically a melange of a few woody plant species unique to such habitats as well as a large number of species commonly encountered elsewhere and occupying intermixed drier microhabitats. One shrub unique to such cliffs and breakdown slopes is Texas snowbells (Styrax texana), a federally listed endangered species which is endemic to a few counties along the southern edge of the Edwards Plateau. Fewer than 100 Texas snowbells shrubs are presently known to occur in the wild. One mature Texas snowbell shrub was found near the top of the breakdown slope at the foot of the east-facing limestone bluff on the west bank of Devils River about 300 to 500 feet south of Dolan Falls. Although portions of this slope are shaded by large plateau live oak trees, the area around the snowbell is a steep pile of large boulders on which shrubs are the principal vegetation; these shrubs form thickets except where growth is restricted by boulders. Associates include Mexican buckeye (Ungnadia speciosa), Roemer acacia (Acacia roemeriana), Texas kidneywood (Eysenhardtia texana), Texas persimmon, coyotillo, and guajillo. Ground cover is

insignificant and few herbaceous plant species were seen in the fall (Table 5a).

Texas snowbells was unsuccessfully sought on a mile long stretch of seemingly appropriate habitat along the southeast bank of Dolan Creek between Live Oak Canyon and Devils River; this area lies directly between the location of the one snowbell shrub presently known from Devils River State Natural Area and the one mature shrub described above. The vegetation of this northwest-facing boulder slope consists of a fairly continuous strip of mature plateau live oak trees mixed with a few pecan (*Carya illinoensis*), with an understory of Texas mountainlaurel, Mexican buckeye, goldenball leadtree, bumelia (*Bumelia lanuginosa* var. *texana*) and other shrubs (Table 5b), with escaped fig trees (*Ficus carica*) locally abundant in the vicinity of the area's numerous springs. Although a variety of microhabitats is present along this slope, no Texas snowbell shrubs were encountered.

6. Alluvial terraces

Along much of the Devils River the floodplain is scoured to limestone bedrock by periodic floods, and little soil has accumulated. However, in some areas such as along the east bank of the river between Dolan Falls and Grass Patch Springs, pockets of deep silty alluvial soil are present. These well watered soils support mixed evergreen-deciduous woodlands in which pecan and plateau live oak, many exceeding 30 feet in height, are the principal trees. Understory shrubs in the deep shade of these trees include Texas mountainlaurel, guajillo, Texas persimmon, and granjeno (*Celtis pallida*). Ground cover is grassy, with speargrass (*Stipa leucotricha*), bermudagrass (*Cynodon dactylon*), and Virginia wildrye (*Elymus virginicus*) providing relatively high percent cover. These live oak-pecan woodlands are small in areal extent and are intermixed with other types. Toward the creek this woodland is bordered by a narrow strip of waterloving trees such as sycamore (*Platanus occidentalis*), fresno (*Fraxinus berlandieri*), and black willow (*Salix nigra*). Upslope only a few feet the live oak-pecan woodland is replaced by mesquite (*Prosopis glandulosa*)-huisache woodland or by the guajillo-cenizo shrubland found on dry colluvial slopes.

7. Streambeds and creekbanks

Although deep silty alluvial terraces and the woodlands they support are absent from most of the ranch, a variable riparian plant community is one of the most unique features of the area. Sycamore and black willow trees are scattered along the length of Dolan Creek and Devils River; most are small in stature (less than 30 feet tall). Shrubs and small trees such as willow baccharis (*Baccharis neglecta*), buttonbush (*Cephalanthus occidentalis*), and fresno are similarly scattered, although along the margin of deepwater pools willow baccharis often forms dense thickets.

Stands of tall grasses and sedges are also conspicuous along such pools (e.g., along Devils River just north of Dolan Creek); switchgrass (Panicum virgatum), sawgrass (Cladium jamaicense), and giant cane (Arundo donax) are common. In the water itself, tussock sedge (Eleocharis rostellata) forms interlocking rounded clumps about 2 feet high and wide in fairly deep water near some gravelly rapids. Some backwater areas are quiet enough to support rooted aquatic plants like yellow spatterdock (Nuphar luteum) and broadleaf pondweed (Potamogeton nodosus), while in the most swiftly flowing water American waterwillow (Justicia americana) may be the only submersed aquatic species. Scoured limestone bedrock benches border the river in some areas, and moist clayey soils in fractures on these benches support a number of sedges and broadleaf riparian species (Table 7), especially around springs where aquatics like water cress (Nasturtium officinale) and duckweed (Lemna valdiviana) are locally abundant. In other areas the waterways are bordered by deep beds of gravel on which desert willow (Chilopsis linearis) and splitleaf brickellia (Brickellia laciniata) often form open shrublands.

PLANT SPECIES OF INTEREST

Two federally listed endangered plant species are known to occur on the Dolan Falls Ranch. Texas snowbells, discussed in section 5a above, is represented by a single mature shrub and three seedlings. Tobusch fishhook cactus, mentioned in sections 1 and 3 above, was more frequently encountered. A total of 100 live plants (and 29 dead plants) were counted at 13 points along informal transects. It seems likely that these individuals represent a population that numbers more than 1000. Information about location of Tobusch fishhook cactus at Dolan Falls Ranch is included as Appendix 1.

Another plant species highlight is yellow show (Amoreuxia wrightii), a former candidate for the endangered species list. Three plants were found in an upland grassland along a north-south jeep track about 0.2 to 0.3 miles northeast of its junction, on the ridgetop about 2 airmiles east of Dolan Falls, with the east-west jeep trail leading through Sheep Camp and Leon Spring Canyons.

The polymorphous white oak (Quercus polymorpha) at area 4 represent the only wild population known in the United States. According to Simpson et al (1992), the nearest population of Quercus polymorpha is 500 kilometers to the southeast near Sabinas Hidalgo in the Mexican state of Nuevo Leon.

Anacacho orchid (Bauhinia congesta) is not a true orchid but instead a leguminous shrub with attractive orchid-like flowers. According to Simpson et al (1992), Jackie Smith and Mary Butterwick found this species near Grass Patch Springs, and John Carpenter and John Karges (pers. comm. to Pat McNeal) found a few shrubs along the west bank of the Devils River just north of Dolan Creek during

the summer of 1992. This shrub is known in Texas from a few spots in Val Verde County and the Anacacho Mountains of Kinney County.

One true orchid species was encountered on the Dolan Falls Ranch. A few stream epipactis (Epipactis gigantea) plants were found on an undercut limestone ledge along the west side of the Devils River at the spot where swimmers exit from the pool immediately below Dolan Falls. These orchids and the associated ferns in this sheltered microhabitat are dependent on the extra moisture provided by seepage and general proximity to perennial water. This orchid is not a globally rare species-- it is distributed over much of western North America-- but the flowers, which may be present in late spring and early summer, may nonetheless be of interest to visitors.

Groovestem bouchea (Bouchea linifolia) also deserves mention. Perhaps nowhere in its limited distribution in Texas is this shrublet more common than on the Dolan Falls Ranch and vicinity, where it is a colorful component of shrublands on steep slopes and colluvial flats, flowering in summer and early fall when floral display by other species is lacking.

Oak dodder (Cuscuta exaltata) is an odd feature of the flora of Dolan Falls Ranch. More than twenty dodder species are found in Texas, all of them true parasites that lack roots, leaves, and chlorophyll; most species resemble a mass of orange string or thread tangled among the stems and leaves of the various host plants. Oak dodder is parasitic on oaks and some other woody plant species; it is known only from Texas and Florida. Although widely distributed across Texas, it is rarely encountered even though it is quite conspicuous. Oak dodder was found on a single Vasey oak on the north edge of the Leon Spring Canyon road ca. 0.3 miles east of the windmill near the mouth of the canyon.

One of the nipple cacti, Mammillaria prolifera, is another of the plant specialties of Dolan Falls Ranch. According to Burford Westlund, a Texas cactus expert, this tiny cactus is seldom encountered in Texas, and although only one plant was found in a remote part of the first canyon on the east side of the Devils River south of the Grass Patch Springs canyon, other plants may be found on dry rock outcrops elsewhere on the property.

Although many showy hibiscus (Hibiscus sp.) are found in parts of the world that receive much more rainfall, a few are found in the arid parts of North America. Tulipan del monte (Hibiscus cardiophyllus) was found along the base of the west-facing bluff on the open limestone shelf along the east bank of the Devils River about 200 to 500 feet upstream from Dolan Creek. Coulter desert-rose (Hibiscus coulteri) was found in chalky dust in a large rock shelter on the lower south-facing slope on the north side of the canyon east of Grass Patch Springs near a fenceline crossing about 0.3-0.4 miles east of the Devils River.

Several other species encountered on Dolan Falls Ranch may be of sufficient academic interest to future surveyors to warrant comment. Seymeria texana was found on a lower east-facing slope in a north-draining tributary of the major canyon joining the Devils River at Grass Patch Springs, about 0.6 airmiles southsoutheast of Grass Patch Springs; additional information is provided on the voucher specimen label (Carr, McNeal, & Westlund 12406, TEX-LL). A single mountain mahogany (Cercocarpus montanus) was seen at the foot of the caprock conspicuously exposed upslope to the west of the Seymeria site. It was assumed, as it turned out erroneously, that this attractive shrub might be encountered in other sheltered rocky areas during this survey, and therefore was not collected or determined to variety. Cliff fendlerbush (Fendlera rupicola) was collected in the Grass Patch Spring canyon (Carr, McNeal, & Westlund 12408, TEX-LL) and was found in several other locations, mostly on or about north-facing rock outcrops. Texas almond (Prunus minutiflora) was found to be surprisingly frequent in similar habitats (Carr, McNeal, & Westlund 12410, TEX-LL).

Two yucca-like desert succulents should also be sought on Dolan Falls Ranch; neither was found during this survey, but both are present in small numbers on the adjacent Devils River State Natural Area. The "red yucca" of the nursery trade (Hesperaloe parviflora), commonly cultivated in xeriscapes across Texas, is native to this part of Texas and adjacent Mexico. Hesperaloe funifera, a much larger plant, is represented at Devils River SNA by fewer than five plants; these are the only plants known to occur in the United States. Both of these Hesperaloe species should be sought on dry open rocky slopes and colluvial flats.

A list of plant species observed during these surveys at Dolan Falls Ranch is presented in Appendix 2.

Table 1. Plant species observed in grasslands on level to gently rolling uplands or ridgetops, area 1, Dolan Falls Ranch, 28 September - 2 October 1992.

WOODY PLANTS

Acacia berlandieri
 Acacia smallii
 Aloysia gratissima
 Ancistrocactus tobuschii
 Berberis trifoliolata
 Castela texana
 Condalia spathulata
 Condalia viridis
 Coryphantha sulcata
 Dalea argyrea
 Dalea formosa
 Dasyilirion texanum
 Echinocereus enneacanthus
 Echinocereus triglochidiatus
 Ephedra antisyphilitica
 Epithelantha micromeris
 Ferocactus hamatacanthus
 Forestiera angustifolia
 Guaiacum angustifolium
 Jatropha dioica
 Juniperus ashei
 Karwinskia humboldtiana
 Koeberlinia spinosa
 Leucophyllum frutescens
 Mammillaria heyderi
 Mimosa biunicifera
 Neolloydia conoidea
 Opuntia leptocaulis
 Opuntia sp. (O. lindheimeri?)
 Yucca sp. (Y. reverchonii?)
 Yucca sp. (Y. torreyi?)
 Salvia ballotaeiflora
 Ziziphus obtusifolius

HERBACEOUS PLANTS

Abutilon incanum
 Acourtia runcinata
 Allium kunthii
 Amoreuxia wrightii
 Anthericum torreyi
 Aristida spp.
 Boerhaavia linearifolia
 Bouteloua curtipendula
 Buchloe dactyloides
 Cassia lindheimeriana
 Centaurium calycosum
 Cheilanthes horridula
 Cooperia pedunculata
 Croton monanthogynus
 Desmanthus velutinus
 Dyssodia pentachaeta
 Erigeron modestus
 Erioneuron pilosum
 Evax verna
 Gaillardia pulchella
 Hedeoma acinoides
 Hedeoma drummondii
 Hedyotis acerosa
 Hedyotis nigricans
 Heteropogon contortus
 Hilaria belangeri
 Ibervillea tenuisecta
 Leptochloa dubia
 Linum sp. (L. rupestre?)
 Macrosiphonia macrosiphon
 Oenothera triloba
 Plantago rhodosperma
 Polygala lindheimeri
 Portulaca mundula
 Portulaca retusa
 Rivina humilis
 Salvia farinacea
 Scutellaria drummondii
 Selaginella sp.
 Sida filicaulis
 Thyralis angustifolia
 Tiquilia canescens
 Triodanis coloradoensis
 Verbena canescens

Table 2. Plant species observed in grasslands and shrublands on dry rocky slopes, area 2, Dolan Falls Ranch, 28 September - 2 October 1992.

WOODY PLANTS

Acacia berlandieri
 Acacia rigidula
 Agave lechuguilla
 Berberis trifoliolata
 Bernardia myricaefolia
 Bouchea linifolia
 Calliandra conferta
 Cercocarpus montanus
 Condalia viridis
 Croton fruticulosus
 Croton torreyanus
 Dalea formosa
 Dalea frutescens
 Dasylirion texanum
 Echinocereus enneacanthus
 Echinocereus triglochidiatus
 Ephedra antisyphilitica
 Epithelantha micromeris
 Eysenhardtia texana
 Fendlera rupicola
 Ferocactus hamatacanthus
 Forestiera reticulata
 Fouquieria splendens
 Guaiacum angustifolium
 Jatropha dioica
 Juniperus ashei
 Karwinskia humboldtiana
 Leucophyllum frutescens
 Mimosa biunicifera
 Mimosa borealis
 Neolloydia conoidea
 Opuntia leptocaulis
 Opuntia sp. (*O. lindheimeri*?)
 Prunus minutiflora
 Quercus pungens var. *vaseyana*
 Yucca sp. (*Y. reverchonii*?)
 Yucca sp. (*Y. torreyi*?)
 Salvia ballotaeiflora
 Viguiera stenoloba

HERBACEOUS PLANTS

Abutilon incanum
 Acalypha lindheimeri
 Acleisanthes longiflora
 Acourtia runcinata
 Allium kunthii
 Amsonia longiflora

Aristida spp.
 Boerhaavia linearifolia
 Bouteloua curtipendula
 Bouteloua eriopoda
 Bouteloua gracilis
 Bouteloua uniflora
 Cassia lindheimeriana
 Centaurium calycosum
 Cheilanthes horridula
 Commelina erecta
 Cooperia pedunculata
 Croton monanthogynus
 Dyssodia pentachaeta
 Eriochloa sericea
 Erioneuron pilosum
 Gaillardia pulchella
 Hedeoma acinoides
 Hedeoma drummondii
 Hedyotis acerosa
 Hedyotis nigricans
 Heliotropium tenellum
 Heteropogon contortus
 Hilaria belangeri
 Leptochloa dubia
 Linum rupestre
 Macrosiphonia macrosiphon
 Menodora longiflora
 Mentzelia oligosperma
 Notholaena candida
 var. *copelandii*
 Notholaena parvifolia
 Oenothera triloba
 Pellaea atropurpurea
 Penstemon baccharifolius
 Polygala lindheimeri
 Rhynchosia texana
 Schizachyrium scoparium
 Scutellaria drummondii
 Selaginella sp.
 Seymeria texana
 Sida filipes
 Sporobolus asper
 Thyralis angustifolia
 Tiquilia canescens
 Tridens muticus
 Triodanis coloradoensis
 Verbena canescens
 Zexmenia hispida

Table 3. Plant species observed in grasslands and shrublands on gentle colluvial slopes and flats, area 3, Dolan Falls Ranch, 28 September - 2 October 1992. Many of the species of adjacent steeper slopes are also found in these areas but are not listed here.

WOODY PLANTS

Acacia berlandieri
 Berberis trifoliolata
 Bouchea linifolia
 Coryphantha sulcata
 Echinocereus enneacanthus
 Epithelantha bokei
 Gutierrezia microcephala
 Heliotropium torreyi
 Leucophyllum frutescens
 Mammillaria heyderi
 Neolloydia conoidea
 Opuntia lindheimeri
 Sophora secundiflora
 Yucca sp.

HERBACEOUS PLANTS

Argythamnia humilis
 Aristida spp.
 Bouteloua curtipendula
 Bouteloua hirsuta
 Chloris cucullata
 Croton dioicus
 Croton monanthogynus
 Dyssodia pentachaeta
 Erioneuron pilosum
 Gaillardia pulchella
 Hedyotis acerosa
 Krameria lanceolata
 Linum rigidum var. berlandieri
 Cheilanthes cochisense
 Cheilanthes horridula
 Phyllanthus polygonoides
 Selaginella sp.
 Thyralis angustifolia

Table 4. Plant species observed in woodland in mesic canyon bottom, area 4, Dolan Falls Ranch, 28 September - 2 October 1992.

WOODY PLANTS

Acacia berlandieri
 Acacia roemeriana
 Bernardia myricaefolia
 Bumelia lanuginosa var. texana
 Carya illinoensis
 Celtis reticulata
 Diospyros texana
 Karwinskia humboldtiana
 Leucaena retusa
 Ptelea trifoliata
 Quercus fusiformis
 Quercus polymorpha
 Rhus toxicodendron
 Rhus virens
 Sophora secundiflora
 Ungnadia speciosa
 Vitis berlandieri

HERBACEOUS PLANTS

Aristolochia coryi
 Bouteloua curtipendula
 Cocculus carolinus
 Euphorbia angusta
 Notholaena candida var.
 copelandii
 Passiflora affinis
 Pellaea ovata
 Setaria sheelei
 Stipa leucotricha

Table 5a. Plant species observed in woodland on mesic cliffs and slopes along streams and around springs, area 5a, Dolan Falls Ranch, 28 September - 2 October 1992.

WOODY PLANTS

Acacia berlandieri
 Acacia rigidula
 Acacia roemeriana
 Agave lechuguilla
 Bernardia myricaefolia
 Bumelia lanuginosa
 var. texana
 Carlowrightia torreyana
 Celtis pallida
 Celtis reticulata
 Colubrina texensis
 Diospyros texana
 Eysenhardtia texana
 Forestiera reticulata
 Fouquieria splendens
 Guaiacum angustifolium
 Karwinskia humboldtiana
 Leucaena retusa
 Leucophyllum frutescens
 Opuntia lindheimeri
 Quercus fusiformis
 Quercus pungens
 var. vaseyana
 Rhus toxicodendron
 var. eximia
 Rubus trivialis
 Salvia ballotaeflora
 Smilax bona-nox
 Sophora secundiflora
 Styrax texana
 Ungnadia speciosa
 Vitis sp. (V. berlandieri?)
 Ziziphus obtusifolius

HERBACEOUS PLANTS

Abutilon incanum
 Acalypha lindheimeri
 Aristida spp.
 Bothriochloa ischaemum
 Bouteloua curtipendula
 Cassia lindheimeriana
 Cheilanthes horridula
 Cocculus carolinus
 Elymus canadensis
 Galactia texana
 Hedeoma sp. (H. drummondii?)
 Maurandya antirrhiniflora
 Notholaena candida
 var. copelandii
 Passiflora affinis
 Pellaea ovata
 Polygala lindheimeri
 Tragia ramosa

Table 5b. Plant species observed in woodland on mesic cliffs and slopes along streams and around springs, area 5b, Dolan Falls Ranch, 28 September - 2 October 1992.

WOODY PLANTS

Acacia berlandieri
 Baccharis neglecta
 Bumelia lanuginosa var. texana
 Carya ilinoensis
 Celtis reticulata
 Cephalanthus occidentalis
 Croton fruticulosus
 Diospyros texana
 Ficus carica
 Forestiera reticulata
 Fraxinus berlandieri
 Juniperus ashei
 Karwinskia humboldtiana
 Leucaena retusa
 Quercus fusiformis
 Quercus pungens var. vaseyana
 Parthenocissus quinquefolia
 Platanus occidentalis
 Ptelea trifoliata
 Rhus toxicodendron
 var. eximia
 Rhus toxicodendron
 var. vulgaris
 Rhus virens
 Rubus trivialis
 Smilax bona-nox
 Sophora secundiflora
 Ungnadia speciosa
 Vitis sp.
 Zanthoxylum hirsutum

HERBACEOUS PLANTS

Acalypha lindheimeri
 Cissus incisa
 Clematis pitcheri
 Convolvulus sp.
 Dichanthelium sp.
 Passiflora affinis
 Penstemon baccharifolius
 Perityle lindheimeri
 Teucrium canadense
 Tillandsia recurvata

Table 6. Plant species observed in woodland/shrubland on alluvial terraces, area 6, Dolan Falls Ranch, 28 September - 2 October 1992.

WOODY PLANTS

Acacia berlandieri
Acacia smallii
Aloysia gratissima
Baccharis neglecta
Berberis trifoliolata
Bumelia lanuginosa
Carya illinoensis
Celtis pallida
Celtis reticulata
Condalia viridis
Croton torreyanus
Dasylyrion texanum
Diospyros texana
Fraxinus berlandieri
Guaiacum angustifolium
Heliotropium torreyi
Jatropha dioica
Juniperus ashei
Juniperus pinchotii
Karwinskia humboldtiana
Leucophyllum frutescens
Mimosa biuncifera
Mimosa borealis
Opuntia leptocaulis
Platanus occidentalis
Prosopis glandulosa
Ptelea trifoliata
Quercus fusiformis
Quercus pungens
 var. *vaseyana*
Sapindus saponaria
Smilax bona-nox
Sophora secundiflora

HERBACEOUS PLANTS

Abutilon incanum
Ambrosia psilostachya
Cassia lindheimeriana
Chloris cucullata
Cynodon dactylon
Dichanthium annulatum
Elymus canadensis
Elymus virginicus
Eragrostis intermedia
Marrubium vulgare
Panicum virgatum
Pappaphorum bicolor
Setaria scheelei
Sorghum halepense
Stipa leucotricha
Teucrium canadense
Tillandsia recurvata
Verbena bipinnatifida
Verbesina encelioides

Table 7. Plant species observed along streambeds and creekbanks, Dolan Falls Ranch, 28 September - 2 October 1992.

WOODY PLANTS

Baccharis neglecta
 Brickellia laciniata
 Cephalanthus occidentalis
 Chilopsis linearis
 Ficus carica
 Fraxinus berlandieri
 Juglans microcarpa
 Platanus occidentalis
 Salix nigra

GRASSES/SEDGES

Arundo donax
 Bothriochloa ischaemum
 Cladium jamaicense
 Cynodon dactylon
 Cyperus cf. elegans
 Cyperus odoratus
 Dichromena colorata
 Eleocharis caribaea
 Eleocharis montividentis
 Eleocharis rostellata
 Fuirena simplex var. simplex
 Juncus interior
 Juncus torreyi
 Panicum virgatum
 Paspalum sp.
 Schizachyrium scoparium
 Setaria geniculata

FERNS

Adiantum capillus-veneris
 Thelypteris kunthii

FORBS

Ambrosia psilostachya
 Asclepias incarnata
 Aster sp. (A. subulatus?)
 Bacopa monnieri
 Boehmeria cylindrica
 Centella asiatica
 Cynoctonum mitreola
 Epipactis gigantea
 Eupatorium serotinum
 Eustoma exaltata
 Hydrocotyle verticillata
 Indigofera lindheimeriana
 Justicia americana
 Lemna valdiviana
 Lobelia berlandieri
 var. brachypoda
 Lobelia cardinalis
 Lythrum californicum
 Mecardonia vandellioides
 Mimulus glabratus
 Najas guadalupensis
 Nasturtium officinale
 Nuphar luteum
 Persicaria punctata
 Persicaria sp.
 Phyla nodiflora
 Potamogeton nodosus
 Salvia farinacea
 Samolus cuneatus
 Samolus parviflorus
 Solidago juliae
 Verbena scabra
 Xanthium strumarium

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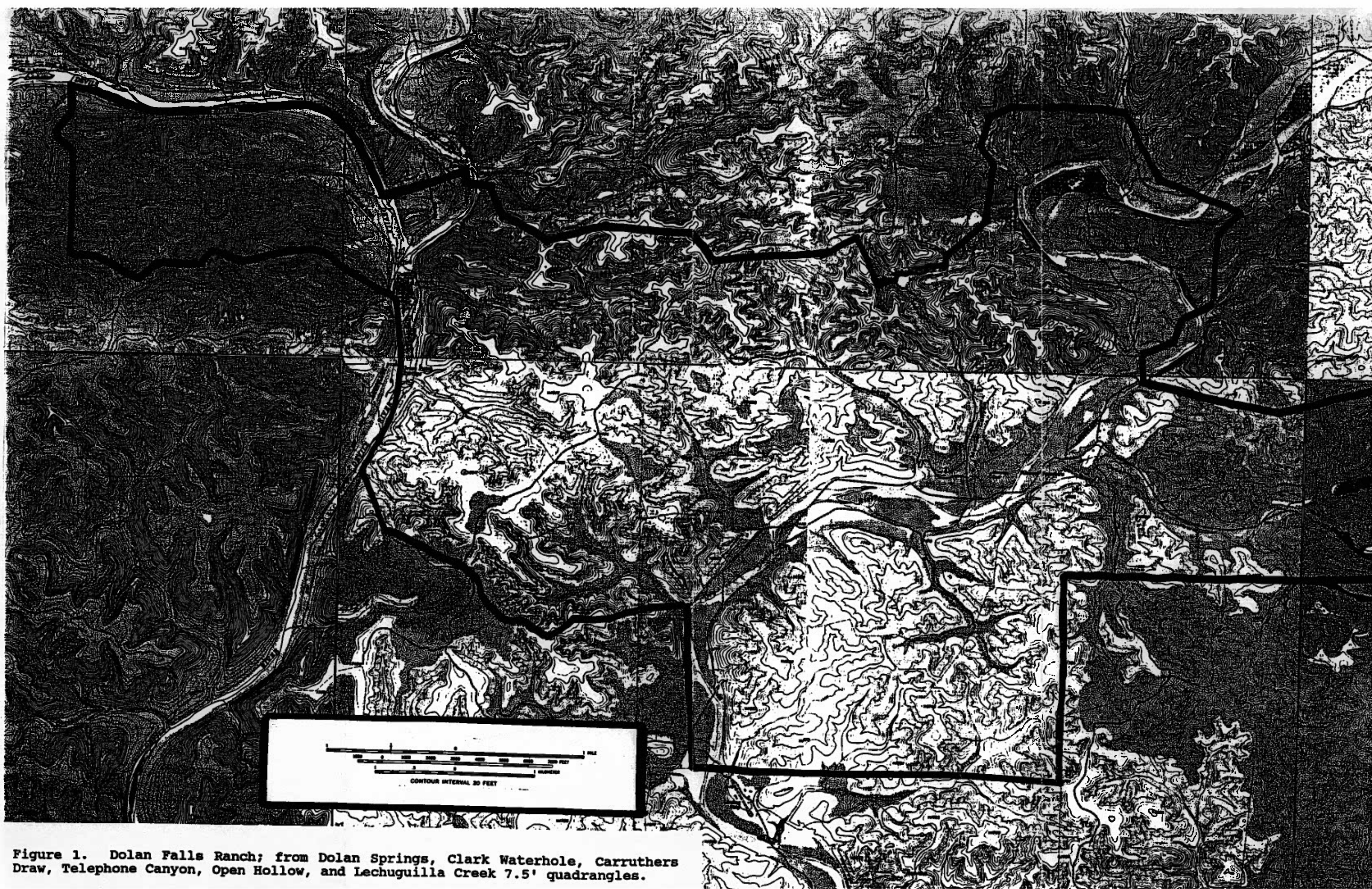


Figure 1. Dolan Falls Ranch; from Dolan Springs, Clark Waterhole, Carruthers Draw, Telephone Canyon, Open Hollow, and Lechuguilla Creek 7.5' quadrangles.

APPENDIX 1
TOBUSCH FISHHOOK CACTUS POPULATIONS
DOLAN FALLS RANCH
16 OCTOBER 1992

During a botanical inventory of Dolan Falls Ranch conducted 28 September through 2 October 1992, Tobusch fishhook cactus (*Ancistrocactus tobuschii*) was sought in appropriate habitat by Burford Westlund, Pat McNeal, Bill Carr and other visitors. Cacti were encountered at 13 points along informal transects on gentle colluvial slopes and flats (Figure 3) and on nearly level uplands (Figure 4). In all, 100 live plants and 29 dead plants were observed. Thousands of acres of similar habitat were not examined, and it is assumed that the total population of Tobusch fishhook cactus at Dolan Falls Ranch numbers more than 1000 individuals. Additional surveys are recommended for early spring 1993. Following is a brief description of each of the presently known 13 population/sites. A list of associates is provided for upland sites; through oversight, no list of associates was prepared for sites on colluvial slopes and flats.

Population/site A

Location: NE side of gravel road leading from ford of Devil's River near mouth of Dolan Creek NW along landing strip and into nameless canyon, ca. 0.8 roadmiles NNW of old abandoned house (marked as open square on topo), just N of crossing of a moderate drain, N of point at which road ascends from level area (old airstrip). Population/site B is across moderate drain to S. Telephone Canyon Quadrangle.

Description of site: ca. 5 percent slope; very stony clay soil; *Leucophyllum frutescens*-*Acacia berlandieri*-*Gutierrezia microcephala* shrub cover ca. 30 percent; cover in ground layer sparse, mostly *Aristida* spp., *Erioneuron pilsoum*, *Hedyotis acerosa*; *Neolloydia conoidea*, *Epithelantha bokei*, *Mammillaria heyderi*, *Coryphantha sulcata*, *Echinocereus enneacanthus* also present.

Soil: mapped as ERG, Ector-Rock outcrop association, very steep; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 15 live plants, 2 dead; mostly large (2 in diameter), few smaller.

Date surveyed: 1 October 1992, Burford Westlund, Pat McNeal, Bill Carr.

Population/site B

Location: NE side of gravel road leading from ford of Devils River near mouth of Dolan Creek NW along landing strip and into nameless canyon, 0.5 roadmiles NNW of old abandoned house (marked as open square on topo), just N of a small drain just N of point at which road ascends from level area (old airstrip). Utility pole in middle or western half of site; at this pole the trend of the wire changes from roughly N-S to roughly SW-NE. Population/site A is across moderate drain to N. Telephone Canyon and Dolan Springs Quadrangles.

Description of site: 5-10 percent slope, very stony clay soil; *Leucophyllum frutescens*-*Acacia berlandieri*-*Gutierrezia microcephala* shrub cover ca. 30 percent; cover in ground layer sparse, mostly *Aristida*, *Hedyotis acerosa*, with some *Bouteloua gracilis*; *Neolloydia conoidea*, *Mammillaria heyderi*, *Coryphantha sulcata*, *Echinocereus enneacanthus* also present.

Soil: mapped as ERG, Ector-Rock outcrop association, very steep; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 17 live plants, 13 dead.

Date surveyed: 1 October 1992, Burford Westlund, Pat McNeal, Bill Carr.

Population/site C

Location: NE side of gravel road leading from ford of Devil's River near mouth of Dolan Creek NW along landing strip and into nameless canyon, 0.2-0.3 roadmiles NNW of old abandoned house (marked as open square on topo); this spot is apparently right on the old airstrip runway. Dolan Springs Quadrangle.

Description of site: nearly level, slope 1 percent or less; gravelly clay soil, numerous stones on surface but cobbles mostly absent (removed?); *Acacia berlandieri*-*Leucophyllum frutescens* shrubland with ca. 25 percent cover of shrubs 4 feet in height; shortgrass openings with *Erioneuron pilosum*, *Aristida* spp.; associates as in populations/sites A/B. Although it seems logical to assume that this airstrip was leveled with heavy machinery at some time in the past (at least once, perhaps regularly), no artifacts of blading were obvious.

Soil: mapped as ERG, Ector-Rock outcrop association, very steep; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate

permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: ca. 25 live plants in small area; no count taken of dead plants.

Date surveyed: 29 September 1992, Pat McNeal, Bill Carr; 1 October 1992, Burford Westlund, Pat McNeal, Bill Carr.

Population/site D

Location: E side of gravel road leading from houses on W side of Devils River NNW to landing strip opposite Blue Spring, N side of small drain S of abandoned house marked as open square on topo. Dolan Springs Quadrangle.

Description of site: lower colluvial slope (less than 10 percent); gravelly clay with large stones and cobbles up to 8" in longest direction common on surface (50 percent or more cover); openings in *Leucophyllum frutescens*-*Acacia berlandieri*-*Gutierrezia microcephala*; openings with patchy cover of *Selaginella* mats and short grasses and forbs such as *Erioneuron pilosum*, *Aristida* spp., *Dyssodia pentachaeta*, *Hedyotis acerosa*, *Croton dioicus*, *Linum rigidum* var. *berlandieri*, *Krameria lanceolata*, *Phyllanthus polygonoides*; other important woody plants include *Heliotropium torreyi*, *Berberis trifoliolata*, *Opuntia lindheimeri*.

Soil: mapped as ERG, Ector-Rock outcrop association, very steep; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 16 live plants, 4 dead.

Date surveyed: 28 September 1992, Burford Westlund, Pat McNeal, Bill Carr; 1 October 1992, Burford Westlund.

Population/site E

Location: steep midslope ca. 500 feet W of cabin, i.e., ca. 800 ft. W of Dolan Falls. Dolan Springs Quadrangle.

Description of site: steep (40 degree?), east-facing, very rocky slope; shallow very stony soil; *Leucophyllum frutescens*-*Acacia berlandieri* shrubland; percent cover not determined; openings scattered, mostly boulders.

Soil: mapped as ERG, Ector-Rock outcrop association, very steep; very shallow to shallow, well drained, moderately alkaline, dark

grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 1 live plant.

Date surveyed: 30 September 1992, Burford Westlund.

Population/site F

Location: W side of entrance road, 0.0- 0.2 mi. S of entrance gate, centered ca. 0.7 airmiles NNE of mouth of Dolan Creek at Devils River. Dolan Springs Quadrangle.

Description of site: slopes of almost 0 to perhaps 10 degrees, gravelly clay soil with stones and cobbles covering 50 percent of surface; cenizo-guajillo shrubland with Selaginella common in openings, little grass cover.

Soil: mapped as OMD, Olmos very gravelly loam; very shallow to shallow, well drained, moderately alkaline, brown very gravelly loam with medium surface runoff and permeability and very low available water capacity. Petrocalcic Calciustolls.

Geology: old outwash deposits per soil survey.

Number of plants observed: 8 live plants, 0 dead.

Date surveyed: 1 October 1992, Burford Westlund, Pat McNeal, Bill Carr.

Population/site G

Location: with 100 feet on windmill on N side of road in Leon Spring Canyon, ca. 1/4 mi E of Dolan Falls, ca. 1/4 mi ESE of mouth of Dolan Creek at Devils River. Dolan Springs Quadrangle. Both plants seen were 30-40 feet WNW of windmill.

Description of site: nearly level to gently sloping (5 percent?) area which was heavily utilized when ranch was active; tight gravelly clay soil, some stones on surface, most of which were recently moved around (mechanically) according to Westlund; *Acacia berlandieri*-*Leucophyllum frutescens*-*Gutierrezia microcephala* shrubland, with *Heliotropium torreyi*, *Dyssodia penmtachaeta*, *Tiquilia canescens*, *Erioneuron pilosum*, *Aristida* spp. in openings. Livestock no doubt lingered in this area when the ranch was active, and periodic maintenance of water pump, etc., no doubt resulted in more vehicle traffic here than in most parts of the ranch. Given this presumed history, the site would not seem to be among the most profitable places to search for *A. tobuschii*; nonetheless, the cactus is present, albeit in very small numbers.

Soil: mapped as ERG, Ector-Rock outcrop association, very steep; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 1 live plant, 1 dead.

Date surveyed: 30 September 1992, Burford Westlund, Pat McNeal, Bill Carr, Terry Cook, Jackie Davis.

Population/site H

Location: ridgetop N of gravel road up Leon Spring Canyon, S of Leon Spring Canyon proper, ca. 1.5 airmiles due E of windmill near mouth of Leon Spring Canyon.

Description of site: shallow stony clay soil on spine of ridgetop.

Soil: mapped as ERG, Ector-Rock outcrop association, very steep; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 6 live plants 2 dead.

Date surveyed: 2 October 1992, Burford Westlund, Pat McNeal.

Population/site I

Location: both sides of road running NE-SW along divide between Leon Canyon and Sheep Camp Canyon, ca. 0.1-0.3 mi NE of this road's jct. with main gravel road running E-W through Leon and Sheep Camp Canyons. Dolan Springs Quadrangle. Cacti were found between road and fence to west, ca. 0.2 mi. NE of jct.

Description of site: nearly level to benched, very gently sloping upland; ca. 25 percent cover of shrubs mostly 3 ft tall or less, usually in clumps or mottes with among sparsely vegetated rocky grassland openings; in addition to locally common species such as *Acacia berlandieri*, *Jatropha dioica*, and *Mimosa biunicifera*, some locally uncommon species such as *Castela texana*, *Condalia spathulata*, and *Koeberlinia spinosa* are present; ground layer in open areas consists of mats of *Selaginella* sp. and scattered grasses such as *Erioneuron pilosum*, *Bouteloua curtispindula*, and *Aristida* spp.; pockets of deeper soil support *Hilaria belangeri*.

Soil: mapped as ERF, Ector-Rock outcrop association, hilly; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 2 live plants, 1 dead.

Date surveyed: 30 September 1992, Burford Westlund, Pat McNeal, Bill Carr, Terry Cook, Jackie Davis.

Population/site J

Location: upland within 500 feet of windmill, both sides of road running NE-SW along divide between Leon Canyon and Sheep Camp Canyon, ca. 1/2 mi NE of this road's jct. with main gravel road running E-W through Leon and Sheep Camp Canyons. Dolan Springs Quadrangle. Cacti were found between road and fence to west, ca. 20 feet south of south end of loop road around windmill.

Description of site: Nearly level upland; shallow gravelly clay with some pockets of deeper, seasonally wet clay over unbroken bedrock; heavily utilized grassland with considerable brush invasion (*Mimosa biuncifera*, *Acacia berlandieri*, *Acacia smallii*, etc); *Hilaria belangeri* common in deeper seasonally moist soil, *Aristida* scattered in rockier areas. *Ancistrocactus tobuschii* found in pocket of deep soil, which is not its typical habitat as presently known.

Soil: mapped as ERF, Ector-Rock outcrop association, hilly; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 2 live plants, 2 dead.

Date surveyed: 30 September 1992, Burford Westlund, Pat McNeal, Bill Carr.

Population/site K

Location: both sides of gravel road on ridgetop between Devils River to W and Dry Devils River to E, 0.6 roadmiles NE of concrete water tank at BM 1789 on topo, 0.2 roadmiles N of gate at right angle turn in road at BM 1774, 0.85 roadmiles SW of jct. of this road and the E-W road from Leon Spring Canyon to Sheep Camp Canyon.

Description of site: essentially same as population/site M. Site includes a nearly level area of almost bare limestone bedrock and flags, and a 2 percent slope with considerable coverage by *Aristida* spp.

Soil: mapped as ERF, Ector-Rock outcrop association, hilly; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 5 live plants, 1 dead.

Date surveyed: 2 October 1992, Burford Westlund, Pat McNeal, Bill Carr, Terry Cook.

Population/site L

Location: both sides of gravel road on ridgetop between Devils River to W and Dry Devils River to E, 0.15 roadmiles NE of concrete water tank at BM 1789 on topo, 1.3 roadmiles SW of jct. of this road and the E-W road from Leon Spring Canyon to Sheep Camp Canyon.

Description of site: essentially same as population/site M.

Soil: mapped as ERF, Ector-Rock outcrop association, hilly; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 1 live plant, 2 dead.

Date surveyed: 2 October 1992, Burford Westlund, Pat McNeal, Bill Carr, Terry Cook.

Population/site M

Location: SE side of gravel road on ridgetop between Devils River to W and Dry Devils River to E, at concrete water tank at BM 1789 on topo, 1.45 roadmiles SW of jct. of this road and the E-W road from Leon Spring Canyon to Sheep Camp Canyon.

Description of site: nearly level ridgetop; very shallow clay with patches of limestone bedrock outcrop and considerable gravel, stone, and cobble on surface; sparse cover of low (1-2 ft) *Mimosa biuncifera*, 3 ft or lower *Acacia berlandieri*, with colonies of *Jatropha dioica*, and very sparse cover of *Aristida* spp., *Selaginella* sp., *Croton monanthogynus*, with scattered clumps of *Bouteloua curtipendula* in deep soil pockets.

Soil: mapped as ERF, Ector-Rock outcrop association, hilly; very shallow to shallow, well drained, moderately alkaline, dark grayish brown stony loam with rapid surface runoff, moderate permeability, and very low available water capacity. Lithic Calciustolls.

Number of plants observed: 1 live plant, 1 dead.

Date surveyed: 2 October 1992, Burford Westlund, Pat McNeal, Bill Carr, Terry Cook.

Table A1. Associates of Ancistrocactus tobuschii at population/sites I and J; based on field survey of 30 September 1992:

WOODY PLANTS

Acacia berlandieri
Acacia smallii
Aloysia gratissima
Berberis trifoliolata
Castela texana
Condalia spathulata
Condalia viridis
Coryphantha sulcata
Dalea formosa
Dasyilirion texanum
Echinocereus enneacanthus
Echinocereus triglochidiatus
Ephedra antisiphilitica
Epithelantha micromeris
Ferocactus hamatacanthus
Forestiera angustifolia
Guaiacum angustifolium
Jatropha dioica
Juniperus ashei
Koeberlinia spinosa
Mammillaria heyderi
Mimosa biunicifera
Neolloydia conoidea
Opuntia leptocaulis
Opuntia sp. (*O. lindheimeri*?)
Yucca sp. (*Y. reverchonii*?)
Yucca sp. (*Y. torreyi*?)
Salvia ballotaeiflora
Ziziphus obtusifolius

HERBACEOUS PLANTS

Abutilon incanum
Acourtia runcinata
Allium kunthii
Amoreuxia wrightii
Anthericum torreyi
Aristida spp.
Boerhaavia linearifolia
Bouteloua curtipendula
Cassia lindheimeriana
Centaurium calycosum
Cheilanthes horridula
Cooperia pedunculata
Croton monanthogynus
Dyssodia pentachaeta
Erioneuron pilosum
Gaillardia pulchella
Hedeoma acerosa
Hedeoma acinoides
Hedeoma drummondii
Heteropogon contortus
Ibervillea tenuisecta
Leptochloa dubia
Linum sp. (*L. rupestre*?)
Macrosiphonia macrosiphon
Oenothera triloba
Plantago rhodosperma
Polygala lindheimeri
Portulaca retusa
Rivina humilis
Scutellaria drummondii
Selaginella sp.
Sida filicaulis
Thyrallis angustifolia
Tiquilia canescens
Verbena canescens

Table A2. Associates of Ancistrocactus tobuschii at populations/sites K, L, and M; based on field survey of 2 October 1992:

| | |
|--------------------------------|---------------------------|
| WOODY PLANTS | Cooperia pedunculata |
| Acacia berlandieri | Croton monanthogynus |
| Acacia smallii (rare) | Desmanthus velutinus |
| Echinocereus enneacanthus | Dyssodia pentachaeta |
| Jatropha dioica | Erigeron modestus |
| Karwinskia humboldtiana | Evax verna |
| Leucophyllum frutescens (rare) | Gaillardia pulchella |
| Mammillaria heyderi | Hedeoma cf. drummondii |
| Mimosa biuncifera | Hedyotis acerosa |
| Opuntia leptocaulis | Hedyotis nigricans |
| Opuntia lindheimeri | Leptochloa dubia |
| Yucca sp. (Y. torreyi?) | Macrosiphonia macrosiphon |
| | Oenothera triloba |
| HERBACEOUS PLANTS | Portulaca mundula |
| Allium kunthii | Portulaca retusa |
| Aristida spp. | Salvia farinacea |
| Bouteloua curtipendula | Selaginella sp. |
| Cassia lindheimeriana | Tiquilia canescens |
| Centaurium calycosum | Triodanis coloradoensis |

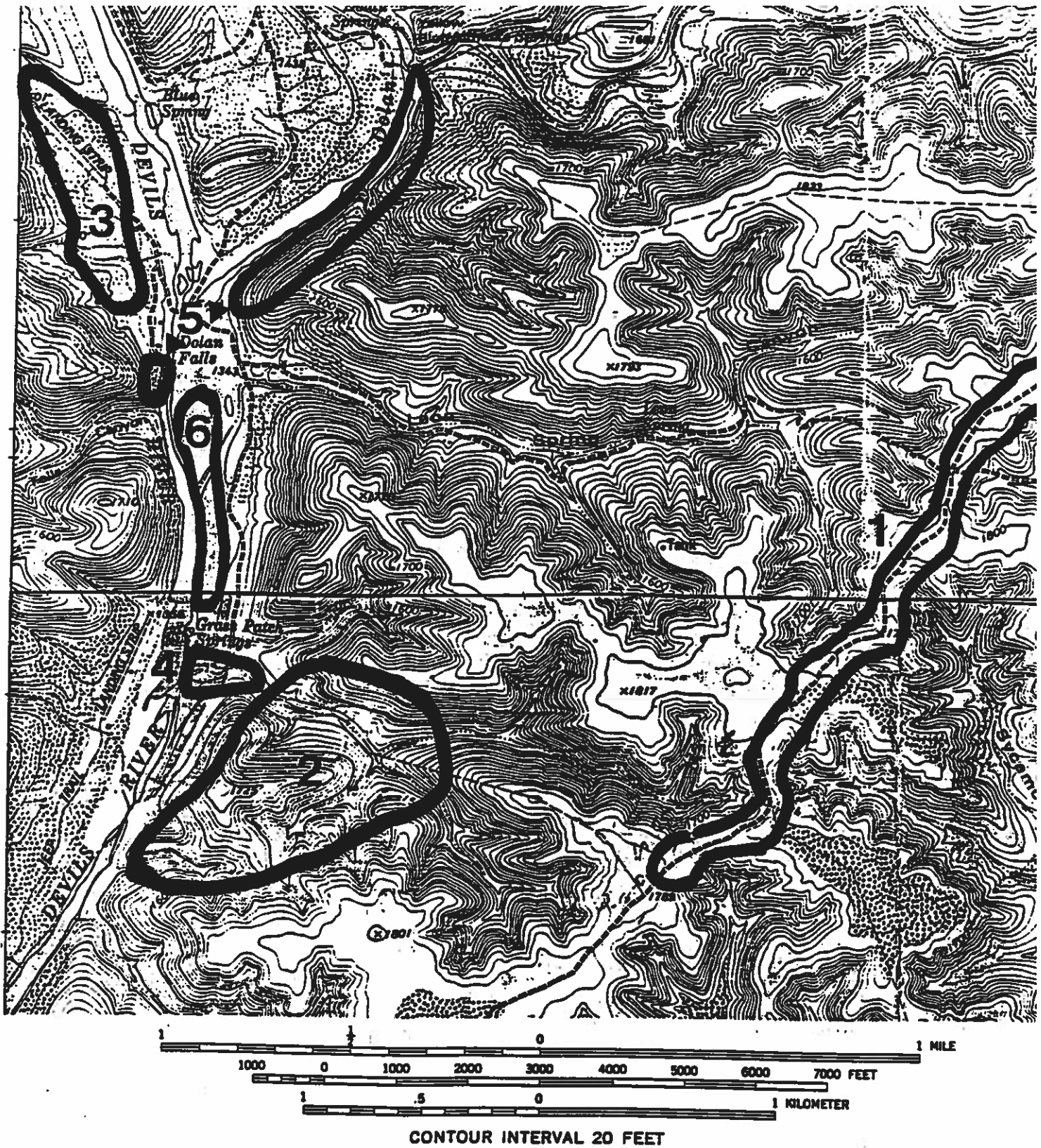


Figure 2. Representative habitat types examined at Dolan Falls Ranch: 1) level to gently rolling uplands or ridgetops; 2) dry rocky slopes; 3) gentle colluvial slopes and flats 4) mesic canyon bottoms; 5) mesic cliffs and slopes along streams and around springs 6) alluvial terraces; and 7) streambeds and creekbanks (not outlined).

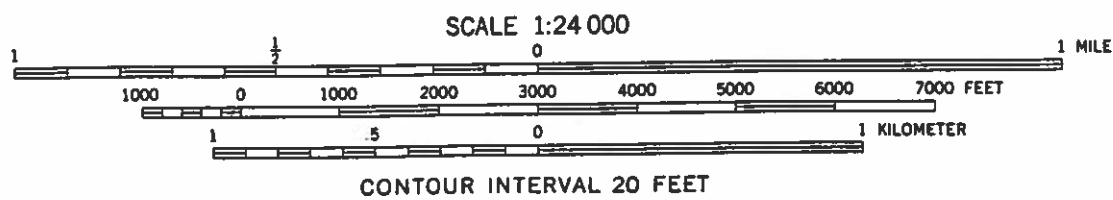
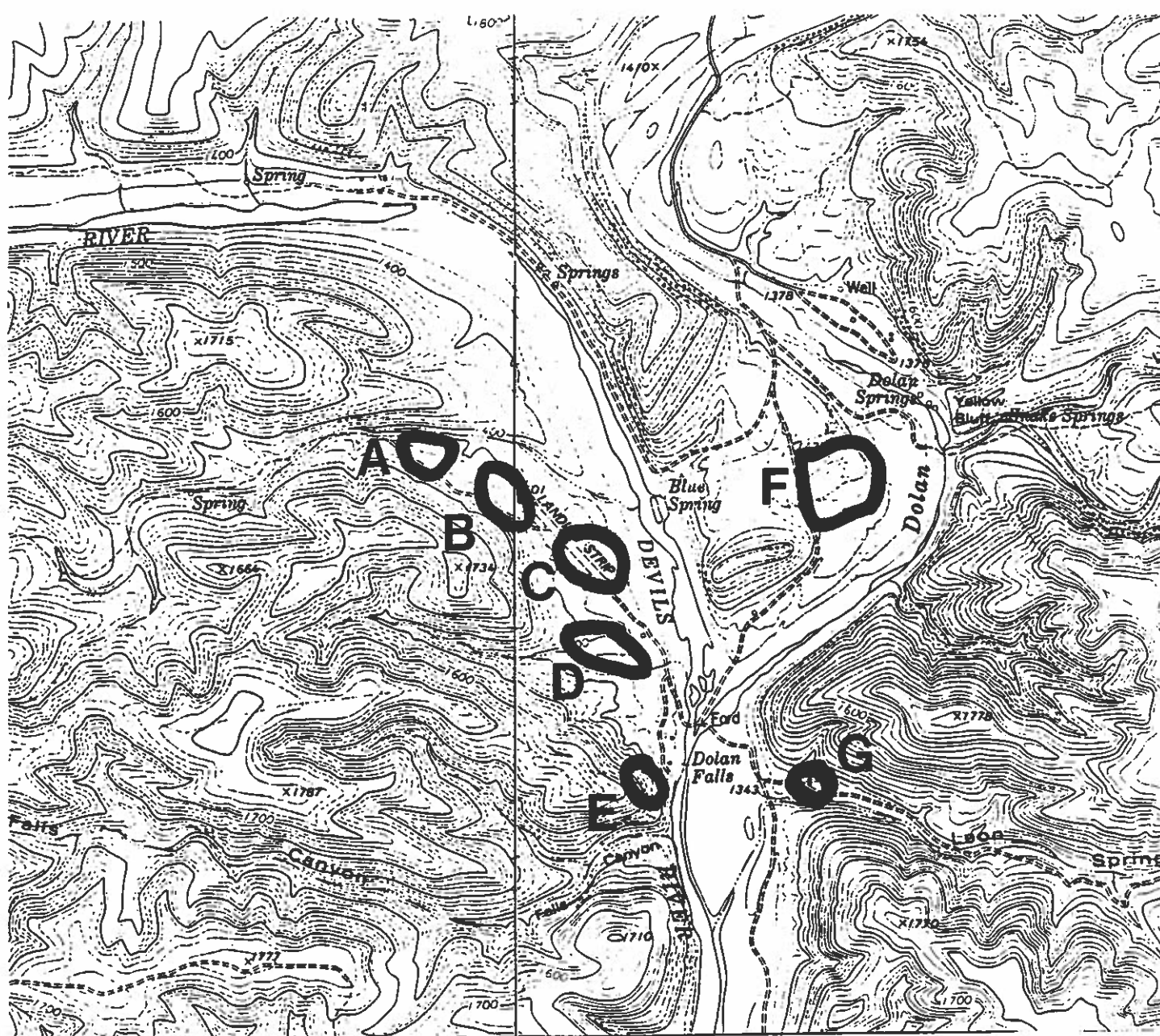


Figure 3. Location of Ancistrocactus tobuschii population/sites A through G, Dolan Falls Ranch; from Telephone Canyon and Dolan Springs 7.5' quadrangles.

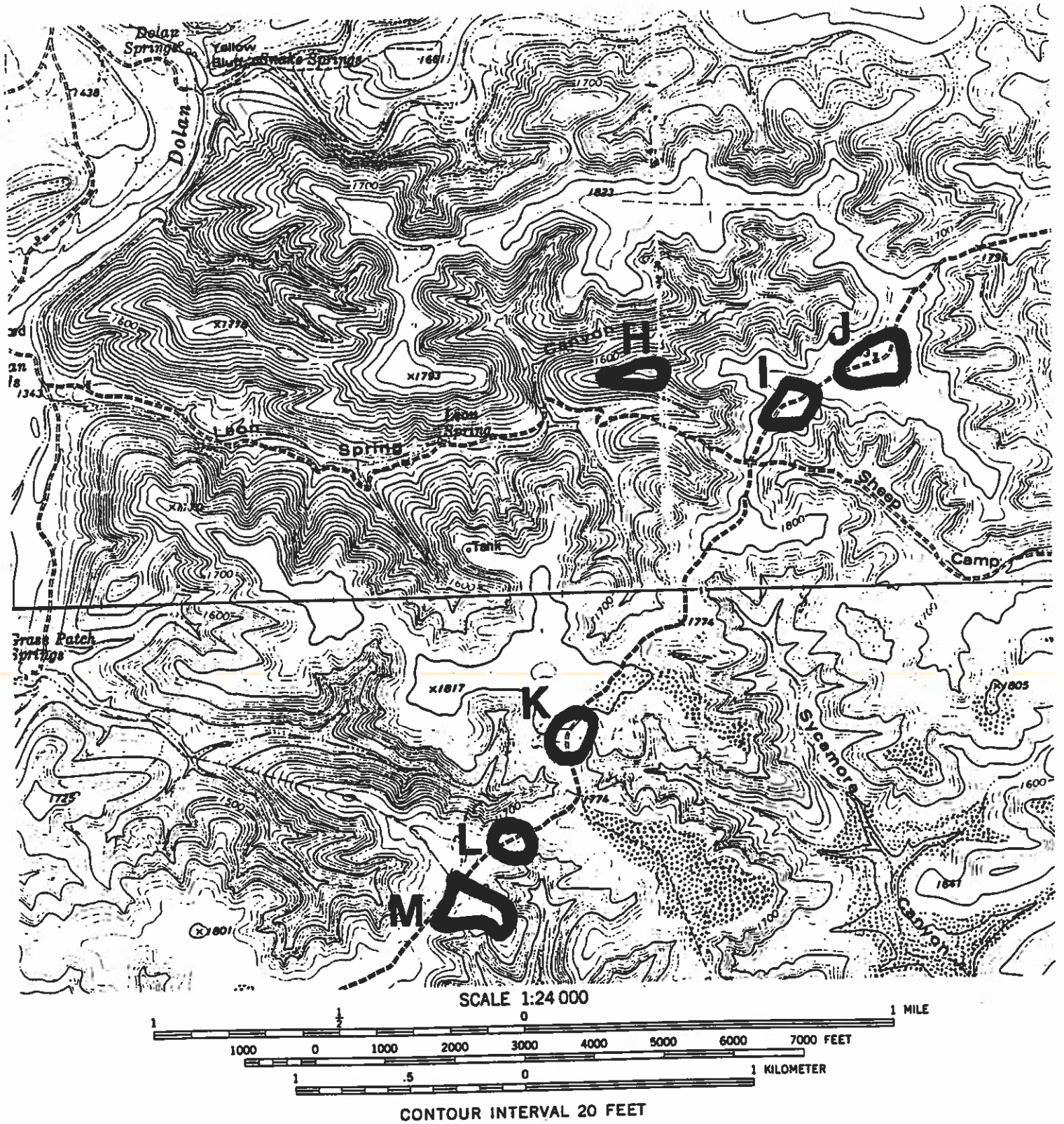
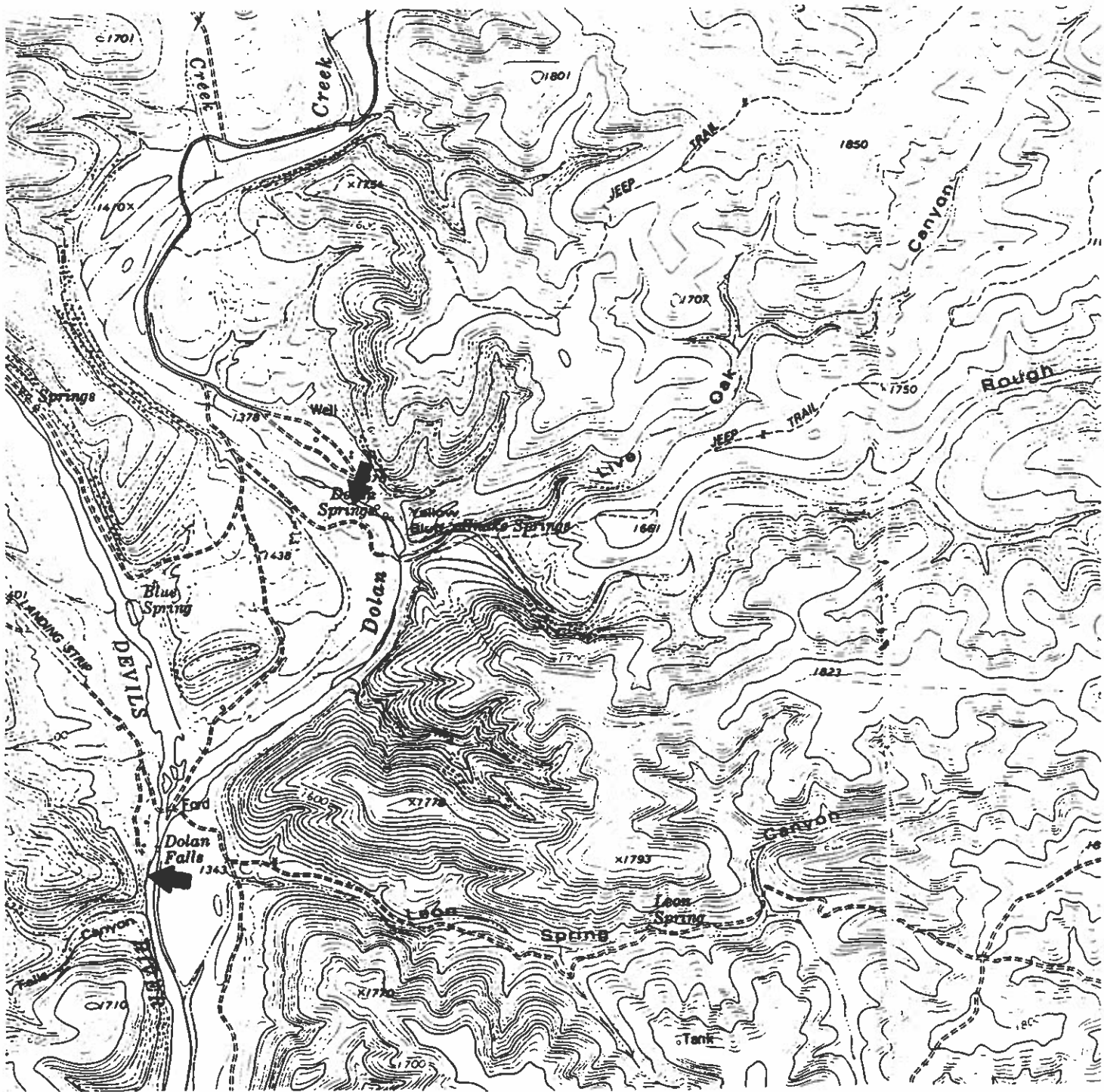


Figure 4. Location of Ancistrocactus tobuschii population/sites H through M, Dolan Falls Ranch; from Dolan Springs and Clark Waterhole 7.5' quadrangles.



SCALE 1:24 000
 1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
 1 5 0 1 KILOMETER
 CONTOUR INTERVAL 20 FEET

Figure 5. Location of populations of Texas snowbells at Devils River State Natural Area (A) and Dolan Falls Ranch (B); from Dolan Springs 7.5' quadrangle.

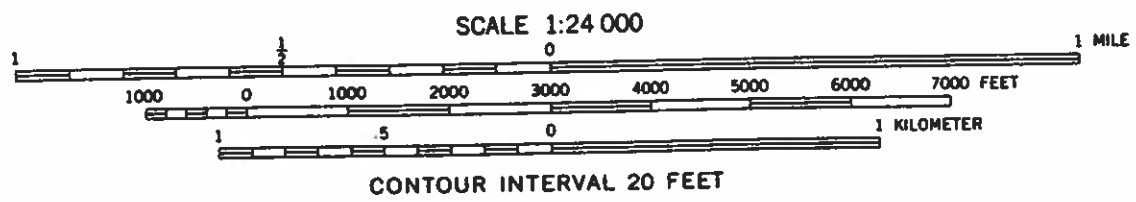
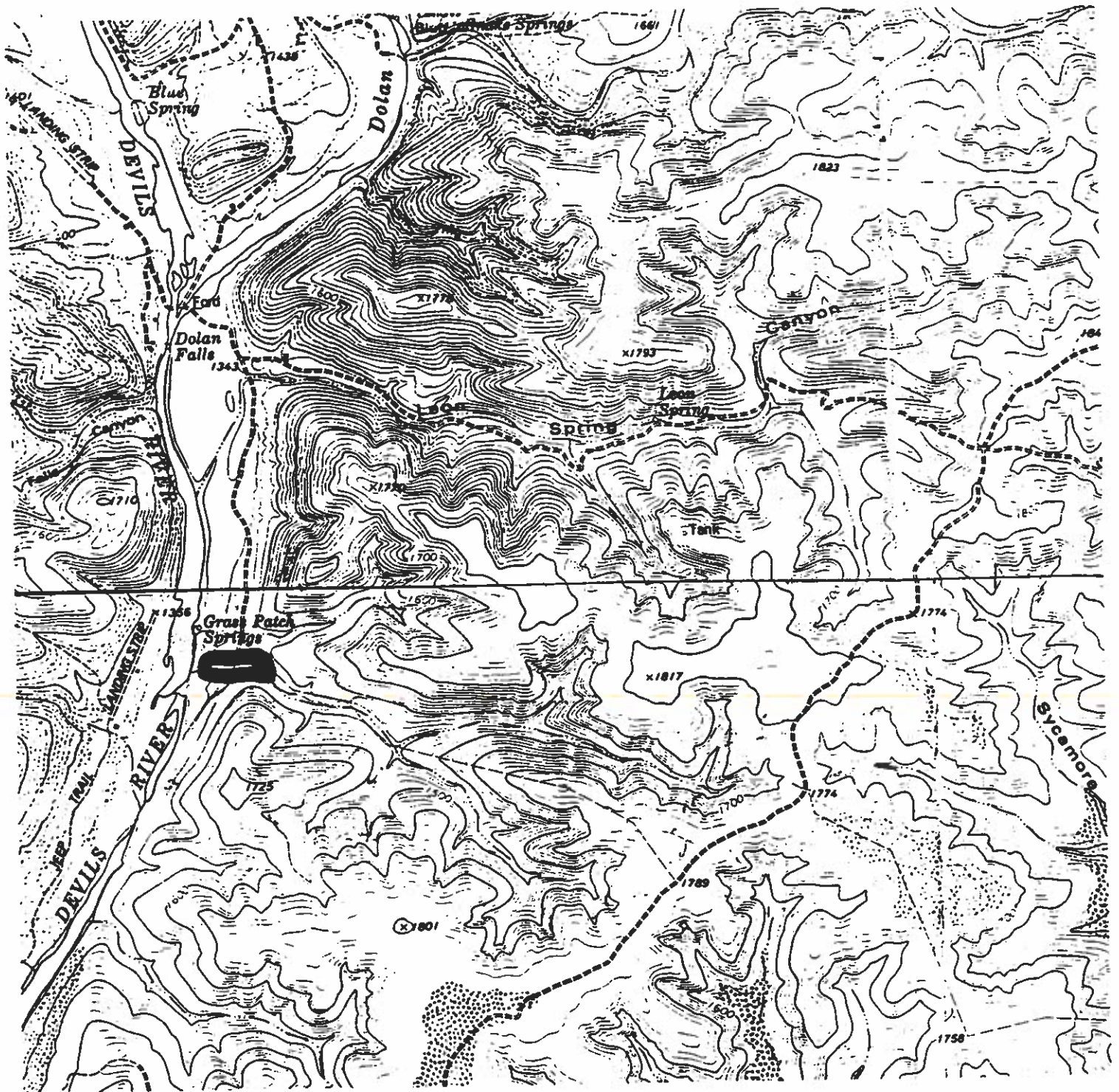


Figure 6. Location of population of polymorphic white oak (*Quercus polymorpha*) at Dolan Falls Ranch; from Dolan Springs and Clark Waterhole 7.5' quadrangles.

**DOLAN FALLS RANCH
VAL VERDE COUNTY, TEXAS
PRELIMINARY CHECKLIST OF VASCULAR PLANTS
October 1992**

Nomenclature follows Correll and Johnston (1970) or its update (Johnston, 1990) and, for grasses, Gould (1975). Common names follow Enquist (1987), Hatch et al. (1990), or Lynch (1981). Five digit numbers represent voucher specimens of difficult or undetermined species. This list is based on field surveys conducted 28 September-2 October 1992, during which many spring-flowering species were overlooked.

| SCIENTIFIC NAME | COMMON NAME |
|---|-------------------------|
| ACANTHACEAE | ACANTHUS FAMILY |
| <i>Carlowrightia torreyana</i> | carlowrightia |
| <i>Justicia americana</i> | American waterwillow |
| <i>Siphonoglossa pilosella</i> | hairy tubetongue |
| AMARYLLIDACEAE | AMARYLLIS FAMILY |
| <i>Agave lechuguilla</i> | lechuguilla |
| <i>Cooperia pedunculata</i> | rain lily |
| ANACARDIACEAE | SUMAC FAMILY |
| <i>Rhus microphylla</i> | littleleaf sumac |
| <i>Rhus toxicodendron</i> var. <i>eximia</i> | shrub poison ivy |
| <i>Rhus toxicodendron</i> var. <i>vulgaris</i> | vine poison ivy |
| <i>Rhus trilobata</i> var. <i>trilobata</i> (<i>R. aromatica</i> var. <i>flabelliformis</i>) | fragrant sumac |
| <i>Rhus virens</i> | evergreen sumac |
| APIACEAE | CARROT FAMILY |
| <i>Centella asiatica</i> | Asian spadeleaf |
| <i>Eryngium leavenworthii</i> | purple eryngo |
| <i>Hydrocotyle verticillata</i> | whorled pennywort |
| <i>Torilis arvensis</i> | sockbane |
| APOCYNACEAE | DOGBANE |
| <i>Amsonia longiflora</i> | white slimpod |
| <i>Macrosiphonia macrosiphon</i> | rock trumpets |
| ARISTOLOCHIACEAE | BIRTHWORT FAMILY |
| <i>Aristolochia coryi</i> | Cory pipevine |
| ASCLEPIADACEAE | MILKWEED FAMILY |
| <i>Asclepias incarnata</i> | swamp milkweed |
| <i>Cynanchum barbigerum</i> | bearded swallowwort |
| <i>Matelea</i> sp. (<i>M. reticulata</i> ?) | milkvine |

ASTERACEAE

Acourtia runcinata
 (Perezia runcinata)
 Ambrosia psilostachya
 Aphanostephus ramosissimus
 Aster subulatus
 Baccharis neglecta
 Brickellia laciniata
 Calyptocarpus vialis
 Centaurea melitensis
 Cirsium texanum
 Dyssodia pentachaeta
 Erigeron modestus (12398)
 Eupatorium serotinum
 Evax verna
 Evax sp. (12396)
 Gaillardia pulchella
 Gutierrezia microcephala
 (Xanthocephalum microcephalum)
 Liatris punctata
 Lygodesmia texana
 Melampodium sp. (M. leucanthum?)
 Palafoxia callosa
 Parthenium hysterophorus
 Perityle lindheimeri
 Ratibida columnaris
 Simsia calva
 Solidago juliae
 Verbesina encelioides
 Verbesina virginica
 Viguiera dentata
 Viguiera stenoloba
 Xanthium strumarium
 Zexmenia hispida

SUNFLOWER FAMILY

peonia
 western ragweed
 lazy daisy
 aster
 rooseveltweed
 splitleaf brickelbush
 straggler daisy
 yellow star-thistle
 Texas thistle
 parralena
 plains fleabane
 white boneset
 roundhead rabbittobacco
 rabbit tobacco
 Indian blanket
 broom snakeweed
 blazing star
 skeleton plant
 Blackfoot daisy
 palafoxia
 false ragweed
 rock daisy
 Mexican hat
 bush sunflower
 gray goldenrod
 cowpen daisy
 frostweed
 plateau goldeneye
 skeletonleaf goldeneye
 cocklebur
 hairy zexmenia

BERBERIDACEAE

Berberis trifoliolata

BARBERRY FAMILY

agarito

BIGNONIACEAE

Chilopsis linearis

CATALPA FAMILY

desert willow

BORAGINACEAE

Heliotropium tenellum
 Heliotropium torreyi
 Tiquilia canescens
 (Coldenia canescens)

BORAGE FAMILY

white heliotrope
 Torrey heliotrope
 gray coldenia

BRASSICACEAE

Lepidium austrinum
 Lesquerella gordonii
 Nasturtium officinale
 (Rorippa nasturtium-aquaticum)

MUSTARD FAMILY

hairy pepperweed
 Gordon bladderpod
 water cress

BROMELIACEAE

Tillandsia recurvata

CACTACEAE

Ancistrocactus tobuschii
Coryphantha sulcata
Echinocactus texensis
Echinocereus enneacanthus
Echinocereus triglochidiatus
Epithelantha micromeris
Ferocactus hamatacanthus
Mammillaria heyderi
Mammillaria prolifera
Neolloydia conoidea
Opuntia leptocaulis
Opuntia lindheimeri
Opuntia schottii var. *schottii*

CAMPANULACEAE

Lobelia berlandieri
Lobelia cardinalis
Triodanis coloradoensis

CAPPARIDACEAE

Polanisia dodecandra

CAPRIFOLIACEAE

Lonicera albiflora

CARYOPHYLLACEAE

Paronychia jamesii

CHENOPODIACEAE

Atriplex canescens
Chenopodium sp.

COCHLOSPERMACEAE

Amoreuxia wrightii

COMMELINACEAE

Commelina erecta

CONVOLVULACEAE

Convolvulus equitans
Cuscuta exaltata
Cuscuta sp. (12438)
Dichondra sp. (*D. carolinense*?)
Evolvulus nuttallianus
Evolvulus sericeus
Ipomaea sinuata
 (Merremia dissecta)
Ipomaea sp.

PINEAPPLE FAMILY

ballmoss

CACTUS FAMILY

Tobusch fishhook cactus
 Cory cactus
 horsecripper cactus

claretcup cactus
 button cactus
 Turk's head cactus
 Heyder nipplecactus

tasajillo
 Lindheimer pricklypear
 jumping cactus

BELLFLOWER FAMILY

blue lobelia
 cardinal-flower
 Venus' lookingglass

CAPER FAMILY

clammyweed

HONEYSUCKLE FAMILY

white honeysuckle

PINK FAMILY

James nailwort

GOOSEFOOT FAMILY

fourwing saltbush
 goosefoot

COCHLOSPERMUM FAMILY

yellow show

DAYFLOWER FAMILY

dayflower

MORNING-GLORY FAMILY

bindweed
 oak dodder
 dodder
 ponyfoot
 hairy evolvulus
 silky evolvulus
 alamovine
 morning glory

CUCURBITACEAE

Cucurbita foetidissima
Ibervillea tenuisecta

GOURD FAMILY

stinking gourd
cutleaf globeberry

CUPRESSACEAE

Juniperus ashei
Juniperus pinchotii

CYPRESS FAMILY

Ashe juniper
redberry juniper

CYPERACEAE

Carex planostachys
Cladium jamaicense
Cyperus elegans (12429)
Cyperus odoratus
Dichromena colorata
Eleocharis caribaea
Eleocharis montividentis
Eleocharis rostellata
Fuirena simplex

SEDGE FAMILY

cedar sedge
sawgrass
sticky umbrellasedge
common umbrellasedge
whitetop sedge
annual spikesedge
perennial spikesedge
tussock spikesedge
porcupine sedge

EBENACEAE

Diospyros texana

EBONY FAMILY

Texas persimmon

EPHEDRACEAE

Ephedra sp. (*E. antisiphilitica*?) jointfir

JOINTFIR FAMILY

jointfir

EQUISETACEAE

Equisetum laevigatum

HORSETAIL FAMILY

horsetail

EUPHORBIACEAE

Acalypha hederacea
Acalypha lindheimeri
Argythamnia humilis
Bernardia myricaefolia
Croton dioicus
Croton fruticulosus
Croton monanthogynus
Croton pottsii
Croton torreyanus
Euphorbia angusta
Euphorbia cyathophora
Jatropha dioica
Phyllanthus polygonoides
Stillingia texana
Tragia ramosa

SPURGE FAMILY

creeping copperleaf
Lindheimer copperleaf
low wildmercury
brush myrtlecroton
grassland croton
bush croton
oneseed croton
Potts croton
Torrey bushcroton
narrowleaf spurge
wild poinsettia
leatherstem
knotweed leafflower
queen's delight
common noseburn

FABACEAE

Acacia berlandieri
Acacia rigidula
Acacia roemeriana
Acacia smallii
Amorpha fruticosa
Bauhinia congesta

PEA FAMILY

guajillo
blackbrush acacia
Roemer acacia
huisache
bastard indigo
Anacacho orchid

| | |
|---|-------------------------|
| Calliandra conferta | calliandra |
| Cassia bauhinioides (Senna bauhinioides) | twolea senna |
| Cassia lindheimeriana (Senna lindheimeriana) | Lindheimer senna |
| Cassia pumilio (Senna pumilio) | dwarf senna |
| Cassia roemeriana (Senna roemerana) | twoleaf senna |
| Cercis canadensis var. texensis | Texas redbud |
| Dalea argyraea | silver dalea |
| Dalea formosa | feather dalea |
| Dalea frutescens | black dalea |
| Desmanthus velutinus | hairy bundleflower |
| Eysenhardtia texana | kidneywood |
| Hoffmanseggia glauca | smooth rushpea |
| Galactia texana | Texas milkpea |
| Indigofera lindheimeri | creek indigo |
| Leucaena retusa | goldenball leadtree |
| Mimosa biuncifera | catclaw mimosa |
| Mimosa borealis | fragrant mimosa |
| Prosopis glandulosa | honey mesquite |
| Rhynchosia texana (Rhynchosia senna var. texana) | Texas snoutbean |
| Sophora secundiflora | Texas mountain-laurel |
| FAGACEAE | BEECH FAMILY |
| Quercus fusiformis | plateau live oak |
| Quercus polymorpha | polymorphic white oak |
| Quercus pungens var. vaseyana | Vasey oak |
| FOUQUIERIACEAE | OCOTILLO FAMILY |
| Fouquieria splendens | ocotillo |
| GENTIANACEAE | GENTIAN FAMILY |
| Centaurium beyrichii | mountain pink |
| Centaurium calycosum | rosita |
| Eustoma exaltatum | prairie gentian |
| HYDROPHYLLACEAE | WATERLEAF FAMILY |
| Phacelia congesta | bluecurls |
| IRIDACEAE | IRIS FAMILY |
| Sisyrinchium sp. | blue-eyed grass |
| JUGLANDACEAE | WALNUT FAMILY |
| Carya illinoensis | pecan |
| Juglans microcarpa | little walnut |
| JUNCACEAE | RUSH FAMILY |
| Juncus interior | inland rush |
| Juncus torreyi | Torrey rush |

KOEBERLINIACEAE

Koeberlinia spinosa

KRAMERIACEAE

Krameria lanceolata

LAMIACEAE

Hedeoma acinoides
 Hedeoma drummondii
 Marrubium vulgare
 Monarda citriodora
 Salvia ballotaeflora
 Salvia farinacea
 Salvia roemeriana
 Scutellaria drummondii
 Teucrium canadense

LEMNACEAE

Lemna valdiviana (12425)

LILIACEAE

Allium kunthii
 Anthericum torreyi
 Dasyilirion texanum
 Nolina texana
 Schenocaulon texanum
 Smilax bona-nox
 Yucca constricta
 Yucca reverchonii
 Yucca torreyi

LINACEAE

Linum rupestre
 Linum rigidum var. berlandieri

LOASACEAE

Eucnide bartonioides
 Mentzelia oligosperma

LOGANIACEAE

Buddleja racemosa
 Mitreola petiolata
 (Cynoctonum mitreola)

LYTHRACEAE

Lythrum californicum

MALVACEAE

Abutilon fruticosum
 (Abutilon incanum)
 Hibiscus cardiophyllus
 Hibiscus coulteri

ALLTHORN FAMILY

allthorn

RATANY FAMILY

trailing ratany

MINT FAMILY

annual pennyroyal
 lemoncillo
 common horehound
 lemon beebalm
 shrubby blue sage
 mealy sage
 cedar sage
 Drummond skullcap
 American germander

DUCKWEED FAMILY

duckweed

LILY FAMILY

Kunth wildonion
 yellow crag-lily
 sotol
 beargrass
 green lily
 common greenbriar
 narrowleaf yucca
 narrowleaf yucca
 Torrey yucca

FLAX FAMILY

rock flax
 annual flax

STICKLEAF FAMILY

yellow rocknettle
 common stickleaf

LOGANIA FAMILY

wand butterflybush
 hornpod

LOOSESTRIFE FAMILY

California loosestrife

MALLOW FAMILY

Texas indianmallow
 tulipan del monte
 yellow desertmallow

| | |
|---|--|
| Meximalva filipes (Sida filipes) | violet mallow |
| Sida abutifolia (Sida filicaulis) | creeping yellow sida |
| MENISPERMACEAE Cocculus carolinus | MOONSEED FAMILY Carolina snailseed |
| MORACEAE Broussonetia papyrifera Ficus carica | MULBERRY FAMILY paper mulberry cultivated fig |
| NYCTAGINACEAE Acleisanthes longiflora Boerhaavia linearifolia Cymopheris gypsophiloides Mirabilis dumetorum Nyctaginea capitata | FOUR O'CLOCK FAMILY angel trumpets narrowleaf spiderling red cymopheris rock four o'clock scarlet muskflower |
| NYMPAEACEAE Nuphar luteum | WATERLILY FAMILY yellow spatterdock |
| OLEACEAE Forestiera angustifolia Forestiera pubescens Forestiera reticulata Fraxinus berlandieri Fraxinus gregii Menodora longiflora | OLIVE FAMILY narrowleaf elbowbush elbowbush netleaf elbowbush fresno Gregg ash showy menodora |
| ONAGRACEAE Calylophus serrulatus Oenothera triloba | EVENING PRIMROSE FAMILY sundrops stemless eveningprimrose |
| ORCHIDACEAE Epipactis gigantea | ORCHID FAMILY stream epipactis |
| OXALIDACEAE Oxalis dichondraefolia Oxalis dillenii Oxalis drummondii | WOODSORREL FAMILY ponyfoot sourclover yellow sourclover purple sourclover |
| PAPAVERACEAE Argemone albiflora | POPPY FAMILY white pricklypoppy |
| PASSIFLORACEAE Passiflora affinis Passiflora tenuiloba | PASSIONFLOWER FAMILY yellow passionflower slenderlobe passionflower |
| PLANTAGINACEAE Plantago rhodosperma | PLANTAIN FAMILY redseed plantain |

PLATANACEAE

Platanus occidentalis

POACEAE

Andropogon glomeratus
 Aristida wrightii
 Aristida sp.
 Arundo donax
 Bothriochloa ischaemum
 Bothriochloa saccharoides
 Bouteloua curtipendula
 Bouteloua eriopoda
 Bouteloua gracilis
 Bouteloua rigidiseta
 Bouteloua trifida
 Bouteloua uniflora
 Buchloe dactyloides
 Cenchrus incertus
 Chloris cucullata
 Cynodon dactylon
 Dichanthium annulatum
 Dichantherium lindheimeri
 Dichantherium sp.
 Elymus canadensis
 Elymus virginicus
 Eragrostis intermedia
 Eriochloa sericea
 Erioneuron pilosum
 Heteropogon contortus
 Hilaria belangeri
 Leptochloa dubia
 Panicum hallii
 Panicum virgatum
 Pappophorum bicolor
 Paspalum pubiflorum
 Paspalum urvillei
 Schizachyrium scoparium
 Setaria geniculata
 Setaria scheelei
 Stipa leucotricha
 Sorghum halepense
 Tridens albescens
 Tridens muticus
 Tridens texanus

POLEMONIACEAE

Gilia incisa

POLYGALACEAE

Polygala lindheimeri
 Polygala ovatifolia

SYCAMORE FAMILY

sycamore

GRASS FAMILY

bushy bluestem
 Wright threeawn
 threeawn
 giant cane
 King Ranch bluestem
 silver bluestem
 sideoats grama
 black grama
 blue grama
 Texas grama
 red grama
 Nealley grama
 buffalograss
 sandburggrass
 hooded windmillgrass
 bermudagrass
 Kleberg bluestem
 Lindheimer panicgrass
 panicgrass
 Canada wildrye
 Virginia wildrye
 plains lovegrass
 silky cupgrass
 hairy tridens
 tanglehead
 curlymesquite
 green sprangletop
 Hall panicgrass
 switchgrass
 pink pappusgrass
 hairyseed paspalum
 Vaseygrass
 little bluestem
 knotroot bristlegrass
 Southwestern bristlegrass
 Texas wintergrass
 Johnsongrass
 white tridens
 slim tridens
 Texas tridens

PHLOX FAMILY

cutleaf gilia

MILKMORT FAMILY

purple milkwort
 broadpod milkwort

POLYGONACEAE

Persicaria punctata
Persicaria sp. (12436)

KNOTWEED FAMILY

spotted smartweed
 smartweed

POLYPODIACEAE

Adiantum capillus-veneris
Cheilanthes alabamensis
Cheilanthes cochisense
 (*Notholaena sinuata* var. *cochisense*)
Cheilanthes horridula
Cheilanthes integerrima
 (*Notholaena sinuata* var. *integerrima*)
Cheilanthes lindheimeri (12407)
Cheilanthes sinuata
 (*Notholaena sinuata* var. *sinuata*)
Cheilanthes tomentosa (12401)
Notholaena candida
 var. *copelandii*
Notholaena parvifolia
Pellaea atropurpurea
Pellaea ovata
Thelypteris ovata var. *lindheimeri*
 (*Thelypteris kunthii*)

TRUE FERN FAMILY

maidenhair fern
 Alabama lipfern
 Cochise lipfern
 rough lipfern
 lipfern
 lipfern
 lipfern
 lipfern
 Copeland starfern
 littleleaf cliffbrake
 purple cliffbrake
 zigzag cliffbrake
 southern shieldfern

PORTULACACEAE

Portulaca mundula
Portulaca retusa
Talinum aurantiacum

PORTULACA FAMILY

shaggy portulaca
 purslane
 orange flameflower

POTAMOGETONACEAE

Potamogeton nodosus

PONDWEED FAMILY

broadleaf pondweed

PRIMULACEAE

Samolus cuneatus
Samolus parviflorus

PRIMULACEAE

largeflower brookweed
 smallflower brookweed

RANUNCULACEAE

Clematis drummondii
Clematis pitcheri

BUTTERCUP FAMILY

old man's beard
 blue clematis

RHAMNACEAE

Colubrina texensis
Condalia hookeri
Condalia spathulata
Condalia viridis
Karwinskia humboldtiana
Ziziphus obtusifolia

BUCKTHORN FAMILY

Texas colubrina
 brasil
 squawbush
 green squawbush
 coyotillo
 lotebush

ROSACEAE

Cercocarpus montanus
Fallugia paradoxa
Prunus minutiflora
Rubus trivialis

RUBIACEAE

Cephalanthus occidentalis
Hedyotis acerosa
Hedyotis nigricans

RUTACEAE

Ptelea trifoliata
Thamnosma texanum
Zanthoxylum hirsutum

SALICACEAE

Salix nigra

SAPINDACEAE

Sapindus saponaria
 var. *drummondii*
Ungnadia speciosa

SAPOTACEAE

Bumelia lanuginosa
 var. *texana*

SAXIFRAGACEAE

Fendlera rupicola

SCHIZAEACEAE

Anemia mexicana

SCROPHULARIACEAE

Bacopa monnieri
Leucophyllum frutescens
Maurandya antirrhiniflora
Mecardonia vandellioides
Mimulus glabratus
Penstemon baccharifolius
Seymeria texana (12406)
Verbascum thapsus

SELAGINELLACEAE

Selaginella lepidophylla
Selaginella peruviana
Selaginella wrightii

SIMAROUBACEAE

Castela texana

ROSE FAMILY

mountain mahogany
 apache-plume
 Texas almond
 dewberry

MADDER FAMILY

buttonbush
 needleleaf bluets
 prairie bluets

CITRUS FAMILY

wafer ash
 desert rue
 toothache tree

WILLOW FAMILY

black willow

SOAPBERRY FAMILY

western soapberry

Mexican buckeye

SAPODILLA FAMILY

gum elastic, coma

SAXIFRAGE FAMILY

cliff fendlerbush

CURLYGRASS FAMILY

Mexican curlygrassfern

FIGWORT FAMILY

water hyssop
 cenizo
 snapdragon vine
 yellow mecardonia
 yellow monkeyflower
 baccharisleaf penstemon
 seymeria
 common mullein

SPIKEMOSS FAMILY

resurrection spikemoss
 rock spikemoss
 Wright spikemoss

QUASSIA FAMILY

goatbush

SOLANACEAE

Datura wrightii
 Nicotiana trigonophylla
 Physalis sp.
 Solanum americanum
 Solanum elaeagnifolium
 Solanum rostratum
 Solanum triquetrum

STERCULIACEAE

Melochia pyramidata

STYRACACEAE

Styrax texana

TYPHACEAE

Typha sp.

ULMACEAE

Celtis pallida
 Celtis reticulata

URTICACEAE

Boehmeria cylindrica

VERBENACEAE

Aloysia gratissima
 Bouchea linifolia
 Lantana macropoda
 Phyla incisa
 Verbena bipinnatifida
 Verbena canescens
 Verbena scabra

VISCACEAE

Phoradendron tomentsoum

VITACEAE

Cissus incisa
 Parthenocissus quinquefolia
 Vitis berlandieri
 Vitis monticola

ZYGOPHYLLACEAE

Guaiacum angustifolium
 (Porlieria angustifolia)

POTATO FAMILY

Wright jimsonweed
 desert tobacco
 groundcherry
 white nightshade
 silverleaf nightshade
 buffalobur
 Texas nightshade

CACAO FAMILY

anglepod melochia

STORAX FAMILY

Texas snowbells

CATTAIL FAMILY

cattail

ELM FAMILY

granjeno
 netleaf hackberry

NETTLE FAMILY

false nettle

VERVAIN FAMILY

whitebrush
 groovestem bouchea
 desert lantana
 fogfruit
 Dakota vervain
 gray vervain
 sandpaper vervain

MISTLETOE FAMILY

mistletoe

GRAPE FAMILY

ivy treebine
 Virginia creeper
 Spanish Grape
 mountain grape

CALTROP FAMILY

guayacan

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