

APPENDIX A:
ANNOTATED SPECIES LIST OF THE DEAD HORSE MOUNTAINS

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ANNOTATED SPECIES LIST OF THE DEAD HORSE MOUNTAINS FLORA

Species are arranged by divisions following Raven et al. (2003): Lycophyta, Pteridophyta, Coniferophyta, Gnetophyta, and Anthophyta. The flowering plants are subdivided into the classes Monocotyledones and Eudicotyledones. Within these hierarchical groupings, taxa are listed alphabetically by family, genus, species, and infraspecific rank, as appropriate. Beyond a basic reliance on the *Manual of Vascular Plants of Texas* (Correll and Johnston 1970), taxonomy and nomenclature were taken preferentially from several updated sources, including Powell (in prep.) and Powell et al. (in ms.) for non-woody vascular species and genera, the *Flora of North America* volumes for the Poaceae and Asteraceae (FNA 2003b, 2006, 2007), and Powell and Weedon (2004) for the Cactaceae. Online databases were also checked for currency, authorities, and synonymy (ITIS 2007, MBG 2007, USDA 2007).

Turner et al. (2003) was the fundamental source for nomenclature and distributional data. Specimens found through the herbaria search were assumed to be correctly identified unless the distribution information (dot maps reflecting collection localities) in Turner et al. (2003) raised significant doubts. In some cases, specimens were examined, and species were added to the flora or were placed on a “likely to occur” list (Appx. B). Also placed on that list were species without vouchers from the study area but that had conducive distributions according to various sources cited accordingly. Some species—either listed without a voucher or that were unable to be examined, with distributions far

away from the study area—were placed on an “unlikely to occur” list (Appx. C). If a taxon was listed (without a voucher collection) by either of the two previous area surveys (Wells 1965, Amos and Giles 1992), it is noted as such. Nativity, common names, and life forms (Table 6) were taken from the United States Department of Agriculture’s PLANTS Database (USDA 2007). Locally used common names from regional literature were included if not utilized by the USDA. Graminoid life-forms were included under the herb category. A generic entry for the annotated list is given below, followed by explanations of the different components:

* *Scientific name* Author var. *variety* Author – Common name

[*Synonym* Author] Abundance and life form, substrate and habitat comments; VEGETATION COMMUNITY, elevation; collections. If the species is uncommon or rarer within the study area, more specific collection localities are given. Any other pertinent comments on distribution, taxonomy, etc., are included at the end of the entry.

Symbols:

Various symbols precede the species entries (Table 15), indicating native status and the type of collection as it relates to the historical baseline. In addition to the USDA nativity designations, state-level rankings for non-native/invasive/noxious species were also incorporated (PTI 2006).

Table 15. Symbols used in association with the species entries in Appendix A.

Symbol	Description
*	non-native
!	invasive non-native
!!	noxious non-native weed listed by TPWD/USDA
Δ	observed but not collected
§	previously collected, but not during the current study period
+	first voucher of a common or expected taxon
#	newly documented taxon for the DH
bold	Species names in bold are considered rare and are currently tracked by the Texas Parks and Wildlife Department and the Nature Conservancy of Texas as species of conservation concern (Poole et al. 2007). An explanation of ranking terminology is provided previously (Table 9).

Abundance categories:

The categories employed here are subjective and based on observations made and impressions gleaned during the current study. The scale used (Table 16) is based on Palmer et al. (1995). Any historical abundance observations taken from label data are placed within quotations. The terms used were not changed (e.g. from “infrequent” to “uncommon”), because the historical collector’s frame of reference or personal distinctions of scale categories is unknown. Many species may have a “rare” abundance within the study area but are not tracked by TPWD or TNC as being imperiled state or worldwide and, thus, are not listed in bold (Table 15) and do not have a G or S ranking (Table 9).

Habitat and vegetation communities:

These data represent field notes and observations made during the current study and any other notes included in the historical digital database. Elevations given represent the range where actual collections were made, often augmented by field notes on other observations of the species’ distributions. Vegetation community designations (Table 17) were created based on field observations as a way to generally represent where each species was expected/known to occur. Categories used were based on the elevational/moisture-availability gradients found in the study area, as discussed in the Vegetation Patterns section of this report. Supplemental data for previously collected specimens (§), such as elevation and vegetation community, were included only if such

Table 16. Abundance categories used to describe species occurrences in the study area.

Density	Description
Abundant	Dominant or co-dominant in one or more common habitats
Common	Easily seen or found in one or more common habitats but not dominant in any common habitat
Occasional	Widely scattered but not difficult to find
Uncommon	Difficult to find with few individuals or colonies but found in several locations
Rare	Very difficult to find and limited to one or very few locations or uncommon habitats

Table 17. Acronyms for vegetation types in the study area.

Acronym	Vegetation Community
DSC	Desert Scrub
DAR	Desert Arroyo
DCA	Desert Canyon
RIO	Rio Grande Riparian Corridor
SYG	Sotol-Yucca Grassland
CHP	Chaparral

information was present on the specimen label or in an electronic database. Two vegetation communities listed together (e.g. SYG/CHP) indicate that the species is found in an intermediate matrix of vegetation types, with one designation not being sufficient.

Voucher specimens:

All collections made during the current study are housed at SRSC. Selected duplicates were sent to BIBE, TEX-LL, and BRIT. All collections in the annotated list are grouped by the responsible herbarium (Table 18). Collectors were abbreviated using the initials of names taken from the databases and are listed alphabetically by the first initial (Table 19).

Locality information and comments:

Species classified as uncommon or rare have their general collection location listed after the list of collections and respective herbaria. Additional comments about localities, including local place names (Fig. 22), taxonomy, or any other notes of import, are included at the end of the listing.

Barker House. Historic adobe structure currently used for researcher housing. On the banks of the Rio Grande, about 1.4 miles east on the Boquillas Canyon road from the main road (NPS Route 12) to Rio Grande Village (RGV).

Boquillas. The site of Boquillas, Texas, equivalent to the current area of RGV.

Boquillas restoration site. Along the Rio Grande and on the old river floodplain terrace, on the southern side of the Boquillas Canyon trail. Burned in 2005, repeatedly treated with herbicide to eliminate the cane and tamarisk. Replanted with native species throughout 2006 and 2007.

Table 18. Acronyms for herbaria housing DH specimens.

Acronym	Herbarium and location
BBRSP	Big Bend Ranch State Park, Warnock Environmental Center, Lajitas, Texas
BGWMA	Black Gap Wildlife Management Area site headquarters on TX FM 2627
BIBE	Big Bend National Park, Texas
BRIT	Botanical Research Institute of Texas, Fort Worth
KANU	R.L. McGregor Herbarium, University of Kansas, Lawrence
NYBG	New York Botanical Garden, Bronx
SAT	Angelo State University Herbarium, San Angelo, Texas
SHST	S.R. Warner Herbarium, Sam Houston State University, Huntsville, Texas
SRSC	A. Michael Powell Herbarium, Sul Ross State University, Alpine, Texas
SWT	Southwest Texas State University Herbarium, San Marcos
TAES	S.M. Tracy Herbarium, Texas A&M University, College Station
TEX-LL	University of Texas at Austin Herbarium

Table 19. Index to workers who have made collections in the study area.

Initials	Collector	Initials	Collector
ACK	A.C. Koelling	CA	C. Adkins
AD	A. Denyas	CAB	C.A. Bane
AG	A. Grimes	CMR	C.M. Rowell
AL	A. Freeman/ A. Leavitt	CN	C. Newman
AL2	A. Lewis	DAL	D.A. Louie
AMP	A.M. Powell	DAZ	D.A. Zimmerman
AT	A. Traverse	DB	D. Baker
B	Blevins	DB2	D. Benham
BA	B. Alex	DF	D. Flyr
BA2	B. Amos	DG	D. Giles
BAR	B.A. Ralston	DHR	D.H. Riskind
BCT	B.C. Tharp	DM	D. Miller
BD	B. Dodson	DS	D. Seigler
BDGL	B.D.G. Leopold	DS2	D. Smith
BGH	B.G. Hughes	DSC	D.S. Correll
BHW	B.H. Warnock	ECM	E. Castro-Mendoza
BLT	B.L. Turner	EGM	E.G. Marsh
BM	B. Moon	EJL	E.J. Lott
BPM	Billy Pat McKinney	EW	Eula Whitehouse
BR	B. Rector	GJG	G.J. Goodman
BRM	B.R. McKinney	GL	G. Jones

Table 19, continued. Index to workers who have made collections in the study area.

Initials	Collector	Initials	Collector
GLB	G.L. Bradley	JLB	J.L. Blassingame
GLW	G.L. Webster	JM	J. Masters
HBC	H.B. Correll	JMM	J.M. Miller
HBP	H.B. Parks	JMP	J.M. Poole
HC	H. Croad	JS	J. Sirotnak
HCC	H.C. Cutler	JT	J. Todd
HCH	H.C. Hanson	KJC	K.J. Castro
HKB	H.K. Beuchner	LCH	L.C. Hinckley
HL	Hillary Loring	LEB	L.E. Brown
HTF	H.T. Fletcher	LF	L. Fowle
IMJ	I.M. Johnston	LJT	L.J. Toolin
JAM	J.A. Moore	LS	L. Slauson
JAS	J.A. Steyermark	MA	M. Anthony
JC	J. Clark	MC	M. Cole
JDA	J.D. Allen	MCJ	M.C. Johnston
JDB	J.D. Bacon	MD	M. Darrach
JEA	J.E. Averett	MLP	M.L. Powell
JF	J. Fenstermacher	MPG	M.P. Griffith
JFW	J.F. Weedon	MSY	M.S. Young
JH	J. Hardy	MT	M. Talbot
JJ	J. Jernigan	MT2	M. Turner

Table 19, continued. Index to workers who have made collections in the study area.

Initials	Collector	Initials	Collector
MWB	M.W. Bierner	SAP	S.A. Powell
MY	M. Yugas	SS	S. Sikes
OCW	O.C. Wallmo	TA	T. Anderson
OES	O.E. Sperry	TE	T. Emerson
PAS	P.A. Smith	TJW	T.J. Watson
PC	P. Cruze	TK	Tony Klein
PDW	P.D. Whitson	TM	T. Mollhagen
PM	P. Manning	TR	T. Rogers
PM2	P. McNeal	TRV	T.R. Van Devender
PVW	P.V. Wells	TXDOT	Tx Highway Dept.
RAH	R.A. Hilsenbeck	UTW	U.T. Waterfall
RB	R. Baker	VB	V. Bailey
RE	R. Eckhardt	VLC	V.L. Cory
RH	R. Halfmann	WBM	W.B. McDougall
RLH	R.L. Hartman	WEH	W.E. Hall
RLU	R.L. Ufkes	WFB	W.F. Barr
RN	R. Nichols	WFM	W.F. Mahler
RRI	R. Rose-Innes	WGD	W.G. Degenhardt
RS	R. Studhalter	WH	W. Hodgson
SJ	S. Jones	WOD	Justice W.O. Douglas
SMU	SMU-DMNH	WRC	W.R. Carr

Dagger Canyon. Unnamed on USGS maps, refers to the tight, steep-walled canyon beginning 2.4 air-miles directly east of the top of Dagger Mountain, with three obvious 90° turns in the canyon.

Dagger Tank. Named on the USGS 7.5 minute topographic map and drawn on many others; large tank just north and west of the mouth of Dagger Canyon.

Devil's Den. Tight, steep-walled canyon 1.2 air-miles south of Dog Canyon, cutting through the hill north of Dagger Mountain.

DH plateau. Flattish plateau, generally above 5000 ft but down to 4500 ft on the eastern side of Brushy Canyon, generally located around Sue Peaks.

Dog Flats. West of Dog Canyon and east of the Persimmon Gap-Panther Junction paved road.

Frog Tank, Frog Canyon. Three miles south and slightly east of BGWMA headquarters, on the east side of Sierra Larga.

Heath Creek. Named on most topographic maps, the main drainage feeding Telephone Canyon, the origin of which is on the east side of Sue Peaks.

High saddle. Between drainages heading north and south, one-half air-mile NW of the northern Sue Peak at 289°. Elevation 5300 ft.

North Dagger Mountain. Northern part of Dagger Mountain, which is split into two parts by a SE-NW drainage on its northwestern side, with a peak at about 2.6 air-miles south of Dog Canyon. Collections from this area include the SE-NW draining valley.

Passionflower Canyon. Southeast end of Alto Relex, 1.4 air-miles east of the Old Ore Road at Ernst Basin roadside campsite turnoff.

Shackelford cabin. Ranch house at the end of the Brushy Canyon road, approximately 16 road-miles from FM 2627. On some specimen labels, referred to as the Nature Conservancy/Brushy Canyon lodge.

Stairstep/Stairway Mountain. Northeastern-most mountain of the study area, just west of TX FM 2627 and the BGWMA headquarters.

Strawhouse Canyon. Southern-most constriction of the drainage that the Strawhouse trail follows, about 1.3 air-miles north of the Boquillas Canyon road.

Sue Peak Canyon. Sinuous canyon that drains the western slopes of Sue Peaks.

TC. Telephone Canyon.

TC dam. Man-made stone-and-concrete dam, trailside, about one mile in from the TC trailhead off the Old Ore Road.

Tunnel. On the road between Panther Junction and Rio Grande Village, about 2.2 miles from RGV.

LYCOPHYTA

SELAGINELLACEAE

Selaginella lepidophylla (Hook. & Grev.) Spring – Resurrection fern

Common perennial, open rocky slopes; DSC, DCA, SYG, 2200–4200 ft; *BA2 5391, JLB 3973, MC 158* (SAT); *BHW 18407, 10760, BHW & MCJ 15988, JF 253, MT 99, 420* (SRSC); *BHW 10760, BHW & RRI 562, DSC & BHW 14980, RRI & BM 1316a* (TEX-LL).

§ *Selaginella pilifera* A. Braun – Resurrection plant

Perennial; Stairway Mountain; *JLB 3980* (SAT). Also occurs in the Chisos and Glass Mountains.

Selaginella wrightii Hieron. – Wright spikemoss

Occasional to common perennial, rock interspaces, shallow soil; DSC, DCA, SYG, 3500–4000 ft; *WFM 43* (BGWMA); *JF 458, 912, BHW 10827 & 18409, BHW & MCJ 15985* (SRSC); *BHW 10827, DSC & BHW 14981* (TEX-LL).

PTEROPHYTA

ASPLENIACEAE

+ *Asplenium resiliens* Kunze – Blackstem spleenwort

Rare perennial, east aspect cliff faces in moister protected soil in cracks or under rock ledges; SYG, CHP, 5680–5840 ft; *JF 1279, 1993* (SRSC). Sue Peaks summit. Turner et al. (2003) indicates a collection was made in the study area but no specimens were discovered.

PTERIDACEAE

Argyrochosma limitanea (Maxon) Windham ssp. *mexicana* (Maxon) Windham – Southwestern false cloakfern

Uncommon perennial herb, cracks in cliff faces or in shallow rocky soil, exposed or protected sites; DCA, SYG, CHP, 2120–5840 ft; *JF 270, 432, 529, 675, 1504, 2023, 2198; AMP & SAP 6142* (SRSC). Sue Peaks and TC trail environs, Alto Relex, north of the Barker House, Boquillas Canyon.

Argyrochosma microphylla (Mett. ex Kuhn) Windham – Small leaf false cloakfern

Occasional perennial, cracks and crevices, shallow soil on open slopes; DSC, SYG, CHP, 2780–5000 ft; *JLB 2957, BA2 5392* (SAT); *JF 183, 484, 527, 768, 1175, 1198, BHW 10822* (SRSC), *BHW 10822, BHW & LCH BG-143* (TEX-LL).

Astrolepis cochisensis (Goodding) Benham & Windham – Cochise scaly cloakfern

Common perennial, shallow to deeper soil, exposed to more sheltered areas; DSC, DCA, SYG, CHP, 1800–5500 ft; *WFM 58, BHW & LCH s.n.* (BGWMA); *PVW s.n.* (KANU); *JF 305, 953, 1232, 1257, 1546, 2098a, JF & MD 462, AMP & SAP 6143a, 6160, MT 54, BHW 10829, BHW & LCH BG-131, BHW & MCJ 16861* (SRSC); *BHW 10829* (TEX-LL).

Astrolepis integerrima (Hook.) Benham & Windham – Hybrid cloakfern

Common perennial, shallow to deeper soil, exposed to more sheltered areas, slightly less common than *A. cochisensis* and in less extreme habitat; DSC, SYG, 1900–4320 ft; BA2 5393, 5578, 5579, JLB 938, 2599, HC 1, 32, 34 (SAT); JF 206a, 433, 487, 680, 952, 1054, 1138, 1489, 1496, 1547, 2043, AMP & SAP 6143b, 6161, TR 88, 464, MT 55, BHW & MCJ 16068; (SRSC); DSC & BHW 14982a (TEX-LL).

Astrolepis sinuata (Lag. ex Sw.) Benham & Windham – Wavy scaly cloakfern

Uncommon perennial, sheltered moister habitats; DAR, DCA, 3050–3560 ft; WFM s.n. (BGWMA); JLB 939, SJ 6510 (SAT); JF 535, 1125, 1156 (SRSC); DSC & BHW 14982 (TEX-LL). Dagger Flat, TC trail, Ernst Tinaja, Brushy Canyon, Frog Canyon.

+ *Astrolepis windhamii* Benham – Windham cloakfern

Uncommon perennial, bottom of scree slope, crevices, steep slopes with shallow soil, varied exposures; DSC, SYG, 2200–4700 ft; JF 1697, 1705, 1892, 2202 (SRSC). Dagger Mountain, western slopes of DH below Sue Peaks, Strawhouse Canyon.

Cheilanthes alabamensis (Buckl.) Kunze – Alabama lipfern

Rare perennial, rocky slopes below ridges, shaded limestone crevices in canyons; DCA, SYG, 4650 ft; JF 2199, MT 229 (SRSC); MT 229 (TEX-LL). Sue Peaks Canyon, north rim of DH plateau/Brushy Canyon.

§ *Cheilanthes bonariensis* (Willd.) Proctor – Golden lipfern

Perennial; 4650 ft; BA2 5394 (SAT). Near Shackelford cabin in Brushy Canyon.

Cheilanthes eatonii Baker – Eaton lipfern

Occasional perennial, unprotected sites to areas with more soil and shade; DSC, SYG, 3700–4960 ft; JF 767, 1201, 1501, MT 116, BHW 20629 (SRSC).

Cheilanthes feei T. Moore – Slender lipfern

Occasional perennial, crevices in protected or north-facing cliffs; DCA, SYG, 3050–4900 ft; JF 533, 758, 1127, 1200, 1500, 1708, 1919, BHW 10765, 20605 (SRSC); BHW 10765 (TEX-LL).

Cheilanthes horridula Maxon – Rough lipfern

Occasional perennial, crevices in rocks and ledges, more protected sites; DAR, DCA, RIO, 1850–3050 ft; CMR 2602 (BGWMA); BA2 5498, 5580, HC 36, 40 (SAT); JF 670, 1059, 1141, 1611, 2046, TR 465, BHW 18412, 20607 (SRSC); DSC & BHW 14977 (TEX-LL).

Cheilanthes villosa Davenp. ex Maxon – Villous lipfern

Uncommon perennial, crevices and base of cliffs; DCA, 3560–3800 ft; JLB 2596, 3801 (SAT); JF 533a, BHW 10757 (SRSC); BHW 10757, DSC & BHW 14983 (TEX-LL). TC trail mile 3.5 area, head of Heath Canyon and Boquillas Canyons, Frog Canyon.

§ *Notholaena aschenborniana* Klotzsch – Scaled cloakfern

Rare perennial; *JLB 2597, 2956* (SAT). Frog Canyon, Stairway Mountain.

§ *Notholaena greggii* (Mett. ex Kuhn) Maxon – Gregg cloak fern

Uncommon perennial, boulders, bluffs, and ledges; DCA, 1800–4300 ft; *CMR 2600* (BGWMA); *JLB 2600* (SAT); *BHW 10841, BHW 20897, BHW & LCH 16061, BHW & MCJ 16859* (SRSC); *DSC & BHW 14978, DS 1096* (TEX-LL). Head of Brushy and Boquillas canyons, Frog Canyon.

Notholaena nealleyi Seaton ex J.M. Coult. – Nealley cloak fern

Rare perennial, base of cliffs; DSC, DCA, 3650 ft; *JLB 3806* (SAT); *JF 479* (SRSC). TC trail area, Frog Canyon.

Notholaena neglecta Maxon – Maxon cloak fern

Rare perennial, base of ledges, underneath rocks in canyon bed; DCA, 1850–3560 ft; *JF 603, 1088* (SRSC); *DSC 14984, DSC & BHW 14979* (TEX-LL). TC trail area, Boquillas Canyon.

Notholaena standleyi Maxon – Star cloak fern

Occasional perennial, base of boulders, cracks in canyon walls; DSC, DAR, DCA, SYG, 2880–4360 ft; *JLB 2595, KJC 176, HC 35, ECM 251* (SAT); *JF 604, 867, 1126, 1007a, BHW 9157, BHW & LCH 15987* (SRSC); *DSC & BHW 14985, BHW 9157* (TEX-LL).

Pellaea atropurpurea (L.) Link – Purple cliffbrake

Rare perennial, protected areas, in thick duff underneath plants or in crack of cliff wall; SYG, CHP, 3500–5680 ft; *JF 1285, 1299a, 2200, BHW & LCH BG-144* (SRSC). Sue Peaks area, DH plateau, upper Brushy Canyon.

Pellaea intermedia Mett. ex Kuhn – Intermediate cliffbrake

Rare perennial, protected areas, in thick duff underneath plants or in crack of cliff wall; SYG, CHP; 2560–4900 ft; *JF 1199, 2201, MT 119* (SRSC). *BHW 559* (TEX-LL). Dog Canyon, DH plateau, near Shackelford cabin.

CONIFEROPHYTA

CUPRESSACEAE

Juniperus coahuilensis (Martínez) Gaussen – Rose-fruited juniper

[*Juniperus erythrocarpa* Cory] Rare shrub-tree, mesa tops and high elevation hillsides; CHP; 4600–5470 ft; *JF 1240* (BIBE); *JF 1037, 1219, 1240, MT 237* (SRSC); *BA2 5370* (SAT). Brushy Canyon, DH plateau.

Juniperus pinchotii Sudw. – Red-berry Juniper

Uncommon shrub-tree, mesa tops, sporadic at higher elevations, one individual at lower elevation in large canyon east of Dagger Mountain; DCA, SYG, CHP; 3050–5680

ft; *PVW s.n.* (KANU); *JF 499, 1048, 1136, 1298, 1913, AMP & SAP 5135, BHW & LCH BG-157* (SRSC). Dagger Mountain, Dagger Canyon, upper TC trail, Sue Peaks environs, Brushy Canyon.

PINACEAE

§ *Pinus cembroides* Zucc. – Mexican pinyon

Rare tree, rocky limestone soil; SYG, ca. 4200–5300 ft; *WFM 54* (BGWMA); *BA2 5229* (SAT); *BHW 313* (SRSC). Brushy Canyon, northern DH plateau. Listed by Amos and Giles (1992).

Pinus remota (Little) D.K. Bailey & Hawksw. – Papershell pinyon

Rare tree, eastern slopes of central DH plateau; SYG, 5200 ft; *JF 1249, 1310, MT 88, 258, AMP 5492* (SRSC).

GNETOPHYTA

EPHEDRACEAE

§ *Ephedra antisiphilitica* Berland. ex C.A. Mey. – Clapweed

Uncommon to "frequent" shrub, northwest slopes; DSC, 3520 ft; *CMR 17227* (BIBE); *BHW 490* (SRSC & TEX-LL). Dagger Flat and northwest slopes of the DH.

Ephedra aspera Engelm. ex S. Watson – Rough jointfir

[*Ephedra nevadensis* var. *aspera* (Engelm. ex S. Watson) L.D. Benson] Common shrub, ridges, washes, open slopes, cracks in bedrock; DSC, DAR, DCA, SYG, CHP, 1900–5250 ft; *OES 1366* (BIBE); *BA2 5710, ECM 72, CMR 17227* (SAT); *JF 349, 455, 474, 563, 578, 723, 745a, 806, 1003, 1237, 1438, 1485, 1665, 2052, JF & MD 583, OES 1365, 1743, BHW 1742* (SRSC).

Ephedra trifurca Torr. ex S. Watson – Longleaf jointfir

Common shrub, sand, limestone soil, alluvium; DSC, DCA, 1800–3500 ft; *EGM 143, ACK 830* (BIBE); *HCC 1856* (NYBG); *CMR 14224, 17226* (SAT); *JF 1388, BHW 47059* (SRSC); *BHW & RRI 557a, 57b, 47059* (TEX-LL).

ANTHOPHYTA – Monocotyledones

AGAVACEAE

Agave lechuguilla Torr. – Lechuguilla

Abundant shrub/semi-succulent, ubiquitous; DSC, DCA, SYG, 1800–5840 ft; *BA2 5264, DB s.n.* (SAT); *JF 257, TR 78* (SRSC); *MSY s.n.* (TEX-LL).

#Δ *Agave havardiana* Trel. – Havard century plant

Rare shrub/semi-succulent, shallow soil, west aspect; SYG, 5840 ft; Observed at south end of southern Sue Peak. Several (ca. five) small individuals were observed, clustered in one spot, rosettes had few leaves.

AMARYLLIDACEAE

Cooperia drummondii Herbert – Evening rainlily

Uncommon perennial herb, gravelly soil, open areas; DSC, SYG, CHP 3150–5840 ft; BA2 5686 (SAT); JF 1102, 1984 (SRSC). Dagger Flat, Sue Peaks, Brushy Canyon.

Zephyranthes longifolia Hemsl. – Copper zephyrlily

Rare perennial herb, open areas, gravelly soil; DSC, SYG, 3500–4840 ft; JF 584, BHW 1080-178 (SRSC). Upper TC trail, near McKinney Springs, Stairway Mountain.

BROMELIACEAE

Hechtia texensis S. Watson – Texas false agave

[*Hechtia scariosa* L.B. Sm.] Occasional shrub/semi-succulent, rocky areas, usually on slight slopes with very sharp, eroded bedrock outcrops and boulders; DSC, 1800–4300 ft; DG 219 (BIBE); BA2 5253, 5273, DG 219, MC s.n. (SAT); JF 328, 1002, 1004, OES 1323, BHW 13036, 14047, 20625, 21206 (SRSC); AT 2242 (TEX-LL).

COMMELINACEAE

Commelina erecta L. – Whitemouth dayflower

Rare perennial herb, deeper soil with shade; DAR, DSC; 2300-2400 ft; BRM 3032 (BGWMA); JF 1445, OCW 507 (SRSC). Found within a thicket of vegetation in a low spot of a slight drainage flowing across Ernst Basin; also in Brushy Canyon.

§ *Tradescantia wrightii* Rose & Bush var. *glandulopubescens* B.L. Turner – Wright spiderwort

Rare perennial herb; 3800 ft; BHW 10775 (SRSC & TEX-LL). Specimens collected at head of Heath Canyon in the DH. The SRSC specimen is labelled as *T. wrightii*, the only locality recorded in Turner et al. (2003) for this variety. Label data notes that the species is, "abundant and widespread on top of mountains".

CYPERACEAE

Carex muriculata F.J. Herm. – Schiede sedge

[*Carex schiedeana* Kunze] Uncommon perennial, dry western slopes, rocky shallow soil; SYG, 3000–5250 ft; BHW & LCH BG-136 (BGWMA); JF 2193 (BIBE); BA2 5219, 5305 (SAT); JF 772, 1193, 1236, 2193, MT 69, BHW 10821, 10847, BHW & LCH BG-136 (SRSC); JF 1236, BHW 10821 (TEX-LL).

§ *Cladium mariscus* (L.) Pohl ssp. *jamaicense* (Crantz) Kükenth. – Jamaica swamp sawgrass

Uncommon perennial, silty soil; ca. 1800 ft; BHW 13068 (SRSC). Collected in 1955 at Graham farm in the RGV area.

+ *Cyperus elegans* L. – Royal flatsedge

Rare perennial, sandy outwash deposit; DAR, 2400 ft; JF 1449 (SRSC). Just below Ernst Tinaja. Turner et al. (2003) shows dots in the study area but no specimens were discovered.

- § *Cyperus laevigatus* L. – Smooth flatsedge
 “Rare” perennial; DCA, 1800 ft; *BHW 772* (SRSC). Collected in 1937 at the entrance to Boquillas Canyon.
- § *Cyperus odoratus* L. – Fragrant flatsedge
 “Infrequent” annual or perennial; RIO, 1800 ft; *CAB 31* (BIBE); *JS s.n.*, *EGM 162m*, *BHW 13046*, *21441* (SRSC); *BHW 327* (TEX-LL). At the beaver marsh and along the Rio Grande at Boquillas in 1955.
- § *Cyperus squarrosus* L. – Bearded flatsedge
 “Rare to infrequent” annual; RIO, 1800 ft; *BHW 774* (SRSC & TEX-LL). Collected in 1937 at the entrance of Boquillas Canyon.
- § *Eleocharis geniculata* (L.) Roemer & J.A. Schultes – Canada spikeseed
 [*Eleocharis caribaea* (Rottb.) S.F. Blake] “Infrequent” annual; RIO, 1800 ft; *BHW 13047* (BIBE & SRSC); *BHW 772b* (TEX-LL). Last collected in 1955.
- § *Eleocharis montevidensis* Kunth – Sand spikerush
 “Frequent” annual; RIO, 1800 ft; *HTF 288* (SRSC). Collected in 1932 along the Rio Grande at Boquillas.
- § *Eleocharis palustris* (L.) Roemer & J.A. Schultes – Common spikerush
 [*Eleocharis macrostachya* Britton] “Frequent” perennial, mud tank; ca. 3000 ft; *BHW & MCJ 16673* (SRSC). Collected in 1958 near Alto Relex.
- § *Fuirena simplex* Vahl var. *aristulata* (Torr.) Kral – Western umbrella-sedge
 Uncommon perennial; RIO, 1800 ft; *BA2 4605* (SAT); *BHW 21444* (SRSC & TEX-LL). Along the Rio Grande at Boquillas, last collected in 1988.
- § *Schoenoplectus pungens* (Vahl) Palla – Common threesquare
 [*Scirpus americanus* Pers. var. *longispicatus* Britton] Perennial; *OES 1350* (SRSC). Banks of the Rio Grande at Ogle Spring, RGV area, in 1938.

JUNCACEAE

- § *Juncus acuminatus* Michx. – Tapertip rush
 Perennial; 1800 ft; *CMR 17236* (SAT). Collected in 1988 at Rio Grande Village.
- § *Juncus bufonius* L. – Toad rush
 Rare annual; RIO, 1800 ft; *BHW C298* (SRSC & TEX-LL). Collected in 1938 along the Rio Grande at Boquillas.

LILIACEAE# *Allium kunthii* G. Don – Kunth onion

Rare perennial herb, open rocky slopes with sparse other vegetation; SYG, 4700–5500 ft; *JF 1514, 1983* (SRSC). Perhaps found other than on slopes surrounding Sue Peaks but were discovered only after significant rains and so may not be an apparent member of the plant community elsewhere.

Dasyliirion leiophyllum Engelm. ex Trel. – Sotol

Common shrub/semi-succulent, ubiquitous above 3000 ft; DSC, DAR, DCA, SYG, CHP, ca. 3000–5840 ft *WFM s.n., TR s.n.* (BGWMA); *OES 1321* (BIBE); *JF 860, OES s.n.* (SRSC).

Nolina erumpens (Torr.) S. Watson – Foothill beargrass

Shrub/semi-succulent, common element of SYG and CHP of higher elevations; 4320 ft; *BA2 5704* (SAT); *JF 128, 821, AMP & SAP 5127, TR 130, MT 188, 190* (SRSC); *BHW & LCH BG-167* (SRSC & TEX-LL).

§ *Nolina texana* S. Watson – Texas sacahuista

Rare shrub/semi-succulent; 3500 ft; *BHW & LCH s.n.* (BGWMA). One collection from 1950 at Big Brushy Canyon. Listed by Amos and Giles (1992).

Nothoscordum bivalve (L.) Britt. – Crowpoison

Rare perennial herb; SYG; *BHW 10773* (SRSC). Collected in 1952 at the head of Heath Canyon. May have been seen during present study also, on ridge above mile 5.5 of Telephone Canyon trail, but not enough material was present to make a confident identification.

§ *Yucca elata* Engelm. – Soap tree yucca

Shrub/semi-succulent, more common at lower to mid-elevations; DSC, DCA, 3520 ft; *BA2 & DG 4861, BHW 877* (BIBE); *BA2 4861* (SAT); *BHW 877* (SRSC); *BHW 877, s.n., MSY s.n.* (TEX-LL).

§ *Yucca faxoniana* Sarg. – Giant dagger yucca

Occasional shrub/semi-succulent, open rocky soil; DSC, SYG, CHP, 3500–5840 ft *OES 1322* (BIBE); *BRM s.n.* (BGWMA); *SMU 162* (SAT); *WH, TA, LS, & JP 9024, OWS 1322, MT 124* (SRSC); *RN E-4-6-92, 5-8-92, BHW Lot 45* (SRSC & TEX-LL).

Yucca rostrata Engelm. ex Trel. – Beaked yucca

Occasional shrub/semi-succulent, open scrub; DSC, 2150–3400 ft; *PVW s.n.* (KANU); *WH, TA, LS & JP 9025, JF 849, TR 129, MT 50, BHW & LCH BG-62* (SRSC); *RN E-5-08-92, 4-6-1992* (TEX-LL). In the past, this species has been placed in synonymy with *Yucca thompsoniana* (Powell 1998) however currently they are considered separate species (Powell in prep, FNA 2002); *Yucca rostrata* is more of a south Brewster County, or lower elevation, species that is generally taller with longer leaves than *Yucca thompsoniana*.

§ *Yucca thompsoniana* Trel. – Thompson yucca

Occasional shrub/semi-succulent; *MSY s.n.* (TEX-LL). Collected in 1915 near McKinney Springs. Also known from the Persimmon Gap area.

Yucca torreyi Shafer – Torrey yucca

Occasional shrub/semi-succulent, gravelly soil; DSC, DAR, DCA, SYG, 2100–3500 ft; *SMU 164* (SAT); *WH, TA, LS & JP 9026, JF 683, 1723* (SRSC); *BHW 9940* (TEX-LL).

ORCHIDACEAE

Dichromanthus cinnabarinus (Llave & Lex.) Garay – Scarlet ladies' tresses

Rare perennial herb, open west slope, in small pocket of shallow soil mostly surrounded by slick bedrock outcrops; SYG, 5500 ft; *JF 1958* (SRSC). Southern Sue Peaks. Few individuals were seen; found after good rains had passed through the area, causing many novel species to emerge including *Allium kunthii*. Also known locally from the Chisos and Glass mountains.

POACEAE

Achnatherum curvifolium (Swallen) Barkworth – Guadalupe ricegrass

[*Stipa curvifolia* Swallen] Rare perennial herb, just off open summit of Stuarts Peak in more vegetated area with sheltered grasses and rock outcrops, northeast aspect, deeper soil; SYG, 5000 ft; *JF 735a* (SRSC). New Brewster County record. This species was previously known only from a restricted area in the Guadalupe Mountains in Culberson County.

Achnatherum eminens (Cav.) Barkworth – Southwestern needlegrass

[*Stipa eminens* Cav.] Rare perennial herb, wash gravel, shallow rocky soil; DSC, SYG, 3400–5300 ft; *JF 366, 1990; BHW 10768* (SRSC); *BHW 10768* (TEX-LL). *JF 366* was collected from a very robust plant growing trailside just downstream of the dam along the Telephone Canyon trail in 2004. However, on successive visits the plant had disappeared, perhaps having been removed during trail maintenance activities.

Achnatherum lobatum (Swallen) Barkworth – Littleawn needlegrass

[*Stipa lobata* Swallen] Uncommon perennial herb, loose rocky soil; DSC, SYG, 3800–5000 ft; *JF 760, MT 146, BHW 10771* (SRSC); *BHW 10771* (TEX-LL). At Heath Canyon and Stuarts Peak.

§ *Andropogon glomeratus* (Walt.) B.S.P. – Bushy bluestem

Perennial herb, marsh; RIO, 1800 ft; *CAB 30* (BIBE). Collected in 1973 at the beaver marsh at RGV.

+ *Aristida adscensionis* L. – Six-weeks Threeawn

Rare annual herb, deeper soil in saddle and high peaks to compacted soil in trail; SYG, 5300–5840 ft; *JF 1304, 1918, 1987* (SRSC). Sue Peaks and TC trail. Turner et al. (2003) shows dots in the study area but no specimens were discovered.

Aristida purpurea Nutt. var. *purpurea* – Purple threeawn

[*Aristida roemeriana* Scheele] Occasional perennial herb, open desert, slopes, washes; DSC, DAR, DCA, 1800–3400 ft; *JF* 173, 325, 344, 1327, 1382, 2079; *MT* 71 (SRSC).

Aristida purpurea Nutt. var. *nealleyi* (Vasey) Allred – Blue threeawn

[*Aristida glauca* (Nees) Walp.] Common perennial herb, slopes, washes, ridges, all aspects; DSC, DAR, DCA, SYG, 2250–4800 ft; *JF* 486, 811, 935, 1178, 1192, 1536, 1537, *CMR* 5069, *MT* 70, 160, *BHW* 10758, 10811, 10816, 10835, *BHW & LCH BG-159*, 191, 193 (SRSC); *GJG & UTW* 4628, *BHW* 10758, 10811, 10816, 10835, 13028 (TEX-LL).

§ *Aristida purpurea* Nutt. var. *wrightii* (Nash) Allred – Wright threeawn

Perennial herb; 3500 ft; *BHW & LCH BG-159*. Upper Brushy Canyon.

§ *Aristida ternipes* Cav. – Spidergrass

"Frequent" perennial herb; 1800 ft; *BHW* 20944, 20946; *BHW & LCH BG-186* (SRSC). Collected in 1950 at Stairway Mountain and in 1966 at Boquillas.

!!+ *Arundo donax* L. – Giant reed

Abundant perennial herb, banks of Rio Grande and extending into appropriate habitat within the mouths of side drainages; RIO, DCA, 1800 ft; *JF* 2039 (SRSC).

+ *Blepharidachne bigelovii* (S. Wats.) Hack. – Bigelow desertgrass

Rare perennial herb, open desert; DSC, 3440 ft; *JF* 355 (SRSC). TC trail. Turner et al. (2003) shows a dot in the study area but no specimen was discovered.

Bothriochloa barbinodis (Lag.) Herter – Cane bluestem

Uncommon perennial herb, in areas that retain more moisture; DAR, SYG, RIO, 1800–4400 ft; *BHW* 779 (BIBE); *JF* 1534 (SRSC). Upper TC trail and Boquillas Canyon.

Bothriochloa laguroides (DC.) Herter ssp. *torreyana* (Steud.) Allred & Gould – Silver beardgrass

Occasional perennial herb, washes, rocky crevices; DAR, DCA, 2350–4360 ft; *CMR* 5096 (BGWMA); *JF* 358, 531, 937, 1113, 1371, 1377, 1531, *MT* 198, 224, *BHW s.n.*, *BHW & BLT* 8320 (SRSC); *BHW* 21514, *BHW & BLT* 8320 (TEX-LL).

§ *Bouteloua aristidoides* (Kunth) Griseb. – Needle grama

"Frequent" annual herb, sandy soil; DSC, RIO, 1800 ft; *BA2*, *DG*, *TE*, & *PC* 4597a, *BHW* 13034 (BIBE); *BHW* 12894, 13034 (SRSC). All collections from the head of Boquillas Canyon, last collected in 1988.

Bouteloua barbata Lag. – Sixweeks grama

Rare annual herb, sandy soil; RIO, DCA, 1800 ft; *BA2*, *DG*, *TE*, & *PC* 4597b (BIBE); *JF* 2096 (SRSC). At the head of Boquillas Canyon and inside the mouth of Arroyo Venado within Boquillas Canyon.

Bouteloua curtipendula (Michx.) Torr. – Sideoats grama

Common perennial herb, washes, slopes, less common at lowest elevations; DSC, DAR, DCA, SYG, CHP, 1800–5250 ft; *JF* 254, 1107, 1176, 1238, 1393, 1512, 1524, 2139, 2166, *MT* 38, 162, *BHW* 10780, *BHW & LCH BG-190*, *BHW & BLT* 8329 (SRSC); *BHW* 10780 (TEX-LL).

+ *Bouteloua eriopoda* (Torr.) Torr. – Black grama

Rare perennial herb, sides of lightly sloped high-elevation drainage; SYG, 4400 ft; *JF* 1533 (SRSC). Upper TC trail area. Black grama does not seem to be an important component of DH grassland areas. Other parts of the DH plateau, or perhaps Margaret Basin may yield more populations.

+ *Bouteloua hirsuta* Lag. – Hairy grama

Occasional perennial herb, rocky soil; SYG, CHP, 3300–5500 ft; *JF* 1221 (BIBE); *JF* 1027, 1032, 1221, 1248, 1256, 1319, 1523, *MT* 46, 80, 131, 175 (SRSC). Replaces *Bouteloua ramosa* to be the common higher elevation grama grass, in addition to *Bouteloua curtipendula*.

Bouteloua kayi Warnock – Kay grama

Uncommon (G1S1) perennial herb, holes or crevices in bedrock or boulders; DSC, SYG, CHP, 3500–5800 ft; *JF* 2186 (BIBE, SRSC, & TEX-LL); *JF* 296, 1169, *MT* 134, 182, 191, *OCW* 318, *BHW* 20621 (SRSC). This species is rare at lower elevations, but becomes one of the common species at higher elevations near Sue Peaks, in areas of slick bedrock exposures, commonly growing out of holes eroded out of the bedrock. Also collected on Stairstep Mountain and in Brushy Canyon.

Bouteloua ramosa Scribn. ex Vasey – Chino grama

Abundant perennial herb, ubiquitous below 5000 ft; DSC, DAR, DCA, SYG, CHP, 1800–4400 ft; *CMR* 5075 (BGWMA); *JF* 191, 338, 443, 930, 1160a, 1331, 1452, 1544, 1545, 2009, 2152, *BHW* 10853 (SRSC).

Bouteloua trifida Thurb. – Red grama

Occasional to “frequent” perennial herb, open desert, slopes, drainages; DSC, DAR, DCA, 1800–3360 ft; *JF* 341, 1398, 1406, 1474, 1476, 1543, 2144, *BHW* 12341, 21190, *BHW & LCH BG-183* (SRSC); *TRV*, *GLB & WEH* 85-38 (TEX-LL).

Cathestecum erectum Vasey & Hack. – False grama

Occasional perennial herb, open desert, alluvial hills; DSC, 1800–2450 ft; *JF* 1340, *MT* 121, 141, *BHW* 10813, 12900, *BHW & MCJ* 16842 (SRSC); *BHW* 110813, 12900 (TEX-LL).

§ *Cenchrus spinifex* Cav. – Coastal sandbur

[*Cenchrus incertus* M.A. Curtis] Locally frequent annual or perennial herb, sandy soil; RIO, DCA, 1800–2400 ft; *BA2*, *DG*, *TE*, & *PC* 4601 (BIBE); *AMP & SAP* 5862, *BHW* 23037, *BHW & MCJ* 16844, *BHW & BLT* 8322 (SRSC); *BHW* 16844 (TEX-LL). Boquillas Canyon.

Chloris virgata Sw. – Feather fingergrass

Rare annual herb, close to water sources; DSC, RIO, 1800–3440 ft; *JF 364* (SRSC); *EGM 51-1129* (TEX-LL). TC trail dam and Boquillas area.

! *Cynodon dactylon* (L.) Pers. – Bermudagrass

Locally abundant perennial herb, sandy soil; DCA, RIO, 1800–2350 ft; *BA2, DG, TE, & PC 4610* (BIBE); *JF 1336* (SRSC); *EGM 141, 51-1115* (TEX-LL). Abundant along the river corridor, the only other place this was encountered was in a sand bank in the canyon above Ernst Tinaja.

Dasyochloa pulchella (Kunth) Willd. ex Rydb. – Fluffgrass

[*Erioneuron pulchellum* (Kunth) Tateoka, *Tridens pulchellus* (Kunth) Hitchc.]

Occasional perennial herb, open desert, slopes, rocky to sandy soil; DSC, DCA, 1900–2760 ft; *BA2, DG, TE, & PC 4595* (BIBE); *JF 194, 678, 1338, 2025, 2049, BHW & LCH BG-198* (SRSC).

Digitaria californica (Benth.) Henr. – Arizona cottontop

Uncommon perennial herb, slightly more mesic sites, water catchments; DSC, DAR, DCA, SYG, CHP, 3000–4000 ft; *CMR 5095* (BGWMA); *JF 335, 839, BHW 10801* (SRSC); *BHW 10801* (TEX-LL). TC trail, near Sue Peaks, Frog Canyon. Observed in Ernst Basin.

§ *Digitaria ciliaris* (Retz.) Koel. – Southern crabgrass

Rare annual herb; 1800 ft; *BHW 775* (BIBE, SRSC, TEX-LL). Along the Rio Grande at Boquillas in 1937.

+ *Digitaria pubiflora* (Vasey) J. Wipff – Carolina crabgrass

[*Digitaria cognata* (J.A. Schultes) Pilger var. *pubiflora* Vasey ex L.H. Dewey] Rare perennial herb, rock crevice of cliff wall; DCA, 1800 ft; *JF 2121* (SRSC). Inside the mouth of Cow Canyon from Boquillas Canyon. Turner et al. (2003) shows dots in the study area but no specimens were discovered. Also known locally from Maravillas Creek and the Chisos Mountains.

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

Uncommon annual herb, sandy soil associated with more permanent water; DAR, RIO, 1800–3440 ft; *DG & TE 4611* (BIBE); *JF 1330, EGM 139, BHW 793* (SRSC); *EGM 51-1113, BHW 793* (TEX-LL). Locally common along the river.

§ *Echinochloa muricata* (Beauv.) Fern. – Rough barnyardgrass

“Rare” annual herb; RIO, 1800 ft; *BHW s.n.* (SRSC), *BHW C299* (TEX-LL). Collected in 1938 along the Rio Grande at Boquillas. Also known from Dog Flats.

Enneapogon desvauxii Desv. ex Beauv. – Nineawn pappusgrass

Occasional perennial herb, slopes, plateaus, washes; DAR, DCA, SYG, 1800–5000 ft; *JF 193, 231a, 347, 1510, 1551, 2097, BHW 10770, 12897, BHW & MCJ 16865* (SRSC); *BHW 10770* (TEX-LL).

Eragrostis intermedia A.S. Hitchc. – Plains lovegrass

Rare perennial herb, western slopes; DSC, DCA, 2500–3800 ft; *JF 1894, BHW & MCJ 15984* (SRSC). Canyons in the Dagger Mountain area.

! *Eragrostis lehmanniana* Nees – Lehmann lovegrass

Uncommon perennial herb, sandy soil in washes; DAR, 2900–3440 ft; *CMR 16950* (BGWMA); *JF 211, 313, 1106, MT 202, BLT 22-143* (SRSC). Collected in the Dagger Mountain/Dagger Flat area, at the TC dam, and at Frog Canyon.

§ *Eragrostis pectinacea* (Michx.) Nees ex Steud. – Tufted lovegrass

“Infrequent” annual herb, in rocks by mortar holes; RIO, 1800 ft; *BHW 785* (BIBE); *BHW C595* (TEX-LL). At the entrance to Boquillas Canyon in 1937.

Erioneuron avenaceum (Kunth) Tateoka – Shortleaf woolygrass

Uncommon perennial herb, wash bottoms, open desert; DSC, SYG, 3560–4400 ft; *JF 515, 1532* (SRSC); *BHW 10781* (TEX-LL). This species was only seen twice during the current study (along the TC trail), though Warnock reported it as a frequent perennial near the top of the DH close to Sue Peaks on his 1952 specimen label.

Erioneuron pilosum (Buckl.) Nash – Hairy woolygrass

Common perennial herb, washes, slopes, plateaus, ridges; DSC, DAR, DCA, SYG, CHP, 2150–5800 ft; *CMR 5089* (BGWMA); *JF 756, 850, 1031, 1057, 1179, 1225, 1251, 1271, 1992, 2160, JF & HL 1905, MT 44, 73, 174, 197, BHW 10781, BHW & LCH BG-75* (SRSC); *BHW 10789* (TEX-LL).

Hesperostipa neomexicana (Thurb. ex Coult.) Barkworth – New Mexico feathergrass

[*Stipa neomexicana* (Thurb. ex Coult.) Scribn.] Rare perennial herb, deeper soil, with other rare grasses and rock outcrops; SYG, 5000 ft; *JF 735* (SRSC). Just north of Stuarts Peak. Also known locally from the Glass and Chisos Mountains.

Heteropogon contortus (L.) Beauv. ex Roemer & J.A. Schultes – Tanglehead

Occasional perennial herb, usually in gravelly or sandy washes; DAR, DCA, DSC, 1800–4400 ft; *JF 345, 574, 1396, 1473, 1596, 2138, MT 176, BHW 13074, 20947, BHW & LCH BG-189* (SRSC).

* *Leptochloa dubia* (Kunth) Nees – Green sprangletop

Uncommon throughout, perennial herb, open areas at higher elevations; DAR, SYG, 3750–5800 ft; *OCW 319* (BGWMA); *JF 233, 299, 1046, 1055, 1268, 1516, 1528, MT 231, OCW 319* (SRSC). No other sources consulted (Correll and Johnston 1970, Gould 1975, Powell 2000, Turner et al. 2003) note this species as being non-native other than the PLANTS database (USDA 2007).

§ *Leptochloa fusca* (L.) Kunth ssp. *uninervia* (J. Presl) N. Snow – Mexican sprangletop
 [*Leptochloa uninervia* (J. Presl) A.S. Hitchc. & Chase] "Infrequent to frequent"
 annual or perennial herb; RIO, 1800 ft; *HTF 289, BHW 13041* (SRSC); *EGM 140, 51-1114* (TEX-LL). All collections were made previous to 1956 along the Rio Grande at Boquillas.

Leptochloa panicea (Retz.) Ohwi ssp. *mucronata* (Michx.) Nowack – Mucronate sprangletop
 [*Leptochloa mucronata* (Michx.) Kunth] Rare annual or perennial herb, silty clay soil; DSC, 2400 ft; *JF 1428* (SRSC). Western Ernst Basin, in patch of tobosa grassland. Well-represented regionally Turner et al. (2003).

Lycurus phleoides Kunth – Wolfstail

Uncommon perennial herb, plateaus and slopes at higher elevations; SYG, CHP, 3800–5000 ft; *JF 1034, MT 39, BHW 10769* (SRSC); *BHW 10769* (TEX-LL).

+ *Lycurus setosus* (Nutt.) C.G. Reeder – Bristly wolfstail

Rare perennial herb, in open pockets within shrub forest; SYG, CHP, 5150 ft; *JF 1230* (SRSC). DH plateau. Turner et al. (2003) shows a dot but no specimen was discovered.

+ *Melica montezumae* Piper – Montezuma melicgrass

Rare perennial herb, north aspect, crack in cliff face, with *Phildadelphus microphyllus*; DSC/DCA, 4040 ft; *JF 721* (SRSC). Steep drainage on the western slopes of Stuarts Peak. Listed by Amos and Giles (1992).

Muhlenbergia arenicola Buckl. – Sand muhly

Rare perennial herb, finer, deeper soil that supported *Pleuraphis mutica*, *Sporobolus* spp., and other grasses; SYG, 5300 ft; *JF 1253* (BIBE); *JF 1253, 1991* (SRSC). High saddle below Sue Peaks. Species that were abundant in surrounding area, including lechuguilla, sotol, nolina, and grama grasses, were absent from this saddle area in favor of various grass species. Some old wood and wire were present, as well as prehistoric rock flakes and a few partial tools and/or arrowheads. Locally known from the NW two-thirds of Brewster County.

Muhlenbergia dubia Fourn. ex Hemsl. – Pine muhly

Occasional perennial herb, wash gravel, talus slopes, shallow to deeper soil; DAR, SYG, 3500–5500 ft; *JF 734, 762, 1217, 1261, 2180* (SRSC). Possibly the dominant grass above 5000 ft. This species concept includes *Muhlenbergia metcalfei*. *Muhlenbergia* replaces *Bouteloua* to be the most abundant high-elevation grass genus at the highest elevations of the DH.

Muhlenbergia spiciformis Trin. – Longawn muhly

[*Muhlenbergia parviglumis* Vasey] Occasional perennial herb, ridges, plateaus, in open pockets of chaparral; SYG, CHP, 4280–5840 ft; the common high-elevation grass on the west side of Sue Peaks; *JF 1053, 1216, 1243, 1262, 1303, 1513, 1525* (SRSC).

Muhlenbergia porteri Scribn. ex Beal – Bush muhly

Uncommon perennial herb, sandy to loamy soils, wash bottoms; DSC, DAR, 2900 ft; *CMR 16956* (BGWMA); *JF 207* (SRSC). North Dagger Mountain and Brushy Canyon.

+ *Muhlenbergia rigens* (Benth.) A.S. Hitchc. – Deergrass

Rare perennial herb, in wash gravel; DAR/SYG, 4320 ft; *JF 1527* (SRSC). Around mile five of the Telephone Canyon trail, in the shade of *Vauquelinia corymbosa* and *Fraxinus greggii*.

§ *Muhlenbergia setifolia* Vasey – Curlyleaf muhly

Perennial herb; DCA; *OCW 316* (BGWMA & SRSC). Collected in Big Brushy Canyon in 1958; label data states that the species was common above 3000 ft. Also listed by Amos and Giles (1992).

Muhlenbergia tenuifolia (Kunth) Trin. – Slender muhly

[*Muhlenbergia monticola* Buckl.] Locally common annual or perennial herb, drainages, slopes, ridges, and plateaus of higher elevations; DCA, SYG, CHP, 5000 ft; *OCW 315b* (BGWMA & SRSC); *JF 845, 1191, 1489a, 1515, 1526, 1930, BHW 10750* (SRSC). Upper TC trail, Sue Peaks environs, Brushy Canyon.

Panicum hallii Vasey – Hall panicgrass

Common perennial herb, washes, slopes, areas with slightly higher water availability; DSC, DAR, DCA, SYG, CHP, 2400–5150 ft; *CMR 5091* (BGWMA); *BHW 12893* (BIBE); *JF 195, 575, 1221a, 1229, 1395, 1456, 1519, 1921, MT 81, 211, BHW & LCH BG-192* (SRSC).

§ *Panicum hirticaule* J. Presl – Mexican panicgrass

Uncommon annual herb; DSC, 1800–3800 ft; *BHW 12896* (BIBE); *BHW 10795* (SRSC & TEX-LL). At head of Boquillas Canyon and near McKinney Springs.

Panicum obtusum Kunth – Vine mesquite

Rare perennial herb, finer, deeper soil supporting *Pleuraphis mutica*, *Sporobolus* spp., and other grasses; SYG, 5300 ft; *JF 1997, TR s.n.* (SRSC). High saddle below Sue Peaks. Species that were abundant in surrounding area, such as lechuguilla, sotol, nolina, and grama grasses, were absent from this saddle area in favor of various grass species. Some old wood and wire were present as well as prehistoric rock flakes and a few partial tools and/or arrowheads.

Pappophorum bicolor Fourn. – Pink pappusgrass

Rare to “infrequent” perennial herb, sandy wash, upper limestone valley; DAR, DCA, 3050–3700 ft; *JF 1105* (BIBE & SRSC); *BHW 20629, BHW & LCH BG-166* (SRSC). Dagger Canyon, Stairway Mountain, Brushy Canyon.

Pappophorum vaginatum Buckl. – Whiplash pappusgrass

Uncommon perennial herb, washes, finer soil that gets runoff; DSC, DAR, 2350–3480 ft; *JF 1394a* (BIBE & SRSC); *JF 1095, 1368, 1412, BHW & LCH BG-151* (SRSC). Dagger Flat, Ernst Basin, Ernst Tinaja. This species concept includes *Pappophorum mucronatum* (Turner et al. 2003).

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

[*Cenchrus ciliaris* L.] Overall rare, but locally abundant, perennial herb in washes, slopes, and open desert; DSC, DAR, DCA, RIO, 1850–2500 ft; *BA2 4323* (BIBE); *JF 1065, 2222; AMP 5861* (SRSC). Not seen anywhere in the DH during the current study except along the Old Ore Road south of the Ernst Tinaja turnoff and above Ernst Tinaja. It is prominent in the southern study area around RGV and the Boquillas Canyon trail. Plants can be seen extending up the slopes of the entrance to Boquillas Canyon almost to the top of the canyon. This species does occur elsewhere in the park, especially along the unpaved river road, and increasingly at higher elevations, including various populations along the paved road between RGV and the BBNP western entrance.

§ *Phragmites australis* (Cav.) Trin. ex Steud. – Common reed

Locally abundant perennial herb, sandy banks of the Rio Grande; RIO, 1800 ft; *WFM s.n.* (BIBE). Though still an important part of the riparian corridor in the study area, no collections were made of this species during the current study period.

Pleuraphis mutica Buckl. – Tobosa grass

[*Hilaria mutica* (Buckl.) Benth.] Uncommon perennial herb, finer, deeper soils usually associated with erosional deposition; DSC, DAR, SYG, 2350–5300 ft; *DG & TE 4614* (BIBE); *JF 1255, 1399, 1435, 1478* (SRSC). High saddle by Sue Peaks, base of western DH slopes, Ernst Tinaja, Ernst Basin.

Poa bigelovii Vasey & Scribn. – Bigelow bluegrass

Uncommon annual herb, gravelly alluvial soil and tasajillo-mesquite thickets; DSC, DCA, 3560 ft; *JF 516, 537, BHW 21134, 47056, BHW & MCJ 15982, 15984* (SRSC); *BHW 21134* (TEX-LL). Dog Canyon, TC trail.

*§ *Polypogon monspeliensis* (L.) Desf. – Rabbitfoot grass

[*Alopecurus monspeliensis* L.] Locally occasional annual herb in sandy soil; RIO, 1800 ft; *HTF 290* (SRSC). Collected along the Rio Grande in 1932; also observed during current study in the restoration site at the mouth of Boquillas Canyon.

Schizachyrium scoparium (Michx.) Nash – Little bluestem

Rare perennial herb, slickrock washbed; DCA, 3500–4650 ft; *JF 1950* (BIBE); *JF 1939, 1950, OCW 317* (SRSC). Brushy and Sue Peaks canyons.

+ *Setaria grisebachii* Fourn. – Grisebach bristlegrass

Rare annual herb; DSC, 2960 ft; *JF 217* (SRSC). North Dagger Mountain.

Setaria leucopila (Scribn. & Merr.) K. Schum. – Streambed bristlegrass

Occasional perennial herb, in shade and good duff layer, in deeper soils, associated with higher moisture content; DSC, DAR, DCA, SYG, 2400–5300 ft; *JF* 356, 1134, 1416, 1988, *MT* 102 (SRSC); *EGM* 164 (TEX-LL).

§ *Setaria parviflora* (Poir.) Kerguelen – Marsh bristlegrass

[*Setaria geniculata* P. Beauv.] Locally common perennial herb, sandy soil, moist areas; RIO, 1800 ft; *CAB* 32, *BHW* 13053 (BIBE); *BHW* 13053 (SRSC); *EGM* 51-1112, *BHW* 13053 (TEX-LL). Last collected in 1973; all collections from along the Rio Grande or at the beaver marsh at Boquillas.

§ *Setaria reverchonii* (Vasey) Pilger – Reverchon bristlegrass

[*Setaria ramiseta* (Scribn.) Pilg.] Perennial herb; 1800 ft; *BHW* & *MCJ* 16856 (SRSC). Collected in 1958 at the head of Boquillas Canyon.

!+ *Sorghum halepense* (L.) Pers. – Johnsongrass

Rare perennial herb, deep soil; DAR, 3440 ft; *JF* 362 (SRSC). Upstream base of the TC dam. Listed by Amos and Giles (1992). Occasional to abundant in other areas of BBNP and the Trans-Pecos in general.

Sporobolus airoides (Torr.) Torr. – Alkali sacaton

Uncommon perennial herb, talus slope, deeper soil; DSC, SYG, 1800–5300 ft; *JF* 1254, 1542, *BGH* 642 (SRSC). High saddle by Sue Peaks, mile 4.5 of the TC trail, and at Rabbit Ears (river mile 791) in Boquillas Canyon.

Sporobolus cryptandrus (Torr.) Gray – Sand dropseed

Uncommon perennial herb, rocky to sandy soil; DSC, DAR, DCA, SYG, 1800–5300 ft; *JF* 352, 1999, 2050, 2146, *MT* 103 (SRSC). High saddle by Sue Peaks, lower elevations of the TC trail, Brushy and Boquillas canyons. Listed by Amos and Giles (1992).

§ *Sporobolus flexuosus* (Thurb. ex Vasey) Rydb. – Mesa dropseed

"Frequent" perennial herb; RIO, 1800 ft; *BHW* & *MCJ* 16845, 16853 (SRSC). Collected in 1958 at the head of Boquillas Canyon.

§ *Sporobolus pyramidatus* (Lam.) A.S. Hitchc. – Madagascar dropseed

"Infrequent" annual or perennial herb, sandy soil; RIO, 1800 ft; *BHW* 786 (SRSC). Collected in 1937 at Boquillas Canyon.

§ *Sporobolus wrightii* Munro ex Scribn. – Big sacaton

Perennial herb; *EGM* 123 (SRSC); *EGM* 123, 51-1110 (TEX-LL). Collected in the Boquillas area in 1937.

§ *Tridens eragrostoides* (Vasey & Scribn.) Nash – Lovegrass tridens

Perennial herb; 3700 ft; *BHW* 20626 (SRSC). Stairstep Mountain.

Tridens muticus (Torr.) Nash – Slim tridens

Common perennial herb, rock crevices, talus slopes, wash gravel, generalist; DSC, DAR, DCA, SYG, 1800–5500 ft; *JF* 327 (BIBE); *JF* 196, 208, 212, 327, 762a, 1017, 1039, 1174, 1177, 1260, 1369, 1437, 1475, 1937, 2017, 2078, *TR* 25, *MT* 138, 161, *BHW* 10789, 20628, *BHW & LCH* BG-65, BG-179 (SRSC).

Urochloa arizonica (Scribn. & Merr.) O. Morrone & F. Zuloaga – Arizona signalgrass [*Brachiaria arizonica* (Scribn. & Merr.) S.T. Blake, *Panicum arizonicum* Scribn. & Merr.] Uncommon annual herb; RIO, DCA, 1800 ft; *JF* 2105, *BHW* 12896, 20945, *BHW & MCJ* 16855 (SRSC). Boquillas Canyon.

§ *Vulpia octoflora* (Walt.) Rydb. – Sixweeks fescue

Annual herb, fine soils; DCA; *RRI* 21160 (TEX-LL). Collected in 1941 on the flats near Dog Canyon in tasajillo thickets. Also known locally from western Brewster County.

TYPHACEAE§ *Typha domingensis* Pers. – Southern cattail

Perennial herb; RIO, 1800 ft; *EGM* 155 (SRSC); *BHW* 835 (BIBE & TEX-LL). Collected along the Rio Grande at Boquillas in 1937. Currently, this species is mainly restricted to the beaver pond area at RGV.

ANTHOPHYTA – Eudicotyledones**ACANTHACEAE***Carlowrightia arizonica* A. Gray – Arizona carlowrightia

Uncommon subshrub, slickrock crevices, rocky soil; DSC, DAR, DCA, 1800–2350 ft; *BHW* 12898 (BIBE); *JF* 648, 1342, 2061, *BHW* 8334, 12898, 18408 (SRSC).

Collected in the southern half of the study area, in the environs of Boquillas Canyon and Ernst Tinaja.

+ *Carlowrightia serpyllifolia* A. Gray – Trans-Pecos wrightwort

Occasional subshrub, cracks in cliff walls, steep slopes in shallow rocky soil; DSC, DCA, 3680 ft; *JF* 447, 607, 667, 972, 1013, 1343, 2016, 2080 (SRSC). Known locally from Heath Canyon and Hot Springs in addition to elsewhere in the southern Big Bend.

Dyschoriste linearis var. *cinerascens* (Henrickson & Hilsenb.) B.L. Turner – Polkadots

Uncommon and "locally frequent" perennial herb, rocky limestone soils; DSC, DAR, DCA, 2150–4360 ft; *BRM* 3138, *CMR* 5093 (BGWMA); *BA2* 5198, 5350, *JF* 1517, 1915, *MT* 65, *BLT* 22-145, *BLT & BD* 23-177, *BHW & LCH* 160 (SRSC); *BLT* 22-145, *BHW & LCH* BG-87, BG-160 (TEX-LL). TC trail, Brushy Canyon, Stairway Mountain. Turner et al. (2003) does not reflect these collections.

Justicia pilosella (Nees) Hilsenb. – Gregg tubetounge

Uncommon perennial herb, wash banks, shaded areas with higher moisture content; DSC, DAR, DCA, 2100–3050 ft; *JF* 1133, 1351, *TRV* s.n., *BHW* 21195 (SRSC). Dagger Flat, Ernst Tinaja canyon, mouth of Heath Creek, near tunnel. Turner et al. (2003) reflects no dots for these collections.

Justicia warnockii B.L. Turner – Warnock water-willow

Occasional subshrub, sides of drainages, slopes, low hills; DSC, DAR, DCA, 1800–3720 ft; *BHW & LCH* BG-137 (BGWMA); *AL* 161, 162, *CMR* 17231, *BHW* 13063(266) (BIBE); *JF* 229, 687, 1667, 2053, 2087, *MT* 152, 181, 227, *BLT* 22-149, *BLT & BD* 23-178, *BHW* 10786, 13063, 20410, *BHW & LCH* BG-137, *BHW & MCJ* 16827 (SRSC); *BLT* 22-149, *BLT & BD* 23-178, *BHW* 10786, *BHW & LCH* s.n. (TEX-LL).

Ruellia parryi A. Gray – Parry wild petunia

Common subshrub, rocky limestone soils; DSC, DAR, DCA, 1800–4600 ft; *SMU* 48 (BGWMA); *JF* 202, 434, 520, 829, 945, 2042, 2113, *AMP & SAP* 5136, *MT* 27, *BLT* 22-144 (SRSC); *BLT* 22-144 (TEX-LL).

AMARANTHACEAE*+ *Amaranthus blitoides* S. Wats. – Mat amaranth

Rare annual herb, deeper soil, washes; DAR, 3000 ft; *JF* 218 (SRSC). Dagger Mountain area. Listed by Amos and Giles (1992).

§ *Amaranthus palmeri* S. Wats. – Carelessweed

Annual herb, sedimentary soil; RIO, 1800 ft; *EGM* 125, 128, 136 (BIBE). Collected in 1937 at the mouth of Boquillas Canyon.

Amaranthus scleropoides Uline & Bray – Bonebract amaranth

Rare annual herb, rocky wash bed; DCA, 1800 ft; *JF* 2107 (SRSC). Arroyo Venado, near the Rio Grande. Also known locally from the Chisos Mountains.

§ *Amaranthus torreyi* (Gray) Benth. ex S. Wats. – Torrey amaranthus

"Frequent" annual herb; DSC, 3800 ft; *BHW* 10796 (SRSC & TEX-LL). Collected in 1952 near McKinney Springs.

§ *Froelichia arizonica* Thornb. ex Standl. – Arizona snakecotton

"Occasional" perennial herb, dry soils in arroyos and ridges; DSC, DAR, DCA; *BHW & BLT* 8318, *BHW & MCJ* 16847, *GLW* 4477 (SRSC); *DSC & HBC* 30635, *BLT & MT* 2 97-333 (TEX-LL).

Tidestromia lanuginosa (Nutt.) Standl. – Woolly tidestromia

Uncommon annual herb, dry, chalky soil; DSC, DCA, 2850 ft; *JF* 942, *BHW & MCJ* 16852 (SRSC). Passionflower Canyon.

Tidestromia suffruticosa (Torr.) Standl. – Shrubby honeysweet

Occasional subshrub, dry, open desert; DSC, DCA, 1800–2760 ft; *JF* 149, 197, *BHW* 694 (SRSC); *BHW* 694 (TEX-LL).

ANACARDIACEAE

Rhus microphylla Engelm. ex A. Gray – Littleleaf sumac

Rare shrub, drainage, deeper soil; DAR, 2100–2400 ft; *CMR* 5076 (BGWMA); *JF* 1444, *BHW* & *LCH* BG-89 (SRSC). Ernst Basin, Frog Creek, east slopes Stairway Mountain.

Rhus trilobata var. *pilosissima* Engl. – Skunkbush sumac

Rare shrub, east aspect, base of cliff; CHP, 5680 ft; *JF* 1292 (SRSC). Near top of southern Sue Peak. Also known locally from the Chisos Mountains.

Rhus virens Lindh. ex A. Gray var. *virens* – Evergreen sumac

Uncommon to occasional at higher elevations, shrub, higher moisture areas; DCA, CHP, 3050–5680 ft; *CMR* 15830 (BGWMA); *JF* 767a, 1040, 1135, 1182, 1295, 1508 (SRSC). Dagger Canyon, Sue Peaks environs, Brushy Canyon.

APOCYNACEAE

Haplophyton crooksii (L.D. Benson) L.D. Benson – Cockroach plant

[*Haplophyton cimicidum* A. DC. var. *crooksii* L. Benson] Rare perennial herb; DCA, 1850 ft; *JF* 1067 (SRSC). Just inside the mouth of Arroyo Venado in Boquillas Canyon. East side of wash, in crevice of canyon wall/boulders. New park record, nearest known locality is in the Chinati Mountains west of BBNP.

Telosiphonia macrosiphon (Torr.) Henrickson – Rocktrumpet

[*Macrosiphonia macrosiphon* (Torr.) A. Heller] Uncommon subshrub, rocky steep drainage, platey limestone hill; DSC, DAR, 2700–3350 ft; *CMR* 11625 (BGWMA); *JF* 815, 933, 1481 (SRSC). TC trail, Passionflower Canyon. The species listed as *Macrosiphonia languinosa* by Amos and Giles (1992) is most likely this, as *M. languinosa* occurs in south Texas, according to Turner et al. (2003).

ARISTOLOCHIACEAE

Aristolochia coryi I.M. Johnst. – Dutchman pipe

Occasional perennial herb, sheltered areas, shaded spots on slopes and in drainages; DSC, DAR, DCA, RIO, SYG, 1800–4280 ft; *BA2*, *DG*, *TE*, & *B* 4933 (BIBE); *BA2* 5716 (SAT); *JF* 955, 1483, 1491, 2093, 2119, *BLT* & *MT2* 97-338, *BHW* 8332 (SRSC); *BLT* & *MT2* 97-338 (TEX-LL).

ASCLEPIACEAE

+ *Asclepias asperula* (Dcne.) Woods. – Spider milkweed

Uncommon perennial herb, open desert to bedrock crack; DSC, 2560–3800 ft; *JF* 368, 1405, 1911 (SRSC). Dagger Mountain, TC trail, Ernst Tinaja. Locally known also from Dog Flats.

Asclepias oenotheroides Cham. & Schlecht. – Zizotes milkweed

Rare perennial herb, dry soils along arroyos and on ridges; DSC, DCA, 2300–2750 ft; *JF 914* (SRSC); *BLT & MT2 97-341* (TEX-LL). Ernst Tinaja and Passionflower Canyon.

Asclepias sperryi Woods. – Sperry milkweed

Rare subshrub, cracks of cliffs and bedrock; CHP, 5100–5680 ft; *JF 1286, 2194* (SRSC). Nose of DH plateau summit and on the eastern side, below and slightly north of the southern Sue Peak. A new park record, this was previously known only from the Glass and Del Norte mountains of northern Brewster County.

§ *Cynanchum barbigerum* (Scheele) Shinnery – Bearded swallow-wort

Perennial herbaceous vine; *JLB 870* (SAT).

Cynanchum pringlei (Gray) Henrickson – Pringle swallow-wort

[*Cynanchum barbigerum* var. *breviflorum* Shinnery] Uncommon to occasional perennial herbaceous vine, wash gravel, rock crevices and outcrops, exposed rocky slopes; DSC, DAR, DCA, 3000–4240 ft; *BA2 5315* (SAT); *JF 256, 301, 1164, 1488, 2203, MT 30, BLT & BD 23-174, BHW 10785, BHW & LCH BG-133* (SRSC); *BLT & BD 23-173, BHW 10785, BHW & LCH BG-133* (TEX-LL).

Cynanchum racemosum (Jacq.) Jacq. var. *unifarium* (Scheele) E. Sundell – Talayote

[*Cynanchum unifarium* (Scheele) Woodson] Uncommon to locally common perennial herbaceous vine, wash gravel and banks; DAR, DCA, 2780–4040 ft; *JF 1928, AL 144* (BIBE); *BA2 5317* (SAT); *JF 169, 858, 1928* (SRSC). Passionflower and Brushy Canyons. After good rains in summer of 2006, it was found growing thickly and abundantly on large shrubs/trees in the bed of Telephone Canyon.

Matelea parvifolia (Torr.) Woods. – Spearleaf milkvine

Rare perennial herbaceous vine, rock crevice at side of arroyo; DSC/DAR, 1900 ft; *JF 2057* (SRSC). Boquillas Canyon, upstream of Marufo Vega. New park record; known also from the Chinati Mountains; recently collected on Reed Plateau west of Terlingua (Weckesser in prep.).

§ *Matelea producta* (Torr.) Woods. – Texas milkvine

Perennial herbaceous vine, sandy soil; RIO, 1800 ft; *BHW 13050* (BIBE). One collection from along the Rio Grande at Boquillas in 1955.

Matelea reticulata (Engelm. ex Gray) Woods. – Netted milkvine

Uncommon perennial herbaceous vine, wash gravel, deep shade in steep ravine; DAR, DCA, 3160–4600 ft; *BRM 3225, BHW & LCH BG-170* (BGWMA); *JF 1938* (BIBE); *BA2 5339* (SAT); *JF 221, 1938, JF & MY 1317, AMP & SAP 5132, BHW & LCH BG-170* (SRSC). North Dagger Mountain, TC trail, Brushy Canyon near Shackelford cabin.

Matelea sagittifolia (Gray) Woods. – Arrowleaf milkvine

Rare perennial herbaceous vine, exposed west slope in shade of large boulder; DSC, 3350 ft; *JF 1484* (SRSC). Found also in Brewster County on Reed Plateau near Terlingua (Weckesser in prep.), and near Lone Mountain in BBNP (Fenstermacher et al. 2006). These concurrent discoveries constitute a new county record for this species. The closest locality known previously was in Val Verde County (Turner et al. 2003).

§ *Sarcostemma crispum* Benth. – Wavyleaf twinvine

Perennial herbaceous vine; DSC; *TR 147* (BGWMA); *BA2 5365* (SAT). Brushy Canyon.

§ *Sarcostemma cynanchoides* Dcne. var. *cynanchoides* – Fringed twinevine

"Frequent on shrubs", perennial herbaceous vine, sandy soil; RIO, DSC, 1825 ft; *BA2 & DG 5158* (BIBE); *BHW 13050* (TEX-LL). Collected along the Rio Grande, at Graham farm, and at Boquillas.

Sarcostemma cynanchoides Dcne. var. *hartwegii* (Vail) Shinnars – Hartweg twinevine

Rare perennial herbaceous vine, on shrubs on hills; DSC, DCA, 1800–2350 ft; *JF 1347* (SRSC); *BHW 12904* (BIBE, SRSC, TEX-LL). *JF 1347* collected in the canyon upstream of Ernst Tinaja. Warnock reported this plant was infrequent at the old Graham farm near Boquillas in 1955.

Sarcostemma torreyi (Gray) Woods. – Soft twinevine

Uncommon perennial herbaceous vine, sandy soil, wash bed; DAR, DCA, RIO, 1800–4650 ft; *BA2 5223, 5280, 5375* (SAT); *JF 1956, 2000, TR 147, BHW 13050, BHW & LCH BG-165* (SRSC). Brushy Canyon near Shackelford cabin, along Rio Grande in Boquillas Canyon, and in Sue Peaks Canyon.

ASTERACEAE

Acourtia runcinata (Lag. ex D. Don) B.L. Turner – Featherleaf desertpeony

Occasional perennial herb, in somewhat protected niches such as between rocks, at base of cliffs, etc; DSC, DCA, 1800–3700 ft; *BRM 3147* (BGWMA); *BA2 5217, 5440* (SAT); *JF 147, 302, 459, 1339, 1353, 2115, OCW 342, BHW 10815, 20610, BHW & LCH BG-181, BHW & MCJ 15899* (SRSC); *BLT & MT 97-339, BHW 10815* (TEX-LL).

Ageratina wrightii (A. Gray) R.M. King & H. Rob. – Wright snakeroot

[*Eupatorium wrightii* A. Gray] Uncommon shrub, ravines, open slopes; DSC, DCA, SYG, 4040–4900 ft; *OCW s.n.* (BGWMA); *JF 722, 1549, 2189; OCW 336* (SRSC); *BA2 5481, 5457* (TEX-LL). Stuarts Peak, DH plateau, Brushy Canyon, Stairway Mountain.

§ *Ambrosia confertiflora* DC. – Weakleaf burr ragweed

Perennial herb; *BA2 5360* (SAT). Shackelford cabin area.

- § *Aphanostephus ramosissimus* DC. var. *humilis* (Benth.) B.L. Turner & Birdsong – Plains dozedaisy
Annual herb, sandy soil; DCA, RIO, 1800–2560 ft; *AL 310* (BIBE); *VLC 18730* (TEX-LL). From Dog Canyon in 1936 and the restoration site at Boquillas Canyon in 2006.
- Artemisia ludoviciana* Nutt. – White sagebrush
Occasional perennial herb at higher elevations,, in crevices associated with cliff walls, wash banks, shaded by boulders in deeper soil; DSC, DAR, DCA, SYG, CHP, 3050–5680 ft; *BA2 5491* (SAT); *JF 222a, 1152* (SRSC); *BA2, DG & TE 5491* (TEX-LL).
- # *Baccharis havardii* Gray – Havard false willow
Rare subshrub, wash gravel; DAR, DCA, 4050–4350 ft; *JF 1933, 1941* (SRSC). From lower elevations of Sue Peak Canyon. Known also from the Chisos, Glass, and Davis mountains.
- Baccharis salicifolia* (Ruiz & Pavón) Pers. – Seepwillow, jara
[*Baccharis glutinosa* Pers.] Locally common shrub, rare away from the river, in wash gravel and sandy soil; DAR, DCA, RIO, 1800–4280 ft; *EGM 12* (BIBE); *BA2 5511* (SAT); *JF 1345* (SRSC); *BA2, DG & ET 5511* (TEX-LL). Upstream of Ernst Tinaja, Boquillas, Brushy Canyon.
- § *Baccharis salicina* Torr. & Gray – Great plains false willow
Subshrub; DSC; *BGH 643* (SRSC). On bluff overlooking Rio Grande, near Rabbit Ears in Boquillas Canyon. Turner et al. (2003) reflects no dot for this collection.
- Bahia absinthifolia* Benth. var. *dealbata* (Gray) Gray – Dealbata bahia
Common at lower elevations, perennial herb, various soil types; DSC, DAR, 1800–3560 ft; *BHW 12888* (BIBE); *JF 347a, 543, 810, 2109, MT 120, 235, 253, BHW 12888, GLW 4486* (SRSC); *BA2 & TE 5301, BHW 12888* (TEX-LL).
- Bahia pedata* Gray – Bluntscale bahia
Uncommon annual herb, sandy soil and low ridges with shallow rocky soil; DSC, DCA, 3050–3150 ft; *JF 1102a, 1104* (SRSC); *WFB 67* (TEX-LL). Dagger Flat and north of Boquillas.
- Baileya multiradiata* Harvey & Gray ex Gray – Desert marigold
Common to occasional annual herb at lower elevations, roadside/trailside, in sandy soil and wash gravel; DSC, DAR, DCA, 2400–3050 ft; *BA2, DG, TE, & PC 4598, CN 1194*; (BIBE); *JF 1132, 1455, 1466, MT 16* (SRSC).
- Brickellia coulteri* Gray – Coulter brickellia
Occasional subshrub, wash gravel, crevices in bedrock, rocky soil; DSC, DAR, DCA, RIO, 1800–3800 ft; *JF 686, 1061, 1593, 1669, 2064; BHW 10834* (SRSC); *DSC & HBC 30626, BHW 10834* (TEX-LL).

Brickellia eupatorioides (L.) Shinnery var. *chlorolepis* (Woot. & Standl.) B.L. Turner – False boneset
Rare subshrub, open hills and washes; DSC, DAR, 4280 ft; *BA2 5510* (SAT & TEX-LL); *JF 1041* (SRSC). Shackelford cabin area.

Brickellia laciniata Gray – Splitleaf brickellia
Occasional shrub, gravel and cobble wash beds; DAR, DCA, 1850–3050 ft; *BA2 5483* (SAT & TEX-LL); *JF 1084, 1146* (SRSC).

Brickellia lemmonii var. *conduplicata* (B.L. Rob.) B.L. Turner – Lemmon brickellbush
Uncommon perennial herb, washbed gravel, bedrock along ravine; DCA, 4650 ft; *BA2 5441, DG 328, 329* (SAT); *JF 1944, 1949* (SRSC); *BA2 5455, BA2 & TE 5441* (TEX-LL). Collected in Sue Peak and Brushy Canyons. Turner et al. (2003) does not reflect the historical collections.

+ *Chaetopappa bellioides* (Gray) Shinnery – Manyflower lestdaisy
Rare perennial herb, open desert, rocky soil; DSC, 2680 ft; *JF 190* (SRSC). Western edge of study area by Dagger Mountain; generally infrequent in the Trans-Pecos. Turner et al. (2003) shows dots in the study area but no specimens were discovered.

+ *Chaetopappa ericoides* (Torr.) Nesom – Rose heath, leucelene
[*Leucelene ericoides* (Torr.) Greene] Rare annual or perennial herb, open meadow, base of cliff outcrop; SYG, 5000–5300 ft; *JF 773, 2157* (SRSC). Stuarts Peak and the high saddle near Sue Peaks.

Chloracantha spinosa (Benth.) Nesom – Mexican devilweed
[*Aster spinosus* Benth., *Erigeron ortegae* S.F. Blake] Occasional perennial herb, along the Rio Grande in sandy soil; RIO, 1800 ft; *BA2, DG, TE, & B 4922* (BIBE); *JF 2019a* (SRSC).

Chrysactinia mexicana A. Gray – Damianita
Common at higher elevations, subshrub, scattered throughout rocky limestone soils; DCA, SYG, CHP, 4080–5200 ft; *SMU 52* (BGWMA); *PVW s.n.* (KANU); *BA2 5297* (SAT); *JF 572, MT 223* (SRSC); *BA2 & TE 5297* (TEX-LL).

Cirsium turneri Warnock – Cliff thistle
Uncommon, yet not surprising to find it in larger canyons with sheer walls; perennial herb, cliff faces, boulders; DCA, 2920–4200 ft; *AL 163* (BIBE); *JF 187, 1121, 1704, AMP & SAP 5126, MT 215* (SRSC); *JF 1121* (TEX-LL). Also seen but not collected from the top of the northern ridge of Dagger Mountain. Occurs throughout the entire north to south range of the DH, at least within BBNP.

§ *Conyza canadensis* (L.) Cronq. – Canadian horseweed
Annual herb; *EGM 142* (BIBE). Collected in 1937 at Boquillas.

Diaperia verna (Raf.) Morefield – Manystem evax

[*Evax verna* Raf., *Evax multicaulis* DC.] Rare annual herb, alluvial sand and sandy clay bottoms; DSC, DAR, 2400–2520 ft; *JF 1429* (SRSC); *RRI 555* (TEX-LL). May be undercollected due to its life strategy; very few plants were seen during the study period and all were dry and barely recognizable.

Dyssodia acerosa DC. – Prickleleaf dogweed

[*Thymophylla acerosa* (DC.) Strother] Common perennial herb, bedrock, open rocky soils, various habitats; DSC, DAR, DCA, 2150–4400 ft; *BHW & LCH BG-72* (BGWMA); *JF 512, 1588, MT 72, BHW & LCH BG-72, GLW 4447* (SRSC); *BA2, DG & TE 5505* (TEX-LL).

Dyssodia micropoides (DC.) Loes. – Woolly dogweed

[*Thymophylla micropoides* (DC.) Strother] Uncommon perennial herb, bare rocky soil with bedrock outcrops; DSC, 2350–2560 ft; *AL 316, 317* (BIBE); *JF 1401, 1684* (SRSC); *BA2, DG & TE 5461* (TEX-LL). Devil's Den, Brushy Draw, Ernst Tinaja environs, Strawhouse trail.

Dyssodia pentachaeta (DC.) B.L. Robins. – Prickly dogweed

[*Thymophylla pentachaeta* (DC.) Small var. *pentachaeta*] Occasional perennial herb, wash gravel, rocky soil, terraces; DSC, DAR, DCA, SYG, 1800–5150 ft; *CMR 5056* (BGWMA); *BA2, DG, TE, & PC 4599* (BIBE); *PVW s.n.* (KANU); *JF 192, 320, 460, 540c, 542, 576, 1033, 1085, 1226, 1228, 1927, 2108, HTF 1230, MT 62, 242, BHW 10817* (SRSC); *BA2 & TE 5295, 5296* (TEX-LL). The degree of pubescence varies among specimens.

§ *Eclipta prostrata* (L.) L. – False daisy

[*Eclipta alba* (L.) Hassk.] "Infrequent to frequent" annual or perennial herb, sandy soil; RIO, 1800–1825 ft; *BHW 13039* (BIBE, SRSC, TEX-LL); *BHW 13035* (TEX-LL). Boquillas.

Erigeron flagellaris A. Gray – Trailing fleabane

Uncommon biennial herb; 3300–4600 ft; *JF 754, 799, AMP & SAP 5129, MT 78* (SRSC). TC trail mile 3.5, Ernst Tinaja, and near the Shackelford cabin.

Erigeron modestus Gray – Plains fleabane

Uncommon perennial herb, wash gravel, limestone ledges, rocky slopes; DSC, DAR, 3460 ft; *VLC 43989; JF 264, 373, MT 249* (SRSC); *BA2 & TE 5324, BA2, TE & DG 5494* (TEX-LL). Dog Canyon, Stuarts and Sue peaks, TC trail, Brushy Canyon.

Erigeron tracyi Greene – Running fleabane

[*Erigeron colomexicanus* A. Nels.] Occasional annual herb, wash gravel to open ridgetops; DSC, DAR, DCA, SYG, 2880–5150 ft; *JF 1025* (BIBE); *JF 763, 1008, 1025, 1153, 1231, 1272, BLT & BD 23-170, BHW 10833* (SRSC); *BLT & BD 23-170* (TEX-LL).

- § *Flaveria trinervia* (Spreng.) C. Mohr – Running yellowtops
 "Frequent" annual herb, sandy soil; RIO, 1800 ft; *EGM 132, BHW 750, 13042* (BIBE);
BHW 13042 (SRSC); *EGM 132, BHW 750* (TEX-LL).
- § *Flourensia cernua* DC. – Tarbush
 Rare shrub; *BA2 5520* (TEX-LL). Collected ca. 1.5 miles N-NW of the Shackelford
 cabin near a man-made dam. This species was observed only twice during the current
 study in BBNP, seemingly limited to the Dagger Flat area.
- § *Flyriella parryi* (Gray) King & H.E. Robins. – Chisos mountains brickellbush
 "Infrequent" perennial herb; *BHW 18403* (SRSC). Collected in 1961 on a trip
 through Boquillas Canyon.
- # *Grindelia arizonica* Gray – Arizona gumweed
 Annual or perennial herb, open rocky rise; SYG, 4280 ft; *JF 1043* (SRSC). Collected
 on a small rise along old road SW of the Shackelford cabin. Locally known also from
 the Chisos, Glass, and Davis mountains.
- § *Grindelia nuda* Wood var. *nuda* – Curlytop gumweed
 Annual or perennial herb, drainage; DAR, *BA2 & TE 5355* (TEX-LL). Brushy
 Canyon. Turner et al. (2003) does not reflect this collection.
- Gutierrezia microcephala* (DC.) Gray – Threadleaf snakeweed
 Occasional to locally common subshrub, rocky soil; DAR, DCA, DSC, SYG, 2500–5840
 ft; *JF 1324a, MT 45, 219, 252* (SRSC); *BA2, DG, & TE 5521, TR 251* (TEX-LL).
- Gutierrezia sarothrae* (Pursh) Britt. & Rusby – Broom snakeweed
 Common subshrub, wash gravel, sandy clay bottoms, river floodplain, open gravelly
 slopes and plateaus; DSC, DAR, DCA, RIO, SYG, 1800–5100 ft; *BA2, DG, B & TE 4921,*
JF 1411 (BIBE); *PVW s.n.* (KANU); *JF 318, 1411, 1417, TR 251, BLT & BD 23-179*
 (SRSC).
- Gutierrezia sphaerocephala* Gray – Roundleaf snakeweed
 Uncommon subshrub, sandy clay bottom, flats, open rocky soil; DSC, DAR, SYG, 2400–
 4280 ft; *JF 1411a, OES 763* (SRSC); *BLT & BD 23-179* (TEX-LL). Dog Canyon,
 Ernst Basin, near Shackelford cabin.
- Gymnosperma glutinosum* (Spreng.) Less. – Tatalencho, gumhead
 [*Xanthocephalum glutinosum* (Spreng.) Shinners] Common subshrub, washes,
 slopes, summits; DSC, DAR, DCA, SYG, 2350–5300 ft; *OCW 339* (BGWMA); *JF 238,*
321, 498a, 579, 712, 752, 1181, 1376, 1989, OCW 339 (SRSC); *BA2 & TE 5323,*
BA2, DG & TE 5515 (TEX-LL).

- § *Helenium elegans* DC. var. *amphilobum* (Gray) Bierner – Pretty sneezweed
Annual herb, sandy soil; RIO, 1800 ft; *MWB & JEA 232a, 232c, 232d* (TEX-LL).
Label data states that two of these collections are considered by the collector as being possible hybrids between *Helenium elegans* DC. var. *amphilobum* (Gray) Bierner and *Helenium microcephalum* DC. var. *ooclinium* (Gray) Bierner.
- § *Helenium microcephalum* DC. var. *microcephalum* – Smallhead sneezweed
"Frequent" annual herb, sandy soil, river floodplain; RIO, 1800 ft; *AL 322, CN 504* (BIBE); *BHW 13031* (SRSC); *OES & CN 504, BHW 13031* (TEX-LL).
- § *Helenium microcephalum* DC. var. *ooclinium* (Gray) Bierner
[*Helenium ooclinium* A. Gray] Annual herb, sandy alluvial soil; RIO, 1800 ft; *MWB & JEA 232b, 232e* (TEX-LL).
- Helianthus annuus* L. – Common sunflower
"Frequent" annual herb; RIO, 1800 ft; *EGM 129, BHW 13045* (BIBE); *JF 2263, BHW 13045* (SRSC). A few patches of plants have reestablished at the Boquillas Canyon restoration site since the last collections in 1955.
- § *Helianthus ciliaris* DC. – Texas blueweed
"Locally frequent" perennial herb, sandy soil; RIO, 1800 ft; *BHW 13051* (BIBE & SRSC).
- # *Heliopsis parvifolia* Gray – Mountain oxeye
Rare perennial herb, east aspect slope, rocky dark soil; SYG/CHP, 5680 ft; *JF 1276* (BIBE & SRSC). Collected just off the saddle between the two Sue Peaks. Also known locally from the Chisos Mountains.
- § *Isocoma pluriflora* (Torr. & Gray) Greene – Jimmyweed
[*Haplopappus heterophyllus* (A. Gray) S.F. Blake, *Haplopappus pluriflorus* (Torr. & A. Gray) H.M. Hall] Subshrub, dry hills; DSC; *BHW 1076* (TEX-LL). Collected in 1937 at Boquillas near Rio Grande.
- Iva ambrosiifolia* (Gray) Gray – Rag sumpweed, ragged marsh-elder
Rare annual herb, open desert; DSC, DAR, 3640 ft; *JF 289* (SRSC); *BA2, DG, & TE 5492* (TEX-LL). From Dagger Flat and upper watershed of Brushy Canyon.
- Jefea brevifolia* (A. Gray) Strother – Shorthorn zexmenia
[*Zexmenia brevifolia* A. Gray] Occasional shrub, slopes, cracks in and at base of cliff walls and bedrock ledges; DSC, DCA, SYG, 1800–4700 ft; *PVW s.n.* (KANU); *JF 472, 708, 2132, CMR 5068, MT 106, BHW 10736* (SRSC); *BA2, DG, & TE 5503, BA2 & TE 5298, DF 223, BHW 10763* (TEX-LL).
- + *Laennecia coulteri* (Gray) Nesom – Coulter horseweed, annual horsetail
[*Conyza coulteri* A. Gray] Rare annual herb, sandy clay bottom; DCA, 2400 ft; *JF 1420* (SRSC). From Ernst Basin near remnant tobosa grassland.

+ *Machaeranthera tanacetifolia* (Kunth) Nees – Tahoka daisy

Rare annual herb; DAR, 3480 ft; *JF* 544 (SRSC). TC trail, east of Alto Relex. Turner et al. (2003) shows a dot in the study area but no specimen was discovered.

Melampodium leucanthum Torr. & A. Gray – Blackfoot daisy

Occasional subshrub, gravelly to sandy soil, open and protected areas; DSC, DAR, DCA, RIO, SYG, 1800–4450 ft; *JF* 228, 269, 490, 967, 2006, 2123, *MT* 4, 47, 58, 74, 238, *BLT & BD* 23-176, *BHW & BLT* 8328, *GLW* 4483 (SRSC); *BLT & BD* 23-176 (TEX-LL).

+ *Packera millelobata* (Rydb.) W.A. Weber & A. Löve – Uinta ragwort

[*Senecio millelobatus* Rydb.] Rare perennial herb, shallow soil, at base of rock outcrop, and amongst rocks and boulders; SYG/CHP, 5680–5840 ft; *JF* 1287, 1971 (SRSC). Collected on the southern Sue Peak. Also listed by Amos and Giles (1992) as a "rare herb in shaded ravines" in Brushy Canyon. According to Turner et al. (2003), this species occurs in many locations throughout western Brewster County and into Jeff Davis and Presidio counties.

Parthenium argentatum A. Gray – Guayule

Uncommon to occasional in northern part of the range, shrub, open areas with rocks and bedrock outcrops at mid- to higher elevations; DSC, SYG, 2920–4880 ft; *BHW & LCH BG-177* (BGWMA); *JF* 1024, *BDGL s.n.* (BIBE); *PVW s.n.* (KANU); *JF* 744, 1024, 1139, 1155, 1183, 1901, *JMM* 888, 900, 903, *AMP & SAP* 4297, *MT* 49, *BHW* 10753 (SRSC); *BHW* 10753 (TEX-LL).

Parthenium confertum A. Gray – Lyreleaf parthenium

Uncommon to occasional throughout, annual or biennial herb, wash gravel, shallow rocky soil, sandy clay bottom; DSC, DAR, DCA, 1850–5840 ft; *JF* 206, 359a, 524, 852, 1068, 1083, 1433, 1907, *DM & JC* 380, 900, 904, *MT* 41, 254, *BHW* 20608, *BHW & MCJ* 16836 (SRSC); *BA2 & TE* 5304 (TEX-LL).

Parthenium incanum Kunth – Mariola

Common shrub, ubiquitous; DSC, DAR, DCA, SYG, 2300–5000 ft; *JF* 350, 1023, *OCW* 511 (SRSC); *BA2 & TE* 5303 (TEX-LL).

§ *Pectis angustifolia* Torr. var. *angustifolia* – Limoncillo

"Frequent" annual herb; *BHW & BLT* 8323 (SRSC); *VLC* 30209, *DF* 224 (TEX-LL). Collected at Dog Canyon, near the tunnel, and in Boquillas Canyon, between 1938 and 1964.

§ *Pectis papposa* Harvey & Gray var. *grandis* Keil – Manybristle cinchweed

"Frequent in sandy soil", annual herb; 1800 ft; *BHW* 286 (SRSC); *BHW & BLT* 8323 (TEX-LL). Collected at entrance to Boquillas Canyon 1937 and 1948.

Perityle aglossa A. Gray – Bluff rockdaisy

Occasional subshrub, cracks in cliff walls, boulders; DSC, DCA, 1850–3560 ft; *AL 141* (BIBE); *JF 184, 530, 650, 685, 1005, 1007, 1073, 1350, 2014, SS 38, 931, BHW 20409* (SRSC); *SS 931* (TEX-LL). The DH is the center of this species' distribution, with outliers in Terlingua and Terrell County. A possible *Perityle aglossa* × *P. bisetosa* var. *scalaris* has been collected in Passionflower Canyon, *AL 202* (BIBE), with white flowers and only one pappus bristle.

Perityle bisetosa var. *scalaris* A.M. Powell – Stairstep rockdaisy

Uncommon to occasional (G2T1S1), subshrub, sheer rock walls with north to east aspects; DCA, SYG, CHP, 3050–5680 ft; *AL 146* (BIBE); *JF 475, 608a, 1123, 1289, 1917, BHW 20604* (SRSC); *JMP 2742* (TEX-LL). Expected in canyons with sheer walls such as Dagger Canyon, side canyons in the TC trail area, and Passionflower Canyon. Also collected at Sue Peaks and Stairway Mountain.

Perityle vaseyi J.M. Coult. – Vasey rockdaisy

Rare subshrub, rocky soil; DSC, DAR, 2080–2350 ft; *JF 1367, SS 39, TRV & LJT 1816* (SRSC); *SS 39* (TEX-LL). Roadside near tunnel and at upstream mouth of Ernst Tinaja canyon.

+ *Plectocephalus americanus* (Nutt.) D. Don – American basketflower or star-thistle [*Centaurea americana* Nutt.] Rare annual herb, alluvial terraces; DSC, DAR, 3550–4420 ft; *JF 507a, 843* (SRSC). Listed by Amos and Giles (1992).

Porophyllum scoparium A. Gray – Shrubby poreleaf

Occasional subshrub, sandy slopes, rock crevices, wash gravel; DSC, DAR, DCA, RIO, 1800–4000 ft; *BRM 3132, 3227, CMR 11592, SMU 38* (BGWMA); *JEA & TJW 170, JF 332, 471, 645, 1379, 2081, BGH 633, OES 1351, MT 184, BHW 18396, 20618, 21191* (SRSC); *BA2 & TE 5336, BA2 & DG 5207, DSC & HBC 30633, DF 51* (TEX-LL).

Psilostrophe gnaphalioides DC. – Cudweed paperflower

Rare to “infrequent” perennial herb, sandy hillside, east aspect; DSC, 1900 ft; *JF 2044, BHW 20627* (SRSC). At Stairstep Mountain and in Boquillas Canyon, upstream from Marufo Vega, along a social trail away from river.

Psilostrophe tagetina (Nutt.) Greene var. *cerifera* (A. Nels.) B.L. Turner – Woolly paperflower

Uncommon throughout, perennial herb, wash gravel, terraces above wash, rocky soil; DSC, DAR, 2300–3560 ft; *JF 523, 605, 855, MT 17, 18, BHW 10788, 18390, GLW 4470* (SRSC); *BA2 & TE 5362, TRV 85-37* (TEX-LL).

+ *Senecio flaccidus* Less. – Threadleaf groundsel

[*Senecio douglasii* DC.] Rare perennial herb, terrace above wash and in a sandy clay bottom; DSC, DAR, 2400–3560 ft; *JF 513, 1431* (SRSC).

- *§ *Sonchus asper* (L.) Hill – Prickly sow thistle
Annual herb, reed stands along sandy river soil; RIO, 1800 ft; *BA2 4320* (BIBE).
Boquillas Canyon.
- *§ *Sonchus oleraceus* L. – Sow-thistle
"Frequent" annual herb, waste places; RIO; *BHW 733* (BIBE & TEX-LL); *HTF 209*
(SRSC). Along Rio Grande at Boquillas, collected in the 1930s.
- + *Stephanomeria pauciflora* (Torr.) A. Nelson – Brownplume wirelettuce
Rare perennial herb; DCA, 2350 ft; *JF 1358* (SRSC). In canyon upstream of Ernst
Tinaja.
- § *Symphotrichum divaricatum* (Nutt.) G.L. Nesom – Southern saltmarsh aster
[*Symphotrichum subulatum* var. *ligulatum* (Shinners) S.D. Sundb.] Annual herb;
EGM 134, BHW 730 (BIBE). Along river at Boquillas.
- Symphotrichum expansum* (Poepp. ex Spreng.) Nesom – Southwestern saltmarsh aster
[*Symphotrichum subulatum* var. *ligulatum* (Shinners) S.D. Sundb.] Occasional
annual herb, sandy soil; RIO, 1800 ft; *JF 2037, BHW 13044* (SRSC). In riverbank
sand, in interior of tamarisk/mesquite thicket. Locally known also from Hot Springs.
- Tetraneuris scaposa* (DC.) Greene var. *scaposa* – Stemmy four nerve daisy
[*Hymenoxys scaposa* (DC.) Parker, *Tetraneuris scaposa* var. *villosa* (Shinners)
Shinners] Occasional perennial herb, shallow rocky soil, washes; DSC, DAR, DCA,
2150–5840 ft; *CMR 5088* (BGWMA); *BHW 12895* (BIBE); *JF 258, 524a, 614, 739,*
755, 1052, 1234, 1247, 1374, 1403, 1970, MT 79, 233, BHW 10850, 12895, BHW &
LCH BG-67 (SRSC); *BA2 & TE 5300, 5434, BHW 12895* (TEX-LL).
- § *Thelesperma filifolium* (Hook.) Gray – Stiff greenthread
Annual herb; 3520 ft; *ACK 826* (BIBE). At Dagger Flat in 1963.
- Thelesperma longipes* A. Gray – Longstalk greenthread
Occasional perennial herb, rock crevices, washes, limestone ledges, open areas; DSC,
DAR, DCA, SYG, CHP, 1800–5150 ft; *BRM 3140; CMR 5083, 16949* (BGWMA); *BHW*
12892 (BIBE, SRSC, & TEX-LL); *JF 761, 1233, 1394, 2125, BHW & LCH BG-73*
(SRSC); *BA2 & TE 5325, OES 734, BHW & LCH BG-73* (TEX-LL).
- Thelesperma megapotamicum* (Spreng.) Kuntze var. *megapotamicum* – Rayless
greenthread
Uncommon perennial herb, rocky slopes, wash/river gravel, open rocky slopes; DSC,
DAR, DCA, RIO, SYG, 1800–4800 ft; *CMR 5084* (BGWMA); *JF 164, 262, 263, 1389,*
2167 (SRSC); *DSC & HBC 30634, JAM & JAS 3429, AMP & SAP 3610* (TEX-LL).
Southern end of study area.

§ *Thelesperma megapotamicum* (Spreng.) Kuntze var. *ambiguum* Gray – Colorado greenthread

Occasional perennial herb, wash gravel, rocky slopes; DAR, DCA, RIO, 1800 ft; *AMP & SAP 3610, BHW 21189, GLW 4476* (SRSC). Collected along the Rio Grande in Boquillas Canyon and at the mouth of Heath Creek between 1952 and 1981. In Texas this may be more of an eastern species but there is some overlap in distribution in west Texas. Some workers elevate these varieties to species (FNA 2006), other sources lump them together under *Thelesperma megapotamicum* (ITIS 2007).

Thelesperma simplicifolium Gray – Slender greenthread

Uncommon perennial herb, side of wash in rock crevice; DCA, 1900-4180 ft; *CMR 324, OCW 3243, BHW & LCH BG-68* (BGWMA); *JF 865, MT 63, 151, 163, AMP & SAP 5135, OCW 324, BHW 21185, BHW & LCH BG-68* (SRSC). Brushy Canyon, Stairway Mountain, Frog Tank, Telephone Canyon. Turner et al. (2003) does not reflect the historical collections.

Trixis californica Kellogg – American trixis

Occasional shrub, wash gravel, talus slope; DSC, DAR, DCA, 1800–4160 ft; *JF 473, 649, 1062, 1079, 1314, 2003, 2114, BHW 10751, GLW 4455* (SRSC); *BA2, DG, & TE 5493* (TEX-LL).

Verbesina encelioides (Cav.) Benth. & Hook. f. ex A. Gray – Golden crownbeard

Uncommon annual herb, sandy to silty soil; DCA, RIO, 1000–2560 ft; *EGM 138, OES 746* (BIBE); *JF 1066, 2036* (SRSC). In Boquillas Canyon and Dog Canyon.

Viguiera dentata (Cav.) Spreng. – Sunflower goldeneye

Uncommon to “frequent and widespread” perennial herb, well vegetated drainages, mesa tops, east aspect high elevation slopes; DAR, SYG, CHP, 3500–5150 ft; *BHW & LCH BG-15* (BGWMA); *JF 291, 759, 1028, 1224, MT 234, BHW & LCH BG-155* (SRSC). Dagger Basin, Stuarts Peak, DH plateau, and Brushy Canyon. Also known from the Chisos Mountains and north, in addition to along the Rio Grande in Val Verde County.

Viguiera stenoloba S.F. Blake – Skeletonleaf goldeneye

Common shrub, wash gravel, shallow rocky soil; DSC, DAR, DCA, SYG, CHP, 1800–5000 ft; *TR 56, CMR 16939, BHW & LCH BG-86* (BGWMA); *JF 260, 1029, 1370, 2140, TR 56, MT 145, 173, BHW & LCH BG-86* (SRSC); *BA2 & TE 5302* (TEX-LL).

§ *Xanthisma spinulosum* (Pursh) D.R. Morgan & R.L. Hartman var. *spinulosum* – Lacy tansyaster, cutleaf goldenweed

[*Haplopappus spinulosus* (Pursh) DC., *Machaeranthera pinnatifida* (Hook.) Shinners] “Fairly common” perennial herb, washes, rocky soil; DSC, DAR; *GLW 4469* (SRSC); *BA2 & TE 5389, BA2 & DG 5272* (TEX-LL).

Xanthisma spinulosum (Pursh) D.R. Morgan & R.L. Hartman var. *chihuahuanum* (B. L. Turner & R. L. Hartman) D. R. Morgan & R. L. Hartman – Lacy tansyaster
[*Machaeranthera pinnatifida* var. *chihuahuana* B.L. Turner & Hartman] Occasional perennial herb, wash gravel, rocky and/or sandy soil; DSC, DCA, RIO, 2300–3050 ft; *JF* 800, 958, 1130, 1373, *MT* 207, 210, *BHW* 18391 (SRSC); *RLH* & *JDB* 3504b, 3503 (TEX-LL).

Xylothamia triantha (Blake) Nesom – Trans-Pecos desert goldenrod
[*Ericameria triantha* (S.F. Blake) Shinnery] Rare subshrub, sandy clay bottom; DSC, DAR, 2400 ft; *JF* 1450 (SRSC). In remnant tobosa grassland patch. Ernst Basin. Also known from the Chisos Mountains and westward in southern Brewster County.

Zinnia acerosa (DC.) A. Gray – Spinyleaf zinnia
Common perennial herb, shallow rocky soil, ledges; DSC, SYG, 2760–4400 ft; *BRM* 3228, *BHW* & *LCH* BG-142 (BGWMA); *JF* 153, 851, 1094, 1180, *MT* 5, 59, *BHW* 10837, *BHW* & *LCH* BG-142 (SRSC); *BH2* & *TE* 5294, *BHW* 10837 (TEX-LL).

BERBERIDACEAE

+ *Berberis trifoliolata* Moric. – Agarita, algerita
[*Mahonia trifoliolata* (Moric.) Fedde] Uncommon to occasional shrub, wash gravel, shaded areas; DSC, DAR, DCA, SYG, 2880–4600 ft; *JF* 508, 528, 1001, 1036 (SRSC). Listed by Amos and Giles (1992).

BIGNONIACEAE

Chilopsis linearis (Cav.) Sweet – Desertwillow
Uncommon shrub or tree wash gravel; DCA, 1800–4280 ft; *TR* 140 (BGWMA); *BA2* 5234 (SAT); *JF* 1355, 1356, 2137, *TR* 140, *MT* 189 (SRSC). Occurs only in the largest canyons (Passionflower Canyon drainage, TC, above Ernst Tinaja, Marufo Vega area, Frog Tank, Brushy Canyon) with higher potential storm flow and moisture retention.

Tecoma stans (L.) Juss. ex Kunth – Yellow bells
Occasional shrub, rocky soils, wash gravel; DSC, DAR, DCA 1800–3050 ft; *TR* 141 (BGWMA); *BA2* 5331 (SAT); *JF* 179, 1010, *TR* 141, *MT* 11 193, *BHW* & *LCH* BG-85, *BHW* & *MCJ* 16866 (SRSC); *BLT* & *MT2* 97-347, *BHW* & *LCH* BG-85 (TEX-LL).

BORAGINACEAE

Antiphytum heliotropioides A. DC. – Mexican saucerflower
Rare, “locally common” shrub, wash gravel; DAR, DCA, 4200–4350 ft; *BA2* 5220, 5313, 5453, 5465, 5600 (SAT); *JF* 1936 (SRSC). Sue Peaks Canyon and Brushy Canyon near Shackelford cabin. Turner et al. (2003) does not reflect any dots for the SAT specimens. Otherwise known from one location each in northern Brewster and Val Verde counties; it is more common in Mexico.

- + *Cryptantha albida* (Kunth) I.M. Johnst. – New Mexico cryptantha
Rare annual herb, areas that hold water after runoff; DCA, 1920–3000 ft; *JF 646, 805* (SRSC). At Ernst Tinaja and a canyon north of the Barker House. Turner et al. (2003) shows a dot in the study area but no specimens were discovered.
- Cryptantha angustifolia* (Torr.) Greene – Panamint cryptantha
Rare annual herb, gravel terrace, alluvial sand on flats; DSC, 2560–3560 ft; *JF 522* (SRSC); *RRI 552* (TEX-LL). At Dog Canyon and a canyon off the TC trail.
- Cryptantha coryi* I.M. Johnst. – Cory cryptantha
[*Cryptantha palmeri* (A. Gray) Payson] Rare subshrub, rocky open soil, sandstone-derived soils; DSC, 3560 ft; *JF 280* (SRSC); *BLT & BD 23-164* (TEX-LL). Dagger Basin and along Brushy Canyon road.
- #Δ *Cryptantha crassisepala* (Torr. & A. Gray) Greene – Thicksepal catseye
Annual herb, 1800 ft. Seen at the Boquillas Canyon restoration site. Turner et al. (2003) shows dots in the area but no specimens were discovered.
- § *Cryptantha mexicana* (Brandege) I.M. Johnst. – Mexican cryptantha
“Infrequent” annual herb; 2300 ft; *OCW 506* (SRSC). Big Brushy Canyon. Also known from Dog Flats and the Chisos Mountains.
- Heliotropium confertifolium* (Torr.) Torr. ex A. Gray – Leafy heliotrope
Occasional subshrub, open rocky shallow soil; DSC, 1800–3800 ft; *EGM 147, BHW 907, 940* (BIBE); *JF 155, 367, BHW s.n., 940, 10848, BHW & LCH BG-76* (SRSC); *BHW s.n., 10848; BHW & LCH BG-76* (TEX-LL).
- Heliotropium convolvulaceum* (Nutt.) A. Gray – Phlox heliotrope
Locally common annual herb, sandy soil; RIO, DSC, 1800 ft; *BA2, DG, TE, & PC 4608, BHW 13029* (BIBE); *WRC & PM212200, JF 2232, AMP & SAP 5860, BHW 686, 13029, 16851, GLW 4474* (SRSC); *DSC & HBC 30631, BHW 686* (TEX-LL). Several species, in addition to *Heliotropium convolvulaceum*, that normally occur in the northern Trans-Pecos sand hills have disjunct populations at the head of Boquillas Canyon.
- Heliotropium curassavicum* L. – Salt heliotrope
Locally common subshrub, sandy soil; RIO, 1800 ft; *EGM 124, 943, CN 495* (BIBE); *JF 2256, BCT 8802* (SRSC); *BCT 8802, BHW 943* (TEX-LL). Boquillas Canyon restoration site.
- #Δ *Heliotropium glabriusculum* (Torr.) A. Gray – Greeneye heliotrope
Perennial herb, observed at the Boquillas Canyon restoration site. Also known from just outside the study area, on the flats near Dog Canyon.

- § *Heliotropium greggii* Torr. – Fragrant heliotrope
Perennial herb; 1800 ft; *DSC & IMJ 21926* (SRSC). Boquillas Canyon, 1959. Also known locally from Dog Flats.
- § *Heliotropium procumbens* Mill. – Fourspike heliotrope
Subshrub; *BHW 1089* (TEX-LL). Boquillas Canyon, 1937.
- Lappula redowskii* (Hornem.) Greene – Flatspine stickseed
Occasional annual herb, gravelly soil, slopes, shaded areas; DAR, DCA, 1800–3560 ft; *DB 22, TK 10, BRM 3124* (BGWMA); *JF 427, 540a, 797, 2101, BHW 47057, 47059* (SRSC).
- + *Lithospermum incisum* Lehm. – Fringed puccoon, narrowleaf stoneseed
Rare perennial herb, gravelly soil/rubble in wash median; SYG, 4360–4800 ft; *BA2 5539, 5597* (SAT); *JF 554, 1948* (SRSC). Turner et al. (2003) does not reflect the BA2 collections, but there are many dots at the Chisos Mountains and to the north and east of the study area.
- § *Omphalodes aliena* A. Gray ex Hemsl. – Mexican navelwort
"Frequent" annual herb, among rocks; DSC, DCA, RIO, 1800–2560 ft; *BRM 3131* (BGWMA); *JLB 1578, ECM 49* (SAT); *AMP 5367, BHW 15991, 18395* (SRSC); *DSC & WOD 30715* (TEX-LL). Dog and Frog canyons, tunnel, Boquillas. Recently collected at Reed Plateau (Weckesser in prep.); known mostly near the Rio Grande, from Presidio through Val Verde counties.
- § *Tiquilia canescens* (A. DC.) A.T. Richardson – Woody crinklemat
[*Coldenia canescens* A. DC.] Occasional subshrub, lowlands, rocky soil; DSC, 2200–2400 ft; *BA2 5340* (SAT); *TR 4* (SRSC); *TR 4, BHW 1230* (TEX-LL).
- Tiquilia gossypina* (Wooton & Standl.) A.T. Richardson – Texas crinklemat
Occasional subshrub, open rocky soil; DSC, DCA, 1800–3440 ft; *JF 360, 2059, BHW 12899* (SRSC); *BHW 909* (TEX-LL).
- Tiquilia greggii* (Torr.) A.T. Richardson – Plume tiquilia
Occasional shrub, brushy canyons; DSC; *CMR 11634* (BGWMA); *BA2 5270* (SAT); *JF 359, 369; MT 213, BHW 10800* (SRSC).
- § *Tiquilia hispidissima* (Torr.) A.T. Richardson – Rough coldenia
Occasional subshrub, sandy to rocky soil, open areas; DSC, 1850–3520 ft; *BA2, DG, TE, & B 4923, ACK 822, BHW 908, 909* (BIBE); *BLT & BD 23-162, BHW 21682, 21692* (TEX-LL).
- Tiquilia mexicana* (S. Watson) A.T. Richardson – Mexican crinklemat
Occasional subshrub, platy limestone, bedrock outcrops, sandy soil; 1800–3400 ft; *JF 152a, 812, 1443, BHW 13072, 23038, GLW 4487* (SRSC).

BRASSICACEAE

Descurainia pinnata (Walter) Britton – Tansymustard

Uncommon annual herb, washes, places where water pools over soil; DSC, DAR, DCA, 3440–3500 ft; *BA2* 5587 (SAT); *JF* 422, 617 (SRSC). TC trail and Shackelford cabin area. Also at Hot Springs and Dog Flats.

§ *Dimorphocarpa wislizeni* (Engelm.) Rollins – Spectacle pod, touristplant

Locally common annual herb, sandy soil; DCA, 3500 ft; *BHW* 47060 (SRSC & TEX-LL); *VLC* 43958, *RRI* 558 (TEX-LL). Dog Canyon area.

Draba cuneifolia Nutt. ex Torr. & A. Gray – Wedgeleaf draba

Occasional annual herb, wash gravel, alluvial terrace, open peak; DSC, DAR, DCA, SYG, 1800–5080 ft; *JF* 429, 536, 566, 738, 802, *BHW* 18392, *BHW* & *MCJ* 15990 (SRSC); *BHW* & *MCJ* 15990 (TEX-LL).

§ *Lepidium alyssoides* var. *angustifolium* (C.L. Hitchc.) Rollins – Mesa pepperwort

Perennial herb; *HBP* 1923 (TEX-LL). Dog Canyon. According to Turner et al. (2003), this species is common, or at least commonly collected, in western Texas. The lack of collections in the eastern part of Brewster County could be due to a relatively lower collecting effort in the local area.

Lepidium lasiocarpum subsp. *wrightii* (A. Gray) Thell. – Wright pepperweed

Uncommon annual herb, wash gravel, rocky terrace; DAR, DCA, 3440–3560 ft; *JF* 619 (BIBE); *BA2* 734, 5540, 5586; *RE* 734 (SAT); *JF* 421, 565, 619 (SRSC). TC trail area, above dam. The specimens at SAT identified as *Lepidium lasiocarpum* would most probably be this variety, based on distributions shown in Turner et al. (2003). Also known at Persimmon Gap and Hot Springs.

§ *Lesquerella purpurea* (A. Gray) S. Watson – Rose bladderpod

"Frequent" perennial herb; *BHW* & *MCJ* 15995 (SRSC). Dog Canyon. Also collected at Dog Flats, McKinney Springs, and Hot Springs.

Nerisyrenia camporum (A. Gray) Greene – Bicolored mustard

Common at lower elevations, perennial herb, gravelly flats, open desert; DSC, DCA, SYG, 2120–4280 ft; *CMR* 16047 (BGWMA); *JF* 492 (BIBE); *JF* 372, 492, 615, 681, *MT* 105, *BHW* 208, 47054, *BHW* & *HKB* 47063 (SRSC); *BHW* T208, 47063 (TEX-LL).

Physaria fendleri (A. Gray) O'Kane & Al-Shehbaz – Fendler bladderpod

[*Lesquerella fendleri* (A. Gray) S. Watson] Occasional perennial herb, gravelly flats, open drainages and peaks with some shelter; DSC, DAR, DCA, SYG, 2200–5000 ft; *JF* 557 (BIBE); *TR* 105 (BGWMA); *JF* 200, 497a, 555, 557, 736, 1189, *TR* 139, *MT* 75, 104, *BHW* 47062 (SRSC). The revision of *Physaria* accord to Al-Shehbaz and O'Kane (2002) and cited by Powell (in prep.) is followed here.

- + *Physaria gordonii* (A. Gray) O'Kane & Al-Shehbaz – Gordon bladderpod
Rare annual herb; SYG, 4360 ft; *JF 570* (SRSC). TC trail, five miles in from the trailhead.
- Physaria mcvaughiana* (Rollins) O'Kane & Al-Shehbaz – Mcvaugh bladderpod
Rare perennial herb, shallow soil with rock and boulders, deeper soil under shrubs in duff and shade, also open ridges; SYG, 4120–5840 ft; *JF 497, 714, 1535, 1964, AMP & SAP 5133* (SRSC). Listed by Amos and Giles (1992). At Sue Peaks, Telephone Canyon trail mile six, and Brushy Canyon. Also known from the Chisos and Glass Mountains.
- Schoenocrambe linearifolia* (A. Gray) Rollins – Slimleaf plainsmustard
Rare perennial herb, rocky areas on open peak; SYG, 3500–5680 ft; *BRM 3110* (BGWMA); *JF 734, 1291, 2185, MT 42, 43, 246, BHW & LCH BG-154* (SRSC). Stuarts and Sue peaks environs, Brushy Canyon.
- § *Selenia dissecta* Torr. & A. Gray – Texas selenia
"Frequent" annual herb, sandy soil; DCA, 3500 ft; *CMR 16410* (BGWMA); *BHW 47058, BHW & MCJ 15989* (SRSC); *BHW 47058* (TEX-LL). From Dog Canyon and near the mouth of Big Brushy Canyon.
- *§ *Sisymbrium irio* L. – London rocket
Annual herb, alluvial sand on flats; DCA, 2560 ft; *RRI 551* (TEX-LL). Dog Canyon. This collection is not reflected in Turner et al. (2003).
- Streptanthus cutleri* Cory – Cutler twistflower
Uncommon (G2S2) biennial herb, rocky soil, alluvium and slopes; DSC, DAR, DCA, 1800–3500 ft; *JF 420, AMP 3570, 5366, AMP & SAP 4299, 5387, BHW 18399, BHW & MCJ 15992* (SRSC). Dog Canyon, Dagger Flats, TC trail, Ernst Tinaja, Boquillas Canyon. This became evident/locally common only after good local spring rain.
- § *Thelypodium texanum* (Cory) Rollins – Texas thelypody
Annual herb, dry areas; *OES 1288* (SRSC). Hills near Boquillas, 1938. This species concept includes *Thelepodium tenue* (Turner et al. 2003).
- § *Thelypodium wrightii* A. Gray – Wright thelypody
Perennial herb; DCA; *BRM 3106* (BGWMA). Twelve miles south of FM 2627 on Brushy Canyon road.
- CACTACEAE**
- Ariocarpus fissuratus* (Engelm.) K. Schum. – Living rock cactus
Common succulent, rocky soil, gravel terraces; DSC, SYG, 3350–ca. 4500 ft; *BA2 5278, DB 468* (SAT); *JF 274, 1479, DS2 12b* (SRSC).
- § *Coryphantha dasyacantha* (Engelm.) Orcutt. – Desert pincushion cactus
Succulent; 4125 ft; *MT 90* (SRSC). Brushy Canyon near Shackelford cabin.

Coryphantha duncanii (Hester) L.D. Benson – Duncan cory cactus

[*Escobaria dasyacantha* var. *duncanii* (Hester) N.P. Taylor] Rare (G3T1T2S1S2) succulent, open ridge, coarse gravel on rocky slope with large boulders and outcrops; DSC, ca. 2000–4146 ft; *JF* 549, *JF & MD* 612, *AMP* 5373, *DS2* 2228 (SRSC). Mid-elevation of TC trail, upper Ore Terminal trail, near Boquillas road.

Coryphantha echinus (Engelm.) Britton & Rose var. *echinus* – Sea-urchin cactus

[*Mammillaria scolymoides* Scheidw.] Occasional succulent, rocky soils, open desert and slopes; DSC, SYG, 3500–4360 ft; *JF* 593, 868, 1493, *BHW* 11061 (SRSC). *JF* 1493 was found growing with *JF* 1494, identified as var. *robusta*, on a western slope of the DH.

Coryphantha echinus (Engelm.) Britton & Rose var. *robusta* A.M. Powell – Multi-stemmed sea-urchin cactus

Rare succulent, uplands, bare slopes, rocky soil; DSC, 2400–3650 ft; *JF* 1440, 1494 (SRSC). In Ernst Basin and on western slopes of the southern DH. These collections were made approximately four and 13 miles north, respectively, of the previously known locality for this relatively new taxon.

Coryphantha sneedii (Britton & Rose) A. Berger var. *albicolumnaria* (Hester) A.D. Zimmerman – Silverlace cactus

[*Coryphantha albicolumnaria* (Hester) Zimmerman, *Corphantha sneedii* var. *albicolumnaria* (Hester) A.D. Zimmerman, (forthcoming, cited in Powell and Weedon 2004), *Escobaria albicolumnaria* Hester] Rare (G2G3S2S3) succulent, gravelly flats, open ridgetop, bedrock outcrops; DSC, SYG, 1800–4840 ft; *DAZ* 1541 (BIBE); *JF* 556, 587, 588 (SRSC). Boquillas Canyon and high elevations of the TC trail.

Coryphantha tuberculosa (Engelm.) A. Berger var. *tuberculosa* – Cob cactus

[*Mammillaria tuberculosa* Engelm.] Common succulent, open ridge, shallow rocky soils, rock crevices; DSC, DCA, SYG, 1900–5840 ft; *CMR s.n.* (BGWMA); *JF* 273, 386, 550, 625, 781, 1300, *MT* 89 (SRSC).

§ ***Coryphantha tuberculosa*** (Engelm.) A. Berger var. *varicolor* (Tiegel) A.D.

Zimmerman – Varicolor cob cactus

[*Coryphantha dasyacantha* var. *varicolor* (Tiegel) L.D. Benson] Succulent; *BA2* 471 (SAT).

Echinocactus horizontalonius Lem. – Eagle claw cactus

Occasional succulent, rocky limestone soils; DSC, DCA, SYG, 4360 ft; *CMR* 5173 (BGWMA); *DB* 470 (SAT); *JF* 591 (SRSC).

Echinocereus dasyacanthus Engelm. – Rainbow cactus

Common succulent, gravelly flats or slopes, some bedrock; DSC, SYG, 1900–5700 ft; *DB* 469 (SAT); *JF* 558, 623 (SRSC).

- + *Echinocereus enneacanthus* Engelm. var. *enneacanthus* – Strawberry cactus
Occasional succulent, fine soil; DSC, 1800 ft; *JF 2148* (SRSC). Observed by Amos and Giles (1992). The variety *brevispinus* (W.O. Moore) L.D. Benson occurs east of the study area with a “taxonomically ambiguous” area of overlap inside the study area near the Rio Grande (Powell and Weedin 2004).
- + *Echinocereus stramineus* (Engelm.) Rumpler var. *stramineus* – Strawberry pitaya
Common succulent, rocky soil, open exposed areas, slopes; DSC, DCA, SYG, 1800–4440 ft; *JF 780, 2149* (SRSC). Observed by Wells. Turner et al. (2003) shows dots in the study area but no specimens were discovered.
- Echinomastus mariposensis*** Hester – Mariposa cactus
[*Neolloydia mariposensis* (Hester) L.D. Benson, *Sclerocactus mariposensis* (Hester) N.P. Taylor] Occasional (G2S2; LT/T) succulent, rocky limestone soils, slight hills, fine-gravel-surfaced flats; DSC, DCA, 3300–3520 ft; *CMR 5172* (BGWMA); *JF 391, 624, AMP & SAP 5925, DS2 2221* (SRSC).
- Echinomastus warnockii* (L.D. Benson) Glass & R. Foster – Warnock cactus
[*Sclerocactus warnockii* (L.D. Benson) N.P. Taylor] Occasional succulent; DSC, DCA, 1900–2560 ft; *JF 2150, BHW 47459, BHW & HKB 47012* (SRSC).
- + *Epithelantha micromeris* (Engelm.) F.A.C. Weber ex Britton & Rose – Common button cactus
Uncommon succulent, open ridges with bedrock outcrops, rock crevices; DSC, SYG, 3560–4140 ft; *JF 268a, 271, 586, 613, 613a, 1486* (SRSC). TC trail area, western slopes of DH, Alto Relax. Observed by Amos and Giles (1992).
- Ferocactus hamatacanthus* (Muehlenpf.) Britton & Rose var. *hamatacanthus* – Giant fishhook cactus
Occasional succulent, open rocky slopes; DCA, SYG, 4300–4900 ft; *CMR 5174* (BGWMA); *JF 590, 1507, MT 96* (SRSC).
- Glandulicactus uncinatus* var. *wrightii* (Engelm.) Backeb. – Eagle claw cactus
[*Ancistrocactus uncinatus* var. *wrightii* (Engelm.) L.D. Benson, *Echinocactus uncinatus* Galeotti ex Pfeiff., *Ferocactus uncinatus* (Galeotti ex Pfeiff.) Britton & Rose] Uncommon throughout, succulent, open flats, rocky areas; DSC, SYG, 3520–4040 ft; *DS2 03b, JF 548* (SRSC).
- § *Mammillaria heyderi* Muehlenpf. – Heyder pincushion cactus
“Rare” succulent; DSC, 2500 ft; *AMP, SAP, MLP, & AL2 6103* (SRSC). Near mouth of Dog Canyon in 1996.
- § *Mammillaria lasiacantha* Engelm. – Golf ball cactus
Succulent; DSC, ca. 3520 ft; *DS2 18b, 2222, JFW s.n.* (SRSC). Dagger Flats and the upper end of the Ore Trail in the 1970s.

§ *Mammillaria meiacantha* Engelm. – Nipple cactus

Succulent; *BHW 11065* (SRSC). “Dead Horse Mountains” in 1952.

Neolloydia conoidea (DC.) Britton & Rose – Texas cone cactus

Occasional to locally abundant succulent in rocky open areas; SYG, 3080–5200 ft; *JF 380, 782, DS2 2220, MT 52, 53, 122, BHW 11055, 11058* (SRSC). Dagger Flat, Brushy Canyon, Stuarts Peak. This cactus seems to be either hyper-abundant or not very noticeable. In some places, like the summit of Stuarts Peak and near mile five of the TC trail (the highest point of the trail before dropping into the TC watershed), it is almost not possible to walk cross-country without stepping on individuals of this species. In these areas they seem to co-occur with *Coryphantha echinus* var. *echinus*.

Opuntia aggeria Ralston & Hilsenb. – Clumped dog cholla

Common at lower elevations, succulent, open flats and some slopes, rocky soil, perhaps more abundant in silty, clayey, or possibly gypsiferous soil; DSC, 1850–300 ft; *JF 691, 704, 1562, 1563, 1574, 1574a, 1576, 1620, BAR & RAH 136* (SRSC). The specimen *MA 5638* (BIBE) identified as *Opuntia grahamii* × *Opuntia schottii* was determined to be *Opuntia aggeria*, instead of a hybrid as was long surmised (Anthony 1956, Ralston 1987), based on morphology and its being a diploid, while the purported parents are tetraploids (Ralston and Hilsenbeck 1989). Ongoing chromosome work on the dog chollas of the southern Big Bend has uncovered the existence of a triploid hybrid (parents undetermined), an even broader species concept of *Opuntia aggeria* than was previously described (Fenstermacher unpub. data), and other anomalies, suggesting the taxonomy of this group is not completely understood.

Opuntia azurea Rose var. *aureispina* (S. Brack & K.D. Heil) A.M. Powell & J.F.

Weedin – Golden-spined prickly pear

[*Opuntia aureispina* (S. Brack & K.D. Heil) Pinkava & B.D. Parfitt] G1S1 succulent; RIO, 1800 ft; *BGH 802* (SRSC). Boquillas Canyon, river mile 795. From a mesa NW of the Shackelford cabin. The purple prickly pear *Opuntia azurea* var. *parva*, with its small orbicular pads with very long spines, is more widespread in southern Brewster county, with var. *aureispina* being locally restricted along the Rio Grande east of Mariscal Canyon up to the eastern side of the DH Mountains. The other local variety of diploid purple prickly pears, var. *diplopurpurea*, is widespread to the west and north of BBNP (Powell and Weedin 2004).

+ *Opuntia camanchica* Engelm. & J.M. Bigelow – Comanche prickly pear

Succulent, on terrace above river floodplain; DSC, DAR, 3560 ft; *MA 848, JF 626* (SRSC). Known locally from Hot Springs; this is the dominant and expected prickly pear of the area (Powell and Weedin 2004).

§ *Opuntia densispina* – Densely-spined dog cholla

Succulent; *DOK & JFW 53, AMP & SAP 6275* (SRSC). On Old Ore Road at Ernst Tinaja turnoff, overlook on Boquillas Canyon road. Many individuals, especially at Ernst Tinaja, fit the morphology for *Opuntia densispina* though it has been

considered restricted in distribution to the Solis area of BBNP, near the Rio Grande (Ralston and Hilsenbeck 1992, Powell and Weedin 2004). Recent chromosome work, however, supports the occurrence of *Opuntia densispina* at Ernst Tinaja (J. Fenstermacher unpublished data).

Opuntia dulcis Engelm. – Sweet prickly pear

Succulent; DSC, 1800–3560 ft; *JF* 628; *AMP & SAP* 6278; *MPG* 87, 88, 89 (SRSC).

+ *Opuntia engelmannii* Salm-Dyck ex Engelm. var. *engelmannii* – Engelmann prickly pear

Uncommon succulent, east aspect hillside, in a clump of thick vegetation; SYG, 4440 ft; *JF* 589 (SRSC). Upper elevations of the TC trail. Turner et al. (2003) shows dots in the study area, in addition to the wider region, but no DH specimens were found.

§ *Opuntia engelmannii* var. *lindheimeri* (Engelm.) B.D. Parfitt & Pinkava – Texas prickly pear

Succulent; DSC, 1800 ft; *AMP & SAP* 6277, *JFW* 1171 (SRSC). RGV area and just west of the Boquillas Canyon trailhead.

*§ *Opuntia ficus-indica* (L.) Mill. – Indian fig

Rare succulent; *BGH* 646 (SRSC). Boquillas Canyon by Rabbit Ears, mile 791.

Opuntia grahamii Engelm. – Graham dog cholla

Occasional succulent, gravelly flats and low hills; DSC, 3000–3520 ft; *CMR* 5178 (BGWMA); *MA* 892 (BIBE); *JF* 333, 377, 378, 389, 783, 892, 1142a (SRSC).

Recent chromosome work has shown that all of the *Opuntia grahamii* tested were sterile, effectively producing no pollen (J. Fenstermacher unpub. data).

Opuntia kleiniae DC. – Candle cholla

Occasional along the river, succulent, sandy banks; RIO, 1800 ft; *BGH* 841, *JF* 2040 (SRSC).

Opuntia leptocaulis DC. – Tasajillo, christmas cactus

Occasional succulent, small drainages, terrace above wash, flats; DSC, DAR, 3360–4120 ft; *JF* 388, 448, 816, *WH*, *TA*, *LS* & *JMP* 9028 (SRSC).

Opuntia rufida Engelm. – Blind prickly pear

Common succulent, rocky slopes; DSC, DAR, DCA, 1800–3560 ft; *JF* 627, *BGH* 803, *WH*, *TA*, *LS* & *JMP* 8985 (SRSC).

Opuntia spinosibacca M.S. Anthony – Spiny-fruited prickly pear

Succulent; DSC, 1800–4600 ft; *MA* A-3, A-7, *JF* 385, *BGH* 801, 842, *AMP & SAP* 5824, 6089 (SRSC).

Opuntia sp. – Prickly pear

Undetermined prickly pear species, chromosome count $n=11$, an erect shrub to one m high. *BGH* 800, 840; *AMP* & *SAP* 6276 (SRSC). In Boquillas Canyon, river mile 800.5 and at overlook west of Boquillas Canyon near trailhead.

CAPPARACEAE*Koeberlinia spinosa* Zucc. – Allthorn

Occasional shrub, rocky soil, exposed areas, flats and slopes; DSC, DAR, DCA, 2500–3800 ft; *WFM s.n.*, *CMR* 32 (BGWMA); *JF* 1441, *JF* & *HL* 1891, *MT* 8 (SRSC).

CAPRIFOLIACEAE*Lonicera albiflora* Torr. & A. Gray – Western white honeysuckle

Rare perennial woody vine, east aspect below cliff, sheltered high elevation drainage under trees; SYG/CHP, DCA, 4280–5680 ft; *BRM* 3230 (BGWMA); *PVW s.n.* (KANU); *BA2* 5436 (SAT); *JF* 1296, *AMP* & *SAP* 5125 (SRSC). Brushy Canyon above BGWMA boundary, vicinity of Sue Peaks, near Shackelford cabin.

CARYOPHYLLACEAE§ *Arenaria benthamii* Fenzl ex Torr. & A. Gray – Hilly sandwort

Annual herb; *BRM s.n.* (BGWMA). Big Brushy Canyon, 12 mi south of TX FM 2627.

Paronychia jamesii Torr. & A. Gray – James nailwort

Uncommon throughout, perennial herb, rocky soils, slightly sheltered spots; DSC, SYG, 3800–5800 ft; *BA2* 5475 (SAT); *JF* 235, 765, 1269a, *MT* 33, 248 (SRSC).

CELASTRACEAE*Mortonia scabrella* A. Gray – Tickbush, Rio Grande saddlebush, sandpaper bush

Uncommon shrub, open exposed areas, shallow rocky soil amongst bedrock; DSC, SYG, 3840–5000 ft; *PVW s.n.* (KANU); *JF* 268, 1167, 2190, *MT* 2 (SRSC). Western slopes of the DH, Alto Relex.

Schaefferia cuneifolia A. Gray – Desertyaupon

Occasional shrub, sides of washes and canyons; DSC, DAR, DCA, 1900–3300 ft; *TR* 126 (BGWMA); *JF* 676, 973, 1366, 2041, *AMP* & *SAP* 4302, *BHW* 15912 (SRSC); *AMP* & *SAP* 4302 (TEX-LL).

CHENOPODIACEAE*Atriplex canescens* (Pursh) Nutt. – Fourwing saltbush

Uncommon throughout, shrub, open exposed summits, sandy-clay and gravelly drainages; DSC, DAR, DCA, SYG, 1800–4160 ft; *BA2* 5262 (SAT); *JF* 336, 861, 1091, 1410, 1895, 2143, *MT* 203, *BHW* & *LCH* BG-132 (SRSC); *BHW* & *LCH* BG-132 (TEX-LL).

* *Atriplex rosea* L. – Tumbling saltweed, red orache

Rare annual herb, sandy soil, old river floodplain; RIO, 1800 ft; *AL 306* (BIBE); *AL 307*, *JF 2236* (SRSC). New county record; independently reestablished at the Boquillas Canyon restoration site.

Chenopodium berlandieri Moq. – Pitseed goosefoot

Rare annual herb, finer soils that are inundated periodically; DAR, RIO, 1800–3440 ft; *JF 361*, *616*, *2122*, *2238* (SRSC). Above dam on the TC trail and in cracked mud of Rio Grande floodplain at the mouth of Cow Canyon. Known from the Chisos Mountains and around Alpine and Marathon.

Corispermum americanum (Nutt.) Nutt. – American bugseed

Locally common annual herb, sandy soil; DSC, RIO, 1800–2100 ft; *BHW 8330*, *JF 2221*, *2224* (SRSC); *DSC & HBC 30630*, *BHW 8330* (TEX-LL). At head of Boquillas Canyon in sand slide area.

!# *Salsola tragus* L. – Tumbleweed

[*Salsola kali* L.] Locally common annual herb; sandy soil; RIO, 1800 ft; *JF 2252* (SRSC). Seen only at Boquillas restoration site where it was a common reestablishing weed.

Suaeda suffrutescens S. Watson var. *suffrutescens* – Desert seepweed

[*Suaeda nigra* (Raf.) J.F. Macbr.] Rare perennial subshrub in sandy soil, old river floodplain; RIO, 1800 ft; *JF 2234* (SRSC). Naturally reestablished at the Boquillas restoration site.

CONVOLVULACEAE

§ *Bonamia ovalifolia* (Torr.) Hallier f. – Bigpod lady's nightcap

"Locally common" subshrub, sandy soil, can be among rocks; DSC, RIO, 1800 ft; *BA2*, *DG*, *TE*, & *PC 4551*; *JS 303* (BIBE); *HBC 30628* (NYBG); *BA2 5502* (SAT); *BGH 622*, *DAL 40*, *AMP 3347*, *AMP & JH 5696*, *AMP & SAP 3609*, *5859*, *GLW 4482* (SRSC); *DSC & HBC 30628*, *AMP 3347*, *AMP & SAP 3609* (TEX-LL).

Bonamia repens (I.M. Johnst.) D.F. Austin & Staples – Creeping lady's nightcap

[*Petrogenia repens* I.M. Johnst.] Common subshrub, trailing over rocks, ledges, bedrock, in shallow soils; DSC, DAR, 1800–4280 ft; *CA & BA2 69*, *BA2 6191*, *SMU 41* (BGWMA); *CA s.n.* (SAT); *JF 154*, *307*, *435*, *1075*, *2062*, *2131*, *MT 167*, *BHW & MCJ 16834* (SRSC).

Convolvulus equitans Benth. – Texas bindweed

Uncommon throughout, perennial herbaceous vine, wash gravel, sandy clay bottom; DAR, DCA, RIO, 1800–4350 ft; *BRM 3149* (BGWMA); *JF 1945*, *EGM 150* (BIBE); *BA2 5309*, *5470*, *5720* (SAT); *JF 181*, *853*, *1349*, *1432*, *1945*, *2077*, *2116* (SRSC).

Dichondra brachypoda Wooton & Standl. – New Mexico ponysfoot

Rare perennial herb, well shaded spots, deep duff layers at side of washes under shrubs; DAR, DCA, 3056–4600 ft; *JF* 859, 1122, *AMP* & *SAP* 5134 (SRSC). Dagger and Telephone canyons, and near Shackelford cabin above BGWMA boundary. Listed by Amos and Giles (1992). Known also from the Chisos Mountains and northward.

Evolvulus alsinoides (L.) L. – Slender dwarf morning-glory

Occasional perennial herb, wash bottoms/sides, base of cliffs in shade, protected rocky areas; DSC, DAR, DCA, 1900–3880 ft; *TR* 249 (BGWMA); *BA2* 5312, 5464 (SAT); *JF* 209, 309, 957, 1472, 2060, *TR* 250; *MT* 127 (SRSC).

§ *Ipomoea cardiophylla* A. Gray – Heartleaf morning-glory

Rare annual vine; *BHW* 10799 (SRSC). Collected in 1952 on top of the DH near Sue Peaks.

Ipomoea costellata Torr. – Crest-rib morning glory

Rare but locally common perennial herbaceous vine, shallow soil amongst rocks and boulders; SYG, 5300–5840 ft; *JF* 1994 (BIBE); *JF* 1969, 1994, *MT* 241 (SRSC). Sue Peaks environs. Observed during current study only after significant rains. Also known locally from the Chisos Mountains and near Boquillas Canyon.

§ *Ipomoea lindheimeri* A. Gray – Lindheimer morning-glory

"Infrequent" perennial herbaceous vine, on juniper; 3520 ft; *MA* & *AD* 874 (SRSC). At Dagger Flat in 1948.

Ipomoea rupicola House – Cliff morning-glory

Occasional to uncommon perennial herbaceous vine, open rocky slopes in shallow soil, over boulders, sides of washes; DSC, DAR, DCA, SYG, 3050–4800 ft; *JF* 248 (BIBE); *JF* 248, 308, 1103, 1186, 1196, *MT* 31, 144, 172, *BHW* 962, *BLT* & *BD* 23-167, *OCW* 352, *BHW* & *LCH* BG-148, *BHW* & *MCJ* 16828 (SRSC); *BLT* & *BD* 23-167 (TEX-LL).

§ *Ipomoea tenuiloba* Torr. – Spiderleaf

Rare perennial herbaceous vine; *MT* 236 (SRSC). North rim of the DH proper [north of Stuarts Peak] in 1994.

CRASSULACEAE*Echeveria strictiflora* A. Gray – Siempreviva, desert savior

Rare succulent; shallow, dark soil; SYG/CHP, 5700–5840 ft; *BRM* 3224 (BGWMA); *JF* 1263, 1301, *BHW* 10774 (SRSC).

Sedum nanifolium Fröd. – Dwarf stonecrop

[*Sedum robertsianum* Alexander, *Sedum parvum* Hemsl. subsp. *robertsianum* (Alexander) R.T. Clausen] Rare, but locally occasional, succulent, shallow lenses of soil within large areas of bedrock exposures; SYG, 5150 ft; *JF* 1215 (BIBE & SRSC).

DH plateau. Warnock (1977) reported that this species was “frequent” in the Del Norte and Glass Mountains, the Del Nortos being the type locality for the synonymized population (Clausen 1981). This taxon is part of a Mexican cohort of species/infraspecific taxa that occur in the Sierra Madre highlands; the higher-elevation yellow-flowered sedums are now split into two species, ours being widespread in eastern Chihuahua, Coahuila, Nuevo León, but apparently rarer in the Trans-Pecos. In the U.S., *Sedum nanifolium* was only known to occur in Brewster County (Nesom and Turner 1995), but was recently reported in the southern sliver of Pecos County on the Guadalupe Ranch (M. Terry pers. comm.).

Sedum wrightii A. Gray – Wright stonecrop

Rare succulent, crevices in highly fractured bedrock outcrops; SYG, 4200–5000 ft; *JF 581, 1163, 1506* (SRSC). On western slopes, below the DH plateau. Known locally from the Chisos Mountains and other area peaks.

CROSSOSOMATACEAE

Glossopetalon spinescens A. Gray – Spiny greasebush

[*Forsellesia spinescens* (A. Gray) Greene] Uncommon shrub, sheltered areas, by cliff outcrops, ridges; SYG, 4200–5000 ft; *PVW s.n.* (KANU); *JF 1205, 1505, BHW 10843* (SRSC). In the vicinity of Sue Peaks, on and just below the DH plateau.

CUCURBITACEAE

Ibervillea lindheimeri (A. Gray) Greene – Lindheimer globeberry

Rare perennial herbaceous vine, in dappled shade, growing on *Aloysia gratissima*; DSC, 3080 ft; *JF 1143* (SRSC). Known locally from the Chisos Mountains and further north through Brewster County.

§ *Ibervillea tenuisecta* (A. Gray) Small – Slimlobe globeberry

Uncommon perennial herbaceous vine; DSC, 3500–3800 ft; *BA2 5368* (SAT); *MA & AD 3500, BHW 10802, MT 206* (SRSC); *BHW 10802* (TEX-LL). Near Sue Peaks, in Dagger Flat, and near the Shackelford cabin.

EBENACEAE

Diospyros texana Scheele – Texas persimmon

Common to occasional shrub, washes; DAR, DCA, 1800–3840 ft; *BRM 3146, CMR 5080* (BGWMA); *BA2 5239, MC 157, CMR 15102* (SAT); *JF 689, 2088, WH, TA, LS, & JMP 8986* (SRSC).

EUPHORBIACEAE

Acalypha monostachya Cav. – Round copperleaf

[*Acalypha hederacea* Torr.] Common perennial herb, flats, rock crevices, wash bottoms; DSC, DAR, DCA, 1850–3050 ft; *BA2 5237, 5334* (SAT); *JF 1069, 1118, 1680, BHW 646, 21200* (SRSC); *BHW 646* (TEX-LL).

Acalypha phleoides Cav. – Shrubby copperleaf

[*Acalypha lindheimeri* Müll. Arg.] Occasional perennial herb, wash gravel, rock crevices; DAR, DCA, 2200–4800 ft; *JF* 1946 (BIBE); *TR* 68, *CMR* 11583 (BGWMA); *BA2* 5240, 5265 (SAT); *JF* 1108, 1128, 1149, 1946, *JF & MY* 1315, *TR* 68, *MT* 187 (SRSC); *OCW s.n.* (TEX-LL).

Andrachne arida (Warnock & M.C. Johnst.) G.L. Webster – Trans-Pecos maidenbush

Rare but locally common (G2S1) shrub, open rocky western slopes with bedrock outcrops and rocky soil; SYG, 4200–4900 ft; *JF* 1170, 1194, 1207, 1499, 2164, 2177, *BHW* 10767, 1077,; *BHW & MCJ* 16681, 16840, 16841 (SRSC). Limited to a thin elevation range on a few western slopes of the DH. This species may occur more widely throughout the range in similar elevations.

Bernardia obovata I.M. Johnst. – Desert myrtlecroton

Occasional shrub, rocky hillsides, talus slopes, drainages; DSC, DAR, DCA, 1920–4900 ft; *CMR* 5134, *BHW & LCH s.n.* (BGWMA); *BA2*, *DG*, *TE*, & *B* 4925 (BIBE); *BA2* 5250, *BR* 293 (SAT); *JF* 203, 496, 642, 715, 1093, 1212, *MT* 86, *BHW* 10832, *BHW & LCH* BG-178, *BHW & MCJ* 16833 (SRSC); *BHW* 10832, *BHW & LCH* BG-178 (TEX-LL).

Chamaesyce acuta (Engelm.) Millsp. – Pointed sandmat

Rare perennial herb, very shallow rocky soil on bedrock; SYG, 5700 ft; *JF* 1264 (SRSC). On north ridgeline of northern Sue Peak. Known also from western Brewster County and east towards the Edwards Plateau.

Chamaesyce albomarginata (Torr. & A. Gray) Small – Whitemargin sandmat

Uncommon perennial herb, cracked, silty clay hills, flats, low elevations; DSC, DAR, 1800–2560 ft; *JF* 1447 (SRSC); *HBP & VLC* 30177, *OES* 1540 (TAES). Dog Canyon, Ernst Basin, along the Rio Grande below Hot Springs.

Chamaesyce chaetocalyx (Boiss.) Wootton & Standl. – Bristlecup sandmat

Locally common subshrub, rock crevices, talus slope; DSC, DCA, 1960–4600 ft; *BHW & LCH s.n.* (BGWMA); *JF* 261, 652, 943, *AMR & SAP* 5142, *MT* 32, 68, *BHW & LCH* BG-176 (SRSC). Flanks of Stuarts Peak, Passionflower Canyon, Brushy Canyon, north of the Barker House.

Chamaesyce cinerascens (Engelm.) Small – Ashy sandmat

[*Euphorbia cinerascens* Engelm.] Occasional perennial herb, rocky slopes, sandy soil, cracks in bedrock, flats, drainages; DSC, DAR, DCA, SYG, 1800–4450 ft; *OCW s.n.* (BGWMA); *BA2*, *DG*, *TE*, & *B* 4934 (BIBE); *BA2* 5291, 5526, 5705 (SAT); *JF* 174, 340, 342, 489, 547, 653, 684, 863, 1078, 1087, 1171, 1337, 2133, 1645, *AMP & SAP* 3612, 5305, *AMP*, *SAP*, *MLP*, & *AL2* 6101, *MT* 3, 66, 67, 165, 166, *BLT* 22-146, *BHW* 10756, 10762, 10840, 18393, *BHW & LCH* BG-66, *BHW & MCJ* 15908, *GLW* 4442 (SRSC); *DSC & HBC* 30632, *BLT* 22-146, *BHW* 10756, 10762, *BHW & LCH* BG-66 (TEX-LL).

Chamaesyce fendleri (Torr. & A. Gray) Small – Fendler sandmat

[*Euphorbia fendleri* Torr. & A. Gray] Uncommon perennial herb, rock cracks, shallow soil pockets; DSC, SYG, CHP, 3000–5250 ft; *JAM & JAS 3444* (NYBG); *BA2 5210, 5276, 5619, 5692* (SAT); *JF 784, 1235, 1243, 1470, 2197* (SRSC). Stuarts Peak, DH plateau, TC trail, Brushy Canyon, Boquillas Canyon. Turner et al. (2003) does not reflect the historical collections.

Chamaesyce glyptosperma (Engelm.) Small – Rib-seed sandmat

"Frequent" annual herb, in sandy soil; RIO, DSC, 1800–3120 ft; *JF 223, BHW & BLT 8317* (SRSC); *BHW & BLT 8325* (TEX-LL). At the head of Boquillas Canyon and in the north Dagger Mountain area.

§ *Chamaesyce golondrina* (L.C. Wheeler) Shinnery – Boquillas sandmat

Rare but locally frequent (G2S2) annual herb, sandy soil; DSC, ca. 1800 ft; *AL 175, BHW 998* (BIBE); *WRC & PM212199, AMP & SAP 3613, BHW 20900, 20951, 20954, 23035, BHW & MCJ 16854, BHW & BLT 8325a, 8325b, GLW 4484* (SRSC); *AMP & SAP 3613* (TEX-LL). At head of Boquillas Canyon at sandslide. Known also from Mariscal Canyon area in BBNP.

+ *Chamaesyce serpens* (Kunth) Small – Matted sandmat

Rare annual or perennial herb, sandy clay bottom; DSC/DAR, 2400 ft; *JF 1422* (SRSC). In Ernst Basin, near the remnant tobosa grassland patch. Known also from Dog Flats.

§ *Chamaesyce serpyllifolia* (Pers.) Small – Thyme-leaf sandmat, thymeleaved spurge

Uncommon annual herb, sandy to limestone soil; DSC, 3800 ft; *BHW 10794* (TEX-LL). DH near McKinney springs.

Chamaesyce serrula (Engelm.) Wootton & Standl. – Sawtooth sandmat

Uncommon but locally frequent annual herb, flats to high ridges; DSC, SYG, 1800–5100 ft; *EGM 165* (BIBE); *JF 2196, BHW 10794, 10838* (SRSC); *BHW 10838* (TEX-LL). DH plateau, near McKinney Springs, Boquillas.

Chamaesyce theriaca (Wheeler) Shinnery – Terlingua sandmat, Terlingua broomspurge

Rare to frequent annual herb, sandy soil, rock cracks, slopes; DSC, DCA, 1800–3800 ft; *CMR 15117* (SAT); *JF 2018, 2095, AMP & SAP 6138, 6139, BHW 13033, 23402, BHW & LCH BG-180, BHW & MCJ 16678, 16680, BHW & BLT 8325, 8326* (SRSC); *BHW & BLT 8325, 8326* (TEX-LL). Boquillas Canyon, Ernst Tinaja, Stairstep Mountain, Frog Tank, Frog Canyon.

Chamaesyce triligulata (L.C. Wheeler) B.L. Turner – Bristlecup sandmat, three-tounge spurge

[*Chamaesyce chaetocalyx* var. *triligulata* (L.C. Wheeler) Mayfield, *Chamaesyce fendleri* (Torr. & Gray) Small var. *triligulata* (L.C. Wheeler) Shinnery] Rare (G5T1S1) perennial herb, rocky cliffs, rock cracks; DSC, DCA, 1800–2200 ft; *AL 164, 165* (BIBE); *JF 1695, AMP & SAP 3611, BHW 20899, BHW & MCJ 16960* (SRSC). Locally frequent at the Boquillas sand slide site.

Chamaesyce villifera (Scheele) Small – Hairy sandmat

Rare perennial herb, shallow soil on open rocky slopes; SYG, 4360–5840 ft; *JF 1173, 1305, 1960* (SRSC). Known from the Chisos and Glass Mountains, and from south-central Texas.

Croton bigbendensis B.L. Turner – Big Bend croton

Occasional perennial herb, sandy to limestone soils, open exposed areas; DSC, 3000–3880 ft; *JF 292, 707, 1463, 1904, MT 158* (SRSC); *BLT & BD 23-163* (TEX-LL).

§ *Croton dioicus* Cav. – Grassland croton, hierba del gato

Perennial herb; DSC, 2150 ft; *EGM 144* (BIBE); *WGD s.n.* (TAES); *BHW & LCH BG-64* (SRSC & TEX-LL). "Frequent and widespread" at Stairway Mountain in 1950, but not observed during the current study. This species is more common in northern Brewster County.

Croton fruticulosus Engelm. ex Torr. – Bush croton, encinilla

Occasional perennial herb, wash gravel, looser soil, protected areas; DAR, DCA, 2200–4100 ft; *BRM 3137, TR 72, 73, OCW 314* (BGWMA); *JF 298* (BIBE); *JF 298, 300, 509, 1114, TR 72, 73, MT 40, 98, 256, OCW 340, BHW 10748* (SRSC); *BHW 10748* (TEX-LL).

Croton incanus Kunth – Torrey croton

Rare shrub, wash gravel; DCA, 1800 ft; *JF 2128, BHW 18406* (SRSC). Boquillas Canyon.

+ *Croton lindheimerianus* var. *tharpii* M.C. Johnst. – Tharp croton

Rare annual herb, sandy clay bottom; DSC/DAR, 2400 ft; *JF 1427* (BIBE & SRSC). In Ernst Basin in the patch of remnant tobosa grassland. Also known from the flats near Dog Canyon. Listed by Amos and Giles (1992).

§ *Croton pottsii* (Klotzsch) Müll. Arg. – Leatherweed

Perennial herb; 2200–2400 ft; *TR 71* (BGWMA & SRSC). Brushy Canyon.

Croton thermophilus (M.C. Johnst.) B.L. Turner – Leatherweed

[*Croton pottsii* var. *thermophilus* (M.C. Johnst.) M.C. Johnst.] Occasional (G5T2S1) perennial herb, sandy soil to open gravelly limestone soils; DSC, DCA, SYG, 1850–4400 ft; *BRM 3113* (BGWMA); *AL 158* (BIBE); *JF 175, 353, 431, 457, 682, 1077, 1397, 1541, 1932, 2011, 2058, MT 159, BHW 18401, 20895, BHW & MCJ 16837, 16862, BHW & BLT 8321, GLW 4439* (SRSC).

Ditaxis humilis (Engelm. & A. Gray) Pax – Low silverbush

[*Argythamnia humilis* (Engelm. & A. Gray) Müll. Arg., *A. laevis* Torr.] Rare perennial herb, platey limestone; DSC, 2560–2760 ft; *JF 152, 1404, BHW & LCH BG-201* (SRSC). Ernst Tinaja and Passionflower Canyon environs, east slopes Stairway Mountain.

Ditaxis neomexicana (Müll. Arg.) A. Heller – New Mexico ditaxis

[*Argythamnia neomexicana* Müll. Arg.] Occasional to common perennial herb, washes, rocky soil; DSC, DAR, 1800–3500 ft; *CMR 5032* (BGWMA); *EGM 133*, *BHW 12889* (BIBE); *BA2 5319*, *5584* (SAT); *JF 168*, *439*, *674*, *2051*, *BLT 22-151*, *BHW 12889*, *BHW & LCH BG-199*, *BHW & MCJ 16858* (SRSC); *BLT 22-151*, *BHW 12889* (TEX-LL).

Euphorbia antisiphilitica Zucc. – Candelilla

Common perennial herb, sandy alluvial flats, rocky limestone flats and slopes; DSC, DAR, DCA, SYG, 1900–4400 ft; *BA2 5241*, *5695* (SAT); *JF 259*, *573*, *778*, *MT 84*, *170*, *BHW & MCJ 16839* (SRSC); *AT 2243* (TEX-LL).

Euphorbia brachycera Engelm. – Horned spurge

Uncommon perennial herb, wash gravel, base of cliffs; DCA, SYG/CHP, 3500–5680 ft; *JF 160* (BIBE); *BHW & LCH s.n.* (BGWMA); *BA2 2513*, *5445* (SAT); *JF 1273*, *1290*, *1934*, *1940*, *AMP & SAP 5141*, *BHW & LCH BG-174* (SRSC). Sue Peaks environs, TC, Brushy Canyon.

Euphorbia eriantha Benth. – Desert poinsettia, beetle spurge

Uncommon annual herb, talus slopes below cliffs; DSC, 1800–1850 ft; *JF 2010*, *2103*; *BGH 634* (SRSC). Limited to Boquillas Canyon, patchy distribution in desert scrub along sides of the canyon.

Euphorbia exstipulata Engelm. – Square-seed spurge

Uncommon annual herb, mid slopes, open peak, flats; DSC, SYG, 2800–5840 ft; *JF 198*, *1980*, *BHW & MCJ 16832* (SRSC). North Dagger Mountain, Sue Peaks.

Jatropha dioica var. *graminea* McVaugh – Sangre de drago, leatherstem

Common perennial herb, rocky often unconsolidated soils; DSC, DAR, DCA, 1800–4360 ft; *CMR 17230* (BIBE); *BA2 5479* (SAT); *JF 709*, *586*, *2029*, *BHW 12902*, *13073* (SRSC).

Phyllanthus polygonoides Nutt. ex Spreng. – Knotweed leafflower

Occasional subshrub, wash gravel, sometimes soil; DSC, DAR, DCA, 1850–4360 ft; *BHW & LCH s.n.* (BGWMA); *JF 160* (BIBE); *BA2 5206*, *5292*, *5593*, *5693* (SAT); *JF 160*, *205*, *297*, *526*, *825*, *1074*, *1400*, *TRV s.n.*, *BHW & LCH BG-146*, *BHW & MCJ 16830*, *GLW 4450* (SRSC).

Tragia amblyodonta (Müll. Arg.) Pax & K. Hoffm. – Dogtooth noseburn

Uncommon in central DH areas, perennial herb, rocky soils, rock crevices; DSC, DAR, DCA, 2680–5680 ft; *JF 146*, *718*, *832*, *1297*, *BLT 22-150*, *BHW & LCH BG-188* (SRSC); *BLT 22-150* (TEX-LL).

Tragia ramosa Torr. – Branched noseburn

Uncommon perennial herb, shallow soil with rocks and boulders; DSC, 2120–5840 ft; *TR 74*, *CMR 5085* (BGWMA); *BA2 5208*, *5283*, *5694* (SAT); *JF 688*, *1966* (SRSC). Sue Peaks, Brushy Canyon, Frog Tank.

FABACEAE*Acacia berlandieri* Benth. – Guajillo

Rare tree, exposed southern exposures, amongst bedrock outcrops; DSC, SYG, 2520–4700 ft; *JF 669* (BIBE); *JF 669*, *2187*, *BHW 21189b* (SRSC); North of the Barker House and western slopes of the DH. Primarily a south Texas species, it is known as far west as the Candelaria area of western Presidio County.

Acacia constricta Benth. ex A. Gray – Whitethorn acacia

Occasional shrub or tree sandy soil, general rocky limestone soil; DSC, DCA, 2350 ft; *CMR 11592* (BGWMA); *LF 86*, *PAS 58* (SHST); *JF 1385* (SRSC); *VB 355* (TEX-LL).

Acacia farnesiana (L.) Willd. – Huisache

[*Acacia smallii* Isely] Uncommon tree, sandy to silty soil; DSC, RIO, 1800 ft; *BHW 13040* (BIBE); *JF 2030*, *EJL 126-H*, *TCM 2003-66b*, *PM 2037*, *AMP 3348*, *BHW 13040*, *18386* (SRSC); *AMP 3348*, *BHW 13040* (TEX-LL). Along river and in old floodplain areas, Boquillas Canyon area.

Acacia greggii A. Gray var. *greggii* – Catclaw acacia

Uncommon shrub; DSC, DAR, DCA, 2350 ft; *SJ 6505* (SAT); *JF 1372*, *BHW 21201*, *21204* (SRSC). Ernst Tinaja area, mouth of Heath Creek, near Frog Tank.

Acacia neovernicosa Isely – Viscid acacia

Uncommon to occasional at lower elevations, shrub or tree platey limestone, sandy clay drainage, sandy rocky slopes; DSC, DAR, DCA, 1800–3408 ft; *EGM 149* (BIBE); *JF 934*, *1089*, *1462*, *2020a-c*, *BHW 20777* (SRSC).

+ *Acacia rigidula* Benth. – Blackbrush acacia

Uncommon tree, rocky or sandy terraces above the Rio Grande; DSC/RIO, 1000–1850 ft; *JF 2002*, *2027* (SRSC). In Boquillas Canyon. Primarily a south Texas species, it has been collected as far west as Mariscal Canyon in BBNP.

Acacia roemeriana Scheele – Roemer acacia

Common shrub or tree rock crevices in drainages and ridgetops, wash beds and sides; DSC, DAR, DCA, 1800–4180 ft; *BRM 3116*, *BHW & LCH s.n.* (BGWMA); *JF 249*, *644*, *1012*, *BHW & LCH BG-147* (SRSC).

§ *Acacia schottii* Torr. – Schott acacia

Rare shrub or tree; DSC; *BHW 20896* (SRSC). Hills at Boquillas.

- + *Astragalus austrinus* (Small) Schulz – Smallflowered milkvetch
 [*Astragalus nuttallianus* var. *austrinus* (Small) Barneby] Rare annual or perennial herb, alluvial terrace and slope; DSC, DAR, DCA, 3000–3560 ft; *JF* 426, 540b, 804 (SRSC). Below Ernst Tinaja and around the TC trail about 3.5 miles in.
- § *Astragalus mollissimus* (Greene ex Rydb.) Tidestr. – Woolly locoweed
 Perennial herb; *BA2* 4755, *SJ* 4755 (SAT). Ernst Tinaja area.
- § *Astragalus wrightii* A. Gray – Wright milkvetch
 Annual herb; *VLC* 43964 (TEX-LL). Dog Canyon. This collection is not reflected in Turner et al. (2003).
- + *Calliandra iselyi* B.L. Turner – Falsemesquite
 Occasional subshrub, platey limestone hills, open gravelly desert, perhaps some in clayey or gypsous soil, also deeper soils at higher elevations; DSC, SYG, 2800–5150 ft; *JF* 813, 938, 1142, 1324, 1469 (SRSC). The low woody *Calliandra* common in this area has been commonly referred to as *Calliandra conferta*; that species is now thought to occur east of BBNP.
- § *Cercis canadensis* subsp. *mexicana* (Rose) E. Murray – Mexican redbud
 "Infrequent" to "common" tree, wash gravel, limestone valley; 3500-4600 ft; *BA2* 5232 (SAT); *AMP* & *SAP* 5140 (SRSC), *BHW* & *LCH* BG-172 (SRSC & TEX-LL). Apparently occurs only on the eastern side of the DH, beginning in the northward-draining Brushy Canyon.
- § *Dalea aurea* Nutt. ex Fraser var. *aurea* – Golden prairie clover
 Perennial herb; *BRM* 3223 (BGWMA); *BA2* 5318 (SAT). Near Shackelford cabin, Brushy Canyon.
- Dalea formosa* Torr. – Feather dalea, plume dalea
 Occasional shrub, gravelly flats and ridges, wash gravel, rocky loamy soil; DSC, DAR, DCA, SYG/CHP, 2560–5840 ft; *CMR* 17225 (BIBE); *BA2* 315, 5191, 5538 (SAT); *JF* 483, 559, 1014, 1047, 1096, 1402, 1914, 1996, *MT* 136 (SRSC); *VB* 342 (TEX-LL).
- Dalea frutescens* A. Gray var. *frutescens* – Black dalea
 Uncommon throughout, shrub, lowlands and ridges; DSC, DAR, DCA, SYG, 3350–5800 ft; *BA2* 5484, 5332 (SAT); *JF* 374a, 1195, *MT* 230, 245, *BHW* 10754 (SRSC); *BHW* 10754 (TEX-LL).
- Dalea greggii* A. Gray – Gregg prairie clover
 [*Dalea alopecuroides* Willd.] Uncommon subshrub, rocky limestone hills and mesa tops; DSC, SYG, 3800-4600 ft; *OCW* 9022 (BGWMA); *BA2* 5277, 5469, 5548 (SAT); *JF* 1038, *OCW* 337 (SRSC). Brushy Canyon and "top of the DH mountains SW of Frog Tank".

§ *Dalea jamesii* (Torr.) Torr. & A. Gray – James prairie clover
Perennial herb; *BA2 5228* (SAT). Near Shackelford cabin.

§ *Dalea laniceps* Barnebey – Woollyhead prairie clover
Perennial herb; *MT 150* (SRSC). Brushy Canyon north of Shackelford cabin.

§ *Dalea leporina* (Aiton) Bullock – Foxtail prairie clover
Annual herb, gravelly flats; DSC; *OCW 584-21* (TAES). West of Frog Tank road.

§ *Dalea longipila* (Rydb.) Cory – Downy prairie clover
Uncommon perennial herb, dry calcareous soils along arroyos and mountain ridges; DSC, DAR, ca. 2500 ft; *AMP & SAP 6140*, *BLT & MT2 97-344* (SRSC); *BLT & MT2 97-344* (TEX-LL). Ernst Tinaja area.

+ *Dalea nana* Torr. & A. Gray – Dwarf prairie clover
Uncommon perennial herb, wash bed and mountain ridge; DAR, SYG/CHP, 2750–5700 ft; *JF 959*, *1265* (SRSC). North Sue Peak and Passionflower Canyon.

Dalea neomexicana (A. Gray) Cory – New Mexico dalea
"Frequent" perennial herb, dry calcareous soils along arroyos and on mountain ridges, rock crevices, sandy soil; DSC, DCA, 1800–3440 ft; *BHW 13032* (BIBE); *JF 357*, *BHW 13032*, *BHW & MCJ 16679*, *BHW & BLT 8319*, *GLW 4473* (SRSC); *BHW 13030* (TAES); *BLT & MT2 97-334*, *BHW 13032*, *BHW & BLT 8319* (TEX-LL).

Dalea pogonathera A. Gray var. *pogonathera* – Bearded dalea
Uncommon throughout, perennial herb, talus/unconsolidated slope, streambed; DSC, DAR, 3560 ft; *BRM 3119*, *OCW 5094* (BGWMA); *JF 461* (BIBE & SRSC); *BHW & LCH BG-196* (SRSC); *BA2 5377*, *5488* (SAT); *VLC 43968* (TEX-LL).

§ *Dalea terminalis* M.E. Jones – Woolly prairie clover
[*Dalea lanata* var. *terminalis* (M.E. Jones) Barneby] Uncommon perennial herb, limestone crevices, rocky ledges, gravelly streambed, sandy soil; DSC, DCA, 1800 ft; *BA2*, *DG*, *TE*, & *PC 4602*, *BHW 13030* (BIBE); *BLT*, *JDA & BHW 8337*, *BHW 13030*, *GLW 4480* (SRSC); *BHW 13030* (TAES); *DSC & HBC 30629*, *BHW 13030* (TEX-LL). At the head of Boquillas Canyon. The individuals collected seem to more closely resemble *Dalea lanata* of the northern Trans-Pecos sand hills; The "intermediate" specimen *DSC & HBC 30629* (from Boquillas Canyon) was reviewed by Barneby (1977) and referred to *Dalea terminalis*, seemingly based on geography more than morphological characters. Other Rio Grande corridor specimens examined fit the description for *Dalea terminalis*, where the Boquillas Canyon ones may be a disjunct sand hills population. Other sand-loving species have disjunct populations at Boquillas including *Heliotropium convolvulaceum* and *Corispermum americanum*.

Dalea wrightii A. Gray – Wright dalea
Uncommon throughout, perennial herb, wash gravel and dry mountain ridges; DSC, DAR, 2750–3560 ft; *BA2 5430* (SAT); *JF 282*, *468a*, *962*, *MT 13*, *15*, *220*, *BLT &*

MT 97-345, 97-349, BHW C300 (SRSC); *VLC 43969, BHW C300* (TEX-LL). *MT 220* has been identified as *Dalea wrightii* var. *warnockii*, but varietal distinctions are not clear for the remaining specimens.

Desmanthus velutinus Scheele – Velvet bundleflower

Uncommon in northern part of range, perennial herb, rock crevices, open slopes, drainages; DSC, DAR, SYG, 3360–5840 ft; *JF 227, 322, 713a, 1097, 1910, 1978, MT 35* (SRSC).

Eysenhardtia texana Scheele – Texas kidneywood

Occasional shrub, washes; DCA, DAR, 1800–4150 ft; *WFM 27, CMR 5125, 11611, OCW s.n., 320a* (BGWMA); *BA2 5254* (SAT); *SCB 223, JF 201, 1112, 1929, 2136, JF & MY 1318, MT 195, OCW 320, BHW & LCH BG-63* (SRSC).

Galactia sp. – Milkpea

Rare perennial herb, wash gravel usually in shade, rock crevices; DAR, DCA, 1800–2780 ft; *JF 961* (BIBE); *JF 188, 940, 961, 1060, 2090, 2141* (SRSC); *JF 2090* (TEX-LL). Passionflower Canyon, and within one mile of the Rio Grande inside Cow Canyon and Arroyo Venado from Boquillas Canyon. The individuals seen were larger, more robust, and more abundant at the Boquillas Canyon sites, perhaps indicating it is a Mexican species. Mexican specimens of this genus at TEX-LL are on loan to another institution, precluding further work on identification at the time of writing. More of a description and pictures of this species (Fig. 32) are included within the body of the thesis.

+ *Hoffmannseggia drepanocarpa* A. Gray – Sicklepod rushpea

Rare annual herb, fine, siltier soil; SYG, 5300 ft; *JF 1998* (SRSC). At the high saddle west of the northern Sue Peak. This was yet another species occurring in the distinctly different patch where the vegetation was representative of lower-elevation tobosa grassland environments.

Leucaena retusa Benth. – Goldenball leadtree, woohoo tree

Occasional tree, washes, open slopes, in the northern part of the range; DSC, DAR, DCA, 2200–5200 ft; *WFM s.n.* (BGWMA); *PVW s.n.* (KANU); *BA2 5190* (SAT); *JF 748, 1020, 1309, AMP & SAP 5144, TR 19, OCW 1, BHW 10849, BHW & LCH BG-135, GLW 4472* (SRSC); *RB 1502, BHW & LCH BG-135* (TEX-LL).

§ *Lupinus havardii* S. Watson – Big bend bluebonnet

Annual herb, wash; DAR, 2560 ft; *OES 1344* (TEX-LL). Dog Canyon wash. Turner et al. (2003) shows many dots close to the study area, especially along the Rio Grande.

*§ *Medicago sativa* L. – Alfalfa

Annual herb; 1800 ft; *EGM 136a* (BIBE & SRSC). At Boquillas in 1937. Turner et al. (2003) does not reflect this collection.

*§ *Melilotus indicus* (L.) All. – Annual yellow sweetclover

"Infrequent" annual herb; 1800 ft; *HTF 1225* (SRSC). Along the Rio Grande at Boquillas in 1933.

Mimosa aculeaticarpa var. *biuncifera* (Benth.) Barneby – Catclaw mimosa

[*Mimosa biuncifera* Benth.] Common shrub, washes; DSC, DAR, DCA, 3050 ft; *WFM 26, 29, 30* (BGWMA); *BA2 5238, 5702* (SAT); *JF 1150* (SRSC).

Mimosa borealis A. Gray – Fragrant mimosa

"Infrequent" to common shrub, drainages; DAR, DCA, 1900–3760 ft; *JF 711, 1693, BHW 21186* (SRSC).

Mimosa emoryana Benth. – Emory mimosa

Occasional shrub, arid desert plains and hills, drainages/canyons; DSC, DAR, DCA, 2850–3560 ft; *JF 848, 970, GLW 4445* (SRSC).

+ *Mimosa texana* (A. Gray) Small – Catclaw

Occasional shrub, wash gravel and banks, open rocky soil; DAR, DCA, SYG, 1800–4600 ft; *JF 1015, 1019, 1357, 2145* (SRSC).

Mimosa turneri Barneby – Desert mimosa, Turner mimosa

Uncommon shrub, limestone terraces, sandy gravel, open high ridges; DSC, DAR, SYG, 3000–4900 ft; *JF 1161, 1467, 1552, 2188* (SRSC). Western slopes of the DH and in the TC trail area. Known locally from the west side of the Chisos Mountains, and more recently from near Lone Mountain (Fenstermacher et al. 2006).

Parkinsonia aculeata L. – Retama, Jerusalem thorn

Rare tree, sandy soil near river; RIO, 1800 ft; *DG 217* (BIBE); *JF 2257* (SRSC). At head of Boquillas Canyon.

Peteria scoparia A. Gray – Rush peteria

Rare shrub, open limestone slope/slight valley, north aspect; DSC, 3840 ft; *JF 247* (SRSC). North end of Alto Relex, up from TC trail. Considered more of a Davis Mountain species, it has also been collected in the Chinati Mountains of Presidio County and in various mountain ranges of the western Trans-Pecos.

Pomaria melanosticta S. Schauer – Parry holdback

[*Caesalpinia parryi* (E. Fisher) Eifert, Correll & Johnston, *Caesalpinia melanosticta* (S. Schauer) Fisher, *Caesalpinia wootonii* (Britt.) Eifert ex Isely, *Hoffmannseggia parryi* (Fisher) B.L. Turner] Occasional subshrub, washes, rocky hillsides; DSC, DAR, DCA, 1800–3500 ft; *BRM 3148, CMR 5143a-c, BHW & LCH s.n.* (BGWMA); *AL 183; BHW 884, 12891* (BIBE); *BA2 5383, 5431* (SAT); *JF 148, 343, 655, 1328, 2130, 2182, BLT & MT2 97-332, BHW 10830, 12891, 20952, BHW & LCH BG-141, BHW & MCJ 16063, 16835, MT 221* (SRSC); *BHW & MCJ 16835* (SWT); *BLT & BD 23-168, BLT & MT2 97-332, BHW 12891, BHW & LCH BG-141* (TEX-LL).

- + *Prosopis glandulosa* Torr. – Mesquite
Occasional shrub or tree open rocky soil; DSC, DAR, SYG, 1800–4400 ft; *JF 807* (SRSC). Usually at elevations below 3400 ft, one lone individual was observed in an open high saddle near mile five of the TC trail at 4400 ft. Listed by Amos and Giles (1992).
- + *Rhynchosia senna* var. *texana* (Torr. & A. Gray) M.C. Johnst. – Texas snoutbean
Rare perennial herbaceous vine, in duff layer and shaded by shrubs, next to slickrock washbed; DCA, 3050 ft; *JF 1119* (BIBE & SRSC). Dagger Canyon.
- + *Senna bauhinioides* (A. Gray) H.S. Irwin & Barneby – Twinleaf senna
[*Cassia bauhinioides* A. Gray] Occasional perennial herb, open hot desert; DSC, 2400–3000 ft; *JF 1457, 1465* (SRSC).
- Senna lindheimeriana* (Scheele ex Schldtl.) H.S. Irwin & Barneby – Lindheimer senna
Rare perennial herb, wash gravel, arid plains and hills; DSC, DAR, 1800 ft; *JF 2072, MT 101* (SRSC). Shackelford lodge environs and at Arroyo Venado, one half mile up from the Rio Grande.
- Senna orcuttii*** (Britton & Rose) H.S. Irwin & Barneby – Orcutt senna
Uncommon (G2S2) perennial herb, gravel wash, shallow soil amongst boulders and slickrock outcrops; SYG, CHP, 4200–5250 ft; *JF 1030* (BIBE); *JF 827, 1030, 1218, 1244, 2191, MT 110, BLT 22-153* (SRSC); *JF 1030, BLT 22-153* (TEX-LL). DH plateau, high TC trail, Brushy Canyon. Known also from northern Brewster County mountains and sparsely in Terrell County.
- Senna pilosior* (Robinson ex J. F. Macbr.) H.S. Irwin & Barneby – Trans-Pecos senna
[*Senna durangensis* (Rose) H.S. Irwin & Barneby] Occasional perennial herb, flats, rock crevices, talus slopes; DSC, DCA, 1800–3500 ft; *JF 437, 673, 1326, 1603, 2020, 2048, CN T263, BHW 20953, GLW 4475* (SRSC); *LEB 9640* (TAES); *BHW 20727* (TEX-LL).
- § *Senna pumilio* (A. Gray) H.S. Irwin & Barneby – Dwarf senna
Northwest of Dagger Flat loop in gravelly outwash; 3200 ft; *PDW & BHW 319* (SRSC).
- # ***Senna ripleyana*** (H.S. Irwin & Barneby) H.S. Irwin & Barneby – Ripley senna
Rare (G1SH) perennial herb, open, gradually sloping hillside, in somewhat unconsolidated rocky soil; SYG, 4320–5000 ft; *JF 820, 1518, MT 214* (SRSC). TC trail mile six and above road in pass at head of Margaret Basin. A sterile specimen (*MT 214*) was collected in 1994 and thought to be *Senna durangensis*, but the specimen collected during this study (with flower and fruit) enabled a mixed collection at SRSC (*BHW 23518*) to be corrected and subsequently all individuals were accurately identified as *Senna ripleyana* by B.L. Turner.

§ *Sophora secundiflora* (Gomez-Ortega) Lag. ex DC. – Mescal bean
Shrub, creek bed; DCA; *BRM 3248* (BGWMA). Frog Canyon, three miles south of BGWMA headquarters.

Vicia ludoviciana Nutt. var. *occidentalis* (Shinners) B.L. Turner – Deer pea vetch
[*Vicia leavenworthii* Torr. & Gray, *Vicia ludoviciana* ssp. *leavenworthii* (Torr. & Gray) Lassetter & Gunn.] Uncommon annual herb, rubbly soil on north-facing alluvial slope in curve of canyon; DCA, 3560 ft; *BRM 3114* (BGWMA); *JF 540*, *BHW & MCJ 15994* (SRSC). Dog Canyon, TC trail area, Brushy Canyon.

FAGACEAE

Quercus grisea Liebm. – Gray oak

Uncommon shrub, terraced outcrops, rocky soil; CHP, 4880–5680 ft; *JF 757* (BIBE); *JF 744c, 757, 1246, 1258, 1280, 1282, 1320, MT 149, 225, 240, 250* (SRSC); *JF 1282* (TEX-LL). Environs of Stuarts and Sue Peaks.

§ *Quercus intricata* Trel. – Dwarf oak

Shrub; 5800 ft; *PVW s.n.* (KANU). Both summits of Sue Peaks. As noted in Wells (1965) and Powell (1998), *Quercus intricata* is rarely found north of the international border with Mexico. In the U.S. it also occurs in the Chisos Mountains of BBNP and in the Eagle Mountains of Hudspeth County.

Quercus laceyi Small – Lacey oak

Rare shrub, wash gravel/rocks; DCA, 4350 ft; *JF 1935* (SRSC). In Sue Peaks canyon. This is a new park record, also having been found recently in Panther Canyon of the Chisos Mountains (*AL s.n.* BIBE). The farthest west known locality for this species is the Solitario, as reported in Hardy (1997). That collection (*Warnock 23860* BBRSP) is not reflected in Turner et al. (2003). Terrell County was previously the western edge of its known range.

Quercus mohriana Buckl. ex Rydb. – Mohr shin-oak

Uncommon shrub, peaks, high slopes and terraces; CHP, 5240–5840 ft; *JF 1245, 1972, 2161* (SRSC). Summit plateau of the DH and environs of Sue Peaks. This species is expected on limestone, and does occur in the Glass and Del Norte Mountains of northern Brewster County.

Quercus pungens Liebm. – Sandpaper oak

[*Quercus pungens* subsp. *vaseyana* (Buckley) E. Murray] Occasional shrub, summits, ridgetops, drainages/washes; DSC, DCA, SYG/CHP, 3150–5680 ft; *CMR 15828, BHW & LCH s.n.* (BGWMA); *JF 303, 1223* (BIBE); *PVW s.n.* (KANU); *BA2 5193, 5203, 5214, 5224, 5225, 5243, 5251, 5275, 5279, 5328, 5450, 5459, 5485, 5709* (SAT); *JF 234, 303, 725, 736a, 749a-b, 818, 819, 1209a, 1220, 1022, 1045, 1223, 1308, 1550, 1709, 1897, JF & MY 1318a, AMP & SAP 5139, MT 76, 82, 83, 111, 112, 113, 117, 118, 130, 135, 139, 140, 142, 143, 186, 192, 194, 247, BHW 10755, 21184, 23397, BHW & LCH BG-163* (SRSC); *BHW 10755, BHW & LCH BG-163* (TEX-LL). This is the common scrub oak of the DH area. This species has

commonly been split into two separate taxa, but is lumped here following Turner et al. (2003). In general, there is a lot of variability in the species; on the whole, however, the *Quercus vaseyana* morphological form, with wavy-margined and mostly entire leaves, is more common in the DH.

FOUQUIERIACEAE

Fouquieria splendens Engelm. – Ocotillo, devil's coachwhip

Common shrub, rocky soils, open flats, slopes, and ridges; DSC, SYG, 1800–4880 ft; *JM 89* (SAT); *JF 750, 779* (SRSC).

GARRYACEAE

Garrya ovata subsp. *goldmanii* (Wootton & Standl.) Dahling – Goldman or eggleaf silktassel

Uncommon shrub, wash gravel, talus slope, sheltered terrace by cliffs, high plateau/summit; DCA, SYG, CHP, 4040–5840 ft; *PVW s.n.* (KANU); *JF 504, 770, 1202, 1239, 1307, PM 975, MT 114* (SRSC). Highest peaks, DH plateau, Brushy and Telephone canyons. Other treatments put this species into the Cornaceae family, and it is listed as such by Amos and Giles (1992) and Wells (1965).

GENTIANACEAE

Centaurium arizonicum (A. Gray) A. Heller – Arizona centaury, rosita

Uncommon annual herb, slight depressions/drainages, wet places; DSC, DAR, RIO, 1800–3640 ft; *JF 710a, HTF 1232, MT 10* (SRSC). Flanks of Stuarts Peak, TC trail, Boquillas Canyon.

Centaurium calycosum (Buckley) Fernald – Centaury

Uncommon to “rare” or “sparse” annual herb, high plateau, rocky soil; CHP, 5150 ft; *BA2 5194, 5689* (SAT); *JF 1323, AMP & SAP 5130, TR 153, MT 178, 196, BHW & LCH BG-156* (SRSC). Summit plateau of DH, Brushy Canyon near Shackelford cabin.

Eustoma exaltatum (L.) Salisb. ex G. Don – Catchfly prairie gentian

Uncommon annual herb, sandy soil; RIO, 1800 ft; *BA2, DG, TE, & PC 4604, EGM 135, BHW 648, 13048* (BIBE); *JF 2254, BHW 13048* (SRSC); *BHW 13048* (TEX-LL). Along the Rio Grande at Boquillas, Boquillas restoration site.

HYDRANGACEAE

Fendlera falcata Thornber – Cliff fendlerbush

Rare shrub, high drainages, cracks in cliff faces, shallow soil amongst rocks and boulders; SYG, CHP, 4040–5840 ft; *JF 721a, 1266, 1277, 1963* (SRSC). Summit plateau of DH and Stuarts and Sue Peaks environs. Also known from the Glass and Del Norte Mountains.

- # *Philadelphus microphyllus* A. Gray var. *microphyllus* – Littleleaf mockorange
Rare shrub, crevices in bedrock outcrops/cliffs, base of chert-rich limestone outcrop; SYG, CHP, 4040–4900 ft; *JF 719, 726, 753* (SRSC). Stuarts Peak area: high western drainage and summit ridge. Known from the other high mountain ranges in the region: the Chisos, Glass, and Davis Mountains.

HYDROPHYLLACEAE

- # *Nama dichotomum* (Ruiz & Pav.) Choisy – Wishbone fiddleleaf
Rare annual herb, shallow dark soil amongst rocks and boulders; CHP, 5840 ft; *JF 1965* (SRSC). Summit of southern Sue Peaks. New county record. Known also from the Franklin, Guadalupe, and Davis Mountains—the highest elevations in Texas.

- Nama havardii* A. Gray – Havard fiddleleaf
Uncommon annual herb, hillsides, loose gravel; DSC, DAR, 1800–3480 ft; *JF 317, 2035* (SRSC); *AT 2241* (TEX-LL). TC trail and in the Boquillas area.

- Nama hispidum* A. Gray – Bristly nama
Uncommon annual herb, flats, wash gravel; DSC, DAR, 1850–3560 ft; *AL 176* (BIBE); *JF 477, 1006, GLW 4467* (SRSC); *BHW C307* (TEX-LL). Dagger Flats, Boquillas, TC trail.

- Phacelia congesta* Hook. – Spike phacelia, bluecurls
Uncommon annual herb, wash, in shade and good duff, open bare peak, sandy soil; DAR, DCA, SYG, 2560–5080 ft; *JF 423, 505a, 744a* (SRSC); *RRI 556* (TEX-LL). Dog Canyon, Stuarts Peak, TC trail.

- # *Phacelia pallida* I.M. Johnst. – Pale phacelia
[*Phacelia petiolata* I.M. Johnst.] Rare (G2S1) perennial herb, base of rock outcrop/cliff and in small cave to side of wash, in chalky to gravelly soil; DCA, 2780–2850 ft; *JF 185, 954* (SRSC). Passionflower Canyon. Taxonomy of these specimens should be explored with other collections from the area, both north and south of the Rio Grande, to resolve the relationship between/nomenclature of *Phacelia pallida* and *Phacelia petiolata*. *Phacelia pallida* was previously thought to occur only in Terlingua (just west of BBNP). As mentioned in Powell et al. (in prep.), the U.S. specimens of *Phacelia pallida* don't exactly match the original species description. It may be that all U.S. specimens are actually *Phacelia petiolata* which was described from Ojinaga, Chihuahua (Mexico) but has since been placed into synonymy with *Phacelia pallida* by many authors: Henrickson and Johnston (2004) and Turner et al. (2003) use *Phacelia pallida*, Poole et al. (2007) uses *Phacelia petiolata*.

- § *Phacelia popei* Torr. & A. Gray – Pope phacelia
Annual herb, alluvial sand on flats; DCA, 2560 ft; *RRI 553* (TEX-LL). At the mouth of Dog Canyon in 1941.

Phacelia robusta (J.F. Macbr.) I.M. Johnst. – Stout phacelia

Rare to “infrequent” annual herb, cracks in cliff walls, wash gravel; DAR, DCA, 2000–3150 ft; *JF 1587, 1703, BHW 18402* (SRSC). Marufo Vega trail and environs, Boquillas Canyon.

JUGLANDACEAE

§ *Juglans major* (Torr.) A. Heller – Arizona walnut

Tree; DCA; *CMR 2602, 2607* (SAT). Frog Canyon.

Juglans microcarpa Berland. – Little walnut

Occasional tree, wash gravel; DCA, 3050 ft; *JF 1151* (BIBE & SRSC); *WFM s.n., CMR 5130* (BGWMA); *BA2 5235* (SAT). Rare in the BBNP side of the range, only in Dagger Canyon. More common east of the NPS boundary, in Brushy and Frog Canyons. In BBNP, known also from the Chisos Mountains.

KRAMERIACEAE

Krameria erecta Willd. ex Schult. – Range ratany

[*Krameria parvifolia* Benth.] Uncommon shrub, open limestone soil; DSC, SYG, 3800–4360 ft; *BA2 5344* (SAT); *JF 569, BHW 10792* (SRSC); *BHW 10792* (TEX-LL). TC trail mile six, near McKinney Springs and Shackelford cabin.

Krameria grayi Rose & Painter – White ratany

Occasional shrub, rocky ridges and slopes with bedrock outcrops, sandy soil in floodplain; DSC, DCA, RIO, SYG; 1800–4800 ft; *SMU 49, TR 52* (BGWMA); *BA2, DG, TE, & B 4920* (BIBE); *BA2 5189, 5480* (SAT); *JF 236, 371, 828, 1056, 1188, 1898, 2102, TR 17, 152, MT 85, BHW & LCH BG-195, BHW & MCJ 16863* (SRSC); *BHW 636* (TEX-LL).

LAMIACEAE

Hedeoma costata Hemsl. – Ribbed false pennyroyal

Rare perennial herb, east aspect cliff wall and washbed gravel; DCA, SYG/CHP, 4650–5680 ft; *JF 1283a, 1951* (SRSC). Near top of southern Sue Peak in Sue Peak canyon. Also known locally from the Chisos Mountains and north through Brewster County.

§ *Hedeoma drummondii* Benth. – Drummond pennyroyal

Annual or perennial herb, rocky limestone soils; *BLT 22-147* (TEX-LL). Head of Brushy Canyon near Shackelford cabin.

Hedeoma nana (Torr.) Briq. – Dwarf false pennyroyal

Occasional annual or perennial herb, gravel wash, rock outcrops, north aspects or more sheltered spots; 2120–5800 ft; *JF 679* (BIBE); *JF 494, 534, 546, 679, 869, 949, 1042, 1270, 1329, 1702, 1719, BLT 22-152* (SRSC). Listed by Amos and Giles (1992) as *Hedeoma nanum* var. *nanum*.

§ *Hedeoma plicata* Torr. – Veiny false pennyroyal

Perennial herb, rocky limestone soils; *BRM 3129*, *CMR 5071* (BGWMA); *BLT 22-152* (TEX-LL). Brushy and Frog canyons. These collections are not reflected in Turner et al. (2003). Known also from the Chisos and Del Norte Mountains and further west.

Hedeoma serpyllifolia Small – Reverchon false pennyroyal

[*Hedeoma reverchonii* var. *serpyllifolia* (Small) R.S. Irving] Occasional perennial herb, rocky limestone soils, bare peaks, rock outcrops, trailside; DSC, SYG, 3560–5080 ft; *JF 740* (BIBE); *JF 230, 281, 740, 834* (SRSC). New county record. More of a central/south Texas species, the closest previous collections shown in Turner et al. (2003) were from eastern Val Verde County.

§ *Mentha arvensis* L. – Wild mint

Rare perennial herb, hills and ravines; 1800 ft; *EGM 158, 167, BHW 832* (BIBE); *BHW 832* (SRSC & TEX-LL). At Boquillas and locally along the Rio Grande in 1937. Turner et al. (2003) shows Boquillas as the only collection location within Brewster County.

Salvia greggii A. Gray – Autumn sage

Uncommon shrub, wash gravel in shade, east aspect talus slope and cliff wall; DAR, DCA, SYG/CHP, 3500–5680 ft; *BRM & BPM 3103* (BGWMA); *JF 505, 766, 1283, 2171, TR 154, MT 107, BHW & LCH BG-171* (SRSC). Western flanks of DH, Stuarts and Sue Peaks, TC trail near mile seven, Brushy Canyon area.

Salvia roemeriana Scheele – Cedar sage, Roemer sage

Uncommon perennial herb, crevices in cliff/canyon walls; DCA, SYG/CHP, 2000–5840 ft; *JF 1284, 1671, 1675, 1975, BHW 18404* (SRSC); *BHW 18404* (TEX-LL). Boquillas Canyon, Sue Peaks environs, Strawhouse Canyon.

§ *Teucrium depressum* Small – Small coastal germander

[*Teucrium cubense* var. *densum* Jeps., *Teucrium cubense* subsp. *depressum* (Small) E.M. McClint. & Epling] Uncommon annual herb, wet places, open ground near pond; 1800–3520 ft; *HTF 1234, BHW 8331, GLW 4465* (SRSC). Along the Rio Grande at Boquillas and at Dagger Flats 1933-1952.

LINACEAE

Linum berlandieri Hook. – Berlandier flax

Occasional annual or perennial herb, wash gravel, open ridge in shallow soil with north-east aspect; DSC, DAR, DCA, SYG, 3560–4600 ft; *CMR 5090; BHW & LCH s.n.* (BGWMA); *ACK 827* (BIBE); *BA2 5338, 5568* (SAT); *JF 265, 295, 525, 552, 826, 1049, AMP & SAP 5137, BHW & LCH BG-149* (SRSC).

Linum hudsonioides Planch. – Texas flax

[*Cerastium clawsonii* Correll] Rare perennial herb, southwest rocky slope; DSC, 3800 ft; *JF & HL 1893* (SRSC). On Dagger Mountain. Known locally from the Chisos Mountains, to the north, and is also in central Texas.

Linum rupestre (A. Gray) Engelm. ex A. Gray – Rock flax

Occasional perennial herb, wash gravel, rock crevices, rocky slopes; DSC, DAR, DCA, 1800–3840 ft; *BRM 3136*, *BHW & LCH s.n.* (BGWMA); *BA2 5218, 5310, 5703* (SAT); *JF 241, 276, 847, 1016, 2071, MT 48, 177, TR 282, OCW 509, BHW 10828, BHW & LCH BG-84, BG-164* (SRSC); *BHW 10828* (TEX-LL).

LOASACEAE*Cevallia sinuata* Lag. – Stinging cevallia

Occasional perennial herb, rocky limestone soils; DSC, DAR, DCA, 2000–3400 ft; *CMR 5077* (BGWMA); *JF 172, 808, 1383, 1724, MT 218* (SRSC).

Eucnide bartonioides Zucc. – Yellow rocknettle

Uncommon to occasional annual or perennial herb, rock crevices, wash gravel, sheltered mini-cave in finer soil; DSC, DCA, 1800–3700 ft; *BA2 & PC 4754* (BIBE); *BRM 3104* (BGWMA); *BA2 4754, 5509* (SAT); *JF 177, 286, 532, 2089, BHW 18400, 20619* (SRSC). Many dead plants were observed on the walls of DH canyons, indicating that this species was once more abundant than it is currently. This perception is supported by recollections of the Hot Springs trail by at least one long-time area resident (Yahas pers. comm.).

+ *Mentzelia mexicana* H.J. Thompson & Zavortink – Mexican blazingstar

Rare perennial herb, wash gravel, sandy bank; DAR, DCA, 1800 ft; *JF 2031, 2066* (SRSC). Boquillas Canyon and Arroyo Venado. Turner et al. (2003) shows dots in the study area but no specimens were discovered.

+Δ *Mentzelia multiflora* (Nutt.) A. Gray – Desert mentzelia

Annual or perennial herb. Observed at the Boquillas restoration site; Turner et al. (2003) shows many dots along the Rio Grande in the study area but no specimens were found.

+ *Mentzelia oligosperma* Nutt. – Chickenthiel, stickleaf

Rare perennial herb, rock crevices; DSC, DCA, 2350–3720 ft; *JF 231, 1333* (SRSC). North Dagger Mountain area and upstream of Ernst Tinaja. Turner et al. (2003) shows dots in the study area but no specimens were discovered.

Mentzelia pachyrhiza I.M. Johnst. – Coahuila blazingstar

Uncommon perennial herb, igneous rock outcrop, chalky talus slopes, roadside; DSC, DCA, 2850–3640 ft; *JF 312, 840, 950, BHW 13071* (SRSC). TC trail, Passionflower Canyon, and near tunnel.

LOGANIACEAE*Buddleja marrubiiifolia* Benth. – Woolly butterflybush

Occasional shrub, talus slopes, rocky limestone soils– hills and drainages; DSC, DAR, DCA, 1850–3900 ft; *CMR 11586* (BGWMA); *SJ 6502* (SAT); *JF 150, 436, 835, 1375, 1721, 2012, MT 9, 168, BHW 10759, BHW & LCH BG-77* (SRSC); *BHW 10759, BHW & LCH BG-77* (TEX-LL).

LYTHRACEAE

§ *Lythrum californicum* Torr. & A. Gray – California loosestrife

"Infrequent" perennial herb; 1800 ft; *BHW 896* (TEX-LL). At head of Boquillas Canyon in 1937. That this species still occurs within the study area is probable; many collections have been made in BBNP and Brewster County into the 1990s, including at Hot Springs.

MALPHIGIACEAE

Janusia gracilis A. Gray – Helicopter bush, slender janusia

Occasional perennial herbaceous vine, rock crevices, drainages with thicker brush, dry soils along arroyos and ridges; DSC, DAR, DCA, 1800–3720 ft; *EGM 122* (BIBE); *CMR 15112* (SAT); *JF 242, 647, 1332, AMP & SAP 5308, BLT & MT2 97-377, BHW 10793* (SRSC); *BLT & MT2 97-337* (TEX-LL).

MALVACEAE

Abutilon malacum S. Watson – Yellow indian mallow

Uncommon subshrub, base of pouroffs, gravelly soil; DSC, DAR, DCA, 1850–2050 ft; *EGM 154* (BIBE); *JF 643, 1082, 1604, 1643, 2004, 2019, BHW 12886* (SRSC). North of the Barker House, Boquillas Canyon, Marufo Vega trail near river.

Abutilon parvulum A. Gray – Dwarf indian mallow

Uncommon perennial herb, wash gravel, cut banks, thickets of vegetation; DSC, DAR, DCA, 2750–3700 ft; *AF 187* (BIBE); *JF 841, 969, 1140, 2169* (SRSC). TC trail, Passionflower Canyon, Dagger Flat.

Abutilon wrightii A. Gray – Wright indian mallow

Occasional perennial herb, rock crevices, dry limestone soil; DSC, DAR, DCA, 1800–3560 ft; *TR s.n.* (BGWMA); *JF 469a, 668, 1011, 1648, 2084, BLT & BD 23-171* (SRSC); *BLT & BD 23-171, BHW 9158, 10839* (TEX-LL).

§ *Herissantia crispa* (L.) Brizicky – Netvein mallow

"Frequent" subshrub, rocky gullies and canyons; DSC, DAR, 1800–1900 ft; *HCH s.n., BHW 13064* (SRSC); *HCH s.n.* (TEX-LL). At Boquillas and near tunnel.

Hibiscus coulteri Harv. ex A. Gray – Desert rosemallow

Occasional subshrub, wash gravel, talus slope, rocky hills; 2400–4300 ft; *JF 444, 846, 1480, 1582, 2184, MT 51, BHW 10820, BHW & LCH BG-152* (SRSC); *BHW 10820, BHW & LCH BG-152* (TEX-LL).

Hibiscus denudatus Benth. – Paleface rosemallow

Rare subshrub, rocky limestone soils; DSC, DCA, 3200 ft; *BRM 3120* (BGWMA); *JF 1471* (SRSC). TC trail area, Brushy Canyon.

§ *Hibiscus martianus* Zucc.– Heartleaf rosemallow

"Sparse" subshrub, limestone soil; 2100 ft; *OCW 358* (SRSC). Cave Canyon in Black Gap Refuge, 1961.

*# *Malva parviflora* L. – Cheeseweed mallow

Rare annual or perennial herb, sandy soil, old river floodplain; RIO, 1800 ft; *AL 304, 308* (BIBE & SRSC). Boquillas Canyon restoration site. New park record; collected during the study period by park staff at the Boquillas restoration site. Also known locally from the Glass Mountains and the Solitario.

§ *Malvella lepidota* (A. Gray) Fryxell – Scurfymallow

Perennial herb; DAR, 2560 ft; *OES 1335* (TAES). Dog Canyon. Turner et al. (2003) does not reflect this collection.

Malvella leprosa (Ortega) Krapov. – Alkali mallow, dollarweed

Rare perennial herb, sandy clay bottom; DSC/DAR, 2400 ft; *JF 1423* (SRSC). Ernst Basin, in remnant patch of tobosa grassland. New park record. Several collections (SRSC) have been made of this species in Brewster County which are not reflected in Turner et al. (2003).

§ *Rhynchosida physocalyx* (A. Gray) Fryxell – Spearleaf sida, buffpetal

“Infrequent” perennial herb, limestone soil; 2250 ft; *BRM 3171* (BGWMA); *BHW & LCH BG-194* (SRSC). Frog Canyon, east slopes of Stairway Mountain.

Sida abutifolia Mill. – Spreading sida

Occasional perennial herb, chalky soil at base of cliffs, bedrock outcrops, rocky slopes; DSC, DCA, 1800–2850 ft; *JF 166, 956, 1325, 1439, 2008, HCH s.n.* (SRSC).

+ *Sida longipes* A. Gray – Stockflower fanpetals

Uncommon perennial herb, open rocky ridgeline, rocky slopes; DSC, DAR, SYG, 3440–4800 ft; *JF 1539, 1920, 2175* (SRSC). TC trail mile five and at dam, western slopes below DH plateau. Turner et al. (2003) shows dots in the study area but no specimens were discovered. Listed by Amos and Giles (1992).

Sphaeralcea angustifolia (Cav.) G. Don – Narrowleaf globemallow

Occasional perennial herb, sandy clay bottom, wash gravel, sandy soil, summit ridge; DSC, DAR, DCA, RIO, SYG, 1800–5300 ft; *BRM 3121, CMR 11593* (BGWMA); *CN 499* (BIBE); *JF 585, 803, 1415, 1461, 1986, 2104, 2268, BH 641* (SRSC); *BHW 247* (TEX-LL). Abundant at the Boquillas Canyon restoration site.

§ *Sphaeralcea hastulata* A. Gray – Spear globemallow

“Infrequent” perennial herb; DCA, 2560 ft; *RRI 21431* (TEX-LL). Dog Canyon. Turner et al. (2003) does not reflect this specimen.

NYCTAGINACEAE

Acleisanthes angustifolia (Torr.) R.A. Levin – Narrowleaf moonpod

[*Selinocarpus angustifolius* Torr.] Occasional to uncommon subshrub, sandy to calcareous soils along arroyos and ridges; DSC, DAR, DCA, 1800–3720 ft; *JF 243*

- (BIBE); *JF* 243, 844, 1352, 2015, 2022, *BLT & BD* 23-160, *BHW* 9159, 10790, *BHW & MCJ* 16846, *BHW & BLT* 8324 (SRSC); *BLT & BD* 23-160, *BLT & MT2* 97-346b, *BHW* 10790 (TEX-LL).
- Acleisanthes longiflora* A. Gray – Angel trumpets, hierba de la rabia
Uncommon perennial herb, cut banks, ledges; DSC, DCA, 1850–4000 ft; *BA2* 5188 (SAT); *JF* 1070, *MT* 157, *GLW* 4479 (SRSC). Boquillas canyon, near Shackelford cabin.
- Allionia incarnata* L. – Trailing four o'clock, pink windmills
Occasional perennial herb, rocky slopes and flats, clayey soil, platy limestone; DSC, DCA, 1800–2750 ft; *EGM* 168 (BIBE); *BA2* 5356 (SAT); *JF* 171, 651, 936, 2065, *AMP & SAP* 5304, *BHW* 20879, *BHW & MCJ* 16848 (SRSC); *BHW* 702 (TEX-LL).
- § *Ammocodon chenopodioides* (A. Gray) Standl. – Goosefoot moonpod
[*Acleisanthes chenopodioides* (A. Gray) R.A. Levin] Perennial herb, sandstone derived soil along base of rocky hill; *BLT & BD* 23-160 (SRSC). Brushy Canyon road.
- § *Anulocaulis eriosolenus* (A. Gray) Standl. – Big bend ringstem
[*Boerhavia eriosolena* A. Gray] "Infrequent to locally common" annual or perennial herb, gravel banks, dry calcareous soils along arroyos and ridges; DSC, DAR, DCA, 1800–2320 ft; *EGM* 146 (BIBE); *AMP & SAP* 6141, *BLT & MT2* 97-351, *BHW* 16676, 20878, 20949 (SRSC); *DSC & HBC* 30639, *OES* 1632, *BLT & MT2* 97-340 (TEX-LL).
- Boerhavia anisophylla* Torr. – Wineflower
Uncommon perennial herb, rock crevices, boulders; DAR, DCA, 1800–3000 ft; *JF* 1468, 2073, 2134, *AMP & SAP* 3614, *BHW* 16690, *BHW, BLT, & JDA* 8335 (SRSC); *BHW* 21031, *BHW, BLT, & JDA* 8335 (TEX-LL). TC trail and Boquillas Canyon.
- + *Boerhavia diffusa* L. – Red spiderling
Rare annual or perennial herb, rock crevices in canyon wall; DCA, 3065 ft; *JF* 1120 (SRSC). Dagger Canyon.
- § *Boerhavia intermedia* M.E. Jones – Spreading spiderling
Uncommon to "frequent" annual herb, rocky slopes, arroyos; DSC, DAR, DCA, 1800–2320 ft; *AMP, SAP, MLP & AL2* 6102, *TRV s.n.*, *BHW* 20877, *BHW & LCH* BG-185BHW & *BLT* 8315 (SRSC); *HCH s.n.*, *AMP & SAP* 3614, *BLT & MT2* 97-342 (TEX-LL). Boquillas area and Ernst Tinaja.
- § *Boerhavia linearifolia* A. Gray – Narrowleaf spiderling
Annual herb, SW-facing limestone slope; 4600 ft; *BA2* 6190, *CMR* 5060, *OCW* 5810-1 (BGWMA); *BA2* 5326 (SAT); *AMP & SAP* 5120 (SRSC). Frog Tank and Brushy Canyon.

§ *Boerhavia spicata* Choisy – Creeping spiderling

"Infrequent to frequent" annual herb; 1800 ft; *BHW 695, 20948, BHW & MCJ 16849* (SRSC). Boquillas Canyon environs.

§ *Boerhavia torreyana* (S. Watson) Standl. – Creeping spiderling

[*Boerhavia spicata* Choisy var. *torreyana* S. Watson] Annual herb, frequent in sandy soil; 2100 ft; *BHW 8315* (TEX-LL). Head of Boquillas Canyon in 1948. A newer taxon recognized in the Flora of North America (FNA 2003a), it is more widespread than its relative *Boerhavia spicata*.

Cyphomeris gypsophiloides (M. Martens & Galeotti) Standl. – Birdfruit, red cyphomeris

Uncommon perennial herb, rock crevices, rocky slopes and flats; DSC, DAR, DCA, SYG, 1800–4360 ft; *JF 348* (BIBE); *BA2 5449* (SAT); *JF 348, 545, 951, 1172, 2086* (SRSC). Dog Canyon, TC trail, and Boquillas Canyon.

§ *Mirabilis albida* (Walter) Heimerl – White four o'clock

[*Mirabilis grayana* (Standl.) Standl.] Perennial herb; *BA2 5527* (SAT). Near Shackelford cabin.

Mirabilis linearis (Pursh) Heimerl – Linearleaf spiderling

Rare perennial herb, shallow soil amongst rocks on open summit; SYG/CHP, 5300–5840 ft; *JF 1982, 2159* (SRSC). Northern Sue Peak. Widely represented in Turner et al. (2003), from the Chisos Mountains northward. This species concept includes *Mirabilis decumbens* and *Mirabilis gausapoides* (Turner et al. 2003).

Mirabilis texensis (J.M. Coult.) B.L. Turner – Texas mirabilis

Uncommon perennial herb, wash gravel, dry calcareous soils along arroyos and mountain ridges; DSC, DAR, DCA, 2750–4200 ft; *JF 165, 809, 960, 1502, 2173, BLT & MT2 97-343, BHW 10776, 10844, BHW & MCJ 16829* (SRSC); *BLT & MT2 97-343* (TEX-LL). Passionflower Canyon, TC trail area, Ernst Tinaja environs, Heath Canyon.

§ *Nyctaginia capitata* Choisy – Devil's boquet

Perennial herb; *TM 137* (SAT). Frog Canyon in 1968.

OLEACEAE

Forestiera angustifolia Torr. – Narrowleaf forestiera

Common shrub, rocky slopes, wash gravel; DSC, DAR, DCA, 1920–4400 ft; *BHW & LCH BG-153* (BGWMA); *BA2 5256, 5266* (SAT); *JF 374, 493, 572a, 2181, JF & HL 1899, AMP & SAP 5826, BHW 18411, 21203, BHW & LCH BG-153, BHW & MCJ 15996, GLW 4459* (SRSC); *WBM 2022* (TAES).

Fraxinus cuspidata Torr. – Fragrant ash

Rare to “sparse” tree; DAR/DCA, 3500-4800 ft; *BHW & LCH BG-173* (BGWMA & SRSC); *JF 1947* (SRSC). In a high side drainage of Sue Peaks Canyon and an upper valley of Brushy Canyon. Also known locally from the north Rosillos and Chisos Mountains.

Fraxinus greggii A. Gray – Gregg ash

Common shrub, wash gravel/boulders, open rocky ridges; DSC, DAR, DCA, SYG, 2500–4900 ft; *TR 243* (BGWMA); *BA2 5358, 5570* (SAT); *JF 246, 568, 728, 1131, TR 296, MT 07b, BHW 20623, BHW & MCJ 15983* (SRSC).

Menodora longiflora A. Gray – Showy menodora, twinpod

Occasional perennial herb, calcareous and sandy arroyos, rock crevices on slopes; DSC, DAR, DCA, 2350–4600 ft; *CMR 5062, OCW 9027* (BGWMA); *JF 334* (BIBE); *BA2 5447, 5528* (SAT); *JF 226, 334, 517, 946, 1115, 1359, 1360, AMP & SAP 5122, 5145, MT 7* (SRSC).

Menodora scabra A. Gray – Rough menodora

[*Menodora scoparia* Engelm. ex Gray] Common subshrub, rocky slopes; DSC, DAR, DCA, 1800-5080 ft; *BHW 1123, 12887* (BIBE); *BA2 5699* (SAT); *JF 582, 754, 1482, 1520, BGH 639, MT 56, 180, 222, BHW 10783, 10803, 12887, 13037* (SRSC); *BHW 10783, 12887* (TEX-LL). Listed by Amos and Giles (1992).

ONAGRACEAE§ *Calylophus greggii* A. Gray – Gregg sundrops

[*Calylophus hartwegii* (Benth.) P.H. Raven subsp. *pubescens* (A. Gray) Towner & P.H. Raven] “Infrequent” subshrub in sandy soil along the Rio Grande at Boquillas in 1933; 2150 ft; *HTF 1225* (SRSC).

Calylophus hartwegii (Benth.) P.H. Raven subsp. *hartwegii* – Hartweg sundrops

Uncommon perennial herb, wash gravel; DCA, 1800–3050 ft; *BA2, DG, TE, & PC 4609* (BIBE); *BA2 5247* (SAT); *JF 1110, 117a, OCW 508* (SRSC). Dagger Canyon, Boquillas Canyon, Brushy Canyon.

Gaura boquillensis P.H. Raven & D.P. Gregory – Boquillas gaura

Occasional (G2S2) subshrub, sandy soil/old floodplain, gravel and boulders, rocky hillside in duff and shade; DSC, DCA, RIO, 1800–4400 ft; *JS & AL 301, 304* (BIBE); *JF 1363, 1380, 1538, 2091, 2117, 2147, AMP & SAP 3608, BHW 1008, 18397, GLW 4481* (SRSC); *BHW 1008* (TAES); *AMP & SAP 3608* (TEX-LL).

§ *Gaura calcicola* P.H. Raven & D.P. Gregory – Texas beeblossom

“Infrequent” perennial herb; 2200–2400 ft; *TR 75* (SRSC). Brushy Canyon.

Gaura coccinea Pursh – Scarlet gaura

Occasional perennial herb, sandy clay bottom, lower areas; DSC, DAR, 2200–3520 ft; TR 75 (BGWMA); BA2 5186, 5248, 5290, 5306, 5522, 5563, 5576 (SAT); JF 1418, 1460, BLT & BD 23-173, GLW 4449 (SRSC); BLT & BD 23-173 (TEX-LL).

§ *Gaura parviflora* Lehm. – Velvetweed

[*Gaura mollis* Kunth] Perennial herb, sandy soil, old river floodplain; RIO, 1800 ft; AL 305 (BIBE). Boquillas Canyon trail at river restoration site.

§ *Ludwigia peploides* (Kunth) P.H. Raven – Floating primrose-willow

"Infrequent to rare" perennial herb; RIO, 1800 ft; HTF 1231, EGM 159 (SRSC); EGM 159, BHW C297 (TEX-LL). Along the Rio Grande at Boquillas in the 1930s.

+ *Oenothera brachycarpa* A. Gray – Shortpod evening-primrose

Rare perennial herb, thin, platey, shallow gravel, in pockets between flat bedrock outcrops; DCA, SYG/CHP, 3560–5200 ft; JF 521, 1311, 1953 (SRSC). TC trail mile three, summit plateau of DH. According to Turner et al. (2003), this is the eastern-most locality known in Brewster County.

Oenothera kunthiana (Spach) Munz – Kunth sundrops

Occasional annual or perennial herb, terraces above washes, flats; DSC, DAR, DCA, RIO, 1800–3560 ft; BRM 3170, CMR 5139 (BGWMA); JF 510, HTF 1229, AMP & SAP 4300, 5388, BHW 18384, 47055 (SRSC); RRI & BHW 21362 (TEX-LL). Turner et al. (2003) does not reflect these historical collections.

§ *Oenothera laciniata* Hill – Cutleaf evening-primrose

Annual or perennial herb; BA2 5513, 5574 (SAT). Near Shackelford cabin. These collections are not reflected in Turner et al. (2003).

§ *Oenothera primiveris* A. Gray – Large yellow desert primrose

"Frequent" annual herb, limestone soil; 2000 ft; BHW & MCJ 16088 (SRSC & TEX-LL). Strawhouse Canyon in 1958. Also known from Hot Springs and Dog Flats.

+ *Oenothera rosea* L'Hér. ex Aiton – Rose sundrops

Rare perennial herb, sandy bank of wash, fine gravel at lip of pouroff plungepool; DCA, 1800–3000 ft; JF 798, 2076 (SRSC). Ernst Tinaja and Arroyo Venado/Boquillas Canyon. New park record. Listed by Amos and Giles (1992).

§ *Oenothera triloba* Nutt. – Stemless evening-primrose

"Infrequent" annual or biennial herb; 1800–4000 ft; BA2 5564 (SAT); HTF 1228 (SRSC). Along Rio Grande at Boquillas and near Shackelford cabin. Also known from Dog Flats.

ORBANCHACEAE

Orobanche ludoviciana Nutt. – Louisiana broomrape

Uncommon annual herb, gravel wash bottom; growing on mesquite; DAR, DCA, 1800–2120 ft; *BRM 3172* (BGWMA); *JF 677* (SRSC); *DSC & WOD 30714*, *BHW 838* (TEX-LL). Boquillas Canyon and north of the Barker House. This species concept includes *Orobanche cooperi* (Turner et al. 2003).

Orobanche multicaulis Brandegee – Spiked broomrape

Occasional annual herb, wash gravel, on mesquite roots; DAR, DCA, RIO, 1800–4080 ft; *JF 564*, *931*, *BHW 738* (SRSC). Bed of Telephone Canyon, Passionflower Canyon wash, head of Boquillas Canyon.

OXALIDACEAE

§ *Oxalis drummondii* A. Gray – Drummond woodsorrel

Perennial herb; *MT 228* (SRSC). Below N rim of DH plateau, N of Stuarts Peak.

PAPAVERACEAE

+ *Argemone chisosensis* G.B. Ownbey – Chisos mountain pricklepoppy

Rare annual or perennial herb, sandy clay bottom, gravelly limestone flats; DSC, DAR, 2350–2400 ft; *JF 1414*, *1579* (SRSC). Ernst Basin and Marufo Vega trail environs. Well-represented regionally.

§ *Argemone mexicana* L. – Mexican pricklepoppy

Rare annual herb, sandy soil, old river floodplain; RIO, 1800 ft; *AL 299* (BIBE); *AL 300* (SRSC). Collected by NPS staff at the Boquillas Canyon restoration site, it is a new county record. The nearest collections shown in Turner et al. (2003) are in eastern Val Verde County.

Argemone sanguinea Greene – Red pricklypoppy

Rare annual or perennial herb, rocky banks/terrace beside wash; DSC/DAR, DCA, 2800 ft; *CMR 2605* (SAT); *JF 966* (SRSC). Passionflower Canyon wash and Frog Canyon. The SAT collection is not reflected in Turner et al. (2003), though there are collections shown from northern Brewster County.

PASSIFLORACEAE

Passiflora tenuiloba Engelm. – Passionflower vine

Occasional perennial herbaceous vine, washes and canyons in gravel and boulders, rarely on open slopes in deep shade and debris; DSC, DAR, DCA, 1800–4280 ft; *BRM 3150*, *3150b*; *CMR 5082* (BGWMA); *AL 142*, *143*, *318* (BIBE); *BA2 5215* (SAT); *JF 189*, *306*, *963*, *1076*, *1361*, *1591*, *2129*, *TR 281*, *BHW 20606* (SRSC); *TR 249* (TEX-LL).

PEDALIACEAE

§ *Proboscidea louisianica* subsp. *fragrans* (Lindl.) Bretting – Devil's claw

[*Proboscidea fragrans* (Lindl.) Decne.] "Infrequent" annual herb; 1800 ft; *BHW 12890* (SRSC). At head of Boquillas Canyon in 1955.

PHYTOLACCACEAE

Rivinia humilis L. – Pigeonberry

Uncommon perennial herb, sandy wash gravel, sides of arroyos; DAR, DCA, 2920–3050 ft; *CMR 5031* (BGWMA); *JF 216a, 1137* (SRSC). North Dagger Mountain, Dagger Canyon, near Brushy Creek.

PLANTAGINACEAE

Plantago helleri Small – Heller plantain

Locally common annual herb, low and high elevation flats, silty soil, talus slope; DSC, SYG/CHP, 3300–5300 ft; *OCW 584-20* (BGWMA); *JF 620, 785, 1250* (SRSC). TC trail, Stuarts Peak, DH plateau, west of Frog Tank.

§ *Plantago hookeriana* Fisch. & C.A. Mey. – California plantain

"Infrequent" annual herb; DCA, 2560 ft; *BHW 21422* (TEX-LL). Dog Canyon in 1941.

+ *Plantago patagonica* Jacq. – Bristlebract plantain

Uncommon annual herb, sandy to silty soil, arroyos; DSC, DAR, DCA, SYG, 1800–5300 ft; *JF 1252, 1609, 2082* (SRSC). High saddle, Arroyo Venado/Boquillas Canyon, Marufo Vega trail along river. Turner et al. (2003) shows dots in the study area but no specimens were discovered. Listed by Amos and Giles (1992).

Plantago rhodosperma Decne. – Redseed plantain

Uncommon annual herb, wash gravel, sandy clay bottom; DSC, DAR, DCA, 2350–2560 ft; *BRM 3112* (BGWMA); *RH 20, 43* (SAT); *JF 1335, 1430* (SRSC); *RRI 21423* (TEX-LL). Ernst Tinaja, Ernst Basin, Dog Canyon, Frog and Brushy canyons.

POLEMONIACEAE

Gilia incisa Benth. – Splitleaf gilia

Rare annual or perennial herb, steep chalky western talus slope; DSC, 2850–4000 ft; *BA2 5308, 5573, 5577* (SAT); *JF 944* (SRSC). Passionflower Canyon and near Shackelford cabin.

§ *Gilia insignis* (Brand) Cory & H.B. Parks – Marked gilia

"Infrequent" perennial herb, eastern slopes of Stairway Mountain; 2250 ft; *BHW & LCH BG-200* (SRSC). Also known from Persimmon Gap and Dog Flats.

Gilia rigidula subsp. *acerosa* (A. Gray) Wherry – Button gilia, blue gilia

Uncommon annual herb, rocky limestone soil, flats and slopes; DSC, 3560–4300 ft; *BA2 5372* (SAT); *JF 245, 284, 870, MT 97* (SRSC). Alto Relex, Dagger Flats, TC trail near canyon bottom, Shackelford cabin. Also known to the west of the Chisos Mountains and northward.

Gilia stewartii I.M. Johnst. – Stewart gilia

Uncommon annual herb, rocky soil, flats, slopes and summits; DSC, DAR, 3400–4800 ft; *BRM 3221* (BGWMA); *BA2 5557* (SAT); *JF 498, 814, 1026, 2163, BHW 10761* (SRSC); *BHW 10761* (TEX-LL). TC trail, near McKinney Springs, near Shackelford cabin, western slopes of DH.

§ *Ipomopsis havardii* (A. Gray) V.E. Grant – Havard ipomopsis

"Infrequent" perennial herb; *BHW & MCJ 15907* (SRSC). DH near Roy Peak; also known from Dog and Tornillo Flats and elsewhere in BBNP.

§ *Phlox nana* Nutt. – Santa Fe phlox

[*Phlox mesoleuca* Greene] Perennial herb; *BA2 5371, 5519, 5562* (SAT). Near Shackelford cabin. Turner et al. (2003) does not reflect these collections. Locally known from the Chisos Mountains and west.

POLYGALACEAE

Polygala alba Nutt. – White milkwort

Uncommon perennial herb, rocky slopes and flats, deeper soil on high plateaus; DSC, CHP, 3500–5150 ft; *ACK 828* (BIBE); *BA2 5212, 5378* (SAT); *JF 251, 1227, MT 72, BHW & LCH BG-158* (SRSC). Dagger Flat, western slopes of DH, DH plateau, and near the Shackelford cabin.

Polygala barbeyana Chodat – Narrowleaf polygala

[*Polygala longa* S.F. Blake] Occasional to uncommon throughout, perennial herb, wash gravel, rocky hillsides and ridges; DSC, DAR, DCA, SYG, 2200–5500 ft; *TR 122, BHW & LCH s.n.* (BGWMA); *BHW 1006* (BIBE); *BA2 5286, SJ 6506* (SAT); *JF 158, 252, 267, 288, 864, 1099, 1160, 1259, 1503, 2174, 2183, TR 122, CMR 5070, MT 28, 244, BHW 10798, 21197, 23401, BHW & LCH BG-169, BHW & MCJ 16826* (SRSC); *BLT & BD 23-172b, BHW 10798* (TEX-LL).

Polygala lindheimeri A. Gray var. *lindheimeri* – Shrubby milkwort

Occasional perennial herb, rock crevices, canyon walls; DCA, 1800–3050 ft; *BA2 5196, 5244, 5696* (SAT); *JF 964, 1009, 1058, 1071, 1148, 2070, MT 12, 29, 200, BHW 10809, BHW & LCH BG-70, BG-134, BG-182* (SRSC); *JF 1071, BHW & LCH BG-134* (TEX-LL). This may be the species' western limit according to Turner et al. (2003). These two varieties intergrade in Brewster and Presidio County, and some individuals demonstrate mixed characters [e.g. *JF 964* (SRSC); Powell in prep.].

+ *Polygala lindheimeri* A. Gray var. *parvifolia* Wheelock – Shrubby milkwort

[*Polygala tweedyi* Britton ex Wheelock] Uncommon perennial herb, gravel flats, slightly clayey soil, arroyos; DSC, DCA, 1850–2600 ft; *JF 929, 1081* (SRSC). Passionflower Canyon area, Arroyo Venado/Boquillas Canyon.

Polygala macradenia A. Gray – Glandleaf milkwort

Common perennial herb, rocky slopes, rock crevices, sandy and calcareous soils; DSC, DAR, DCA, 1850–4360 ft; *BRM 3226* (BGWMA); *ACK 824* (BIBE); *BA2 5228, 5547,*

5553 (SAT); *JF* 239, 275, 354, 854, 1529, 2007, *BHW* 10797, 20955, *BHw* & *BLT* 8316, *GLW* 4446 (SRSC); *BLT* & *BD* 23-166, *TRV*, *GLB* & *WEH* 85-46, *BHW* & *BLT* 8316 (TEX-LL).

Polygala nudata Brandegee – Littleleaf milkwort

Rare perennial herb, sandy slope, rock crevices; DSC, DCA, 1800–>4000 ft; *BA2*, *DG*, *TE*, & *B* 4932, *AL* 312 (BIBE); *JF* 1670, 1698, 2126 (SRSC). Big Brushy, Strawhouse, and Boquillas canyons, including lower elevations of canyons draining into the Rio Grande; Marufo Vega trail.

Polygala scoparioides Chodat – Broom milkwort

Occasional perennial herb, rocky soils, flats, slopes, and ridges; DSC, DAR, DCA, 2200–4800 ft; *CMR* 5064, 11590 (BGWMA); *BA2* 5289, *SJ* 6499 (SAT); *JF* 425, 506, 580, 1165, 1190, 1365, *TR* 124, *OCW* 502, *BHW* 20624, 21199, *GLW* 4440, 4452 (SRSC); *BLT* & *BD* 23-165, 23-172a (TEX-LL).

POLYGONACEAE

Eriogonum havardii S. Watson – Havard buckwheat

Rare perennial herb, crevices or pockets in flat bedrock exposures; DSC, 3350 ft; *JF* 1718 (BIBE & SRSC); *JF* 1714 (SRSC). On high rocky cliffs overlooking the Rio Grande, above the Marufo Vega trail. Known locally from the Solitario area and in the center of Brewster County, continuing east and north.

Eriogonum platyphyllum Torr. ex Benth. – Broad-leaf wild buckwheat

[*Eriogonum tenellum* subsp. *platyphyllum* (Torr. ex Benth.) S. Stokes] Occasional perennial herb, wash gravel; DAR, DCA, 1950–4600 ft; *JF* 939, 1381, 1635, *AMP* & *SAP* 5123 (SRSC). Brushy Canyon and the upper mouth of Ernst Tinaja Canyon.

+ *Eriogonum rotundifolium* Benth. – Roundleaf buckwheat

Rare annual herb, wash gravel; DAR, 2350 ft; *JF* 1384 (SRSC). Just above upstream entrance to Ernst Tinaja canyon. Turner et al. (2003) shows dots in the study area but no specimens were discovered.

§ *Eriogonum tenellum* Torr. – Tall wild buckwheat

Perennial herb; *BRM* 3206 (BGWMA). Three miles west of BGWMA headquarters.

§ *Polygonum hydropiperoides* Michx. – Swamp smartweed

[*Persicaria hydropiperoides* (Michx.) Small] "Infrequent" perennial herb; 1800 ft; *BHW*, *BLT* & *JDA* 8336 (SRSC). At head of Boquillas Canyon in 1948.

§ *Polygonum pensylvanicum* L. – Pennsylvania smartweed

[*Persicaria pensylvanica* (L.) M. Gómez] Annual herb, sandy soil; 1800 ft; *BHW* 641 (BIBE). At entrance to Boquillas Canyon in 1937.

*§ *Persicaria maculosa* Gray – Spotted ladythumb

[*Polygonum persicaria* L.] "Infrequent" annual herb; 1800-1850 ft; *EGM 161*, *BHW 642* (BIBE); *BHW 21517* (TEX-LL). Along the Rio Grande at Boquillas, and below Barker House along spring area, in the 1930s.

*§ *Rumex crispus* L. – Curly dock

"Infrequent" perennial herb; 1800 ft; *BHW 18387* (SRSC). Boquillas Canyon in 1961.

Rumex maritimus L. – Golden dock

Rare annual or biennial herb, wash gravel/sand; DCA, 1800 ft; *JF 2118* (SRSC). Cow Canyon mouth in Boquillas Canyon. New county record. Few collections from Presidio and Val Verde counties. Rarely collected in Texas according to Turner et al. (2003), perhaps due to collector bias against weeds?

PORTULACACEAE

Talinum angustissimum (Engelm.) Wooton & Standl. – Narrow-leaf fameflower

[*Phemeranthus aurantiacus* (Engelm.) Kiger] Rare perennial herb, sandy bank in shade; DAR, 1900 ft; *JF 2040a* (SRSC). Boquillas Canyon, upstream from Marufo Vega trail. Many treatments include this species under *Phemeranthus aurantiacus*: the Flora of North America (FNA 2003a) states that the purported distinctions creating separate species break down under a continuum of intergradation, but collections examined from Brewster County (*JF 2270-2274* SRSC) demonstrate that individuals clearly representing both concepts occur at the same site with no intergradation of characters (Powell in prep.). Based on distribution information from the Flora of North America treatment (FNA 2003a), the Big Bend region could be a zone of overlap between the two species, providing more support for the idea of the DH and larger region being a floristic mixing ground as discussed in the above thesis.

+ *Phemeranthus aurantiacus* (Engelm.) Kiger – Orange fameflower

[*Talinum aurantiacum* Engelm.] Rare perennial herb, rocky limestone soil; DSC, 3880 ft; *JF 293*, *2040a* (SRSC). Lower western flanks of Stuarts Peak.

Phemeranthus brevicaulis (S. Watson) Kiger – Dwarf fameflower

[*Talinum brevicaule* S. Watson] Rare, locally more common perennial herb, shallow soil amongst rocks and boulders; SYG/CHP, 5320–5840 ft; *JF 1967*, *1967a* (SRSC). Sue Peaks area. Known locally from the Chisos and Glass Mountains.

Portulaca oleracea L. – Purslane, verdolaga

Rare annual herb, sandy wash; DAR, DCA, 2500–2880 ft; *TR s.n.* (BGWMA); *JF 204* (SRSC). North Dagger Mountain and Frog Tank.

Portulaca pilosa L. – Kiss me quick

[*Portulaca mundula* I.M. Johnst.] Occasional annual or perennial herb, rock crevices, wash gravel, rocky limestone soil, shallow soil on bedrock terrace; DSC, DAR, DCA,

SYG/CHP, 1800–5840 ft; *BHW 12901* (BIBE); *BA2 5281, 5379* (SAT); *JF 176, 240, 272, 1154, 1979, 2099, MT 6, 209, 243, BHW 12901, JF & MY 1316, BHW & MCJ 16843* (SRSC); *BHW 12901* (TEX-LL).

PRIMULACEAE

§ *Anagallis arvensis* L. – Scarlet pimpernel

Annual or biennial herb, sandy soil, old river floodplain; RIO, 1800 ft; *AL 303* (BIBE). Boquillas Canyon trail, river restoration site just upstream from mouth of canyon.

§ *Samolus ebracteatus* subsp. *cuneatus* (Small) R. Knuth – Limewater brookweed

"Infrequent" perennial herb, sandy soil; RIO, 1800 ft; *EGM 130* (BIBE); *HTF 1223, BHW 13049* (SRSC). Along the Rio Grande at Boquillas.

RANUNCULACEAE

Anemone tuberosa var. *texana* Enquist & Crozier – Desert windflower, tuber anemone

Rare perennial herb, rocky hillside, north aspect, with thin bedrock outcrops and boulders; DSC, DCA, 2560–4440 ft; *JF 562, BHW & MCJ 15986* (SRSC). TC trail mile five and Dog Canyon.

Clematis drummondii Torr. & A. Gray – Virgin's bower, old man's beard

Common perennial herbaceous vine, wash gravel, sides of canyons and arroyos; DAR, DCA, RIO, 1800–4080 ft; *JF 178, 1334, 1424, TR 295* (SRSC). Listed by Amos and Giles (1992).

RESEDACEAE

+ *Oligomeris linifolia* (Vahl) J.F. Macbr. – Desert spikes

Occasional annual herb, rocky desert soil, flats, sandy floodplain; DSC, RIO, 1800–2600 ft; *JF 932, 2226* (SRSC). Passionflower Canyon area and at the Boquillas Canyon restoration site. Turner et al. (2003) shows a dot in the study area but no specimens were discovered.

§ *Ranunculus sceleratus* L. – Cursed buttercup

Rare native herb, in mud at river's edge; *BHW & RLU s.n.* (SRSC). RGV area, at Ojo Caliente crossing in 1950.

RHAMNACEAE

Ceanothus greggii A. Gray – Desert ceanothus

Uncommon shrub, cliff outcrops, crevices in canyon walls, north and east aspects; DCA, SYG, 4040–5840 ft; *PVW s.n.* (KANU); *BA2 5537* (SAT); *JF 727, 746a, 771, 1211, 1275, 1976, PM 974, MT 226, 239* (SRSC). Stuarts and Sue peaks area, Brushy Canyon.

§ *Condalia ericoides* (A. Gray) M.C. Johnst. – Javelinabush

Shrub; *CMR 11624* (SAT). Observed occasionally in the study area. Collection from near Shackelford cabin.

Condalia viridis I.M. Johnst. – Green condalia

Occasional shrub, wash gravel, sandy clay bottom, rocky limestone soil; DSC, DAR, DCA, SYG, 2350–4880 ft; *JF* 161, 744b, 1348, 1386, 1421, *TVR* s.n. (SRSC).

Condalia warnockii M.C. Johnst. – Warnock condalia

Uncommon shrub, rocky ridge and canyons, with bedrock and rock outcrops; DSC, DAR, DCA, SYG, 1800–4650 ft; *JF* 1185, 2085, *BHW* 10814 (SRSC); *BHW* 10814 (TEX-LL). Western slopes of DH, head of Heath Canyon, Arroyo Venado/Boquillas Canyon.

Karwinskia humboldtiana (Willd. ex Roem. & Schult.) Zucc. – Coyotillo

Locally uncommon shrub, rock crevices, terraces, bouldery sides of washes; DCA, RIO/DSC, 1800–3150 ft; *BHW* 834 (BIBE, SRSC, & TEX-LL); *JF* 1595, 2001, 2135 (SRSC). Various sites in Boquillas Canyon, and in the upper Marufo Vega trail area away from the river.

Ziziphus obtusifolia (Hook. ex Torr. & A. Gray) A. Gray – Lotebush Occasional shrub, rocky limestone soil, cut banks, sandy clay bottom; DSC, DAR, DCA, 2200– ca. 4000 ft; *BA2* 5226, 5261, 5706 (SAT); *JF* 1312, 1419, 1426, *TR* 117 (SRSC); *AG* 380 (TEX-LL).

ROSACEAE*Cercocarpus breviflorus* A. Gray – Small-leaf mountain mahogany

[*Cercocarpus montanus* Raf. var. *paucidentatus* (S. Wats) F.L. Martin] Rare shrub, holes/cracks in bedrock and boulders; CHP, 5800–5840 ft; *PVW* s.n. (KANU); *JF* 1267, 1977 (SRSC). Northern Sue Peak. Known from other high elevations in Brewster and Jeff Davis counties as well.

Cercocarpus glaberoides R.A. Denham var. *glaber* – Smooth mountain mahogany

[*Cercocarpus betuloides* Nutt., *Cercocarpus montanus* Raf. var. *glaber* (S. Wats) F.L. Martin] Uncommon shrub, canyon bottoms, base of cliffs, rocky summits; DCA, SYG/CHP, 3500–5680 ft; *OCW* 9036, *BHW* & *LCH* s.n. (BGWMA); *PVW* s.n. (KANU); *BA2* 5439, 5452 (SAT); *JF* 716, 1021, 1197, 1274, 1278, 1281, *MT* 64, 109, 115, *OCW* 338, *BHW* & *LCH* BG-150 (SRSC). Stuarts and Sue Peaks environs, DH plateau, TC area. Trans-Pecos mountain mahoganies were previously treated as varieties of *Cercocarpus montanus* (Powell 1998) and are now recognized by some as different species (Turner et al. 2003, Powell in prep.). Two other *Cercocarpus* species occur in western Texas: *Cercocarpus montanus* Raf. var. *montanus* (Guadalupe and Sierra Diablo mountains) and *Cercocarpus montanus* Raf. var. *argenteus* (Rydb.) F.L. Martin (Texas Panhandle).

Fallugia paradoxa (D. Don) Endl. ex Torr. – Apacheplume

Occasional to locally common shrub, wash gravel; DAR, DCA, 2350–4040 ft; *BRM* 3108, *TR* s.n. (BGWMA); *BA2* 5249, 5329 (SAT); *JF* 157, 1111, 1378, *PM* 978, *TR* 114, *MT* 201, *BHW* & *LCH* BG-168 (SRSC); *BHW* & *LCH* BG-88 (TEX-LL).

Malacomeles denticulata (Kunth) G.N. Jones – Serviceberry

[*Amelanchier denticulata* (Kunth) K. Koch] Uncommon shrub, drainages, open ridgelines; DCA/SYG, CHP, 3800–5080 ft; *PVW s.n.* (KANU); *BA2 5536* (SAT); *JF 511, 717, 728a, 822, 1184, 1954, BHW 10826* (SRSC); *DHR 2298, BHW 10826* (TEX-LL). Stuarts and Sue Peaks environs, interior TC trail area, Brushy Canyon.

Petrophyton caespitosum (Nutt.) Rydb. – Mat rockspirea, tufted rockmat

Rare subshrub, cracks and crevices in slick bedrock outcrops; SYG, 4750–5840 ft; *JF 786, 1269, MT 232* (SRSC). Stuarts and Sue Peaks areas, and on N rim of the DH plateau/Brushy Canyon.

Prunus havardii (W. Wight) S. C. Mason – Havard plum

Uncommon to occasional shrub in northern half of the range, washes, ridgelines; DAR, DCA, SYG, 3050–5840 ft; *JF 1109* (BIBE); *JF 742, 1109, 1266a, 1973, PM 973* (SRSC); *BHW & LCH BG-140* (SRSC & TEX-LL).

Purshia ericifolia (Torr. ex Gray) Henrick. – Heath cliffrose

[*Cowania ericifolia* Torr. ex Gray] Common shrub, crevices in bedrock; DCA, SYG, CHP, 2050–5150 ft; *BA2 6192, CMR 5067, 5133, 15832, TR s.n.* (BGWMA); *PVW s.n.* (KANU); *BA2 5366* (SAT); *JF 751, 948, 1098, 1601, 1672, 1902, MT 25, 94, 171, TR 115, BHW 10836, 16682, 20622, BHW & LCH BG-138, BHW & MCJ 16831* (SRSC); *BHW 10836, BHW & LCH BG-138* (TEX-LL).

Vauquelinia corymbosa Humb. & Bonpl. subsp. *angustifolia* (Rydb.) W.J. Hess & Henrickson – Narrow-leaf vauquelinia

[*Vauquelinia angustifolia* Rydb.] Occasional shrub or tree open rocky limestone slopes, drainages; DCA, SYG, 4200–4800 ft; *BA2 5555* (SAT); *JF 496a, 577, 862, PM 972, BHW 10778, 10784, BHW & MCJ 16683* (SRSC); *BHW 10778* (TEX-LL).

RUBIACEAE+ *Galium proliferum* A. Gray – Limestone bedstraw

Rare annual herb, wash gravel and amongst boulders on open peak; DAR, DCA, SYG, 3500–5080 ft; *JF 428, 745* (SRSC). TC trail mile three and on top of Stuarts Peak. Turner et al. (2003) shows a dot in the study area but no specimen was discovered.

Hedyotis acerosa A. Gray var. *acerosa* – Needleleaf bluet

[*Houstonia acerosa* (Gray) Gray ex Benth. & Hook. f. var. *acerosa*] Common perennial herb, rocky limestone soils, bedrock outcrops; DSC, DAR, DCA, SYG/CHP, 3500–5840 ft; *BRM 3229* (BGWMA); *BHW 889* (BIBE); *JF 250, 287, 330, 480, 491, 824, 1051, 1101, 1717, MT 27a, 57, OCW 323, BHW 10825* (SRSC); *BHW 10825* (TEX-LL).

Hedyotis intricata Fosberg – Tangled starviolet, fascicled bluet

[*Houstonia fasciculata* Gray, non Bertol.] Occasional shrub, cracks in bedrock and cliff walls; DSC, DCA, SYG/CHP, 3800–5800 ft; *PVW s.n.* (KANU); *JF 294, 481, 749, 866, 1487, MT 91, 169, BHW & MCJ 16684* (SRSC).

Hedyotis nigricans (Lam.) Fosberg var. *nigricans* – Diamondflowers

[*Stenaria nigricans* (Lam.) Terrell var. *nigricans*] Common perennial herb, wash gravel; DAR, DCA, 1800–4360 ft; *BRM 3139* (BGWMA); *JF 500, AL 196* (BIBE); *BA2 5342* (SAT); *JF 156, 186, 424, 500, 541, 801, 823, 1129, 1530, 1924, 1925, 1926, 1931, JF & MY 1354* (SRSC); *BLT & MT2 97-335* (TEX-LL).

Hedyotis pooleana B.L. Turner – Jackie’s bluet

[*Stenaria mullerae* var. *pooleana* (B.L. Turner) Terrell] Occasional (G1T1S1) perennial herb, slick bedrock outcrops, slope less than 50%, seemingly all aspects; DSC, SYG, 2700–5680 ft; *JF 237, 713, 775, 1168, 1288, 1553, 1605, 1715, 1716, 1916, 1961, 1962, 2192, 2195, JF & MD 553, JMP 2527* (SRSC); *JMP 2527* (TEX-LL). This taxon is deserving of more systematic work; its relationship to the variable Mexican species *Houstonia mullerae*, and the regional *Hedyotis angulata* is of interest; in addition to the previously mentioned dispute over varietal versus specific designation of *Hedyotis pooleana*, two specimens of *Hedyotis angulata* seem to approach vegetative characters of *Hedyotis pooleana* (*Tharp 270, Warnock 23716* SRSC) which is supposedly restricted to the DH mountains. *Hedyotis pooleana* is also apparently slightly morphologically plastic, with a few specimens showing a more branched habit, even approaching *Hedyotis angulata*, as opposed to the characteristic densely-matted growth (Fig. 30).

RUTACEAE

Ptelea trifoliata subsp. *angustifolia* (Benth.) V.L. Bailey – Common hoptree, skunkbush
Rare shrub, base of and in shade of cliff outcrops; SYG, CHP, 480–5680 ft; *BA2 327* (SAT); *JF 1213, 1294, 2162, MT 185* (SRSC). DH plateau, near Shackelford cabin.

Thamnosma texanum (A. Gray) Torr. – Dutchman's breeches, Texas desertrue

Occasional to uncommon throughout, perennial herb, wash gravel, rocky desert slopes with some protection; DSC, DAR, DCA, SYG, 1800–5840 ft; *BRM 3122, CMR 5081* (BGWMA); *JF 488, 747, 1583, 1995, BHW 18394, BHW & LCH BG-69, BHW & MCJ 15906, GLW 4441* (SRSC).

SALICACEAE

§ *Populus fremontii* S. Wats. – Fremont cottonwood

Locally occasional tree; sandy soil, river floodplain; RIO, 1800 ft; *EW 19709* (SRSC). East of Hot Springs on the river. Cottonwoods currently grow in the RGV campground and picnic areas; many were planted and are probably the upstream-native Rio Grande cottonwood *Populus deltoides* subsp. *wislezani*.

§ *Salix exigua* Nutt. – Narrowleaf willow, coyote willow

"Infrequent to frequent" tree, on hills; at old Graham farm/ Boquillas area 1930s-1950s; *BHW 12911* (SRSC); *BHW s.n.* (TEX-LL).

§ *Salix exilifolia* Dorn – Yewleaf willow

[*Salix taxifolia* Kunth] Tree, at Boquillas in 1937; *EGM 166* (BIBE).

Salix nigra Marshall – Black willow

Uncommon tree; DCA, RIO, 1800–2350 ft; *BHW 647* (BIBE); *JF 1344*, *BHW 18389* (SRSC); *EGM 71*, *BHW 21505* (TEX-LL). At Boquillas and in canyon upstream of Ernst Tinaja. Also known from Hot Springs, McKinney Springs areas. This species concept includes *Salix gooddingii* (Turner et al. 2003).

SAPINDACEAE

+ *Sapindus saponaria* L. – Western soapberry, jaboncillo

Rare tree, dark sandy median of wash; DAR, 3050 ft; *JF 1116* (SRSC). At mouth of Dagger Canyon.

Ungnadia speciosa Endl. – Mexican buckeye

Uncommon tree, canyon walls and wash gravel; DCA, 1800–4420 ft; *BRM 3109*, *TR 84* (BGWMA); *DB s.n.* (SAT); *JF 817*, *1144*, *2075*, *2127*, *TR 84* (SRSC). In the larger canyons. Usually only isolated individuals were seen, but this species was unusually common in Dagger Canyon and noted as “frequent” in Brushy Canyon on *TR 84*.

SAPOTACEAE

§ *Sideroxylon lanuginosum* Michx. ssp. *rigidum* (Gray) T.D. Pennington – Gum bully, ironwood

Rare tree, banks of drainage below canyon walls DCA, 2560 ft; *AL 240* (BIBE); *BHW & MCJ s.n.* (SRSC). Dog Canyon.

SCROPHULARIACEAE

§ *Castilleja integra* A. Gray – Wholeleaf indian paintbrush

Perennial herb, calcareous soils; Brushy Canyon; *BA2 5227*, *5345*, *5390*, *5448*, *5460*, *5542*, *5588* (SAT); *BLT & BD 23-169* (TEX-LL).

Castilleja rigida Eastw. – Rigid indian paintbrush, broadbract paintbrush

[*Castilleja latebracteata* Pennell] Occasional perennial herb, talus slopes, cliff outcrops, open rocky soils; DSC, SYG/CHP, 2150–5200 ft; *TR 111*, *OCW 9035* (BGWMA); *OES 1332* (BIBE); *SJ 6497* (SAT); *JF 151*, *214*, *331*, *485*, *774*, *830*, *833*, *1210*, *1580*, *1720*, *1908*, *AMP & SAP 5121*, *TR 111*, *MT 14*, *126*, *133*, *148*, *153*, *154*, *BHW 10851*, *BHW & LCH BG-71* (SRSC); *BHW 10851*, *BHW & LCH BG-71* (TEX-LL).

Leucophyllum candidum I.M. Johnst. – Boquillas silverleaf

[*Leucophyllum violaceum* Pennell] Occasional to common shrub, rocky limestone slopes, washes, cliffs; DSC, DAR, DCA, 1800–4080 ft; *EGM 153*, *BHW 13070* (BIBE); *JF 329*, *567*, *836*, *837*, *1464*, *1711*, *2092*, *2124*, *PM 238*, *BHW 13070*, *BHW & LCH BG-61BHW & MCJ 16857* (SRSC); *BHW s.n.* (TEX-LL).

+ *Leucophyllum frutescens* (Berland.) I.M. Johnst. – Barometer bush, ceniza, purple sage

Rare shrub, wash gravel; DCA, 1800 ft; *JF 2083* (SRSC). Arroyo Venado/Boquillas Canyon. Listed by Amos and Giles (1992).

Leucophyllum minus A. Gray – Big Bend silverleaf

Common shrub, open rocky limestone soil, alluvium, ridges, slopes; DSC, DAR, DCA, 2600–4300 ft; *CMR 5066* (BGWMA); *BA 107* (BIBE); *DB s.n.* (SAT); *JF 244, 266, 470, 831, 842, 1162, MT 23, 24, 125, BLT 22-148, BHW 10804, BHW & LCH BG-161, GLW 4471* (SRSC); *BLT 22-148* (TEX-LL).

Maurandya antirrhiniflora Humb. & Bonpl. ex Willd. – Snapdragon vine, roving sailor

Common perennial herbaceous vine, chalky soil on talus slope in shade, wash gravel/banks on shrubs; DSC, DAR, DCA, 1800–4080 ft; *BRM 3105, TR 110* (BGWMA); *JF 438, 971, TR 110, 113, MT 100, BHW 10807* (SRSC).

§ *Maurandya wislizeni* Engelm. ex A. Gray – Balloonbush

Rare perennial herbaceous vine, sandy soil, old river floodplain; RIO, 1800 ft; *AL 301* (BIBE); *AL 302* (SRSC). Collected by NPS staff at the Boquillas Canyon trail river restoration site; new county record.

Penstemon baccharifolius Hook. – Baccharisleaf beardtounge

Occasional perennial herb, slickrock of canyon walls, protected areas; DCA, 1800–4600 ft; *CMR 5061, SMU 39* (BGWMA); *AL 145* (BIBE); *JAS 3450* (NYBG); *JLB 866* (SAT); *JF 180, 838, 974, 1313, 1681, 2106, AMP & SAP 5124, TR 112, MT 95, 183, BHW & LCH BG-162* (SRSC).

Penstemon barbatus (Cav.) Roth – Beardlip penstemon

Rare perennial herb, gravelly arroyo bottoms, crevice in canyon wall; DAR, DCA, 3160–4000 ft; *JF 222, MT 216, BHW 10732* (SRSC); *LCH & BHW BG-175* (TEX-LL). North Dagger Mountain, Brushy Canyon, head of Heath Canyon.

+ *Penstemon dasyphyllus* A. Gray – Cochise beardtounge

Rare perennial herb, north aspect cliff face; DAR/DCA, 4120 ft; *JF 724* (SRSC). Drainage on flanks of Stuarts Peak. Turner et al. (2003) shows a dot in the study area but no specimen was discovered.

Penstemon lanceolatus Benth. – Lanceleaf beardtounge

Uncommon to “rare” perennial herb, limestone rockland, north-facing slope, rocky summit; 3500–5840 ft; *JF 1306, BHW & LCH BG-175* (SRSC); *JMP 2725, BHW 10752* (TEX-LL). Summit of southern Sue Peak, head of Heath Canyon, near Shackelford cabin. The DH is the only population for this species in Texas, according to Turner et al. (2003).

Seymeria falcata B.L. Turner var. *falcata* – Falcate blacksennea

Locally common annual herb, holes and crevices in slick bedrock outcrops, wash gravel; DAR/SYG, 4000–5500 ft; *JF 1943* (BIBE, BRIT, SRSC, & TEX-LL); *JF 571, 1187, 1548, 1952, 1959; MT 137* (SRSC). Sue Peaks and Shackelford cabin environs. New to the U.S. (Fenstermacher 2006).

Seymeria scabra A. Gray – Limpia blacksennea

Uncommon annual herb, rocky limestone soil; SYG, 4880–5840 ft; *BA2 5330* (SAT); *JF 744d, 1302; MT 255* (SRSC). Stuarts Peak, Sue Peaks, near Shackelford cabin.

Stemodia coahuilensis B.L. Turner – Coahuila twintip

[*Leucospora coahuilense* Henrickson] Rare annual herb, wash gravel, extremely ephemeral; DAR; 2200 ft. Photo documented by Roy Morey in February 2007: at the first mini-side drainage encountered when walking up the wash towards Ernst Tinaja from the parking area; “one clump” of plant(s) was found. Also known from Reed Plateau (Weckesser in prep). Rare in the U.S.; mostly a Mexican species from Cuatro Ciénegas area (Henrickson 2005).

SIMAROUBACEAE*Holacantha stewartii* C.H. Mull. – Crucifixion thorn

[*Castela stewartii* (C.H. Mull.) Moran & Felger] Rare shrub, rocky limestone soils; DSC, 3480–3700 ft; *JF 1145, JF & HL 1900, BHW 11760* (SRSC). Dagger Mountain and Dagger Flats. Warnock's collection in 1953 was the first record of its occurrence in the United States. Known from south of Glen Springs, Paint Gap, and other spots in south Brewster County including BBRSP.

SOLANACEAE§ *Calibrachoa parviflora* (Juss.) D'Arcy – Wild petunia

Annual herb, sandy soil, old river floodplain; RIO, 1800 ft; *AL 309* (BIBE); Boquillas Canyon trail, river restoration site just upstream from mouth of canyon.

Chamaesaracha pallida Averett – Pale five eyes, false nightshade

Uncommon perennial herb, rock crevices, shallow soil; DSC, DCA, SYG/CHP, 1800–4800 ft; *JF 2204, BHW 16846, 21198, BHW & MCJ 16685* (SRSC). Western slopes of the DH, Heath Canyon, Boquillas Canyon.

Chamaesaracha sordida (Dunal) A. Gray – Hairy false nightshade

Occasional perennial herb, rocky flats and hills, base of cliffs; DSC, DCA, 1900–3640 ft; *BHW & LCH BG-74* (BGWMA); *JEA & MWB 519, 520, CMR 17157, TXDOT 1324* (BIBE); *JF 290, 449, 629, 654, 965, 2047, BLT & BD 23-175, BHW 20898* (SRSC); *BLT & BD 23-175* (TEX-LL).

Chamaesaracha villosa Rydb. – Trans-Pecos five eyes, wooly false nightshade

Uncommon perennial herb, rocky soil, bedrock outcrops; DSC, DAR, DCA, 1900–2560 ft; *JF 1442, TXDOT s.n., BHW 21205, BHW & LCH BG-74, BHW & MCJ 15909, BHW & BLT 8327* (SRSC); *JEA & TJW 172, BHW 21205* (TEX-LL). Dog Canyon, Ernst Basin, near Roys Peak, Frog Tank, Boquillas Canyon. Includes *Chamaesaracha crenata* Rydb.

Datura wrightii Regel – Sacred datura, thorn apple

Annual or perennial herb, sandy soil; RIO; 1800 ft; *JF 2262* (SRSC). Few plants at the Boquillas Canyon restoration site.

Lycium berlandieri Dunal – Berlandier wolfberry

Occasional shrub, limestone soil, poorly drained ground, sandy clay soil; DSC, DAR, DCA, 1800–3480 ft; *EGM 10*, *BHW 13025* (BIBE); *JF 1090*, *1387*, *1390*, *1391*, *1451*, *2045*, *2110*, *MT 205*, *BHW 13025*, *13067*, *GLW 4463* (SRSC).

+ *Lycium puberulum* var. *berberidoides* (Correll) F. Chiang – Downy wolfberry
[*Lycium puberulum* A. Gray] Rare shrub, flats; DSC, 2350 ft; *JF 1392* (SRSC). Ernst Basin. Turner et al. (2003) shows dots in the study area but no specimens were discovered.

! *Nicotiana glauca* Graham – Tree tobacco

Uncommon shrub, sandy/silty soil; DCA, RIO, 1850 ft; *CN 11739* (BIBE); *CMR s.n.* (SAT); *JF 1063*, *2260* (SRSC). Boquillas area, Frog Canyon, Arroyo Venado.

Nicotiana trigonophylla Dunal – Desert tobacco

Uncommon annual herb, wash bottom, unconsolidated rocky slope, desert flats; DSC, DAR, DCA, 2400–3500 ft; *CMR 16411* (SAT); *JF 370*, *440*, *1446* (SRSC). TC trail, near Shackelford cabin, Ernst Basin.

Physalis cinerascens (Dunal) Hitchc. var. *cinerascens* – Smallflower groundcherry

Uncommon perennial herb, rocky summit; SYG/CHP, 2300–5840 ft; *BA2 5231*, *5311* (SAT); *JF 1981*, *MT 128*, *OCW 504* (SRSC). Summit of northern Sue Peak and in Brushy Canyon.

Physalis hederifolia A. Gray – Ivyleaf groundcherry

Uncommon to occasional throughout, perennial herb, throughout entire range in wash gravel and rock crevices; DSC, DAR, DCA, 1800–4650 ft; *OES 1334* (BIBE); *JF 159*, *216*, *441*, *1086*, *1906*, *2069*, *2074*, *MT 36*, *37*, *BHW 10779*, *BHW & MCJ 16825* (SRSC); *TRV & GLB 85-36*, *BHW 10779* (TEX-LL).

Quincula lobata (Torr.) Raf. – Chinese lantern, purple groundcherry

[*Physalis lobata* Torr.] "Infrequent/sparse" perennial herb, limestone and sandy soil; DSC, RIO, 1800–3800 ft; *BHW 1227*, *10747*, *JF 2269* (SRSC); *BHW 10747* (TEX-LL). Near Norton's mine, along the Rio Grande at Boquillas, Boquillas Canyon restoration site.

Solanum elaeagnifolium Cav. – Silverleaf nightshade

Uncommon perennial herb, sandy-silty soil; DCA, RIO, 1800–1850 ft; *EGM 160*, *BHW 645* (BIBE); *JF 1064* (SRSC). Along the Rio Grande at Boquillas and at Arroyo Venado/Boquillas Canyon junction.

§ *Solanum ptychanthum* Dunal – West Indian nightshade

[*Solanum americanum* Mill.] Annual herb; *EGM 137* (BIBE). At Boquillas in 1937.

Solanum triquetrum Cav. – Texas nightshade

Uncommon perennial woody vine, wash gravel, sides of wash within shrubs, rocky ridges; DSC, DAR, DCA, SYG, 2780–4800 ft; *JF* 162, 249a, 1035, 2176, 2178, 2185, *PM* 976, *BHW & MCJ* 16838 (SRSC). In southern half of the study area, also Brushy Canyon.

STERCULIACEAE*Ayenia filiformis* S. Watson – Trans-Pecos or narrowleaf ayenia

Uncommon subshrub, washes, clay-loam limestone; DSC, DCA, RIO, 1800–2250 ft; *CMR* 17160 (BIBE); *JF* 2034, *BHW* 18398, 20950, *BHW & LCH* BG-187 (SRSC). Boquillas environs and through Boquillas Canyon.

Ayenia microphylla A. Gray – Dense ayenia

Uncommon to occasional subshrub throughout the entire range, wash gravel, rocky slopes and boulder piles; DSC, DAR, DCA, 1800–4800 ft; *JF* 1124, 1957, 2038, 2172, *BGH* 632, *AMP & SAP* 5307, *BHW* 20620 (SRSC); *DSC & HBC* 30627, *BHW* 10791 (TEX-LL).

§ *Ayenia pilosa* Cristóbal – Hairy or dwarf ayenia

Subshrub; 3000 ft; *BHW & LCH* s.n. (BGWMA); *BHW & LCH* BG-139 (SRSC). Upper Brushy Canyon in 1950.

TAMARICACEAE!!§ *Tamarix aphylla* (L.) H. Karst. – Athel tamarisk, saltcedar

Locally occasional tree, sandy banks, wash gravel; DSC, RIO, 1800–1900 ft; *BHW* 13052 (BIBE); *AMP* 3349, *BHW* 13052 (SRSC); *AMP* 3349 (TEX-LL). These large trees were historically planted around developed areas; those in the RGV area are being targeted and removed by NPS exotic plant eradication teams, as are the *Tamarix chinensis*, but they are firmly established in upstream areas and so will likely continue to reestablish along the river corridor into the future.

!! *Tamarix chinensis* Lour. – Five-stamen tamarisk, saltcedar

Locally abundant tree, sandy banks, wash gravel; DCA, RIO, 1800–ca. 4000 ft; *JF* 1346, 2233, 2253, *MT* 179 (SRSC). At the Boquillas Canyon restoration site, above Ernst Tinaja, and near the Shackelford cabin. Along the Rio Grande this is the *Tamarix* species dominating the riparian bosques. *Tamarix gallica* was listed by Amos and Giles (1992) and is reported to occur at RGV (Powell 1998) but no specimen was discovered.

ULMACEAE*Celtis pallida* Torr. – Spiny hackberry

Common shrub or tree wash gravel and banks; DAR, DCA, RIO, 1800–2800 ft; *CMR* 5078 (BGWMA); *JF* 2112, *TR* 80, *MT* 204 *BHW* 14048 (SRSC).

§Δ *Celtis reticulata* Torr. – Netleaf hackberry, palo blanco

Tree. Listed by Amos and Giles (1992) as occurring in Brushy Canyon. Known from BBNP and commonly through the rest of Brewster County.

URTICACEAE

+ *Parietaria pensylvanica* Muhl. ex Willd. – Pennsylvania pellitory

Rare annual herb, rubbly soil on north-facing alluvial slope, crack in a boulder on talus slope; DSC, DCA, 3150–3560 ft; *JF 538, 1701* (SRSC). Environs of TC trail mile 3.5 and upper Marufo Vega trail. Listed by Amos and Giles (1992). Observed at the Boquillas Canyon restoration site. Turner et al. (2003) shows a dot in the study area but no specimen was discovered.

VERBENACEAE

Aloysia gratissima (Gillies & Hook.) Tronc. – Beebrush, whitebrush

Occasional shrub, wash gravel, rocky hills; DSC, DAR, DCA, 1880–3480 ft; *JF 671, 1362, TR 102* (SRSC). Turner et al. (2003) shows dots in the study area but no specimens were discovered.

+ *Aloysia wrightii* A. Heller ex Abrams – Wright beebrush, oreganillo

Uncommon shrub, base of cliffs, open rocky peak; DSC, DCA, SYG/CHP, 3560–5080 ft; *JF 476, 746* (SRSC). TC trail and on top of Stuarts Peak. Turner et al. (2003) shows dots in the study area but no specimens were discovered.

Bouchea spathulata Torr. – Spoonleaf

Occasional in southern half of study area, shrub, rocky limestone slopes, cobbly stoney loam in bottom of wash, sandy slope; DSC, DAR, DCA, SYG, 1800–5000 ft; *BA2, DG, TE, & B 4927* (BIBE); *PVW s.n.* (KANU); *BA2 4927, SJ & GJ 6503* (SAT); *JF 170, 857, 1511, MT 1* (SRSC); *BHW 10749, 10766* (TEX-LL).

§ *Glandularia bipinnatifida* (Nutt.) Nutt. var. *ciliata* (Benth.) B.L. Turner – Dakota mock vervain, old blue

[*Glandularia bipinnatifida* (Nutt.) Nutt.] Uncommon perennial herb, sandy soil, in or around depressions where water collects; DSC, DAR, RIO, 1800–3520 ft; *OES 1492* (BIBE); *HTF 1226, GLW 4466* (SRSC). Dog Creek, Dagger Flat, along Rio Grande at Boquillas. The varietal status is based on recent chromosome work on this genus (Turner and Powell 2005).

Glandularia quadrangulata (A. Heller) Umber – Beaked verbena

[*Glandularia verecunda* Umber] Uncommon annual herb, flats, sandy to rocky soil, streambed; DSC, DCA, RIO, 1800–3300 ft; *CMR 5140* (BGWMA); *JF 618* (BIBE); *CMR 16409* (SAT); *JF 618, HTF 1224* (SRSC); *BHW & RRI 21430* (TEX-LL).

Locally abundant after good rains, just like many generally uncommon annuals. Dog Canyon, TC trail, and along Rio Grande at Boquillas. Also known from Dog Flats. The individuals found in BBNP may be more appropriately placed under *Glandularia verecunda* based on different seed structure, with *Glandularia quadrangulata* being a

more northerly distributed taxon (Powell in prep., Henrickson 2003). The species *Glandularia wrightii* f. *albiflora* listed in Amos and Giles (1992) is most likely *Glandularia quadrangulata*.

§ *Glandularia wrightii* (A. Gray) Umber – Wright verbena, pinky
[*Verbena wrightii* A. Gray] Perennial herb; *CMR 16408* (SAT). Near Shackelford cabin in 1981. This species was included under *Glandularia bipinnatifida* var. *ciliata* in Turner et al. (2003), but they were separated based on differing chromosome counts and morphology (Turner and Powell 2005).

Lantana achyranthifolia Desf. – Brushland shrubverbena, desert lantana
[*Lantana macropoda* Torr.] Uncommon to occasional shrub in the southern half of the study area, wash gravel; DSC, DAR, DCA, 1800–2780 ft; *TR 103* (BGWMA); *BA2 4636, 4936* (SAT); *JF 163, 947, 1364, TR 103* (SRSC); *BHW 831a* (TEX-LL).

Lippia graveolens Kunth – Mexican oregano, scented lippia
Uncommon shrub, expected in canyons in the southern half of the study area, wash gravel, limestone hills, moister areas; DSC, DAR, DCA, 1800–2350 ft; *DG & TE 4613, EGM 148, BHW 13065* (BIBE); *DG 4613* (SAT); *JF 1080, 1341, 1691, 2032, 2142, AMP s.n., 5306, 5823, BHW 13065, 21202* (SRSC); *BHW 831* (TEX-LL).

Phyla nodiflora (L.) Greene – Turkey tangle frogfruit
"Frequent" perennial herb, sandy soil, old river floodplain; RIO, DCA, 1800–2300 ft; *AL 321, BHW 833* (BIBE); *JF 2243, OCW 510, BHW 20435* (SRSC). Brushy Canyon, along the banks of the Rio Grande at Boquillas, and at the Boquillas Canyon trail restoration site.

§ *Tetradlea coulteri* A. Gray – Coulter wrinklefruit, stinkweed
"Infrequent" perennial herb; 2250 ft; *BRM 3209, CMR 5073* (BGWMA); *BA2 5717* (SAT); *BHW & LCH BG-184* (SRSC). Near the Shackelford cabin and on Stairstep Mountain.

Verbena neomexicana (A. Gray) Small – Hillside vervain, New Mexico verbena
Occasional to "abundant" perennial herb, sandy to rocky soil; RIO, DCA, 1800–? ft; *BRM 3047, CMR 11635* (BGWMA); *JF 2265* (SRSC).

VIOLACEAE

Hybanthus verticillatus (Ortega) Baill. – Babyslippers
Uncommon to rare perennial herb, in duff under shrubs, often associated with cliff/rock outcrops; DSC, SYG, 3000–4900 ft; *JF 220, 1322, 2170, BHW 10895* (SRSC). North Dagger Mountain, DH plateau, near McKinney Springs. Turner et al. (2003) does not reflect the BHW specimen. Listed by Amos and Giles (1992).

VISCACEAE

Phoradendron hawksworthii (Wiens) Wiens – Hawksworth mistletoe

Rare subshrub, growing on *Juniperus pinchotii* (JF 1913 SRSC), on open rocky summit; DSC/SYG, 4160 ft; JF 1896 (SRSC). On top of Dagger Mountain. Also known from the Chisos Mountains and sparsely throughout the Trans-Pecos.

Phoradendron tomentosum (DC.) Engelm. ex A. Gray – Christmas mistletoe

Uncommon subshrub; DSC, DCA, 2780 ft; CMR 5097 (BGWMA); JF 182 (SRSC); AMP & SAP 4301 (SRSC & TEX-LL). JF 182 was found on *Acacia*, other substrates were not identified. Passionflower Canyon, Ernst Tinaja, and Frog Canyon.

Phoradendron villosum Nutt. – Oak or Cory mistletoe

[*Phoradendron villosum* (Nutt.) Nutt. subsp. *coryae* (Trel.) Weins.] Uncommon subshrub, on *Quercus vaseyana* and *Prosopis glandulosa*; SYG/CHP, 2300-5000 ft; PVW s.n. (KANU); JF 769, 1209, BHW 10845, 10846, OCW 505, BHW & LCH BG-145 (SRSC). Stuarts Peak, DH plateau, head of Heath Canyon, Brushy Canyon.

VITACEAE

+ *Cissus incisa* (Nutt. ex Torr. & A. Gray) Des Moul. – Sorrelvine, ivy treebine

[*Cissus trifoliata* (L.) L.] Rare perennial woody vine, side of wash, one specimen on *Chilopsis linearis*; DSC, DAR, 2050–3740 ft; JF 232, 1682 (SRSC). North Dagger Mountain area and Strawhouse Canyon. Observed at Dagger Canyon. Listed by Amos and Giles (1992).

§ *Vitis arizonica* Engelm. – Canyon grape

"Abundant" perennial woody vine, sandy banks, climbing in shrubbery; RIO, 1800 ft; EGM 156, BHW 13038 (BIBE); BHW 13038, GLW 4489 (SRSC). Along the banks of the Rio Grande, Boquillas area.

ZYGOPHYLLACEAE

Guaiacum angustifolium Engelm. – Guayacan, Texas lignum-vitae

Common shrub, wash gravel and banks, rocky limestone soils; DSC, DAR, DCA, RIO, 1800–3280 ft; CMR 5033 (BGWMA); JF 224, 690, 2111, TR 96, BHW 18413 (SRSC).

§ *Kallstroemia grandiflora* Torr. ex A. Gray – Arizona poppy

"Infrequent" annual herb, dry calcareous soils along arroyos and on mountain ridges; DSC, DCA, 1800–2320 ft; BLT & MT2 97-336, BHW & MCJ 16867 (SRSC); EGM 53, BLT & MT2 97-336 (TEX-LL). Ernst Tinaja and the Boquillas area.

Kallstroemia hirsutissima Vail – Hairy caltrop

Uncommon annual herb, rocky limestone soils; DSC, 1900–3000 ft; JF 199, 219, BHW 13066 (SRSC). North Dagger Mountain and near tunnel. Also known from Hot Springs. BHW 13066 is not reflected in Turner et al. (2003).

§ *Kallstroemia parviflora* Norton– Warty caltrop

Annual herb; *BHW & LCH BG-197* (SRSC). East slopes Stairway Mountain in 1950.

Larrea tridentata (Sessé & Moc. ex DC.) Coville – Creosote, gobernadora

Abundant shrub, rocky soils on flats and hills, rock outcrops, sandy clay bottoms; DSC, DAR, 1800–3560 ft; *ACK 829* (BIBE); *JJ 40, JT 30* (SAT); *JF 606* (SRSC); *DS 1091* (TEX-LL).

! *Tribulus terrestris* L. – Goathead, puncturevine

"Infrequent to frequent" annual herb, sandy soil; RIO, 1800 ft; *BA2, DG, TE, & PC 4607, EGM 157* (BIBE); *BA2 4607* (SAT); *JF 2227, BHW 23036, BHW & MCJ 16850* (SRSC). Boquillas Canyon area.